B06N63-TMA-252

0045255

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

October 26, 1992

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

Quality Control Narrative

Scope
Twenty (20) grass samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on August 13, 1992 from TMA/Norcal. The samples were analyzed for the USEPA CLP TAL metals. The analysis were performed under TMA/Skinner and Sherman work order S208146.

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 iron, lead, manganese, and zinc 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

SEP 1996
RECEIVED
EDMC

i 2/27/96 M.H.

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-92-00179
Record of Disposition No.

DATE: October 28, 1992	LABORATORY: TMA
PROJECT TITLE/NO.: 100 Area Biota	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

►► B06N88

DESCRIPTION OF EVENT:

►► Sample B06N88 was overlooked by a TMA Laboratory technician, and was not noticed until the data package was being assembled.

DISPOSITION OF SAMPLES:

►► The mercury analysis on Sample B06N88 was canceled per telecon with Steve Weiss on October 22, 1992.

APPROVAL SIGNATURES:

K. N. Pool — 10/29/92
OSM Project Coordinator (Print/Sign Name) — Date

S. Weiss — 11/2/92
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-92-00179
Record of Disposition No.

DATE: October 28, 1992

LABORATORY: TMA

PROJECT TITLE/NO.: 100 Area Biota

NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

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gave to JPENA 11/10 for signature

APPROVAL SIGNATURES:

K. N. Pool — 10/29/92
OSM Project Coordinator (Print/Sign Name) — Date

S. Weiss
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N63

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-01S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 57.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	142			P
7440-36-0	Antimony	5.9	U		P
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	22.0	B		P
7440-41-7	Beryllium	0.14	U		P
7440-43-9	Cadmium	0.35	U		P
7440-70-2	Calcium	3530			P
7440-47-3	Chromium	2.1	B		P
7440-48-4	Cobalt	0.94	U		P
7440-50-8	Copper	5.8	B		P
7439-89-6	Iron	258		*	P
7439-92-1	Lead	3.8		W*	F
7439-95-4	Magnesium	1710	B		P
7439-96-5	Manganese	35.6		*	P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	1.9	U		P
7440-09-7	Potassium	9110			P
7782-49-2	Selenium	1.3	U	W	F
7440-22-4	Silver	0.87	U		P
7440-23-5	Sodium	98.8	B		P
7440-28-0	Thallium	0.45	U	W	F
7440-62-2	Vanadium	0.97	U		P
7440-66-6	Zinc	36.8		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N64

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-02S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 80.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	252			P
7440-36-0	Antimony	4.2	U		P
7440-38-2	Arsenic	0.72	U		F
7440-39-3	Barium	19.6	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	3890			P
7440-47-3	Chromium	1.7	B		P
7440-48-4	Cobalt	0.68	U		P
7440-50-8	Copper	5.7	B		P
7439-89-6	Iron	436		*	P
7439-92-1	Lead	1.5		W*	F
7439-95-4	Magnesium	2020			P
7439-96-5	Manganese	88.7		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	9020			P
7782-49-2	Selenium	0.95	U	W	F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	153	B		P
7440-28-0	Thallium	0.32	U	W	F
7440-62-2	Vanadium	1.1	B		P
7440-66-6	Zinc	65.4		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

004

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N65

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-03S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 60.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	46.5	B		P
7440-36-0	Antimony	5.6	U		P
7440-38-2	Arsenic	0.96	U		F
7440-39-3	Barium	16.5	B		P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.33	U		P
7440-70-2	Calcium	3780			P
7440-47-3	Chromium	1.5	U		P
7440-48-4	Cobalt	0.90	U		P
7440-50-8	Copper	4.0	B		P
7439-89-6	Iron	109		*	P
7439-92-1	Lead	0.72	B	W*	F
7439-95-4	Magnesium	2310			P
7439-96-5	Manganese	48.9		*	P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	1.8	U		P
7440-09-7	Potassium	18000			P
7782-49-2	Selenium	1.3	U		F
7440-22-4	Silver	0.83	U		P
7440-23-5	Sodium	144	B		P
7440-28-0	Thallium	0.43	U	W	F
7440-62-2	Vanadium	0.93	U		P
7440-66-6	Zinc	33.6		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N67

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

Lab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-05S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 77.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	339			P
7440-36-0	Antimony	4.3	U		P
7440-38-2	Arsenic	0.90	B	W	F
7440-39-3	Barium	23.9	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.26	U		P
7440-70-2	Calcium	4190			P
7440-47-3	Chromium	1.2	U		P
7440-48-4	Cobalt	0.69	U		P
7440-50-8	Copper	3.7	B		P
7439-89-6	Iron	593		*	P
7439-92-1	Lead	4.2		*	F
7439-95-4	Magnesium	2620			P
7439-96-5	Manganese	42.8		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.9	B		P
7440-09-7	Potassium	12900			P
7782-49-2	Selenium	0.94	U		F
7440-22-4	Silver	0.64	U		P
7440-23-5	Sodium	75.2	B		P
7440-28-0	Thallium	0.32	U		F
7440-62-2	Vanadium	1.3	B		P
7440-66-6	Zinc	43.0		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

007

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N68

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-06S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 71.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	608			P
7440-36-0	Antimony	4.7	U		P
7440-38-2	Arsenic	1.0	B		F
7440-39-3	Barium	23.1	B		P
7440-41-7	Beryllium	0.54	B		P
7440-43-9	Cadmium	0.32	B		P
7440-70-2	Calcium	4340			P
7440-47-3	Chromium	2.1	B		P
7440-48-4	Cobalt	0.92	B		P
7440-50-8	Copper	6.3	B		P
7439-89-6	Iron	1070		*	P
7439-92-1	Lead	4.5		*	F
7439-95-4	Magnesium	2200			P
7439-96-5	Manganese	72.5		*	P
7439-97-6	Mercury	0.08	B		CV
7440-02-0	Nickel	2.1	B		P
7440-09-7	Potassium	10300			P
7782-49-2	Selenium	1.0	U		F
7440-22-4	Silver	0.70	U		P
7440-23-5	Sodium	256	B		P
7440-28-0	Thallium	0.36	U	W	F
7440-62-2	Vanadium	1.8	B		P
7440-66-6	Zinc	56.1		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

008

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N69

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-07S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 58.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	50.5	B		P
7440-36-0	Antimony	5.5	U		P
7440-38-2	Arsenic	0.97	U		F
7440-39-3	Barium	33.2	B		P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.32	U		P
7440-70-2	Calcium	7590			P
7440-47-3	Chromium	1.5	U		P
7440-48-4	Cobalt	0.87	U		P
7440-50-8	Copper	3.8	B		P
7439-89-6	Iron	116		*	P
7439-92-1	Lead	0.67	U	W*	F
7439-95-4	Magnesium	3320			P
7439-96-5	Manganese	45.3		*	P
7439-97-6	Mercury	0.08	U		CV
7440-02-0	Nickel	1.7	U		P
7440-09-7	Potassium	12400			P
7782-49-2	Selenium	1.3	U		F
7440-22-4	Silver	0.81	U		P
7440-23-5	Sodium	69.0	B		P
7440-28-0	Thallium	0.44	U	W	F
7440-62-2	Vanadium	0.90	U		P
7440-66-6	Zinc	70.1		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N70

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-08S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 82.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	110			P
7440-36-0	Antimony	3.9	U		P
7440-38-2	Arsenic	0.68	U		F
7440-39-3	Barium	23.2	B		P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	6130			P
7440-47-3	Chromium	2.3			P
7440-48-4	Cobalt	0.62	U		P
7440-50-8	Copper	3.5	B		P
7439-89-6	Iron	207		*	P
7439-92-1	Lead	0.89		W*	F
7439-95-4	Magnesium	3660			P
7439-96-5	Manganese	24.8		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.2	U		P
7440-09-7	Potassium	12100			P
7782-49-2	Selenium	2.3		+	F
7440-22-4	Silver	0.57	U		P
7440-23-5	Sodium	98.1	B		P
7440-28-0	Thallium	0.30	U	W	F
7440-62-2	Vanadium	0.64	U		P
7440-66-6	Zinc	64.7		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

010

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N71

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-09S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 80.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	38.8	B		P
7440-36-0	Antimony	4.2	U		P
7440-38-2	Arsenic	0.69	U		F
7440-39-3	Barium	17.9	B		P
7440-41-7	Beryllium	0.19	B		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	4340			P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	3.0	B		P
7439-89-6	Iron	81.4		*	P
7439-92-1	Lead	0.48	U	W*	F
7439-95-4	Magnesium	2220			P
7439-96-5	Manganese	39.4		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	15100			P
7782-49-2	Selenium	0.91	U		F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	35.6	B		P
7440-28-0	Thallium	0.31	U	W	F
7440-62-2	Vanadium	0.70	U		P
7440-66-6	Zinc	38.0		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

011

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N72

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-10S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 84.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	23.1	B		P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	0.69	U		F
7440-39-3	Barium	19.8	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.24	U		P
7440-70-2	Calcium	5950			P
7440-47-3	Chromium	2.7			P
7440-48-4	Cobalt	0.64	U		P
7440-50-8	Copper	3.4	B		P
7439-89-6	Iron	61.1		*	P
7439-92-1	Lead	0.48	B	*	F
7439-95-4	Magnesium	2650			P
7439-96-5	Manganese	11.3		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	10700			P
7782-49-2	Selenium	0.90	U		F
7440-22-4	Silver	0.59	U		P
7440-23-5	Sodium	38.4	B		P
7440-28-0	Thallium	0.31	U	W	F
7440-62-2	Vanadium	0.66	U		P
7440-66-6	Zinc	74.8		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N73

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-11S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 69.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	50.0	B		P
7440-36-0	Antimony	4.7	U		P
7440-38-2	Arsenic	0.80	U		F
7440-39-3	Barium	22.6	B		P
7440-41-7	Beryllium	0.11	U		P
7440-43-9	Cadmium	0.28	U		P
7440-70-2	Calcium	5380			P
7440-47-3	Chromium	1.3	U		P
7440-48-4	Cobalt	0.76	U		P
7440-50-8	Copper	5.4	B		P
7439-89-6	Iron	98.1		*	P
7439-92-1	Lead	1.7		W*	F
7439-95-4	Magnesium	2770			P
7439-96-5	Manganese	11.1		*	P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	1.5	U		P
7440-09-7	Potassium	14200			P
7782-49-2	Selenium	1.0	U		F
7440-22-4	Silver	0.70	U		P
7440-23-5	Sodium	54.4	B		P
7440-28-0	Thallium	0.36	U	W	F
7440-62-2	Vanadium	0.79	U		P
7440-66-6	Zinc	305		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N74

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-12S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 84.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	199			P
7440-36-0	Antimony	3.9	U		P
7440-38-2	Arsenic	0.68	U		F
7440-39-3	Barium	12.6	B		P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	1970			P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	0.63	U		P
7440-50-8	Copper	4.7	B		P
7439-89-6	Iron	353		*	P
7439-92-1	Lead	1.8		*	F
7439-95-4	Magnesium	1190			P
7439-96-5	Manganese	37.3		*	P
7439-97-6	Mercury	0.10	B		CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	9900			P
7782-49-2	Selenium	0.89	U	W	F
7440-22-4	Silver	0.58	U		P
7440-23-5	Sodium	47.2	B		P
7440-28-0	Thallium	0.30	U	W	F
7440-62-2	Vanadium	0.79	B		P
7440-66-6	Zinc	95.8		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

014

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N75

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-13S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 75.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	180			P
7440-36-0	Antimony	4.4	U		P
7440-38-2	Arsenic	0.98	B	W	F
7440-39-3	Barium	35.3	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.26	U		P
7440-70-2	Calcium	7030			P
7440-47-3	Chromium	1.4	B		P
7440-48-4	Cobalt	0.70	U		P
7440-50-8	Copper	4.0	B		P
7439-89-6	Iron	382		*	P
7439-92-1	Lead	2.3		*	F
7439-95-4	Magnesium	2750			P
7439-96-5	Manganese	58.5		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	12700			P
7782-49-2	Selenium	0.99	U		F
7440-22-4	Silver	0.65	U		P
7440-23-5	Sodium	94.6	B		P
7440-28-0	Thallium	0.34	U	W	F
7440-62-2	Vanadium	0.73	U		P
7440-66-6	Zinc	70.5		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N76

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-14S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 75.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	118			P
7440-36-0	Antimony	4.5	U		P
7440-38-2	Arsenic	1.0	B		F
7440-39-3	Barium	14.3	B		P
7440-41-7	Beryllium	0.11	U		P
7440-43-9	Cadmium	0.26	U		P
7440-70-2	Calcium	2520			P
7440-47-3	Chromium	1.2	U		P
7440-48-4	Cobalt	0.71	U		P
7440-50-8	Copper	3.3	B		P
7439-89-6	Iron	231		*	P
7439-92-1	Lead	1.0		W*	F
7439-95-4	Magnesium	1680			P
7439-96-5	Manganese	51.2		*	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	12400			P
7782-49-2	Selenium	0.99	U		F
7440-22-4	Silver	0.66	U		P
7440-23-5	Sodium	59.2	B		P
7440-28-0	Thallium	0.34	U	W	F
7440-62-2	Vanadium	0.74	U		P
7440-66-6	Zinc	59.4		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

016

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N77

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-15S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 66.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	60.8			P
7440-36-0	Antimony	5.1	U		P
7440-38-2	Arsenic	0.85	U	W	F
7440-39-3	Barium	27.2	B		P
7440-41-7	Beryllium	0.12	U		P
7440-43-9	Cadmium	0.30	U		P
7440-70-2	Calcium	4060			P
7440-47-3	Chromium	1.3	U		P
7440-48-4	Cobalt	0.81	U		P
7440-50-8	Copper	3.4	B		P
7439-89-6	Iron	128		*	P
7439-92-1	Lead	0.68	B	*	F
7439-95-4	Magnesium	2080			P
7439-96-5	Manganese	39.9		*	P
7439-97-6	Mercury	0.07	U		CV
7440-02-0	Nickel	1.6	U		P
7440-09-7	Potassium	10100			P
7782-49-2	Selenium	1.1	U	W	F
7440-22-4	Silver	0.75	U		P
7440-23-5	Sodium	147	B		P
7440-28-0	Thallium	0.38	U	W	F
7440-62-2	Vanadium	0.84	U		P
7440-66-6	Zinc	143		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

017

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N78

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-16S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 78.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	273			P
7440-36-0	Antimony	4.2	U		P
7440-38-2	Arsenic	0.97	B		F
7440-39-3	Barium	21.7	B		P
7440-41-7	Beryllium	0.39	B		P
7440-43-9	Cadmium	0.25	U		P
7440-70-2	Calcium	4680			P
7440-47-3	Chromium	2.5			P
7440-48-4	Cobalt	0.70	B		P
7440-50-8	Copper	4.9	B		P
7439-89-6	Iron	491		*	P
7439-92-1	Lead	2.7		*	F
7439-95-4	Magnesium	2050			P
7439-96-5	Manganese	84.4		*	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	2.3	B		P
7440-09-7	Potassium	9190			P
7782-49-2	Selenium	0.95	U		F
7440-22-4	Silver	0.62	U		P
7440-23-5	Sodium	103	B		P
7440-28-0	Thallium	0.32	U		F
7440-62-2	Vanadium	1.0	B		P
7440-66-6	Zinc	91.1		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

018

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N79

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-17S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 74.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	273			P
7440-36-0	Antimony	4.5	U		P
7440-38-2	Arsenic	0.75	U		F
7440-39-3	Barium	17.5	B		P
7440-41-7	Beryllium	0.11	U		P
7440-43-9	Cadmium	0.27	U		P
7440-70-2	Calcium	4430			P
7440-47-3	Chromium	1.2	U		P
7440-48-4	Cobalt	0.72	U		P
7440-50-8	Copper	5.0	B		P
7439-89-6	Iron	514		*	P
7439-92-1	Lead	0.91		*	F
7439-95-4	Magnesium	1830			P
7439-96-5	Manganese	64.8		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	11200			P
7782-49-2	Selenium	0.98	U	MW	F
7440-22-4	Silver	0.67	U		P
7440-23-5	Sodium	150	B		P
7440-28-0	Thallium	0.33	U	W	F
7440-62-2	Vanadium	0.75	U		P
7440-66-6	Zinc	47.3		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N80

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-18S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 87.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	535			P
7440-36-0	Antimony	3.8	U		P
7440-38-2	Arsenic	0.66	U	W	F
7440-39-3	Barium	21.9	B		P
7440-41-7	Beryllium	0.44	B		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	5070			P
7440-47-3	Chromium	1.4	B		P
7440-48-4	Cobalt	0.62	U		P
7440-50-8	Copper	5.1	B		P
7439-89-6	Iron	907		*	P
7439-92-1	Lead	3.8		*	F
7439-95-4	Magnesium	1800			P
7439-96-5	Manganese	55.1		*	P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	1.6	B		P
7440-09-7	Potassium	7780			P
7782-49-2	Selenium	0.87	U		F
7440-22-4	Silver	0.57	U		P
7440-23-5	Sodium	218	B		P
7440-28-0	Thallium	0.30	U		F
7440-62-2	Vanadium	1.5	B		P
7440-66-6	Zinc	51.8		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

020

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N81

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: 806N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-19S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 85.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	207			P
7440-36-0	Antimony	3.9	U		P
7440-38-2	Arsenic	0.68	U		F
7440-39-3	Barium	14.8	B		P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.23	U		P
7440-70-2	Calcium	3560			P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	0.63	U		P
7440-50-8	Copper	4.4	B		P
7439-89-6	Iron	426		*	P
7439-92-1	Lead	1.2		*	F
7439-95-4	Magnesium	1890			P
7439-96-5	Manganese	58.1		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	11800			P
7782-49-2	Selenium	0.89	U		F
7440-22-4	Silver	0.58	U		P
7440-23-5	Sodium	139	B		P
7440-28-0	Thallium	0.30	U	W	F
7440-62-2	Vanadium	0.81	B		P
7440-66-6	Zinc	69.6		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

021

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N82

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-20S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 84.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	97.3			P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	0.77	B	W	F
7440-39-3	Barium	12.8	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.24	U		P
7440-70-2	Calcium	2920			P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	0.64	U		P
7440-50-8	Copper	4.6	B		P
7439-89-6	Iron	199		*	P
7439-92-1	Lead	1.1		*	F
7439-95-4	Magnesium	1990			P
7439-96-5	Manganese	77.4		*	P
7439-97-6	Mercury	0.06	U		CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	14600			P
7782-49-2	Selenium	0.90	U		F
7440-22-4	Silver	0.59	U		P
7440-23-5	Sodium	129	B		P
7440-28-0	Thallium	0.31	U		F
7440-62-2	Vanadium	0.66	U		P
7440-66-6	Zinc	97.4		*	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

022

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

2521032496

2521032496

Date

RECIPIENT'S COPY

1

From (Your Name) Please Print: SAMPLE CONTACT

Your Phone Number (Very Important): (617) 235-2233

Company: [illegible] MEDICAL

Department/Floor No.

Street Address: 2[illegible] WEIGHT [illegible]

City: RICHMOND

State

ZIP Required

2

To (Recipient's Name) Please Print: SAMPLE CONTACT

Recipient's Phone Number (Very Important): ( )

Company: SK [illegible]

Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 300 SECOND [illegible]

City: WINCHAM

State: MA

ZIP Required: 02254

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): L3L0 6406

H

IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address

City

State

ZIP Required

3

PAYMENT 1 [✓] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check

4

SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 [✓] YOUR PACKAGING
- 16 [ ] FEDEX LETTER *
- 12 [ ] FEDEX PAK *
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†)
- 51 [ ] YOUR PACKAGING
- 56 [ ] FEDEX LETTER *
- 52 [ ] FEDEX PAK *
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
- 30 [ ] ECONOMY

Government Overnight (Restricted to authorized users only)
- 46 [ ] GOVT LETTER
- 41 [ ] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
- 70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required)
- 60 [ ] TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas.
* Declared Value Limit $100
** Call for delivery schedule

5

DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [✓] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations) [ ]
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
11 [ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES 1	WEIGHT In Pounds Only	YOUR DECLARED VALUE
Total	Total 1.14	Total

DIM SHIPMENT (Chargeable Weight) [ ] ____ lbs.

___ x ___ x ___ = ___

Received At: 1 [✓] Regular Stop; 2 [ ] On-Call Stop; 3 [ ] Drop Box; 4 [ ] B.S.C.; 5 [ ] Station

7

Emp. No.

Date

[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold

Street Address

City State Zip

Received By: EXPRESS PROMPT

Date/Time Received: 8/13/92 10:00

FedEx Employee Number

Release Signature:

FedEx Emp. No.

Date/Time

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

REVISION DATE 6/91
PART #137204 FXEM 4/92
FORMAT #099

099

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247

Hanford Nor

TMA/Skinner & Sherman Labs SAMPLE LOG-IN 8/31/92 BC

WORKORDER S208146 CLIENT ~~TAA Norcat~~ NO. SAMPLES:

PROTCL CLP TURNARND 33 Day ____ ____ 20 Gras

COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Othe

CUSTODIAN B. PROUIX SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208041

SHIPER & # Fed Ex 2521 032496 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 8-13-92

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

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME
1	B06N63	Grass	8-13-92	N/A	D CLP-M	
2	B06N64				S	
3	B06N65					
4	B06N66					
5	B06N67					
6	B06N68					
7	B06N69					
8	B06N70					
9	B06N71					
10	B06N72					
11	B06N73	Grass	8-13-92	N/A	- CLP-M	
12	B06N74					
13	B06N75					
14	B06N76					
15	B06N77					
16	B06N78					
17	B06N79					
18	B06N80					
19	B06N81					
20	B06N82					
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: ____

218 REVIEWED ____

complete 8/14/9

* EPA/CLP required Rev 1.6 PAGE:

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Holden Date Sampled 7-21-92 Time 07:48 - hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N63	(1) Paper bag per	Grass	TAL metals (including mercury)-CLP
B06N64	sample #		
B06N65			Total Gamma, Lab SOP
B06N66			Sr-90
B06N67			
B06N68			
B06N69			
B06N70			
B06N71			
B06N72			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required 250

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

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

A-6000-406 (05/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Haden Date Sampled 7-21-92 Time ~11:45 hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N73	(1) Paper bag	Grass	TAL metals (including mercury)-CLP
B06N74	per sample #.		
B06N75			Total Gamma, Lab SOP
B06N76			Sr-90
B06N77			
B06N78			
B06N79			
B06N80			
B06N81			
B06N82			
B06N83			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required 252

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

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

A-6000-406 (05/90)

Westinghouse Hanford Company

CHAIN OF CUSTODY

S&S

Custody Form Initiator: J.G. Lucas

Company Contact: Dan Landeen

Telephone: 376-1038

Project Designation/Sampling Locations: 100A Biota – Reed Canary Grass

Collection Date: 7-21-92

~~Ice Chest~~ Box No.: B-1 2L 8-4-92

Field Logbook No.: WHC-N-444-1

Bill of Lading/Airbill No.: 2509869714

Offsite Property No.: W92-0-0577 #6

Method of Shipment: Emery

Shipped to: TMA / NORCAL Richmond, CA

Possible Sample Hazards/Remarks: None

Sample Identification

B06N63 ✓
B06N64 ✓
B06N65 ✓
B06N66 ✓
B06N67 ✓ ~~Paper bags~~ vials
B06N68 ✓ containing grass
B06N69 ✓
B06N70 ✓
B06N71 ✓
B06N72 ✓

Field Transfer of Custody	CHAIN OF POSSESSION	(Sign and Print Names)
linquished by: Jonathan G. Lucas [signature]	Received by: Kermit Blum	Date/Time: 8-5-92 1100
linquished by: Kermit Blum 8-12-92	Received by: Bart Powers	Date/Time: 8-13-92 10:00
linquished by:	Received by:	Date/Time:
linquished by:	Received by:	Date/Time:

Final Sample Disposition

sposal Method:	Disposed by:	Date/Time:

mments: 249

A-6000-407 (12/90)

Westinghouse Hanford Company

CHAIN OF CUSTODY

S & S

ustody Form Initiator: J.G. Lucas

ompany Contact: Dan Landeen — Telephone: 376-1038

roject Designation/Sampling Locations: 100A Biota — Collection Date: 7-21-92

Reed Canary Grass

~~Chest~~ Box No.: B-2 — Field Logbook No.: WHC-N-444-1

8-4-92

ill of Lading/Airbill No.: 2509869714 — Offsite Property No.: W92-0-0577 #6

lethod of Shipment: Emery

hipped to: TMA/NORCAL Richmond, CA

ossible Sample Hazards/Remarks: None

Sample Identification

B06N73
B06N74
B06N75
B06N76
B06N77
B06N78
B06N79
B06N80
B06N81
B06N82
B06N83

~~Paper bags~~ vials containing grass

~~B06N83~~ 8-4-92
~~B06N84~~

Field Transfer of Custody	CHAIN OF POSSESSION	(Sign and Print Names)
inquished by: Jonathan C. Lucas	Received by: Kermit Blum	Date/Time: 8-5-92 1100
inquished by: Kermit Blum 8-12-92	Received by: Barb Prowse	Date/Time: 8-13-92 10:00
inquished by:	Received by:	Date/Time:
inquished by:	Received by:	Date/Time:

Final Sample Disposition

posal Method:	Disposed by:	Date/Time:

nments:

251

A-6000-407 (12/90)

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

NOV 1992
RECEIVED
OGM DMO

October 27, 1992
TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804
Attention: Dan Stuermer

Quality Control Narrative

Scope
Twelve (12) grass samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on August 13, 1992 from TMA/Norcal. The samples were analyzed for the USEPA CLP TAL metals. The analysis were performed under TMA/Skinner and Sherman work order S208147.

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:

Sample BOGN88 was not analyzed for mercury due to a missed holding time. The client requested that it not be analyzed past holding time.

The aluminum, cadmium, iron, lead, manganese, magnesium, and potassium laboratory duplicates exceeded the control limit requirements.

The arsenic, mercury and zinc matrix spike recovery exceeded the control limit requirements.

The calcium, iron and magnesium ICP serial dilution 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

RECORD COPY

ii 2/27/96 M.H.

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B06N83

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-01S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 81.0

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

CAS No	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	238		*	P
7440-36-0	Antimony	4.2	U		P
7440-38-2	Arsenic	1.1	B	WN	F
7440-39-3	Barium	23.2	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.37	U		P
7440-70-2	Calcium	5930		*F	P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	6.5			P
7439-89-6	Iron	511		*E	P
7439-92-1	Lead	3.4		+*	F
7439-95-4	Magnesium	2100		*E	P
7439-96-5	Manganese	46.0		*	P
7439-97-6	Mercury	0.05	U	N	CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	12400		*	P
7782-49-2	Selenium	0.96	U	W	F
7440-22-4	Silver	0.89	U		P
7440-23-5	Sodium	91.9	B		P
7440-28-0	Thallium	0.42	U	W	F
7440-62-2	Vanadium	0.69	U		P
7440-66-6	Zinc	75.3		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS.

002

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N84

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

Lab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-028

Level (low/med): LOW Date Received: 08/13/92

% Solids: 78.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	116		*	P
7440-36-0	Antimony	4.3	U		P
7440-38-2	Arsenic	0.98	B	N	F
7440-39-3	Barium	14.2	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.38	U		P
7440-70-2	Calcium	2860		*E	P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	0.69	U		P
7440-50-8	Copper	6.5			P
7439-89-6	Iron	250		*E	P
7439-92-1	Lead	1.6		*	F
7439-95-4	Magnesium	1580		*E	P
7439-96-5	Manganese	57.6		*	P
7439-97-6	Mercury	0.10	B	N	CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	12100		*	P
7782-49-2	Selenium	0.99	U	W	F
7440-22-4	Silver	0.92	U		P
7440-23-5	Sodium	38.7	B		P
7440-28-0	Thallium	0.43	U		F
7440-62-2	Vanadium	0.71	U		P
7440-66-6	Zinc	147		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

003

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B06N85

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-03S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 76.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	399		*	P
7440-36-0	Antimony	4.3	U		P
7440-38-2	Arsenic	1.5	B	N	F
7440-39-3	Barium	16.9	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.38	U		P
7440-70-2	Calcium	3170		*E	P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	0.69	U		P
7440-50-8	Copper	7.8			P
7439-89-6	Iron	720		*F	P
7439-92-1	Lead	4.3		*	F
7439-95-4	Magnesium	1910		*F	P
7439-96-5	Manganese	47.9		*	P
7439-97-6	Mercury	0.06	U	N	CV
7440-02-0	Nickel	4.2	B		P
7440-09-7	Potassium	9920		*	P
7782-49-2	Selenium	1.1	B	S	F
7440-22-4	Silver	0.92	U		P
7440-23-5	Sodium	85.3	B		P
7440-28-0	Thallium	0.74	B		F
7440-62-2	Vanadium	0.71	U		P
7440-66-6	Zinc	192		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

B06N86

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-04S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 92.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	125		*	P
7440-36-0	Antimony	3.3	U		P
7440-38-2	Arsenic	1.1	B	WN	F
7440-39-3	Barium	16.6	B		P
7440-41-7	Beryllium	0.08	U		P
7440-43-9	Cadmium	0.38	B		P
7440-70-2	Calcium	3750		*E	P
7440-47-3	Chromium	0.89	U		P
7440-48-4	Cobalt	0.53	U		P
7440-50-8	Copper	8.6			P
7439-89-6	Iron	260		*E	P
7439-92-1	Lead	3.2		*	F
7439-95-4	Magnesium	2470		*E	P
7439-96-5	Manganese	45.9		*	P
7439-97-6	Mercury	0.05	U	N	CV
7440-02-0	Nickel	1.5	B		P
7440-09-7	Potassium	12700		*	P
7782-49-2	Selenium	0.75	U	W	F
7440-22-4	Silver	0.71	U		P
7440-23-5	Sodium	84.4	B		P
7440-28-0	Thallium	0.33	U		F
7440-62-2	Vanadium	0.55	U		P
7440-66-6	Zinc	112		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

005

FORM I - IN

IL M02 1

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B06N87

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-00-0108

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-05S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 84.8

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

CAS No	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	78.8		*	P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	0.90	B	WN	F
7440-39-3	Barium	20.0	B		P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	1.5			P
7440-70-2	Calcium	2890		*F	P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	0.64	U		P
7440-50-8	Copper	4.1	B		P
7439-89-6	Iron	159		F*	P
7439-92-1	Lead	1.0		*	F
7439-95-4	Magnesium	2390		*F	P
7439-96-5	Manganese	25.7		*	P
7439-97-6	Mercury	0.05	U	N	CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	14300		*	P
7782-49-2	Selenium	1.1	B	S	F
7440-22-4	Silver	0.85	U		P
7440-23-5	Sodium	33.8	B		P
7440-28-0	Thallium	0.40	U	W	F
7440-62-2	Vanadium	0.66	U		P
7440-66-6	Zinc	128		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
BRASS

306

FORM I - IN TLM02.1

WESTINGHOUSE/HANFORD

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N83

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

Lab Code: SKINER Case No.: N2-03-0415AS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-065

Level (low/med): LOW Date Received: 08/13/93

% Solids: 81.7

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	120		*	P
7440-36-0	Antimony	3.9	U		P
7440-38-2	Arsenic	0.77	B	WN	F
7440-39-3	Barium	16.4	B		P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.35	U		P
7440-70-2	Calcium	5110		*F	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.62	U		P
7440-50-8	Copper	7.7	B		P
7439-89-6	Iron	230		*F	P
7439-92-1	Lead	1.6		*	F
7439-95-4	Magnesium	2470		*F	P
7439-96-5	Manganese	64.3		*	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	1.2	U		P
7440-09-7	Potassium	10600		*	P
7782-49-2	Selenium	0.94	U		F
7440-22-4	Silver	0.83	U		P
7440-23-5	Sodium	44.7	B		P
7440-28-0	Thallium	0.41	U		F
7440-62-2	Vanadium	0.65	U		P
7440-66-6	Zinc	68.1		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

007

FORM I - IN

ILM03.1

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N89

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-075

Level (low/med): LOW Date Received: 08/13/92

% Solids: 85.0

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

CAS No	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	99.6		*	P
7440-36-0	Antimony	3.9	U		P
7440-38-2	Arsenic	0.75	U	N	F
7440-39-3	Barium	18.0	B		P
7440-41-7	Beryllium	0.09	U		P
7440-43-9	Cadmium	0.35	U		P
7440-70-2	Calcium	4750		*E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	0.62	U		P
7440-50-8	Copper	4.3	B		P
7439-89-6	Iron	208		*E	P
7439-92-1	Lead	1.8		W*	F
7439-95-4	Magnesium	2020		*E	P
7439-96-5	Manganese	47.1		*	P
7439-97-6	Mercury	0.05	U	N	CV
7440-02-0	Nickel	1.2	U		P
7440-09-7	Potassium	9170		*	P
7782-49-2	Selenium	0.92	U		F
7440-22-4	Silver	0.83	U		P
7440-23-5	Sodium	64.8	B		P
7440-28-0	Thallium	0.46	B		F
7440-62-2	Vanadium	0.65	U		P
7440-66-6	Zinc	46.8		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

008

FORM I - IN TLM02.1

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N90

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

Lab Code: SKINER Case No.: N2-08-0461SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-089

Level (low/med): LOW Date Received: 08/13/92

% Solids: 81.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	78.3		*	P
7440-36-0	Antimony	4.0	U		P
7440-38-2	Arsenic	0.76	U	N	F
7440-39-3	Barium	15.9	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.36	U		P
7440-70-2	Calcium	5370		*F	P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	0.64	U		P
7440-50-8	Copper	2.8	B		P
7439-89-6	Iron	167		*F	P
7439-92-1	Lead	0.83		W*	F
7439-95-4	Magnesium	2020		*F	P
7439-96-5	Manganese	27.1		*	P
7439-97-6	Mercury	0.06	U	N	CV
7440-02-0	Nickel	1.3	U		P
7440-09-7	Potassium	11300		*	P
7782-49-2	Selenium	0.92	U		F
7440-22-4	Silver	0.85	U		P
7440-23-5	Sodium	44.3	B		P
7440-28-0	Thallium	0.40	U		F
7440-62-2	Vanadium	0.66	U		P
7440-66-6	Zinc	41.6		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

009

FORM I - IN TLM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

806N91

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: 806N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-095

Level (low/med): LOW Date Received: 08/13/92

% Solids: 68.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	190		*	P
7440-36-0	Antimony	4.9	U		P
7440-38-2	Arsenic	1.7	B	WN	F
7440-39-3	Barium	18.4	B		P
7440-41-7	Beryllium	0.12	U		P
7440-43-9	Cadmium	0.44	U		P
7440-70-2	Calcium	3950		*F	P
7440-47-3	Chromium	1.3	U		P
7440-48-4	Cobalt	0.79	U		P
7440-50-8	Copper	2.2			P
7439-89-6	Iron	350		*F	P
7439-92-1	Lead	1.8		W*	F
7439-95-4	Magnesium	2350		*F	P
7439-96-5	Manganese	57.2		*	P
7439-97-6	Mercury	0.07	U	N	CV
7440-02-0	Nickel	1.6	U		P
7440-09-7	Potassium	15500		*	P
7782-49-2	Selenium	1.1	U	S	F
7440-22-4	Silver	1.1	U		P
7440-23-5	Sodium	257	B		P
7440-28-0	Thallium	0.49	U	W	F
7440-62-2	Vanadium	0.82	U		P
7440-66-6	Zinc	98.1		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

010

FORM I - IN TLM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N92

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-10S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 77.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	113		*	P
7440-36-0	Antimony	4.2	U		P
7440-38-2	Arsenic	1.3	B	WN	F
7440-39-3	Barium	11.6	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.37	U		P
7440-70-2	Calcium	3000		*E	P
7440-47-3	Chromium	1.1	U		P
7440-48-4	Cobalt	0.67	U		P
7440-50-8	Copper	5.0	B		P
7439-89-6	Iron	227		*F	P
7439-92-1	Lead	1.6		*	F
7439-95-4	Magnesium	2580		*F	P
7439-96-5	Manganese	74.7		*	P
7439-97-6	Mercury	0.05	U	N	CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	9830		*	P
7782-49-2	Selenium	1.3		S	F
7440-22-4	Silver	0.90	U		P
7440-23-5	Sodium	153	B		P
7440-28-0	Thallium	0.43	U	W	F
7440-62-2	Vanadium	0.70	U		P
7440-66-6	Zinc	121		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

011

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N93

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

Lab Code: SKINER Case No. : N2-08-041SAS No. : SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-11S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 61.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	132		*	P
7440-36-0	Antimony	5.5	U		P
7440-38-2	Arsenic	1.3	B	WN	F
7440-39-3	Barium	12.7	B		P
7440-41-7	Beryllium	0.13	U		P
7440-43-9	Cadmium	0.49	U		P
7440-70-2	Calcium	3310		*E	P
7440-47-3	Chromium	1.5	U		P
7440-48-4	Cobalt	0.88	U		P
7440-50-8	Copper	2.5	B		P
7439-89-6	Iron	249		*E	P
7439-92-1	Lead	1.7		*	F
7439-95-4	Magnesium	2130		*E	P
7439-96-5	Manganese	63.4		*	P
7439-97-6	Mercury	0.08	U	N	CV
7440-02-0	Nickel	1.8	U		P
7440-09-7	Potassium	7460		*	P
7782-49-2	Selenium	1.3	U	W	F
7440-22-4	Silver	1.2	U		P
7440-23-5	Sodium	152	B		P
7440-28-0	Thallium	0.56	U		F
7440-62-2	Vanadium	0.92	U		P
7440-66-6	Zinc	115		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N94

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N93

Matrix (soil/water): SOIL Lab Sample ID: 08147-125

Level (low/med): LOW Date Received: 08/13/92

% Solids: 72.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	101		*	P
7440-36-0	Antimony	4.5	U		P
7440-38-2	Arsenic	1.2	B	WN	F
7440-39-3	Barium	10.1	B		P
7440-41-7	Beryllium	0.11	U		P
7440-43-9	Cadmium	0.40	U		P
7440-70-2	Calcium	2360		*E	P
7440-47-3	Chromium	1.2	U		P
7440-48-4	Cobalt	0.72	U		P
7440-50-8	Copper	2.9	B		P
7439-89-6	Iron	198		*E	P
7439-92-1	Lead	1.6		*	F
7439-95-4	Magnesium	1180	B	*F	P
7439-96-5	Manganese	22.0		*	P
7439-97-6	Mercury	0.07	U	N	CV
7440-02-0	Nickel	1.4	U		P
7440-09-7	Potassium	7390		*	P
7782-49-2	Selenium	1.1	U	W	F
7440-22-4	Silver	0.96	U		P
7440-23-5	Sodium	48.9	B		P
7440-28-0	Thallium	0.47	U		F
7440-62-2	Vanadium	0.75	U		P
7440-66-6	Zinc	45.6		N	P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

013

HANFORD-NOR

TMA/Skinner & Sherman Labs SAMPLE LOG-IN

WORKORDER S206147 CLIENT TMA Norcal No. SAMPLES:

PROTCL CLP TURNARND 33 Day 12 Grass

COOLER TEMP: 5 oC, or NA (Soil) (Water) (Specify Other

CUSTODIAN R. PROULX SDG/BATCH N/A

CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N208041

SHIPER & # Fed Ex 2521032496 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 8-13-92

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

N/A

	CLIENT ID	MATRIX	RECEIVED	PH*	TEST(S) & QC	HOLD TIME
1	B06N83	Grass	8-13-92	N/A	D CLP m	
2	B06N84	↓	↓	↓	S ↓	
3	B06N85					
4	B06N86					
5	B06N87					
6	B06N88					
7	B06N89					
8	B06N90					
9	B06N91					
10	B06N92					
11	B06N93					
12	B06N94	↓	↓	↓	↓	
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

Complete 8/14/92 BP

* EPA/CLP required Rev 1.6 PAGE:

Westinghouse Hanford Company	CHAIN OF CUSTODY S&S

Custody Form Initiator: V.G. Lucas

Company Contact: Don Landeen — Telephone: 376-1038

Project Designation/Sampling Locations: 100A Biota — Reed Canary Grass — Collection Date: 7-21-92

Ice Chest No. Box 8-8-92: B-3 — Field Logbook No. WHC-N-444-1

Bill of Lading/Airbill No.: 2509869714 — Offsite Property No. W92-0-0577 #6

Method of Shipment: Emery

Shipped to: TMA/NORCAL Richmond, CA

Possible Sample Hazards/Remarks: None

Sample Identification

B06N84 ✓
B06N85 ✓
B06N86 ✓
B06N87 ✓
B06N88 ✓
B06N89 ✓
B06N90 ✓
B06N91 ✓
B06N92 ✓
B06N93 ✓
B06N94 ✓

~~Paper bags~~ vials containing grass

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Jonathan G. Lucas (Jonathan G. Lucas)	Kermit Blum	8-5-92 1100
Kermit Blum 8-12-92	Barb Prunee	8-13-92 10:00

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

280

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Haden Date Sampled 7-21-92 Time 11:45 hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N84	(1) paperbag per	Grass	TAL metals (including mercury)-CLP
B06N85	sample #.		
B06N86			Total Gamma Lab SOP
B06N87			Sr-90
B06N88			
B06N89			
B06N90			
B06N91			
B06N92			
B06N93			
B06N94			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required

28

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

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

A-6000-406 (05/90)

TMA
Thermo Analytical Inc.

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

FACSIMILE COVER SHEET

To:

Name Doloris SANCHEZ Date 10/21/92

Company TMA / NORIAN FAX No.

Location Verification No.

From:

Name Daniel Peterson FAX No. (617) 890-3883

No. Pages 1 (Including Cover Sheet)

MESSAGES

For SAMPLE B0GN88 (SAS 5208147-06) the 14g holding time was missed due to the analyst not analyzing the sample. the Mercury analysis system autosampler was missing samples at that time and it was not noticed it had not run that sample due to an analyst error. the autosampler has been repaired.

Should we go ahead and analyze the sample?

N2-08-041

TMA

MEMORANDUM

To: Karl Pool

From: Dolores Sanchez D. Sanchez

Subject: Sample B06N88 (100A BIOTA)

Date: October 21, 1992

Sample B06N88, collected on 7/21/92 and received by TMA on 8-5-92, was not analyzed for Mercury due to an oversight by the analyst. Should we go ahead and analyze the sample for Mercury? Please advise.

Per Karl Pool on 10-23-92, cancel Hg for this sample.

N208037-01

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N63

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-01	Client sample id	B06N63
Dept sample id	7067-001	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.20	1.3	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	15	3.7				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		6.8		U	GAM
Cobalt 60	10198-40-0	U		0.29	0.050	U	GAM
Zinc 65	17982-39-3	U		0.61		U	GAM
Ruthenium 106	13967-48-1	U		2.6		U	GAM
Cesium 134	17967-70-9	U		0.24		U	GAM
Cesium 137	10045-97-3	U		0.25	0.050	U	GAM
Europium 152	14683-23-9	U		0.41	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Radium 226	13982-67-7	U		0.39	0.10	U	GAM
Thorium 228	14274-82-9	U		0.37		U	GAM
Thorium 232	7440-29-1	U		1.0		U	GAM
Beryllium 7		6.3	4.0				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-02

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N64

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-02	Client sample id	B06N64
Dept sample id	7067-002	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.20	0.22	0.72	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	3.2				GAM
Iron 59		U		1.7	0.050	U	GAM
Chromium 51	14392-02-0	U		5.6		U	GAM
Cobalt 60	10198-40-0	U		0.23	0.050	U	GAM
Zinc 65	17982-39-3	U		0.68		U	GAM
Ruthenium 106	13967-48-1	U		1.7		U	GAM
Cesium 134	17967-70-9	U		0.23		U	GAM
Cesium 137	10045-97-3	U		0.22	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Radium 226	13982-67-7	U		0.46	0.10	U	GAM
Thorium 228	14274-82-9	U		0.30		U	GAM
Thorium 232	7440-29-1	U		0.88		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-03

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N65

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-03	Client sample id	B06N65
Dept sample id	7067-003	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.057	0.25	0.79	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	17	4.5				GAM
Iron 59		U		2.3	0.050	U	GAM
Chromium 51	14392-02-0	U		8.7		U	GAM
Cobalt 60	10198-40-0	U		0.23	0.050	U	GAM
Zinc 65	17982-39-3	U		0.84		U	GAM
Ruthenium 106	13967-48-1	U		3.3		U	GAM
Cesium 134	17967-70-9	U		0.38		U	GAM
Cesium 137	10045-97-3	U		0.32	0.050	U	GAM
Europium 152	14683-23-9	U		0.54	0.10	U	GAM
Europium 154	15585-10-1	U		0.35	0.10	U	GAM
Radium 226	13982-67-7	0.67	0.61		0.10		GAM
Thorium 228	14274-82-9	U		0.43		U	GAM
Thorium 232	7440-29-1	U		1.2		U	GAM
Beryllium 7		4.7	3.8				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-04

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N66

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-04	Client sample id	B06N66
Dept sample id	7067-004	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	2.4	0.37	0.82	2.0		Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	15	4.2				GAM
Iron 59		U		1.6	0.050	U	GAM
Chromium 51	14392-02-0	U		5.7		U	GAM
Cobalt 60	10198-40-0	U		0.37	0.050	U	GAM
Zinc 65	17982-39-3	U		0.79		U	GAM
Ruthenium 106	13967-48-1	U		2.2		U	GAM
Cesium 134	17967-70-9	U		0.28		U	GAM
Cesium 137	10045-97-3	U		0.19	0.050	U	GAM
Europium 152	14683-23-9	U		0.39	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Radium 226	13982-67-7	U		0.46	0.10	U	GAM
Thorium 228	14274-82-9	U		0.33		U	GAM
Thorium 232	7440-29-1	U		0.99		U	GAM
Beryllium 7		5.1	3.5				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-05

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N67

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-05	Client sample id	B06N67
Dept sample id	7067-005	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	2.9	0.47	1.0	2.0		Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	16	4.4				GAM
Iron 59		U		2.1	0.050	U	GAM
Chromium 51	14392-02-0	U		7.6		U	GAM
Cobalt 60	10198-40-0	U		0.32	0.050	U	GAM
Zinc 65	17982-39-3	U		0.98		U	GAM
Ruthenium 106	13967-48-1	U		2.4		U	GAM
Cesium 134	17967-70-9	U		0.28		U	GAM
Cesium 137	10045-97-3	U		0.37	0.050	U	GAM
Europium 152	14683-23-9	U		0.45	0.10	U	GAM
Europium 154	15585-10-1	U		0.32	0.10	U	GAM
Radium 226	13982-67-7	U		0.53	0.10	U	GAM
Thorium 228	14274-82-9	U		0.40		U	GAM
Thorium 232	7440-29-1	U		1.2		U	GAM
Beryllium 7		5.0	4.2				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-06

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N68

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-06	Client sample id	B06N68
Dept sample id	7067-006	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.023	0.17	0.62	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	3.0				GAM
Iron 59		U		0.98	0.050	U	GAM
Chromium 51	14392-02-0	U		4.8		U	GAM
Cobalt 60	10198-40-0	U		0.20	0.050	U	GAM
Zinc 65	17982-39-3	U		0.41		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.21	0.050	U	GAM
Europium 152	14683-23-9	U		0.27	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.33	0.10	U	GAM
Thorium 228	14274-82-9	U		0.28		U	GAM
Thorium 232	7440-29-1	U		0.85		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-07

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N69

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-07	Client sample id	B06N69
Dept sample id	7067-007	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.081	1.1	0.72	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	3.0				GAM
Iron 59		U		0.78	0.050	U	GAM
Chromium 51	14392-02-0	U		4.9		U	GAM
Cobalt 60	10198-40-0	U		0.26	0.050	U	GAM
Zinc 65	17982-39-3	U		0.41		U	GAM
Ruthenium 106	13967-48-1	U		1.6		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.19	0.050	U	GAM
Europium 152	14683-23-9	U		0.28	0.10	U	GAM
Europium 154	15585-10-1	U		0.20	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.24		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		2.7	1.9				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-08

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N70

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-08	Client sample id	B06N70
Dept sample id	7067-008	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.096	0.20	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13	2.8				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		4.8		U	GAM
Cobalt 60	10198-40-0	U		0.24	0.050	U	GAM
Zinc 65	17982-39-3	U		0.52		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.15		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.47		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		4.3	3.1				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
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N208037-09

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N71

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-09	Client sample id	B06N71
Dept sample id	7067-009	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0	2.0	0.55	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.5	2.5				GAM
Iron 59		U		1.0	0.050	U	GAM
Chromium 51	14392-02-0	U		4.9		U	GAM
Cobalt 60	10198-40-0	U		0.17	0.050	U	GAM
Zinc 65	17982-39-3	U		0.40		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.16	0.050	U	GAM
Europium 152	14683-23-9	U		0.22	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.26		U	GAM
Thorium 232	7440-29-1	U		0.77		U	GAM
Beryllium 7		4.6	1.8				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-10

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N72

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-10	Client sample id	B06N72
Dept sample id	7067-010	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.062	0.31	1.1	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.3	1.4				GAM
Iron 59		U		0.66	0.050	U	GAM
Chromium 51	14392-02-0	U		2.4		U	GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Zinc 65	17982-39-3	U		0.21		U	GAM
Ruthenium 106	13967-48-1	U		0.81		U	GAM
Cesium 134	17967-70-9	U		0.084		U	GAM
Cesium 137	10045-97-3	U		0.074	0.050	U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.096	0.10	U	GAM
Radium 226	13982-67-7	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	U		0.12		U	GAM
Thorium 232	7440-29-1	U		0.38		U	GAM
Beryllium 7		3.1	1.1				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
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N208037-11

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N73

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-11	Client sample id	B06N73
Dept sample id	7067-011	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.63	2.3	1.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13	1.9				GAM
Iron 59		U		0.67	0.050	U	GAM
Chromium 51	14392-02-0	U		3.0		U	GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Zinc 65	17982-39-3	U		0.30		U	GAM
Ruthenium 106	13967-48-1	U		1.0		U	GAM
Cesium 134	17967-70-9	U		0.11		U	GAM
Cesium 137	10045-97-3	U		0.10	0.050	U	GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Radium 226	13982-67-7	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	U		0.15		U	GAM
Thorium 232	7440-29-1	U		0.46		U	GAM
Beryllium 7		4.3	1.9				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-12

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N74

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-12	Client sample id	B06N74
Dept sample id	7067-012	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.14	3.2	1.2	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	10	1.3				GAM
Iron 59		U		0.51	0.050	U	GAM
Chromium 51	14392-02-0	U		2.2		U	GAM
Cobalt 60	10198-40-0	U		0.067	0.050	U	GAM
Zinc 65	17982-39-3	U		0.18		U	GAM
Ruthenium 106	13967-48-1	U		0.73		U	GAM
Cesium 134	17967-70-9	U		0.075		U	GAM
Cesium 137	10045-97-3	U		0.075	0.050	U	GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.080	0.10	U	GAM
Radium 226	13982-67-7	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	0.14	0.14				GAM
Thorium 232	7440-29-1	U		0.32		U	GAM
Beryllium 7		5.9	1.3				GAM
Gamma U238		7.2	6.2				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-13

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N75

SDG 7067
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208037-13
Dept sample id 7067-013
Received 08/05/92
% moisture

Client sample id B06N75
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.069	0.28	0.98	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	14	4.4				GAM
Iron 59		U		2.1	0.050	U	GAM
Chromium 51	14392-02-0	U		6.7		U	GAM
Cobalt 60	10198-40-0	U		0.30	0.050	U	GAM
Zinc 65	17982-39-3	U		0.58		U	GAM
Ruthenium 106	13967-48-1	U		2.2		U	GAM
Cesium 134	17967-70-9	U		0.27		U	GAM
Cesium 137	10045-97-3	U		0.29	0.050	U	GAM
Europium 152	14683-23-9	U		0.40	0.10	U	GAM
Europium 154	15585-10-1	U		0.29	0.10	U	GAM
Radium 226	13982-67-7	U		0.59	0.10	U	GAM
Thorium 228	14274-82-9	U		0.35		U	GAM
Thorium 232	7440-29-1	U		1.6		U	GAM
Beryllium 7		3.4	3.2				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.19
Report date 10/14/92

N208037-14

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N76

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-14	Client sample id	B06N76
Dept sample id	7067-014	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.041	0.26	0.90	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13	2.9				GAM
Iron 59		U		1.3	0.050	U	GAM
Chromium 51	14392-02-0	U		5.1		U	GAM
Cobalt 60	10198-40-0	U		0.24	0.050	U	GAM
Zinc 65	17982-39-3	U		0.28		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.22		U	GAM
Cesium 137	10045-97-3	U		0.19	0.050	U	GAM
Europium 152	14683-23-9	U		0.33	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Radium 226	13982-67-7	U		0.40	0.10	U	GAM
Thorium 228	14274-82-9	U		0.28		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		3.4	2.5				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-15

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N77

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-15	Client sample id	B06N77
Dept sample id	7067-015	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.060	0.27	0.99	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13	3.7				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		5.5		U	GAM
Cobalt 60	10198-40-0	U		0.29	0.050	U	GAM
Zinc 65	17982-39-3	U		0.70		U	GAM
Ruthenium 106	13967-48-1	U		1.9		U	GAM
Cesium 134	17967-70-9	U		0.27		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.36	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Radium 226	13982-67-7	U		0.53	0.10	U	GAM
Thorium 228	14274-82-9	U		0.28		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		5.4	3.6				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
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N208037-16

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N78

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-16	Client sample id	B06N78
Dept sample id	7067-016	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.28	0.37	1.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	17	3.7				GAM
Iron 59		U		1.8	0.050	U	GAM
Chromium 51	14392-02-0	U		6.4		U	GAM
Cobalt 60	10198-40-0	U		0.16	0.050	U	GAM
Zinc 65	17982-39-3	U		0.57		U	GAM
Ruthenium 106	13967-48-1	U		1.7		U	GAM
Cesium 134	17967-70-9	U		0.23		U	GAM
Cesium 137	10045-97-3	U		0.20	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Radium 226	13982-67-7	U		0.42	0.10	U	GAM
Thorium 228	14274-82-9	U		0.35		U	GAM
Thorium 232	7440-29-1	U		0.95		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
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TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N79

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-17	Client sample id	B06N79
Dept sample id	7067-017	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.17	2.2	0.76	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	3.5				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		6.3		U	GAM
Cobalt 60	10198-40-0	U		0.32	0.050	U	GAM
Zinc 65	17982-39-3	U		0.67		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.27		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.37	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	U	GAM
Radium 226	13982-67-7	U		0.40	0.10	U	GAM
Thorium 228	14274-82-9	U		0.31		U	GAM
Thorium 232	7440-29-1	U		0.96		U	GAM
Beryllium 7		8.6	3.0				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
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N208037-18

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N80

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-18	Client sample id	B06N80
Dept sample id	7067-018	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.36	0.92	0.73	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13	3.1				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		5.2		U	GAM
Cobalt 60	10198-40-0	U		0.22	0.050	U	GAM
Zinc 65	17982-39-3	U		0.37		U	GAM
Ruthenium 106	13967-48-1	U		1.6		U	GAM
Cesium 134	17967-70-9	U		0.21		U	GAM
Cesium 137	10045-97-3	U		0.19	0.050	U	GAM
Europium 152	14683-23-9	U		0.29	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.35	0.10	U	GAM
Thorium 228	14274-82-9	U		0.29		U	GAM
Thorium 232	7440-29-1	U		0.77		U	GAM
Beryllium 7		4.5	2.7				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
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Report date	10/14/92

N208037-19

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N81

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-19	Client sample id	B06N81
Dept sample id	7067-019	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.009	0.28	1.1	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	3.0				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		5.6		U	GAM
Cobalt 60	10198-40-0	U		0.25	0.050	U	GAM
Zinc 65	17982-39-3	U		0.55		U	GAM
Ruthenium 106	13967-48-1	U		1.3		U	GAM
Cesium 134	17967-70-9	U		0.24		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Radium 226	13982-67-7	U		0.28	0.10	U	GAM
Thorium 228	14274-82-9	U		0.45		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		4.4	2.3				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
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N208037-20

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N82

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-20	Client sample id	B06N82
Dept sample id	7067-020	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.85	2.0	0.97	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	3.0				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		5.7		U	GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Zinc 65	17982-39-3	U		0.51		U	GAM
Ruthenium 106	13967-48-1	U		1.9		U	GAM
Cesium 134	17967-70-9	U		0.20		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.27	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Radium 226	13982-67-7	U		0.35	0.10	U	GAM
Thorium 228	14274-82-9	U		0.30		U	GAM
Thorium 232	7440-29-1	U		0.65		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
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Report date	10/14/92

N208037-21

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N83

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-21	Client sample id	B06N83
Dept sample id	7067-021	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.43	0.86	3.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	8.8	3.1				GAM
Iron 59		U		1.9	0.050	U	GAM
Chromium 51	14392-02-0	U		7.5		U	GAM
Cobalt 60	10198-40-0	U		0.42	0.050	U	GAM
Zinc 65	17982-39-3	U		0.85		U	GAM
Ruthenium 106	13967-48-1	U		2.6		U	GAM
Cesium 134	17967-70-9	U		0.28		U	GAM
Cesium 137	10045-97-3	U		0.29	0.050	U	GAM
Europium 152	14683-23-9	U		0.39	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Radium 226	13982-67-7	U		0.51	0.10	U	GAM
Thorium 228	14274-82-9	U		0.39		U	GAM
Thorium 232	7440-29-1	U		1.3		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: J.G. Lucas

Company Contact: Dan Landeen — Telephone: 376-1038

Project Designation/Sampling Locations: 100A Biota — Reed Canary Grass — Collection Date: 7-21-92

~~Ice Chest~~ Box No.: B-1 — Field Logbook No.: WHC-N-444-1

Bill of Lading/Airbill No.: 2509869714 — Offsite Property No.: W92-0-0577 #6

Method of Shipment: Emery

Shipped to: TMA / NORCAL Richmond, CA

Possible Sample Hazards/Remarks: None

Sample Identification

B06N63
B06N64
B06N65
B06N66
B06N67
B06N68
B06N69
B06N70
B06N71
B06N72

Paper bags containing grass

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)		
Relinquished by: Jonathan G. Lucas	Received by: Kermit Blum	Date/Time: 8-5-92 1100
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:

00054

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Holden Date Sampled 7-21-92 Time 07:48 - hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N63	(1) Paper bag per	Grass	TAL metals (including mercury)-CLP
B06N64	sample #		
B06N65			Total Gamma, Lab SOP
B06N66			Sr-90
B06N67			
B06N68			
B06N69			
B06N70			
B06N71			
B06N72			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required

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

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

00015

A-6000-406 (05/90)

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: J.G. Lucas

Company Contact: Dan Landeen — Telephone: 376-1038

Project Designation/Sampling Locations: 100A Biota — Collection Date: 7-21-92

Reed Canary Grass

~~Ice Chest~~ Box No.: B-2 — Field Logbook No.: WHC-N-444-1

JL 8-4-92

Bill of Lading/Airbill No.: 2509869714 — Offsite Property No.: W92-0-0577#0

Method of Shipment: Emery

Shipped to: TMA/NORCAL Richmond, CA

Possible Sample Hazards/Remarks: None

Sample Identification

B06N73
B06N74
B06N75
B06N76
B06N77
B06N78
B06N79
B06N80
B06N81
B06N82
B06N83

Paper bags containing grass

~~B06N83~~ JL 8-4-92
~~B06N84~~

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)		
Relinquished by: Jonathan G. Lucas	Received by: Kermit Blum	Date/Time: 8-5-92 1100
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:

00053

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Haden Date Sampled 7-21-92 Time ~11:45 hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N73	(1) Paper bag	Grass	TAL metals (including mercury)-CLP
B06N74	per sample #.		
B06N75			Total Gamma, Lab SOP
B06N76			Sr-90
B06N77			
B06N78			
B06N79			
B06N80			
B06N81			
B06N82			
B06N83			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required

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

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

00054

A-6000-406 (05/90)

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: V.G. Lucas

Company Contact: Dan Landeen — Telephone: 376-1038

Project Designation/Sampling Locations: 100A Biota — Reed Canary Grass — Collection Date: 7-21-92

~~Ice Chest~~ Box No.: B-3 — Field Logbook No.: WHC-N-444-1

Bill of Lading/Airbill No.: 2509869714 — Offsite Property No.: W92-0-0577 #6

Method of Shipment: Emery

Shipped to: TMA/NORCAL Richmond, CA

Possible Sample Hazards/Remarks: None

Sample Identification

B06N84 ✓
B06N85 ✓
B06N86 ✓
B06N87 ✓
B06N88 ✓
B06N89 ✓
B06N90 ✓
B06N91 ✓
B06N92 ✓
B06N93 ✓
B06N94 ✓

Paper bags containing grass

☐ Field Transfer of Custody — CHAIN OF POSSESSION — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Jonathan G. Lucas	Kermit Blum	8-5-92 1100
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:

00055

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Haiden Date Sampled 7-21-92 Time 11:45 hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N84	(1) Paperbag per	Grass	TAL metals (including mercury)-CLP
B06N85	sample #.		
B06N86			Total Gamma, Lab SOP
B06N87			Sr-90
B06N88			
B06N89			
B06N90			
B06N91			
B06N92			
B06N93			
B06N94			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required

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

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

00056

A6000-406 (05/90)

SDG 7068 Contact Dinkar P. Kharkar	Client Westinghouse Hanford Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

The result of the Reed Canary Grass samples from Location 100A (TMA/Norcal Group 7068) are reported herein. TMA/Norcal Group 7068 is comprised of the eleven samples listed on the Chain-of-Custody documents and is identified as Sample 1 through 11.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. WHC-N-444-1.

1.2 SAMPLE VOLUME

Paper bags containing 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 on 7/21/92 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 7068-12, 13, and 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

The LCS recovery of ^{90}Sr was 50% with a high error of 45%. The sample had a long-lived component which we normally do not see in the samples. It has contributed to a high error in the sample. The LSC recoveries of gamma nuclides were good and they meet the RDL requirements. The MDA's for gamma nuclides were higher than the RDL because only small aliquots (49.0 g to 120.0 g) were available for gamma analysis instead of 750.0 g required by MDA calculations.

2.2 BLANKS

MDA's for ^{90}Sr meet the RDL requirements, except for the gamma nuclides. Sample aliquots smaller than the aliquot required by MDA calculations were used for gamma analysis.

iv 2/27/96 M.H.

SDG 7068 Contact Dinkar P. Kharkar	Client Westinghouse Hanford Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

Results were satisfactory for ^{90}Sr, and gamma nuclides. The MDA's for gamma nuclides were higher due to small aliquots available for gamma analysis.

3.0 ANALYTICAL NOTES

3.1 Strontium-90 Analyses: The average yield for fourteen analysis (87 ± 23%). The lowest yield was 51% and the highest was 96%. The average MDA was 0.71 ± 0.24 pCi/g. Positive ^{90}Sr concentration was not found in the samples. The ^{90}Sr concentrations are calculated on the basis of dry sample.

3.3 Gamma Scan Analyses: Gamma scan analysis did not find positive concentration of gamma nuclides. The concentration of gamma nuclides was below RDL. The concentration is based on dry sample.

√ 2/27/96 M.H.

N208038-01

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N84

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-01
Dept sample id 7068-001
Received 08/05/92

Client sample id B06N84
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.011	0.21	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.4	2.4				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		4.5		U	GAM
Cobalt 60	10198-40-0	U		0.20	0.050	U	GAM
Zinc 65	17982-39-3	U		0.44		U	GAM
Ruthenium 106	13967-48-1	U		1.7		U	GAM
Cesium 134	17967-70-9	U		0.15		U	GAM
Cesium 137	10045-97-3	0.23	0.19		0.050		GAM
Europium 152	14683-23-9	U		0.26	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Radium 226	13982-67-7	U		0.30	0.10	U	GAM
Thorium 228	14274-82-9	U		0.22		U	GAM
Thorium 232	7440-29-1	U		0.65		U	GAM
Beryllium 7		2.4	2.1				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-02

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N85

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-02
Dept sample id 7068-002
Received 08/05/92

Client sample id B06N85
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.029	0.23	0.71	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.6				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		4.1		U	GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Zinc 65	17982-39-3	U		0.46		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.18		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.30	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.35	0.10	U	GAM
Thorium 228	14274-82-9	U		0.27		U	GAM
Thorium 232	7440-29-1	U		0.71		U	GAM
Beryllium 7		3.4	2.5				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-03

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N86

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-03
Dept sample id 7068-003
Received 08/05/92

Client sample id B06N86
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0	0.80	0.67	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.7				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		4.0		U	GAM
Cobalt 60	10198-40-0	U		0.24	0.050	U	GAM
Zinc 65	17982-39-3	U		0.41		U	GAM
Ruthenium 106	13967-48-1	U		1.1		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.16	0.050	U	GAM
Europium 152	14683-23-9	U		0.24	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Radium 226	13982-67-7	U		0.28	0.10	U	GAM
Thorium 228	14274-82-9	U		0.21		U	GAM
Thorium 232	7440-29-1	U		0.64		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-04

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N87

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-04
Dept sample id 7068-004
Received 08/05/92

Client sample id B06N87
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.14	0.26	0.78	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.9				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		5.2		U	GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Zinc 65	17982-39-3	U		0.51		U	GAM
Ruthenium 106	13967-48-1	U		1.4		U	GAM
Cesium 134	17967-70-9	U		0.17		U	GAM
Cesium 137	10045-97-3	U		0.17	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.34	0.10	U	GAM
Thorium 228	14274-82-9	U		0.24		U	GAM
Thorium 232	7440-29-1	U		0.83		U	GAM
Beryllium 7		5.6	2.9				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-05

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N88

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-05	Client sample id	B06N88
Dept sample id	7068-005	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.10	0.60	0.64	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.5				GAM
Iron 59		U		0.84	0.050	U	GAM
Chromium 51	14392-02-0	U		4.1		U	GAM
Cobalt 60	10198-40-0	U		0.16	0.050	U	GAM
Zinc 65	17982-39-3	U		0.42		U	GAM
Ruthenium 106	13967-48-1	U		1.2		U	GAM
Cesium 134	17967-70-9	U		0.14		U	GAM
Cesium 137	10045-97-3	U		0.13	0.050	U	GAM
Europium 152	14683-23-9	U		0.25	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Radium 226	13982-67-7	U		0.30	0.10	U	GAM
Thorium 228	14274-82-9	U		0.22		U	GAM
Thorium 232	7440-29-1	U		0.64		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

N208038-06

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N89

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-06
Dept sample id 7068-006
Received 08/05/92

Client sample id B06N89
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.34	1.0	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	3.1				GAM
Iron 59		U		0.91	0.050	U	GAM
Chromium 51	14392-02-0	U		5.4		U	GAM
Cobalt 60	10198-40-0	U		0.17	0.050	U	GAM
Zinc 65	17982-39-3	U		0.50		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.19		U	GAM
Cesium 137	10045-97-3	U		0.17	0.050	U	GAM
Europium 152	14683-23-9	U		0.34	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Radium 226	13982-67-7	U		0.27	0.10	U	GAM
Thorium 228	14274-82-9	U		0.27		U	GAM
Thorium 232	7440-29-1	U		0.81		U	GAM
Beryllium 7		3.4	2.2				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-07

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N90

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-07
Dept sample id 7068-007
Received 08/05/92

Client sample id B06N90
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.27	0.31	0.68	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	2.8				GAM
Iron 59		U		0.95	0.050	U	GAM
Chromium 51	14392-02-0	U		3.3		U	GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Zinc 65	17982-39-3	U		0.22		U	GAM
Ruthenium 106	13967-48-1	U		1.1		U	GAM
Cesium 134	17967-70-9	U		0.14		U	GAM
Cesium 137	10045-97-3	U		0.13	0.050	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Radium 226	13982-67-7	U		0.21	0.10	U	GAM
Thorium 228	14274-82-9	U		0.17		U	GAM
Thorium 232	7440-29-1	U		0.60		U	GAM
Beryllium 7		2.9	1.8				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-08

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N91

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-08
Dept sample id 7068-008
Received 08/05/92

Client sample id B06N91
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.16	0.73	0.72	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.5	4.9				GAM
Iron 59		U		2.0	0.050	U	GAM
Chromium 51	14392-02-0	U		9.2		U	GAM
Cobalt 60	10198-40-0	U		0.42	0.050	U	GAM
Zinc 65	17982-39-3	U		0.80		U	GAM
Ruthenium 106	13967-48-1	U		3.1		U	GAM
Cesium 134	17967-70-9	U		0.38		U	GAM
Cesium 137	10045-97-3	U		0.32	0.050	U	GAM
Europium 152	14683-23-9	U		0.54	0.10	U	GAM
Europium 154	15585-10-1	U		0.33	0.10	U	GAM
Radium 226	13982-67-7	U		0.51	0.10	U	GAM
Thorium 228	14274-82-9	U		0.42		U	GAM
Thorium 232	7440-29-1	U		1.4		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-09

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N92

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-09
Dept sample id 7068-009
Received 08/05/92

Client sample id B06N92
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.20	0.26	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.7				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		6.4		U	GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Zinc 65	17982-39-3	U		0.53		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.21		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Radium 226	13982-67-7	U		0.39	0.10	U	GAM
Thorium 228	14274-82-9	U		0.30		U	GAM
Thorium 232	7440-29-1	U		0.82		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-10

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N93

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-10	Client sample id	B06N93
Dept sample id	7068-010	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.024	0.21	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	7.7	2.2				GAM
Iron 59		U		0.87	0.050	U	GAM
Chromium 51	14392-02-0	U		3.9		U	GAM
Cobalt 60	10198-40-0	U		0.26	0.050	U	GAM
Zinc 65	17982-39-3	U		0.27		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.14		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.24	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Radium 226	13982-67-7	U		0.24	0.10	U	GAM
Thorium 228	14274-82-9	U		0.23		U	GAM
Thorium 232	7440-29-1	U		0.55		U	GAM
Beryllium 7		2.5	1.9				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

N208038-11

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N94

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-11	Client sample id	B06N94
Dept sample id	7068-011	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.29	1.1	0.67	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	7.2	2.4				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		4.9		U	GAM
Cobalt 60	10198-40-0	U		0.21	0.050	U	GAM
Zinc 65	17982-39-3	U		0.50		U	GAM
Ruthenium 106	13967-48-1	U		1.4		U	GAM
Cesium 134	17967-70-9	U		0.17		U	GAM
Cesium 137	10045-97-3	U		0.17	0.050	U	GAM
Europium 152	14683-23-9	U		0.30	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.24		U	GAM
Thorium 232	7440-29-1	U		0.90		U	GAM
Beryllium 7		4.3	3.1				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: J.G. Lucas

Company Contact: Don Landeen — Telephone: 376-1038

Project Designation/Sampling Locations: 100A Biota — Collection Date: 7-21-92

Reed Canary Grass

~~Ice Chest~~ Box No.: B-3 — Field Logbook No.: WHC-N-444-1

8-8-92

Bill of Lading/Airbill No.: 2509869714 — Offsite Property No.: W92-0-0577 #6

Method of Shipment: Emery

Shipped to: TMA/NORCAL Richmond, CA

Possible Sample Hazards/Remarks: None

Sample Identification

B06N84 ✓
B06N85 ✓
B06N86 ✓
B06N87 ✓
B06N88 ✓
B06N89 ✓
B06N90 ✓
B06N91 ✓
B06N92 ✓
B06N93 ✓
B06N94 ✓

Paper bags containing grass

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)		
Relinquished by: Jonathan G. Lucas	Received by: Kermit Blum	Date/Time: 8-5-92 1100
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 00040
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Holden Date Sampled 7-21-92 Time 11:45 hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N84	(1) Paperbag per	Grass	TAL metals (including mercury)-CLP
B06N85	Sample #.		
B06N86			Total Gamma } Lab SOP
B06N87			Sr-90 }
B06N88			
B06N89			
B06N90			
B06N91			
B06N92			
B06N93			
B06N94			

Field Information** None

Special Handling and/or Storage None

00041

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

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)

XNP 1/31/93

100 AREA BIOTA RADIOCHEMICAL DATA VALIDATION REPORT

FOR SDG N2-08-037-7067 (Reed Canary Grass)

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 21 samples. All samples were identified on the Chain of custody as being "Reed Canary Grass". 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.

NOTE: This sample delivery group (SDG) consists of 21 samples. This exceeds the contract requirement of a maximum SDG size of 20 samples. Additional batch specific QC was not run with the additional sample within this SDG. This is an issue of contract compliance and does not have a negative impact on the data quality of this SDG.

Data limitations and explanation of qualifiers for SDG # N2-08-037-7067

STRONTIUM-90

The processing group contains the following sample numbers: B06N63, B06N64, B06N65, B06N66, B06N67, B06N68, B06N69, B06N70, B06N71, B06N72, B06N73, B06N74, B06N75, B06N76, B06N77, B06N78, B06N79, B06N80, B06N81, B06N82, and B06N83.

The carrier recovery for one sample is below the limit of acceptability. Sample B06N83 has carrier recovery of 22.6% which is below the 30% acceptance limit. Qualify sample B06N83 as "R" unusable.

All other QC samples and method specific requirements are within acceptable limits. NOTE: Activity was detected in the blank but the activity is below the MDA.

xnp
1/31/93

100 AREA BIOTA RADIOCHEMICAL DATA VALIDATION REPORT

FOR SDG N2-08-037-7067 (Reed Canary Grass)

GAMMA SCAN

The processing group contains the following sample numbers: B06N63, B06N64, B06N65, B06N66, B06N67, B06N68, B06N69, B06N70, B06N71, B06N72, B06N73, B06N74, B06N75, B06N76, B06N77, B06N78, B06N79, B06N80, B06N81, B06N82, and B06N83.

The K-40 sample and duplicate sample results exceed acceptable limits. The Relative Percent Difference of the sample and duplicate sample for K-40 is 40% which exceeds the 35% limit. Qualify all K-40 results as "J" estimated. All other QC samples and method specific requirements are within acceptable limits. Do to the limited amount of sample mass that could be provided for these samples, the laboratory could not obtain required detection limits.

N208037-01

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N63

XNP 1/31/93

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-01	Client sample id	B06N63
Dept sample id	7067-001	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.20	1.3	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	15 J	3.7				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		6.8		U	GAM
Cobalt 60	10198-40-0	U		0.29	0.050	U	GAM
Zinc 65	17982-39-3	U		0.61		U	GAM
Ruthenium 106	13967-48-1	U		2.6		U	GAM
Cesium 134	17967-70-9	U		0.24		U	GAM
Cesium 137	10045-97-3	U		0.25	0.050	U	GAM
Europium 152	14683-23-9	U		0.41	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Radium 226	13982-67-7	U		0.39	0.10	U	GAM
Thorium 228	14274-82-9	U		0.37		U	GAM
Thorium 232	7440-29-1	U		1.0		U	GAM
Beryllium 7		6.3	4.0				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

XNP 1/31/93

N208037-02

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N64

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-02	Client sample id	B06N64
Dept sample id	7067-002	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.20	0.22	0.72	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11 J	3.2				GAM
Iron 59		U		1.7	0.050	U	GAM
Chromium 51	14392-02-0	U		5.6		U	GAM
Cobalt 60	10198-40-0	U		0.23	0.050	U	GAM
Zinc 65	17982-39-3	U		0.68		U	GAM
Ruthenium 106	13967-48-1	U		1.7		U	GAM
Cesium 134	17967-70-9	U		0.23		U	GAM
Cesium 137	10045-97-3	U		0.22	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Radium 226	13982-67-7	U		0.46	0.10	U	GAM
Thorium 228	14274-82-9	U		0.30		U	GAM
Thorium 232	7440-29-1	U		0.88		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

XnP
1/31/93

N208037-03

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N65

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-03	Client sample id	B06N65
Dept sample id	7067-003	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.057	0.25	0.79	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	17 J	4.5				GAM
Iron 59		U		2.3	0.050	U	GAM
Chromium 51	14392-02-0	U		8.7		U	GAM
Cobalt 60	10198-40-0	U		0.23	0.050	U	GAM
Zinc 65	17982-39-3	U		0.84		U	GAM
Ruthenium 106	13967-48-1	U		3.3		U	GAM
Cesium 134	17967-70-9	U		0.38		U	GAM
Cesium 137	10045-97-3	U		0.32	0.050	U	GAM
Europium 152	14683-23-9	U		0.54	0.10	U	GAM
Europium 154	15585-10-1	U		0.35	0.10	U	GAM
Radium 226	13982-67-7	0.67	0.61		0.10		GAM
Thorium 228	14274-82-9	U		0.43		U	GAM
Thorium 232	7440-29-1	U		1.2		U	GAM
Beryllium 7		4.7	3.8				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

XnP 1/31/93

N208037-05

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N67

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-05	Client sample id	B06N67
Dept sample id	7067-005	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	2.9	0.47	1.0	2.0		Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	16 J	4.4				GAM
Iron 59		U		2.1	0.050	U	GAM
Chromium 51	14392-02-0	U		7.6		U	GAM
Cobalt 60	10198-40-0	U		0.32	0.050	U	GAM
Zinc 65	17982-39-3	U		0.98		U	GAM
Ruthenium 106	13967-48-1	U		2.4		U	GAM
Cesium 134	17967-70-9	U		0.28		U	GAM
Cesium 137	10045-97-3	U		0.37	0.050	U	GAM
Europium 152	14683-23-9	U		0.45	0.10	U	GAM
Europium 154	15585-10-1	U		0.32	0.10	U	GAM
Radium 226	13982-67-7	U		0.53	0.10	U	GAM
Thorium 228	14274-82-9	U		0.40		U	GAM
Thorium 232	7440-29-1	U		1.2		U	GAM
Beryllium 7		5.0	4.2				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

XnP
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N208037-06

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N68

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-06	Client sample id	B06N68
Dept sample id	7067-006	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.023	0.17	0.62	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11 J	3.0				GAM
Iron 59		U		0.98	0.050	U	GAM
Chromium 51	14392-02-0	U		4.8		U	GAM
Cobalt 60	10198-40-0	U		0.20	0.050	U	GAM
Zinc 65	17982-39-3	U		0.41		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.21	0.050	U	GAM
Europium 152	14683-23-9	U		0.27	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.33	0.10	U	GAM
Thorium 228	14274-82-9	U		0.28		U	GAM
Thorium 232	7440-29-1	U		0.85		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-07

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N69

XnP 11/31/93

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-07	Client sample id	B06N69
Dept sample id	7067-007	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.081	1.1	0.72	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12 J	3.0				GAM
Iron 59		U		0.78	0.050	U	GAM
Chromium 51	14392-02-0	U		4.9		U	GAM
Cobalt 60	10198-40-0	U		0.26	0.050	U	GAM
Zinc 65	17982-39-3	U		0.41		U	GAM
Ruthenium 106	13967-48-1	U		1.6		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.19	0.050	U	GAM
Europium 152	14683-23-9	U		0.28	0.10	U	GAM
Europium 154	15585-10-1	U		0.20	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.24		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		2.7	1.9				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

XNP
1/31/93

N208037-08

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N70

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-08	Client sample id	B06N70
Dept sample id	7067-008	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.096	0.20	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13 J	2.8				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		4.8		U	GAM
Cobalt 60	10198-40-0	U		0.24	0.050	U	GAM
Zinc 65	17982-39-3	U		0.52		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.15		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.47		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		4.3	3.1				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

XNP
1/31/93

N208037-09

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N71

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-09	Client sample id	B06N71
Dept sample id	7067-009	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0	2.0	0.55	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.5 J	2.5				GAM
Iron 59		U		1.0	0.050	U	GAM
Chromium 51	14392-02-0	U		4.9		U	GAM
Cobalt 60	10198-40-0	U		0.17	0.050	U	GAM
Zinc 65	17982-39-3	U		0.40		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.16	0.050	U	GAM
Europium 152	14683-23-9	U		0.22	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.26		U	GAM
Thorium 232	7440-29-1	U		0.77		U	GAM
Beryllium 7		4.6	1.8				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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N208037-10

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N72

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-10	Client sample id	B06N72
Dept sample id	7067-010	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.062	0.31	1.1	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.3 J	1.4				GAM
Iron 59		U		0.66	0.050	U	GAM
Chromium 51	14392-02-0	U		2.4		U	GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Zinc 65	17982-39-3	U		0.21		U	GAM
Ruthenium 106	13967-48-1	U		0.81		U	GAM
Cesium 134	17967-70-9	U		0.084		U	GAM
Cesium 137	10045-97-3	U		0.074	0.050	U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.096	0.10	U	GAM
Radium 226	13982-67-7	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	U		0.12		U	GAM
Thorium 232	7440-29-1	U		0.38		U	GAM
Beryllium 7		3.1	1.1				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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N208037-11

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N73

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-11	Client sample id	B06N73
Dept sample id	7067-011	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.63	2.3	1.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13 J	1.9				GAM
Iron 59		U		0.67	0.050	U	GAM
Chromium 51	14392-02-0	U		3.0		U	GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Zinc 65	17982-39-3	U		0.30		U	GAM
Ruthenium 106	13967-48-1	U		1.0		U	GAM
Cesium 134	17967-70-9	U		0.11		U	GAM
Cesium 137	10045-97-3	U		0.10	0.050	U	GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Radium 226	13982-67-7	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	U		0.15		U	GAM
Thorium 232	7440-29-1	U		0.46		U	GAM
Beryllium 7		4.3	1.9				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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N208037-12

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N74

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-12	Client sample id	B06N74
Dept sample id	7067-012	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.14	3.2	1.2	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	10 J	1.3				GAM
Iron 59		U		0.51	0.050	U	GAM
Chromium 51	14392-02-0	U		2.2		U	GAM
Cobalt 60	10198-40-0	U		0.067	0.050	U	GAM
Zinc 65	17982-39-3	U		0.18		U	GAM
Ruthenium 106	13967-48-1	U		0.73		U	GAM
Cesium 134	17967-70-9	U		0.075		U	GAM
Cesium 137	10045-97-3	U		0.075	0.050	U	GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.080	0.10	U	GAM
Radium 226	13982-67-7	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	0.14	0.14				GAM
Thorium 232	7440-29-1	U		0.32		U	GAM
Beryllium 7		5.9	1.3				GAM
Gamma U238		7.2	6.2				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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N208037-13

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N75

SDG 7067
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208037-13
Dept sample id 7067-013
Received 08/05/92
% moisture
Client sample id B06N75
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Strontium 90	10098-97-2	0.069	0.28	0.98	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	14 J	4.4				GAM
Iron 59		U		2.1	0.050	U	GAM
Chromium 51	14392-02-0	U		6.7		U	GAM
Cobalt 60	10198-40-0	U		0.30	0.050	U	GAM
Zinc 65	17982-39-3	U		0.58		U	GAM
Ruthenium 106	13967-48-1	U		2.2		U	GAM
Cesium 134	17967-70-9	U		0.27		U	GAM
Cesium 137	10045-97-3	U		0.29	0.050	U	GAM
Europium 152	14683-23-9	U		0.40	0.10	U	GAM
Europium 154	15585-10-1	U		0.29	0.10	U	GAM
Radium 226	13982-67-7	U		0.59	0.10	U	GAM
Thorium 228	14274-82-9	U		0.35		U	GAM
Thorium 232	7440-29-1	U		1.6		U	GAM
Beryllium 7		3.4	3.2				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.19
Report date 10/14/92

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TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N76

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-14	Client sample id	B06N76
Dept sample id	7067-014	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.041	0.26	0.90	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13 J	2.9				GAM
Iron 59		U		1.3	0.050	U	GAM
Chromium 51	14392-02-0	U		5.1		U	GAM
Cobalt 60	10198-40-0	U		0.24	0.050	U	GAM
Zinc 65	17982-39-3	U		0.28		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.22		U	GAM
Cesium 137	10045-97-3	U		0.19	0.050	U	GAM
Europium 152	14683-23-9	U		0.33	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Radium 226	13982-67-7	U		0.40	0.10	U	GAM
Thorium 228	14274-82-9	U		0.28		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		3.4	2.5				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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N208037-15

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N77

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-15	Client sample id	B06N77
Dept sample id	7067-015	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.060	0.27	0.99	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13 J	3.7				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		5.5		U	GAM
Cobalt 60	10198-40-0	U		0.29	0.050	U	GAM
Zinc 65	17982-39-3	U		0.70		U	GAM
Ruthenium 106	13967-48-1	U		1.9		U	GAM
Cesium 134	17967-70-9	U		0.27		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.36	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Radium 226	13982-67-7	U		0.53	0.10	U	GAM
Thorium 228	14274-82-9	U		0.28		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		5.4	3.6				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVO-DS
Version	2.19
Report date	10/14/92

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N208037-16

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N78

SDG	7067	Client	Westinghouse Hanford
Contact	Dinker Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-16	Client sample id	B06N78
Dept sample id	7067-016	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.28	0.37	1.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	17 J	3.7				GAM
Iron 59		U		1.8	0.050	U	GAM
Chromium 51	14392-02-0	U		6.4		U	GAM
Cobalt 60	10198-40-0	U		0.16	0.050	U	GAM
Zinc 65	17982-39-3	U		0.57		U	GAM
Ruthenium 106	13967-48-1	U		1.7		U	GAM
Cesium 134	17967-70-9	U		0.23		U	GAM
Cesium 137	10045-97-3	U		0.20	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Radium 226	13982-67-7	U		0.42	0.10	U	GAM
Thorium 228	14274-82-9	U		0.35		U	GAM
Thorium 232	7440-29-1	U		0.95		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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N208037-17

TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N79

SDG 7067
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208037-17
Dept sample id 7067-017
Received 08/05/92
% moisture
Client sample id B06N79
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.17	2.2	0.76	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11 J	3.5				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		6.3		U	GAM
Cobalt 60	10198-40-0	U		0.32	0.050	U	GAM
Zinc 65	17982-39-3	U		0.67		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.27		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.37	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	U	GAM
Radium 226	13982-67-7	U		0.40	0.10	U	GAM
Thorium 228	14274-82-9	U		0.31		U	GAM
Thorium 232	7440-29-1	U		0.96		U	GAM
Beryllium 7		8.6	3.0				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
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Version 2.19
Report date 10/14/92

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TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N80

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-18	Client sample id	B06N80
Dept sample id	7067-018	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.36	0.92	0.73	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	13 J	3.1				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		5.2		U	GAM
Cobalt 60	10198-40-0	U		0.22	0.050	U	GAM
Zinc 65	17982-39-3	U		0.37		U	GAM
Ruthenium 106	13967-48-1	U		1.6		U	GAM
Cesium 134	17967-70-9	U		0.21		U	GAM
Cesium 137	10045-97-3	U		0.19	0.050	U	GAM
Europium 152	14683-23-9	U		0.29	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.35	0.10	U	GAM
Thorium 228	14274-82-9	U		0.29		U	GAM
Thorium 232	7440-29-1	U		0.77		U	GAM
Beryllium 7		4.5	2.7				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N81

SDG 7067
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208037-19
Dept sample id 7067-019
Received 08/05/92
% moisture
Client sample id B06N81
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.009	0.28	1.1	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12 J	3.0				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		5.6		U	GAM
Cobalt 60	10198-40-0	U		0.25	0.050	U	GAM
Zinc 65	17982-39-3	U		0.55		U	GAM
Ruthenium 106	13967-48-1	U		1.3		U	GAM
Cesium 134	17967-70-9	U		0.24		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Radium 226	13982-67-7	U		0.28	0.10	U	GAM
Thorium 228	14274-82-9	U		0.45		U	GAM
Thorium 232	7440-29-1	U		0.84		U	GAM
Beryllium 7		4.4	2.3				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.19
Report date 10/14/92

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TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N82

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-20	Client sample id	B06N82
Dept sample id	7067-020	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.85	2.0	0.97	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11 J	3.0				GAM
Iron 59		U		1.5	0.050	U	GAM
Chromium 51	14392-02-0	U		5.7		U	GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Zinc 65	17982-39-3	U		0.51		U	GAM
Ruthenium 106	13967-48-1	U		1.9		U	GAM
Cesium 134	17967-70-9	U		0.20		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.27	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Radium 226	13982-67-7	U		0.35	0.10	U	GAM
Thorium 228	14274-82-9	U		0.30		U	GAM
Thorium 232	7440-29-1	U		0.65		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

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TMA NORCAL
REPORTING GROUP 7067

DATA SHEET

B06N83

SDG	7067	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208037-21	Client sample id	B06N83
Dept sample id	7067-021	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
% moisture		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.43 R	0.86	3.0	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	8.8 J	3.1				GAM
Iron 59		U		1.9	0.050	U	GAM
Chromium 51	14392-02-0	U		7.5		U	GAM
Cobalt 60	10198-40-0	U		0.42	0.050	U	GAM
Zinc 65	17982-39-3	U		0.85		U	GAM
Ruthenium 106	13967-48-1	U		2.6		U	GAM
Cesium 134	17967-70-9	U		0.28		U	GAM
Cesium 137	10045-97-3	U		0.29	0.050	U	GAM
Europium 152	14683-23-9	U		0.39	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Radium 226	13982-67-7	U		0.51	0.10	U	GAM
Thorium 228	14274-82-9	U		0.39		U	GAM
Thorium 232	7440-29-1	U		1.3		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.19
Report date	10/14/92

N208037-22

TMA NORCAL

REPORTING GROUP 7067

LAB CONTROL SAMPLE

LAB CONTROL SAMPLE

SDG 7067
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208037-22
Dept sample id 7067-022
% 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	11	1.6	1.5	2.0	X	Y	10.2	0.41	108	70-130	
GAMMA SCAN ANALYTES											
Potassium 40	U		3.4		U	GAM					
Iron 59	U		0.68	0.050	U	GAM					
Chromium 51	U		1.4		U	GAM					
Cobalt 60	1.8	0.37		0.050	X	GAM	2.07	0.083	87	66-134	
Zinc 65	U		0.62		U	GAM					
Ruthenium 106	U		2.2		U	GAM					
Cesium 134	U		0.21		U	GAM					
Cesium 137	1.5	0.33		0.050	X	GAM	1.55	0.062	97	61-139	
Europium 152	U		0.39	0.10	U	GAM					
Europium 154	U		0.27	0.10	U	GAM					
Radium 226	U		0.45	0.10	U	GAM					
Thorium 228	U		0.30		U	GAM					
Thorium 232	U		1.3		U	GAM					

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-LCS
Version 2.19
Report date 10/14/92

N208037-23

TMA NORCAL
REPORTING GROUP 7067

REAGENT BLANK

Reagent Blank

SDG 7067
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208037-23
Dept sample id 7067-023
% 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	0.19	0.21	0.52	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		2.7		U	GAM
Iron 59		U		0.35	0.050	U	GAM
Chromium 51	14392-02-0	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Zinc 65	17982-39-3	U		0.26		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.20		U	GAM
Cesium 137	10045-97-3	U		0.20	0.050	U	GAM
Europium 152	14683-23-9	U		0.30	0.10	U	GAM
Europium 154	15585-10-1	U		0.20	0.10	U	GAM
Radium 226	13982-67-7	U		0.32	0.10	U	GAM
Thorium 228	14274-82-9	U		0.27		U	GAM
Thorium 232	7440-29-1	U		0.56		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.19
Report date 10/14/92

N208037-24

TMA NORCAL

REPORTING GROUP 7067

REPLICATE

B06N63

SDG	7067			Client	Westinghouse Hanford
Contact	Dinkar Kharkar			Contract	MBH-SVV-069262
	REPLICATE		ORIGINAL		
Lab sample id	N208037-24	Lab sample id	N208037-01	Client sample id	B06N63
Dept sample id	7067-024	Dept sample id	7067-001	Matrix	BIOTA
		Received	08/05/92	Collected	07/21/92
% moisture		% moisture		Chain of custody id	WHC-N-444-1

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
Strontium 90	0	1.6	0.56	2.0	U	Y	-0.20	1.3	0.65	U	-	
GAMMA SCAN ANALYTES												
Potassium 40	10	3.2				GAM	15	3.7			40	68
Iron 59	U		1.0	0.050	U	GAM	U		1.4	U	-	
Chromium 51	U		6.9		U	GAM	U		6.8	U	-	
Cobalt 60	U		0.17	0.050	U	GAM	U		0.29	U	-	
Zinc 65	U		0.49		U	GAM	U		0.61	U	-	
Ruthenium 106	U		1.9		U	GAM	U		2.6	U	-	
Cesium 134	U		0.20		U	GAM	U		0.24	U	-	
Cesium 137	U		0.18	0.050	U	GAM	U		0.25	U	-	
Europium 152	U		0.36	0.10	U	GAM	U		0.41	U	-	
Europium 154	U		0.25	0.10	U	GAM	U		0.25	U	-	
Radium 226	U		0.39	0.10	U	GAM	U		0.39	U	-	
Thorium 228	U		0.29		U	GAM	U		0.37	U	-	
Thorium 232	U		0.64		U	GAM	U		1.0	U	-	
Beryllium 7	5.6	2.3				GAM	6.3	4.0			12	121

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-REP
Version	2.19
Report date	10/14/92

SDG 7067 Contact Dinkar P. Kharkar	Client Westinghouse Hanford Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

The result of the Reed Canary Grass samples from Location 100A (TMA/Norcal Group 7067) are reported herein. TMA/Norcal Group 7067 is comprised of the twenty-one samples listed on the Chain-of-Custody documents and is identified as Sample 1 through 21.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. WHC-N-444-1.

1.2 SAMPLE VOLUME

Paper bags containing 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 on 7/21/92 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 7067-22, 23, and 24.

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

The LCS recovery of ^{90}Sr was good and was within the 3 σ limits. The MDA for ^{90}Sr met the RDL requirements. The LSC recoveries of gamma nuclides were good and they were within 3 σ limits. The MDA's for gamma nuclides were higher than the RDL because only small aliquots (50.0 g to 93.0 g) were available for gamma analysis instead of 750.0 g required by MDA calculations. The matrix used for the lab control sample was water and not biota as shown in the sample and QC summary data sheets.

2.2 BLANKS

MDA's for ^{90}Sr meet the RDL requirements, except for the gamma nuclides. Sample aliquots smaller than the aliquot required by MDA calculations were used for gamma analysis. The matrix used for the lab control sample was water and not biota as shown in the sample and QC summary data sheets.

SDG 7067	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

Results were satisfactory for ^{90}Sr, and gamma nuclides. The MDA's for gamma nuclides were higher due to small aliquots available for gamma analysis. The 2 σ error for ^{90}Sr is underlined because the error is greater than MDA.

3.0 ANALYTICAL NOTES

3.1 Strontium-90 Analyses: The average yield for twenty-four analysis was (66 ± 28%). The lowest yield was 23% and the highest was 91%. The average MDA was 0.95 ± 0.99 pCi/g. Positive ^{90}Sr concentration was not found in the samples. The ^{90}Sr concentrations are calculated on the basis of dry sample.

3.3 Gamma Scan Analyses: Gamma scan analysis did not find positive concentration of gamma nuclides except for sample numbers 7067-4 and 5. The concentration of gamma nuclides was below RDL. The concentrations are based on dry sample.

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator J.G. Lucas

Company Contact Dan Landeen Telephone 376-1038

Project Designation/Sampling Locations 100A Biota - Reed Canary Grass Collection Date 7-21-92

~~Ice Chest~~ Box No. B-1 Field Logbook No. WHC-N-444-1

Bill of Lading/Airbill No. 2509869714 Offsite Property No. W92-0-0577 #6

Method of Shipment Emery

Shipped to TMA / NORCAL Richmond, CA

Possible Sample Hazards/Remarks None

Sample Identification

B06N63 ✓
B06N64 ✓
B06N65 ✓
B06N66 ✓
B06N67 ✓
B06N68 ✓
B06N69 ✓
B06N70 ✓
B06N71 ✓
B06N72 ✓

Paper bags containing grass

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Jonathan G. Lucas	Kermit Blum	8-5-92 1100
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:

0054

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Holden Date Sampled 7-21-92 Time 07:48 - hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N63	(1) Paper bag per	GRASS	TAL metals (including mercury)-CLP
B06N64	sample #		
B06N65			Total Gamma Lab SOP
B06N66			Sr-90
B06N67			
B06N68			
B06N69			
B06N70			
B06N71			
B06N72			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required

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

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

00155

A-6000-406 (05/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Holden Date Sampled 7-21-92 Time ~11:45 hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N73	(1) Paper bag	Grass	TAL metals (including mercury)-CLP
B06N74	per sample #.		
B06N75			Total Gamma, Lab SOP
B06N76			Sr-90
B06N77			
B06N78			
B06N79			
B06N80			
B06N81			
B06N82			
B06N83			

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

Analysis Required

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

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

00115-1

A-6000-406 (05/90)

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: J.G. Lucas

Company Contact: Dan Landeen — Telephone: 376-1038

Project Designation/Sampling Locations: 100A Biota — Reed Canary Grass — Collection Date: 7-21-92

~~Ice Chest~~ Box No.: B-2 — Field Logbook No.: WHC-N-444-1

Bill of Lading/Airbill No.: 2509869714 — Offsite Property No.: W92-0-0577 #6

Method of Shipment: Emery

Shipped to: TMA/NORCAL Richmond, CA

Possible Sample Hazards/Remarks: None

Sample Identification

B06N73
B06N74
B06N75
B06N76
B06N77
B06N78
B06N79
B06N80
B06N81
B06N82
B06N83

Paper bags containing grass

~~B06N83~~ DL 8-4-92
~~B06N84~~

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Jonathan G. Lucas	Kermit Blum	8-5-92 1100
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:

00053

A-6000-407 (12/90)

N2-08-037-7067

XnP 1/31/93

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

N2-08-037-7067

XnP 1/31/93

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

N2-08-037-7067

XNP 1/31/93

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

N2-08-037-7067

XMP 1/31/93

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

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-92-00179
Record of Disposition No.

DATE: October 28, 1992	LABORATORY: TMA
PROJECT TITLE/NO.: 100 Area Biota	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

►► B06N88

DESCRIPTION OF EVENT:

►► Sample B06N88 was overlooked by a TMA Laboratory technician, and was not noticed until the data package was being assembled.

DISPOSITION OF SAMPLES:

►► The mercury analysis on Sample B06N88 was canceled per telecon with Steve Weiss on October 22, 1992.

APPROVAL SIGNATURES:

K. N. Pool — 10/29/92
OSM Project Coordinator (Print/Sign Name) — Date

S. Weiss — 11/2/92
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

XMP
1/31/93

100 AREA BIOTA RADIOCHEMICAL DATA VALIDATION REPORT

FOR SDG N2-08-038-7068 (Reed Canary Grass)

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 11 samples. All samples were identified on the Chain of custody as being "Reed Canary Grass". 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 # N2-08-038-7068</u>

STRONTIUM-90

The processing group contains the following sample numbers: B06N84, B06N85, B06N86, B06N87, B06N88, B06N89, B06N90, B06N91, B06N92, B06N93, and B06N94.

The laboratory control sample (LCS) associated with this batch exceeds acceptable limits. The recovery of the LCS is 50% which is below the acceptable limit of 65%. All sample results are below the MDA of the method thus all samples are to be qualified as "UJ" estimated Non-detectable.

All other QC samples and method specific requirements are within acceptable limits. NOTE: Activity was detected in the blank but the activity is below the MDA.

XnP
1/31/93

100 AREA BIOTA RADIOCHEMICAL DATA VALIDATION REPORT

FOR SDG N2-08-038-7068 (Reed Canary Grass)

GAMMA SCAN

The processing group contains the following sample numbers: B06N84, B06N85, B06N86, B06N87, B06N88, B06N89, B06N90, B06N91, B06N92, B06N93, and B06N94.

All QC samples and method specific requirements are within acceptable limits. Do to the limited amount of sample mass that could be provided for these samples, the laboratory could not obtain required detection limits.

XnP 1/31/93

N208038-01

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N84

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-01	Client sample id	B06N84
Dept sample id	7068-001	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.011 UJ	0.21	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	9.4	2.4				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		4.5		U	GAM
Cobalt 60	10198-40-0	U		0.20	0.050	U	GAM
Zinc 65	17982-39-3	U		0.44		U	GAM
Ruthenium 106	13967-48-1	U		1.7		U	GAM
Cesium 134	17967-70-9	U		0.15		U	GAM
Cesium 137	10045-97-3	0.23	0.19		0.050		GAM
Europium 152	14683-23-9	U		0.26	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Radium 226	13982-67-7	U		0.30	0.10	U	GAM
Thorium 228	14274-82-9	U		0.22		U	GAM
Thorium 232	7440-29-1	U		0.65		U	GAM
Beryllium 7		2.4	2.1				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

xnp
1/31/93

N208038-02

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06M85

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-02	Client sample id	B06M85
Dept sample id	7068-002	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.029 UJ	0.23	0.71	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.6				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		4.1		U	GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Zinc 65	17982-39-3	U		0.46		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.18		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.30	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.35	0.10	U	GAM
Thorium 228	14274-82-9	U		0.27		U	GAM
Thorium 232	7440-29-1	U		0.71		U	GAM
Beryllium 7		3.4	2.5				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

XNP 1/31/93

N208038-03

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N86

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-03
Dept sample id 7068-003
Received 08/05/92

Client sample id B06N86
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0 UJ	0.80	0.67	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.7				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		4.0		U	GAM
Cobalt 60	10198-40-0	U		0.24	0.050	U	GAM
Zinc 65	17982-39-3	U		0.41		U	GAM
Ruthenium 106	13967-48-1	U		1.1		U	GAM
Cesium 134	17967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.16	0.050	U	GAM
Europium 152	14683-23-9	U		0.24	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Radium 226	13982-67-7	U		0.28	0.10	U	GAM
Thorium 228	14274-82-9	U		0.21		U	GAM
Thorium 232	7440-29-1	U		0.64		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

XnP 1/31/93

N208038-04

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N87

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-04	Client sample id	B06N87
Dept sample id	7068-004	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.14 UJ	0.26	0.78	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.9				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		5.2		U	GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Zinc 65	17982-39-3	U		0.51		U	GAM
Ruthenium 106	13967-48-1	U		1.4		U	GAM
Cesium 134	17967-70-9	U		0.17		U	GAM
Cesium 137	10045-97-3	U		0.17	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Radium 226	13982-67-7	U		0.34	0.10	U	GAM
Thorium 228	14274-82-9	U		0.24		U	GAM
Thorium 232	7440-29-1	U		0.83		U	GAM
Beryllium 7		5.6	2.9				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

XMP 1/31/93

N208038-05

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N88

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-05	Client sample id	B06N88
Dept sample id	7068-005	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Strontium 90	10098-97-2	-0.10 UJ	0.60	0.64	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.5				GAM
Iron 59		U		0.84	0.050	U	GAM
Chromium 51	14392-02-0	U		4.1		U	GAM
Cobalt 60	10198-40-0	U		0.16	0.050	U	GAM
Zinc 65	17982-39-3	U		0.42		U	GAM
Ruthenium 106	13967-48-1	U		1.2		U	GAM
Cesium 134	17967-70-9	U		0.14		U	GAM
Cesium 137	10045-97-3	U		0.13	0.050	U	GAM
Europium 152	14683-23-9	U		0.25	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Radium 226	13982-67-7	U		0.30	0.10	U	GAM
Thorium 228	14274-82-9	U		0.22		U	GAM
Thorium 232	7440-29-1	U		0.64		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

XNP 1/31/93

N208038-06

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N89

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-06	Client sample id	B06N89
Dept sample id	7068-006	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	-0.34 UJ	1.0	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	3.1				GAM
Iron 59		U		0.91	0.050	U	GAM
Chromium 51	14392-02-0	U		5.4		U	GAM
Cobalt 60	10198-40-0	U		0.17	0.050	U	GAM
Zinc 65	17982-39-3	U		0.50		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.19		U	GAM
Cesium 137	10045-97-3	U		0.17	0.050	U	GAM
Europium 152	14683-23-9	U		0.34	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Radium 226	13982-67-7	U		0.27	0.10	U	GAM
Thorium 228	14274-82-9	U		0.27		U	GAM
Thorium 232	7440-29-1	U		0.81		U	GAM
Beryllium 7		3.4	2.2				GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

XnP 1/31/93

N208038-07

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N90

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-07
Dept sample id 7068-007
Received 08/05/92

Client sample id B06N90
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.27 UJ	0.31	0.68	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	12	2.8				GAM
Iron 59		U		0.95	0.050	U	GAM
Chromium 51	14392-02-0	U		3.3		U	GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Zinc 65	17982-39-3	U		0.22		U	GAM
Ruthenium 106	13967-48-1	U		1.1		U	GAM
Cesium 134	17967-70-9	U		0.14		U	GAM
Cesium 137	10045-97-3	U		0.13	0.050	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Radium 226	13982-67-7	U		0.21	0.10	U	GAM
Thorium 228	14274-82-9	U		0.17		U	GAM
Thorium 232	7440-29-1	U		0.60		U	GAM
Beryllium 7		2.9	1.8				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

XNP 1/31/93

N208038-08

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N91

SDG	7068	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N208038-08	Client sample id	B06N91
Dept sample id	7068-008	Matrix	BIOTA
Received	08/05/92	Collected	07/21/92
		Chain of custody id	WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Strontium 90	10098-97-2	0.16 UJ	0.73	0.72	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	6.5	4.9				GAM
Iron 59		U		2.0	0.050	U	GAM
Chromium 51	14392-02-0	U		9.2		U	GAM
Cobalt 60	10198-40-0	U		0.42	0.050	U	GAM
Zinc 65	17982-39-3	U		0.80		U	GAM
Ruthenium 106	13967-48-1	U		3.1		U	GAM
Cesium 134	17967-70-9	U		0.38		U	GAM
Cesium 137	10045-97-3	U		0.32	0.050	U	GAM
Europium 152	14683-23-9	U		0.54	0.10	U	GAM
Europium 154	15585-10-1	U		0.33	0.10	U	GAM
Radium 226	13982-67-7	U		0.51	0.10	U	GAM
Thorium 228	14274-82-9	U		0.42		U	GAM
Thorium 232	7440-29-1	U		1.4		U	GAM

Lab id	TMAN
Protocol	WHC-HEIS
Version	Ver 1.0
Form	DVD-DS
Version	2.17
Report date	10/06/92

XNP 1/31/93

N208038-09

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N92

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-09
Dept sample id 7068-009
Received 08/05/92

Client sample id B06N92
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Strontium 90	10098-97-2	0.20 UJ	0.26	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	11	2.7				GAM
Iron 59		U		1.4	0.050	U	GAM
Chromium 51	14392-02-0	U		6.4		U	GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Zinc 65	17982-39-3	U		0.53		U	GAM
Ruthenium 106	13967-48-1	U		1.8		U	GAM
Cesium 134	17967-70-9	U		0.21		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Radium 226	13982-67-7	U		0.39	0.10	U	GAM
Thorium 228	14274-82-9	U		0.30		U	GAM
Thorium 232	7440-29-1	U		0.82		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

XNP 1/31/93

N208038-10

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N93

SDG 7068
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-10
Dept sample id 7068-010
Received 08/05/92
Client sample id B06N93
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALI-FIERS	TEST
Strontium 90	10098-97-2	0.024 UJ	0.21	0.65	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	7.7	2.2				GAM
Iron 59		U		0.87	0.050	U	GAM
Chromium 51	14392-02-0	U		3.9		U	GAM
Cobalt 60	10198-40-0	U		0.26	0.050	U	GAM
Zinc 65	17982-39-3	U		0.27		U	GAM
Ruthenium 106	13967-48-1	U		1.5		U	GAM
Cesium 134	17967-70-9	U		0.14		U	GAM
Cesium 137	10045-97-3	U		0.18	0.050	U	GAM
Europium 152	14683-23-9	U		0.24	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Radium 226	13982-67-7	U		0.24	0.10	U	GAM
Thorium 228	14274-82-9	U		0.23		U	GAM
Thorium 232	7440-29-1	U		0.55		U	GAM
Beryllium 7		2.5	1.9				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

XNP 1/31/93

N208038-11

TMA NORCAL
REPORTING GROUP 7068

DATA SHEET

B06N94

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-11
Dept sample id 7068-011
Received 08/05/92

Client sample id B06N94
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

PARAMETER	CAS NO	RESULT pCi/G	2σ ERR (COUNT)	MDA pCi/G	RDL pCi/G	QUALIFIERS	TEST
Strontium 90	10098-97-2	-0.29 UJ	1.1	0.67	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	7.2	2.4				GAM
Iron 59		U		1.1	0.050	U	GAM
Chromium 51	14392-02-0	U		4.9		U	GAM
Cobalt 60	10198-40-0	U		0.21	0.050	U	GAM
Zinc 65	17982-39-3	U		0.50		U	GAM
Ruthenium 106	13967-48-1	U		1.4		U	GAM
Cesium 134	17967-70-9	U		0.17		U	GAM
Cesium 137	10045-97-3	U		0.17	0.050	U	GAM
Europium 152	14683-23-9	U		0.30	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Radium 226	13982-67-7	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	U		0.24		U	GAM
Thorium 232	7440-29-1	U		0.90		U	GAM
Beryllium 7		4.3	3.1				GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-12

TMA NORCAL

REPORTING GROUP 7068

LAB CONTROL SAMPLE

LAB CONTROL SAMPLE

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-12
Dept sample id 7068-012

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	4.2	1.9	0.69	2.0		Y	8.48	0.34	50	65-135	
GAMMA SCAN ANALYTES											
Potassium 40	U		2.3		U	GAM					
Iron 59	U		0.48	0.050	U	GAM					
Chromium 51	U		1.6		U	GAM					
Cobalt 60	2.1	0.44		0.050		GAM	2.06	0.082	102	60-140	
Zinc 65	U		0.60		U	GAM					
Ruthenium 106	U		1.8		U	GAM					
Cesium 134	U		0.28		U	GAM					
Cesium 137	1.3	0.31		0.050		GAM	1.44	0.058	90	61-139	
Europium 152	U		0.33	0.10	U	GAM					
Europium 154	U		0.24	0.10	U	GAM					
Radium 226	U		0.42	0.10	U	GAM					
Thorium 228	U		0.34		U	GAM					
Thorium 232	U		1.2		U	GAM					

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-LCS
Version 2.17
Report date 10/06/92

N208038-13

TMA NORCAL
REPORTING GROUP 7068

REAGENT BLANK

Reagent Blank

SDG 7068
Contact Dinkar Kharkar
Client Westinghouse Hanford
Contract MBH-SVV-069262

Lab sample id N208038-13
Dept sample id 7068-013
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	0.27	0.38	1.1	2.0	U	Y
GAMMA SCAN ANALYTES							
Potassium 40	13966-00-2	U		3.2		U	GAM
Iron 59		U		0.39	0.050	U	GAM
Chromium 51	14392-02-0	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.22	0.050	U	GAM
Zinc 65	17982-39-3	U		0.32		U	GAM
Ruthenium 106	13967-48-1	U		1.3		U	GAM
Cesium 134	17967-70-9	U		0.17		U	GAM
Cesium 137	10045-97-3	U		0.16	0.050	U	GAM
Europium 152	14683-23-9	U		0.32	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Radium 226	13982-67-7	U		0.31	0.10	U	GAM
Thorium 228	14274-82-9	0.23	0.22				GAM
Thorium 232	7440-29-1	U		0.77		U	GAM

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-DS
Version 2.17
Report date 10/06/92

N208038-14

TMA NORCAL

REPORTING GROUP 7068

REPLICATE

B06N84

SDG 7068
Contact Dinkar Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

REPLICATE
Lab sample id N208038-14
Dept sample id 7068-014

ORIGINAL
Lab sample id N208038-01
Dept sample id 7068-001
Received 08/05/92

Client sample id B06N84
Matrix BIOTA
Collected 07/21/92
Chain of custody id WHC-N-444-1

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
Strontium 90	0.065	0.21	0.66	2.0	U	Y	0.011	0.21	0.65	U	-	
GAMMA SCAN ANALYTES												
Potassium 40	13	3.3				GAM	9.4	2.4			32	65
Iron 59	U		1.2	0.050	U	GAM	U		1.1	U	-	
Chromium 51	U		9.2		U	GAM	U		4.5	U	-	
Cobalt 60	U		0.16	0.050	U	GAM	U		0.20	U	-	
Zinc 65	U		0.61		U	GAM	U		0.44	U	-	
Ruthenium 106	U		3.0		U	GAM	U		1.7	U	-	
Cesium 134	U		0.25		U	GAM	U		0.15	U	-	
Cesium 137	U		0.29	0.050	U	GAM	0.23	0.19			23	204
Europium 152	U		0.41	0.10	U	GAM	U		0.26	U	-	
Europium 154	U		0.26	0.10	U	GAM	U		0.17	U	-	
Radium 226	U		0.49	0.10	U	GAM	U		0.30	U	-	
Thorium 228	U		0.43		U	GAM	U		0.22	U	-	
Thorium 232	U		1.1		U	GAM	U		0.65	U	-	
Beryllium 7	5.9	4.2				GAM	2.4	2.1			84	188

Lab id TMAN
Protocol WHC-HEIS
Version Ver 1.0
Form DVD-REP
Version 2.17
Report date 10/06/92

SDG 7068	Client Westinghouse Hanford
Contact Dinkar P. Kharkar	Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

The result of the Reed Canary Grass samples from Location 100A (TMA/Norcal Group 7068) are reported herein. TMA/Norcal Group 7068 is comprised of the eleven samples listed on the Chain-of-Custody documents and is identified as Sample 1 through 11.

1.1 CHAINS-OF-CUSTODY

This report includes data from samples delivered under Chain-of-Custody documents Field Logbook No. WHC-N-444-1.

1.2 SAMPLE VOLUME

Paper bags containing 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 on 7/21/92 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 7068-12, 13, and 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

The LCS recovery of ^{90}Sr was 50% with a high error of 45%. The sample had a long-lived component which we normally do not see in the samples. It has contributed to a high error in the sample. The LSC recoveries of gamma nuclides were good and they meet the RDL requirements. The MDA's for gamma nuclides were higher than the RDL because only small aliquots (49.0 g to 120.0 g) were available for gamma analysis instead of 750.0 g required by MDA calculations.

2.2 BLANKS

MDA's for ^{90}Sr meet the RDL requirements, except for the gamma nuclides. Sample aliquots smaller than the aliquot required by MDA calculations were used for gamma analysis.

SDG 7068 Contact Dinkar P. Kharkar	Client Westinghouse Hanford Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

Results were satisfactory for ^{90}Sr, and gamma nuclides. The MDA's for gamma nuclides were higher due to small aliquots available for gamma analysis.

3.0 ANALYTICAL NOTES

3.1 Strontium-90 Analyses: The average yield for fourteen analysis (87 ± 23%). The lowest yield was 51% and the highest was 96%. The average MDA was 0.71 ± 0.24 pCi/g. Positive ^{90}Sr concentration was not found in the samples. The ^{90}Sr concentrations are calculated on the basis of dry sample.

3.3 Gamma Scan Analyses: Gamma scan analysis did not find positive concentration of gamma nuclides. The concentration of gamma nuclides was below RDL. The concentration is based on dry sample.

Westinghouse Hanford Company	CHAIN OF CUSTODY

ustody Form Initiator V.G. Lucas

ompany Contact Dan Landeen Telephone 376-1038

roject Designation/Sampling Locations 100A Biota - Reed Canary Grass Collection Date 7-21-92

Box
e Chest No. B-3 Field Logbook No. WHCN-444-1
8-8-92

ill of Lading/Airbill No. 2509869714 Offsite Property No. W92-0-0577 #6

lethod of Shipment Emery

hipped to TMA/NORCAL Richmond, CA

ossible Sample Hazards/Remarks None

Sample Identification

B06N84
B06N85
B06N86
B06N87
B06N88
B06N89
B06N90
B06N91
B06N92
B06N93
B06N94

Paper bags containing grass

] Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Jonathan G. Lucas	Kermit Blum	8-5-92 1100
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 00040
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-107 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector D. Landeen, J.G. Lucas, C.E. Holden Date Sampled 7-21-92 Time 11:45 hours

Company Contact Dan Landeen Telephone (509) 376-1038

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B06N84	(1) Paperbag per	Grass	TAL metals (including mercury)-CLP
B06N85	Sample #.		
B06N86			Total Gamma } Lab SOP
B06N87			Sr-90 }
B06N88			
B06N89			
B06N90			
B06N91			
B06N92			
B06N93			
B06N94			

Field Information** None

Special Handling and/or Storage None

30041

Possible Sample Hazards None

PART II: LABORATORY SECTION

Received by Kermit Blum Title Sample Control Supervisor Date 8-5-92

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)

N2-08-038-1068

XNP 1/31/93

Supplemental Requirements for Analyses Using Gas Proportional Counters

A.0 Completeness Checklist

Analysis Results

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

Initial and Continuing Calibration

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

Blanks

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

N2-08-038-7068

XnP 1/31/93

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

N2-08-038-7068

XNP
1/31/93

Supplemental Requirements for Analyses Using
Gamma Spectroscopy

C.0 Completeness Checklist

Analysis Results

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

Initial and Continuing Calibration

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

Blanks

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

N2-08-038-7068

JCNP 1/31/93

Supplemental Requirements for Analyses Using
Gamma Spectroscopy (Cont.)

Duplicates

0 Detector Identification
0 Date of Analysis
0 Amounts of Samples
0 Count Durations
0 Sample Identifications
0 Results of Analyses and Calculated Precision
0 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

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

Validation Narrative - SDG: B06N63

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: B06N63	B06N63	B06N73	Soil
	B06N64	B06N74	Soil
	B06N65	B06N75	Soil
	B06N66	B06N76	Soil
	B06N67	B06N77	Soil
	B06N68	B06N78	Soil
	B06N69	B06N79	Soil
	B06N70	B06N80	Soil
	B06N71	B06N81	Soil
	B06N72	B06N82	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, antimony, beryllium, cadmium, calcium, iron, magnesium, selenium, 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).

- Duplicates for lead and zinc were outside limits. All samples were qualified as estimated (J).

- Analytical spike recovery of arsenic, lead, selenium, and thallium was outside control limits, therefore the results have been qualified as estimated (UJ for non-detects).

- ICP interference check indicated that sample results for 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: 100 AREA BIOTA	REVIEWER: RCS	DATE: 12/29/92
LABORATORY: TMA	CASE: N2-08-041	SDG: B06N63
SAMPLES/MATRIX: B06N63, B06N64, B06N65, B06N66, B06N67, B06N68, B06N69, B06N70, B06N71, B06N72, B06N73, B06N74, B06N75, B06N76, B06N77, B06N78, B06N79, B06N80, B06N81, B06N82 ALL SOIL GRASS		

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	✓		

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.

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.

HOLDING TIME SUMMARY - FORM B-1

SDG: B06N63 | REVIEWER: RC SMITH | DATE: 12/29/92 | 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	COLD VAPOR	7/21/92	8/17/92	8/17/92	27	27	NONE
ALL	AA METALS	7/21/92	10/19/92	10/23-26/92	90	97	NONE
ALL	ICP METALS	7/21/92	10/19/92	10/21/92	90	92	NONE

COMMENTS: Recommended holding times were not exceeded.

ACTION: No action necessary.

CALIBRATION DATA SUMMARY - FORM B-2

SDG: B06N63	REVIEWER: RCS	DATE: 12/29/92	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 within control limits.

ACTION: No action required.

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: B06N63 | REVIEWER: RCS | DATE: 12/29/92 | PAGE 1 OF 1

CALIB. TYPE/SAMPLE IDENT.	ANALYTE/COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLE(S) AFFECTED	QUALIFIER
CCB1	ALUMINUM	6.56	B	N/A	MG/KG	32.8	N/A	B06N72	U
ICB	ANTIMONY	4.0				20.0		NONE	NONE
PREP BLANK	BERYLLIUM	.308				1.54		B06N68	U
								B06N71	
								B06N78	
								B06N80	
CCB1	CADMIUM	.26				1.3		B06N68	U
PREP BLANK	CALCIUM	6.274				31.37		NONE	NONE
CCB2	IRON	4.82				24.71			
CCB1/CCB2	MAGNESIUM	8.84				44.2			
CCB3	SELENIUM	.82				4.1		B06N70	U
PREP BLANK	SILVER	.554				2.77		NONE	NONE
CCB1	SODIUM	11.22				56.1		B06N71	U
								B06N72	
								B06N73	
								B06N74	
PREP BLANK	ZINC	2.508				12.54		NONE	NONE

COMMENTS: Contaminants detected in blanks above their IDL: aluminum, antimony, beryllium, cadmium, calcium, iron, magnesium, selenium, silver, sodium, & zinc.

ACTION: For any blank w/ an analyte concentration > 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: B06N63	REVIEWER: RCS	DATE: 12/29/92	PAGE 1 OF 1	
SAMPLE IDENT.	ANALYTE/COMPOUND	%RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
MATRIX SPIKE				

COMMENTS: All matrix spike recoveries were within control limits.

ACTION: No action required.

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

SDG: B06N63	REVIEWER: RCS	DATE: 12/29/92	PAGE 1 OF 1	
SAMPLE IDENT.	ANALYTE/COMPOUND	%RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
LCS				

COMMENTS: All LCS results fall within the published control limits.

ACTION: No action required

PRECISION DATA SUMMARY - FORM B-5

SDG: B06N63	REVIEWER: RCS	DATE: 12/29/92	PAGE 1 OF 1		
ANALYTE/COMPOUND	SAMPLE IDENT.	SAMPLE IDENT.	RPD	SAMPLE(S) AFFECTED	QUALIFIER
LEAD	DUPLICATES		52.3	B06N63	J
				B06N64	
				B06N65	
				B06N66	
				B06N67	
				B06N68	
				B06N70	
				B06N72	
				B06N73	
				B06N74	
				B06N75	
				B06N76	
				B06N77	
				B06N78	
				B06N79	
				B06N80	
				B06N81	
				B06N82	

COMMENTS:

ACTION:

PRECISION DATA SUMMARY - FORM B-5

SDG: 1506N63	REVIEWER: RCS	DATE: 12/29/92		PAGE 2 OF 2	
ANALYTE/COMPOUND	SAMPLE IDENT.	SAMPLE IDENT.	RPD	SAMPLE(S) AFFECTED	QUALIFIER
ZINC	DUPLICATES		112	ALL	J

COMMENTS: Duplicate analytes for lead & zinc were outside control limits.

ACTION: Qualify all ~~results~~ samples > IDL as estimated (J). RCS 12/29/92

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

SDG: B06N63	REVIEWER: RCS	DATE: 12/29/92	PAGE 1 OF 3	
SAMPLE IDENT.	**ANALYTE/COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER**
ANALYTICAL SPIKE	LEAD	218.7 (122.4)	B06N63	J
		153.4	B06N64	
		121.2	B06N65	
		123.3	B06N66	
		~~84.2~~	RCS 12/29/92 ~~B06N67~~	
		115.8	B06N69	UJ
		119.7	B06N70	J
		118.0	B06N71	UJ
		119.2	B06N73	J
	THALLIUM	63.5	B06N63	UJ
		80.8	B06N64	
		61.1	B06N65	
		56.1	B06N66	
		62.3	B06N68	
		68.4	B06N69	
		74.6	B06N70	
		78.3	B06N71	

COMMENTS:

ACTION:

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

SDG: B06N63	REVIEWER: RCS	DATE: 12/29/92	PAGE 2 OF 3	
SAMPLE IDENT.	ANALYTE/COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
ANALYTICAL SPIKE	THALLIUM	83.2	B06N72	UJ
		82.0	B06N73	
		68.4	B06N74	
		79.5	B06N75	
		77.1	B06N76	
		72.1	B06N77	
		83.5	B06N79	
		77.1	B06N81	
	ARSENIC	80.8	B06N67	J
		75.8	B06N75	
		82.9	B06N74	UJ
		116.6	B06N80	
		83.2	B06N82	J
	SELENIUM	116.8	B06N63	UJ
		118.2	B06N64	UJ
		78.3	B06N70	J
		65.5	B06N74	UJ

COMMENTS:

ACTION:

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

SDG: B06N63	REVIEWER: RCL	DATE: 12/29/92	PAGE 3 OF 3	
SAMPLE IDENT.	**ANALYTE/COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER**
ANALYTICAL SPIKE	SELENIUM	117.1	B06N79	UJ

COMMENTS: Percent recoveries for arsenic, lead, selenium, & thallium were outside limits

ACTION: Qualify results according to Hasm guidelines

CALCULATION SUMMARY - FORM B-7

SDG: 306N63	REVIEWER: RCS	DATE: 12/29/92	PAGE 1 OF 1

COMMENTS:

ACTION:

DATA QUALIFICATION SUMMARY - FORM B-8

SDG: B06N63	REVIEWER: RLS	DATE: 12/29/92	PAGE 1 OF 3
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
ALUMINUM	U	B06N72	CONTAMINANTS IN BLANKS
BERYLLIUM		B06N68	
		B06N71	
		B06N78	
		B06N80	
CADMIUM		B06N69	
SELENIUM		B06N70	
SODIUM		B06N71	
		B06N72	
		B06N73	
		B06N74	
LEAD	J	B06N63	DUPLICATES OUTSIDE LIMITS
		B06N64	
		B06N65	
		B06N66	
		B06N67	
		B06N68	
		RLS 12/29/92 ~~B06N69~~	
		B06N70	
		B06N72	
		B06N73	
		B06N74	
		B06N75	
		B06N76	
		B06N77	
		B06N78	
		B06N79	

DATA QUALIFICATION SUMMARY - FORM B-8

SDG: B06N03	REVIEWER: RCJ	DATE: 12/29/92	PAGE 2 OF 3
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
LEAD	J	B06N80	DUPLICATES OUTSIDE LIMITS
		B06N81	
		B06N82	
ZINC	J	ALL	
LEAD	J	B06N63	ANALYTICAL SPIKE OUT OF LIMITS
		B06N64	
		B06N65	
		B06N66	
	UJ	B06N69	
	J	B06N70	
	UJ	B06N71	
	J	B06N73	
THALLIUM	UJ	B06N63	
		B06N64	
		B06N65	
		B06N66	
		B06N67	
		B06N68	
		B06N69	
		B06N70	
		B06N71	
		B06N72	
		B06N73	
		B06N74	
		B06N75	
		B06N76	
		B06N77	

DATA QUALIFICATION SUMMARY - FORM B-8

SDG: B06N63	REVIEWER: [illegible]	DATE: 12/29/92	PAGE 3 OF 3
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
THALLIUM	UJ	B06N79	ANALYTICAL SPIKE OUT OF LIMITS
↓	↓	B06N81	
ARSENIC	J	B06N67	
	↓	B06N75	
	UJ	B06N77	
	↓	B06N80	
	J	B06N82	
SELENIUM	UJ	B06N63	
	↓	B06N64	
	J	B06N70	
	UJ	B06N74	
	↓	B06N79	
SODIUM	J	ALL	ICP INTERFERENCE

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N63

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-01S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 57.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	142			P	
7440-36-0	Antimony	5.9	U		P	
7440-38-2	Arsenic	1.0	U		F	
7440-39-3	Barium	22.0	B		P	
7440-41-7	Beryllium	0.14	U		P	
7440-43-9	Cadmium	0.35	U		P	
7440-70-2	Calcium	3530			P	
7440-47-3	Chromium	2.1	B		P	
7440-48-4	Cobalt	0.94	U		P	
7440-50-8	Copper	5.8	B		P	
7439-89-6	Iron	258		*	P	
7439-92-1	Lead	3.8		W*	F	J
7439-95-4	Magnesium	1710	B		P	
7439-96-5	Manganese	35.6		*	P	
7439-97-6	Mercury	0.08	U		CV	
7440-02-0	Nickel	1.9	U		P	
7440-09-7	Potassium	9110			P	
7782-49-2	Selenium	1.3	~~U~~	W	F	UJ
7440-22-4	Silver	0.87	U		P	
7440-23-5	Sodium	98.8	~~B~~		P	J
7440-28-0	Thallium	0.45	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.97	U		P	
7440-66-6	Zinc	36.8		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N64

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-02S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 80.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	252			P	
7440-36-0	Antimony	4.2	U		P	
7440-38-2	Arsenic	0.72	U		F	
7440-39-3	Barium	19.6	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.25	U		P	
7440-70-2	Calcium	3890			P	
7440-47-3	Chromium	1.7	B		P	
7440-48-4	Cobalt	0.68	U		P	
7440-50-8	Copper	5.7	B		P	
7439-89-6	Iron	436		*	P	
7439-92-1	Lead	1.5		W*	F	J
7439-95-4	Magnesium	2020			P	
7439-96-5	Manganese	88.7		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.4	U		P	
7440-09-7	Potassium	9020			P	
7782-49-2	Selenium	0.95	~~U~~	W	F	UJ
7440-22-4	Silver	0.62	U		P	
7440-23-5	Sodium	153	~~B~~		P	J
7440-28-0	Thallium	0.32	~~U~~	W	F	UJ
7440-62-2	Vanadium	1.1	B		P	
7440-66-6	Zinc	65.4		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

004

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B06N65

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

ab Code: SKINER Case No.: N2-08-041SAS No.: SDG No. B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-03S

evel (low/med): LOW Date Received: 08/13/92

Solids: 60.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	46.5	B		P	
7440-36-0	Antimony	5.6	U		P	
7440-38-2	Arsenic	0.96	U		F	
7440-39-3	Barium	16.5	B		P	
7440-41-7	Beryllium	0.13	U		P	
7440-43-9	Cadmium	0.33	U		P	
7440-70-2	Calcium	3780			P	
7440-47-3	Chromium	1.5	U		P	
7440-48-4	Cobalt	0.90	U		P	
7440-50-8	Copper	4.0	B		P	
7439-89-6	Iron	109		*	P	
7439-92-1	Lead	0.72	~~B~~	W*	F	J
7439-95-4	Magnesium	2310			P	
7439-96-5	Manganese	48.9		*	P	
7439-97-6	Mercury	0.08	U		CV	
7440-02-0	Nickel	1.8	U		P	
7440-09-7	Potassium	18000			P	
7782-49-2	Selenium	1.3	~~U~~		F	~~UJ~~ RCS 12/29/92
7440-22-4	Silver	0.83	U		P	
7440-23-5	Sodium	144	~~B~~		P	J
7440-28-0	Thallium	0.43	U	W	F	UJ
7440-62-2	Vanadium	0.93	U		P	
7440-66-6	Zinc	33.6		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

005

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N66

SUMMARY DATA

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

Lab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-04S

Level (low/med): LOW Date Received: 08/13/92

Solids: 46.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	189			P	
7440-36-0	Antimony	7.2	U		P	
7440-38-2	Arsenic	1.1	U		F	
7440-39-3	Barium	26.5	B		P	
7440-41-7	Beryllium	0.17	U		P	
7440-43-9	Cadmium	0.42	U		P	
7440-70-2	Calcium	6950			P	
7440-47-3	Chromium	2.3	B		P	
7440-48-4	Cobalt	1.1	U		P	
7440-50-8	Copper	7.6	B		P	
7439-89-6	Iron	355		*	P	
7439-92-1	Lead	2.0		W*	F	J
7439-95-4	Magnesium	3020			P	
7439-96-5	Manganese	53.2		*	P	
7439-97-6	Mercury	0.09	U		CV	
7440-02-0	Nickel	2.3	U		P	
7440-09-7	Potassium	21000			P	
7782-49-2	Selenium	1.5	~~U~~		F	~~UJ~~ RCS 12/20/92
7440-22-4	Silver	1.1	U		P	
7440-23-5	Sodium	492	~~B~~		P	J
7440-28-0	Thallium	0.51	U	W	F	UJ
7440-62-2	Vanadium	1.2	U		P	
7440-66-6	Zinc	69.8		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

008

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

B06N67

SUMMARY DATA

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

.ab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-05S

evel (low/med): LOW Date Received: 08/13/92

Solids: 77.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	339			P	
7440-36-0	Antimony	4.3	U		P	
7440-38-2	Arsenic	0.90	B	W	F	
7440-39-3	Barium	23.9	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	4190			P	
7440-47-3	Chromium	1.2	U		P	
7440-48-4	Cobalt	0.69	U		P	
7440-50-8	Copper	3.7	B		P	
7439-89-6	Iron	593		*	P	
7439-92-1	Lead	4.2		*	F	J
7439-95-4	Magnesium	2620			P	
7439-96-5	Manganese	42.8		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.9	B		P	
7440-09-7	Potassium	12900			P	
7782-49-2	Selenium	0.94	U		F	
7440-22-4	Silver	0.64	U		P	
7440-23-5	Sodium	75.2	B		P	J
7440-28-0	Thallium	0.32	U		F	UJ
7440-62-2	Vanadium	1.3	B		P	
7440-66-6	Zinc	43.0		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N68

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

Lab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-06S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 71.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	608			P	
7440-36-0	Antimony	4.7	U		P	
7440-38-2	Arsenic	1.0	B		F	
7440-39-3	Barium	23.1	B		P	
7440-41-7	Beryllium	0.54	~~B~~		P	u
7440-43-9	Cadmium	0.32	~~B~~		P	u
7440-70-2	Calcium	4340			P	
7440-47-3	Chromium	2.1	B		P	
7440-48-4	Cobalt	0.92	B		P	
7440-50-8	Copper	6.3	B		P	
7439-89-6	Iron	1070		*	P	
7439-92-1	Lead	4.5		*	F	J
7439-95-4	Magnesium	2200			P	
7439-96-5	Manganese	72.5		*	P	
7439-97-6	Mercury	0.08	B		CV	
7440-02-0	Nickel	2.1	B		P	
7440-09-7	Potassium	10300			P	
7782-49-2	Selenium	1.0	U		F	
7440-22-4	Silver	0.70	U		P	
7440-23-5	Sodium	256	~~B~~		P	J
7440-28-0	Thallium	0.36	U	W	F	uJ
7440-62-2	Vanadium	1.8	B		P	
7440-66-6	Zinc	56.1		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

008

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N69

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

Lab Code: SKINER Case No.: N2-08-041SAS No. SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-07S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 58.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	50.5	B		P	
7440-36-0	Antimony	5.5	U		P	
7440-38-2	Arsenic	0.97	U		F	
7440-39-3	Barium	33.2	B		P	
7440-41-7	Beryllium	0.13	U		P	
7440-43-9	Cadmium	0.32	U		P	
7440-70-2	Calcium	7590			P	
7440-47-3	Chromium	1.5	U		P	
7440-48-4	Cobalt	0.87	U		P	
7440-50-8	Copper	3.8	B		P	
7439-89-6	Iron	116		*	P	
7439-92-1	Lead	0.67	~~U~~	W*	F	~~J~~ RCS 12/29/92 UJ
7439-95-4	Magnesium	3320			P	
7439-96-5	Manganese	45.3		*	P	
7439-97-6	Mercury	0.08	U		CV	
7440-02-0	Nickel	1.7	U		P	
7440-09-7	Potassium	12400			P	
7782-49-2	Selenium	1.3	U		F	
7440-22-4	Silver	0.81	U		P	
7440-23-5	Sodium	69.0	~~B~~		P	J
7440-28-0	Thallium	0.44	U	W	F	UJ
7440-62-2	Vanadium	0.90	U		P	
7440-66-6	Zinc	70.1		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N70

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

ab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-08S

evel (low/med): LOW Date Received: 08/13/92

Solids: 82.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	110			P	
7440-36-0	Antimony	3.9	U		P	
7440-38-2	Arsenic	0.68	U		F	
7440-39-3	Barium	23.2	B		P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	0.23	U		P	
7440-70-2	Calcium	6130			P	
7440-47-3	Chromium	2.3			P	
7440-48-4	Cobalt	0.62	U		P	
7440-50-8	Copper	3.5	B		P	
7439-89-6	Iron	207		*	P	
7439-92-1	Lead	0.89		W*	F	J
7439-95-4	Magnesium	3660			P	
7439-96-5	Manganese	24.8		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.2	U		P	
7440-09-7	Potassium	12100			P	
7782-49-2	Selenium	2.3		+	F	u
7440-22-4	Silver	0.57	U		P	
7440-23-5	Sodium	98.1	B		P	J
7440-28-0	Thallium	0.30	U	W	F	uJ
7440-62-2	Vanadium	0.64	U		P	
7440-66-6	Zinc	64.7		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

010

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B06N71

~~INORGANIC ANALYSIS DATA SHEET~~

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

ab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-09S

evel (low/med): LOW Date Received: 08/13/92

Solids: 80.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	38.8	B		P	
7440-36-0	Antimony	4.2	U		P	
7440-38-2	Arsenic	0.69	U		F	
7440-39-3	Barium	17.9	B		P	
7440-41-7	Beryllium	0.19	~~B~~		P	u
7440-43-9	Cadmium	0.25	U		P	
7440-70-2	Calcium	4340			P	
7440-47-3	Chromium	1.2	B		P	
7440-48-4	Cobalt	0.67	U		P	
7440-50-8	Copper	3.0	B		P	
7439-89-6	Iron	81.4		*	P	
7439-92-1	Lead	0.48	~~U~~	W*	F	uJ
7439-95-4	Magnesium	2220			P	
7439-96-5	Manganese	39.4		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	15100			P	
7782-49-2	Selenium	0.91	U		F	
7440-22-4	Silver	0.62	U		P	
7440-23-5	Sodium	35.6	~~B~~		P	J u
7440-28-0	Thallium	0.31	U	W	F	uJ
7440-62-2	Vanadium	0.70	U		P	
7440-66-6	Zinc	38.0		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

011

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N72

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

.ab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

latrix (soil/water): SOIL Lab Sample ID: 08146-10S

.evel (low/med): LOW Date Received: 08/13/92

, Solids: 84.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	23.1	~~B~~		P	u
7440-36-0	Antimony	4.0	U		P	
7440-38-2	Arsenic	0.69	U		F	
7440-39-3	Barium	19.8	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.24	U		P	
7440-70-2	Calcium	5950			P	
7440-47-3	Chromium	2.7			P	
7440-48-4	Cobalt	0.64	U		P	
7440-50-8	Copper	3.4	B		P	
7439-89-6	Iron	61.1		*	P	
7439-92-1	Lead	0.48	~~B~~	*	F	J
7439-95-4	Magnesium	2650			P	
7439-96-5	Manganese	11.3		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	10700			P	
7782-49-2	Selenium	0.90	U		F	
7440-22-4	Silver	0.59	U		P	
7440-23-5	Sodium	38.4	~~B~~		P	~~J~~ u
7440-28-0	Thallium	0.31	~~U~~	W	F	u J
7440-62-2	Vanadium	0.66	U		P	
7440-66-6	Zinc	74.8		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N73

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

ab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-11S

evel (low/med): LOW Date Received: 08/13/92

Solids: 69.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	50.0	B		P	
7440-36-0	Antimony	4.7	U		P	
7440-38-2	Arsenic	0.80	U		F	
7440-39-3	Barium	22.6	B		P	
7440-41-7	Beryllium	0.11	U		P	
7440-43-9	Cadmium	0.28	U		P	
7440-70-2	Calcium	5380			P	
7440-47-3	Chromium	1.3	U		P	
7440-48-4	Cobalt	0.76	U		P	
7440-50-8	Copper	5.4	B		P	
7439-89-6	Iron	98.1		*	P	
7439-92-1	Lead	1.7		W*	F	J
7439-95-4	Magnesium	2770			P	
7439-96-5	Manganese	11.1		*	P	
7439-97-6	Mercury	0.14			CV	
7440-02-0	Nickel	1.5	U		P	
7440-09-7	Potassium	14200			P	
7782-49-2	Selenium	1.0	U		F	
7440-22-4	Silver	0.70	U		P	
7440-23-5	Sodium	54.4	~~B~~		P	~~J~~ U
7440-28-0	Thallium	0.36	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.79	U		P	
7440-66-6	Zinc	305		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

QUALITY DATA REPORT

SAMPLE NUMBER: B06N74

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

ab Code: SKINER ~~Case No.: N2-08-041SAS No.:~~ SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-12S

evel (low/med): LOW Date Received: 08/13/92

Solids: 84.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	199			P	
7440-36-0	Antimony	3.9	U		P	
7440-38-2	Arsenic	0.68	U		F	
7440-39-3	Barium	12.6	B		P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	0.23	U		P	
7440-70-2	Calcium	1970			P	
7440-47-3	Chromium	1.1	B		P	
7440-48-4	Cobalt	0.63	U		P	
7440-50-8	Copper	4.7	B		P	
7439-89-6	Iron	353		*	P	
7439-92-1	Lead	1.8		*	F	J
7439-95-4	Magnesium	1190			P	
7439-96-5	Manganese	37.3		*	P	
7439-97-6	Mercury	0.10	B		CV	
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	9900			P	
7782-49-2	Selenium	0.89	~~U~~	W	F	UJ
7440-22-4	Silver	0.58	U		P	
7440-23-5	Sodium	47.2	~~B~~		P	~~J~~ U
7440-28-0	Thallium	0.30	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.79	B		P	
7440-66-6	Zinc	95.8		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

014

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N75

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-13S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 75.3

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	180			P	J
7440-36-0	Antimony	4.4	U		P	
7440-38-2	Arsenic	0.98	B	W	F	
7440-39-3	Barium	35.3	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	7030			P	
7440-47-3	Chromium	1.4	B		P	
7440-48-4	Cobalt	0.70	U		P	
7440-50-8	Copper	4.0	B		P	
7439-89-6	Iron	382		*	P	
7439-92-1	Lead	2.3		*	F	J
7439-95-4	Magnesium	2750			P	
7439-96-5	Manganese	58.5		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.4	U		P	
7440-09-7	Potassium	12700			P	
7782-49-2	Selenium	0.99	U		F	
7440-22-4	Silver	0.65	U		P	
7440-23-5	Sodium	94.6	~~B~~		P	J
7440-28-0	Thallium	0.34	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.73	U		P	
7440-66-6	Zinc	70.5		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

WESTINGHOUSE/HANFORD

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N76

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

ab Code: SKINER ~~Case No.: N2-08-041 SAS No.:~~ SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-14S

evel (low/med): LOW Date Received: 08/13/92

Solids: 75.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	118			P	
7440-36-0	Antimony	4.5	U		P	
7440-38-2	Arsenic	1.0	B		F	
7440-39-3	Barium	14.3	B		P	
7440-41-7	Beryllium	0.11	U		P	
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	2520			P	
7440-47-3	Chromium	1.2	U		P	
7440-48-4	Cobalt	0.71	U		P	
7440-50-8	Copper	3.3	B		P	
7439-89-6	Iron	231		*	P	
7439-92-1	Lead	1.0		W*	F	J
7439-95-4	Magnesium	1680			P	
7439-96-5	Manganese	51.2		*	P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	1.4	U		P	
7440-09-7	Potassium	12400			P	
7782-49-2	Selenium	0.99	U		F	
7440-22-4	Silver	0.66	U		P	
7440-23-5	Sodium	59.2	~~B~~		P	J
7440-28-0	Thallium	0.34	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.74	U		P	
7440-66-6	Zinc	59.4		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

016

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N77

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

ab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-15S

evel (low/med): LOW Date Received: 08/13/92

Solids: 66.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	60.8			P	
7440-36-0	Antimony	5.1	U		P	
7440-38-2	Arsenic	0.85	~~U~~	W	F	uJ
7440-39-3	Barium	27.2	B		P	
7440-41-7	Beryllium	0.12	U		P	
7440-43-9	Cadmium	0.30	U		P	
7440-70-2	Calcium	4060			P	
7440-47-3	Chromium	1.3	U		P	
7440-48-4	Cobalt	0.81	U		P	
7440-50-8	Copper	3.4	B		P	
7439-89-6	Iron	128		*	P	
7439-92-1	Lead	0.68	~~B~~	*	F	J
7439-95-4	Magnesium	2080			P	
7439-96-5	Manganese	39.9		*	P	
7439-97-6	Mercury	0.07	U		CV	
7440-02-0	Nickel	1.6	U		P	
7440-09-7	Potassium	10100			P	
7782-49-2	Selenium	1.1	U	W	F	
7440-22-4	Silver	0.75	U		P	
7440-23-5	Sodium	147	~~B~~		P	J
7440-28-0	Thallium	0.38	~~U~~	W	F	uJ
7440-62-2	Vanadium	0.84	U		P	
7440-66-6	Zinc	143		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

017

WESTINGHOUSE/HANFORD

1

SUMMARY DATA

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N78

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-16S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 78.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	273			P	
7440-36-0	Antimony	4.2	U		P	
7440-38-2	Arsenic	0.97	B		F	
7440-39-3	Barium	21.7	B		P	
7440-41-7	Beryllium	0.39	~~B~~		P	u
7440-43-9	Cadmium	0.25	U		P	
7440-70-2	Calcium	4680			P	
7440-47-3	Chromium	2.5			P	
7440-48-4	Cobalt	0.70	B		P	
7440-50-8	Copper	4.9	B		P	
7439-89-6	Iron	491		*	P	
7439-92-1	Lead	2.7		*	F	J
7439-95-4	Magnesium	2050			P	
7439-96-5	Manganese	84.4		*	P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	2.3	B		P	
7440-09-7	Potassium	9190			P	
7782-49-2	Selenium	0.95	U		F	
7440-22-4	Silver	0.62	U		P	
7440-23-5	Sodium	103	~~B~~		P	J
7440-28-0	Thallium	0.32	U		F	
7440-62-2	Vanadium	1.0	B		P	
7440-66-6	Zinc	91.1		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

018

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N79

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

ab Code: SKINER Case No.: N2-08-041SAS No. SDG No.: B06N63

atrix (soil/water): SOIL Lab Sample ID: 08146-17S

evel (low/med): LOW Date Received: 08/13/92

Solids: 74.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	273			P	
7440-36-0	Antimony	4.5	U		P	
7440-38-2	Arsenic	0.75	U		F	
7440-39-3	Barium	17.5	B		P	
7440-41-7	Beryllium	0.11	U		P	
7440-43-9	Cadmium	0.27	U		P	
7440-70-2	Calcium	4430			P	
7440-47-3	Chromium	1.2	U		P	
7440-48-4	Cobalt	0.72	U		P	
7440-50-8	Copper	5.0	B		P	
7439-89-6	Iron	514		*	P	
7439-92-1	Lead	0.91		*	F	J
7439-95-4	Magnesium	1830			P	
7439-96-5	Manganese	64.8		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.4	U		P	
7440-09-7	Potassium	11200			P	
7782-49-2	Selenium	0.98	~~U~~	MW	F	UJ
7440-22-4	Silver	0.67	U		P	
7440-23-5	Sodium	150	~~B~~		P	J
7440-28-0	Thallium	0.33	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.75	U		P	
7440-66-6	Zinc	47.3		*	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

WESTINGHOUSE/HANFORD
1

PRELIMINARY DATA

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N80

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-18S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 87.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	535			P	
7440-36-0	Antimony	3.8	U		P	
7440-38-2	Arsenic	0.66	~~U~~	W	F	UJ
7440-39-3	Barium	21.9	B		P	
7440-41-7	Beryllium	0.44	~~B~~		P	U
7440-43-9	Cadmium	0.23	U		P	
7440-70-2	Calcium	5070			P	
7440-47-3	Chromium	1.4	B		P	
7440-48-4	Cobalt	0.62	U		P	
7440-50-8	Copper	5.1	B		P	
7439-89-6	Iron	907		*	P	
7439-92-1	Lead	3.8		*	F	J
7439-95-4	Magnesium	1800			P	
7439-96-5	Manganese	55.1		*	P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	1.6	B		P	
7440-09-7	Potassium	7780			P	
7782-49-2	Selenium	0.87	U		F	
7440-22-4	Silver	0.57	U		P	
7440-23-5	Sodium	218	~~B~~		P	J
7440-28-0	Thallium	0.30	U		F	
7440-62-2	Vanadium	1.5	B		P	
7440-66-6	Zinc	51.8		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

020

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N81

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

Lab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-19S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 85.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	207			P	
7440-36-0	Antimony	3.9	U		P	
7440-38-2	Arsenic	0.68	U		F	
7440-39-3	Barium	14.8	B		P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	0.23	U		P	
7440-70-2	Calcium	3560			P	
7440-47-3	Chromium	1.6	B		P	
7440-48-4	Cobalt	0.63	U		P	
7440-50-8	Copper	4.4	B		P	
7439-89-6	Iron	426		*	P	
7439-92-1	Lead	1.2		*	F	J
7439-95-4	Magnesium	1890			P	
7439-96-5	Manganese	58.1		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	11800			P	
7782-49-2	Selenium	0.89	U		F	
7440-22-4	Silver	0.58	U		P	
7440-23-5	Sodium	139	~~B~~		P	J
7440-28-0	Thallium	0.30	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.81	B		P	
7440-66-6	Zinc	69.6		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

021

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B06N82

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N63

Matrix (soil/water): SOIL Lab Sample ID: 08146-20S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 84.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	97.3			P	
7440-36-0	Antimony	4.0	U		P	
7440-38-2	Arsenic	0.77	~~B~~	W	F	J
7440-39-3	Barium	12.8	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.24	U		P	
7440-70-2	Calcium	2920			P	
7440-47-3	Chromium	1.1	U		P	
7440-48-4	Cobalt	0.64	U		P	
7440-50-8	Copper	4.6	B		P	
7439-89-6	Iron	199		*	P	
7439-92-1	Lead	1.1		*	F	J
7439-95-4	Magnesium	1990			P	
7439-96-5	Manganese	77.4		*	P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	14600			P	
7782-49-2	Selenium	0.90	U		F	
7440-22-4	Silver	0.59	U		P	
7440-23-5	Sodium	129	~~B~~		P	J
7440-28-0	Thallium	0.31	U		F	
7440-62-2	Vanadium	0.66	U		P	
7440-66-6	Zinc	97.4		*	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

022

Validation Narrative - SDG: B06N83

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: B06N63	B06N83	B06N89	Soil
	B06N84	B06N90	Soil
	B06N85	B06N91	Soil
	B06N86	B06N92	Soil
	B06N87	B06N93	Soil
	B06N88	B06N94	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, antimony, barium, beryllium, cadmium, calcium, copper, iron, magnesium, manganese, mercury, sodium, vanadium, 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).

  Arsenic, mercury, and zinc matrix spike recoveries exceeded the control limits. All affected results were qualified as estimated (J), (UJ for non-detects).

- Duplicates for calcium, manganese, and potassium were outside limits. All samples were qualified as estimated (J).

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

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

- ICP serial dilution indicated that results for certain samples of iron 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: 100 AREA BIOTA	REVIEWER: RCJ	DATE: 12/30/92
LABORATORY: TMA	CASE: N2-08-041	SDG: B06N83
SAMPLES/MATRIX: B06N83, B06N84, B06N85, B06N86, B06N87, B06N88, B06N89, B06N90, B06N91, B06N92, B06N93, B06N94 ALL SOIL		
GRASS		

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 COULD BE A POTENTIAL FALSE POSITIVE. QUALIFY ALL POSITIVE SAMPLE RESULTS FOR SODIUM 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. * IF SAMPLE RESULT FOR IRON IS ≥ 116 MG/KG, QUALIFY RESULT AS (J).

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.

* No field duplicates or field splits were identified in the sample delivery group

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: B06N83 REVIEWER: RCS DATE: 12/30/92 PAGE 1 OF 2

FIELD SAMPLE IDENT.	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
ALL	COLD VAPOR	7/21/92	8/17/92	8/18-19/92	27	28	NONE
B06N83	AA METALS	7/21/92	10/20/92	10/23-26/92	91	94	NONE
B06N84							
B06N85							
B06N87							
B06N88							
B06N89							
B06N90							
B06N91							
B06N92							
B06N93							
B06N94							
B06N86		7/21/92	10/22/92		93	94	
B06N83	ICP METALS	7/21/92	10/22/92	10/26/92		97	
B06N84							
B06N85							
B06N87							

COMMENTS:

ACTION:

HOLDING TIME SUMMARY - FORM B-1

SDG: B06N83 | REVIEWER: RCL | DATE: 12/30/92 | PAGE 2 OF 2

FIELD SAMPLE IDENT.	ANALYSIS TYPE		DATE SAMPLED	DATE PREPARED	DATE ANALYZED RCL 1/29/93	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B06N88	ICP	METALS	7/21/92	10/22/92	10/~~27~~ 26/92	93	97	NONE
B06N89								
B06N90.								
B06N91								
B06N92								
B06N93								
B06N94								
B06N86			7/21/92	10/22/92				

COMMENTS: Recommended holding times were not exceeded.

ACTION: No action required.

CALIBRATION DATA SUMMARY - FORM B-2

SDG: B06 N83	REVIEWER: RCS	DATE: 12/30/92	PAGE 1 OF ___
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 within control limits.

ACTION: No action required.

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: B06N83 | REVIEWER: RCS | DATE: 12/30/92 | PAGE 1 OF 2

CALIB. TYPE/SAMPLE IDENT.	ANALYTE/COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLE(S) AFFECTED	QUALIFIER
CCB2	ALUMINUM	6.86	B	N/A	MG/KG	34.3	N/A	NONE	NONE
CCB1	ANTIMONY	3.84				19.2		NONE	NONE
CCB3	BARIUM	0.68				3.4			
ICB, CCB1, CCB2, CCB3	BERYLLIUM	.096				.48			
CCB2	CADMIUM	.88				4.4		B06N86	U
CCB2	CALCIUM	13.54				67.7		NONE	NONE
CCB2	COPPER	.92				4.6		B06N87	U
								B06N88	
								B06N89	
								B06N90	
								B06N92	
								B06N93	
								B06N94	
PREP BLANK	IRON	5.93				29.65		NONE	NONE
CCB1	MAGNESIUM	19.22				96.1		NONE	NONE
PREP BLANK	MANGANESE	1.406				7.03			
CCB1	MERCURY	.02				.1			

COMMENTS:

ACTION:

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: B06N83 | REVIEWER: RCS | DATE: 12/30/92 | PAGE 2 OF 2

CALIB. TYPE/SAMPLE IDENT.	ANALYTE/COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLE(S) AFFECTED	QUALIFIER
PREP BLANK	SODIUM	22.438	B	N/A	MG/KG	112.19	N/A	B06N83	U
								B06N84	
								B06N85	
								B06N86	
								B06N87	
								B06N88	
								B06N89	
								B06N90	
								B06N94	
PREP BLANK	VANADIUM	.562				2.81		NONE	NONE
PREP BLANK	ZINC	2.032				10.16			

COMMENTS: Contaminants were detected in the following blanks above their IDL: aluminum, antimony, barium, beryllium, cadmium, calcium, copper, iron, magnesium, manganese, mercury, sodium, vanadium, & 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: B06N83	REVIEWER: RCB	DATE: 12/30/92	PAGE 1 OF 2	
SAMPLE IDENT.	ANALYTE/COMPOUND	%RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
MATRIX SPIKE	ARSENIC	68.5	B06N83	J
			B06N 84	
			B06N 85	
			B06N 86	
			B06N 87	
			B06N 88	
			B06N 89	UJ
			B06N 90	
			B06N 91	J
			B06N 92	
			B06N 93	
			B06N 94	
~~MERCURY~~ RCB 12/30/92	MERCURY	59.2	B06N 83	UJ
			B06N84	J
			B06N85	UJ
			B06N86	
			B06N87	

COMMENTS:

ACTION:

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

SDG: B06N83	REVIEWER: RCS	DATE: 12/30/92	PAGE 2 OF 2	
SAMPLE IDENT.	ANALYTE/COMPOUND	%RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
MATRIX SPIKE	MERCURY	59.2	B06N89	UJ
			B06N90	
			B06N91	
			B06N92	
			B06N93	
			B06N94	
	ZINC	197.3	ALL	J

COMMENTS: The arsenic, mercury, and zinc matrix spike recoveries exceeded the control limit requirements.

ACTION: ~~No action required.~~ Qualify all results as estimated.

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

SDG: B06N83	REVIEWER: RCJ	DATE: 12/30/92	PAGE 1 OF 1	
SAMPLE IDENT.	ANALYTE/COMPOUND	%RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
LCS				

COMMENTS: All LCS results fell within the published control limits

ACTION: No action required.

PRECISION DATA SUMMARY - FORM B-5

SDG: B06N83	REVIEWER: RCS	DATE: 12/30/92		PAGE 1 OF 1	
ANALYTE/COMPOUND	SAMPLE IDENT.	SAMPLE IDENT.	RPD	SAMPLE(S) AFFECTED	QUALIFIER
CALCIUM	DUPLICATES		62.8	ALL	J
MANGANESE	↓		71.2	ALL	J
POTASSIUM			71.9	ALL	J

COMMENTS: Duplicate analytes for calcium, manganese, and potassium were outside control limits.

ACTION: Qualify all samples > IDL as estimated (J).

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

SDG: B06N83	REVIEWER: RCS	DATE: 12/30/92	PAGE 1 OF ___	
SAMPLE IDENT.	**ANALYTE/COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER**
ANALYTICAL SPIKE	LEAD	165.5	B06N89	J
		161.8	B06N91	J
		119.9	B06N90	J
	THALLIUM	81.3	B06N87	UJ
		66.9	B06N91	
		127.2	B06N92	
	ARSENIC	76.1	B06N83	J
		67.7	B06N87	J
		52.2	B06N88	
		67.8	B06N91	
		62.3	B06N92	
		72.4	B06N93	
		80.9	B06N94	
	SELENIUM	116.4	B06N83	UJ
		133.5 ~~119.9~~ RCS	12/30/92 B06N94 ~~B06N90~~	UJ
	SELENIUM	144.2	B06N84	UJ
		118.2	B06N86	UJ
		126.4	B06N93	UJ

COMMENTS:

Percent recoveries for arsenic, lead, selenium, & thallium were outside limits.

ACTION: Qualify results according to Region guidelines.

DATA QUALIFICATION SUMMARY - FORM B-8

SDG: B06N83	REVIEWER: RCJ	DATE: 12/3/92	PAGE 1 OF 3
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
CADMIUM	U	B06N86	CONTAMINANTS IN BLANKS
COPPER		B06N87	
		B06N88	
		B06N89	
		B06N90	
		B06N92	
		B06N93	
		B06N94	
SODIUM		B06N83	
		B06N84	
		B06N85	
		B06N86	
		B06N87	
		B06N88	
		B06N89	
		B06N90	
		B06N94	
ARSENIC	J	B06N83	MATRIX SPIKE RECOVERY OUT OF LIMITS
		B06N84	
		B06N85	
		B06N86	
		B06N87	
		B06N88	
	UJ	B06N89	
		B06N90	
	J	B06N91	
		B06N92	

DATA QUALIFICATION SUMMARY - FORM B-8

SDG: B06N83	REVIEWER: RCS	DATE: 12/30/92	PAGE 2 OF 3
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
ARSENIC	J	B06N93	MATRIX SPIKE RECOVERY OUT OF LIMITS
↓	↓	B06N94	↓
MERCURY	UJ	B06N83	
	J	B06N84	
	UJ	B06N85	
		B06N86	
	↓	B06N87	
		B06N89	
		B06N90	
		B06N91	
		B06N92	
		B06N93	
↓	↓	B06N94	↓
ZINC	J	ALL	↓
CALCIUM	J	ALL	DUPLICATES OUTSIDE LIMITS
MANGANESE	↓	↓	↓
POTASSIUM	↓	↓	↓
LEAD	J	B06N89	ANALYTICAL SPIKE RECOVERY OUT OF LIMIT
↓	↓	B06N91	↓
↓	↓	B06N90	
THALLIUM	UJ	B06N87	
↓	↓	B06N91	
↓	↓	B06N92	
ARSENIC	J	B06N83	
↓	↓	B06N87	
		B06N88	
↓	↓	B06N91	↓

DATA QUALIFICATION SUMMARY - FORM B-8

SDG: B06N83	REVIEWER: RCJ	DATE: 12/21/92	PAGE 3 OF 3
ANALYTE/ COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
ARSENIC	J	B06N92	ANALYTICAL SPIKE RECOVERY OUT OF LIMIT
↓	↓	B06N93	↓
↓	↓	B06N94	↓
SELENIUM	UJ	B06N83	↓
↓	↓	B06N94	↓
↓	↓	B06N84	↓
↓	↓	B06N86	↓
↓	↓	B06N93	↓
SODIUM	J	ALL	ICP INTERFERENCE
IRON	J	ALL	ICP SERIAL DILUTION

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

B06N83

INORGANIC ANALYSIS DATA SHEET

SUBMITTED DATA

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

Lab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-01S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 81.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	238		*	P	
7440-36-0	Antimony	4.2	U		P	
7440-38-2	Arsenic	1.1	~~B~~	WN	F	~~UL~~ RCS 12/30/92 J
7440-39-3	Barium	23.2	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.37	U		P	
7440-70-2	Calcium	5930		*E	P	J
7440-47-3	Chromium	1.1	U		P	
7440-48-4	Cobalt	0.67	U		P	
7440-50-8	Copper	6.5			P	
7439-89-6	Iron	511		*E	P	J
7439-92-1	Lead	3.4		+*	F	
7439-95-4	Magnesium	2100		*E	P	
7439-96-5	Manganese	96.0		*	P	J
7439-97-6	Mercury	0.05	~~U~~	N	CV	UJ
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	12400		*	P	J
7782-49-2	Selenium	0.96	~~U~~	W	F	UJ
7440-22-4	Silver	0.89	U		P	
7440-23-5	Sodium	91.9	~~B~~		P	~~J~~ U
7440-28-0	Thallium	0.42	U	W	F	
7440-62-2	Vanadium	0.69	U		P	
7440-66-6	Zinc	75.3		N	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

002

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N84

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

ab Code: SKINER ~~Case No.: N2-02-04 SAS No.:~~ SDG No.: B06N83

atrix (soil/water): SOIL Lab Sample ID: 08147-02S

evel (low/med): LOW Date Received: 08/13/92

Solids: 78.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	116		*	P	
7440-36-0	Antimony	4.3	U		P	
7440-38-2	Arsenic	0.98	~~B~~	N	F	J
7440-39-3	Barium	14.2	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.38	U		P	
7440-70-2	Calcium	2860		*E	P	J
7440-47-3	Chromium	1.1	U		P	
7440-48-4	Cobalt	0.69	U		P	
7440-50-8	Copper	6.5			P	
7439-89-6	Iron	250		*E	P	J
7439-92-1	Lead	1.4		*	F	
7439-95-4	Magnesium	1580		*E	P	
7439-96-5	Manganese	57.6		*	P	
7439-97-6	Mercury	0.10	~~B~~	N	CV	J
7440-02-0	Nickel	1.4	U		P	
7440-09-7	Potassium	12100		*	P	J
7782-49-2	Selenium	0.99	~~U~~	W	F	UJ
7440-22-4	Silver	0.92	U		P	
7440-23-5	Sodium	38.7	~~B~~		P	~~J~~ U
7440-28-0	Thallium	0.43	U		F	
7440-62-2	Vanadium	0.71	U		P	
7440-66-6	Zinc	147		N	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

003

FORM I - IN TLM02.1

WESTINGHOUSE/HANFORD

1

SUMMARY DATA

INORGANIC ANALYSIS DATA SHEET

PLAN

SAMPLE NUMBER:

B06N85

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

ab Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

atrix (soil/water): SOIL Lab Sample ID: 08147-03S

evel (low/med): LOW Date Received: 08/13/92

Solids: 76.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	399		*	P	
7440-36-0	Antimony	4.3	U		P	
7440-38-2	Arsenic	1.5	~~B~~	N	F	J
7440-39-3	Barium	16.9	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.38	U		P	
7440-70-2	Calcium	3170		*E	P	J
7440-47-3	Chromium	1.1	U		P	
7440-48-4	Cobalt	0.69	U		P	
7440-50-8	Copper	7.8			P	
7439-89-6	Iron	720		*E	P	J
7439-92-1	Lead	4.3		*	F	
7439-95-4	Magnesium	1910		*E	P	
7439-96-5	Manganese	47.9		*	P	J
7439-97-6	Mercury	0.06	~~U~~	N	CV	J
7440-02-0	Nickel	4.2	B		P	
7440-09-7	Potassium	9920		*	P	J
7782-49-2	Selenium	1.1	B	S	F	
7440-22-4	Silver	0.92	U		P	
7440-23-5	Sodium	85.3	~~B~~		P	J u
7440-28-0	Thallium	0.74	B		F	
7440-62-2	Vanadium	0.71	U		P	
7440-66-6	Zinc	192		N	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

004

FORM I - IN ILM02.

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SUMMARY DATA

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B06N86

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

ab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N83

atrix (soil/water): SOIL Lab Sample ID: 08147-04S

evel (low/med): LOW Date Received: 08/13/92

Solids: 92.3

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	125		*	P	
7440-36-0	Antimony	3.3	U		P	
7440-38-2	Arsenic	1.1	~~B~~	WN	F	J
7440-39-3	Barium	16.6	B		P	
7440-41-7	Beryllium	0.08	U		P	
7440-43-9	Cadmium	0.38	~~B~~		P	u
7440-70-2	Calcium	3750		*E	P	J
7440-47-3	Chromium	0.89	U		P	
7440-48-4	Cobalt	0.53	U		P	
7440-50-8	Copper	8.6			P	
7439-89-6	Iron	260		*E	P	J
7439-92-1	Lead	3.2		*	F	
7439-95-4	Magnesium	2470		*E	P	
7439-96-5	Manganese	45.9		*	P	J
7439-97-6	Mercury	0.05	~~U~~	N	CV	uJ
7440-02-0	Nickel	1.5	B		P	
7440-09-7	Potassium	12700		*	P	J
7782-49-2	Selenium	0.75	~~U~~	W	F	uJ
7440-22-4	Silver	0.71	U		P	
7440-23-5	Sodium	84.4	~~B~~		P	Ju
7440-28-0	Thallium	0.33	U		F	
7440-62-2	Vanadium	0.55	U		P	
7440-66-6	Zinc	112		N	P	J
	Cyanide				NR	

olor Before: BROWN Clarity Before: Texture: COARSE

olor After: BROWN Clarity After: Artifacts: YES

omments:
GRASS

005

FORM I - IN

TLM02.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N87

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-00-0108

Lab Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N83

Matrix (soil/water): SOIL Lab Sample ID: 08147-05S

Level (low/med): LOW Date Received: 08/13/92

% Solids: 84.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	78.8		*	P	
7440-36-0	Antimony	4.0	U		P	
7440-38-2	Arsenic	0.90	~~B~~	WN	F	J
7440-39-3	Barium	20.2	B		P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	1.5			P	
7440-70-2	Calcium	2890		*E	P	J
7440-47-3	Chromium	1.1	U		P	
7440-48-4	Cobalt	0.64	U		P	
7440-50-8	Copper	4.1	~~B~~		P	u
7439-89-6	Iron	159		F*	P	J
7439-92-1	Lead	1.0		*	F	
7439-95-4	Magnesium	2390		*E	P	
7439-96-5	Manganese	25.7		*	P	J
7439-97-6	Mercury	0.05	~~U~~	N	CV	uJ
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	14300		*	P	J
7782-49-2	Selenium	1.1	B	S	F	
7440-22-4	Silver	0.85	U		P	
7440-23-5	Sodium	33.8	~~B~~		P	~~J~~ u
7440-28-0	Thallium	0.40	~~U~~	W	F	uJ
7440-62-2	Vanadium	0.66	U		P	
7440-66-6	Zinc	128		N	P	J
	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
GRASS

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FORM I - IN TLM02.1

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET
SUMMARY DATA

SAMPLE NUMBER: B06N88

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

o Code: SKINER Case No.: N2-08-041 SAS No. SDG No.: B06N83

trix (soil/water): SOIL Lab Sample ID: 08147-06S

vel (low/med): LOW Date Received: 08/13/92

Solids: 81.7

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	120		*	P	
7440-36-0	Antimony	3.9	U		P	
7440-38-2	Arsenic	0.77	~~B~~	WN	F	J
7440-39-3	Barium	16.4	B		P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	0.35	U		P	
7440-70-2	Calcium	5110		*E	P	J
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	0.62	U		P	
7440-50-8	Copper	2.7	~~B~~		P	u
7439-89-6	Iron	232		*E	P	J
7439-92-1	Lead	1.6		*	F	
7439-95-4	Magnesium	2470		*E	P	
7439-96-5	Manganese	63.3		*	P	J
7439-97-6	Mercury				NR	
7440-02-0	Nickel	1.2	U		P	
7440-09-7	Potassium	10600		*	P	J
7782-49-2	Selenium	0.94	U		F	
7440-22-4	Silver	0.83	U		P	
7440-23-5	Sodium	44.7	~~B~~		P	~~J~~ u
7440-28-0	Thallium	0.41	U		F	
7440-62-2	Vanadium	0.65	U		P	
7440-66-6	Zinc	68.1		N	P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: COARSE

lor After: BROWN Clarity After: Artifacts: YES

mments:
GRASS

007

FORM I - IN ILM03.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N89

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

b Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

trix (soil/water): SOIL Lab Sample ID: 08147-07S

vel (low/med): LOW Date Received: 08/13/92

Solids: 85.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	99.6		*	P	
7440-36-0	Antimony	3.9	U		P	
7440-38-2	Arsenic	0.75	~~U~~	N	F	uJ
7440-39-3	Barium	18.0	B		P	
7440-41-7	Beryllium	0.09	U		P	
7440-43-9	Cadmium	0.35	U		P	
7440-70-2	Calcium	4750		*E	P	J
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	0.62	U		P	
7440-50-8	Copper	3.3	~~B~~		P	u
7439-89-6	Iron	208		*E	P	J
7439-92-1	Lead	1.8		W*	F	J
7439-95-4	Magnesium	2020		*E	P	
7439-96-5	Manganese	47.1		*	P	J
7439-97-6	Mercury	0.05	~~U~~	N	CV	uJ
7440-02-0	Nickel	1.2	U		P	
7440-09-7	Potassium	9170		*	P	J
7782-49-2	Selenium	0.92	U		F	
7440-22-4	Silver	0.83	U		P	
7440-23-5	Sodium	64.8	~~B~~		P	BU
7440-28-0	Thallium	0.46	B		F	
7440-62-2	Vanadium	0.65	U		P	
7440-66-6	Zinc	46.8		N	P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: COARSE

lor After: BROWN Clarity After: Artifacts: YES

mments:
GRASS

008

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N90

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

b Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N83

trix (soil/water): SOIL Lab Sample ID: 08147-08S

vel (low/med): LOW Date Received: 08/13/92

Solids: 81.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	78.3		*	P	
7440-36-0	Antimony	4.0	U		P	
7440-38-2	Arsenic	0.76	~~U~~	N	F	UJ
7440-39-3	Barium	15.9	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.36	U		P	
7440-70-2	Calcium	5370		*E	P	J
7440-47-3	Chromium	1.1	U		P	
7440-48-4	Cobalt	0.64	U		P	
7440-50-8	Copper	2.8	~~B~~		P	U
7439-89-6	Iron	167		*E	P	J
7439-92-1	Lead	0.83		W*	F	J
7439-95-4	Magnesium	3020		*E	P	
7439-96-5	Manganese	77.1		*	P	J
7439-97-6	Mercury	0.06	~~U~~	N	CV	UJ
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	11300		*	P	J
7782-49-2	Selenium	0.92	U		F	
7440-22-4	Silver	0.85	U		P	
7440-23-5	Sodium	44.3	~~B~~		P	~~B~~ U
7440-28-0	Thallium	0.40	U		F	
7440-62-2	Vanadium	0.66	U		P	
7440-66-6	Zinc	41.6		N	P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: COARSE

lor After: BROWN Clarity After: Artifacts: YES

mments:
GRASS

003

FORM I - IN TLM02.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N91

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

b Code: SKINER Case No.: N2-08-041 SAS No.: SDG No.: B06N83

trix (soil/water): SOIL Lab Sample ID: 08147-09S

vel (low/med): LOW Date Received: 08/13/92

Solids: 68.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	190		*	P	
7440-36-0	Antimony	4.9	U		P	
7440-38-2	Arsenic	1.7	~~B~~	WN	F	J
7440-39-3	Barium	18.4	B		P	
7440-41-7	Beryllium	0.12	U		P	
7440-43-9	Cadmium	0.44	U		P	
7440-70-2	Calcium	3950		*E	P	J
7440-47-3	Chromium	1.3	U		P	
7440-48-4	Cobalt	0.79	U		P	
7440-50-8	Copper	7.7			P	
7439-89-6	Iron	350		*E	P	J
7439-92-1	Lead	1.8		W*	F	J
7439-95-4	Magnesium	2350		*E	P	
7439-96-5	Manganese	57.2		*	P	J
7439-97-6	Mercury	0.07	~~U~~	N	CV	UJ
7440-02-0	Nickel	1.6	U		P	
7440-09-7	Potassium	15500		*	P	J
7782-49-2	Selenium	1.1	U	S	F	
7440-22-4	Silver	1.1	U		P	
7440-23-5	Sodium	257	~~B~~		P	J
7440-28-0	Thallium	0.49	~~U~~	W	F	UJ
7440-62-2	Vanadium	0.82	U		P	
7440-66-6	Zinc	98.1		N	P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: COARSE

lor After: BROWN Clarity After: Artifacts: YES

mments:
GRASS

010

FORM I - IN ILM02.1

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

SAMPLE NUMBER: B06N92

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

b Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

trix (soil/water): SOIL Lab Sample ID: 08147-10S

vel (low/med): LOW Date Received: 08/13/92

Solids: 77.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	113		*	P	
7440-36-0	Antimony	4.2	U		P	
7440-38-2	Arsenic	1.3	~~B~~	WN	F	J
7440-39-3	Barium	11.6	B		P	
7440-41-7	Beryllium	0.10	U		P	
7440-43-9	Cadmium	0.37	U		P	
7440-70-2	Calcium	3000		*E	P	J
7440-47-3	Chromium	1.1	U		P	
7440-48-4	Cobalt	0.67	U		P	
7440-50-8	Copper	3.0	~~B~~		P	u
7439-89-6	Iron	227		*E	P	J
7439-92-1	Lead	1.6		*	F	
7439-95-4	Magnesium	2580		*E	P	
7439-96-5	Manganese	74.7		*	P	J
7439-97-6	Mercury	0.05	~~U~~	N	CV	uJ
7440-02-0	Nickel	1.3	U		P	
7440-09-7	Potassium	9830		*	P	J
7782-49-2	Selenium	1.3		S	F	
7440-22-4	Silver	0.90	U		P	
7440-23-5	Sodium	153	~~B~~		P	J
7440-28-0	Thallium	0.43	~~U~~	W	F	uJ
7440-62-2	Vanadium	0.70	U		P	
7440-66-6	Zinc	121		N	P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: COARSE

lor After: BROWN Clarity After: Artifacts: YES

mments:
GRASS

011

FORM I - IN ILM03.1

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

B06N93

INORGANIC ANALYSIS DATA SHEET

SUMMARY DATA

PERIODIC

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

o Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: B06N83

trix (soil/water): SOIL Lab Sample ID: 08147-11S

vel (low/med): LOW Date Received: 08/13/92

Solids: 61.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	132		*	P	
7440-36-0	Antimony	5.5	U		P	
7440-38-2	Arsenic	1.3	~~B~~	WN	F	J
7440-39-3	Barium	12.7	B		P	
7440-41-7	Beryllium	0.13	U		P	
7440-43-9	Cadmium	0.49	U		P	
7440-70-2	Calcium	3310		*E	P	J
7440-47-3	Chromium	1.5	U		P	
7440-48-4	Cobalt	0.88	U		P	
7440-50-8	Copper	2.5	~~B~~		P	u
7439-89-6	Iron	249		*E	P	J
7439-92-1	Lead	1.7		*	F	
7439-95-4	Magnesium	2130		*E	P	
7439-96-5	Manganese	63.4		*	P	J
7439-97-6	Mercury	0.08	~~U~~	N	CV	uJ
7440-02-0	Nickel	1.8	U		P	
7440-09-7	Potassium	7460		*	P	J
7782-49-2	Selenium	1.3	~~U~~	W	F	uJ
7440-22-4	Silver	1.2	U		P	
7440-23-5	Sodium	152	~~B~~		P	J
7440-28-0	Thallium	0.56	U		F	
7440-62-2	Vanadium	0.92	U		P	
7440-66-6	Zinc	115		N	P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: COARSE

lor After: BROWN Clarity After: Artifacts: YES

mments:
GRASS

012

FORM I - IN ILM0

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SUPPORTING DATA

SAMPLE NUMBER: 806N94

Name: SKINNER & SHERMAN LABS. Contract: 68-00-0108

Code: SKINER Case No.: N2-08-041SAS No.: SDG No.: 806N83

trix (soil/water): SOIL Lab Sample ID: 08147-12S

vel (low/med): LOW Date Received: 08/13/92

Solids: 72.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	101		*	P	
7440-36-0	Antimony	4.5	U		P	
7440-38-2	Arsenic	1.2	~~B~~	WN	F	J
7440-39-3	Barium	10.1	B		P	
7440-41-7	Beryllium	0.11	U		P	
7440-43-9	Cadmium	0.40	U		P	
7440-70-2	Calcium	2560		*E	P	J
7440-47-3	Chromium	1.2	U		P	
7440-48-4	Cobalt	0.72	U		P	
7440-50-8	Copper	2.9	~~B~~		P	u
7439-89-6	Iron	198		*E	P	J
7439-92-1	Lead	1.6		*	F	
7439-95-4	Magnesium	1180	B	*F	P	
7439-96-5	Manganese	22.0		*	P	J
7439-97-6	Mercury	0.07	~~U~~	N	CV	uJ
7440-02-0	Nickel	1.4	U		P	
7440-09-7	Potassium	7390		*	P	J
7782-49-2	Selenium	1.1	~~U~~	W	F	uJ
7440-22-4	Silver	0.96	U		P	
7440-23-5	Sodium	48.9	~~B~~		P	Ju
7440-28-0	Thallium	0.47	U		F	
7440-62-2	Vanadium	0.75	U		P	
7440-66-6	Zinc	45.6		N	P	J
	Cyanide				NR	

lor Before: BROWN Clarity Before: Texture: COARSE

lor After: BROWN Clarity After: Artifacts: YES

mments:
GRASS

013

FORM I - IN ILM02.1