

TMA
Thermo Analytical Inc.

9613492.0179
START

B07921-TMA-340

0045417

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

December 29, 1992

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

Quality Control Narrative

Scope

Four (4) biota samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on October 29, 1992 from TMA/NORCAL. The samples were analyzed for the USEPA CLP metals. The analysis were performed under TMA/Skinner and Sherman work order S210514.

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 selenium digestion spike recovery exceeded the control limit requirements.

The calcium and chromium laboratory duplicates exceeded the control limit requirements.

The ICP serial dilution for zinc and magnesium 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



9613492 8190

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07921

Lab Name: SKINNER & SHERMAN LABS.

Contract: 68-D0-0108

Lab Code: SKINER

Case No.: N2-10-174SAS No.:

SDG No.: B07921

Matrix (soil/water): SOIL

Lab Sample ID: 10514-015

Level (low/med): LOW

Date Received: 10/29/92

% Solids: 36.0

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

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|---|----|
| 7429-90-5 | Aluminum | 6860 | | | P |
| 7440-36-0 | Antimony | 9.2 | U | | P |
| 7440-38-2 | Arsenic | 6.3 | | | F |
| 7440-39-3 | Barium | 147 | | | P |
| 7440-41-7 | Beryllium | 0.64 | B | | F |
| 7440-43-9 | Cadmium | 4.6 | | | P |
| 7440-70-2 | Calcium | 21100 | | * | P |
| 7440-47-3 | Chromium | 16.2 | | * | P |
| 7440-48-4 | Cobalt | 5.2 | B | | P |
| 7440-50-8 | Copper | 61.1 | | | P |
| 7439-89-6 | Iron | 12200 | | | P |
| 7439-92-1 | Lead | 28.3 | | | F |
| 7439-95-4 | Magnesium | 6050 | | E | P |
| 7439-96-5 | Manganese | 1190 | | | P |
| 7439-97-6 | Mercury | 0.45 | | | CV |
| 7440-02-0 | Nickel | 16.4 | B | | P |
| 7440-09-7 | Potassium | 7840 | | | P |
| 7782-49-2 | Selenium | 2.1 | U | N | F |
| 7440-22-4 | Silver | 1.4 | U | | P |
| 7440-23-5 | Sodium | 2900 | | | P |
| 7440-28-0 | Thallium | 2.1 | U | | F |
| 7440-62-2 | Vanadium | 20.2 | B | | P |
| 7440-66-6 | Zinc | 319 | | E | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

GRASSY, FIRM LIKE SUBSTANCE

002

9613192 8101

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07922

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

Lab Code: SKINER Case No.: N2-10-174SAS No.: SDG No.: B07921

Matrix (soil/water): SOIL Lab Sample ID: 10514-02S

Level (low/med): LOW Date Received: 10/29/92

% Solids: 63.9

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

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|----|----|
| 7429-90-5 | Aluminum | 2760 | | | P |
| 7440-36-0 | Antimony | 5.2 | U | | P |
| 7440-38-2 | Arsenic | 2.9 | B | | F |
| 7440-39-3 | Barium | 104 | | | P |
| 7440-41-7 | Beryllium | 0.12 | U | | P |
| 7440-43-9 | Cadmium | 4.3 | | | P |
| 7440-70-2 | Calcium | 21700 | | * | P |
| 7440-47-3 | Chromium | 5.4 | | * | P |
| 7440-48-4 | Cobalt | 2.0 | B | | P |
| 7440-50-8 | Copper | 24.9 | | | P |
| 7439-89-6 | Iron | 4190 | | | P |
| 7439-92-1 | Lead | 11.6 | | | F |
| 7439-95-4 | Magnesium | 3390 | | E | P |
| 7439-96-5 | Manganese | 402 | | | P |
| 7439-97-6 | Mercury | 0.16 | | | CV |
| 7440-02-0 | Nickel | 6.2 | B | | P |
| 7440-09-7 | Potassium | 1110 | B | | F |
| 7782-49-2 | Selenium | 1.4 | B | +N | F |
| 7440-22-4 | Silver | 0.77 | U | | P |
| 7440-23-5 | Sodium | 464 | B | | P |
| 7440-28-0 | Thallium | 1.2 | U | W | F |
| 7440-62-2 | Vanadium | 9.2 | B | | P |
| 7440-66-6 | Zinc | 189 | | E | P |
| | Cyanide | | | | NR |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments: GRASSY FIRM LIKE SUBSTANCE

003

9613492 8182

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07923

Lab Name: SKINNER & SHERMAN LABS.

Contract: 68-D0-0108

Lab Code: SKINER

Case No.: N2-10-174SAS No.:

SDG No.: B07921

Matrix (soil/water): SOIL

Lab Sample ID: 10514-03S

Level (low/med): LOW

Date Received: 10/29/92

% Solids: 62.1

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

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|----|----|
| 7429-90-5 | Aluminum | 3740 | | | P |
| 7440-36-0 | Antimony | 5.4 | U | | P |
| 7440-38-2 | Arsenic | 4.0 | | | F |
| 7440-39-3 | Barium | 122 | | | P |
| 7440-41-7 | Beryllium | 0.38 | B | | P |
| 7440-43-9 | Cadmium | 4.6 | | | P |
| 7440-70-2 | Calcium | 20500 | | * | P |
| 7440-47-3 | Chromium | 8.2 | | * | P |
| 7440-48-4 | Cobalt | 3.1 | B | | P |
| 7440-50-8 | Copper | 35.7 | | | P |
| 7439-89-6 | Iron | 6400 | | | P |
| 7439-92-1 | Lead | 17.7 | | | F |
| 7439-95-4 | Magnesium | 3620 | | F | P |
| 7439-96-5 | Manganese | 771 | | | P |
| 7439-97-6 | Mercury | 0.27 | | | CV |
| 7440-02-0 | Nickel | 9.3 | B | | P |
| 7440-09-7 | Potassium | 4500 | | | P |
| 7782-49-2 | Selenium | 1.2 | B | WN | F |
| 7440-22-4 | Silver | 0.81 | U | | P |
| 7440-23-5 | Sodium | 1910 | | | P |
| 7440-28-0 | Thallium | 1.2 | U | W | F |
| 7440-62-2 | Vanadium | 11.8 | B | | P |
| 7440-66-6 | Zinc | 230 | | E | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

GRASSY FIRM LIKE SUBSTANCE

004

9613492.8183

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B07924

Lab Name: SKINNER & SHERMAN LABS.

Contract: 68-D0-0108

Lab Code: SKINER

Case No.: N2-10-174SAS No.:

SDG No.: B07921

Matrix (soil/water): SOIL

Lab Sample ID: 10514-045

Level (low/med): LOW

Date Received: 10/29/92

% Solids: 16.9

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

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|---|----|
| 7429-90-5 | Aluminum | 987 | | | P |
| 7440-36-0 | Antimony | 19.6 | U | | P |
| 7440-38-2 | Arsenic | 3.8 | U | W | F |
| 7440-39-3 | Barium | 114 | B | | P |
| 7440-41-7 | Beryllium | 0.63 | B | | P |
| 7440-43-9 | Cadmium | 5.5 | B | | P |
| 7440-70-2 | Calcium | 26200 | | * | P |
| 7440-47-3 | Chromium | 7.0 | B | * | P |
| 7440-48-4 | Cobalt | 3.1 | U | | P |
| 7440-50-8 | Copper | 26.0 | B | | P |
| 7439-89-6 | Iron | 1780 | | | P |
| 7439-92-1 | Lead | 9.8 | | | F |
| 7439-95-4 | Magnesium | 2650 | B | E | P |
| 7439-96-5 | Manganese | 370 | | | P |
| 7439-97-6 | Mercury | 0.47 | B | | CV |
| 7440-02-0 | Nickel | 9.0 | B | | P |
| 7440-09-7 | Potassium | 2570 | B | | P |
| 7782-49-2 | Selenium | 4.6 | U | N | F |
| 7440-22-4 | Silver | 2.9 | U | | P |
| 7440-23-5 | Sodium | 1190 | B | | P |
| 7440-28-0 | Thallium | 4.5 | U | W | F |
| 7440-62-2 | Vanadium | 5.4 | B | | P |
| 7440-66-6 | Zinc | 206 | | E | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

GRASSY FIRM LIKE SUBSTANCE

005

FORM I - IN

ILM02.1

9613492.8184

Rush Doe 11/4/92 ^{10/30/92}

TMA/Skinner & Sherman Labs SAMPLE LOG-IN
 WORKORDER 5210514 CLIENT Hanford New No. SAMPLES: 4
 PROTCL CLP TURNARND 33 Days
 COOLER TEMP: 5 OC, or NA (Soil) (Water) (Specify Other)
 CUSTODIAN B. Prindel SDG/BATCH N/A
 CUSTODY SEAL: PRESENT/ABSENT/INTACT/NOT CLIENT CASE N210174
 SHIPER & # Fed Ex PO/CONTRACT# ↓
 TAGS: PRESENT/ABSENT/NA/SEE COC CONTACT D. Sanchez
 CHAIN OF CUSTODY: PRESENT/ABSENT/NA, # N/A COMMENTS: None

SAMPLE CONTAINERS-INTACT/BROKEN COMMENTS

CLIENT COMMENT? YES/NO

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

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

SHIPMENT DATES 10-29-92

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

| CLIENT ID | MATRIX | RECEIVED | PH* | TEST(S) & QC | HOLD TIME UP |
|-----------|-------------|----------|-----|--------------|----------------|
| 1 B07921 | Solid water | 10-29-92 | N/A | TM | HG due 11/4/92 |
| 2 B07922 | ↓ | ↓ | ↓ | ↓ | ↓ |
| 3 B07923 | ↓ | ↓ | ↓ | D | ↓ |
| 4 B07924 | ↓ | ↓ | A | BS | ↓ |
| 5 | | | | AB 10/30/92 | |
| 6 | | | | | |
| 7 | | | | | |
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| 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 10/30/92 BP

PAGE 1

TMA/Norcal

CHAIN OF CUSTODY

ORD # N2-10-174

RCVD: 10/22/92 DUE: 11/21/92

10/22/92 17:55:47

KEEP: 02/19/93 DISP: S

DASH SAMPLE IDENTIFICATION STORED TESTS for FRACTIONS with work in DEPT: SU and CATEGORY

| | | | | |
|------------------|-----|---------|-------|-------|
| 01A-B B07921 | S&S | ! WH001 | WH002 | WH004 |
| 02A-B B07922 | S&S | ! WH001 | WH002 | WH004 |
| 03A-B B07923 | S&S | ! WH001 | WH002 | WH004 |
| 04A-B B07924 | S&S | ! WH001 | WH002 | WH004 |
| 04B-B B07924 MS | S&S | ! WH001 | WH002 | WH004 |
| 04C-B B07924 DUP | S&S | ! WH001 | WH002 | WH004 |
| 04D-B L C S | S&S | ! WH001 | WH002 | WH004 |

| <u>RELEASED BY</u> | <u>DATE</u> | <u>TRANSFERRED TO</u> | <u>DATE</u> | <u>RECEIVED BY</u> | <u>DATE</u> |
|--------------------|-----------------|-----------------------|-----------------|--------------------|-----------------|
| <i>Gyamamoto</i> | <i>10-28-92</i> | <i>Skinner</i> | <i>10-28-92</i> | <i>Alb</i> | <i>10/29/92</i> |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ |

9613492.8186

TMA
Thermo Analytical Inc.

TMA/Norcal

2030 Wright Avenue

P. O. Box 4040

Richmond, CA 94804-0040

(510) 235-2633 Fax No. (510) 235-0438

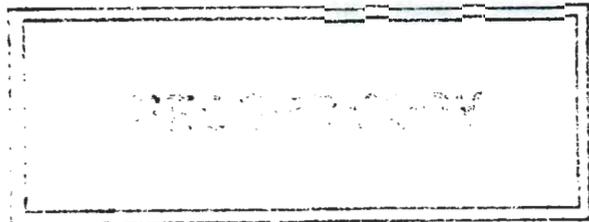


February 12, 1993

SENT BY FAX

Ref. TMA/Norcal N2-10-199-7114

Ms. Briana Colley
Westinghouse Hanford Company
2355 Stevens Drive
MSIN H4-23
345 Hills Street/3000 Area
Richland, WA 99352



Dear Ms. Colley:

Enclosed is the gross counter QC status information you requested for data package TMA/Norcal N2-10-199-7114.

Please call if you have any questions concerning this data.

Sincerely,

A handwritten signature in cursive script that reads "D.P. Kharkar".

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

DPK/jv

Enclosures: Gross Counter
QC Status Data

9613492.8187

TMA

Thermo Analytical Inc.

TMAINorcal

2030 Wright Avenue

P. O. Box 4040

Richmond, CA 94804-0040

(510) 235-2633 Fax No. (510) 235-0438



January 29, 1993

SENT BY FEDERAL EXPRESS

Ref. TMA/Norcal N2-10-199-7114

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

Dear Mr. Bourgeault:

Enclosed on the Summary Data Section, are the ⁹⁰Sr, and gamma scan results for the Vegetation Samples from 100 Area Biota Sampling Location, we received 22 October 1992. The QA/QC results are also given in the Summary Data Section. The Summary Data Including QC's section is numbered pages 1 to 35, and the appendices are numbered pages 36 to 32.

Please call if you have any questions concerning this data.

Sincerely,

A handwritten signature in cursive script, appearing to read "D.P.K. Kharkar".

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

DPK/ss

Enclosures: Sections 1 and 2
Appendices

SDG 7114
Contact Dinkar P. Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

The result of the Vegetation samples from Location 100 Area Biota Sampling Location (TMA/Norcal Group 7114) are reported herein. TMA/Norcal Group 7114 is comprised of the four samples listed on the Chain-of-Custody documents and is identified as Sample 1 through 4.

1.1 CHAINS-OF-CUSTODY

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

1.2 SAMPLE VOLUME

ZipLok 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 10/07/92 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 7114-5, 6, and 7.

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 recoveries and MDA's for all nuclides were satisfactory and all MDA's met RDL requirements.

2.2 BLANKS

MDA for ⁹⁰Sr was above the RDL requirements, because of low chemical yield. The MDA's for all other nuclides met the RDL requirements.

SDG 7114
Contact Dinkar P. Kharkar

Client Westinghouse Hanford
Contract MBH-SVV-069262

CASE NARRATIVE

2.3 REPLICATES

The ^{90}Sr MDA's for sample number 7114-01 and its replicate 7114-07 were above RDL due to low chemical yield and delay in counting the yttrium mount due to instrument failure. The MDA's for gamma nuclides were higher due to the small sample available for analysis.

3.0 ANALYTICAL NOTES

3.1 Strontium-90 Analyses: The average yield for seven analysis was (23 ± 6%). The lowest yield was 29% and the highest was 32%. The average MDA was 3 ± 2 pCi/g. Positive ^{90}Sr concentration was not found in the samples.

3.2 Gamma Scan Analyses: Gamma scan analysis of the samples did not find positive concentration of gamma nuclides except in sample number 7114-3 where both ^{60}Co and ^{137}Cs were found.

9613492.8190

TMA NORCAL
REPORTING GROUP 7114

N210199-01

B07921

DATA SHEET

SDG 7114 Client Westinghouse Hanford
 Contact Dinkar Kharkar Contract MBH-SVV-069262

Lab sample id N210199-01 Client sample id B07921
 Dept sample id 7114-001 Matrix BIOTA
 Received 10/22/92 Collected 10/07/92
 Chain of custody id WHC-N-444

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI- FIERS | TEST |
|-------------------------------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Strontium 90 GAMMA SCAN ANALYTES | 10098-97-2 | 0.15 | 6.2 | 5 | 2 | U | Y |
| Potassium 40 | 13966-00-2 | U | | 10 | | U | GAM |
| Iron 59 | | U | | 5 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 40 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.7 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 2 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 6 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.6 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.6 | 0.05 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.8 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.5 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | U | | 1 | | U | GAM |
| Thorium 228 | 14274-82-9 | U | | 0.8 | | U | GAM |
| Thorium 232 | 7440-29-1 | U | | 3 | | U | GAM |

Lab id TMAN
 Protocol WHC-HEIS
 Version Ver 1.0
 Form DVD-DS
 Version 2.22
 Report date 01/29/93

9613492.8191

TMA NORCAL
REPORTING GROUP 7114

N210199-02

B07922

DATA SHEET

SDG 7114
Contact Dinkar KharkarClient Westinghouse Hanford
Contract MBH-SVV-069262Lab sample id N210199-02
Dept sample id 7114-002
Received 10/22/92Client sample id B07922
Matrix BIOTA
Collected 10/07/92
Chain of custody id WHC-N-444

| PARAMETER | CAS NO | RESULT pCi/G | 2 σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI- FIERS | TEST |
|-------------------------------------|------------|-----------------|---------------------------|--------------|--------------|-----------------|------|
| Strontium 90 GAMMA SCAN ANALYTES | 10098-97-2 | 0.16 | 1.4 | 3 | 2 | U | Y |
| Potassium 40 | 13966-00-2 | 5.1 | 2.6 | | | | GAM |
| Iron 59 | | U | | 2 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 10 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.3 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.4 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 2 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.3 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.2 | 0.05 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.4 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.54 | 0.34 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.34 | 0.32 | | | | GAM |
| Thorium 232 | 7440-29-1 | 1.1 | 0.76 | | | | GAM |

TMA NORCAL
REPORTING GROUP 7114

N210199-03

B07923

DATA SHEET

| | |
|---------------------------------|--------------------------------------|
| SDG <u>7114</u> | Client <u>Westinghouse Hanford</u> |
| Contact <u>Dinkar Kharkar</u> | Contract <u>MBH-SVV-069262</u> |
| Lab sample id <u>N210199-03</u> | Client sample id <u>B07923</u> |
| Dept sample id <u>7114-003</u> | Matrix <u>BIOTA</u> |
| Received <u>10/22/92</u> | Collected <u>10/07/92</u> |
| | Chain of custody id <u>WHC-N-444</u> |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALIFIERS | TEST |
|-------------------------------------|------------|-----------------|-------------------|--------------|--------------|------------|------|
| Strontium 90 GAMMA SCAN ANALYTES | 10098-97-2 | 0.61 | 1.4 | 4 | 2 | U | Y |
| Potassium 40 | 13966-00-2 | 5.3 | 2.3 | | | | GAM |
| Iron 59 | | U | | 1 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 10 | | U | GAM |
| Cobalt 60 | 10198-40-0 | 0.20 | 0.17 | | 0.05 | | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.6 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 2 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.2 | | U | GAM |
| Cesium 137 | 10045-97-3 | 0.19 | 0.18 | | 0.05 | | GAM |
| Europium 152 | 14683-23-9 | U | | 0.3 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.2 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | 0.54 | 0.30 | | | | GAM |
| Thorium 228 | 14274-82-9 | 0.66 | 0.33 | | | | GAM |
| Thorium 232 | 7440-29-1 | U | | 1 | | U | GAM |

| |
|-----------------------------|
| Lab id <u>TMAN</u> |
| Protocol <u>WHC-HEIS</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DS</u> |
| Version <u>2.22</u> |
| Report date <u>01/29/93</u> |

9613492.8193

**TMA NORCAL
REPORTING GROUP 7114**

N210199-04

B07924

DATA SHEET

| | |
|---------------------------------|--------------------------------------|
| SDG <u>7114</u> | Client <u>Westinghouse Hanford</u> |
| Contact <u>Dinker Kharkar</u> | Contract <u>MBH-SVV-069262</u> |
| Lab sample id <u>N210199-04</u> | Client sample id <u>B07924</u> |
| Dept sample id <u>7114-004</u> | Matrix <u>BIOTA</u> |
| Received <u>10/22/92</u> | Collected <u>10/07/92</u> |
| | Chain of custody id <u>WHC-N-444</u> |

| PARAMETER | CAS NO | RESULT pCi/G | 2σ ERR (COUNT) | MDA pCi/G | RDL pCi/G | QUALI- FIERS | TEST |
|----------------------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Strontium 90 | 10098-97-2 | 0.038 | 1.7 | 2 | 2 | U | Y |
| GAMMA SCAN ANALYTES | | | | | | | |
| Potassium 40 | 13966-00-2 | 3.0 | 2.5 | | | | GAM |
| Iron 59 | | U | | 1 | 0.05 | U | GAM |
| Chromium 51 | 14392-02-0 | U | | 20 | | U | GAM |
| Cobalt 60 | 10198-40-0 | U | | 0.2 | 0.05 | U | GAM |
| Zinc 65 | 17982-39-3 | U | | 0.6 | | U | GAM |
| Ruthenium 106 | 13967-48-1 | U | | 2 | | U | GAM |
| Cesium 134 | 17967-70-9 | U | | 0.3 | | U | GAM |
| Cesium 137 | 10045-97-3 | U | | 0.2 | 0.05 | U | GAM |
| Europium 152 | 14683-23-9 | U | | 0.4 | 0.1 | U | GAM |
| Europium 154 | 15585-10-1 | U | | 0.3 | 0.1 | U | GAM |
| Radium 226 | 13982-67-7 | U | | 0.5 | | U | GAM |
| Thorium 228 | 14274-82-9 | U | | 0.4 | | U | GAM |
| Thorium 232 | 7440-29-1 | U | | 1 | | U | GAM |

| |
|-----------------------------|
| Lab id <u>TMAN</u> |
| Protocol <u>WHC-HEIS</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DS</u> |
| Version <u>2.22</u> |
| Report date <u>01/29/93</u> |

9613492.8194

PAGE 1

TMA/Norcal

CHAIN OF CUSTODY

ORD # N2-10-199

RCVD: 10/22/92 DUE: 12/06/92

10/27/92 15:30:52

KEEP: 03/06/93 DISP: S

| DASH SAMPLE IDENTIFICATION | STORED | TESTS |
|----------------------------|---------|-----------|
| 01A-B B07921 | SCA2(1) | ! GLY Y90 |
| 02A-B B07922 | SCA2(1) | ! GLY Y90 |
| 03A-B B07923 | SCA2(1) | ! GLY Y90 |
| 04A-B B07924 | SCA2(1) | ! GLY Y90 |
| 05A-B GC LCS | n/a | ! GLY Y90 |
| 06A-B GC blank | n/a | ! GLY Y90 |
| 07A-B GC dup of 01 | n/a | ! GLY Y90 |

| RELEASED BY | DATE | TRANSFERRED TO | DATE | RECEIVED BY | DATE |
|---------------|---------------|----------------|------|-----------------------|-----------------|
| <u>AI</u> | <u>1/4/93</u> | | | <u>Alex. Metchers</u> | <u>01-04-93</u> |
| <u>T Long</u> | <u>2/2/93</u> | <u>SCA 2</u> | | <u>AI Metchers</u> | <u>2-2-93</u> |
| | | | | | |
| | | | | | |
| | | | | | |

N210199 DPK WHC
 7114 10/22/92 7 samps
 100 area biota sampling

38A ck
 5-4-93

9613492-8195

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator C.E. Heiden

Company Contact Dan Landeen

Telephone 376-1038

Project Designation/Sampling Locations 100 Area Biota Sampling
100-N Springs

Collection Date 10/7/92

Ice Chest No. RM#8

Field Logbook No. WAC-N-444

Bill of Lading/Airbill No. 252156859 9

Offsite Property No. W93-D-0002 #2

Method of Shipment Emery

Shipped to TMA/NORCAL

Possible Sample Hazards/Remarks N/A

Sample Identification

B07921
B07922
B07923
B07924 } MILFOIL (ZIPLOCK BAGS)

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

Relinquished by: C.E. Heiden Received by: Elby G. Yamamoto Date/Time: 10-22-92 11:00

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: 032

Comments: 39 EK 8-9-92

9613492.8197

| | | | | | | | | | | | |
|--|--|--|--|---|--|---|--|---|--|---|--|
| FORM OF PAYMENT | | | | SERVICES ** | | | | INTERNATIONAL | | | |
| Check <input type="checkbox"/> CC <input type="checkbox"/> <input type="checkbox"/> FCCOD <input type="checkbox"/> | | | | <input type="checkbox"/> UNITED STATES / CANADA <input type="checkbox"/> Same Day (Extra Charge) <input type="checkbox"/> AM <input type="checkbox"/> PM <input type="checkbox"/> Second Day | | | | <input type="checkbox"/> Express <input type="checkbox"/> Standard Plus <input type="checkbox"/> Preferred <input type="checkbox"/> Standard <input type="checkbox"/> Saturday Delivery | | | |
| Bill to Shipper <input type="checkbox"/> Bill to Consignee <input type="checkbox"/> Third Party Billing <input type="checkbox"/> | | | | EMERY WORLDWIDE | | | | Date: 10-21-92 Origin: PSC Shipper's Account Number: 2521568599 | | | |
| Shipper's Account Number: E 250281585 | | | | EMERY WORLDWIDE A Company | | | | Date: 10-21-92 Origin: PSC Shipper's Account Number: 2521568599 | | | |
| From: WESTINGHOUSE SHIPPING DEPT (509) 376-6665 | | | | To: ROBERT FOX | | | | Tariff Dest. | | Gateway | |
| U.S. DEPARTMENT OF ENERGY C/O WESTINGHOUSE HANFORD | | | | TMA/NORCAL | | | | Check to Shipper \$ | | | |
| 2355 STEVENS DRIVE | | | | 8030 WRIGHT AVENUE | | | | Hold for Pick Up: <input type="checkbox"/> | | EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation. | |
| RICHLAND WA | | | | RICHMOND CA | | | | Canada <input type="checkbox"/> | | | |
| Customer's Reference Numbers: W81353 PE719 W93-0-0002#21 99352 | | | | Consignee's Account Number: E 94804 | | | | | | | |
| Description: 1 ICE CHEST RM#8 SAMPLES B07921, B07922, B07923, B07924 | | | | Dimensions: 1 12 11 | | Total Pieces: 1 | | Total Weight (In Lbs.): 26 | | FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379) | |
| Remarks: OVERNIGHT DELIVERY 10/21/92 | | | | Zip Ship <input type="checkbox"/> | | Mark if Emery Packaging is used | | Urgent Letter <input type="checkbox"/> 9X12 <input checked="" type="checkbox"/> | | Declared Value \$ | |
| Shipper's Signature: <i>[Signature]</i> | | | | Third Party Account Number: E | | Urgent Pack <input checked="" type="checkbox"/> 12X15 | | BIOTA 2521568599 | | 1-OAK-A Terms and Conditions on Back | |
| International Shipments: Free Comcite <input type="checkbox"/> | | | | Commodity Code | | International Insurance | | | | | |
| Base Charge | | | | Total Transportation Charges | | Other Charges/Advance at Origin: <input type="checkbox"/> OC/AC | | | | | |

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