START 9613402.2197 9210L337-WES-924 171 2

0000010 0043052

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client:** WESTINGHOUSE HANFORD
**RFW #:** 9210L337

**W.O. #:** 06168-002-001-9999-00
**Date Received:** 10-17-92

**GC/MS VOLATILE**

One (1) soil sample was collected on 10-13-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 10-26-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. A non-target compound was detected in sample B07HG5.

2. All system monitoring compounds (surrogate) recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. All blank spike recoveries were within EPA QC limits.

5. Internal standard areas were outside QC limits for sample B07HG5 MSD. The analyses of samples B07HG5 and B07HG5 MS fulfilled its re-analysis requirement.

FEB 1996
RECEIVED
EDMC

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

12-09-92
Date

sma/voa/10-337v.cn

PM = Jos; Data Entry QA check

WESTON Analytics Use Only: 9210L337

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse - Hanford
Est. Final Proj. Sampling Date
Work Order #: 0L01-8-002-001-9999-00
Project Contact/Phone #
AD Project Manager: Josie Edwards
QC: Clin Del: CLP TAT: 35 days
Date Rec'd: 10/17/92 Date Due: 11/23/92
Account #: WS HANFORD

| Refrigerator # | | 1 | 6 | 4 | 4 | 4 | 8 | 4 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | | | | |
| | Solid | 1G | 1AG | 1 | 1 | 1AG | 1G | 1/6L | 1 |
| Volume | Liquid | | | | | | | | |
| | Solid | 500 | 500 | 1 | 1 | 500 | 1,000 | 250m | 1 |
| Preservatives | | — | — | — | — | | | | 1 |

ANALYSES REQUESTED →

| ORGANIC | | | | | | INORG | |
|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | PH Herb | FL SO4 PO4 NO2 | Explosives | Metal | CN |

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; Wi - Wipe; X - Other; F - Fish

WESTON Analytics Use Only

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | CLP3H | CLP5H | CLP8H | IPH | ICFL ICSO4 ICPO4 ICNO2 | ISUB | | m ISL 203 | ICANTO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | B07H65 (RAD) | | | ~~LIQ~~ S | 10/15/92 | 1015 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |

RADIOCHEM = Gross Alpha/Gross Beta, Gamma Spec, Sr-90, C-14, U-235/238, Pu-239/240, Am-241

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
100 - KR-1

Run (1) MS/MSD

DATE/REVISIONS:
11/13/92 1. Radio Chem. added to Ego Tok
2. 
3. 
4. 
5. 
6. 

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| EMERY | Sheila SO 10/17/92 | 10/17/92 | 315 |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | SO 10/17/92 | | |

WESTON Analytics Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# N/A Cooler# N/A 381-596a

9613402.2198

000002

9613402.2199 0000003

GWJ# 92K2337

| Westinghouse Hanford Company | CHAIN OF CUSTODY |
|---|---|

Custody Form Initiator: W.V. SETZER

Company Contact: WV SETZER — Telephone: 376-2413

Project Designation/Sampling Locations: 100-KR-1 — Collection Date: 10-13-92

Ice Chest No.: SMC 142 — Field Logbook No.: EFL-1051

Bill of Lading/Airbill No.: 2521568742 — Offsite Property No.: W930-0002 #18

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~TMA/NORCAL~~ WESTON WVS 10-16-92

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

**Sample Identification**

1) B07HG5
- 1,250ml aG:CLP;ICP/AA Metals,Hg,Cn
- 1,120ml aG:CLP;VOA
- 1,950ml aG:CLP;Semi-VOA,PCB/PEST, pH, Anions (IC) F,$SO_4$,$NO_3$-$NO_2$
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

2)
- ~~1,250ml aG:CLP;ICP/AA Metals,Hg,Cn~~
- ~~1,120ml aG:CLP;VOA~~
- ~~1,950ml aG:CLP;Semi-VOA,PCB/PEST, pH, Anions (IC) F,$SO_4$,$NO_3$-$NO_2$~~
- ~~1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241~~

3)
- 1,250ml aG:CLP;ICP/AA Metals,Hg,Cn
- 1,120ml aG:CLP;VOA
- 1,950ml aG:CLP;Semi-VOA,PCB/PEST, pH, Anions (IC) F,$SO_4$,$NO_3$-$NO_2$
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

WVS

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

| Relinquished by: | Received by: | Date/Time: |
|---|---|---|
| W.V. Setzer | | |
| Relinquished by: EMERY | Received by: Susan Perez | Date/Time: 10/17/92 930 |
| Relinquished by: | Received by: | Date/Time: |
| Relinquished by: | Received by: | Date/Time: |

**Final Sample Disposition**

| Disposal Method: | Disposed by: | Date/Time: |
|---|---|---|

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

9613402.2200 0000004

| Westinghouse Hanford Company | SAMPLE ANALYSIS REQUEST |
|---|---|

Collector W.W. SETZER Date 10-16-92

Company Contact WV SETZER Telephone (509)376-2413

| Sample Number | * | Date Collected | Time Collected | Number and Type of Sample Containers/Analysis Required |
|---|---|---|---|---|
| B07HG5 | S | 10-13-92 | 1015 | 1-250ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH 300.0/353.2;Anions (IC) F,SO4,NO3, NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 |
| | | | | 1-250ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH 300.0/353.2;Anions (IC) F,SO4,NO3,NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 |
| | | | | 1-250ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH 300.0/353.2;Anions (IC) F,SO4,NO3, NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241<br>WVS |
| | | | | 1-120ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH 300.0/353.2;Anions (IC) F,SO4,NO3, NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14 U-235/238,Pu-239/240,Am-241 |
| | | | | |

| *Type of Sample | A = Air | L = Liquid | SE = Sediment | T = Tissue | X = Other |
|---|---|---|---|---|---|
| | DL = Drum Liquids | O = Oil | SL = Sludge | W = Water | |
| | DS = Drum Solids | S = Soil | SO = Solid | WI = Wipe | |

Field Information FROM 100-KR-1 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

FORM OF PAYMENT

Check ☐ CBL ☐ | _____ | PCCOD ☐

Bill to Shipper [X] Bill to Consignee ☐ Third Party Billing ☐

Shipper's Account Number: E 850281585

92104331

EMERY WORLDWIDE

A CF Company

SERVICES

UNITED STATES / CANADA: Same Day (Extra Charges) ☐ AM ☐ PM ☐ Second Day [X] Saturday Delivery

INTERNATIONAL: Express ☐ Standard Plus ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

Date: 10-16-92 | Origin: PSC | Shipment Number: 2521568742 2

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DR
RICHLAND WA
Canada ☐

To:
PEG BEATY
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341 -1313
Hold for Pick Up ☐
Canada ☐

Consignee's Account Number: E

Tariff Dest. | Gateway

$

EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non payment, fraud and misrepresentation.

Customer's Reference Numbers: W12200 P1318 W9E-0-0002#18 97352

Description: 1 RUBBERMAID SML-102 POLYCOOLER SOIL SAMPLES B07H65

Dimensions: Pcs 1 | L 1 | W 1/ | H 1 1

Total Pieces: 1 | Total Weight: 47

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-143-6379)

Declared Value: $

2521568742

Remarks: SATURDAY DELIVERY

Shipper's Signature X

Zip Ship ☐

For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply

Mark if Emery Packaging is used

Urgent Letter 9X12 | Urgent Pack 12X15

International Shipments: Free Domicile ☐ | Commodity Code

Third Party Account Number mandatory for Third Party Billing. E | Third Party Account Number

International Customs Value | International Insurance

Base Charge

Total Transportation Charges | Other Charges/Advance at Origin ☐ OCA/O- $

3-PHL SA

Terms and Conditions on Back

9613402.2201

000005

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 11/30/92 14:39

RFW Batch Number: 9210L337 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1a

| | Cust ID: | BO7HG5 | | BO7HG5 | | BO7HG5 | | VBLK | | VBLK BS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 001 MS | | 001 MSD | | 92LVR144-MB1 | | 92LVR144-MB1 | |
| | Matrix: | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | D.F.: | 1.00 | | 1.02 | | 1.02 | | 1.00 | | 1.00 | |
| | Units: | UG/KG | | UG/KG | | UG/KG | | UG/KG | | UG/KG | |
| Surrogate Recovery | Toluene-d8 | 94 | % | 98 | % | 96 | % | 91 | % | 91 | % |
| | Bromofluorobenzene | 89 | % | 94 | % | 97 | % | 95 | % | 93 | % |
| | 1,2-Dichloroethane-d4 | 92 | % | 103 | % | 105 | % | 105 | % | 101 | % |
| Chloromethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Methylene Chloride | | 3 | J | 2 | J | 2 | J | 10 | U | 10 | U |
| Acetone | | 23 | | 12 | | 14 | | 10 | U | 10 | U |
| Carbon Disulfide | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 1,1-Dichloroethene | | 10 | U | 113 | % | 108 | % | 10 | U | 106 | % |
| 1,1-Dichloroethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 1,2-Dichloroethene (total) | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Chloroform | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 1,2-Dichloroethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 2-Butanone | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Carbon Tetrachloride | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 1,2-Dichloropropane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| cis-1,3-Dichloropropene | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Trichloroethene | | 10 | U | 117 | % | 119 | % | 10 | U | 112 | % |
| Dibromochloromethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 1,1,2-Trichloroethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Benzene | | 10 | U | 113 | % | 114 | % | 10 | U | 114 | % |
| trans-1,3-Dichloropropene | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Bromoform | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 4-Methyl-2-pentanone | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| 1,1,2,2-Tetrachloroethane | | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Toluene | | 10 | U | 105 | % | 105 | % | 10 | U | 89 | % |

*= Outside of EPA CLP QC limits.

9613402.2202 000007

RFW Batch Number: 9210L337 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1b

| Cust ID: | BO7HG5 | | BO7HG5 | | BO7HG5 | | VBLK | | VBLK BS | |
|---|---|---|---|---|---|---|---|---|---|---|
| RFW#: | 001 | | 001 MS | | 001 MSD | | 92LVR144-MB1 | | 92LVR144-MB1 | |
| Chlorobenzene | 10 | U | 97 | % | 96 | % | 10 | U | 102 | % |
| Ethylbenzene | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Styrene | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |
| Xylene (total) | 10 | U | 11 | U | 11 | U | 10 | U | 10 | U |

*= Outside of EPA CLP QC limits.

9613402.2203 0000008

9613402.2204 1A 000023

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R102606

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: not dec. 3

Date Analyzed: 10/26/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 3 | J |
| 67-64-1 | Acetone | 23 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

9613H02.2205 1E

0 0 0 0 0 2 3 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R102606

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: not dec. 3

Date Analyzed: 10/26/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 27.18 | 10 | J |

Roy F. Weston, Inc. - Lionville Laboratory
Semivolatiles by GC/MS, HSL List

RFW Batch Number: 9210L337 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Report Date: 11/24/92 14:33 Page: 1a

| | Cust ID: | BO7HG5 | BO7HG5 | BO7HG5 | SBLK | SBLK BS |
|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | 001 MS | 001 MSD | 92LE1795-MB1 | 92LE1795-MB1 |
| | Matrix: | SOIL | SOIL | SOIL | SOIL | SOIL |
| | D.F.: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Units: | ug/Kg | ug/Kg | ug/Kg | ug/Kg | ug/Kg |
| Surrogate Recovery | Nitrobenzene-d5 | 30 % | 28 % | 31 % | 41 % | 59 % |
| | 2-Fluorobiphenyl | 51 % | 57 % | 48 % | 55 % | 70 % |
| | Terphenyl-d14 | 57 % | 52 % | 71 % | 70 % | 80 % |
| | Phenol-d5 | 39 % | 50 % | 40 % | 52 % | 71 % |
| | 2-Fluorophenol | 45 % | 38 % | 44 % | 63 % | 83 % |
| | 2,4,6-Tribromophenol | 77 % | 66 % | 93 % | 54 % | 82 % |
| | 2-Chlorophenol-d4 | 38 % | 43 % | 40 % | 52 % | 73 % |
| | 1,2-Dichlorobenzene-d4 | 33 % | 13 * % | 33 % | 46 % | 61 % |
| | | fl | fl | fl | fl | fl |
| Phenol | | 340 U | 51 % | 45 % | 330 U | 78 % |
| bis(2-Chloroethyl)ether | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 2-Chlorophenol | | 340 U | 40 % | 39 % | 330 U | 70 % |
| 1,3-Dichlorobenzene | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 1,4-Dichlorobenzene | | 340 U | 8 * % | 33 % | 330 U | 58 % |
| 1,2-Dichlorobenzene | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 2-Methylphenol | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 2,2'-oxybis(1-Chloropropane) | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 4-Methylphenol | | 340 U | 340 U | 340 U | 330 U | 330 U |
| N-Nitroso-di-n-propylamine | | 340 U | 39 * % | 36 * % | 330 U | 63 % |
| Hexachloroethane | | 340 U | 340 U | 340 U | 330 U | 330 U |
| Nitrobenzene | | 340 U | 340 U | 340 U | 330 U | 330 U |
| Isophorone | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 2-Nitrophenol | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 2,4-Dimethylphenol | | 340 U | 340 U | 340 U | 330 U | 330 U |
| bis(2-Chloroethoxy)methane | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 2,4-Dichlorophenol | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 1,2,4-Trichlorobenzene | | 340 U | 34 * % | 36 * % | 330 U | 64 % |
| Naphthalene | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 4-Chloroaniline | | 340 U | 340 U | 340 U | 330 U | 330 U |
| Hexachlorobutadiene | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 4-Chloro-3-methylphenol | | 340 U | 60 % | 74 % | 330 U | 71 % |
| 2-Methylnaphthalene | | 340 U | 340 U | 340 U | 330 U | 330 U |
| Hexachlorocyclopentadiene | | 340 U | 340 U | 340 U | 330 U | 330 U |

*= Outside of EPA CLP QC limits.

9613402.2206 000007

RFW Batch Number: 9210L337 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1b

| Cust ID: | BO7HG5 | | BO7HG5 | | BO7HG5 | | SBLK | | SBLK BS | |
|---|---|---|---|---|---|---|---|---|---|---|
| RFW#: | 001 | | 001 MS | | 001 MSD | | 92LE1795-MB1 | | 92LE1795-MB1 | |
| 2,4,6-Trichlorophenol | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 2,4,5-Trichlorophenol | 860 | U | 860 | U | 860 | U | 840 | U | 840 | U |
| 2-Chloronaphthalene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 2-Nitroaniline | 860 | U | 860 | U | 860 | U | 840 | U | 840 | U |
| Dimethylphthalate | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Acenaphthylene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 2,6-Dinitrotoluene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 3-Nitroaniline | 860 | U | 860 | U | 860 | U | 840 | U | 840 | U |
| Acenaphthene | 340 | U | 49 | % | 55 | % | 330 | U | 57 | % |
| 2,4-Dinitrophenol | 860 | U | 860 | U | 860 | U | 840 | U | 840 | U |
| 4-Nitrophenol | 860 | U | 69 | % | 106 | % | 840 | U | 87 | % |
| Dibenzofuran | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 2,4-Dinitrotoluene | 340 | U | 54 | % | 75 | % | 330 | U | 74 | % |
| Diethylphthalate | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 4-Chlorophenyl-phenylether | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Fluorene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 4-Nitroaniline | 860 | U | 860 | U | 860 | U | 840 | U | 840 | U |
| 4,6-Dinitro-2-methylphenol | 860 | U | 860 | U | 860 | U | 840 | U | 840 | U |
| N-Nitrosodiphenylamine (1) | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 4-Bromophenyl-phenylether | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Hexachlorobenzene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Pentachlorophenol | 860 | U | 76 | % | 110 * | % | 840 | U | 90 | % |
| Phenanthrene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Anthracene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Carbazole | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Di-n-butylphthalate | 20 | JB | 15 | JB | 30 | JB | 19 | J | 17 | JB |
| Fluoranthene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Pyrene | 340 | U | 50 | % | 72 | % | 330 | U | 77 | % |
| Butylbenzylphthalate | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 3,3'-Dichlorobenzidine | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Benzo(a)anthracene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Chrysene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| bis(2-Ethylhexyl)phthalate | 23 | J | 32 | J | 100 | J | 330 | U | 330 | U |
| Di-n-octyl phthalate | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Benzo(b)fluoranthene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Benzo(k)fluoranthene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Benzo(a)pyrene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Indeno(1,2,3-cd)pyrene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Dibenz(a,h)anthracene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Benzo(g,h,i)perylene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9613402.2207

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client:** WESTINGHOUSE HANFORD
**RFW #:** 9210L337

**W.O. #:** 06168-002-001-9999-00
**Date Received:** 10-17-92

**SEMIVOLATILE**

One (1) soil sample was collected on 10-13-92.

The sample and its associated QC samples were extracted on 10-21-92 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 11-05-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were detected in these samples.

2. One (1) of forty (40) surrogate recoveries was outside EPA QC limits; however, EPA CLP surrogate recovery criteria were met [i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%].

3. Six (6) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

4. All blank spike recoveries were within EPA QC limits.

5. The laboratory blank contained the common contaminant Di-n-butylphthalate at a level less than the CRQL.

6. Internal standard areas were outside QC limits for sample B07HG5. The associated matrix spike analyses of this sample fulfilled its re-analysis requirement.

Margaret M. Beatyjoe

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

12/7/92
Date

kls/10-337b.cn

9613402.2209 1B 000023

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 340 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 340 | U |
| 95-57-8 | 2-Chlorophenol | 340 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 340 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 340 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | U |
| 95-48-7 | 2-Methylphenol | 340 | U |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | 340 | U |
| 106-44-5 | 4-Methylphenol | 340 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 340 | U |
| 67-72-1 | Hexachloroethane | 340 | U |
| 98-95-3 | Nitrobenzene | 340 | U |
| 78-59-1 | Isophorone | 340 | U |
| 88-75-5 | 2-Nitrophenol | 340 | U |
| 105-67-9 | 2,4-Dimethylphenol | 340 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 340 | U |
| 120-83-2 | 2,4-Dichlorophenol | 340 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 340 | U |
| 91-20-3 | Naphthalene | 340 | U |
| 106-47-8 | 4-Chloroaniline | 340 | U |
| 87-68-3 | Hexachlorobutadiene | 340 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 340 | U |
| 91-57-6 | 2-Methylnaphthalene | 340 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 340 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 340 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 860 | U |
| 91-58-7 | 2-Chloronaphthalene | 340 | U |
| 88-74-4 | 2-Nitroaniline | 860 | U |
| 131-11-3 | Dimethylphthalate | 340 | U |
| 208-96-8 | Acenaphthylene | 340 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | U |
| 99-09-2 | 3-Nitroaniline | 860 | U |
| 83-32-9 | Acenaphthene | 340 | U |

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 860 | U |
| 100-02-7 | 4-Nitrophenol | 860 | U |
| 132-64-9 | Dibenzofuran | 340 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 340 | U |
| 84-66-2 | Diethylphthalate | 340 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 340 | U |
| 86-73-7 | Fluorene | 340 | U |
| 100-01-6 | 4-Nitroaniline | 860 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 860 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 340 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 340 | U |
| 118-74-1 | Hexachlorobenzene | 340 | U |
| 87-86-5 | Pentachlorophenol | 860 | U |
| 85-01-8 | Phenanthrene | 340 | U |
| 120-12-7 | Anthracene | 340 | U |
| 86-74-8 | Carbazole | 340 | U |
| 84-74-2 | Di-n-butylphthalate | 20 | JB |
| 206-44-0 | Fluoranthene | 340 | U |
| 129-00-0 | Pyrene | 340 | U |
| 85-68-7 | Butylbenzylphthalate | 340 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 340 | U |
| 56-55-3 | Benzo(a)anthracene | 340 | U |
| 218-01-9 | Chrysene | 340 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 23 | J |
| 117-84-0 | Di-n-octyl phthalate | 340 | U |
| 205-99-2 | Benzo(b)fluoranthene | 340 | U |
| 207-08-9 | Benzo(k)fluoranthene | 340 | U |
| 50-32-8 | Benzo(a)pyrene | 340 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 340 | U |
| 53-70-3 | Dibenz(a,h)anthracene | 340 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U |

(1) - Cannot be separated from Diphenylamine

9613402.2211 1F 000025

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 6.6

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 21.52 | 200 | J |
| 2. | ADIPATE | 22.15 | 20000 | J |
| 3. | UNKNOWN | 22.65 | 300 | J |
| 4. | UNKNOWN | 23.85 | 100 | JB |
| 5. | UNKNOWN | 26.17 | 90 | J |
| 6. | UNKNOWN | 27.75 | 100 | JB |

EXTERNAL
6168-02-01-9999
WESTINGHOUSE-HANFO
1
JOSIE EDWARDS

SRVC. GROUP
CODE
==========

FORM OF PAYMENT

92104337

SERVICES

UNITED STATES / CANADA: Same Day (Extra Charges)

INTERNATIONAL: Express, Standard Plus, Business Documents, Customs

EMERY WORLDWIDE — A CF Company

# SIGNATURE AND TALLY RECORD

60029-46 (8/89) Litho USA

DATE: 10-16-92 SHIPMENT NO.: 252156872 0
SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-6665
REFERENCE NO.: W93-0-0001 #30

| SHIPPER NAME AND ADDRESS | CONSIGNEE NAME AND ADDRESS |
|---|---|
| WESTINGHOUSE SHIPPING DEPT (509) 376-6665<br>62-06 U.S. DEPARTMENT OF ENERGY C/O<br>WESTINGHOUSE HANFORD COMPANY<br>2355 STEVENS DRIVE 1163 BUILDING<br>PO BOX 1970<br>RICHLAND WA 99352 | JOSIE KING<br>RF WESTON INC<br>208 WELSH POOL ROAD<br>LIONVILLE PA 19341<br>92104337 |

| Pieces | Weight | Description/Marks | Emery Authorization No. |
|---|---|---|---|
| 1 | 54 LBS | COOLER ID: SHL 238<br>WATER SAMPLES | |

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

| Name of Person/Company | Transship Point/Destination | Signature of Person Accepting Custody | Time/Date |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. K. Brown EMERY | Phil | K. Brown | 10:30 10/17/92 |
| 7. Jon H. Richardson | WESTON | [illegible] | 3:15 pm 10-17-92 |

SHIPPING INSTRUCTIONS

SUBTOTAL $6,805.50
MULTIPLIER 1.00
==========
RFW LOT TOTAL $6,805.50

PROJECT MANAGER

Roy F. Weston, Inc. - Lionville Laboratory
Pesticide/PCBs by GC, CLP List

Report Date: 12/10/92 19:07

RFW Batch Number: 9210L337 Client: WESTINGHOUSE HANFORD Work Order: 06168-002-001-9999-00 

| Cust ID: | BO7HG5 | BO7HG5 | BO7HG5 | BO7HG5 | BO7HG5 | BO7HG5 |
|---|---|---|---|---|---|---|
| Sample Information RFW#: | 001 | 001 | 001 MS | 001 MS | 001 MSD | 001 MSD |
| Matrix: | SOIL | SOIL | SOIL | SOIL | SOIL | SOIL |
| D.F.: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Units: | ug/Kg | ug/Kg | ug/Kg | ug/Kg | ug/Kg | ug/Kg |
| | | CONFIRM | | CONFIRM | | CONFIRM |
| Surrogate: Tetrachloro-m-xylene | 82 % | 78 % | 92 % | 88 % | 78 % | 75 % |
| Surrogate: Decachlorobiphenyl | 85 % | 82 % | 95 % | 92 % | 75 % | 75 % |
| | fl | fl | fl | fl | fl | fl |
| Alpha-BHC | 1.7 U | NA | 1.7 U | NA | 1.7 U | NA |
| Beta-BHC | 1.7 U | NA | 1.7 U | NA | 1.7 U | NA |
| Delta-BHC | 1.7 U | NA | 1.7 U | NA | 1.7 U | NA |
| gamma-BHC (Lindane) | 1.7 U | NA | 94 % | 88 % | 80 % | 76 % |
| Heptachlor | 1.7 U | NA | 84 % | 86 % | 76 % | 76 % |
| Aldrin | 1.7 U | NA | 70 % | 80 % | 64 % | 68 % |
| Heptachlor epoxide | 1.7 U | NA | 1.7 U | NA | 1.7 U | NA |
| Endosulfan I | 1.7 U | NA | 1.7 U | NA | 1.7 U | NA |
| Dieldrin | 3.4 U | NA | 96 % | 90 % | 80 % | 77 % |
| 4,4'-DDE | 3.4 U | NA | 3.4 U | NA | 3.4 U | NA |
| Endrin | 3.4 U | NA | 116 % | 97 % | 94 % | 80 % |
| Endosulfan II | 3.4 U | NA | 3.4 U | NA | 3.4 U | NA |
| 4,4'-DDD | 3.4 U | NA | 3.4 U | NA | 3.4 U | NA |
| Endosulfan sulfate | 3.4 U | NA | 3.4 U | NA | 3.4 U | NA |
| 4,4'-DDT | 3.4 U | NA | 114 % | 112 % | 92 % | 90 % |
| Methoxychlor | 17 U | NA | 17 U | NA | 17 U | NA |
| Endrin ketone | 3.4 U | NA | 3.4 U | NA | 3.4 U | NA |
| Endrin aldehyde | 3.4 U | NA | 3.4 U | NA | 3.4 U | NA |
| alpha-Chlordane | 1.7 U | NA | 1.7 U | NA | 1.7 U | NA |
| gamma-Chlordane | 1.7 U | NA | 1.7 U | NA | 1.7 U | NA |
| Toxaphene | 170 U | NA | 170 U | NA | 170 U | NA |
| Aroclor-1016 | 34 U | NA | 34 U | NA | 34 U | NA |
| Aroclor-1221 | 69 U | NA | 68 U | NA | 67 U | NA |
| Aroclor-1232 | 34 U | NA | 34 U | NA | 34 U | NA |
| Aroclor-1242 | 34 U | NA | 34 U | NA | 34 U | NA |
| Aroclor-1248 | 34 U | NA | 34 U | NA | 34 U | NA |
| Aroclor-1254 | 34 U | NA | 34 U | NA | 34 U | NA |
| Aroclor-1260 | 34 U | NA | 34 U | NA | 34 U | NA |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. Z= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9613402.2213
000008

WESTON

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client:** WESTINGHOUSE HANFORD
**RFW #:** 9210L337

**W.O. #:** 06168-002-001-9999-00
**Date Received:** 10-17-92

**PESTICIDE/PCB**

One (1) water sample was collected on 10-13-92.

The sample and its associated QC samples were extracted on 10-21-92 and analyzed according to criteria set forth in the Contract Laboratory Program 03/90 SOW for Pesticide and PCB target compounds on 11-08-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Linearity and breakdown criteria were met for each of the analytical columns.

2. Retention time criteria were met for all compounds on both analytical columns.

3. Resolution of all pesticides in the Resolution Check Standard were within EPA QC limits.

4. The RPDs of the pesticides in the individual mixes analyzed for calibration verification were within 25% for both analytical columns.

5. The RPDs of the pesticides in the Performance Evaluation Mixes analyzed for calibration verification were within 25% for both analytical columns.

6. All surrogate recoveries were within EPA QC limits.

7. All blank spike recoveries were within EPA QC limits.

8. All matrix spike recoveries were within EPA QC limits.

9. Recoveries of pesticides for the Florisil Cartridge Check were within EPA QC limits.

10. Recoveries of pesticides for the GPC Calibration Check were within EPA QC limits.

Margaret M. Beaty for

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

1/8/93
Date

sma/pcb/10-337pp.cn

9613402.2215 0000021 CLIENT SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: 11059235.53

% Moisture: 3.4 decanted: (Y/N)

Date Received: 10/17/92

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 10/21/92

Concentrated Extract Volume: 5000(uL)

Date Analyzed: 11/08/92

Injection Volume: 0.5(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | 1.7 | U |
| 319-85-7 | Beta-BHC | 1.7 | U |
| 319-86-8 | Delta-BHC | 1.7 | U |
| 58-89-9 | gamma-BHC (Lindane) | 1.7 | U |
| 76-44-8 | Heptachlor | 1.7 | U |
| 309-00-2 | Aldrin | 1.7 | U |
| 1024-57-3 | Heptachlor epoxide | 1.7 | U |
| 959-98-8 | Endosulfan I | 1.7 | U |
| 60-57-1 | Dieldrin | 3.4 | U |
| 72-55-9 | 4,4'-DDE | 3.4 | U |
| 72-20-8 | Endrin | 3.4 | U |
| 33213-65-9 | Endosulfan II | 3.4 | U |
| 72-54-8 | 4,4'-DDD | 3.4 | U |
| 1031-07-8 | Endosulfan sulfate | 3.4 | U |
| 50-29-3 | 4,4'-DDT | 3.4 | U |
| 72-43-5 | Methoxychlor | 17 | U |
| 53494-70-5 | Endrin ketone | 3.4 | U |
| 7421934 | Endrin aldehyde | 3.4 | U |
| 5103-71-9 | alpha-Chlordane | 1.7 | U |
| 5103-74-2 | gamma-Chlordane | 1.7 | U |
| 8001-35-2 | Toxaphene | 170 | U |
| 12674-11-2 | Aroclor-1016 | 34 | U |
| 11104-28-2 | Aroclor-1221 | 69 | U |
| 11141-16-5 | Aroclor-1232 | 34 | U |
| 53469-21-9 | Aroclor-1242 | 34 | U |
| 12672-29-6 | Aroclor-1248 | 34 | U |
| 11097-69-1 | Aroclor-1254 | 34 | U |
| 11096-82-5 | Aroclor-1260 | 34 | U |

B.M 12/29/92

9613402.2216 0000001

JAN 1993
RECEIVED
OSM DMO

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client** : WESTINGHOUSE HANFORD
**RFW#** : 9210L337

**W.O. #:** 06168-002-001-9999-00
**Date Received:** 10-17-92

**INORGANIC**

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

RECORD COPY

Margaret M. Beaty for
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11/12/92
Date

pas/i10-337

9613402.2217 0000003

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 11/09/92

CLIENT: WESTINGHOUSE HANFORD

WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9210L337

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | BO7HG5 | % Solids | 96.6 | | % | 0.10 |
| | | Fluoride by IC | 2.6 | u | MG/KG | 2.6 |
| | | Nitrite by IC | 1.3 | u | MG/KG | 1.3 |
| | | Nitrate by IC | 4.9 | | MG/KG | 1.3 |
| | | Cyanide, Total | 1.0 | u | MG/KG | 1.0 |
| | | Sulfate by IC | 5.7 | | MG/KG | 1.4 |
| | | pH | 7.7 | | PH UNITS | 0.010 |

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client** : WESTINGHOUSE HANFORD
**RFW#** : 9210L337

**W.O. #:** 6168-02-01
**Date Received:** 10-17-92

**CLP METALS**

One (1) soil sample was collected on 10-13-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 3/90.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analysis:

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits.

6. All matrix spike recoveries were within the 75-125% control limits with the exception of manganese. All exceptions are flagged with a "N" on the CLP forms.

7. All duplicate analyses were within the 20% RPD control limit.

8. Lead sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with a "S" according to CLP protocol.

9. For MSA, results reported on Form 8 are calculated from absorbance values. Results reported on other forms are based on concentration. As indicated in the SOWILM01.0, page B-32, differences due to rounding may be found between the MSA values on Form 8 and the results reported on the other forms.

10. The code CV is currently in use by the laboratory for both mercury instruments in operation (HG1 and HG2). HG1 is complete with autosampler and software, but still requires manual digestion; HG2 is operated by the analyst, produces a strip chart and also requires manual digestion.

WESTON

11. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).

12. Quarterly Detection Limits, ICP Interelement Correction Factors and ICP Linear Ranges for IC3 are included in this package, but do not appear on EDD.

13. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

Margaret M. Beatty (for)
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11/24/92
Date

mlj/clp-met.nar

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client:** WESTINGHOUSE HANFORD
**RFW #:** 9210L337

**W.O. #:** 6168-02-01
**Date Received:** 10-17-92

**CLP METALS ADDENDUM**

1. Following Exhibit E, Section V, Item 10, page E-23 of the USEPA Statement of Work for Inorganics Analysis, Document Number ILM02.0 ICP Instrument Detection Limits (IDLs) are reported for two (2) ICP instruments. The instrument identification numbers are "IC1" and "IC3". The highest IDL for the two instruments is used for reporting concentration values in this sample data package.

2. A discrepancy exists between raw data and Form XIVs analytical spikes recovery calculations performed for graphite furnace AA analytes. Instrument software calculates spike recoveries based on absolute values below the IDL for sample results. This is hard-coded by the vendor and is currently not correctable. CLP convention (SOW ILM02.0, Exhibit E, Section V, Item 6, page E-20) requires that when values fall below the IDL, the sample result is equal to zero (0) for the purposes of calculating the percent recovery. The Form XIVs contain the correct calculation.

Margaret M. Beaty for
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11/24/92
Date

mlj\clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 11/12/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9210L337

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | BO7HG5 | Silver, Total | 2.1 | u | MG/KG | 2.1 |
| | | Aluminum, Total | 3820 | | MG/KG | 41.4 |
| | | Arsenic, Total | 2.1 | u | MG/KG | 2.1 |
| | | Barium, Total | 77.4 | | MG/KG | 41.4 |
| | | Beryllium, Total | 1.0 | u | MG/KG | 1.0 |
| | | Calcium, Total | 8740 | | MG/KG | 1040 |
| | | Cadmium, Total | 1.0 | u | MG/KG | 1.0 |
| | | Cobalt, Total | 10.4 | u | MG/KG | 10.4 |
| | | Chromium, Total | 8.0 | | MG/KG | 2.1 |
| | | Copper, Total | 9.0 | | MG/KG | 5.2 |
| | | Iron, Total | 11200 | | MG/KG | 20.7 |
| | | Mercury, Total | 0.10 | u | MG/KG | 0.10 |
| | | Potassium, Total | 1040 | u | MG/KG | 1040 |
| | | Magnesium, Total | 3330 | | MG/KG | 1040 |
| | | Manganese, Total | 230 | | MG/KG | 3.1 |
| | | Sodium, Total | 1040 | u | MG/KG | 1040 |
| | | Nickel, Total | 12.0 | | MG/KG | 8.3 |
| | | Lead, Total | 4.0 | | MG/KG | 0.62 |
| | | Antimony, Total | 12.4 | | MG/KG | 12.4 |
| | | Selenium, Total | 1.0 | u | MG/KG | 1.0 |
| | | Thallium, Total | 2.1 | u | MG/KG | 2.1 |
| | | Vanadium, Total | 16.6 | | MG/KG | 10.4 |
| | | Zinc, Total | 26.0 | | MG/KG | 4.1 |

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07HG5

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Matrix (soil/water): SOIL Lab Sample ID: 921033701

Level (low/med): LOW Date Received: 10/17/92

% Solids: 96.6

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3820.00 | | E | P |
| 7440-36-0 | Antimony | 12.40 | U | | P |
| 7440-38-2 | Arsenic | 1.60 | B | | F |
| 7440-39-3 | Barium | 77.40 | | | P |
| 7440-41-7 | Beryllium | .25 | B | | P |
| 7440-43-9 | Cadmium | 1.45 | U | | P |
| 7440-70-2 | Calcium | 8740.00 | | E | P |
| 7440-47-3 | Chromium | 8.00 | | | P |
| 7440-48-4 | Cobalt | 5.90 | B | | P |
| 7440-50-8 | Copper | 9.00 | | | P |
| 7439-89-6 | Iron | 11200.00 | | E | P |
| 7439-92-1 | Lead | 4.00 | | S | F |
| 7439-95-4 | Magnesium | 3330.00 | | E | P |
| 7439-96-5 | Manganese | 230.00 | | NE | P |
| 7439-97-6 | Mercury | .05 | U | | CV |
| 7440-02-0 | Nickel | 12.00 | | | P |
| 7440-09-7 | Potassium | 945.00 | B | | P |
| 7782-49-2 | Selenium | .41 | U | W | F |
| 7440-22-4 | Silver | 2.07 | U | | P |
| 7440-23-5 | Sodium | 200.00 | B | | P |
| 7440-28-0 | Thallium | .41 | U | | F |
| 7440-62-2 | Vanadium | 16.60 | | | P |
| 7440-66-6 | Zinc | 26.00 | | | P |
| | Cyanide | 1.04 | U | | C |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9613402.2223

# VALIDATION SUMMARY

9613402.2224

9210L337-WES-924

# DATA QUALIFICATION SUMMARY

**UNIT:** 100-KR-1

**DOCUMENT CONTROL NUMBER:** WHC-SD-EN-TI-149

**ANALYSES:** VOC, BNA, Pest/PCB, Inorganics, Wet Chemistry

**RFW NO.:** 9210L337-WES-924

**SDG NO.:** B07HG5

**QUALIFICATION SUMMARY:**

**VOLATILES**

SAMPLE NUMBERS: B07HG5

No Data Qualified.

**SEMIVOLATILES**

SAMPLE NUMBERS: B07HG5

HOLDING TIMES

The seven-day extraction holding time was exceeded for the following sample:

- Sample number B07HG5 in SDG No. B07HG5.

All associated sample results were qualified as estimates and flagged "J".

BLANKS

Due to the presence of di-n-butylphthalate in the laboratory blank, the following associated results for the above analyte were qualified as non-detects and flagged "U":

- Sample number B07HG5 in SDG No. B07HG5.

**PESTICIDES/PCBS**

SAMPLE NUMBERS: B07HG5

HOLDING TIMES

The seven-day holding time was exceeded for the following samples:

- Sample number B07HG5 in SDG No. B07HG5.

All associated sample results were qualified as estimates and flagged "J".

INITIAL CALIBRATIONS

The %RSDs for the following compounds did not meet QC limits:

Heptachlor, 4,4'-DDT and methoxychlor in sample number B07HG5 in SDG No. B07HG5.

All associated sample results were qualified as estimates and flagged "J".

INORGANICS

SAMPLE NUMBERS: B07HG5

BLANKS

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for arsenic:

- Sample number B07HG5 in SDG No. B07HG5.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for selenium:

- Sample number B07HG5 in SDG No. B07HG5.

Due to the presence of laboratory blank contamination, the following sample was flagged "U" for thallium:

- Sample number B07HG5 in SDG No. B07HG5.

MATRIX SPIKE RECOVERY

Matrix spike recoveries fell outside the quality control requirement for manganese in SDG No. B07HG5.

Matrix spike recoveries fell outside the quality control requirement for selenium in SDG No. B07HG5.

All associated sample results were qualified as estimates and flagged "J".

ICP SERIAL DILUTIONS

The ICP serial dilution results fell outside the established QC limits for aluminum in SDG No. B07HG5.

The ICP serial dilution results fell outside the established QC limits for calcium in SDG No. B07HG5.

The ICP serial dilution results fell outside the established QC limits for iron in SDG No. B07HG5.

The ICP serial dilution results fell outside the established QC limits for magnesium in SDG No. B07HG5.

The ICP serial dilution results fell outside the established QC limits for manganese in SDG No. B07HG5.

All associated sample results were qualified as estimates and flagged "J".

ANALYTICAL SPIKE RECOVERY

The analytical spike recovery fell outside the established QC limits for selenium:

- Sample number B07HG5 in SDG No. B07HG5.

All associated sample results were qualified as estimates and flagged "J".

**WET CHEMISTRY**

SAMPLE NUMBERS: B07HG5

HOLDING TIMES

Holding times were grossly exceeded for nitrate in SDG No. B07HG5. All associated sample results were rejected and flagged "R".

Holding times were grossly exceeded for nitrite in SDG No. B07HG5. All associated sample results were rejected and flagged "R".

Holding times were grossly exceeded for pH in SDG No. B07HG5. All associated sample results were rejected and flagged "R".

9613402.2227

0000003

PFW# 92K2337

**Westinghouse Hanford Company**

# CHAIN OF CUSTODY

Custody Form Initiator: W.V. SETZER

Company Contact: WV SETZER

Telephone: 376-2413

Project Designation/Sampling Locations: 100-KR-1

Collection Date: 10-13-92

Ice Chest No.: SMC 142

Field Logbook No.: EFL-1051

Bill of Lading/Airbill No.: 2521568742

Offsite Property No.: W930-0002 #18

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~TMA/NORCAL~~ WESTON WVS 10-16-92

Possible Sample Hazards/Remarks: None detected with field instruments. Maintain at 4C.

**Sample Identification**

1) B07HG5
- 1,250ml aG:CLP;ICP/AA Metals,Hg,Cn
- 1,120ml aG:CLP;VOA
- 1,950ml aG:CLP;Semi-VOA,PCB/PEST, pH, Anions (IC) F,$SO_4$,$NO_3$-$NO_2$
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

2)
- ~~1,250ml~~ aG:CLP;ICP/AA Metals,Hg,Cn
- 1,120ml ~~aG:CLP;~~VOA
- 1,950ml aG:CLP;~~Semi-VOA~~,PCB/PEST, pH, Anions (IC) F,$SO_4$,$NO_3$-$NO_2$
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,Pu-239/240,Am-241

3)
- 1,250ml aG:CLP;ICP/AA Metals,Hg,Cn
- 1,120ml aG:CLP;VOA
- 1,950ml aG:CLP;Semi-VOA,PCB/PEST, pH, Anions (IC) F,~~$SO_4$~~,$NO_3$-$NO_2$
- 1,1000ml G:Gross alpha/beta,Gamma Spec,Sr-90,C-14,U-235/238,~~Pu-239/240~~,Am-241

WVS

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

| Relinquished by: | Received by: | Date/Time: |
|---|---|---|
| W.V. Setzer | | |
| EMERY | Susan Perez | 10/17/92 930 |
| | | |
| | | |

**Final Sample Disposition**

| Disposal Method: | Disposed by: | Date/Time: |
|---|---|---|

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

9613402.2228

0000004

| Westinghouse Hanford Company | SAMPLE ANALYSIS REQUEST |
|---|---|

Collector W.W. SETZER Date 10.16.92

Company Contact WV SETZER Telephone (509)376-2413

| Sample Number | * | Date Collected | Time Collected | Number and Type of Sample Containers/Analysis Required |
|---|---|---|---|---|
| B07HG5 | S | 10.13.92 | 1015 | 1-250ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH<br>300.0/353.2;Anions (IC) F,SO4,NO3, NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14<br>U-235/238,Pu-239/240,Am-241 |
| | | | | 1-250ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH<br>300.0/353.2;Anions (IC) F,SO4,NO3,NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14<br>U-235/238,Pu-239/240,Am-241 |
| | | | | 1-250ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH<br>300.0/353.2;Anions (IC) F,SO4,NO3, NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14<br>U-235/238,Pu-239/240,Am-241<br>WVS |
| | | | | 1-120ml aG CLP;ICP/AA Metals,Hg,Cn<br>1-120ml aG CLP;VOA<br>1-950ml aG CLP;Semi-VOA,PCB/PEST & pH<br>300.0/353.2;Anions (IC) F,SO4,NO3, NO2<br>1-1000ml G Gross alpha/beta,Gamma Spec,Sr-90,C-14<br>U-235/238,Pu-239/240,Am-241 |
| | | | | |

| *Type of Sample | A = Air | L = Liquid | SE = Sediment | T = Tissue | X = Other |
|---|---|---|---|---|---|
| | DL = Drum Liquids | O = Oil | SL = Sludge | W = Water | |
| | DS = Drum Solids | S = Soil | SO = Solid | WI = Wipe | |

Field Information FROM 100-KR-1 Drilling

Special Handling and/or Storage Maintain at 4C

Possible Sample Hazards NA

A-6000-406 (06/91) WEF060

9613402.2229

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

Bill to Shipper XX Bill to Consignee ☐ Third Party Billing ☐

Shipper's Account Number E 850281585

92104337

EMERY WORLDWIDE

A CF Company

SERVICES

UNITED STATES / CANADA: Same Day (Extra Charges) ☐ AM ☐ PM ☐ Second Day XX Standard Plus ☐ Preferred ☐ Standard ☐

INTERNATIONAL: Express ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

Date 10-16-92 Origin PSC Shipment Number 2521568742

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA
Canada ☐

To:
PEG BEATY
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341 -1313
Hold for Pick Up ☐
Canada ☐

Tariff Dest. Gateway

$

EMERY WORLDWIDE will accept Consignee check with all risks being assumed by Shipper, including but not limited to non payment, fraud and misrepresentation.

Customer's Reference Numbers
W12200 P131B W9B-0-0002#1897352

Consignee's Account Number E

Description: 1 RUBBERMAIL SML-182 POLYCOOLER SOIL SAMPLES B07HG5

Dimensions: Pcs. 1 L 11 W 14 H 11

Total Pieces 1 Total Weight 47

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-143-63791)

Declared Value $

2521568742

Remarks: SATURDAY DELIVERY

Shipper's Signature X

Zip Ship ☐
For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used
Urgent Letter 9X12 Urgent Pack 12X15

International Shipments: Free Domicile ☐ Commodity Code

Third Party Account Number mandatory for Third Party Billing. Third Party Account Number E

International Customs Value International Insurance

Base Charge

Total Transportation Charges

Other Charges/Advance at Origin ☐ OC/AO- $

3-Phl. SA

Terms and Conditions on Back

9200035

1A 9613402.2230 0000022

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

WC X02009

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R102606

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: not dec. 3

Date Analyzed: 10/26/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

RB 4/11/93

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 3 | J |
| 67-64-1 | Acetone | 23 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1E

0 0 0 0 2 3 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R102606

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: not dec. 3

Date Analyzed: 10/26/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 27.18 | 10 | J |

RB
41.153

9613402.2232 1B 000023

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 340 | UJ |
| 111-44-4 | bis(2-Chloroethyl)ether | 340 | U |
| 95-57-8 | 2-Chlorophenol | 340 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 340 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 340 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | U |
| 95-48-7 | 2-Methylphenol | 340 | U |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | 340 | U |
| 106-44-5 | 4-Methylphenol | 340 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 340 | U |
| 67-72-1 | Hexachloroethane | 340 | U |
| 98-95-3 | Nitrobenzene | 340 | U |
| 78-59-1 | Isophorone | 340 | U |
| 88-75-5 | 2-Nitrophenol | 340 | U |
| 105-67-9 | 2,4-Dimethylphenol | 340 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 340 | U |
| 120-83-2 | 2,4-Dichlorophenol | 340 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 340 | U |
| 91-20-3 | Naphthalene | 340 | U |
| 106-47-8 | 4-Chloroaniline | 340 | U |
| 87-68-3 | Hexachlorobutadiene | 340 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 340 | U |
| 91-57-6 | 2-Methylnaphthalene | 340 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 340 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 340 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 860 | U |
| 91-58-7 | 2-Chloronaphthalene | 340 | U |
| 88-74-4 | 2-Nitroaniline | 860 | U |
| 131-11-3 | Dimethylphthalate | 340 | U |
| 208-96-8 | Acenaphthylene | 340 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | U |
| 99-09-2 | 3-Nitroaniline | 860 | U |
| 83-32-9 | Acenaphthene | 340 | U |

RB 4/2/93

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 860 | U J |
| 100-02-7 | 4-Nitrophenol | 860 | U |
| 132-64-9 | Dibenzofuran | 340 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 340 | U |
| 84-66-2 | Diethylphthalate | 340 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 340 | U |
| 86-73-7 | Fluorene | 340 | U |
| 100-01-6 | 4-Nitroaniline | 860 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 860 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 340 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 340 | U |
| 118-74-1 | Hexachlorobenzene | 340 | U |
| 87-86-5 | Pentachlorophenol | 860 | U |
| 85-01-8 | Phenanthrene | 340 | U |
| 120-12-7 | Anthracene | 340 | U |
| 86-74-8 | Carbazole | 340 | U |
| 84-74-2 | Di-n-butylphthalate | ~~20~~ 340 | ~~JB~~ UJ |
| 206-44-0 | Fluoranthene | 340 | UJ |
| 129-00-0 | Pyrene | 340 | U |
| 85-68-7 | Butylbenzylphthalate | 340 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 340 | U |
| 56-55-3 | Benzo(a)anthracene | 340 | U |
| 218-01-9 | Chrysene | 340 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 23 | J |
| 117-84-0 | Di-n-octyl phthalate | 340 | UJ |
| 205-99-2 | Benzo(b)fluoranthene | 340 | U |
| 207-08-9 | Benzo(k)fluoranthene | 340 | U |
| 50-32-8 | Benzo(a)pyrene | 340 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 340 | U |
| 53-70-3 | Dibenz(a,h)anthracene | 340 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U |

RB 4/2/93

(1) - Cannot be separated from Diphenylamine

9603402.2234 0000025

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 6.6

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 21.52 | 200 | J |
| 2. | ADIPATE | 22.15 | 20000 | J |
| 3. | UNKNOWN | 22.65 | 300 | J |
| 4. | UNKNOWN | 23.85 | 100 | ~~JB~~ UJ |
| 5. | UNKNOWN | 26.17 | 90 | J |
| 6. | UNKNOWN | 27.75 | 100 | ~~JB~~ UJ |

RB 4/2/93

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07HG5

Lab Name: Roy F. Weston, Inc. Work Order: 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: 11059235.53

% Moisture: 3.4 decanted: (Y/N)

Date Received: 10/17/92

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 10/21/92

Concentrated Extract Volume: 5000(uL)

Date Analyzed: 11/08/92

Injection Volume: 0.5(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | 1.7 | U J |
| 319-85-7 | Beta-BHC | 1.7 | U |
| 319-86-8 | Delta-BHC | 1.7 | U |
| 58-89-9 | gamma-BHC (Lindane) | 1.7 | U |
| 76-44-8 | Heptachlor | 1.7 | U |
| 309-00-2 | Aldrin | 1.7 | U |
| 1024-57-3 | Heptachlor epoxide | 1.7 | U |
| 959-98-8 | Endosulfan I | 1.7 | U |
| 60-57-1 | Dieldrin | 3.4 | U |
| 72-55-9 | 4,4'-DDE | 3.4 | U |
| 72-20-8 | Endrin | 3.4 | U |
| 33213-65-9 | Endosulfan II | 3.4 | U |
| 72-54-8 | 4,4'-DDD | 3.4 | U |
| 1031-07-8 | Endosulfan sulfate | 3.4 | U |
| 50-29-3 | 4,4'-DDT | 3.4 | U |
| 72-43-5 | Methoxychlor | 17 | U |
| 53494-70-5 | Endrin ketone | 3.4 | U |
| 7421934 | Endrin aldehyde | 3.4 | U |
| 5103-71-9 | alpha-Chlordane | 1.7 | U |
| 5103-74-2 | gamma-Chlordane | 1.7 | U |
| 8001-35-2 | Toxaphene | 170 | U |
| 12674-11-2 | Aroclor-1016 | 34 | U |
| 11104-28-2 | Aroclor-1221 | 69 | U |
| 11141-16-5 | Aroclor-1232 | 34 | U |
| 53469-21-9 | Aroclor-1242 | 34 | U |
| 12672-29-6 | Aroclor-1248 | 34 | U |
| 11097-69-1 | Aroclor-1254 | 34 | U |
| 11096-82-5 | Aroclor-1260 | 34 | U |

RB 4/2/93

B.M 12/29/92

FORM 1 PEST 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07HG5

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Matrix (soil/water): SOIL Lab Sample ID: 921033701

Level (low/med): LOW Date Received: 10/17/92

% Solids: 96.6

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3820.00 | | E(J) | P |
| 7440-36-0 | Antimony | 12.40 | U | | P |
| 7440-38-2 | Arsenic | 1.60 | ~~B~~ | (U) | F |
| 7440-39-3 | Barium | 77.40 | | | P |
| 7440-41-7 | Beryllium | .25 | B | | P |
| 7440-43-9 | Cadmium | ~~1.45~~ | U | | P |
| 7440-70-2 | Calcium | 8740.00 | | E(J) | P |
| 7440-47-3 | Chromium | 8.00 | | | P |
| 7440-48-4 | Cobalt | 5.90 | B | | P |
| 7440-50-8 | Copper | 9.00 | | | P |
| 7439-89-6 | Iron | 11200.00 | | EJ | P |
| 7439-92-1 | Lead | 4.00 | | S | F |
| 7439-95-4 | Magnesium | 3330.00 | | EJ | P |
| 7439-96-5 | Manganese | 230.00 | | NEJ | P |
| 7439-97-6 | Mercury | .05 | U | | CV |
| 7440-02-0 | Nickel | 12.00 | | | P |
| 7440-09-7 | Potassium | 945.00 | B | | P |
| 7782-49-2 | Selenium | .41 | U | W(UJ | F |
| 7440-22-4 | Silver | 2.07 | U | | P |
| 7440-23-5 | Sodium | 200.00 | B | | P |
| 7440-28-0 | Thallium | .41 | U | (U) | F |
| 7440-62-2 | Vanadium | 16.60 | | | P |
| 7440-66-6 | Zinc | 26.00 | | | P |
| | Cyanide | 1.04 | U | | C |

4/2

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 11/09/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9210L337

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | BO7HG5 | % Solids | 96.6 | | % | 0.10 |
| | | Fluoride by IC | 2.6 | u | MG/KG | 2.6 |
| | | Nitrite by IC | 1.3 | u (R) | MG/KG | 1.3 |
| | | Nitrate by IC | 4.9 | (R) | MG/KG | 1.3 |
| | | ~~Cyanide, Total~~ | ~~1.0~~ | ~~u~~ | ~~MG/KG~~ | ~~1.0~~ |
| | | Sulfate by IC | 5.7 | | MG/KG | 1.4 |
| | | pH | 7.7 | (R) | PH UNITS | 0.010 |

[illegible]

X02009

# VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

| | | |
|---|---|---|
| PROJECT: Westinghouse - Hanford | REVIEWER: RB | DATE: 4/1/93 |
| LABORATORY: Roy F. Weston | CASE: N/A | SDG: B07HG5 |
| SAMPLES/MATRIX: One soil - B07HG5 | | |
| | | |
| | | |
| | | |

## 1. DATA PACKAGE COMPLETENESS

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

| Data Package Item | Present?: Yes | No | N/A |
|---|---|---|---|
| Case Narrative | ✓ | | |
| Data Summary | ✓ | | |
| Chain-of-Custody | ✓ | | |
| QC Summary | | | |
| Surrogate report | ✓ | | |
| MS/MSD report | ✓ | | |
| Blank summary report | ✓ | | |
| GC/MS tuning report | ✓ | | |
| Internal standard summary report | ✓ | | |
| Sample Data | | | |
| Sample reports | ✓ | | |
| TIC reports for each sample | ✓ | | |
| RIC reports for all samples | ✓ | | |
| Raw and corrected spectra for all detected results | ✓ | | |
| Raw and corrected library search data for all reported TIC | ✓ | | |
| Quantitation and calculation data for all TIC | ✓ | | |
| Standards Data | | | |
| Initial calibration report | ✓ | | |
| RIC and quantitation reports for initial calibration | ✓ | | |
| Continuing calibration reports | ✓ | | |
| RIC and quantitation reports for cont. calibrations | ✓ | | |
| Internal standard summary report | ✓ | | |
| Raw QC Data | | | |
| Tuning report, spectra and mass lists | ✓ | | |
| Blank analysis reports | ✓ | | |
| TIC reports for all blanks | ✓ | | |
| RIC and quantitation reports for blanks | ✓ | | |
| Raw and corrected spectra for all detected results in blanks | | | ✓ |
| Raw and corrected library search data for all reported TIC | | | ✓ |

| Data Package Item | Present?: Yes | No | N/A |
|---|---|---|---|
| Quantitation and calculation data for all TIC | | | ✓ |
| MS/MSD report forms | ✓ | | |
| RIC and quantitation reports for MS/MSD | ✓ | | |
| **Additional Data** | | | |
| Moisture/% solids data sheets | ✓ | | |
| Reduction formulae | | ✓ | |
| Instrument time logs | | ✓ | |
| Chemist notebook pages | | ✓ | |
| Sample preparation sheets | | | ✓ |

## 2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

## 3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

### 3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? (Yes) No N/A

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

### 3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes No (N/A)

Are all RRF values ≥0.05 (2/88 SOW)? Yes No (N/A)

| | | | |
|---|---|---|---|
| Are all applicable RSD values ≤~~20.5%~~ 25% RA W/ (3/90 SOW)? | Yes | No | N/A |
| Are all applicable RSD values ≤40% (3/90 SOW)? | Yes | No | N/A |
| Are all applicable RRF values within SOW limits (3/90 SOW)? | Yes | No | N/A |
| Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? | Yes | No | N/A |

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

## 3.3. CONTINUING CALIBRATION

| | | | |
|---|---|---|---|
| Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? | Yes | No | N/A |
| Are all RRF values ≥0.05 (2/88 SOW)? | Yes | No | N/A |
| Are all %D values ≤25% (2/88 or 3/90 SOW)? | Yes | No | N/A |
| Are all %D values ≤40% (3/90 SOW)? | Yes | No | N/A |
| Are all RRF values within SOW limits (3/90 SOW)? | Yes | No | N/A |
| Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? | Yes | No | N/A |

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

## 4. BLANKS

### 4.1 LABORATORY BLANKS

| | | | |
|---|---|---|---|
| Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed? | Yes | No | N/A |
| Are TCL compounds present in the laboratory blanks? | Yes | No | N/A |

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results $\leq 5$ times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries < 10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but > 10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

### 5.3 PERFORMANCE AUDIT SAMPLES

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

ACTION: Note the results of the performance audit sample in the validation narrative.

## 6. PRECISION

### 6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

### 6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

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

### 6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

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

## 7. SYSTEM PERFORMANCE

### 7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

# 8. COMPOUND IDENTIFICATION AND QUANTITATION

## 8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? Yes No N/A

Are all ions at a relative intensity of ≥ 10% in the standard spectra present in the sample spectra? Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? Yes No N/A

Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No N/A RB 4/1/93

Are molecular ions present in the reference specrum present in the sample spectrum? Yes No N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

## 8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation? Yes No N/A

Are results and quantitation limits calculated properly? Yes No N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values? Yes No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

## 8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? Yes No N/A RB

Has the laboratory properly identified and coded all TIC? Yes No N/A RB

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

## 9. 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 recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page____ of____

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project WESTINGHOUSE-HANFORD | | | | | | | | | | | | | | | | | | | | | | | |
| Laboratory Roy F. Weston | | | | | | | | | | | | | | | | | | | | | | | |
| Case | SDG B07HG5 | | | | | | | | | | | | | | | | | | | | | | |
| Sample Number | | B07HG5 | | | | | | | | | | | | | | | | | | | | | |
| Location | | 116-K-1 | | | | | | | | | | | | | | | | | | | | | |
| Remarks | | EC | | | | | | | | | | | | | | | | | | | | | |
| Sample Date | | 10/13/92 | | | | | | | | | | | | | | | | | | | | | |
| Analysis Date | | 10/20/92 | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Chloromethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Bromomethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Vinyl Chloride | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Chloroethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Methylene Chloride | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Acetone | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Carbon Disulfide | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethene (total) | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Chloroform | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 2-Butanone | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Bromodichloromethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dichloropropane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| cis-1,3-Dichloropropene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Trichloroethene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Dibromochloromethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,2-Trichloroethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| trans-1,3-Dichloropropene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Bromoform | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 4-Methyl-2-pentanone | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 2-Hexanone | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Tetrachloroethene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Toluene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Ethylbenzene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Styrene | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Xylene (total) | 10 | | | | | | | | | | | | | | | | | | | | | | |

EC: Effluent Crib

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# VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: R102606

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: not dec. 3

Date Analyzed: 10/26/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 3 | J |
| 67-64-1 | Acetone | 23 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

RB
11

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B07HG5

Roy F. Weston, Inc. Work Order: 6168-02-0

WESTINGHOUSE HANFORD

soil/water) SOIL

Lab Sample ID: 9210L337-001

/vol: 5.00 (g/mL) G

Lab File ID: R102606

(low/med) LOW

Date Received: 10/17/92

e: not dec. 3

Date Analyzed: 10/26/92

: DB624 ID: .53(mm)

Dilution Factor: 1.00

act Volume: (uL)

Soil Aliquot Volume: (uL)

Cs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| AS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| . | UNKNOWN | 27.18 | 10 | J |

RB
4/1/93

2B
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD Level:(low/med) LOW

RFW Lot No.: 9210L337

| | CLIENT SAMPLE NO. | SMC1 (TOL)# | SMC2 (BFB)# | SMC3 (DCE)# | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | B07HG5 | 94 | 89 | 92 | | 0 |
| 02 | B07HG5MS | 98 | 94 | 103 | | 0 |
| 03 | B07HG5MSD | 96 | 97 | 105 | | 0 |
| 04 | VBLKLVR144-MB1 | 91 | 95 | 105 | | 0 |
| 05 | VBLKLVR144-MB1 BS | 91 | 93 | 101 | | 0 |

| | QC LIMITS |
|---|---|
| SMC1 (TOL) = Toluene-d8 | ( 84-138) |
| SMC2 (BFB) = Bromofluorobenzene | ( 59-113) |
| SMC3 (DCE) = 1,2-Dichloroethane-d4 | ( 70-121) |

# Column to be used to flag recovery values

* Values outside of QC limits

D System Monitoring Compound diluted out

IS = ?
RRF = 0.710

= 91.2 / (1.710)

= [illegible]

BLL 11/30/92

[illegible]

3B

# SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9210L337-001

MATRIX Spike - Sample No.: B07HG5 Level (low/med): LOW

| COMPOUND | SPIKE ADDED UG/KG | SAMPLE CONCENTRATION UG/KG | MS CONCENTRATION UG/KG | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50.0 | 0 | 56.3 | 113 | 59 -172 |
| Trichloroethene | 50.0 | 0 | 58.5 | 117 | 62 -137 |
| Benzene | 50.0 | 0 | 56.5 | 113 | 66 -142 |
| Toluene | 50.0 | 0 | 52.5 | 105 | 59 -139 |
| Chlorobenzene | 50.0 | 0 | 48.6 | 97 | 60 -133 |

| COMPOUND | SPIKE ADDED UG/KG | MSD CONCENTRATION UG/KG | MSD % REC # | % RPD # | QC LIMITS RPD | REC |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50.0 | 54.0 | 108 | 4 | 22 | 59 -172 |
| Trichloroethene | 50.0 | 59.3 | 119 | 1 | 24 | 62 -137 |
| Benzene | 50.0 | 56.9 | 114 | 0 | 21 | 66 -142 |
| Toluene | 50.0 | 52.4 | 105 | 0 | 21 | 59 -139 |
| Chlorobenzene | 50.0 | 48.0 | 96 | 1 | 21 | 60 -133 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

FORM III VOA-2 3/90

3B
SOIL VOLATILE MATRIX SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: ONE

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9210L337

MATRIX Spike - Sample No.: VBLKLVR144-MB1 Level (low/med): LOW

| COMPOUND | SPIKE ADDED UG/KG | SAMPLE CONCENTRATION UG/KG | MS CONCENTRATION UG/KG | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 50.0 | 0 | 53.0 | 106 | 59 -172 |
| Trichloroethene | 50.0 | 0 | 56.0 | 112 | 62 -137 |
| Benzene | 50.0 | 0 | 57.0 | 114 | 66 -142 |
| Toluene | 50.0 | 0 | 44.4 | 89 | 59 -139 |
| Chlorobenzene | 50.0 | 0 | 50.9 | 102 | 60 -133 |

# Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

4A

# VOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD

Lab File ID: R102604 Lab Sample ID: 92LVR144-MB1

Date Analyzed: 10/26/92 Time Analyzed: 1149

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) Y

Instrument ID: 5100R

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 01 | VBLKLVR144-MB1 BS | 92LVR144-MB1S | R102605 | 1223 |
| 02 | B07HG5 | 9210L337-001 | R102606 | 1354 |
| 03 | B07HG5MS | 9210L337-001S | R102607 | 1428 |
| 04 | B07HG5MSD | 9210L337-001T | R102608 | 1502 |

COMMENTS:

BCL 11/30/92

9613402.2253

5A

# VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
## BROMOFLUOROBENZENE (BFB)

Lab Name: Roy F. Weston, Inc. Contract: 06168-002-001-9

Case No.: WESTINGHOUSE HANFORD

Lab File ID: R102215 BFB Injection Date: 10/22/92

Instrument ID: 5100R BFB Injection Time: 2203

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) Y

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 8.0 - 40.0% of mass 95 | 17.6 |
| 75 | 30.0 - 66.0% of mass 95 | 41.9 |
| 95 | Base peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 8.1 |
| 173 | Less than 2.0% of mass 174 | 0.0( 0.0)1 |
| 174 | 50.0 - 120.0% of mass 95 | 80.7 |
| 175 | 4.0 - 9.0% of mass 174 | 6.0( 7.5)1 |
| 176 | 93.0 - 101.0% of mass 174 | 78.6( 97.4)1 |
| 177 | 5.0 - 9.0% of mass 176 | 5.3( 6.8)2 |

1-Value is % mass 174 2-Value is % mass 176

BKL 11/30/92

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | VSTD200 | VSTD200 | R102217 | 10/22/92 | 2306 |
| 02 | VSTD10 | VSTD10 | R102219 | 10/23/92 | 0043 |
| 03 | VSTD20 | VSTD20 | R102222 | 10/23/92 | 0308 |
| 04 | VSTD50 | VSTD50 | R102223 | 10/23/92 | 0356 |
| 05 | VSTD100 | VSTD100 | R102224 | 10/23/92 | 0444 |
| 06 | | | | | |
| 07 | | | | | |
| 08 | | | | | |
| 09 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
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| 20 | | | | | |

X002409

# SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

| | | |
|---|---|---|
| PROJECT: Westinghouse-Hanford | REVIEWER: RB | DATE: 4/2/93 |
| LABORATORY: Roy F. Weston | CASE: N/A | SDG: B07HG5 |
| SAMPLES/MATRIX: One soil - B07HG5 | | |
| | | |
| | | |
| | | |

## 1. DATA PACKAGE COMPLETENESS

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

| Data Package Item | Present?: Yes | No | N/A |
|---|---|---|---|
| Case Narrative | ✓ | | |
| Data Summary | ✓ | | |
| Chain-of-Custody | ✓ | | |
| QC Summary | | | |
| Surrogate report | ✓ | | |
| MS/MSD report | ✓ | | |
| Blank summary report | ✓ | | |
| GC/MS tuning report | ✓ | | |
| Internal standard summary report | ✓ | | |
| Sample Data | | | |
| Sample reports | ✓ | | |
| TIC reports for each sample | ✓ | | |
| RIC reports for all samples | ✓ | | |
| Raw and corrected spectra for all detected results | ✓ | | |
| Raw and corrected library search data for all reported TIC | ✓ | | |
| Quantitation and calculation data for all TIC | ✓ | | |
| Standards Data | | | |
| Initial calibration report | ✓ | | |
| RIC and quantitation reports for initial calibration | ✓ | | |
| Continuing calibration reports | ✓ | | |
| RIC and quantitation reports for cont. calibrations | ✓ | | |
| Internal standard summary report | ✓ | | |
| Raw QC Data | | | |
| Tuning report, spectra and mass lists | ✓ | | |
| Blank analysis reports | ✓ | | |
| TIC reports for all blanks | ✓ | | |
| RIC and quantitation reports for blanks | ✓ | | |
| Raw and corrected spectra for all detected results in blanks | ✓ | | |
| Raw and corrected library search data for all reported TIC | ✓ | | |
| Quantitation and calculation data for all TIC | ✓ | | |
| MS/MSD report forms | ✓ | | |

| Data Package Item | Present?: Yes | No | N/A |
|---|---|---|---|
| RIC and quantitation reports for MS/MSD | ✓ | | |
| Additional Data | | | |
| Moisture/% solids data sheets | ✓ | | |
| Reduction formulae | | ✓ | |
| Instrument time logs | | | ✓ |
| Chemist notebook pages | | ✓ | |
| Sample preparation sheets | ✓ | | |

## 2. HOLDING TIMES

| | | | |
|---|---|---|---|
| Were all samples extracted within holding time? | Yes | (No) | N/A |
| Were all samples analyzed within holding time? | (Yes) | No | N/A |

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

## 3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

### 3.1 GC/MS TUNING AND PERFORMANCE CHECKS

| | | | |
|---|---|---|---|
| Is a DFTPP tune report present for each applicable 12h period? | (Yes) | No | N/A |
| Do all tunes on all instruments meet the tuning criteria? | (Yes) | No | N/A |
| Do all tunes on all instruments meet the expanded criteria? | (Yes) | No | N/A |
| Has the laboratory made any calculation or transciption errors? | Yes | (No) | N/A |
| Have the proper significant figures been reported? | (Yes) | No | N/A |

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for nondetects). If all tuning criteria are not met, qualify all associated data as unusable (R).

### 3.2 INITIAL CALIBRATION

| | | | |
|---|---|---|---|
| Is an initial calibration report provided for all instruments? | (Yes) | No | N/A |
| Are all RSD values ≤30% (2/88 SOW)? | Yes | No | (N/A) |
| Are all RRF values ≥0.05 (2/88 SOW)? | Yes | No | (N/A) |
| Are all applicable RSD values ≤~~20.5%~~ 25 (3/90 SOW)? RO 4/2/93 | (Yes) | No | N/A |
| Are all applicable RSD values ≤40% (3/90 SOW)? | (Yes) | No | N/A |

| | | | |
|---|---|---|---|
| Are all applicable RRF values within SOW limits (3/90 SOW)? | Yes | No | N/A |
| Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? | Yes | No | N/A |

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

## 3.3. CONTINUING CALIBRATION

| | | | |
|---|---|---|---|
| Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? | Yes | No | N/A |
| Are all RRF values ≥0.05 (2/88 SOW)? | Yes | No | N/A |
| Are all %D values ≤25% (2/88 or 3/90 SOW)? | Yes | No | N/A |
| Are all %D values ≤40% (3/90 SOW)? | Yes | No | N/A |
| Are all RRF values within SOW limits (3/90 SOW)? | Yes | No | N/A |
| Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? | Yes | No | N/A |

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

# 4. BLANKS

## 4.1 LABORATORY BLANKS

| | | | |
|---|---|---|---|
| Has the laboratory conducted a method blank analysis per matrix for every extraction batch? | Yes | No | N/A |
| Are compounds reported in the laboratory blanks? | Yes | No | N/A |

ACTION: Qualify all sample results < 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results <5 times the blank concentration in similar fashion.

## 4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results $\leq 5$ times the amount in any valid field blank as nondetects (U) and note the results of the field blanks in the validation narrative.

# 5. ACCURACY

## 5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries < 10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for nondetects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated nondetect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

## 5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

## 5.3 PERFORMANCE AUDIT SAMPLES

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

ACTION: Note the results of the performance audit samples in the validation narrative.

# 6. PRECISION

## 6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

## 6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

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

## 6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

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

# 7. SYSTEM PERFORMANCE

## 7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A RB 4/2

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for nondetects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

# 8. COMPOUND IDENTIFICATION AND QUANTITATION

## 8.1 COMPOUND IDENTIFICATION

| | | | |
|---|---|---|---|
| Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? | Yes | No | N/A |
| Are all ions at a relative intensity of ≥ 10% in the standard spectra present in the sample spectra? | Yes | No | N/A |
| Do the relative intensities between the standard and sample spectra agree within 20%? | Yes | No | N/A |
| Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? | Yes | No | N/A |
| Are molecular ions in the reference spectrum present in the sample spectrum? | Yes | No | N/A |

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

## 8.2 REPORTED RESULTS AND QUANTITATION LIMITS

| | | | |
|---|---|---|---|
| Has the laboratory used the correct RRF values and internal standards for quantitation? | Yes | No | N/A |
| Are results and quantitation limits calculated properly? | Yes | No | N/A |
| Has the laboratory reported the sample quantitation limits within 5xCRQL values? | Yes | No | N/A |

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

## 8.3 TENTATIVELY IDENTIFIED COMPOUNDS

| | | | |
|---|---|---|---|
| Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? | Yes | No | N/A |
| Has the laboratory properly identified and coded all TIC? | Yes | No | N/A |

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

## 9. 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): It appears that computer algorithm used to calculate concentration is using 30 grams instead of 30.3 grams. No qualification was made; however, the lab should be contacted for an explanation.

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page____ of____

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project WESTINGHOUSE-HANFORD | | | | | | | | | | | | | | | | | | | | | |
| Laboratory ~~[illegible]~~ Roy F. Weston | | | | | | | | | | | | | | | | | | | | | |
| Case | SDG 607HG5 | | | | | | | | | | | | | | | | | | | | |
| Sample Number | | 307HG5 | | | | | | | | | | | | | | | | | | | |
| Location | | 216-K-1 | | | | | | | | | | | | | | | | | | | |
| Remarks | | EC | | | | | | | | | | | | | | | | | | | |
| Sample Date | | 10/13/92 | | | | | | | | | | | | | | | | | | | |
| Extraction Date | | 10/21/92 | | | | | | | | | | | | | | | | | | | |
| Analysis Date | | 11/8/92 | | | | | | | | | | | | | | | | | | | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Phenol | 330 | 340 | UJ | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethyl)ether | 330 | | | | | | | | | | | | | | | | | | | | |
| 2-Chlorophenol | 330 | | | | | | | | | | | | | | | | | | | | |
| 1,3-Dichlorobenzene | 330 | | | | | | | | | | | | | | | | | | | | |
| 1,4-Dichlorobenzene | 330 | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | 330 | | | | | | | | | | | | | | | | | | | | |
| 2-Methylphenol | 330 | | | | | | | | | | | | | | | | | | | | |
| 2,2'-oxybis(1-Chloropropane) | 330 | | | | | | | | | | | | | | | | | | | | |
| 4-Methylphenol | 330 | | | | | | | | | | | | | | | | | | | | |
| N-Nitroso-di-n-propylamine | 330 | | | | | | | | | | | | | | | | | | | | |
| Hexachloroethane | 330 | | | | | | | | | | | | | | | | | | | | |
| Nitrobenzene | 330 | | | | | | | | | | | | | | | | | | | | |
| Isophorone | 330 | | | | | | | | | | | | | | | | | | | | |
| 2-Nitrophenol | 330 | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | 330 | | | | | | | | | | | | | | | | | | | | |
| ~~Benzoic acid~~ | ~~1700~~ | | | | | | | | | | | | | | | | | | | | |
| bis(2-Chloroethoxy)methane | 330 | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dichlorophenol | 330 | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 330 | | | | | | | | | | | | | | | | | | | | |
| Naphthalene | 330 | | | | | | | | | | | | | | | | | | | | |
| 4-Chloroaniline | 330 | | | | | | | | | | | | | | | | | | | | |
| Hexachlorobutadiene | 330 | | | | | | | | | | | | | | | | | | | | |
| 4-Chloro-3-methylphenol | 330 | | | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | 330 | | | | | | | | | | | | | | | | | | | | |
| Hexachlorocyclopentadiene | 330 | | | | | | | | | | | | | | | | | | | | |
| 2,4,6-Trichlorophenol | 330 | | | | | | | | | | | | | | | | | | | | |
| 2,4,5-Trichlorophenol | 1700 | 860 | | | | | | | | | | | | | | | | | | | |
| 2-Chloronaphthalene | 330 | 340 | | | | | | | | | | | | | | | | | | | |
| 2-Nitroaniline | 1700 | 860 | | | | | | | | | | | | | | | | | | | |
| Dimethylphthalate | 330 | 340 | | | | | | | | | | | | | | | | | | | |
| Acenaphthylene | 330 | | | | | | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | 330 | | | | | | | | | | | | | | | | | | | | |
| 3-Nitroaniline | 1700 | 860 | | | | | | | | | | | | | | | | | | | |

delete 20...

EC = Effluent Crib

SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page____ of____

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project | WESTINGHOUSE-HANFORD | | | | | | | | | | | | | | | | | | | | |
| Laboratory | Roy F. Weston | | | | | | | | | | | | | | | | | | | | |
| Case | SDG | K07H65 | | | | | | | | | | | | | | | | | | | |
| Sample Number | | 307H65 | | | | | | | | | | | | | | | | | | | |
| Location | | 116-K-1 | | | | | | | | | | | | | | | | | | | |
| Remarks | | EC | | | | | | | | | | | | | | | | | | | |
| Sample Date | | 10/13/92 | | | | | | | | | | | | | | | | | | | |
| Extraction Date | | 10/21/92 | | | | | | | | | | | | | | | | | | | |
| Analysis Date | | 11/8/92 | | | | | | | | | | | | | | | | | | | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Acenaphthene | 330 | 340 | UJ | | | | | | | | | | | | | | | | | | |
| 2,4-Dinitrophenol | 1700 | 860 | | | | | | | | | | | | | | | | | | | |
| 4-Nitrophenol | 1700 | 860 | | | | | | | | | | | | | | | | | | | |
| Dibenzofuran | 330 | 340 | | | | | | | | | | | | | | | | | | | |
| 2,4-Dinitrotoluene | 330 | | | | | | | | | | | | | | | | | | | | |
| Diethylphthalate | 330 | | | | | | | | | | | | | | | | | | | | |
| 4-Chlorophenyl-phenyl ether | 330 | | | | | | | | | | | | | | | | | | | | |
| Fluorene | 330 | | | | | | | | | | | | | | | | | | | | |
| 4-Nitroaniline | 1700 | 860 | | | | | | | | | | | | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | 1700 | 860 | | | | | | | | | | | | | | | | | | | |
| N-Nitrosodiphenylamine | 330 | 340 | | | | | | | | | | | | | | | | | | | |
| 4-Bromophenyl-phenylether | 330 | | | | | | | | | | | | | | | | | | | | |
| Hexachlorobenzene | 330 | | | | | | | | | | | | | | | | | | | | |
| Pentachlorophenol | 1700 | 860 | | | | | | | | | | | | | | | | | | | |
| Phenanthrene | 330 | 340 | | | | | | | | | | | | | | | | | | | |
| Anthracene | 330 | | | | | | | | | | | | | | | | | | | | |
| Carbazole | 330 | | | | | | | | | | | | | | | | | | | | |
| Di-n-butylphthalate | 330 | | | | | | | | | | | | | | | | | | | | |
| Fluoranthene | 330 | | | | | | | | | | | | | | | | | | | | |
| Pyrene | 330 | | | | | | | | | | | | | | | | | | | | |
| Butylbenzylphthalate | 330 | | | | | | | | | | | | | | | | | | | | |
| 3,3'-Dichlorobenzidine | 330 | | | | | | | | | | | | | | | | | | | | |
| Benz(a)anthracene | 330 | | | | | | | | | | | | | | | | | | | | |
| Chrysene | 330 | | | | | | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)phthalate | 330 | 23 | J | | | | | | | | | | | | | | | | | | |
| Di-n-octylphthalate | 330 | 340 | UJ | | | | | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | 330 | | | | | | | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | 330 | | | | | | | | | | | | | | | | | | | | |
| Benzo(a)pyrene | 330 | | | | | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 330 | | | | | | | | | | | | | | | | | | | | |
| Dibenz(a,g)anthracene | 330 | | | | | | | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 330 | | | | | | | | | | | | | | | | | | | | |

EC = Effluent Crib

HOLDING TIME SUMMARY - ~~FORM B-1~~

| SDG: B07HG5 | REVIEWER: RB | DATE: 4/2/93 | PAGE___OF___ |
|---|---|---|---|

COMMENTS:

| FIELD SAMPLE ID | ANALYSIS TYPE | DATE SAMPLED | DATE PREPARED | DATE ANALYZED | PREP. HOLDING TIME, DAYS | ANALYSIS HOLDING TIME, DAYS | QUALIFIER |
|---|---|---|---|---|---|---|---|
| B07HG5 | BNA | 10/13/92 | 10/21/92 | 11/5/92 | 1 | | J |
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BLANK AND SAMPLE DATA SUMMARY - ~~FORM B-3~~

| SDG: B07HG5 | REVIEWER: RB | DATE: 4/2/93 | PAGE___OF___ |
|---|---|---|---|
| COMMENTS: | | | |

| SAMPLE ID | COMPOUND | RESULT | Q | RT | UNITS | 5X RESULT | 10X RESULT | SAMPLES AFFECTED | QUALIFIER |
|---|---|---|---|---|---|---|---|---|---|
| SBLK | Di-n-butylphthalate | 19 | J | | ug/kg | 95 | 190 | B07HG5 | U |
| | | | | | | | | | |
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DATA QUALIFICATION SUMMARY ~~FORM B-~~7

| SDG: B07HG5 | REVIEWER: RB | DATE: 4/2/93 | PAGE___OF___ |
|---|---|---|---|
| COMMENTS: | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Di-n-octylphthalate | J | B07HG5 | Internal standard area counts out |
| Benzo(b)fluoranthene | | | |
| Benzo(k)fluoranthene | | | |
| Benzo(a)pyrene | | | |
| Indeno(1,2,3-cd)pyrene | | | |
| Dibenz(a,h)anthracene | | | |
| Benzo(g,h,i)perylene | | | |
| All | | | Holding time exceeded |
| Di-n-butyl-phthalate | U | B07HG5 | Lab blank contamination |
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# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

WC

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

SD = 10/13/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 340 | UJ |
| 111-44-4 | bis(2-Chloroethyl)ether | 340 | U |
| 95-57-8 | 2-Chlorophenol | 340 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 340 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 340 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | U |
| 95-48-7 | 2-Methylphenol | 340 | U |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | 340 | U |
| 106-44-5 | 4-Methylphenol | 340 | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 340 | U |
| 67-72-1 | Hexachloroethane | 340 | U |
| 98-95-3 | Nitrobenzene | 340 | U |
| 78-59-1 | Isophorone | 340 | U |
| 88-75-5 | 2-Nitrophenol | 340 | U |
| 105-67-9 | 2,4-Dimethylphenol | 340 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 340 | U |
| 120-83-2 | 2,4-Dichlorophenol | 340 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 340 | U |
| 91-20-3 | Naphthalene | 340 | U |
| 106-47-8 | 4-Chloroaniline | 340 | U |
| 87-68-3 | Hexachlorobutadiene | 340 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 340 | U |
| 91-57-6 | 2-Methylnaphthalene | 340 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 340 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 340 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 860 | U |
| 91-58-7 | 2-Chloronaphthalene | 340 | U |
| 88-74-4 | 2-Nitroaniline | 860 | U |
| 131-11-3 | Dimethylphthalate | 340 | U |
| 208-96-8 | Acenaphthylene | 340 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | U |
| 99-09-2 | 3-Nitroaniline | 860 | U |
| 83-32-9 | Acenaphthene | 340 | U |

RB 4/12/93

all analytes 'J' due to HTS

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL — Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G — Lab File ID: M110513

Level: (low/med) LOW — Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__ — Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL) — Date Analyzed: 11/05/92

Injection Volume: 2.0(uL) — Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 860 | UJ |
| 100-02-7 | 4-Nitrophenol | 860 | U |
| 132-64-9 | Dibenzofuran | 340 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 340 | U |
| 84-66-2 | Diethylphthalate | 340 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 340 | U |
| 86-73-7 | Fluorene | 340 | U |
| 100-01-6 | 4-Nitroaniline | 860 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 860 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 340 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 340 | U |
| 118-74-1 | Hexachlorobenzene | 340 | U |
| 87-86-5 | Pentachlorophenol | 860 | U |
| 85-01-8 | Phenanthrene | 340 | U |
| 120-12-7 | Anthracene | 340 | U |
| 86-74-8 | Carbazole | 340 | U |
| 84-74-2 | Di-n-butylphthalate | 20 | ~~JB~~ UJ |
| 206-44-0 | Fluoranthene | 340 | U |
| 129-00-0 | Pyrene | 340 | U |
| 85-68-7 | Butylbenzylphthalate | 340 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 340 | U |
| 56-55-3 | Benzo(a)anthracene | 340 | U |
| 218-01-9 | Chrysene | 340 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 23 | J |
| 117-84-0 | Di-n-octyl phthalate | 340 | U |
| 205-99-2 | Benzo(b)fluoranthene | 340 | U |
| 207-08-9 | Benzo(k)fluoranthene | 340 | U |
| 50-32-8 | Benzo(a)pyrene | 340 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 340 | U |
| 53-70-3 | Dibenz(a,h)anthracene | 340 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U |

(1) - Cannot be separated from Diphenylamine

RB 4/2/93

All analytes "J" due to HTs

blk limit

9403402.2269

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1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B07HG5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.3 (g/mL) G

Lab File ID: M110513

Level: (low/med) LOW

Date Received: 10/17/92

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/21/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 11/05/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 6.6

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

RB
4/2/93

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 21.52 | 200 | J |
| 2. | ADIPATE | 22.15 | 20000 | J |
| 3. | UNKNOWN | 22.65 | 300 | J |
| 4. | UNKNOWN | 23.85 | 100 | ~~JB~~ UJ blk cont, HT |
| 5. | UNKNOWN | 26.17 | 90 | J |
| 6. | UNKNOWN | 27.75 | 100 | ~~JB~~ UJ blk cont, HT |

X02009

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

| | | |
|---|---|---|
| PROJECT: Westinghouse - Hanford | REVIEWER: RB | DATE: 4/2/93 |
| LABORATORY: Roy F. Weston | CASE: N/A | SDG: B07HG5 |
| SAMPLES/MATRIX: One soil - B07HG5 | | |
| | | |
| | | |
| | | |

## 1. DATA PACKAGE COMPLETENESS

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

| Data Package Item | Present?: Yes | No | N/A |
|---|---|---|---|
| Case Narrative | ✓ | | |
| Data Summary | ✓ | | |
| Chain-of-Custody | ✓ | | |
| QC Summary | | | |
| Surrogate report | ✓ | | |
| MS/MSD report | ✓ | | |
| Blank summary report | ✓ | | |
| Sample Data | | | |
| Sample reports | ✓ | | |
| Chromatograms | ✓ | | |
| GC integration reports | ✓ | | |
| Worksheets | ✓ | | |
| UV traces from GPC | | ✓ | |
| GC/MS confirmation spectra | | | ✓ |
| Standards Data | | | |
| Pesticides Evaluation Standards Summary | ✓ | | |
| Pesticides/PCB Standards Summary | ✓ | | |
| Pesticides/PCB identification | ✓ | | |
| Pesticides standard chromatograms | ✓ | | |
| Raw QC Data | | | |
| Blank analysis report forms and chromatograms | ✓ | | |
| MS/MSD report forms and chromatograms | ✓ | | |

| Data Package Item | Present?: Yes | No | N/A |
|---|---|---|---|
| Additional Data | | | |
| Moisture/% solids data sheets | ✓ | | |
| Reduction formulae | | ✓ | |
| Instrument time logs | | ✓ | |
| Chemist notebook pages | | ✓ | |
| Sample preparation sheets | ✓ | | |

## 2. HOLDING TIMES

Were all samples extracted within holding time? Yes **(No)** N/A

Were all samples analyzed within holding time? **(Yes)** No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

## 3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

### 3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No **(N/A)**

ACTION: If DDT retention time is $\leq$12 minutes and resolution is <25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No **(N/A)**

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No **(N/A)**

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq$20%? Yes No **(N/A)**

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq$20%? Yes No **(N/A)**

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No N/A

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC ≤10%? Yes No N/A

Have all standards been analyzed within 72 h of any sample? Yes No N/A

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No N/A

Have all standards been analyzed at the start of each 72-h sequence? Yes No N/A

Have evaluation standards A, B, and C been analyzed within 72 h of any sample? Yes No N/A

Has the confirmation standard mix been analyzed after every five samples? Yes No N/A

Has evaluation standard B analyzed every 10 samples? Yes No N/A

Are %D values for initial and subsequent standards ≤15% for quantitation standards and ≤20% for confirmation standards? Yes No N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

## 3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors < 10.0% (< 15.0% for the BHC series, DDT, endrin, and methoxychlor)? Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

## 3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

## 4. BLANKS

### 4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No N/A

Has the laboratory analyzed instrument blanks at the required frequency? Yes No N/A

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

ACTION: Qualify all associated positive results as nondetects (U) that are <5 times the highest concentration in any acceptable blank.

### 4.2 FIELD BLANKS

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

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

# 5. ACCURACY

## 5.1 SURROGATE RECOVERY

| | | | |
|---|---|---|---|
| Are any surrogate recoveries out of specification? | Yes | No | N/A |
| Do any samples show nondetects for surrogates? | Yes | No | N/A |
| Are any method blank surrogates out of specification? | Yes | No | N/A |

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

## 5.2 MATRIX SPIKE RECOVERY

| | | | |
|---|---|---|---|
| Has the laboratory analyzed a MS/MSD per matrix for the the sample group? | Yes | No | N/A |
| Are MS/MSD recoveries within specification? | Yes | No | N/A |
| Are there any calculation or transcription errors? | Yes | No | N/A |

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

## 5.3 PERFORMANCE AUDIT SAMPLES

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

ACTION: Note the results of the performance audit samples in the validation narrative.

## 6. PRECISION

### 6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are >5xCRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

### 6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No N/A

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

### 6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? Yes No N/A

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

## 7. COMPOUND IDENTIFICATION AND QUANTITATION

### 7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No N/A

Were positive results analyzed on disimilar columns? Yes No N/A

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No N/A

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No N/A

Has GC/MS confirmation been conducted on sample extract concentrations > 10 ppm? Yes No N/A

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

## 7.2 REPORTED RESULTS AND QUANTITATION LIMITS

| | | | |
|---|---|---|---|
| Are results and quantitation limits calculated properly? | Yes | No | N/A |
| Has the laboratory reported the sample quantitation limits within 5xCRQL values? | Yes | No | N/A |

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

## 8. 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):

COMMENTS (attach additional sheets as necessary):

PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Page____ of____

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project WESTINGHOUSE-HANFORD | | | | | | | | | | | | | | | | | | | | | | | |
| Laboratory Roy F. Weston | | | | | | | | | | | | | | | | | | | | | | | |
| Case | SDG B07HG5 | | | | | | | | | | | | | | | | | | | | | | |
| Sample Number | | B07HG5 | | | | | | | | | | | | | | | | | | | | | |
| Location | | 116-K-1 | | | | | | | | | | | | | | | | | | | | | |
| Remarks | | EC | | | | | | | | | | | | | | | | | | | | | |
| Sample Date | | 10/13/92 | | | | | | | | | | | | | | | | | | | | | |
| Extraction Date | | 10/21/92 | | | | | | | | | | | | | | | | | | | | | |
| Analysis Date | | 11/8/92 | | | | | | | | | | | | | | | | | | | | | |
| Pesticide/PCB | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| alpha-BHC | 1.7 | 1.7 | UJ | | | | | | | | | | | | | | | | | | | | |
| beta-BHC | 1.7 | \| | \| | | | | | | | | | | | | | | | | | | | |
| delta-BHC | 1.7 | \| | \| | | | | | | | | | | | | | | | | | | | |
| gamma-BHC (Lindane) | 1.7 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Heptchlor | 1.7 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Aldrin | 1.7 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Heptachlor epoxide | 1.7 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Endosulfan I | 1.7 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Dieldrin | 3.3 | 3.4 | \| | | | | | | | | | | | | | | | | | | | |
| 4,4'-DDE | 3.3 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Endrin | 3.3 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Endosulfan II | 3.3 | \| | \| | | | | | | | | | | | | | | | | | | | |
| 4,4'-DDD | 3.3 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Endosulfan sulfate | 3.3 | \| | \| | | | | | | | | | | | | | | | | | | | |
| 4,4'-DDT | 3.3 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Methoxychlor | 17.0 | 17 | \| | | | | | | | | | | | | | | | | | | | |
| Endrin Ketone | 3.3 | 3.4 | \| | | | | | | | | | | | | | | | | | | | |
| Endrin Aldehyde | 3.3 | 3.4 | \| | | | | | | | | | | | | | | | | | | | |
| alpha-Chlordane | 1.7 | 1.7 | \| | | | | | | | | | | | | | | | | | | | |
| gamma-Chlordane | 1.7 | 1.7 | \| | | | | | | | | | | | | | | | | | | | |
| Toxaphene | 170.0 | 170 | \| | | | | | | | | | | | | | | | | | | | |
| Arochlor-1016 | 33.0 | 34 | \| | | | | | | | | | | | | | | | | | | | |
| Arochlor-1221 | 33.0 | 34 | \| | | | | | | | | | | | | | | | | | | | |
| Arochlor-1232 | 67.0 | 69 | \| | | | | | | | | | | | | | | | | | | | |
| Arochlor-1242 | 33.0 | 34 | \| | | | | | | | | | | | | | | | | | | | |
| Arochlor-1248 | 33.0 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Arochlor-1254 | 33.0 | \| | \| | | | | | | | | | | | | | | | | | | | |
| Arochlor-1260 | 33.0 | \| | \| | | | | | | | | | | | | | | | | | | | |

EC = Effluent Crib

HOLDING TIME SUMMARY - ~~FORM B-1~~

| SDG: B07HG5 | REVIEWER: RB | DATE: 4/2/93 | PAGE___OF___ |
|---|---|---|---|

COMMENTS:

| FIELD SAMPLE ID | ANALYSIS TYPE | DATE SAMPLED | DATE PREPARED | DATE ANALYZED | PREP. HOLDING TIME, DAYS | ANALYSIS HOLDING TIME, DAYS | QUALIFIER |
|---|---|---|---|---|---|---|---|
| B07HG5 | Pest/PCB | 10/13/92 | 10/21/92 | 11/8/92 | 1 | | J |
| | | | | | | | |
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CALIBRATION DATA SUMMARY ~~FORM B-2~~

| SDG: B07HG5 | REVIEWER: RB | DATE: 4/2/93 | PAGE____OF____ | | |
|---|---|---|---|---|---|
| COMMENTS: | | | | | |
| CALIB. TYPE: | INITIAL CONTINUING | INSTRUMENT: 35 | | | |
| CALIB. DATE | COMPOUND | RF | RSD/%D/%R | SAMPLES AFFECTED | QUALIFIER |
| 10/31/92 | Heptachlor | | 11.46 | B07HG5 | J |
| \| | 4,4'-DDT | | 18.25 | \| | \| |
| \| | methoxychlor | | 24.68 | \| | \| |
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DATA QUALIFICATION SUMMARY - FORM B-7

| SDG: B07HG5 | REVIEWER: RB | DATE: 4/2/93 | PAGE___OF___ |
|---|---|---|---|
| COMMENTS: | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| All | J | B07HG5 | Holding times exceeded |
| Heptachlor | | | Calibration RSD out |
| 4,4'-DDT | | | |
| Methoxychlor | | | |

9613402.2284 5A 000019

# VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
## BROMOFLUOROBENZENE (BFB)

Lab Name: Roy F. Weston, Inc. Contract: 06168-002-001-9

Case No.: WESTINGHOUSE HANFORD

Lab File ID: R102601 BFB Injection Date: 10/26/92

Instrument ID: 5100R BFB Injection Time: 929

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) Y

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 8.0 - 40.0% of mass 95 | 16.1 |
| 75 | 30.0 - 66.0% of mass 95 | 41.9 |
| 95 | Base peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 7.2 |
| 173 | Less than 2.0% of mass 174 | 0.0( 0.0)1 |
| 174 | 50.0 - 120.0% of mass 95 | 88.0 |
| 175 | 4.0 - 9.0% of mass 174 | 6.4( 7.3)1 |
| 176 | 93.0 - 101.0% of mass 174 | 85.1( 96.7)1 |
| 177 | 5.0 - 9.0% of mass 176 | 5.7( 6.7)2 |

1-Value is % mass 174 2-Value is % mass 176

BLR 11/30/92

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | VSTD50 | VSTD50 | R102603 | 10/26/92 | 1028 |
| 02 | VBLKLVR144-MB1 | 92LVR144-MB1 | R102604 | 10/26/92 | 1149 |
| 03 | VBLKLVR144-MB1 BS | 92LVR144-MB1S | R102605 | 10/26/92 | 1223 |
| 04 | B07HG5 | 9210L337-001 | R102606 | 10/26/92 | 1354 |
| 05 | B07HG5MS | 9210L337-001S | R102607 | 10/26/92 | 1428 |
| 06 | B07HG5MSD | 9210L337-001T | R102608 | 10/26/92 | 1502 |
| 07 | | | | | |
| 08 | | | | | |
| 09 | | | | | |
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8A

# VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9210L337

Lab File ID (Standard): R102603 Date Analyzed: 10/26/92

Instrument ID: 5100R Time Analyzed: 1028

GC Column: DB624 ID: .53(mm) Heated Purge: (Y/N) Y

| | | IS1(BCM) AREA # | RT # | IS2(DFB) AREA # | RT # | IS3(CBZ) AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 89882 | 6.18 | 402402 | 9.13 | 263329 | 17.27 |
| | UPPER LIMIT | 179764 | 6.68 | 804804 | 9.63 | 526658 | 17.77 |
| | LOWER LIMIT | 44941 | 5.68 | 201201 | 8.63 | 131665 | 16.77 |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | B07HG5 | 57180 | 6.08 | 210825 | 9.08 | 157282 | 17.27 |
| 02 | B07HG5MS | 49123 | 6.28 | 205919 | 9.23 | 155700 | 17.37 |
| 03 | B07HG5MSD | 45217 | 6.18 | 179803* | 9.13 | 143701 | 17.30 |
| 04 | VBLKLVR144-MB1 | 88652 | 6.27 | 322993 | 9.22 | 255129 | 17.33 |
| 05 | VBLKLVR144-MB1 BS | 76369 | 6.28 | 294101 | 9.22 | 241541 | 17.37 |

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

RB 4/1/93

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

BLR 11/30/92

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100-KR-1



# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

| | | |
|---|---|---|
| PROJECT: Westinghouse - Hanford | REVIEWER: LM | DATE: 4/01/93 |
| LABORATORY: Roy F. Weston | CASE: | SDG: B01HG5 |
| SAMPLES/MATRIX: B01HG5 | | |
| 1 soil sample | | |
| | | |
| | | |
| | | |

## 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.

## 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.

## 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.

## 13. FIELD DUPLICATE SAMPLES

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

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

## 14. FIELD SPLIT SAMPLES

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

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

## 1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

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

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

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

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

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

## 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).

## 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 ≥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 ≥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):

Internal COC insufficient - No sample information or header information Page 0000007 of the CLP report.

Incorrect LCS-soil. See final report for full explanation

9613402.2098 U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO7HG5

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Matrix (soil/water): SOIL Lab Sample ID: 921033701

Level (low/med): LOW Date Received: 10/17/92

% Solids: 96.6

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

4/2/93

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3820.00 | | ~~E~~ J | P- | Ipsential Dilution |
| 7440-36-0 | Antimony | 12.40 | U | | P | |
| 7440-38-2 | Arsenic | 1.60 | ~~B~~ | U | F- | Lab Blank |
| 7440-39-3 | Barium | 77.40 | | | P | |
| 7440-41-7 | Beryllium | .25 | B | | P | |
| 7440-43-9 | Cadmium | 1.45 | U | | P | |
| 7440-70-2 | Calcium | 8740.00 | | ~~E~~ J | P- | Tip [illegible] Dilution |
| 7440-47-3 | Chromium | 8.00 | | | P | |
| 7440-48-4 | Cobalt | 5.90 | B | | P | |
| 7440-50-8 | Copper | 9.00 | | | P | |
| 7439-89-6 | Iron | 11200.00 | | ~~E~~ J | P | Tip [illegible] Dilution |
| 7439-92-1 | Lead | 4.00 | | S | F | |
| 7439-95-4 | Magnesium | 3330.00 | | ~~E~~ J | P- | Tip [illegible] Dilution |
| 7439-96-5 | Manganese | 230.00 | | ~~NE~~ J | P- | Matrix Spike/Tip [illegible] Dilu |
| 7439-97-6 | Mercury | .05 | U | | CV | |
| 7440-02-0 | Nickel | 12.00 | | | P | |
| 7440-09-7 | Potassium | 945.00 | B | | P | |
| 7782-49-2 | Selenium | .41 | U | W UJ | F- | Lab Blank |
| 7440-22-4 | Silver | 2.07 | U | | P | |
| 7440-23-5 | Sodium | 200.00 | B | | P | |
| 7440-28-0 | Thallium | .41 | U | U | F- | Lab Blank |
| 7440-62-2 | Vanadium | 16.60 | | | P | |
| 7440-66-6 | Zinc | 26.00 | | | P | |
| | Cyanide | 1.04 | U | | C | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client** : WESTINGHOUSE HANFORD
**RFW#** : 9210L337

**W.O. #:** 6168-02-01
**Date Received:** 10-17-92

**CLP METALS**

One (1) soil sample was collected on 10-13-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 3/90.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analysis:

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits.

6. All matrix spike recoveries were within the 75-125% control limits with the exception of manganese. All exceptions are flagged with a "N" on the CLP forms.

7. All duplicate analyses were within the 20% RPD control limit.

8. Lead sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with a "S" according to CLP protocol.

9. For MSA, results reported on Form 8 are calculated from absorbance values. Results reported on other forms are based on concentration. As indicated in the SOWILM01.0, page B-32, differences due to rounding may be found between the MSA values on Form 8 and the results reported on the other forms.

10. The code CV is currently in use by the laboratory for both mercury instruments in operation (HG1 and HG2). HG1 is complete with autosampler and software, but still requires manual digestion; HG2 is operated by the analyst, produces a strip chart and also requires manual digestion.

WESTON

11. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).

12. Quarterly Detection Limits, ICP Interelement Correction Factors and ICP Linear Ranges for IC3 are included in this package, but do not appear on EDD.

13. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

Margaret M. Beaty for
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11/24/92
Date

mlj/clp-met.nar

9613402.2295 0000011

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

WESTON

**Client:** WESTINGHOUSE HANFORD
**RFW #:** 9210L337

**W.O. #:** 6168-02-01
**Date Received:** 10-17-92

## CLP METALS ADDENDUM

1. Following Exhibit E, Section V, Item 10, page E-23 of the USEPA Statement of Work for Inorganics Analysis, Document Number ILM02.0 ICP Instrument Detection Limits (IDLs) are reported for two (2) ICP instruments. The instrument identification numbers are "IC1" and "IC3". The highest IDL for the two instruments is used for reporting concentration values in this sample data package.

2. A discrepancy exists between raw data and Form XIVs analytical spikes recovery calculations performed for graphite furnace AA analytes. Instrument software calculates spike recoveries based on absolute values below the IDL for sample results. This is hard-coded by the vendor and is currently not correctable. CLP convention (SOW ILM02.0, Exhibit E, Section V, Item 6, page E-20) requires that when values fall below the IDL, the sample result is equal to zero (0) for the purposes of calculating the percent recovery. The Form XIVs contain the correct calculation.

Only when both instruments are used [illegible] results [illegible] SDL, [illegible] IDL [illegible] was [illegible] [illegible] only [illegible] [illegible]

Margaret M. Beaty for
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11/24/92
Date

mlj\clp-met.nar

U. S. EPA - CLP

COVER PAGE - INORGANIC ANALYSIS DATA PACKAGE

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

SOW No.: 03/90

| EPA Sample No. | Lab Sample ID |
|---|---|
| B07HG5 | 921033701 |
| B07HG5D | 921033701R |
| B07HG5S | 921033701S |

| | | |
|---|---|---|
| Were ICP interelement corrections applied? | Yes/No | YES |
| Were ICP background corrections applied? | Yes/No | YES |
| If yes, were raw data generated before application of background corrections? | Yes/No | NO |

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Margaret M. Beaty Name: MARGARET M. BEATY

Date: 11/24/92 Title: Section Manager

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 5000.0 | 5220.10 | 104.4 | 5000.0 | 5242.20 | 104.8 | 5215.30 | 104.3 | P |
| Antimony | 3000.0 | 3121.70 | 104.1 | 3000.0 | 3150.60 | 105.0 | 3165.90 | 105.5 | P |
| Arsenic | 40.0 | 43.00 | 107.5 | 40.0 | 43.10 | 107.8 | 42.80 | 107.0 | F |
| Barium | 5000.0 | 5075.20 | 101.5 | 5000.0 | 5158.80 | 103.2 | 5251.00 | 105.0 | P |
| Beryllium | 250.0 | 257.90 | 103.2 | 250.0 | 258.00 | 103.2 | 253.80 | 101.5 | P |
| Cadmium | 250.0 | 264.20 | 105.7 | 250.0 | 253.60 | 101.4 | 256.20 | 102.5 | P |
| Calcium | 25000.0 | 25825.40 | 103.3 | 25000.0 | 25790.50 | 103.2 | 25553.50 | 102.2 | P |
| Chromium | 500.0 | 517.30 | 103.5 | 500.0 | 510.60 | 102.1 | 513.00 | 102.6 | P |
| Cobalt | 2500.0 | 2575.10 | 103.0 | 2500.0 | 2576.60 | 103.1 | 2571.60 | 102.9 | P |
| Copper | 1250.0 | 1288.60 | 103.1 | 1250.0 | 1293.70 | 103.5 | 1285.20 | 102.8 | P |
| Iron | 5000.0 | 5008.30 | 100.2 | 5000.0 | 5061.30 | 101.2 | 5352.20 | 107.0 | P |
| Lead | 40.0 | 40.10 | 100.3 | 40.0 | 41.10 | 102.8 | 42.70 | 106.8 | F |
| Magnesium | 25000.0 | 25584.10 | 102.3 | 25000.0 | 25488.70 | 102.0 | 24940.40 | 99.8 | P |
| Manganese | 750.0 | 751.00 | 100.1 | 750.0 | 758.30 | 101.1 | 781.30 | 104.2 | P |
| Mercury | 5.0 | 5.07 | 101.4 | 5.0 | 5.18 | 103.6 | 5.16 | 103.3 | CV |
| Nickel | 2000.0 | 2062.50 | 103.1 | 2000.0 | 2046.30 | 102.3 | 2023.50 | 101.2 | P |
| Potassium | 25000.0 | 26121.50 | 104.5 | 25000.0 | 26745.50 | 107.0 | 25185.40 | 100.7 | P |
| Selenium | 40.0 | 43.20 | 108.0 | 40.0 | 43.00 | 107.5 | 41.80 | 104.5 | F |
| Silver | 500.0 | 510.80 | 102.2 | 500.0 | 507.80 | 101.6 | 520.40 | 104.1 | P |
| Sodium | 25000.0 | 25927.00 | 103.7 | 25000.0 | 26052.00 | 104.2 | 25853.90 | 103.4 | P |
| Thallium | 40.0 | 43.10 | 107.8 | 40.0 | 42.90 | 107.3 | 44.10 | 110.3 | F |
| Vanadium | 2500.0 | 2534.90 | 101.4 | 2500.0 | 2545.20 | 101.8 | 2601.50 | 104.1 | P |
| Zinc | 1000.0 | 1022.60 | 102.3 | 1000.0 | 1022.60 | 102.3 | 1012.10 | 101.2 | P |
| Cyanide | 100.0 | 102.04 | 102.0 | 100.0 | 99.56 | 99.6 | | | C |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 5000.0 | 5182.10 | 103.6 | | | P |
| Antimony | | | | 3000.0 | 3171.10 | 105.7 | | | P |
| Arsenic | | | | 40.0 | 43.20 | 108.0 | | | F |
| Barium | | | | 5000.0 | 5205.30 | 104.1 | | | P |
| Beryllium | | | | 250.0 | 253.40 | 101.4 | | | P |
| Cadmium | | | | 250.0 | 247.70 | 99.1 | | | P |
| Calcium | | | | 25000.0 | 25361.00 | 101.4 | | | P |
| Chromium | | | | 500.0 | 508.20 | 101.6 | | | P |
| Cobalt | | | | 2500.0 | 2549.60 | 102.0 | | | P |
| Copper | | | | 1250.0 | 1282.70 | 102.6 | | | P |
| Iron | | | | 5000.0 | 5262.30 | 105.2 | | | P |
| Lead | | | | 40.0 | 41.80 | 104.5 | 42.50 | 106.3 | F |
| Magnesium | | | | 25000.0 | 24813.50 | 99.3 | | | P |
| Manganese | | | | 750.0 | 770.70 | 102.8 | | | P |
| Mercury | | | | | | | | | |
| Nickel | | | | 2000.0 | 2004.00 | 100.2 | | | P |
| Potassium | | | | 25000.0 | 25552.40 | 102.2 | | | P |
| Selenium | | | | 40.0 | 41.80 | 104.5 | | | F |
| Silver | | | | 500.0 | 514.40 | 102.9 | | | P |
| Sodium | | | | 25000.0 | 25925.30 | 103.7 | | | P |
| Thallium | | | | 40.0 | 40.30 | 100.7 | | | F |
| Vanadium | | | | 2500.0 | 2577.80 | 103.1 | | | P |
| Zinc | | | | 1000.0 | 1007.40 | 100.7 | | | P |
| Cyanide | | | | | | | | | |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

03/90

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| Antimony | | | | | | | | | |
| Arsenic | | | | | | | | | |
| Barium | | | | | | | | | |
| Beryllium | | | | | | | | | |
| Cadmium | | | | | | | | | |
| Calcium | | | | | | | | | |
| Chromium | | | | | | | | | |
| Cobalt | | | | | | | | | |
| Copper | | | | | | | | | |
| Iron | | | | | | | | | |
| Lead | 40.0 | 42.60 | 106.5 | 40.0 | 42.10 | 105.2 | 41.80 | 104.5 | F |
| Magnesium | | | | | | | | | |
| Manganese | | | | | | | | | |
| Mercury | | | | | | | | | |
| Nickel | | | | | | | | | |
| Potassium | | | | | | | | | |
| Selenium | | | | | | | | | |
| Silver | | | | | | | | | |
| Sodium | | | | | | | | | |
| Thallium | | | | | | | | | |
| Vanadium | | | | | | | | | |
| Zinc | | | | | | | | | |
| Cyanide | | | | | | | | | |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

| Analyte | Initial Calibration True | Initial Calibration Found | Initial Calibration %R(1) | Continuing Calibration True | Continuing Calibration Found | Continuing Calibration %R(1) | Continuing Calibration Found | Continuing Calibration %R(1) | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| Antimony | | | | | | | | | |
| Arsenic | | | | | | | | | |
| Barium | | | | | | | | | |
| Beryllium | | | | | | | | | |
| Cadmium | | | | | | | | | |
| Calcium | | | | | | | | | |
| Chromium | | | | | | | | | |
| Cobalt | | | | | | | | | |
| Copper | | | | | | | | | |
| Iron | | | | | | | | | |
| Lead | | | | 40.0 | 43.10 | 107.8 | 43.80 | 109.5 | F |
| Magnesium | | | | | | | | | |
| Manganese | | | | | | | | | |
| Mercury | | | | | | | | | |
| Nickel | | | | | | | | | |
| Potassium | | | | | | | | | |
| Selenium | | | | | | | | | |
| Silver | | | | | | | | | |
| Sodium | | | | | | | | | |
| Thallium | | | | | | | | | |
| Vanadium | | | | | | | | | |
| Zinc | | | | | | | | | |
| Cyanide | | | | | | | | | |

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

03/90

9613402.2301

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

AA CRDL Standard Source: IV

ICP CRDL Standard Source: IV

Concentration Units: ug/L

| Analyte | CRDL Standard for AA | | | CRDL Standard for ICP | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Initial | | Final | |
| | True | Found | %R | True | Found | %R | Found | %R |
| Aluminum | | | | | | | | |
| Antimony | | | | 120.0 | 123.00 | 102.5 | 140.20 | 116.8 |
| Arsenic | 10.0 | 10.60 | 106.0 | | | | | |
| Barium | | | | | | | | |
| Beryllium | | | | 10.0 | 9.80 | 98.0 | 9.90 | 99.0 |
| Cadmium | | | | 10.0 | 9.60 | 96.0 | 12.00 | 120.0 |
| Calcium | | | | | | | | |
| Chromium | | | | 20.0 | 15.50 | 77.5 | 23.80 | 119.0 |
| Cobalt | | | | 100.0 | 99.70 | 99.7 | 100.20 | 100.2 |
| Copper | | | | 50.0 | 43.30 | 86.6 | 53.50 | 107.0 |
| Iron | | | | | | | | |
| Lead | 3.0 | 2.90 | 96.7 | | | | | |
| Magnesium | | | | | | | | |
| Manganese | | | | 30.0 | 31.70 | 105.7 | 31.00 | 103.3 |
| Mercury | .2 | .15 | 75.0 | | | | | |
| Nickel | | | | 80.0 | 74.70 | 93.4 | 82.10 | 102.6 |
| Potassium | | | | | | | | |
| Selenium | 5.0 | 5.30 | 106.0 | | | | | |
| Silver | | | | 20.0 | 21.60 | 108.0 | 27.00 | 135.0 |
| Sodium | | | | | | | | |
| Thallium | 10.0 | 10.80 | 108.0 | | | | | |
| Vanadium | | | | 100.0 | 101.70 | 101.7 | 105.60 | 105.6 |
| Zinc | | | | 40.0 | 43.10 | 107.8 | 42.40 | 106.0 |

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

AA CRDL Standard Source: IV

ICP CRDL Standard Source: IV

Concentration Units: ug/L

| Analyte | CRDL Standard for AA | | | CRDL Standard for ICP | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Initial | | Final | |
| | True | Found | %R | True | Found | %R | Found | %R |
| Aluminum | | | | | | | | |
| Antimony | | | | | | | | |
| Arsenic | | | | | | | | |
| Barium | | | | | | | | |
| Beryllium | | | | | | | | |
| Cadmium | | | | | | | | |
| Calcium | | | | | | | | |
| Chromium | | | | | | | | |
| Cobalt | | | | | | | | |
| Copper | | | | | | | | |
| Iron | | | | | | | | |
| Lead | 3.0 | 2.30 | 76.7 | | | | | |
| Magnesium | | | | | | | | |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | | | | | | | | |
| Potassium | | | | | | | | |
| Selenium | | | | | | | | |
| Silver | | | | | | | | |
| Sodium | | | | | | | | |
| Thallium | | | | | | | | |
| Vanadium | | | | | | | | |
| Zinc | | | | | | | | |

U.S. EPA - CLP

3
BLANKS

Lab name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 49.0 | U | 49.0 | U | 49.0 | U | 49.0 | U | 10.310 | U | P |
| Antimony | 60.0 | U | 60.0 | U | 60.0 | U | 60.0 | U | 12.624 | U | P |
| Arsenic | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .480 | B | F |
| Barium | 14.0 | U | 14.0 | U | 14.0 | U | 14.0 | U | 2.946 | U | P |
| Beryllium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .210 | U | P |
| Cadmium | 7.0 | U | 7.0 | U | 7.0 | U | 7.0 | U | 1.473 | U | P |
| Calcium | 57.0 | U | 57.0 | U | 57.0 | U | 57.0 | U | 11.993 | U | P |
| Chromium | 9.0 | U | 9.0 | U | 9.0 | U | 9.0 | U | 1.894 | U | P |
| Cobalt | 9.0 | U | 9.0 | U | 9.0 | U | 9.0 | U | 1.894 | U | P |
| Copper | 8.0 | U | 8.0 | U | 8.0 | U | 8.0 | U | 1.683 | U | P |
| Iron | 15.0 | U | 15.0 | U | 15.0 | U | 15.0 | U | 3.156 | U | P |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .421 | U | F |
| Magnesium | 68.0 | U | 68.0 | U | 68.0 | U | 68.0 | U | 14.307 | U | P |
| Manganese | 4.0 | U | 4.0 | U | 4.0 | U | 4.0 | U | .842 | U | P |
| Mercury | .1 | U | .1 | U | .1 | U | | | .050 | U | CV |
| Nickel | 20.0 | U | 20.0 | U | 20.0 | U | 20.0 | U | 4.208 | U | P |
| Potassium | 1340.0 | U | 1340.0 | U | 1340.0 | U | 1340.0 | U | 281.936 | U | P |
| Selenium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .570 | B | F |
| Silver | 10.0 | U | 10.0 | U | 10.0 | U | 10.0 | U | 2.104 | U | P |
| Sodium | 151.0 | U | 151.0 | U | 151.0 | U | 151.0 | U | 31.770 | U | P |
| Thallium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .630 | B | F |
| Vanadium | 8.0 | U | 8.0 | U | 8.0 | U | 8.0 | U | 1.683 | U | P |
| Zinc | 4.0 ~~7.0~~ | U | 4.0 ~~7.0~~ | U | 4.0 ~~7.0~~ | U | 4.0 ~~7.0~~ | U | ~~1.473~~ | U | P |
| Cyanide | 10.0 | U | 10.0 | U | | | | | 1.000 | U | C |

U.S. EPA - CLP

3
BLANKS

Lab name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | | | NR |
| Antimony | | | | | | | | | | | NR |
| Arsenic | | | | | | | | | | | NR |
| Barium | | | | | | | | | | | NR |
| Beryllium | | | | | | | | | | | NR |
| Cadmium | | | | | | | | | | | NR |
| Calcium | | | | | | | | | | | NR |
| Chromium | | | | | | | | | | | NR |
| Cobalt | | | | | | | | | | | NR |
| Copper | | | | | | | | | | | NR |
| Iron | | | | | | | | | | | NR |
| Lead | | | 2.0 | U | | | | | | | F |
| Magnesium | | | | | | | | | | | NR |
| Manganese | | | | | | | | | | | NR |
| Mercury | | | | | | | | | | | NR |
| Nickel | | | | | | | | | | | NR |
| Potassium | | | | | | | | | | | NR |
| Selenium | | | | | | | | | | | NR |
| Silver | | | | | | | | | | | NR |
| Sodium | | | | | | | | | | | NR |
| Thallium | | | | | | | | | | | NR |
| Vanadium | | | | | | | | | | | NR |
| Zinc | | | | | | | | | | | NR |
| Cyanide | | | | | | | | | | | NR |

U.S. EPA - CLP

3
BLANKS

Lab name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | | | NR |
| Antimony | | | | | | | | | | | NR |
| Arsenic | | | | | | | | | | | NR |
| Barium | | | | | | | | | | | NR |
| Beryllium | | | | | | | | | | | NR |
| Cadmium | | | | | | | | | | | NR |
| Calcium | | | | | | | | | | | NR |
| Chromium | | | | | | | | | | | NR |
| Cobalt | | | | | | | | | | | NR |
| Copper | | | | | | | | | | | NR |
| Iron | | | | | | | | | | | NR |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | | | F |
| Magnesium | | | | | | | | | | | NR |
| Manganese | | | | | | | | | | | NR |
| Mercury | | | | | | | | | | | NR |
| Nickel | | | | | | | | | | | NR |
| Potassium | | | | | | | | | | | NR |
| Selenium | | | | | | | | | | | NR |
| Silver | | | | | | | | | | | NR |
| Sodium | | | | | | | | | | | NR |
| Thallium | | | | | | | | | | | NR |
| Vanadium | | | | | | | | | | | NR |
| Zinc | | | | | | | | | | | NR |
| Cyanide | | | | | | | | | | | NR |

U.S. EPA - CLP

3
BLANKS

Lab name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | | | NR |
| Antimony | | | | | | | | | | | NR |
| Arsenic | | | | | | | | | | | NR |
| Barium | | | | | | | | | | | NR |
| Beryllium | | | | | | | | | | | NR |
| Cadmium | | | | | | | | | | | NR |
| Calcium | | | | | | | | | | | NR |
| Chromium | | | | | | | | | | | NR |
| Cobalt | | | | | | | | | | | NR |
| Copper | | | | | | | | | | | NR |
| Iron | | | | | | | | | | | NR |
| Lead | | | 2.0 | U | | | | | | | F |
| Magnesium | | | | | | | | | | | NR |
| Manganese | | | | | | | | | | | NR |
| Mercury | | | | | | | | | | | NR |
| Nickel | | | | | | | | | | | NR |
| Potassium | | | | | | | | | | | NR |
| Selenium | | | | | | | | | | | NR |
| Silver | | | | | | | | | | | NR |
| Sodium | | | | | | | | | | | NR |
| Thallium | | | | | | | | | | | NR |
| Vanadium | | | | | | | | | | | NR |
| Zinc | | | | | | | | | | | NR |
| Cyanide | | | | | | | | | | | NR |

U.S. EPA - CLP

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

ICP ID Number: IC1 ICS Source: IV

Concentration Units: ug/L

| Analyte | True Sol. A | True Sol. AB | Initial Found Sol. A | Initial Found Sol. AB | %R | Final Found Sol. A | Final Found Sol. AB | %R |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 530060 | 506830 | 497105 | 479572.5 | 94.6 | 502742 | 476801.8 | 94.1 |
| Antimony | | | 0 | 11.5 | | 46 | 37.3 | |
| Arsenic | | | | | | | | |
| Barium | | 480 | 0 | 491.4 | 102.4 | 1 | 499.2 | 104.0 |
| Beryllium | | 439 | 0 | 465.2 | 106.0 | 0 | 454.4 | 103.5 |
| Cadmium | | 946 | -5 | 1015.5 | 107.3 | 7 | 983.9 | 104.0 |
| Calcium | 514420 | 495860 | 480452 | 463266.8 | 93.4 | 475769 | 455503.8 | 91.9 |
| Chromium | | 458 | 1 | 474.8 | 103.7 | 2 | 475.5 | 103.8 |
| Cobalt | | 450 | -6 | 457.6 | 101.7 | -11 | 455.4 | 101.2 |
| Copper | | 478 | -11 | 486.4 | 101.8 | -18 | 483.0 | 101.0 |
| Iron | 192280 | 188090 | 197260 | 183602.9 | 97.6 | 193967 | 188922.1 | 100.4 |
| Lead | | | | | | | | |
| Magnesium | 541560 | 521510 | 496608 | 481414.3 | 92.3 | 492822 | 469608.7 | 90.0 |
| Manganese | | 454 | -2 | 469.3 | 103.4 | -1 | 477.3 | 105.1 |
| Mercury | | | | | | | | |
| Nickel | | 889 | -6 | 916.8 | 103.1 | -5 | 916.9 | 103.1 |
| Potassium | | | -260 | -660.0 | | -1000 | -220.0 | |
| Selenium | | | | | | | | |
| Silver | | 931 | -63 | 860.1 | 92.4 | -77 | 872.7 | 93.7 |
| Sodium | | | 439 | 371.4 | | 415 | 445.8 | |
| Thallium | | | | | | | | |
| Vanadium | | 461 | -17 | 459.9 | 99.8 | -19 | 465.2 | 100.9 |
| Zinc | | 944 | -3 | 964.1 | 102.1 | -2 | 952.6 | 100.9 |

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B07HG5S

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 96.6

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

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | 75-125 | 94.6000 | | 12.4000 | | 103.50 | 79.4 | | P |
| Arsenic | 75-125 | 9.0000 | | 1.6000 | B | 8.30 | 88.8 | | F |
| Barium | 75-125 | 455.1001 | | 77.4000 | | 414.00 | 91.2 | | P |
| Beryllium | 75-125 | 10.1000 | | .2500 | B | 10.40 | 94.7 | | P |
| Cadmium | 75-125 | 9.5000 | | 1.4490 | U | 10.40 | 91.4 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 75-125 | 48.0000 | | 8.0000 | | 41.40 | 96.6 | | P |
| Cobalt | 75-125 | 104.2000 | | 5.9000 | B | 103.50 | 94.9 | | P |
| Copper | 75-125 | 56.9000 | | 9.0000 | | 51.80 | 92.7 | | P |
| Iron | | | | | | | | | NR |
| Lead | 75-125 | 7.0000 | | 4.0000 | | 4.10 | 73.1 | | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 75-125 | 296.1001 | | 230.5000 | | 103.50 | 63.4 | N | P |
| Mercury | 75-125 | .4940 | | .0518 | U | .52 | 95.0 | | CV |
| Nickel | 75-125 | 105.9000 | | 12.0000 | | 103.50 | 90.7 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 1.8000 | | .4140 | U | 2.10 | 85.7 | | F |
| Silver | 75-125 | 9.7000 | | 2.0700 | U | 10.40 | 93.6 | | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 10.2000 | | .4140 | U | 10.40 | 98.8 | | F |
| Vanadium | 75-125 | 119.3000 | | 16.6000 | | 103.50 | 99.3 | | P |
| Zinc | 75-125 | 123.0000 | | 26.0000 | | 103.50 | 93.7 | | P |
| Cyanide | 75-125 | 4.4450 | | 1.0360 | U | 5.18 | 85.7 | | C |

Comments:

U.S. EPA - CLP

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B07HG5A

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Matrix: Level (low/med):

Concentration Units: ug/L

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | | | | | | | | | NR |
| Arsenic | | | | | | | | | NR |
| Barium | | | | | | | | | NR |
| Beryllium | | | | | | | | | NR |
| Cadmium | | | | | | | | | NR |
| Calcium | | | | | | | | | NR |
| Chromium | | | | | | | | | NR |
| Cobalt | | | | | | | | | NR |
| Copper | | | | | | | | | NR |
| Iron | | | | | | | | | NR |
| Lead | | | | | | | | | NR |
| Magnesium | | | | | | | | | NR |
| Manganese | | 1496.70 | | 1113.30 | | 500.0 | 76.7 | | P |
| Mercury | | | | | | | | | NR |
| Nickel | | | | | | | | | NR |
| Potassium | | | | | | | | | NR |
| Selenium | | | | | | | | | NR |
| Silver | | | | | | | | | NR |
| Sodium | | | | | | | | | NR |
| Thallium | | | | | | | | | NR |
| Vanadium | | | | | | | | | NR |
| Zinc | | | | | | | | | NR |
| Cyanide | | | | | | | | | NR |

Comments:

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B07HG5D

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Matrix (water/soil): SOIL Level (low/med): LOW

% Solids for Sample: 96.6 % Solids for Duplicate: 96.6

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

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | %RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Aluminum | | 3823.1000 | | 3815.9000 | | .2 | | P |
| Antimony | | 12.4200 | U | 12.4200 | U | | | P |
| Arsenic | | 1.6000 | B | 1.3000 | B | 24.5 | | F |
| Barium | 41.4 | 77.4000 | | 43.6000 | | 56.0 | | P |
| Beryllium | | .2500 | B | .2100 | B | 18.2 | | P |
| Cadmium | | 1.4490 | U | 1.4490 | U | | | P |
| Calcium | | 8740.8980 | | 8035.3010 | | 8.4 | | P |
| Chromium | 2.1 | 8.0000 | | 7.4000 | | 8.0 | | P |
| Cobalt | | 5.9000 | B | 6.6000 | B | 11.0 | | P |
| Copper | 5.2 | 9.0000 | | 7.7000 | | 14.6 | | P |
| Iron | | 11205.3000 | | 10505.7000 | | 6.4 | | P |
| Lead | | 4.0000 | | 3.3000 | | 19.2 | | F |
| Magnesium | 1035.0 | 3329.0000 | | 2974.4000 | | 11.3 | | P |
| Manganese | | 230.5000 | | 214.6000 | | 7.1 | | P |
| Mercury | | .0518 | U | .0518 | U | | | CV |
| Nickel | 8.3 | 12.0000 | | 10.5000 | | 13.8 | | P |
| Potassium | | 944.6001 | B | 679.3999 | B | 32.7 | | P |
| Selenium | | .4140 | U | .4140 | U | | | F |
| Silver | | 2.0700 | U | 2.0700 | U | | | P |
| Sodium | | 199.9000 | B | 157.4000 | B | 23.8 | | P |
| Thallium | | .4140 | U | .4140 | U | | | F |
| Vanadium | 10.4 | 16.6000 | | 16.5000 | | .5 | | P |
| Zinc | | 26.0000 | | 24.1000 | | 7.6 | | P |
| Cyanide | | 1.0360 | U | 1.0360 | U | | | C |

FORM VI - IN

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U.S. EPA - CLP

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LABORATORY CONTROL SAMPLE

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Solid LCS Source: IV

Aqueous LCS Source: IV

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 1000.0 | 1053.2 | | 800.0 | 1200.0 | 105.3 |
| Antimony | | | | 600.0 | 634.1 | | 480.0 | 720.0 | 105.7 |
| Arsenic | | | | 6.0 | 6.1 | | 4.8 | 7.2 | 102.3 |
| Barium | | | | 1000.0 | 1031.1 | | 800.0 | 1200.0 | 103.1 |
| Beryllium | | | | 50.0 | 51.0 | | 40.0 | 60.0 | 102.0 |
| Cadmium | | | | 50.0 | 52.1 | | 40.0 | 60.0 | 104.2 |
| Calcium | | | | 5000.0 | 5134.0 | | 4000.0 | 6000.0 | 102.7 |
| Chromium | | | | 100.0 | 103.4 | | 80.0 | 120.0 | 103.4 |
| Cobalt | | | | 500.0 | 520.4 | | 400.0 | 600.0 | 104.1 |
| Copper | | | | 250.0 | 256.7 | | 200.0 | 300.0 | 102.7 |
| Iron | | | | 1000.0 | 1060.6 | | 800.0 | 1200.0 | 106.1 |
| Lead | | | | 6.0 | 6.1 | | 4.8 | 7.2 | 101.3 |
| Magnesium | | | | 5000.0 | 5040.3 | | 4000.0 | 6000.0 | 100.8 |
| Manganese | | | | 150.0 | 155.1 | | 120.0 | 180.0 | 103.4 |
| Mercury | | | | 12.7 | 12.8 | | 10.2 | 15.2 | 101.0 |
| Nickel | | | | 400.0 | 412.4 | | 320.0 | 480.0 | 103.1 |
| Potassium | | | | 5000.0 | 5050.3 | | 4000.0 | 6000.0 | 101.0 |
| Selenium | | | | 6.0 | 6.3 | | 4.8 | 7.2 | 105.0 |
| Silver | | | | 100.0 | 111.5 | | 80.0 | 120.0 | 111.5 |
| Sodium | | | | 5000.0 | 5144.0 | | 4000.0 | 6000.0 | 102.9 |
| Thallium | | | | 6.0 | 6.4 | | 4.8 | 7.2 | 106.7 |
| Vanadium | | | | 500.0 | 518.3 | | 400.0 | 600.0 | 103.7 |
| Zinc | | | | 200.0 | 207.2 | | 160.0 | 240.0 | 103.6 |
| Cyanide | | | | 10.0 | 9.5 | | 8.0 | 12.0 | 95.1 |

FORM VII - IN

03/90

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Solid LCS Source: IV

Aqueous LCS Source: IV

| Analyte | Aqueous (ug/L) True | Found | %R | Solid (mg/kg) True | Found | C | Limits | | %R |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | 1000.0 | 1061.7 | | 800.0 | 1200.0 | 106.2 |
| Antimony | | | | 600.0 | 634.6 | | 480.0 | 720.0 | 105.8 |
| Arsenic | | | | 6.0 | 6.2 | | 4.8 | 7.2 | 104.0 |
| Barium | | | | 1000.0 | 1045.2 | | 800.0 | 1200.0 | 104.5 |
| Beryllium | | | | 50.0 | 51.4 | | 40.0 | 60.0 | 102.7 |
| Cadmium | | | | 50.0 | 50.9 | | 40.0 | 60.0 | 101.7 |
| Calcium | | | | 5000.0 | 5182.1 | | 4000.0 | 6000.0 | 103.6 |
| Chromium | | | | 100.0 | 104.2 | | 80.0 | 120.0 | 104.2 |
| Cobalt | | | | 500.0 | 526.8 | | 400.0 | 600.0 | 105.4 |
| Copper | | | | 250.0 | 260.6 | | 200.0 | 300.0 | 104.2 |
| Iron | | | | 1000.0 | 1080.5 | | 800.0 | 1200.0 | 108.0 |
| Lead | | | | 6.0 | 6.3 | | 4.8 | 7.2 | 105.3 |
| Magnesium | | | | 5000.0 | 5087.9 | | 4000.0 | 6000.0 | 101.8 |
| Manganese | | | | 150.0 | 157.9 | | 120.0 | 180.0 | 105.3 |
| Mercury | | | | 12.7 | 14.1 | | 10.2 | 15.2 | 111.2 |
| Nickel | | | | 400.0 | 416.3 | | 320.0 | 480.0 | 104.1 |
| Potassium | | | | 5000.0 | 5135.5 | | 4000.0 | 6000.0 | 102.7 |
| Selenium | | | | 6.0 | 6.3 | | 4.8 | 7.2 | 104.7 |
| Silver | | | | 100.0 | 112.0 | | 80.0 | 120.0 | 112.0 |
| Sodium | | | | 5000.0 | 5195.2 | | 4000.0 | 6000.0 | 103.9 |
| Thallium | | | | 6.0 | 6.5 | | 4.8 | 7.2 | 107.7 |
| Vanadium | | | | 500.0 | 528.1 | | 400.0 | 600.0 | 105.6 |
| Zinc | | | | 200.0 | 210.0 | | 160.0 | 240.0 | 105.0 |
| Cyanide | | | | | 0.0 | | | | |

FORM VII - IN

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U.S. EPA - CLP

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Standard Addition Results

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Concentration Units: ug/L

| EPA Sample No. | An | 0 ADD ABS | 1 ADD CON | 1 ADD ABS | 2 ADD CON | 2 ADD ABS | 3 ADD CON | 3 ADD ABS | Final Conc. | r | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BO7HG5 | PB | .026 | 10.00 | .057 | 20.00 | .081 | 30.00 | .111 | 19.3 | .9988 | |
| BO7HG5 | PB | .022 | 10.00 | .049 | 20.00 | .082 | 30.00 | .104 | 16.1 | .9973 | + |

"+" for correlation <.995

4/2/93

FORM VIII - IN 03/90

U.S. EPA - CLP

9
ICP SERIAL DILUTIONS

EPA SAMPLE NO.

BO7HG5L

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Initial Sample Result (I) | C | Serial Dilution Result (S) | C | % Difference | Q | M |
|---|---|---|---|---|---|---|---|
| Aluminum | 18469.00 | | 23329.49 | | 26.3 | E | P |
| Antimony | 60.00 | B | 300.00 | U | 100.0 | | P |
| Arsenic | | | | | | | |
| Barium | 374.00 | | 488.50 | B | 30.6 | | P |
| Beryllium | 1.20 | B | 5.00 | U | 100.0 | | P |
| Cadmium | 7.00 | U | 35.00 | U | | | P |
| Calcium | 42226.50 | | 54510.00 | | 29.1 | E | P |
| Chromium | 38.80 | | 45.00 | U | 9.8 | | P |
| Cobalt | 28.40 | B | 47.00 | B | 65.5 | | P |
| Copper | 43.30 | | 51.00 | B | 17.8 | | P |
| Iron | 54131.70 | | 71864.00 | | 32.8 | E | P |
| Lead | | | | | | | |
| Magnesium | 16081.90 | | 20826.00 | B | 29.5 | E | P |
| Manganese | 1113.30 | | 1468.50 | | 31.9 | E | P |
| Mercury | | | | | | | |
| Nickel | 58.00 | | 100.00 | U | .9 | | P |
| Potassium | 4563.50 | B | 6700.00 | U | 100.0 | | P |
| Selenium | | | | | | | |
| Silver | 10.00 | U | 50.00 | U | | | P |
| Sodium | 965.90 | B | 1255.00 | B | 29.9 | | P |
| Thallium | | | | | | | |
| Vanadium | 80.10 | | 94.00 | B | 17.4 | | P |
| Zinc | 125.70 | | 171.50 | | 36.4 | | P |

U.S. EPA - CLP

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

Lab Code: WESTON Case No: SAS No.: SDG No.: CLP

ICP ID Number: IC1 Date: 10/15/92

Flame AA ID Number:

Furnace AA ID Number:

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | 308.20 | | 200.0 | 37.0 | P |
| Antimony | 206.80 | | 60.0 | 17.0 | P |
| Arsenic | | | | | |
| Barium | 493.40 | | 200.0 | 2.0 | P |
| Beryllium | 313.00 | | 5.0 | 1.0 | P |
| Cadmium | 228.80 | | 5.0 | 3.0 | P |
| Calcium | 317.90 | | 5000.0 | 30.0 | P |
| Chromium | 267.70 | | 10.0 | 3.0 | P |
| Cobalt | 228.60 | | 50.0 | 4.0 | P |
| Copper | 324.70 | | 25.0 | 2.0 | P |
| Iron | 259.90 | | 100.0 | 10.0 | P |
| Lead | | | | | |
| Magnesium | 279.00 | | 5000.0 | 24.0 | P |
| Manganese | 257.60 | | 15.0 | 2.0 | P |
| Mercury | | | | | |
| Nickel | 231.60 | | 40.0 | 9.0 | P |
| Potassium | 766.40 | | 5000.0 | 419.0 | P |
| Selenium | | | | | |
| Silver | 328.00 | | 10.0 | 3.0 | P |
| Sodium | 588.90 | | 5000.0 | 18.0 | P |
| Thallium | | | | | |
| Vanadium | 292.40 | | 50.0 | 2.0 | P |
| Zinc | 213.80 | | 20.0 | 7.0 | P |

Comments:

FORM X - IN

U.S. EPA - CLP

10

# INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

ICP ID Number: IC3 Date: 10/15/92

Flame AA ID Number:

Furnace AA ID Number:

| Analyte | Wave-length (nm) | Back ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | 308.20 | | 200 | 49.0 | P |
| Antimony | 206.80 | | 60 | 60.0 | P |
| Arsenic | | | 10 | | |
| Barium | 493.40 | | 200 | 14.0 | P |
| Beryllium | 313.00 | | 5 | 1.0 | P |
| Cadmium | 228.80 | | 5 | 7.0 | P |
| Calcium | 317.90 | | 5000 | 57.0 | P |
| Chromium | 267.70 | | 10 | 9.0 | P |
| Cobalt | 228.60 | | 50 | 9.0 | P |
| Copper | 324.70 | | 25 | 8.0 | P |
| Iron | 259.90 | | 100 | 15.0 | P |
| Lead | | | 3 | | |
| Magnesium | 279.00 | | 5000 | 68.0 | P |
| Manganese | 257.60 | | 15 | 4.0 | P |
| Mercury | | | 0.2 | | |
| Nickel | 231.60 | | 40 | 20.0 | P |
| Potassium | 766.40 | | 5000 | 1340.0 | P |
| Selenium | | | 5 | | |
| Silver | 328.00 | | 10 | 10.0 | P |
| Sodium | 588.90 | | 5000 | 151.0 | P |
| Thallium | | | 10 | | |
| Vanadium | 292.40 | | 50 | 8.0 | P |
| Zinc | 213.80 | | 20 | 4.0 | P |

Comments:

U.S. EPA - CLP

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# INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

ICP ID Number: Date: 10/15/92

Flame AA ID Number:

Furnace AA ID Number: AA4

| Analyte | Wave-length (nm) | Back ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | |
| Antimony | | | 60 | | |
| Arsenic | 193.70 | BZ | 10 | 2.0 | F |
| Barium | | | 200 | | |
| Beryllium | | | 5 | | |
| Cadmium | | | 5 | | |
| Calcium | | | 5000 | | |
| Chromium | | | 10 | | |
| Cobalt | | | 50 | | |
| Copper | | | 25 | | |
| Iron | | | 100 | | |
| Lead | | | 3 | | |
| Magnesium | | | 5000 | | |
| Manganese | | | 15 | | |
| Mercury | | | 0.2 | | |
| Nickel | | | 40 | | |
| Potassium | | | 5000 | | |
| Selenium | 196.00 | BZ | 5 | 2.0 | F |
| Silver | | | 10 | | |
| Sodium | | | 5000 | | |
| Thallium | | | 10 | | |
| Vanadium | | | 50 | | |
| Zinc | | | 20 | | |

Comments:

U.S. EPA - CLP

10

# INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

ICP ID Number: Date: 10/15/92

Flame AA ID Number:

Furnace AA ID Number: AA7

| Analyte | Wave-length (nm) | Back ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | |
| Antimony | | | 60 | | |
| Arsenic | | | 10 | | |
| Barium | | | 200 | | |
| Beryllium | | | 5 | | |
| Cadmium | | | 5 | | |
| Calcium | | | 5000 | | |
| Chromium | | | 10 | | |
| Cobalt | | | 50 | | |
| Copper | | | 25 | | |
| Iron | | | 100 | | |
| Lead | 283.30 | BZ | 3 | 1.0 | F |
| Magnesium | | | 5000 | | |
| Manganese | | | 15 | | |
| Mercury | | | 0.2 | | |
| Nickel | | | 40 | | |
| Potassium | | | 5000 | | |
| Selenium | | | 5 | | |
| Silver | | | 10 | | |
| Sodium | | | 5000 | | |
| Thallium | 276.80 | BZ | 10 | 2.0 | F |
| Vanadium | | | 50 | | |
| Zinc | | | 20 | | |

Comments:

U.S. EPA - CLP

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

Lab Code: WESTON Case No: SAS No.: SDG No.: CLP

ICP ID Number: Date: 10/15/92

Flame AA ID Number:

Furnace AA ID Number:
HG1

| Analyte | Wave-length (nm) | Back-ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | | | |
| Antimony | | | | | |
| Arsenic | | | | | |
| Barium | | | | | |
| Beryllium | | | | | |
| Cadmium | | | | | |
| Calcium | | | | | |
| Chromium | | | | | |
| Cobalt | | | | | |
| Copper | | | | | |
| Iron | | | | | |
| Lead | | | | | |
| Magnesium | | | | | |
| Manganese | | | | | |
| Mercury | 257.30 | | 0.2 | 0.1 | CV |
| Nickel | | | | | |
| Potassium | | | | | |
| Selenium | | | | | |
| Silver | | | | | |
| Sodium | | | | | |
| Thallium | | | | | |
| Vanadium | | | | | |
| Zinc | | | | | |
| | | | | | |

Comments:

FORM X - IN

U.S. EPA - CLP

11A
ICP Interelement Correction Factors (Annually)

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

ICP ID Number: IC1 Date: 1/15/92

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Al | Ca | Fe | Mg | AS |
|---|---|---|---|---|---|---|
| Aluminum | 308.20 | 0.0000000 | 0.0000000 | .0002400 | 0.0000000 | 0.0000000 |
| Antimony | 206.80 | 0.0000000 | 0.0000000 | .0006000 | 0.0000000 | .0054000 |
| Arsenic | | | | | | |
| Barium | 493.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Beryllium | 313.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cadmium | 228.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | .0034000 |
| Calcium | 317.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.70 | 0.0000000 | 0.0000000 | .0000800 | 0.0000000 | 0.0000000 |
| Cobalt | 228.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Copper | 324.70 | 0.0000000 | 0.0000000 | -.0001000 | 0.0000000 | 0.0000000 |
| Iron | 259.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | | | | | | |
| Magnesium | 279.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.60 | -.0003000 | 0.0000000 | -.0009000 | 0.0000000 | 0.0000000 |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Potassium | 766.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Selenium | | | | | | |
| Silver | 328.00 | 0.0000000 | 0.0000000 | -.0002600 | 0.0000000 | 0.0000000 |
| Sodium | 588.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | | | | | | |
| Vanadium | 292.40 | 0.0000000 | 0.0000000 | .0008000 | 0.0000000 | 0.0000000 |
| Zinc | 213.80 | 0.0000000 | 0.0000000 | .0001000 | 0.0000000 | 0.0000000 |

Comments:

U.S. EPA - CLP

11A

ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

Lab Code: WESTON Case No: SAS No.: SDG No.:

ICP ID Number: IC3 Date: 02/01/92

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Al | Ca | Fe | Mg | As |
|---|---|---|---|---|---|---|
| Aluminum | 308.20 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | | | | | | |
| Barium | 493.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Beryllium | 313.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cadmium | 228.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0025200 |
| Calcium | 317.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.70 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cobalt | 228.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Copper | 324.70 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Iron | 259.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | | | | | | |
| Magnesium | 279.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Potassium | 766.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Selenium | | | | | | |
| Silver | 328.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Sodium | 588.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | | | | | | |
| Vanadium | 292.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 213.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Comments:

FORM XI (PART 1) - IN

U.S. EPA - CLP

11B

ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

Lab Code: WESTON Case No: SAS No.: SDG No.:

ICP ID Number: IC1 Date: 01/15/92

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Ba | Cr | Co | Cu | Mn |
|---|---|---|---|---|---|---|
| Aluminum | 308.20 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.80 | 0.0000000 | 0.0167000 | -0.0012000 | 0.0000000 | 0.0000000 |
| Arsenic | | | | | | |
| Barium | 493.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Beryllium | 313.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cadmium | 228.80 | 0.0000000 | 0.0000000 | 0.0002900 | 0.0000000 | 0.0000000 |
| Calcium | 317.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.70 | 0.0000000 | 0.0000000 | 0.0000800 | 0.0000000 | 0.0000000 |
| Cobalt | 228.60 | 0.0012000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Copper | 324.70 | 0.0000000 | 0.0002000 | -0.0011000 | 0.0000000 | 0.0000000 |
| Iron | 259.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.0079000 |
| Lead | | | | | | |
| Magnesium | 279.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Potassium | 766.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Selenium | | | | | | |
| Silver | 328.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0001900 |
| Sodium | 588.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | | | | | | |
| Vanadium | 292.40 | 0.0000000 | 0.0011000 | 0.0008000 | 0.0000000 | 0.0000000 |
| Zinc | 213.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0009000 | 0.0000000 |

Comments:

FORM XI (PART 2) - IN

U.S. EPA - CLP

11B
ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

Lab Code: WESTON Case No: SAS No.: SDG No.:

ICP ID Number: IC1 Date: 01/15/92

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Ni | Pb | Sb | Sr | Ti |
|---|---|---|---|---|---|---|
| Aluminum | 308.20 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.0060000 |
| Antimony | 206.80 | -0.0039000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0017000 |
| Arsenic | | | | | | |
| Barium | 493.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Beryllium | 313.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cadmium | 228.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Calcium | 317.90 | 0.0000000 | 0.0000000 | 0.0740000 | 0.0000000 | 0.0000000 |
| Chromium | 267.70 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0005000 | 0.0000000 |
| Cobalt | 228.60 | 0.0003000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0016000 |
| Copper | 324.70 | 0.0016000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Iron | 259.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0022000 | 0.0000000 |
| Lead | | | | | | |
| Magnesium | 279.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Potassium | 766.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Selenium | | | | | | |
| Silver | 328.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Sodium | 588.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | | | | | | |
| Vanadium | 292.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0008000 |
| Zinc | 213.80 | 0.0038000 | 0.0016000 | 0.0026000 | 0.0000000 | 0.0000000 |

Comments:

FORM XI (PART 2) - IN

U.S. EPA - CLP

11B
ICP INTERELEMENT CORRECTION FACTORS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

Lab Code: WESTON Case No: SAS No.: SDG No.:

ICP ID Number: IC1 Date: 01/15/92

| Analyte | Wave-length (nm) | Interelement Correction Factors for: V | Zn | -- | -- | -- |
|---|---|---|---|---|---|---|
| Aluminum | 308.20 | 0.0170000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Antimony | 206.80 | -0.0080000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Arsenic | | | | | | |
| Barium | 493.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Beryllium | 313.00 | 0.0050000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cadmium | 228.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Calcium | 317.90 | 0.0000000 | 0.0022000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Chromium | 267.70 | 0.0004000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Cobalt | 228.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Copper | 324.70 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Iron | 259.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Lead | | | | | | |
| Magnesium | 279.00 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Manganese | 257.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Mercury | | | | | | |
| Nickel | 231.60 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Potassium | 766.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Selenium | | | | | | |
| Silver | 328.00 | -0.0060000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Sodium | 588.90 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Thallium | | | | | | |
| Vanadium | 292.40 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Zinc | 213.80 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Comments:

FORM XI (PART 2) - IN

U.S. EPA - CLP

12
ICP Linear Ranges (Quarterly)

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

ICP ID Number: IC1 Date: 10/26/92

| Analyte | Integ. Time (sec.) | Concentration (ug/L) | M |
|---|---|---|---|
| Aluminum | 3.30 | 1000000.0 | |
| Antimony | 3.30 | 120000.0 | |
| Arsenic | | | |
| Barium | 3.30 | 200000.0 | |
| Beryllium | 3.30 | 50000.0 | |
| Cadmium | 3.30 | 25000.0 | |
| Calcium | 3.30 | 1000000.0 | |
| Chromium | 3.30 | 50000.0 | |
| Cobalt | 3.30 | 250000.0 | |
| Copper | 3.30 | 125000.0 | |
| Iron | 3.30 | 500000.0 | |
| Lead | | | |
| Magnesium | 3.30 | 1000000.0 | |
| Manganese | 3.30 | 100000.0 | |
| Mercury | | | |
| Nickel | 3.30 | 100000.0 | |
| Potassium | 3.30 | 1000000.0 | |
| Selenium | | | |
| Silver | 3.30 | 50000.0 | |
| Sodium | 3.30 | 1000000.0 | |
| Thallium | | | |
| Vanadium | 3.30 | 50000.0 | |
| Zinc | 3.30 | 150000.0 | |

Comments:

U.S. EPA - CLP

12

ICP LINEAR RANGES (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract:

Lab Code: WESTON Case No: SAS No.: SDG No.: CLP

ICP ID Number: IC3 Date: 11/13/92

| Analyte | Integ. Time (Sec.) | Concentration (ug/L) | M |
|---|---|---|---|
| Aluminum | 3.30 | 1000000.0 | |
| Antimony | 3.30 | 300000.0 | |
| Arsenic | | | |
| Barium | 3.30 | 100000.0 | |
| Beryllium | 3.30 | 10000.0 | |
| Cadmium | 3.30 | 25000.0 | |
| Calcium | 3.30 | 1000000.0 | |
| Chromium | 3.30 | 50000.0 | |
| Cobalt | 3.30 | 250000.0 | |
| Copper | 3.30 | 250000.0 | |
| Iron | 3.30 | 500000.0 | |
| Lead | | | |
| Magnesium | 3.30 | 625000.0 | |
| Manganese | 3.30 | 150000.0 | |
| Mercury | | | |
| Nickel | 3.30 | 100000.0 | |
| Potassium | 3.30 | 625000.0 | |
| Selenium | | | |
| Silver | 3.30 | 100000.0 | |
| Sodium | 3.30 | 1000000.0 | |
| Thallium | | | |
| Vanadium | 3.30 | 50000.0 | |
| Zinc | 3.30 | 50000.0 | |
| | | | |

Comments:

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No: SDG No.: CLP337

Method: P

| EPA Sample No. | Preparation Date | Weight (gram) | Volume (mL) |
|---|---|---|---|
| BO7HG5 | 10/28/92 | 1.00 | 200 |
| BO7HG5D | 10/28/92 | 1.00 | 200 |
| BO7HG5S | 10/28/92 | 1.00 | 200 |
| LCSS128 | 10/28/92 | 1.00 | 200 |
| LCSS228 | 10/28/92 | 1.00 | 200 |
| PBS128 | 10/28/92 | 1.00 | 200 |

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No: SDG No.: CLP337

Method: F

| EPA Sample No. | Preparation Date | Weight (gram) | Volume (mL) |
|---|---|---|---|
| BO7HG5 | 10/28/92 | 1.00 | 200 |
| BO7HG5D | 10/28/92 | 1.00 | 200 |
| BO7HG5S | 10/28/92 | 1.00 | 200 |
| LCSS127 | 10/28/92 | 1.00 | 200 |
| LCSS227 | 10/28/92 | 1.00 | 200 |
| PBS127 | 10/28/92 | 1.00 | 200 |

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No: SDG No.: CLP337

Method: C

| EPA Sample No. | Preparation Date | Weight (gram) | Volume (mL) |
|---|---|---|---|
| LCSS164 | 10/27/92 | 5.00 | 250 |
| PBS164 | 10/27/92 | 5.00 | 250 |
| BO7HG5 | 10/27/92 | 5.00 | 250 |
| BO7HG5D | 10/27/92 | 5.00 | 250 |
| BO7HG5S | 10/27/92 | 5.00 | 250 |

U.S. EPA - CLP

13
PREPARATION LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No: SDG No.: CLP337

Method: CV

| EPA Sample No. | Preparation Date | Weight (gram) | Volume (mL) |
|---|---|---|---|
| BO7HG5 | 11/10/92 | .10 | 50 |
| BO7HG5D | 11/10/92 | .10 | 50 |
| BO7HG5S | 11/10/92 | .10 | 50 |
| LCSS143 | 11/10/92 | .10 | 50 |
| LCSS243 | 11/10/92 | .10 | 50 |
| PBS143 | 11/10/92 | .10 | 50 |

U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: AA4 Method: F

Start Date: 11/02/92 End Date: 11/02/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 1131 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| S10 | 1.00 | 1135 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| S20 | 1.00 | 1140 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| S30 | 1.00 | 1144 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| S60 | 1.00 | 1148 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| ICV1 | 1.00 | 1152 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| ICB1 | 1.00 | 1157 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| CRA | 1.00 | 1201 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| CCV1 | 1.00 | 1205 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| CCB1 | 1.00 | 1210 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| PBS127 | 1.00 | 1214 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| PBS127A | 1.00 | 1219 | 93.5 | | | X | | | | | | | | | | | | | | | | | | | | | |
| LCSS127 | 1.00 | 1223 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| LCSS127A | 1.00 | 1228 | 98.0 | | | X | | | | | | | | | | | | | | | | | | | | | |
| LCSS227 | 1.00 | 1232 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| LCSS227A | 1.00 | 1236 | 95.5 | | | X | | | | | | | | | | | | | | | | | | | | | |
| BO7HG5 | 1.00 | 1241 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| BO7HG5A | 1.00 | 1245 | 90.0 | | | X | | | | | | | | | | | | | | | | | | | | | |
| BO7HG5D | 1.00 | 1250 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| BO7HG5DA | 1.00 | 1254 | 91.5 | | | X | | | | | | | | | | | | | | | | | | | | | |
| CCV2 | 1.00 | 1259 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| CCB2 | 1.00 | 1303 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| BO7HG5S | 1.00 | 1308 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | 1312 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV3 | 1.00 | 1317 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| CCB3 | 1.00 | 1322 | | | | X | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |

U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: CN1 Method: C

Start Date: 10/27/92 End Date: 10/27/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 1600 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| S5 | 1.00 | 1601 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| S10 | 1.00 | 1602 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| S20 | 1.00 | 1603 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| S50 | 1.00 | 1604 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| S100 | 1.00 | 1605 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| S200 | 1.00 | 1606 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| ICV1 | 1.00 | 1607 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| ICB1 | 1.00 | 1608 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| PBS164 | 1.00 | 1609 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| LCSS164 | 1.00 | 1610 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| BO7HG5 | 1.00 | 1611 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| BO7HG5D | 1.00 | 1612 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| BO7HG5S | 1.00 | 1613 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| ZZZZZZ | 1.00 | 1614 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV1 | 1.00 | 1615 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| CCB1 | 1.00 | 1616 | | | | | | | | | | | | | | | | | | | | | | | | | X |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
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U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: HG1 Method: CV

Start Date: 11/10/92 End Date: 11/10/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 2022 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| S0.5 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| S1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| S2 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| S5 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| S10 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| ICV1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| ICB1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| CRA | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| PBS143 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| LCSS143 | 5.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| LCSS243 | 5.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| CCB1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG5 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| BO7HG5D | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| BO7HG5S | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| CCV2 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| CCB2 | 1.00 | 2126 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: AA7 Method: F

Start Date: 11/02/92 End Date: 11/02/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 820 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| S3 | 1.00 | 826 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| S15 | 1.00 | 831 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| S30 | 1.00 | 836 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| S60 | 1.00 | 841 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| ICV1 | 1.00 | 846 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| ICB1 | 1.00 | 851 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| CRA | 1.00 | 856 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| CCV1 | 1.00 | 901 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| CCB1 | 1.00 | 906 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| PBS127 | 1.00 | 911 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| PBS127A | 1.00 | 916 | 82.5 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| LCSS127 | 1.00 | 921 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| LCSS127A | 1.00 | 926 | 77.5 | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| LCSS227 | 1.00 | 931 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| LCSS227A | 1.00 | 936 | 71.5 | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| BO7HG5 | 1.00 | 941 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| BO7HG5A | 1.00 | 946 | 65.0 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| BO7HG5D | 1.00 | 951 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| BO7HG5DA | 1.00 | 956 | 76.5 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| CCV2 | 1.00 | 1001 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| CCB2 | 1.00 | 1006 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| BO7HG5S | 1.00 | 1011 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| ZZZZZZ | 1.00 | 1016 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| CCV3 | 1.00 | 1021 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| CCB3 | 1.00 | 1026 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| PBS127 | 1.00 | 1042 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| PBS127A | 1.00 | 1047 | 83.0 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| CCV4 | 1.00 | 1052 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| CCB4 | 1.00 | 1057 | | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
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U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: AA7 Method: F

Start Date: 11/02/92 End Date: 11/02/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 1129 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S3 | 1.00 | 1134 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S15 | 1.00 | 1139 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S30 | 1.00 | 1144 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S60 | 1.00 | 1149 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| ICV1 | 1.00 | 1154 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| ICB1 | 1.00 | 1159 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CRA | 1.00 | 1203 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV1 | 1.00 | 1208 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCB1 | 1.00 | 1213 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| PBS127 | 1.00 | 1218 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| PBS127A | 1.00 | 1223 | 86.5 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV2 | 1.00 | 1228 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCB2 | 1.00 | 1233 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV3 | 1.00 | 1343 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCB3 | 1.00 | 1348 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG50 | 1.00 | 1355 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG51 | 1.00 | 1357 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG52 | 1.00 | 1400 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG53 | 1.00 | 1402 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG5D | 1.00 | 1405 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG5D | 1.00 | 1407 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG5D | 1.00 | 1410 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| BO7HG5D | 1.00 | 1412 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV4 | 1.00 | 1415 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCB4 | 1.00 | 1417 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: AA4 Method: F

Start Date: 11/02/92 End Date: 11/02/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 1630 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S5 | 1.00 | 1634 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S10 | 1.00 | 1639 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S30 | 1.00 | 1643 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S60 | 1.00 | 1648 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| ICV1 | 1.00 | 1652 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| ICB1 | 1.00 | 1657 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CRA | 1.00 | 1701 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCV1 | 1.00 | 1705 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB1 | 1.00 | 1710 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| PBS127 | 1.00 | 1715 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| PBS127A | 1.00 | 1719 | 88.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| LCSS127 | 1.00 | 1724 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| LCSS127A | 1.00 | 1728 | 82.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| LCSS227 | 1.00 | 1733 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| LCSS227A | 1.00 | 1738 | 85.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO7HG5 | 1.00 | 1742 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO7HG5A | 1.00 | 1747 | 76.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO7HG5D | 1.00 | 1752 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO7HG5DA | 1.00 | 1756 | 76.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCV2 | 1.00 | 1801 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB2 | 1.00 | 1806 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO7HG5S | 1.00 | 1810 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| ZZZZZZ | 1.00 | 1815 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV3 | 1.00 | 1820 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB3 | 1.00 | 1825 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |

U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: AA7 Method: F

Start Date: 11/02/92 End Date: 11/02/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 2047 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| S10 | 1.00 | 2052 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| S20 | 1.00 | 2057 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| S30 | 1.00 | 2102 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| S60 | 1.00 | 2108 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| ICV1 | 1.00 | 2113 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| ICB1 | 1.00 | 2118 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| CRA | 1.00 | 2123 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| CCV1 | 1.00 | 2128 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| CCB1 | 1.00 | 2133 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| PBS127 | 1.00 | 2138 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| PBS127A | 1.00 | 2144 | 100.5 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| LCSS127 | 1.00 | 2149 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| LCSS127A | 1.00 | 2154 | 110.5 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| LCSS227 | 1.00 | 2159 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| LCSS227A | 1.00 | 2205 | 107.0 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| BO7HG5 | 1.00 | 2210 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| BO7HG5A | 1.00 | 2215 | 91.5 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| ZZZZZZ | 1.00 | 2223 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | | – | – | – |
| CCV2 | 1.00 | 2226 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| CCB2 | 1.00 | 2231 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| BO7HG5D | 1.00 | 2236 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| BO7HG5DA | 1.00 | 2242 | 92.5 | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| BO7HG5S | 1.00 | 2247 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| ZZZZZZ | 1.00 | 2252 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | | – | – | – |
| ZZZZZZ | 1.00 | 2300 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| CCV3 | 1.00 | 2303 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| CCB3 | 1.00 | 2308 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | X | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

U.S. EPA - CLP

14

# ANALYSIS RUN LOG

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP337

Instrument ID Number: IC3 Method: P

Start Date: 10/30/92 End Date: 10/30/92

| EPA Sample No. | D/F | Time | % R | Analytes | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AL | SB | AS | BA | BE | CD | CA | CR | CO | CU | FE | PB | MG | MN | HG | NI | K | SE | AG | NA | TL | V | ZN | CN |
| S0 | 1.00 | 1230 | | X̄ | X̄ | – | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – |
| S1 | 1.00 | 1234 | | | X | – | | X | X | – | X | X | X | X | – | – | X | – | X | – | – | X | | – | X | X | – |
| S2 | 1.00 | 1238 | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| ICV1 | 1.00 | 1239 | | X̄ | X̄ | – | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – |
| ICB1 | 1.00 | 1242 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| ICSA | 1.00 | 1245 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| ICSAB | 1.00 | 1248 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| CRI | 1.00 | 1256 | | | X | – | | X | X | | X | X | X | | – | | X | – | X | | – | X | | – | X | X | – |
| CCV1 | 1.00 | 1259 | | X̄ | X | – | X̄ | X | X | X̄ | X | X | X | X̄ | – | X̄ | X | – | X | X̄ | – | X | X̄ | – | X | X | – |
| CCB1 | 1.00 | 1302 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| PBS128 | 1.00 | 1306 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| LCSS128 | 1.00 | 1309 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| LCSS228 | 1.00 | 1312 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| BO7HG5 | 1.00 | 1315 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| BO7HG5L | 5.00 | 1319 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| BO7HG5D | 1.00 | 1322 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| ZZZZZZ | 1.00 | 1325 | | | | – | | | | | | | | | – | | | – | | | – | | | – | | | – |
| CCV2 | 1.00 | 1434 | | X̄ | X̄ | – | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – |
| CCB2 | 1.00 | 1437 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| BO7HG5S | 1.00 | 1441 | | | X | – | X | X | X | | X | X | X | | – | | X | – | X | | – | X | | – | X | X | – |
| BO7HG5A | 1.00 | 1450 | | – | | – | | | | – | | | | – | – | – | X | – | | – | – | | – | – | | | – |
| ICSA | 1.00 | 1453 | | X̄ | X̄ | – | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | X̄ | – | X̄ | X | – | X̄ | X̄ | – | X̄ | X̄ | – | X̄ | X̄ | – |
| ICSAB | 1.00 | 1457 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| CRI | 1.00 | 1503 | | | X | – | | X | X | | X | X | X | | – | | X | – | X | | – | X | | – | X | X | – |
| CCV3 | 1.00 | 1506 | | X̄ | X | – | X̄ | X | X | X̄ | X | X | X | X̄ | – | X̄ | X | – | X | X̄ | – | X | X̄ | – | X | X | – |
| CCB3 | 1.00 | 1509 | | X | X | – | X | X | X | X | X | X | X | X | – | X | X | – | X | X | – | X | X | – | X | X | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| | 0.00 | | | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

X02009
100-KR-1

# WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

| | | |
|---|---|---|
| PROJECT: WESTINGHOUSE-HANFORD | REVIEWER: LM | DATE: 4/2/93 |
| LABORATORY: Roy F. Weston | CASE: | SDG: B07HG5 |
| SAMPLES/MATRIX: B07HG5 | | |
| 1 soil sample | | |
| | | |
| | | |
| | | |

## 1. DATA PACKAGE COMPLETENESS

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/Chain-of-Custody | ✓ | | |
| Sample Analysis Data Report Forms | ✓ | | |
| Standards Data | | | |
| QC Summary | | | |
| Blanks Summary Report Forms | ✓ | | |
| Spike Sample Recovery Report Forms | ✓ | | |
| Duplicate Sample Analysis Report Forms | ✓ | | |
| Laboratory Control Sample Report Forms | | ✓ | |
| Raw Data | | | |
| Ion Chromatograph Chromatograms | ✓ | | |
| TOC and TOX Instrument Printouts | | | ✓ |
| Laboratory Bench Sheets | ✓ | | |
| Additional Data | | | |
| Laboratory Sample Preparation Logs | | ✓ | |
| Instrument Run Logs | ✓ | | |
| Internal Laboratory Chain-of-Custory | | ✓ | |
| Percent Solids Analysis Records | ✓ | | |
| Reduction Formulae | | ✓ | |
| Chemist Notebook Pages | ✓ | | |

## 2. HOLDING TIMES

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

Action: If any holding times were 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 balance check conducted prior to the TDS analysis? | Yes | No | N/A |
| Was the titrant normality checked? | Yes | No | N/A |

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

## 4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

| | | | |
|---|---|---|---|
| Have ICV and CCV been analyzed at the proper frequency? | Yes | No | N/A |
| 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 the validation requirements.

## 5. 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) and list the affected samples and analytes below.

## 6. 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).

## 7. MATRIX SPIKE SAMPLE ANALYSIS

| | | | |
|---|---|---|---|
| Are spike recoveries within the acceptance limits? | Yes | No | N/A |

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

8. 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 affected results 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 %R 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.

9. 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 samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

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

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

12. FIELD SPLIT SAMPLES

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

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

## 13. ANALYTE QUANTITATION AND DETECTION LIMITS

| | | | |
|---|---|---|---|
| Have results been reported and calculated correctly? | Yes | No | N/A |
| Are instrument detection limits below the CRDL? | 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).

## 14. 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): Wet Chemistry - X02009 - 100-KR-1

Holding times grossly exceeded for Nitrite, Nitrate and pH. Results flagged "R" rejected.

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JAN 1993
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OSM DMO

**ROY F. WESTON, INC.**
**LIONVILLE ANALYTICAL LABORATORY**
**ANALYTICAL CASE NARRATIVE**

**Client :** WESTINGHOUSE HANFORD
**RFW# :** 9210L337

**W.O. #:** 06168-002-001-9999-00
**Date Received:** 10-17-92

**INORGANIC**

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

RECORD COPY

Margaret M. Beaty for
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11/12/92
Date

pas/i10-337

# INORGANIC DATA SUMMARY REPORT 11/09/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9210L337

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | BO7HG5 | % Solids | 96.6 | | % | 0.10 |
| | | Fluoride by IC | 2.6 | u | MG/KG | 2.6 |
| | | Nitrite by IC | 1.3 | u (R) | MG/KG | 1.3 |
| | | Nitrate by IC | 4.9 | (R) | MG/KG | 1.3 |
| | | * ~~Cyanide, Total~~ | ~~1.0~~ | ~~u~~ | ~~MG/KG~~ | ~~1.0~~ |
| | | Sulfate by IC | 5.7 | | MG/KG | 1.4 |
| | | pH | 7.7 | (R) | PH UNITS | 0.010 |

4/3/93
[illegible]

* Cyanide is expected as part of the [illegible] but it was the [illegible] reported [illegible] the [illegible] water

ROY F. WESTON INC.

INORGANIC METHOD BLANK DATA SUMMARY PAGE 11/09/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9210L337

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK10 | 92LICS50-MB1 | Fluoride by IC | 2.5 | u | MG/KG | 2.5 |
| | | Nitrite by IC | 1.2 | u | MG/KG | 1.2 |
| | | Nitrate by IC | 1.2 | u | MG/KG | 1.2 |
| | | Sulfate by IC | 1.4 | u | MG/KG | 1.4 |
| BLANK1 | 92LC264-MB1 | Cyanide, Total | 1.0 | u | MG/KG | 1.0 |

ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 11/09/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9210L337

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -001 | BO7HG5 | Fluoride by IC | 56.2 | 2.6 u | 51.8 | 109 |
| | | Fluoride by IC MSD | 56.1 | 2.6 u | 51.8 | 108 |
| | | Nitrite by IC | 26.5 | 1.3 u | 25.9 | 102 |
| | | Nitrite by IC MSD | 27.0 | 1.3 u | 25.9 | 104 |
| | | Nitrate by IC | 31.9 | 4.9 | 25.9 | 104 |
| | | Nitrate by IC MSD | 32.1 | 4.9 | 25.9 | 105 |
| | | Cyanide, Total | 4.4 | 1.0 u | 5.2 | 85.9 |
| | | Cyanide, Total MSD | 4.6 | 1.0 u | 5.2 | 89.6 |
| | | Sulfate by IC | 32.1 | 5.7 | 25.9 | 102 |
| | | Sulfate by IC MSD | 32.2 | 5.7 | 25.9 | 102 |
| BLANK10 | 92LICS50-MB1 | Fluoride by IC | 50.1 | 2.5 u | 50.0 | 100 |
| | | Fluoride by IC MSD | 50.0 | 2.5 u | 50.0 | 99.9 |
| | | Nitrite by IC | 25.3 | 1.2 u | 25.0 | 101 |
| | | Nitrite by IC MSD | 24.8 | 1.2 u | 25.0 | 99.3 |
| | | Nitrate by IC | 25.1 | 1.2 u | 25.0 | 100 |
| | | Nitrate by IC MSD | 25.2 | 1.2 u | 25.0 | 101 |
| | | Sulfate by IC | 27.9 | 1.4 u | 27.9 | 100 |
| | | Sulfate by IC MSD | 27.9 | 1.4 u | 27.9 | 100 |

ROY F. WESTON INC.

INORGANIC DUPLICATE SPIKE REPORT 11/09/92

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9210L337

WORK ORDER: 06168-002-001-9999-00

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %RPD |
|---|---|---|---|---|---|
| -001 | BO7HG5 | Fluoride by IC | 109 | 108 | 0.10 |
| | | Nitrite by IC | 102 | 104 | 2.1 |
| | | Nitrate by IC | 104 | 105 | 0.42 |
| | | Cyanide, Total | 85.9 | 89.6 | 4.2 |
| | | Sulfate by IC | 102 | 102 | 0.33 |
| BLANK10 | 92LICS50-MB1 | Fluoride by IC | 100 | 99.9 | 0.30 |
| | | Nitrite by IC | 101 | 99.3 | 2.0 |
| | | Nitrate by IC | 100 | 101 | 0.44 |
| | | Sulfate by IC | 100 | 100 | 0.18 |
| LCS1 | 92LC264-LC1 | Cyanide, Total LCS | 95.1 | 95.1 | 0.00 |

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ROY F. WESTON INC.

INORGANIC PRECISION REPORT 11/09/92

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9210L337

WORK ORDER: 06168-002-001-9999-00

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | %RPD |
|---|---|---|---|---|---|
| -001REP | BO7HG5 | Fluoride by IC | 2.6 u | 2.6 u | NC |
| | | Nitrite by IC | 1.3 u | 1.3 u | NC |
| | | Nitrate by IC | 4.9 | 5.0 | 2.5 |
| | | Cyanide, Total | 1.0 u | 1.0 u | NC |
| | | Sulfate by IC | 5.7 | 5.3 | 6.0 |

ROY F. WESTON INC.

INORGANIC LABORATORY CONTROL STANDARDS REPORT 11/09/92

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 92LC264-LC1 | Cyanide, Total LCS | 9.5 | 10.0 | MG/KG | 95.1 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 10/17/92 RFW LOT # :9210L337

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| BO7HG5 | | | | | | |
| % SOLIDS | 001 | S | 92LRS273 | 10/13/92 | 10/23/92 | 10/24/92 |
| FLUORIDE BY IC | 001 | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| FLUORIDE BY IC | 001 REP | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| FLUORIDE BY IC | 001 MS | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| FLUORIDE BY IC | 001 MSD | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRITE BY IC | 001 | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRITE BY IC | 001 REP | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRITE BY IC | 001 MS | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRITE BY IC | 001 MSD | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRATE BY IC | 001 | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRATE BY IC | 001 REP | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRATE BY IC | 001 MS | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| NITRATE BY IC | 001 MSD | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| TOTAL CYANIDE | 001 | S | 92LC264 | 10/13/92 | 10/27/92 | 10/27/92 |
| TOTAL CYANIDE | 001 REP | S | 92LC264 | 10/13/92 | 10/27/92 | 10/27/92 |
| TOTAL CYANIDE | 001 MS | S | 92LC264 | 10/13/92 | 10/27/92 | 10/27/92 |
| TOTAL CYANIDE | 001 MSD | S | 92LC264 | 10/13/92 | 10/27/92 | 10/27/92 |
| SULFATE BY IC | 001 | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| SULFATE BY IC | 001 REP | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| SULFATE BY IC | 001 MS | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| SULFATE BY IC | 001 MSD | S | 92LICS50 | 10/13/92 | 11/06/92 | 11/06/92 |
| PH | 001 | S | 92LRP009 | 10/13/92 | 10/24/92 | 10/24/92 |
| SUB-OUT TEST FOR SUB | 001 | S | | 10/13/92 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| CHLORIDE BY IC | MB1 | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| CHLORIDE BY IC | MB1 BS | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| CHLORIDE BY IC | MB1 BSD | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| FLUORIDE BY IC | MB1 | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| FLUORIDE BY IC | MB1 BS | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| FLUORIDE BY IC | MB1 BSD | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| NITRITE BY IC | MB1 | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| NITRITE BY IC | MB1 BS | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| NITRITE BY IC | MB1 BSD | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 10/17/92 RFW LOT # :9210L337

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| NITRATE BY IC | MB1 | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| NITRATE BY IC | MB1 BS | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| NITRATE BY IC | MB1 BSD | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| PHOSPHATE BY IC | MB1 | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| PHOSPHATE BY IC | MB1 BS | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| PHOSPHATE BY IC | MB1 BSD | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| SULFATE BY IC | MB1 | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| SULFATE BY IC | MB1 BS | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| SULFATE BY IC | MB1 BSD | S | 92LICS50 | N/A | 11/06/92 | 11/06/92 |
| TOTAL CYANIDE | LC1 L | S | 92LC264 | N/A | 10/27/92 | 10/27/92 |
| TOTAL CYANIDE | MB1 | S | 92LC264 | N/A | 10/27/92 | 10/27/92 |

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD Level:(low/med) LOW

RFW Lot No.: 9210L337

| | CLIENT SAMPLE NO. | S1 (NBZ)# | S2 (FBP)# | S3 (TPH)# | S4 (PHL)# | S5 (2FP)# | S6 (TBP)# | S7 (2CP)# | S8 (DCB)# | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|---|
| 01 | BO7HG5 | 30 | 51 | 57 | 39 | 45 | 77 | 38 | 33 | 0 |
| 02 | BO7HG5MS | 28 | 57 | 52 | 50 | 38 | 66 | 43 | 13* | 1 |
| 03 | BO7HG5MSD | 31 | 48 | 71 | 40 | 44 | 93 | 40 | 33 | 0 |
| 04 | SBLKLE1795-MB1 | 41 | 55 | 70 | 52 | 63 | 54 | 52 | 46 | 0 |
| 05 | SBLKLE1795-MB1 BS | 59 | 70 | 80 | 71 | 83 | 82 | 73 | 61 | 0 |

| | QC LIMITS | |
|---|---|---|
| S1 (NBZ) = Nitrobenzene-d5 | ( 23-120) | |
| S2 (FBP) = 2-Fluorobiphenyl | ( 30-115) | |
| S3 (TPH) = Terphenyl-d14 | ( 18-137) | |
| S4 (PHL) = Phenol-d5 | ( 24-113) | |
| S5 (2FP) = 2-Fluorophenol | ( 25-121) | |
| ~~S6 (TBP) = 2,4,6-Tribromophenol~~ | ( 19-122) | |
| S7 (2CP) = 2-Chlorophenol-d4 | ( 20-130) | (advisory) |
| S8 (DCB) = 1,2-Dichlorobenzene-d4 | ( 20-130) | (advisory) |

# Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

IS = 3
RF = 0.106

$$\frac{9160(40ng)(0.4)}{42497(0.106)} = 81.33^{8}\ ng$$

Spike 100 ul x

50 ug = 500 ng
75 ug = 750 ng

375 ul, ~~500~~ 2

0.15 ug
150 ng



5127

3D

# SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9210L337-001

MATRIX Spike - Sample No.: B07HG5 Level (low/med): LOW

| COMPOUND | SPIKE ADDED UG/KG | SAMPLE CONCENTRATION UG/KG | MS CONCENTRATION UG/KG | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| Phenol | 2560 | 0 | 1310 | 51 | 26 - 90 |
| 2-Chlorophenol | 2560 | 0 | 1030 | 40 | 25 -102 |
| 1,4-Dichlorobenzene | 1710 | 0 | 137 | 8 * | 28 -104 |
| N-Nitroso-di-n-prop.(1) | 1710 | 0 | 664 | 39 * | 41 -126 |
| 1,2,4-Trichlorobenzene | 1710 | 0 | 588 | 34 * | 38 -107 |
| 4-Chloro-3-methylphenol | 2560 | 0 | 1530 | 60 | 26 -103 |
| Acenaphthene | 1710 | 0 | 839 | 49 | 31 -137 |
| 4-Nitrophenol | 2560 | 0 | 1780 | 69 | 11 -114 |
| 2,4-Dinitrotoluene | 1710 | 0 | 931 | 54 | 28 - 89 |
| Pentachlorophenol | 2560 | 0 | 1940 | 76 | 17 -109 |
| Pyrene | 1710 | 0 | 850 | 50 | 35 -142 |

| COMPOUND | SPIKE ADDED UG/KG | MSD CONCENTRATION UG/KG | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC |
|---|---|---|---|---|---|---|
| Phenol | 2560 | 1160 | 45 | 12 | 35 | 26 - 90 |
| 2-Chlorophenol | 2560 | 988 | 39 | 2 | 50 | 25 -102 |
| 1,4-Dichlorobenzene | 1710 | 558 | 33 | 125 * | 27 | 28 -104 |
| N-Nitroso-di-n-prop.(1) | 1710 | 608 | 36 * | 8 | 38 | 41 -126 |
| 1,2,4-Trichlorobenzene | 1710 | 615 | 36 * | 5 | 23 | 38 -107 |
| 4-Chloro-3-methylphenol | 2560 | 1910 | 74 | 20 | 33 | 26 -103 |
| Acenaphthene | 1710 | 933 | 55 | 11 | 19 | 31 -137 |
| 4-Nitrophenol | 2560 | 2720 | 106 | 42 | 50 | 11 -114 |
| 2,4-Dinitrotoluene | 1710 | 1280 | 75 | 32 | 47 | 28 - 89 |
| Pentachlorophenol | 2560 | 2830 | 110 * | 36 | 47 | 17 -109 |
| Pyrene | 1710 | 1230 | 72 | 36 | 36 | 35 -142 |

(1) N-Nitroso-di-n-propylamine

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 11 outside limits
Spike Recovery: 6 out of 22 outside limits

COMMENTS:

3D

SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: ~~ONB~~ 6168-02-01 12/7/92

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9210L337

BLANK Spike - Sample No.: SBLKLE1795-MB1 Level (low/med): LOW

| COMPOUND | SPIKE ADDED UG/KG | SAMPLE CONCENTRATION UG/KG | BS CONCENTRATION UG/KG | BS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| Phenol | 2500 | 0 | 1950 | 78 | 26 - 90 |
| 2-Chlorophenol | 2500 | 0 | 1750 | 70 | 25 -102 |
| 1,4-Dichlorobenzene | 1670 | 0 | 968 | 58 | 28 -104 |
| N-Nitroso-di-n-prop.(1) | 1670 | 0 | 1050 | 63 | 41 -126 |
| 1,2,4-Trichlorobenzene | 1670 | 0 | 1070 | 64 | 38 -107 |
| 4-Chloro-3-methylphenol | 2500 | 0 | 1780 | 71 | 26 -103 |
| Acenaphthene | 1670 | 0 | 946 | 57 | 31 -137 |
| 4-Nitrophenol | 2500 | 0 | 2180 | 87 | 11 -114 |
| 2,4-Dinitrotoluene | 1670 | 0 | 1240 | 74 | 28 - 89 |
| Pentachlorophenol | 2500 | 0 | 2240 | 90 | 17 -109 |
| Pyrene | 1670 | 0 | 1290 | 77 | 35 -142 |

(1) N-Nitroso-di-n-propylamine

# Column to be used to flag recovery value with an asterisk
* Values outside of QC limits

Spike Recovery: 0 out of 11 outside limits

COMMENTS:

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD

Lab File ID: M110511 Lab Sample ID: 92LE1795-MB1

Instrument ID: 5100M Date Extracted: 10/21/92

Matrix:(soil/water) SOIL Date Analyzed: 11/05/92

Level:(low/med) LOW Time Analyzed: 1840

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 01 | SBLKLE1795-MB1 BS | 92LE1795-MB1S | M110512 | 11/05/92 |
| 02 | BO7HG5 | 9210L337-001 | M110513 | 11/05/92 |
| 03 | BO7HG5MS | 9210L337-001S | M110514 | 11/05/92 |
| 04 | BO7HG5MSD | 9210L337-001T | M110515 | 11/05/92 |

COMMENTS:

5B

# SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
## DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc. Contract: 06168-002-001-9

Case No.: WESTINGHOUSE HANFORD

Lab File ID: M102909 DFTPP Injection Date: 10/29/92

Instrument ID: 5100M DFTPP Injection Time: 1815

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 51 | 30.0 - 80.0% of mass 198 | 31.8 |
| 68 | Less than 2.0% of mass 69 | 0.0( 0.0)1 |
| 69 | Mass 69 relative abundance | 49.4 |
| 70 | Less than 2.0% of mass 69 | 0.0( 0.0)1 |
| 127 | 25.0 - 75.0% of mass 198 | 43.5 |
| 197 | Less than 1.0% of mass 198 | 0.0 |
| 198 | Base Peak, 100% relative abundance | 100.0 |
| 199 | 5.0 to 9.0% of mass 198 | 7.5 |
| 275 | 10.0 - 30.0% of mass 198 | 20.3 |
| 365 | Greater than 0.75% of mass 198 | 2.01 |
| 441 | Present, but less than mass 443 | 5.6 |
| 442 | 40.0 - 110.0% of mass 198 | 43.1 |
| 443 | 15.0 - 24.0% of mass 442 | 9.7( 22.6)2 |

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | SSTD50 | SSTD50 | M102910 | 10/29/92 | 2145 |
| 02 | SSTD80 | SSTD80 | M102911 | 10/29/92 | 2230 |
| 03 | SSTD120 | SSTD120 | M102912 | 10/29/92 | 2315 |
| 04 | SSTD160 | SSTD160 | M102913 | 10/29/92 | 2359 |
| 05 | SSTD20 | SSTD20 | M102914 | 10/30/92 | 0044 |
| 06 | | | | | |
| 07 | | | | | |
| 08 | | | | | |
| 09 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
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| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |

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# SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
## DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc. Contract: 06168-002-001-9

Case No.: WESTINGHOUSE HANFORD

Lab File ID: M110501 DFTPP Injection Date: 11/05/92

Instrument ID: 5100M DFTPP Injection Time: 1041

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 51 | 30.0 - 80.0% of mass 198 | 44.2 |
| 68 | Less than 2.0% of mass 69 | 0.0( 0.0)1 |
| 69 | Mass 69 relative abundance | 59.9 |
| 70 | Less than 2.0% of mass 69 | 0.0( 0.0)1 |
| 127 | 25.0 - 75.0% of mass 198 | 50.9 |
| 197 | Less than 1.0% of mass 198 | 0.0 |
| 198 | Base Peak, 100% relative abundance | 100.0 |
| 199 | 5.0 to 9.0% of mass 198 | 8.0 |
| 275 | 10.0 - 30.0% of mass 198 | 20.8 |
| 365 | Greater than 0.75% of mass 198 | 1.64 |
| 441 | Present, but less than mass 443 | 6.4 |
| 442 | 40.0 - 110.0% of mass 198 | 44.0 |
| 443 | 15.0 - 24.0% of mass 442 | 9.3( 21.1)2 |

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | SSTD50 | SSTD50 | M110502 | 11/05/92 | 1101 |
| 02 | SBLKLE1795-MB1 | 92LE1795-MB1 | M110511 | 11/05/92 | 1840 |
| 03 | SBLKLE1795-MB1 BS | 92LE1795-MB1S | M110512 | 11/05/92 | 1920 |
| 04 | BO7HG5 | 9210L337-001 | M110513 | 11/05/92 | 2001 |
| 05 | BO7HG5MS | 9210L337-001S | M110514 | 11/05/92 | 2041 |
| 06 | BO7HG5MSD | 9210L337-001T | M110515 | 11/05/92 | 2122 |
| 07 | | | | | |
| 08 | | | | | |
| 09 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
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| 16 | | | | | |
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| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9210L337

Lab File ID (Standard): M110502 Date Analyzed: 11/05/92

Instrument ID: 5100M Time Analyzed: 1101

| | | IS4(PHN) AREA # | RT # | IS5(CRY) AREA # | RT # | IS6(PRY) AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 45649 | 18.00 | 37068 | 22.93 | 25975 | 26.32 |
| | UPPER LIMIT | 91298 | 18.50 | 74136 | 23.43 | 51950 | 26.82 |
| | LOWER LIMIT | 22825 | 17.50 | 18534 | 22.43 | 12988 | 25.82 |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | BO7HG5 | 54416 | 18.00 | 59743 | 22.97 | 56094* | 26.37 |
| 02 | BO7HG5MS | 51260 | 18.00 | 58152 | 22.97 | 53108* | 26.37 |
| 03 | BO7HG5MSD | 60225 | 17.98 | 66535 | 22.95 | 59263* | 26.35 |
| 04 | SBLKLE1795-MB1 | 52588 | 18.00 | 46095 | 22.97 | 43904 | 26.37 |
| 05 | SBLKLE1795-MB1 BS | 54340 | 18.00 | 44110 | 22.93 | 42165 | 26.33 |

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9210L337

Lab File ID (Standard): M110502 Date Analyzed: 11/05/92

Instrument ID: 5100M Time Analyzed: 1101

| | | IS1(DCB) AREA # | RT # | IS2(NPT) AREA # | RT # | IS3(ANT) AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 21862 | 7.25 | 67720 | 10.08 | 35507 | 14.37 |
| | UPPER LIMIT | 43724 | 7.75 | 135440 | 10.58 | 71014 | 14.87 |
| | LOWER LIMIT | 10931 | 6.75 | 33860 | 9.58 | 17754 | 13.87 |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | BO7HG5 | 22472 | 7.18 | 75407 | 10.07 | 39847 | 14.35 |
| 02 | BO7HG5MS | 23143 | 7.18 | 75920 | 10.07 | 40800 | 14.35 |
| 03 | BO7HG5MSD | 24675 | 7.18 | 83185 | 10.05 | 45179 | 14.35 |
| 04 | SBLKLE1795-MB1 | 24509 | 7.18 | 81175 | 10.05 | 42497 | 14.35 |
| 05 | SBLKLE1795-MB1 BS | 23820 | 7.18 | 78704 | 10.05 | 42398 | 14.35 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

9613402.2361

CLIENT SAMPLE NO.

BO7HG5

Lab Name: Roy F. Weston, Inc. Work Order: 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD WC

Matrix: (soil/water) SOIL

Lab Sample ID: 9210L337-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: 11059235.53

% Moisture: 3.4 decanted: (Y/N)

Date Received: 10/17/92

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 10/21/92 SD = 10/13

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 11/08/92

Injection Volume: 0.5 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.6

Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | Q |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | 1.7 | UJ |
| 319-85-7 | Beta-BHC | 1.7 | U |
| 319-86-8 | Delta-BHC | 1.7 | U |
| 58-89-9 | gamma-BHC (Lindane) | 1.7 | U |
| 76-44-8 | Heptachlor | 1.7 | U |
| 309-00-2 | Aldrin | 1.7 | U |
| 1024-57-3 | Heptachlor epoxide | 1.7 | U |
| 959-98-8 | Endosulfan I | 1.7 | U |
| 60-57-1 | Dieldrin | 3.4 | U |
| 72-55-9 | 4,4'-DDE | 3.4 | U |
| 72-20-8 | Endrin | 3.4 | U |
| 33213-65-9 | Endosulfan II | 3.4 | U |
| 72-54-8 | 4,4'-DDD | 3.4 | U |
| 1031-07-8 | Endosulfan sulfate | 3.4 | U |
| 50-29-3 | 4,4'-DDT | 3.4 | U |
| 72-43-5 | Methoxychlor | 17 | U |
| 53494-70-5 | Endrin ketone | 3.4 | U |
| 7421934 | Endrin aldehyde | 3.4 | U |
| 5103-71-9 | alpha-Chlordane | 1.7 | U |
| 5103-74-2 | gamma-Chlordane | 1.7 | U |
| 8001-35-2 | Toxaphene | 170 | U |
| 12674-11-2 | Aroclor-1016 | 34 | U |
| 11104-28-2 | Aroclor-1221 | 69 | U |
| 11141-16-5 | Aroclor-1232 | 34 | U |
| 53469-21-9 | Aroclor-1242 | 34 | U |
| 12672-29-6 | Aroclor-1248 | 34 | U |
| 11097-69-1 | Aroclor-1254 | 34 | U |
| 11096-82-5 | Aroclor-1260 | 34 | U |

RB 4/1/93

all analytes "J" due to HT's

highlighted analytes - J. also due to Calib. RSD and

B.M 12/9/93

FORM 1 PEST 03/90

2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9210L337

GC Column(1): DB608 ID: 0.53(mm) GC Column(2): DB1701 ID: 0.53(mm)

| | CLIENT SAMPLE NO. | TCX1 %REC # | TCX2 %REC # | DCB1 %REC # | DCB2 %REC # | OTHER (1) | OTHER (2) | TOT OUT |
|---|---|---|---|---|---|---|---|---|
| 01 | BO7HG5 | 82 | 78 | 85 | 82 | | | 0 |
| 02 | BO7HG5MS | 92 | 88 | 95 | 92 | | | 0 |
| 03 | BO7HG5MSD | 78 | 75 | 75 | 75 | | | 0 |
| 04 | PBLKLE1797-MB1 | 82 | 78 | 82 | 85 | | | 0 |
| 05 | PBLKLE1797-MB1 BS | 82 | 78 | 82 | 82 | | | 0 |

| | ADVISORY QC LIMITS |
|---|---|
| TCX = Tetrachloro-m-xylene | ( 60-150) |
| DCB = Decachlorobiphenyl | ( 60-150) |

# Column to be used to flag recovery values
* Values outside of QC limits
Z Surrogate diluted out

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9210L337-001

MATRIX Spike - Sample No.: B07HG5

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 17.0 | 0 | 15.0 | 88 | 46-127 |
| Heptachlor | 17.0 | 0 | 14.3 | 84 | 35-130 |
| Aldrin | 17.0 | 0 | 11.9 | 70 | 34-132 |
| Dieldrin | 34.0 | 0 | 30.6 | 90 | 31-134 |
| Endrin | 34.0 | 0.688 | 33.7 | 97 | 42-139 |
| 4,4'-DDT | 34.0 | 0 | 38.1 | 112 | 23-134 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONCENTRATION (ug/Kg) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC |
|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 16.8 | 12.7 | 76 | 14 | 50 | 46-127 |
| Heptachlor | 16.8 | 12.7 | 76 | 10 | 31 | 35-130 |
| Aldrin | 16.8 | 10.7 | 64 | 8 | 43 | 34-132 |
| Dieldrin | 33.5 | 25.8 | 77 | 15 | 38 | 31-134 |
| Endrin | 33.5 | 27.5 | 80 | 19 | 45 | 42-139 |
| 4,4'-DDT | 33.5 | 30.2 | 90 | 21 | 50 | 23-134 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS: _____

3F

SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: ~~ONE~~ fmm 12/11/92 6168-02-01

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9210L337

MATRIX Spike - Sample No.: PBLKLE1797-MB1

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 16.7 | 0 | 13.3 | 80 | 46-127 |
| Heptachlor | 16.7 | 0 | 12.7 | 76 | 35-130 |
| Aldrin | 16.7 | 0 | 10.7 | 64 | 34-132 |
| Dieldrin | 33.3 | 0 | 27.0 | 81 | 31-134 |
| Endrin | 33.3 | 0 | 26.3 | 79 | 42-139 |
| 4,4'-DDT | 33.3 | 0 | 28.7 | 86 | 23-134 |

# Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: ~~6~~ 0 out of 6 outside limits

COMMENTS: fmm 12/11/92

9613402.2365

4C

# PESTICIDE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01

Case No.: WESTINGHOUSE HANFORD

Lab Sample ID: 92LE1797-MB1 Lab File ID: 11059235.56

Matrix:(soil/water) SOIL Extraction:(SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) N Date Extracted: 10/21/92

Date Analyzed (1): 11/08/92 Date Analyzed (2): 11/08/92

Time Analyzed (1): 0642 Time Analyzed (2): 0642

Instrument ID (1): 35 Instrument ID (2): 35

GC Column (1): DB608 ID: 0.53(mm) GC Column (2): DB1701 ID: 0.53(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED 1 | DATE ANALYZED 2 |
|---|---|---|---|---|
| 01 | BO7HG5 | 9210L337-001 | 11/08/92 | 11/08/92 |
| 02 | BO7HG5MS | 9210L337-001S | 11/08/92 | 11/08/92 |
| 03 | BO7HG5MSD | 9210L337-001T | 11/08/92 | 11/08/92 |
| 04 | PBLKLE1797-MB1 BS | 92LE1797-MB1S | 11/08/92 | 11/08/92 |

COMMENTS: _____