WESTON Analytics Use Only
9201L008

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date: 6168-02-01-0000
Work Order #: 91 019 PE3BP 91-142
Project Contact/Phone #: WS Thompson/509-376-2153
AD Project Manager: Susie King
QC: CLP Del: CLP TAT: 3.5 Days
Date Rec'd: 1-14-92 Date Due: 2-18-92
Account #: WS-HANFORD

Refrigerator #: #50 1G-60 Poly Cooler #
#/Type Container: Liquid / Solid — Glass
Volume: Liquid / Solid — 20 gal 1000 ml
Preservatives: HF

ANALYSES REQUESTED

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | ORGANIC VOA | BNA | Pest/PCB | Herb | 1 | 2 | 3 | INORG Metal | CN | PS/N2 | Anions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Gas/H | Gas/H IOET | ISUB | MBS/TOS +Bi | TCNTO | INORG | ICSO4 IPO4 ICNO3 |
| 001 | B015R7 (RAD) | | | S | 1/10/92 | 0947 | | | | | X | X | X | ✓ | ✓ | ✓ | ✓ |
| | W.O. #=6168-02-01-0000 | | | | | | | | | | | | | | | | |
| | ANALYSES REQUESTED | | | | | | | | | | | | | | | | |
| | 1) VOA (CLP) | | | | | | | | | | | | | | | | |
| | 2) Semi-VOA, Pesticides, PCB's, TOC, ICP/AA Metals, Bismuth, Cyanide, IC Anions NO2/NO3 (CLP) | | | | | | | | | | | | | | | | |
| | 3) Total alpha/beta, GEA, Tc99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, Ru-106, Total Uranium (CLP) | | | | | | | | | | | | | | | | |

Bill Tipp & Follow

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

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: GEA = GAMMA SCAN
See WHC Chain of Custody
copy of Emery airbill was not available upon del.

MS/MSD Required on Each Batch & Each Matrix

DATE/REVISIONS:
1/30/92 1. Radio Chem subbed to Teledyne
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| See WHC C of C | | | |
| Emery Airbill | | 1-14-92 | 14:05 |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | | 1-14-92 | |

WESTON Analytics Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill #2506186962
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:

FEB 1996 RECEIVED

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# None Cooler# 50 Westinghouse Hanford 381-596a

9201L008-WES-296

Westinghouse Hanford Company

9213446.1082 0000003

# CHAIN OF CUSTODY

RFW 9201L008

Custody Form Initiator W.S. Thompson

Project #: 91-019

Company Contact H. S. Thompson

Telephone (509) 376-2153

Project Designation/Sampling Locations 200-BP-1 Operable Unit

Collection Date 1/10/92

Boring: 216-B-46C

Time: 0947

Ice Chest No. #5016L00

Field Logbook No. WHC-N-385-12

Bill of Lading/Airbill No. 2509864962

Offsite Property No. W92-0-0003 #21

Method of Shipment Air

Shipped to Weston Laboratory, 208 Welsh Pool Road, Lionville, PA 19341-1313

Possible Sample Hazards/Remarks Sample is nonhazardous with field instruments. Keep samples chilled. All analysis CLP. See lab statement of work.

Sample Identification

D B015 R7

1, 120ml; amber glass; soil; CLP-VOA

1, 950ml; amber glass; soil; CLP-Semi-VOA; Pest/PCB; TOC; Bi; Cr; metal

1, 1000ml; glass; soil CLP-total alpha, ~~total~~ beta, GEA, Sr90, Tc99, Cs137, Co60, Pu239/240, Ru106, total uranium.

SO4, PO4, NO3, NO2/NO3

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

| Relinquished by: | Received by: | Date/Time: |
|---|---|---|
| W S Thompson<br>Wendy S Thompson | | |
| Emery | Dick Pelizzari | 1-14-92 14:05 |
| | | |
| | | |

Final Sample Disposition

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

Comments:

EMERY WORLDWIDE — A CF Company

72016008

250986496 2

DATE: 01-13-92 SHIPMENT NO.: [redacted]

SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-6665

REFERENCE NO.: W92-0-0003021

# SIGNATURE AND TALLY RECORD

60029-46 (8/89) Litho USA

| SHIPPER NAME AND ADDRESS | CONSIGNEE NAME AND ADDRESS |
|---|---|
| WESTINGHOUSE SHIPPING DEPT (509) 376-6665<br>02-06 US DEPARTMENT OF ENERGY C/O<br>WESTINGHOUSE HANFORD COMPANY<br>2355 STEVENS DRIVE 3163 BUILDING<br>PO BOX 1970<br>RICHLAND WA 99352 | PEG BEATY<br>NF WESTON INC<br>208 WELSH POOL ROAD<br>LIGONVILLE PA 19341-1313 |

| Pieces | Weight | Description/Marks | Freight Authorization No. |
|---|---|---|---|
| 1 | 54 LBS | W92-0-0003021<br>PSG 10L00 COOLER SOIL 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. [illegible] | [illegible] | [illegible] | [illegible] |
| 2. Richard [illegible] | PHL | [illegible] | [illegible] |
| 3. [illegible] | PSA | [illegible] | 1533 1-12 |
| 4. [illegible] | PSC | [illegible] | 1100 1/13 |
| 5. B. FISHER | PHL | B. Fisher | 1115 1-14 |
| 6. Tvan Bibner | MSI | [illegible] | |
| 7. | | | 0465 1-14 |
| 8. WD SNYDER | PHL | WD Snyder | 1115 1/14 |
| 9. S Perkins | Lionville | Susan Perkins | 1405 1/14 |

SPECIAL HANDLING INSTRUCTIONS

CONSIGNEE COPY

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

RFW Batch Number: 9201L008 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 01/31/92 14:40 Page: 1a

| | Cust ID: | B015R7 | | B015R7 | | B015R7 | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 001 MS | | 001 MSD | | 92LV0015-MB1 | |
| | Matrix: | SOIL | | SOIL | | SOIL | | SOIL | |
| | D.F.: | 1.00 | | 1.02 | | 1.02 | | 1.00 | |
| | Units: | ug/Kg | | ug/Kg | | ug/Kg | | ug/Kg | |
| Surrogate Recovery | Toluene-d8 | 108 | % | 102 | % | 98 | % | 111 | % |
| | Bromofluorobenzene | 105 | % | 94 | % | 93 | % | 110 | % |
| | 1,2-Dichloroethane-d4 | 99 | % | 91 | % | 91 | % | 97 | % |
| Chloromethane | | 11 | U | 11 | U | 11 | U | 10 | U |
| Bromomethane | | 11 | U | 11 | U | 11 | U | 10 | U |
| Vinyl Chloride | | 11 | U | 11 | U | 11 | U | 10 | U |
| Chloroethane | | 11 | U | 11 | U | 11 | U | 10 | U |
| Methylene Chloride | | 1 | J | 1 | J | 1 | J | 5 | U |
| Acetone | | 16 | B | 28 | B | 21 | B | 6 | J |
| Carbon Disulfide | | 6 | U | 6 | U | 6 | U | 5 | U |
| 1,1-Dichloroethene | | 6 | U | 81 | % | 78 | % | 5 | U |
| 1,1-Dichloroethane | | 6 | U | 6 | U | 6 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 6 | U | 6 | U | 6 | U | 5 | U |
| Chloroform | | 6 | U | 6 | U | 6 | U | 5 | U |
| 1,2-Dichloroethane | | 6 | U | 6 | U | 6 | U | 5 | U |
| 2-Butanone | | 11 | U | 11 | U | 11 | U | 10 | U |
| 1,1,1-Trichloroethane | | 6 | U | 6 | U | 6 | U | 5 | U |
| Carbon Tetrachloride | | 6 | U | 6 | U | 6 | U | 5 | U |
| Vinyl Acetate | | 11 | U | 11 | U | 11 | U | 10 | U |
| Bromodichloromethane | | 6 | U | 6 | U | 6 | U | 5 | U |
| 1,2-Dichloropropane | | 6 | U | 6 | U | 6 | U | 5 | U |
| cis-1,3-Dichloropropene | | 6 | U | 6 | U | 6 | U | 5 | U |
| Trichloroethene | | 6 | U | 90 | % | 87 | % | 5 | U |
| Dibromochloromethane | | 6 | U | 6 | U | 6 | U | 5 | U |
| 1,1,2-Trichloroethane | | 6 | U | 6 | U | 6 | U | 5 | U |
| Benzene | | 6 | U | 87 | % | 81 | % | 5 | U |
| Trans-1,3-Dichloropropene | | 6 | U | 6 | U | 6 | U | 5 | U |
| Bromoform | | 6 | U | 6 | U | 6 | U | 5 | U |
| 4-Methyl-2-pentanone | | 11 | U | 11 | U | 11 | U | 10 | U |
| 2-Hexanone | | 11 | U | 11 | U | 11 | U | 10 | U |
| Tetrachloroethene | | 6 | U | 6 | U | 6 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 6 | U | 6 | U | 6 | U | 5 | U |

*= Outside of EPA CLP QC limits.

9613446.1004 000096

WESTON

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 01-14-92
**RFW #:** 9201L008, GC/MS VOLATILE
**W.O. #:** 6168-02-01

**NARRATIVE**

One (1) soil sample was collected on 01-10-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Volatile target compounds on 01-23-92.

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 not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

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

4. The laboratory blank contained the common contaminant acetone at a level less than the CRQL.

5. All internal standard area and retention time criteria were met.

Jack R. Tuschall 2.20.92
Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

# VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B015R7

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L008-001

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

Lab File ID: Q012305

Level: (low/med) LOW

Date Received: 01/14/92

% Moisture: not dec. 6

Date Analyzed: 01/23/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 74-87-3 | Chloromethane | 11 | U |
| 74-83-9 | Bromomethane | 11 | U |
| 75-01-4 | Vinyl Chloride | 11 | U |
| 75-00-3 | Chloroethane | 11 | U |
| 75-09-2 | Methylene Chloride | 1 | J |
| 67-64-1 | Acetone | 16 | B |
| 75-15-0 | Carbon Disulfide | 6 | U |
| 75-35-4 | 1,1-Dichloroethene | 6 | U |
| 75-34-3 | 1,1-Dichloroethane | 6 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3 | Chloroform | 6 | U |
| 107-06-2 | 1,2-Dichloroethane | 6 | U |
| 78-93-3 | 2-Butanone | 11 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5 | Carbon Tetrachloride | 6 | U |
| 108-05-4 | Vinyl Acetate | 11 | U |
| 75-27-4 | Bromodichloromethane | 6 | U |
| 78-87-5 | 1,2-Dichloropropane | 6 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6 | Trichloroethene | 6 | U |
| 124-48-1 | Dibromochloromethane | 6 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2 | Benzene | 6 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2 | Bromoform | 6 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 11 | U |
| 591-78-6 | 2-Hexanone | 11 | U |
| 127-18-4 | Tetrachloroethene | 6 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3 | Toluene | 6 | U |
| 108-90-7 | Chlorobenzene | 6 | U |
| 100-41-4 | Ethylbenzene | 6 | U |
| 100-42-5 | Styrene | 6 | U |
| 1330-20-7 | Xylene (total) | 6 | U |

CLIENT SAMPLE NO.

B015R7

# VOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L008-001

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

Lab File ID: Q012305

Level: (low/med) LOW

Date Received: 01/14/92

% Moisture: not dec. 6

Date Analyzed: 01/23/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

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

RFW Batch Number: 9201L008 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 02/10/92 13:41 Page: 1a

| | Cust ID: | BO15R7 | BO15R7 | BO15R7 | SBLK | SBLK BS |
|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | 001 MS | 001 MSD | 92LE0089-MB1 | 92LE0089-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 | 107 % | 108 % | 119 % | 81 % | 88 % |
| | 2-Fluorobiphenyl | 95 % | 98 % | 112 % | 74 % | 77 % |
| | p-Terphenyl-d14 | 103 % | 107 % | 119 % | 76 % | 83 % |
| | Phenol-d5 | 114 * % | 115 * % | 127 * % | 88 % | 96 % |
| | 2-Fluorophenol | 114 % | 114 % | 125 * % | 87 % | 95 % |
| | 2,4,6-Tribromophenol | 105 % | 117 % | 129 * % | 76 % | 89 % |
| Phenol | | 340 U | 102 * % | 116 * % | 330 U | 85 % |
| bis(2-Chloroethyl)ether | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 2-Chlorophenol | | 340 U | 96 % | 110 * % | 330 U | 81 % |
| 1,3-Dichlorobenzene | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 1,4-Dichlorobenzene | | 340 U | 87 % | 100 % | 330 U | 74 % |
| Benzyl alcohol | | 340 U | 340 U | 340 U | 330 U | 330 U |
| 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 |
| bis(2-Chloroisopropyl)ether | | 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 | 88 % | 99 % | 330 U | 73 % |
| 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 |
| Benzoic acid | | 1700 U | 1700 U | 1700 U | 1700 U | 1700 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 | 102 % | 117 * % | 330 U | 82 % |
| 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 | 105 * % | 122 * % | 330 U | 87 % |
| 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.

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000009

| Cust ID: | BO15R7 | | BO15R7 | | BO15R7 | | SBLK | | SBLK BS | |
|---|---|---|---|---|---|---|---|---|---|---|
| RFW#: | 001 | | 001 MS | | 001 MSD | | 92LE0089-MB1 | | 92LE0089-MB1 | |
| 2,4,6-Trichlorophenol | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 2,4,5-Trichlorophenol | 1700 | U | 1700 | U | 1700 | U | 1700 | U | 1700 | U |
| 2-Chloronaphthalene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 2-Nitroaniline | 1700 | U | 1700 | U | 1700 | U | 1700 | U | 1700 | 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 | 1700 | U | 1700 | U | 1700 | U | 1700 | U | 1700 | U |
| Acenaphthene | 340 | U | 90 | % | 105 | % | 330 | U | 72 | % |
| 2,4-Dinitrophenol | 1700 | U | 1700 | U | 1700 | U | 1700 | U | 1700 | U |
| 4-Nitrophenol | 1700 | U | 83 | % | 98 | % | 1700 | U | 66 | % |
| Dibenzofuran | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 2,4-Dinitrotoluene | 340 | U | 85 | % | 98 * | % | 330 | U | 69 | % |
| 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 | 1700 | U | 1700 | U | 1700 | U | 1700 | U | 1700 | U |
| 4,6-Dinitro-2-methylphenol | 1700 | U | 1700 | U | 1700 | U | 1700 | U | 1700 | 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 | 1700 | U | 115 * | % | 138 * | % | 1700 | U | 85 | % |
| Phenanthrene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Anthracene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Di-n-Butylphthalate | 340 | U | 340 | U | 340 | U | 330 | U | 58 | J |
| Fluoranthene | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| Pyrene | 340 | U | 87 | % | 103 | % | 330 | U | 70 | % |
| Butylbenzylphthalate | 340 | U | 340 | U | 340 | U | 330 | U | 330 | U |
| 3,3'-Dichlorobenzidine | 680 | U | 680 | U | 690 | U | 670 | U | 670 | 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 | 340 | U | 35 | J | 40 | 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 |
| Dibenzo(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.

00000006
96346.1009

WESTON

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 01-14-92
**RFW #:** 9201L008, SEMIVOLATILE
**W.O. #:** 6168-02-01

**NARRATIVE**

One (1) soil sample was collected on 01-10-92.

The sample and its associated QC samples were extracted on 01-20-92 and analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Semivolatile target compounds on 02-05-92.

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. Five (5) of thirty (30) surrogate recoveries were outside EPA QC limits.

   EPA CLP surrogate recovery criteria was not met for sample B015R7 MSD. The original and the matrix spike analyses of B015R7 MSD fulfilled its re-analysis requirement.

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

4. Nine (9) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

5. Internal standard area and retention time criteria were met.

03.09.92

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

9613446.1091 1B 0000018

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BO15R7

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L008-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: J020506

Level: (low/med) LOW Date Received: 01/14/92

% Moisture: not dec. 3 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 |
| 100-51-6 | Benzyl alcohol | 340 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | U |
| 95-48-7 | 2-Methylphenol | 340 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 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 |
| 65-85-0 | Benzoic acid | 1700 | 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 | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 340 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 340 | U |
| 208-96-8 | Acenaphthylene | 340 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | U |

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CLIENT SAMPLE NO.

BO15R7

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L008-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: J020506

Level: (low/med) LOW Date Received: 01/14/92

% Moisture: not dec. 3 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U |
| 83-32-9 | Acenaphthene | 340 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U |
| 100-02-7 | 4-Nitrophenol | 1700 | 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 | 1700 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | 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 | 1700 | U |
| 85-01-8 | Phenanthrene | 340 | U |
| 120-12-7 | Anthracene | 340 | U |
| 84-74-2 | Di-n-Butylphthalate | 340 | U |
| 206-44-0 | Fluoranthene | 340 | U |
| 129-00-0 | Pyrene | 340 | U |
| 85-68-7 | Butylbenzylphthalate | 340 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 680 | U |
| 56-55-3 | Benzo(a)anthracene | 340 | U |
| 218-01-9 | Chrysene | 340 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 340 | U |
| 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 | Dibenzo(a,h)anthracene | 340 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U |

(1) - Cannot be separated from Diphenylamine

9613446.1093 0000020

CLIENT SAMPLE NO.

BO15R7

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L008-001

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

Lab File ID: J020506

Level: (low/med) LOW

Date Received: 01/14/92

% Moisture: not dec. 3 dec.

Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 6.5

Dilution Factor: 1.00

Number TICs found: 3

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | ~~ALCOLHOL~~ | 5.32 | 200 | J |
| 2. | UNKNOWN aldol condensate | 6.24 | 300 | ~~J~~ A |
| 3. | ~~PHOSPHORIC ACID~~ phosphate | 17.32 | 200 | J |

Overnight Delivery NEW 12011L008 Signature Select Service

| Contractor | OFF-SITE PROPERTY CONTROL | CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) |
|---|---|---|
| Westinghouse Hanford Company | | W92-0-0003 #21 |

PART I – TO BE COMPLETED BY ORIGINATOR

| Department | Section | Unit |
|---|---|---|
| Env. Eng. & Restech. | EF50 | Env. Charac. & Sampling |

The following items are to be shipped from: ☒ Contractor ☐ Vendor

Routing: A1r ☒ Contractor ☐ Vendor

Shipped to: ROY F WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341-1313

Off-site Custodian: Peg Beaty

Full Title: Project Coordinator

| Quantity | Description (Include Serial and any Government Tag Numbers) | Original Cost |
|---|---|---|
| 1 | #50 ice poly cooler. Contains soil samples that are double-bagged and packed in wet ice and vermiculite. Samples are nonhazardous | N/A |
| 54# | Sample #: B015R7 | |

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

To support drilling and sampling at 200-BP-1.

Bill of Lading: 2509816496 2

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

| RM Clearance for Public Release | RM Survey No | Date |
|---|---|---|
| [signature] | 164848 | 1/13/92 |

| Location of Property (Area & Bldg.) | Contact | Phone |
|---|---|---|
| 200 Area | W. S. Thompson | 376-5123 |

| Date Ready for Shipment | Cost Code to be Charged | Approximate Date This Property will be Returned |
|---|---|---|
| 1/13/91 | PE3BP B1241 | N/A |

| Originated By / Relinquished By | Date | Authorized By | Date |
|---|---|---|---|
| [signature] | 1/10/91 | [signature] | 1/13/92 |
| Signature and Name of Property Control | Custodian Date | Property Management Approval | Date |
| [signature] | | [signature] | 1/13/92 |

PART II – TO BE COMPLETED BY SHIPPING

| Signature of Recipient | Return Order No. | Date Issued | Purchase Order No. | Date Issued |
|---|---|---|---|---|
| [signature] | | | | |
| Date 1-13-92 | | | | |

DISTRIBUTION

| By Originator | Shipping Operation – Sign all Copies and Forward to: |
|---|---|
| White, Green, Yellow, Pink – Property Management<br>Goldenrod – Retain | White – Property Management<br>Yellow – Retain<br>Green – Property Control Custodian (Issuing Office)<br>Pink – Originator |

54-3000-479 (09/89)

**Roy F. Weston, Inc. - Lionville Laboratory**

Pesticide/PCBs by GC, CLP List

Report Date: 02/14/92 13:38

RFW Batch Number: 9201L008 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Page: 1

| | Cust ID: | B015R7 | | B015R7 | | B015R7 | | PBLK | | PBLK BS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 001 MS | | 001 MSD | | 92LE0090-MB1 | | 92LE0090-MB1 | |
| | Matrix: | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | D.F.: | 1.00 | | 4.00 | | 4.00 | | 1.00 | | 4.00 | |
| | Units: | ug/Kg | | ug/Kg | | ug/Kg | | ug/Kg | | ug/Kg | |
| Surrogate: Di-n-butylchlorendate | | 30 | % | 121 | % | 127 | % | 103 | % | 125 | % |
| Alpha-BHC | | 8.2 | U | 33 | U | 32 | U | 8.0 | U | 32 | U |
| Beta-BHC | | 8.2 | U | 33 | U | 32 | U | 8.0 | U | 32 | U |
| Delta-BHC | | 8.2 | U | 33 | U | 32 | U | 8.0 | U | 32 | U |
| gamma-BHC (Lindane) | | 8.2 | U | 75 | % | 75 | % | 8.0 | U | 80 | % |
| Heptachlor | | 8.2 | U | 98 | % | 98 | % | 8.0 | U | 95 | % |
| Aldrin | | 8.2 | U | 68 | % | 65 | % | 8.0 | U | 68 | % |
| Heptachlor epoxide | | 8.2 | U | 33 | U | 32 | U | 8.0 | U | 32 | U |
| Endosulfan I | | 8.2 | U | 33 | U | 32 | U | 8.0 | U | 32 | U |
| Dieldrin | | 16 | U | 93 | % | 92 | % | 16 | U | 102 | % |
| 4,4'-DDE | | 16 | U | 65 | U | 64 | U | 16 | U | 64 | U |
| Endrin | | 16 | U | 97 | % | 96 | % | 16 | U | 102 | % |
| Endosulfan II | | 16 | U | 65 | U | 64 | U | 16 | U | 64 | U |
| 4,4'-DDD | | 16 | U | 65 | U | 64 | U | 16 | U | 64 | U |
| Endosulfan sulfate | | 16 | U | 65 | U | 64 | U | 16 | U | 64 | U |
| 4,4'-DDT | | 16 | U | 74 | % | 75 | % | 16 | U | 79 | % |
| Methoxychlor | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| Endrin ketone | | 16 | U | 65 | U | 64 | U | 16 | U | 64 | U |
| alpha-Chlordane | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| gamma-Chlordane | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| Toxaphene | | 160 | U | 650 | U | 640 | U | 160 | U | 640 | U |
| Aroclor-1016 | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| Aroclor-1221 | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| Aroclor-1232 | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| Aroclor-1242 | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| Aroclor-1248 | | 82 | U | 330 | U | 320 | U | 80 | U | 320 | U |
| Aroclor-1254 | | 160 | U | 650 | U | 640 | U | 160 | U | 640 | U |
| Aroclor-1260 | | 160 | U | 650 | U | 640 | U | 160 | U | 640 | U |

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

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**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 01-14-92
**RFW #:** 9201L008, PEST/PCB
**W.O. #:** 6168-02-01

**NARRATIVE**

One (1) soil sample was collected on 01-10-92.

The sample and its associated QC samples were extracted on 01-20-92 and analyzed according to criteria set forth in the Contract Laboratory Program for Pesticide and PCB target compounds on 02-07-92.

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 on the primary column.

2. Continuing calibration criteria were met for all compounds on both the primary and confirmation columns in standards analyzed prior to the sample extracts.

3. Retention time criteria were met for all compounds on both the primary and confirmation columns.

4. All surrogate recoveries were within EPA QC limits.

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

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

7. The blank spike and matrix spike samples required four-fold dilutions to maintain the pesticide concentrations within the linear range of the instrument.

Margaret M. Leady 2-20-92

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

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ID

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BO15R7

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L008-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 02059213.64

Level: (low/med) LOW Date Received: 01/14/92

% Moisture: not dec. 3 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/07/92

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | 8.2 | U |
| 319-85-7 | Beta-BHC | 8.2 | U |
| 319-86-8 | Delta-BHC | 8.2 | U |
| 58-89-9 | gamma-BHC (Lindane) | 8.2 | U |
| 76-44-8 | Heptachlor | 8.2 | U |
| 309-00-2 | Aldrin | 8.2 | U |
| 1024-57-3 | Heptachlor epoxide | 8.2 | U |
| 959-98-8 | Endosulfan I | 8.2 | U |
| 60-57-1 | Dieldrin | 16 | U |
| 72-55-9 | 4,4'-DDE | 16 | U |
| 72-20-8 | Endrin | 16 | U |
| 33213-65-9 | Endosulfan II | 16 | U |
| 72-54-8 | 4,4'-DDD | 16 | U |
| 1031-07-8 | Endosulfan sulfate | 16 | U |
| 50-29-3 | 4,4'-DDT | 16 | U |
| 72-43-5 | Methoxychlor | 82 | U |
| 53494-70-5 | Endrin ketone | 16 | U |
| 5103-71-9 | alpha-Chlordane | 82 | U |
| 5103-74-2 | gamma-Chlordane | 82 | U |
| 8001-35-2 | Toxaphene | 160 | U |
| 12674-11-2 | Aroclor-1016 | 82 | U |
| 11104-28-2 | Aroclor-1221 | 82 | U |
| 11141-16-5 | Aroclor-1232 | 82 | U |
| 53469-21-9 | Aroclor-1242 | 82 | U |
| 12672-29-6 | Aroclor-1248 | 82 | U |
| 11097-69-1 | Aroclor-1254 | 160 | U |
| 11096-82-5 | Aroclor-1260 | 160 | U |

DS 2-17-92

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ROY F. WESTON, INC.
Lionville Laboratory

**REVISION**

CLIENT: WESTINGHOUSE HANFORD
RFW #: 9201L008
W.O. #: 6168-02-01

SAMPLES RECEIVED: 01-14-92

## INORGANIC NARRATIVE

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%.

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 with the exception of total organic carbon. All %RPD were within the 20% guidance limit with the exception of sulfate by IC.

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).

Margaret M. Leaty 3-20-92

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

Date

MAR 1992
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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/14/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L008

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | B015R7 | % Solids | 93.6 | | % | 0.10 |
| | | Nitrate by IC | 3350 | | MG/KG | 134 |
| | | Cyanide, Total | 3.2 | | MG/KG | 1.1 |
| | | Phosphate by IC | 134 | u | MG/KG | 134 |
| | | Sulfate by IC | 264 | | MG/KG | 134 |
| | | Nitrate Nitrite | 1030 | | MG-N/KG | 134 |
| | | Total Organic Carbon | 1220 | | MG/KG | 305 |

WESTON

Roy F. Weston, INC.
Lionville Laboratory

**CLIENT: WESTINGHOUSE HANFORD** **SAMPLES RECEIVED:** 01/14/92
**RFW #:** 9201L008
**W.O. #:** 6168-02-01

## METALS NARRATIVE

The set of samples consisted of (1) soil sample collected on 01/10/92.

The 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 Se. All corresponding samples were flagged with an "N" according to CLP protocol.

7. All duplicate analyses were within the 20% RPD control limit with the exception of Al, Ca, Fe, Mg, and Mn. All corresponding samples were flagged with an "*" according to CLP protocol.

8. Lead sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with an "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 SOW1LJM01.0, 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.

WESTON

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.

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 for IC3 are included in this package.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratories

2.19.92.
Date

mlj\ clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/18/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L008

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | B015R7 | Silver, Total | 2.1 | u | MG/KG | 2.1 |
| | | Aluminum, Total | 3600 | | MG/KG | 42.8 |
| | | Arsenic, Total | 2.1 | u | MG/KG | 2.1 |
| | | Barium, Total | 42.8 | u | MG/KG | 42.8 |
| | | Beryllium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Bismuth, Total | 32.1 | u | MG/KG | 32.1 |
| | | Calcium, Total | 5740 | | MG/KG | 1070 |
| | | Cadmium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Cobalt, Total | 10.7 | u | MG/KG | 10.7 |
| | | Chromium, Total | 5.4 | | MG/KG | 2.1 |
| | | Copper, Total | 12.6 | | MG/KG | 5.3 |
| | | Iron, Total | 12700 | | MG/KG | 21.4 |
| | | Mercury, Total | 0.24 | | MG/KG | 0.11 |
| | | Potassium, Total | 1070 | u | MG/KG | 1070 |
| | | Magnesium, Total | 3230 | | MG/KG | 1070 |
| | | Manganese, Total | 216 | | MG/KG | 3.2 |
| | | Sodium, Total | 2830 | | MG/KG | 1070 |
| | | Nickel, Total | 8.7 | | MG/KG | 8.6 |
| | | Lead, Total | 3.8 | | MG/KG | 0.64 |
| | | Antimony, Total | 12.8 | u | MG/KG | 12.8 |
| | | Selenium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Thallium, Total | 2.1 | u | MG/KG | 2.1 |
| | | Vanadium, Total | 18.0 | | MG/KG | 10.7 |
| | | Zinc, Total | 24.7 | | MG/KG | 4.3 |

U.S. EPA - CLP

1

# INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B015R7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP008

Matrix (soil/water): SOIL Lab Sample ID: 920100801

Level (low/med): LOW Date Received: 1/14/92

% Solids: 93.6

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3600.00 | | * | P |
| 7440-36-0 | Antimony | 4.92 | U | | P |
| 7440-38-2 | Arsenic | 1.30 | B | | F |
| 7440-39-3 | Barium | 42.10 | B | | P |
| 7440-41-7 | Beryllium | .24 | B | | P |
| 7440-43-9 | Cadmium | .71 | B | | P |
| 7440-70-2 | Calcium | 5740.00 | | * | P |
| 7440-47-3 | Chromium | 5.40 | | | P |
| 7440-48-4 | Cobalt | 5.20 | B | | P |
| 7440-50-8 | Copper | 12.60 | | | P |
| 7439-89-6 | Iron | 12700.00 | | * | P |
| 7439-92-1 | Lead | 3.80 | | S | F |
| 7439-95-4 | Magnesium | 3230.00 | | * | P |
| 7439-96-5 | Manganese | 216.00 | | * | P |
| 7439-97-6 | Mercury | .24 | | | CV |
| 7440-02-0 | Nickel | 8.70 | | | P |
| 7440-09-7 | Potassium | 459.00 | B | | P |
| 7782-49-2 | Selenium | .43 | U | NW | F |
| 7440-22-4 | Silver | .86 | U | | P |
| 7440-23-5 | Sodium | 2830.00 | | | P |
| 7440-28-0 | Thallium | .43 | U | W | F |
| 7440-62-2 | Vanadium | 18.00 | | | P |
| 7440-66-6 | Zinc | 24.70 | | | P |
| | Cyanide | 3.17 | U | | C |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9613446.1104

9201L008-WES-296

Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS
Data Packages: 9201L008, 9201L041, 9201L101,
9201L119, 9201L150
Matrix: Soil/Water
Analysis Type: Organics/Metals/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

July 15, 1992

913-1719

9613446.1105

**DON'T SAY IT** --- *Write It!*

DATE: January 26, 1993

TO: File 9201L008
9201L041
9201L101
9201L119
9201L150

FROM: S.D.L.A.

Telephone: 2-3206

CC:

SUBJECT:
VALIDATION DOCUMENTATION

Validation documentation for the above mentioned data package is filed with Data Package 9201L008.

54-3000-101 (12/92) GEF014

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## 1. INTRODUCTION

This report presents the results of data validation on the following sample delivery groups and sample numbers which were analyzed by the Weston - Lionville, PA laboratory. The HEIS sample numbers and field QC associated with this group by SDG are:

| Data Package ID | HEIS Sample Numbers | Matrix |
|---|---|---|
| 9201L008 | B015R7 | Soil |
| 9201L041 | B015R9 | Soil |
| 9201L101 | B015J6, BO15P2, B015Q0, B01S79 | Soil |
| 9201L119 | B01S81, B01S65, B01S67 | Soil/Water |
| 9201L150 | B01S85, B01S83, B01S87 | Soil |

Sample identifications, locations and sample dates are provided in the tabular data summary provided in Appendix A. Data validation was conducted in accordance with the Westinghouse Hanford Company statement of work (WHC 1991) and alidation procedures (WHC 1992).

## 2. DATA QUALITY OBJECTIVES

The data package was complete for all requested analyses and met the data quality objectives of the work plan. Data quality objectives for the project specified the use of CLP methods for the TCL organics and TAL metals/cyanide analytes and the use of standard methods for all other parameters.

Sample quantitation limits were met with the exception of minor differences due to sample volume and dilution factors.

In SDG 9201L119, samples B01S65 and B01S67 were identified as an equipment blank and a field blank, respectively. The results for the volatile and pesticide/PCB parameters were all non-detects; therefore, blank qualification of the associated soil sample, B01S81 was not necessary. Semivolatile, metal and wet chemistry compounds detected in the field blank and the associated samples were blank qualified as undetected when criteria were met.

With the exception of the deficiencies identified in Section 3.0, the precision and accuracy goals of the work plan were met.

## 3. QUALIFIED DATA

This section presents a summary of the qualifications required based on validation of the subject data package.

### 3.1 Major Deficiencies

The following presents a summary of the rejected data.

Volatile Organics

- 2-Butanone results in samples B01S65 and B01S67 from SDG 9201L119 and sample B015R7 from SDG 9201L008 have been rejected since the initial and continuing calibration relative response factors (RRF) values are less than 0.05.

Semivolatile Organics

- Aldol condensation products detected in samples from SDGs: 9201L119, 9201L008, 9201L041, 9201L101, and 9201L150 have been rejected since they are suspected laboratory contaminants.

- 2,4-Dinitrophenol and 4,6-dinitro-2-methylphenol results in sample B015R7 from SDG 9201L008 and 4-nitrophenol results in samples B01S83, B01S85, and B01S87 from SDG 9201L150 have been rejected since the initial calibration RRF values are less than 0.05.

- Benzoic acid results in sample B015J6 from SDG 9201L101 have been rejected since the relative retention time unit (RRT) value was not within 0.06 RRT units of the most recent continuing calibration standard.

Metals

- Silver results in samples B01S67 and B01S65 and lead results in sample B01S67 in SDG 9201L119 were rejected since the associated matrix spike sample recoveries were less than 30 percent and the sample results were less than the IDL.

### 3.2 Minor Deficiencies

The following qualifications were required as a result of the validation. Appendices B through F provide supporting documentation and a summary of the samples affected.

#### 3.2.1 Volatile Organics

Initial Calibrations

The following compounds and their associated SDGs exceeded the initial calibration RSD limits of 30%:

- SDG 9201L119: Acetone, chloromethane and vinyl acetate.
- SDG 9201L150: Acetone, 2-butanone and 4-methyl-2-pentanone.

Sample results for the above compounds in their associated SDGs have been qualified as estimated (J for detects, UJ for non-detects).

Continuing Calibrations

The following compounds and their associated SDGs exceeded the continuing calibration %D limits of 25%:

- SDG 9201L008: Acetone, bromoform, 2-butanone, chloroethane, carbon tetrachloride, 2-hexanone, 4-methyl-2-pentanone and 1,1,2-trichloroethane.
- SDG 9201L041: 2-Hexanone.
- SDG 9201L101: Chloromethane, 2-hexanone, 4-methyl-2-pentanone, 1,1,2,2-tetrachloroethane and vinyl acetate.
- SDG 9201L119: Chloroethane (sample B01S67), acetone, bromomethane, chloromethane, 1,1,2,2-tetrachloroethane and vinyl acetate (sample B01S81).

Sample results for the above compounds in their associated SDGs have been qualified as estimated (J for detects, UJ for non-detects).

Blanks

The following compounds were detected in the laboratory blanks.

- SDG 9201L008: Acetone.
- SDG 9201L041: Acetone and methylene chloride.
- SDG 9201L101: Acetone and methylene chloride.
- SDG 9201L119: Acetone and methylene chloride.
- SDG 9201L150: Acetone, 2-butanone, methylene chloride and toluene.

All associated sample results for the above compounds in their respective SDGs are qualified as undetected (U).

Surrogate Recoveries

- SDG 9201L101: All surrogate recoveries exceeded the upper contol limits in sample B01S79, however the MS/MSD recoveries were acceptable in this sample group therefore no qualification is necessary.

- SDG 9201L119: Surrogate recovery for 1,1-dichloroethane-d4 exceeded the upper control limits in sample B01S81, however, the MS/MSD recoveries were acceptable in this sample group therefore no qualification is necessary.

### 3.2.2 Semivolatile Organics

Holding Times

The following samples and their associated SDGs exceeded the holding time limits:

- SDG 9201L008, sample B015R7, extraction holding time exceeded.

- SDG 9201L101, samples B015J6, B015P2 and B015Q0, extraction holding times were exceeded.

All associated results for the above samples have been qualified as J for detects and UJ for non-detects.

Initial Calibrations

The following compounds and their associated SDGs exceeded the initial calibration RSD limits of 30%:

- SDG 9201L119: Benzoic acid for sample B01S67.

- SDG 9201L150: Benzoic acid.

Sample results for the above compounds in their associated SDGs have been qualified as estimated (J for detects, UJ for non-detects).

Continuing Calibrations

The following compounds and their associated SDGs exceeded the continuing calibration %D limits of 25%:

- SDG 9201L041: Napthalene and Acenapthylene.

- SDG 9201L101: Samples B015J6 and B01S79: Bis(2-chloroisopropyl)ether, 2-nitroaniline, 2,4-dinitrotoluene and dibenzo(a,h)anthracene. Samples B015P2 and B015Q0: benzoic acid.

- SDG 9201L119: Sample B01S81: bis-(2-chloroisopropyl)ether, 2-nitroaniline, 2,4-dinitrotoluene and dibenzo(a,g)anthracene. Sample B01S65: benzoic acid, hexachlorocyclopentadiene, and 2,4-dinitrophenol.

- SDG 9201L150: Benzoic acid, hexachlorocyclopentadiene, 3-nitroaniline, 4-nitrophenol, 4-nitroaniline and 3,3'-dichlorobenzidine.

Sample results for the above compounds in their associated SDGs have been qualified as estimated (J for detects, UJ for non-detects).

Blanks

The following compounds were detected in the laboratory blanks.

- SDG 9201L008: Aldol condensate and an unknown TIC.

- SDG 9201L041: Aldol condensate TIC.

- SDG 9201L101: Di-n-butylpthalate and bis(2-ethylhexyl)phthalate associated with B01S79.

- SDG 9201L119: Di-n-butylpthalate and bis(2-ethylhexyl)phthalate associated with B01S81.

- SDG 9201L150: Di-n-butylphthalate, bis(2-ethylhexyl)phthalate, aldol condensate and an unknown TIC associated with samples B01S85 and B01S87 and Di-n-butylphthalate, aldol condensate and an unknown TIC associated with B01S83.

Associated sample results for the above compounds have been qualified as non-detects.

Tentatively Identified Compounds (TICs)

- SDG 9201L008: Phosphate (organic acid ester) in sample B015R7 was detected as a TIC and was qualified as NJ.

- SDG 9201L041: Unknown TICs were detected in sample B015R9 and were qualified as NJ.

- SDG 9201L101: Unknown TICs were detected in samples B015J6, B015P2, B015QO, and B01S79 and were qualified as NJ.

- SDG 9201L119: Unknown TICs were detected in samples B01S65, B01S67, and B01S81 and were qualified as NJ.

- SDG 9201L150: Unknown TICs were detected in samples B01S83, B01S85, and B01S87 and have been qualified as NJ.

### 3.2.3 Pesticide/PCB Organics

Holding Times

The following samples were extracted out of holding time.

- SDG 9201L008, sample B015R7 and SDG 9201L041, sample B015R9.

Sample results and quantitation limits for samples associated with the above SDGs have been qualified as estimated (J for detects, UJ for non-detects)

Quantitation Limits

Quantitation limits were reported incorrectly for the following samples. Since the samples were prepared by GPC, the CRQL must be multiplied by a factor of 2 in accordance with the SOW.

- Samples B015R7, B015R9, B015J6, B015P2, B015QO, B01S79, B01S85, B01S83, B01S87, and B01S81.

Quantitation limits for the above samples have been corrected on the report forms.

Compound Identification

Heptachlor was incorrectly reported as a positive identification for samples B01S65 and B01S67. Heptachlor was not positively detected on the confirmation column and therefore should not have been reported. Heptachlor was qualified as undetected (0.05 U) for these samples.

### 3.2.4 Metals

Blanks

The following analytes were detected in the laboratory blanks requiring qualification of associated sample results as undetected (U):

- SDG 9201L119: Thallium and zinc.

Spike Sample Recovery

The following spike results exceeded the QC limits of 75% to 125%.

- SDG 9201L008: Selenium and lead.
- SDG 9201L101: Antimony and manganese.
- SDG 9201L119: Manganese, thallium, lead (sample B01S65 only), and cyanide.

- SDG 9201L150: Arsenic, manganese, silver and thallium.

The associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

Duplicates

The following duplicate results exceeded the RPD limits of 35%:

- SDG 9201L008: Aluminum, calcium, and iron.
- SDG 9201L119: Chromium (B01S81 only) and zinc (B01S65 only).

The associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

ICP Serial Dilutions

The following serial dilution results exceeded the QC limits of 10% for analyte concentrations >50X the IDL:

- SDG 9201L101: Aluminum, calcium, iron, magnesium, manganese and sodium.
- SDG 9201L150: Aluminum, calcium, iron, magnesium, and manganese.

The associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

Furnace AA Quality Control

The following GFAA analytical spikes exceeded the limits of 85% to 115% recovery:

- SDG 9201L008: Selenium, thallium and lead. However, lead was analyzed by MSA and therefore no qualification was required.
- SDG 9201L041: Selenium.
- SDG 9201L101: Selenium and lead (sample B015P2 only for lead). Lead should have been analyzed by MSA but was not, therefore, associated lead results have been qualified as estimated (J).
- SDG 9201L119: Lead and thallium (sample B01S81 only). Lead was analyzed by MSA, however MSA results were not reported, therefore the reported results have been corrected to reflect the MSA analyses.
- SDG 9201L150: Selenium.

Except where noted above, the associated sample results have been qualified as estimated (UJ).

### 3.2.5 Wet Chemistry

Holding Times

The following analytes exceeded the holding times:

- SDG 9201L008: Nitrate and phosphate.
- SDG 9201L041: Nitrite, nitrate and phosphate.
- SDG 9201L101: Nitrate and phosphate.
- SDG 9201L119: Nitrate and phosphate.
- SDG 9201L150: Nitrate, nitrate/nitrite and phosphate.

All associated sample results for the above analytes have been qualified as estimated (J for detects, UJ for non-detects).

Spike Recovery

The following spike recoveries were less than 75%:

- SDG 9201L101: Total organic carbon (TOC).
- SDG 9201L119: Cyanide.
- SDG 9201L150: Total organic carbon (TOC).

All associated sample results for the above analytes have been qualified as estimated (J for detects, UJ for non-detects).

Duplicates

The following laboratory duplicates had RPDs of greater than 35%:

- SDG 9201L101: Total organic carbon (TOC).

Associated sample results had already been qualified J and therefore additional qualification was not necessary.

## 4. CONCLUSIONS

Sections 1 through 3 present a summary of the data quality for the subject data package. The results contained in this report are acceptable for use as qualified with the exception of the major deficiencies as reported in Section 3.1.

The appendices provide supporting documentation and tabular summary of the qualified data. The original, as-received data package is enclosed for submittal to the project QA record.

## 5. REFERENCES

WHC, 1991, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision A, November 1991. Westinghouse Hanford Company, Richland, Washington.

WHC, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

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# APPENDIX A

# AS QUALIFIED DATA SUMMARY

| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | | B01S83 |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-45A | | 216-B-45A | | 216-B-43A | | 216-B-43A | | 216-B-49C | | 216-B-49C |
| | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | | 2.0-4.5 |
| Sample Date | | 01/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/92 | | 01/22/92 | | 01/24/92 | | 01/23/92 |
| Analysis Date | | 01/23/92 | | 01/17/92 | | 01/31/92 | | 01/31/92 | | 01/31/92 | | 01/31/92 | | 02/01/91 | | 02/05/92 | | 02/05/92 |
| Volatile Organic Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Chloromethane | 10 | 11 | U | 10 | U | 10 | UJ | 10 | UJ | 10 | UJ | 10 | UJ | 10 | UJ | 10 | U | 10 | U |
| Bromomethane | 10 | 11 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | UJ | 10 | U | 10 | U |
| Vinyl Chloride | 10 | 11 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | 10 | 11 | UJ | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | 5 | 1 | J | 6 | U | 7 | U | 8 | U | 11 | U | 10 | U | 6 | U | 7 | U | 7 | U |
| Acetone | 10 | 16 | UJ | 32 | U | 28 | UJ | 26 | UJ | 10 | UJ | 22 | UJ | 20 | UJ | 10 | UJ | 13 | UJ |
| Carbon Disulfide | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | 10 | 11 | R | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | UJ | 10 | UJ |
| 1,1,1-Trichloroethane | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | 5 | 6 | UJ | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | 10 | 11 | U | 10 | U | 10 | UJ | 10 | UJ | 10 | UJ | 10 | UJ | 10 | UJ | 10 | U | 10 | U |
| Bromodichloromethane | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | 5 | 6 | UJ | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| trans-1,3-Dichloropropene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | 5 | 6 | UJ | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | 10 | 11 | UJ | 10 | U | 11 | J | 10 | UJ | 10 | UJ | 10 | UJ | 10 | U | 10 | UJ | 10 | UJ |
| 2-Hexanone | 10 | 11 | UJ | 10 | UJ | 10 | UJ | 10 | UJ | 10 | UJ | 10 | UJ | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | 5 | 6 | U | 5 | U | 5 | UJ | 5 | UJ | 5 | UJ | 5 | UJ | 5 | UJ | 5 | U | 5 | U |
| Toluene | 5 | 6 | U | 5 | U | 2 | J | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chlorobenzene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Ethylbenzene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Styrene | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Xylene (total) | 5 | 6 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Unknown @ 21.40 | | --- | | --- | | --- | | --- | | --- | | --- | | 9 | NJ | --- | | --- | |

| Laboratory: WESTON | SDG | | |
|---|---|---|---|
| Sample Number | | B01S87 | |
| Location | | 216-B-43A | |
| | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | |
| Analysis Date | | 02/05/92 | |
| Volatile Organic Compound | CRQL | Result | Q |
| Chloromethane | 10 | 11 | U |
| Bromomethane | 10 | 11 | U |
| Vinyl Chloride | 10 | 11 | U |
| Chloroethane | 10 | 11 | U |
| Methylene Chloride | 5 | 8 | U |
| Acetone | 10 | 20 | UJ |
| Carbon Disulfide | 5 | 6 | U |
| 1,1-Dichloroethene | 5 | 6 | U |
| 1,1-Dichloroethane | 5 | 6 | U |
| 1,2-Dichloroethene (total) | 5 | 6 | U |
| Chloroform | 5 | 6 | U |
| 1,2-Dichloroethane | 5 | 6 | U |
| 2-Butanone | 10 | 11 | UJ |
| 1,1,1-Trichloroethane | 5 | 6 | U |
| Carbon Tetrachloride | 5 | 6 | U |
| Vinyl Acetate | 10 | 11 | U |
| Bromodichloromethane | 5 | 6 | U |
| 1,2-Dichloropropane | 5 | 6 | U |
| cis-1,3-Dichloropropene | 5 | 6 | U |
| Trichloroethene | 5 | 6 | U |
| Dibromochloromethane | 5 | 6 | U |
| 1,1,2-Trichloroethane | 5 | 6 | U |
| Benzene | 5 | 6 | U |
| trans-1,3-Dichloropropene | 5 | 6 | U |
| Bromoform | 5 | 6 | U |
| 4-Methyl-2-pentanone | 10 | 11 | UJ |
| 2-Hexanone | 10 | 1 | J |
| Tetrachloroethene | 5 | 6 | U |
| 1,1,2,2-Tetrachloroethane | 5 | 6 | U |
| Toluene | 5 | 6 | U |
| Chlorobenzene | 5 | 6 | U |
| Ethylbenzene | 5 | 6 | U |
| Styrene | 5 | 6 | U |
| Xylene (total) | 5 | 6 | U |
| Unknown @ 21.40 | | --- | |

| Laboratory: WESTON | SDG | 9201L119 | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S65 | | B01S67 | |
| Location | | 216-B-43A | | 216-B-43A | |
| Remarks | | EQ. BLNK | | FIELD BLNK | |
| Sample Date | | 01/22/92 | | 01/22/92 | |
| Analysis Date | | 01/29/92 | | 02/03/92 | |
| Volatile Organic Compound | CRQL | Result | Q | Result | Q |
| Chloromethane | 10 | 10 | U | 10 | U |
| Bromomethane | 10 | 10 | U | 10 | U |
| Vinyl Chloride | 10 | 10 | U | 10 | U |
| Chloroethane | 10 | 10 | U | 10 | UJ |
| Methylene Chloride | 5 | 5 | U | 6 | U |
| Acetone | 10 | 10 | U | 10 | UJ |
| Carbon Disulfide | 5 | 5 | U | 5 | U |
| 1,1-Dichloroethene | 5 | 5 | U | 5 | U |
| 1,1-Dichloroethane | 5 | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | 5 | 5 | U | 5 | U |
| Chloroform | 5 | 5 | U | 5 | U |
| 1,2-Dichloroethane | 5 | 5 | U | 5 | U |
| 2-Butanone | 10 | 10 | R | 10 | R |
| 1,1,1-Trichloroethane | 5 | 5 | U | 5 | U |
| Carbon Tetrachloride | 5 | 5 | U | 5 | U |
| Vinyl Acetate | 10 | 10 | U | 10 | U |
| Bromodichloromethane | 5 | 5 | U | 5 | U |
| 1,2-Dichloropropane | 5 | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | 5 | 5 | U | 5 | U |
| Trichloroethene | 5 | 5 | U | 5 | U |
| Dibromochloromethane | 5 | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | 5 | 5 | U | 5 | U |
| Benzene | 5 | 5 | U | 5 | U |
| trans-1,3-Dichloropropene | 5 | 5 | U | 5 | U |
| Bromoform | 5 | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | 10 | 10 | U | 10 | U |
| 2-Hexanone | 10 | 10 | U | 10 | U |
| Tetrachloroethene | 5 | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | 5 | 5 | U | 5 | U |
| Toluene | 5 | 5 | U | 5 | U |
| Chlorobenzene | 5 | 5 | U | 5 | U |
| Ethylbenzene | 5 | 5 | U | 5 | U |
| Styrene | 5 | 5 | U | 5 | U |
| Xylene (total) | 5 | 5 | U | 5 | U |

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| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-45A | | 216-B-45A | | 216-B-43A | | 216-B-43A | | 216-B-49C | |
| Remarks | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | |
| Sample Date | | 01/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/02 | | 01/22/92 | | 01/24/92 | |
| Extraction Date | | 01/20/92 | | 01/20/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/29/92 | |
| Analysis Date | | 02/05/92 | | 01/30/92 | | 02/13/92 | | 02/20/92 | | 02/20/92 | | 02/13/92 | | 02/13/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Phenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| bis(2-Chloroethyl)ether | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2-Chlorophenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 1,3-Dichlorobenzene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 1,4-Dichlorobenzene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Benzyl Alcohol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 1,2-Dichlorobenzene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2-Methylphenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| bis(2-Chloroisopropyl)ether | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | UJ | 330 | UJ | 340 | U |
| 4-Methylphenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| N-Nitroso-di-n-propylamine | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Hexachloroethane | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Nitrobenzene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Isophorone | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2-Nitrophenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2,4-Dimethylphenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Benzoic acid | 1600 | 1700 | UJ | 1700 | U | 75 | R | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | UJ |
| bis(2-Chloroethoxy)methane | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2,4-Dichlorophenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 1,2,4-Trichlorobenzene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Naphthalene | 330 | 340 | UJ | 340 | UJ | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 4-Chloroaniline | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Hexachlorobutadiene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 4-Chloro-3-methylphenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2-Methylnaphthalene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Hexachlorocyclopentadiene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | UJ |
| 2,4,6-Trichlorophenol | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2,4,5-Trichlorophenol | 1600 | 1700 | UJ | 1700 | U | 1800 | UJ | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | U |
| 2-Chloronaphthalene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2-Nitroaniline | 1600 | 1700 | UJ | 1700 | U | 1800 | UJ | 1700 | UJ | 1700 | UJ | 1700 | UJ | 1700 | UJ | 1700 | U |
| Dimethylphthalate | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Acenaphthylene | 330 | 340 | UJ | 340 | UJ | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2,6-Dinitrotoluene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |

| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-45A | | 216-B-45A | | 216-B-43A | | 216-B-43A | | 216-B-49C | |
| Remarks | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | |
| Sample Date | | 01/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/02 | | 01/22/92 | | 01/24/92 | |
| Extraction Date | | 01/20/92 | | 01/20/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/29/92 | |
| Analysis Date | | 02/05/92 | | 01/30/92 | | 02/13/92 | | 02/20/92 | | 02/20/92 | | 02/13/92 | | 02/13/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| 3-Nitroaniline | 1600 | 1700 | UJ | 1700 | U | 1800 | UJ | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | UJ |
| Acenaphthene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2,4-Dinitrophenol | 1600 | 1700 | R | 1700 | U | 1800 | UJ | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | UJ |
| 4-Nitrophenol | 1600 | 1700 | UJ | 1700 | U | 1800 | UJ | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | R |
| Dibenzofuran | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 2,4-Dinitrotoluene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | UJ | 330 | UJ | 340 | U |
| Diethylphthalate | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 4-Chlorophenyl-phenyl ether | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Fluorene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 4-Nitroaniline | 1600 | 1700 | UJ | 1700 | U | 1800 | UJ | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | UJ |
| 4,6-Dinitro-2-methylphenol | 1600 | 1700 | R | 1700 | U | 1800 | UJ | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | U |
| N-Nitrosodiphenylamine | 330 | 330 | UJ | 330 | U | 360 | UJ | 330 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| 4-Bromophenyl-phenylether | 330 | 330 | UJ | 330 | U | 360 | UJ | 330 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Hexachlorobenzene | 330 | 330 | UJ | 330 | U | 360 | UJ | 330 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Pentachlorophenol | 1600 | 1700 | UJ | 1700 | U | 200 | J | 1700 | UJ | 1700 | UJ | 1700 | U | 1700 | U | 1700 | U |
| Phenanthrene | 330 | 330 | UJ | 330 | U | 360 | UJ | 330 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Anthracene | 330 | 330 | UJ | 330 | U | 360 | UJ | 330 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Di-n-butylphthalate | 330 | 340 | UJ | 700 | | 760 | UJ | 2700 | UJ | 2800 | UJ | 3700 | U | 3900 | U | 820 | U |
| Fluoranthene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Pyrene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Butylbenzylphthalate | 330 | 340 | UJ | 1000 | | 1000 | J | 1300 | J | 960 | J | 790 | | 360 | | 680 | U |
| 3,3'-Dichlorobenzidine | 660 | 680 | UJ | 680 | U | 720 | UJ | 680 | UJ | 700 | UJ | 700 | U | 670 | U | 340 | UJ |
| Benzo(a)anthracene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Chrysene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| bis(2-Ethylhexyl)phthalate | 330 | 340 | UJ | 2200 | J | 2400 | UJ | 1900 | UJ | 1200 | UJ | 850 | U | 330 | U | 340 | U |
| Di-n-octylphthalate | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Benzo(b)fluoranthene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Benzo(k)fluoranthene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Benzo(a)pyrene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Indeno(1,2,3-cd)pyrene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Dibenz(a,h)anthracene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | UJ | 330 | UJ | 340 | U |
| Benzo(g,h,i)perylene | 330 | 340 | UJ | 340 | U | 360 | UJ | 340 | UJ | 350 | UJ | 350 | U | 330 | U | 340 | U |
| Unknown @ 7.12 | --- | --- | | --- | | --- | | --- | | --- | | --- | | 100 | NJ | --- | |

| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-45A | | 216-B-45A | | 216-B-43A | | 216-B-43A | | 216-B-49C | |
| Remarks | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | |
| Sample Date | | 01/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/02 | | 01/22/92 | | 01/24/92 | |
| Extraction Date | | 01/20/92 | | 01/20/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/29/92 | |
| Analysis Date | | 02/05/92 | | 01/30/92 | | 02/13/92 | | 02/20/92 | | 02/20/92 | | 02/13/92 | | 02/13/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Aldol Condensate @ 7.38 | --- | --- | | --- | | --- | | --- | | --- | | --- | | 500 | R | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | | --- | | --- | | --- | | --- | | 400 | R | --- | |
| Organic Acid @ 23.05 | --- | --- | | --- | | --- | | --- | | --- | | --- | | 300 | NJ | --- | |
| Unknown @ 25.28 | --- | --- | | --- | | --- | | --- | | --- | | --- | | 200 | NJ | --- | |
| Hydrocarbon @ 28.62 | --- | --- | | --- | | --- | | --- | | --- | | --- | | 400 | NJ | --- | |
| Unknown @ 31.33 | --- | --- | | --- | | --- | | --- | | --- | | --- | | 600 | NJ | --- | |
| Unknown @ 5.32 | --- | 200 | U | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 6.24 | --- | 300 | R | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Phosphate @ 17.32 | --- | 200 | NJ | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 5.47 | --- | --- | | 200 | R | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 24.13 | --- | --- | | 200 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Alkene @ 25.17 | --- | --- | | 2000 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Hydrocarbon @ 26.25 | --- | --- | | 200 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 26.72 | --- | --- | | 1000 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 26.83 | --- | --- | | 200 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Hydrocarbon @ 27.10 | --- | --- | | 2000 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Alkane @ 28.02 | --- | --- | | 200 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Hydrocarbon @ 28.90 | --- | --- | | 500 | NJ | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 7.12 | --- | --- | | --- | | 100 | NJ | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | | 200 | R | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | | 400 | R | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 25.67 | --- | --- | | --- | | 100 | NJ | --- | | --- | | --- | | --- | | --- | |
| Hydrocarbon @ 26.60 | --- | --- | | --- | | 1000 | NJ | --- | | --- | | --- | | --- | | --- | |
| Phosphate @ 28.22 | --- | --- | | --- | | 1000 | NJ | --- | | --- | | --- | | --- | | --- | |
| Hydrocarbon @ 28.55 | --- | --- | | --- | | 1000 | NJ | --- | | --- | | --- | | --- | | --- | |
| Hydrocarbon @ 30.38 | --- | --- | | --- | | 300 | NJ | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 31.33 | --- | --- | | --- | | 500 | NJ | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | | --- | | 500 | R | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | | --- | | 200 | R | --- | | --- | | --- | | --- | |
| Phthalate @ 22.18 | --- | --- | | --- | | --- | | 100 | NJ | --- | | --- | | --- | | --- | |
| Unknown @ 25.30 | --- | --- | | --- | | --- | | 100 | NJ | --- | | --- | | --- | | --- | |
| Unknown @ 27.65 | --- | --- | | --- | | --- | | 70 | NJ | --- | | --- | | --- | | --- | |
| Phosphate @ 28.23 | --- | --- | | --- | | --- | | 100 | NJ | --- | | --- | | --- | | --- | |

| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-45A | | 216-B-45A | | 216-B-43A | | 216-B-43A | | 216-B-49C | |
| Remarks | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | |
| Sample Date | | 01/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/02 | | 01/22/92 | | 01/24/92 | |
| Extraction Date | | 01/20/92 | | 01/20/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/29/92 | |
| Analysis Date | | 02/05/92 | | 01/30/92 | | 02/13/92 | | 02/20/92 | | 02/20/92 | | 02/13/92 | | 02/13/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Alkane @ 28.58 | --- | --- | | --- | | --- | | 70 | NJ | --- | | --- | | --- | | --- | |
| Unknown @ 31.35 | --- | --- | | --- | | --- | | 600 | NJ | --- | | --- | | --- | | --- | |
| Unknown @ 7.02 | --- | --- | | --- | | --- | | --- | | 600 | NJ | --- | | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | | --- | | --- | | 400 | R | --- | | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | | --- | | --- | | 500 | R | --- | | --- | | --- | |
| Aldol Condensate @ 9.57 | --- | --- | | --- | | --- | | --- | | 600 | R | --- | | --- | | --- | |
| Phthalate @ 22.18 | --- | --- | | --- | | --- | | --- | | 100 | NJ | --- | | --- | | --- | |
| Organic Acid @ 23.07 | --- | --- | | --- | | --- | | --- | | 100 | NJ | --- | | --- | | --- | |
| Unknown @ 25.30 | --- | --- | | --- | | --- | | --- | | 200 | NJ | --- | | --- | | --- | |
| Unknown @ 31.37 | --- | --- | | --- | | --- | | --- | | 700 | NJ | --- | | --- | | --- | |
| Unknown @ 7.12 | --- | --- | | --- | | --- | | --- | | --- | | 100 | NJ | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | | --- | | --- | | --- | | 700 | R | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | | --- | | --- | | --- | | 600 | R | --- | | --- | |
| Unknown @ 11.33 | --- | --- | | --- | | --- | | --- | | --- | | 200 | NJ | --- | | --- | |
| Organic Acid @ 23.07 | --- | --- | | --- | | --- | | --- | | --- | | 300 | NJ | --- | | --- | |
| Unknown @ 25.28 | --- | --- | | --- | | --- | | --- | | --- | | 200 | NJ | --- | | --- | |
| Hydrocarbon @ 28.60 | --- | --- | | --- | | --- | | --- | | --- | | 500 | NJ | --- | | --- | |
| Unknown @ 31.33 | --- | --- | | --- | | --- | | --- | | --- | | 700 | NJ | --- | | --- | |
| Unknown @ 4.52 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | 200 | NJ |
| Unknown @ 4.60 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | 300 | NJ |
| Aldol Condensate @ 5.97 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | 1000 | R |
| Aldol Condensate @ 6.65 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | 600 | R |
| Aldol Condensate @ 7.03 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | 400 | R |
| Aldol Condensate @ 7.63 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | 200 | R |
| Unknown @ 24.28 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | 300 | U |
| Unknown @ 4.48 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 4.60 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 5.97 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 6.67 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 7.03 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 9.07 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 24.28 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 4.48 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |

| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-45A | | 216-B-45A | | 216-B-43A | | 216-B-43A | | 216-B-49C | |
| Remarks | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | |
| Sample Date | | 01/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/02 | | 01/22/92 | | 01/24/92 | |
| Extraction Date | | 01/20/92 | | 01/20/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/28/92 | | 01/29/92 | |
| Analysis Date | | 02/05/92 | | 01/30/92 | | 02/13/92 | | 02/20/92 | | 02/20/92 | | 02/13/92 | | 02/13/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Unknown @ 4.60 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 5.97 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 6.65 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Aldol Condensate @ 7.65 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Unknown @ 24.27 | --- | --- | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |

| Laboratory: WESTON | SDG | | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S83 | | B01S87 | |
| Location | | 216-B-49C | | 216-B-43A | |
| Remarks | | 2.0-4.5 | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | | 01/23/92 | |
| Extraction Date | | 01/29/92 | | 01/29/92 | |
| Analysis Date | | 02/14/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| Phenol | 330 | 340 | U | 370 | U |
| bis(2-Chloroethyl)ether | 330 | 340 | U | 370 | U |
| 2-Chlorophenol | 330 | 340 | U | 370 | U |
| 1,3-Dichlorobenzene | 330 | 340 | U | 370 | U |
| 1,4-Dichlorobenzene | 330 | 340 | U | 370 | U |
| Benzyl Alcohol | 330 | 340 | U | 370 | U |
| 1,2-Dichlorobenzene | 330 | 340 | U | 370 | U |
| 2-Methylphenol | 330 | 340 | U | 370 | U |
| bis(2-Chloroisopropyl)ether | 330 | 340 | U | 370 | U |
| 4-Methylphenol | 330 | 340 | U | 370 | U |
| N-Nitroso-di-n-propylamine | 330 | 340 | U | 370 | U |
| Hexachloroethane | 330 | 340 | U | 370 | U |
| Nitrobenzene | 330 | 340 | U | 370 | U |
| Isophorone | 330 | 340 | U | 370 | U |
| 2-Nitrophenol | 330 | 340 | U | 370 | U |
| 2,4-Dimethylphenol | 330 | 340 | U | 370 | U |
| Benzoic acid | 1600 | 1700 | UJ | 1800 | UJ |
| bis(2-Chloroethoxy)methane | 330 | 340 | U | 370 | U |
| 2,4-Dichlorophenol | 330 | 340 | U | 370 | U |
| 1,2,4-Trichlorobenzene | 330 | 340 | U | 370 | U |
| Naphthalene | 330 | 340 | U | 370 | U |
| 4-Chloroaniline | 330 | 340 | U | 370 | U |
| Hexachlorobutadiene | 330 | 340 | U | 370 | U |
| 4-Chloro-3-methylphenol | 330 | 340 | U | 370 | U |
| 2-Methylnaphthalene | 330 | 340 | U | 370 | U |
| Hexachlorocyclopentadiene | 330 | 340 | UJ | 370 | UJ |
| 2,4,6-Trichlorophenol | 330 | 340 | U | 370 | U |
| 2,4,5-Trichlorophenol | 1600 | 1700 | U | 1800 | U |
| 2-Chloronaphthalene | 330 | 340 | U | 370 | U |
| 2-Nitroaniline | 1600 | 1700 | U | 1800 | U |
| Dimethylphthalate | 330 | 340 | U | 370 | U |
| Acenaphthylene | 330 | 340 | U | 370 | U |
| 2,6-Dinitrotoluene | 330 | 340 | U | 370 | U |

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| Laboratory: WESTON | SDG | | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S83 | | B01S87 | |
| Location | | 216-B-49C | | 216-B-43A | |
| Remarks | | 2.0-4.5 | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | | 01/23/92 | |
| Extraction Date | | 01/29/92 | | 01/29/92 | |
| Analysis Date | | 02/14/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| 3-Nitroaniline | 1600 | 1700 | UJ | 1800 | UJ |
| Acenaphthene | 330 | 340 | U | 370 | U |
| 2,4-Dinitrophenol | 1600 | 1700 | UJ | 1800 | UJ |
| 4-Nitrophenol | 1600 | 1700 | R | 1800 | R |
| Dibenzofuran | 330 | 340 | U | 370 | U |
| 2,4-Dinitrotoluene | 330 | 340 | U | 370 | U |
| Diethylphthalate | 330 | 340 | U | 370 | U |
| 4-Chlorophenyl-phenyl ether | 330 | 340 | U | 370 | U |
| Fluorene | 330 | 340 | U | 370 | U |
| 4-Nitroaniline | 1600 | 1700 | UJ | 1800 | UJ |
| 4,6-Dinitro-2-methylphenol | 1600 | 1700 | U | 1800 | U |
| N-Nitrosodiphenylamine | 330 | 340 | U | 370 | U |
| 4-Bromophenyl-phenylether | 330 | 340 | U | 370 | U |
| Hexachlorobenzene | 330 | 340 | U | 370 | U |
| Pentachlorophenol | 1600 | 1700 | U | 1800 | U |
| Phenanthrene | 330 | 340 | U | 370 | U |
| Anthracene | 330 | 340 | U | 370 | U |
| Di-n-butylphthalate | 330 | 360 | U | 410 | U |
| Fluoranthene | 330 | 340 | U | 370 | U |
| Pyrene | 330 | 340 | U | 370 | U |
| Butylbenzylphthalate | 330 | 680 | U | 370 | U |
| 3,3'-Dichlorobenzidine | 660 | 340 | UJ | 730 | UJ |
| Benzo(a)anthracene | 330 | 340 | U | 370 | U |
| Chrysene | 330 | 340 | U | 370 | U |
| bis(2-Ethylhexyl)phthalate | 330 | 340 | U | 370 | U |
| Di-n-octylphthalate | 330 | 340 | U | 370 | U |
| Benzo(b)fluoranthene | 330 | 340 | U | 370 | U |
| Benzo(k)fluoranthene | 330 | 340 | U | 370 | U |
| Benzo(a)pyrene | 330 | 340 | U | 370 | U |
| Indeno(1,2,3-cd)pyrene | 330 | 340 | U | 370 | U |
| Dibenz(a,h)anthracene | 330 | 340 | U | 370 | U |
| Benzo(g,h,i)perylene | 330 | 340 | U | 370 | U |
| Unknown @ 7.12 | --- | --- | | --- | |

| Laboratory: WESTON | SDG | | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S83 | | B01S87 | |
| Location | | 216-B-49C | | 216-B-43A | |
| Remarks | | 2.0-4.5 | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | | 01/23/92 | |
| Extraction Date | | 01/29/92 | | 01/29/92 | |
| Analysis Date | | 02/14/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| Aldol Condensate @ 7.38 | --- | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | |
| Organic Acid @ 23.05 | --- | --- | | --- | |
| Unknown @ 25.28 | --- | --- | | --- | |
| Hydrocarbon @ 28.62 | --- | --- | | --- | |
| Unknown @ 31.33 | --- | --- | | --- | |
| Unknown @ 5.32 | --- | --- | | --- | |
| Aldol Condensate @ 6.24 | --- | --- | | --- | |
| Phosphate @ 17.32 | --- | --- | | --- | |
| Aldol Condensate @ 5.47 | --- | --- | | --- | |
| Unknown @ 24.13 | --- | --- | | --- | |
| Alkene @ 25.17 | --- | --- | | --- | |
| Hydrocarbon @ 26.25 | --- | --- | | --- | |
| Unknown @ 26.72 | --- | --- | | --- | |
| Unknown @ 26.83 | --- | --- | | --- | |
| Hydrocarbon @ 27.10 | --- | --- | | --- | |
| Alkane @ 28.02 | --- | --- | | --- | |
| Hydrocarbon @ 28.90 | --- | --- | | --- | |
| Unknown @ 7.12 | --- | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | |
| Unknown @ 25.67 | --- | --- | | --- | |
| Hydrocarbon @ 26.60 | --- | --- | | --- | |
| Phosphate @ 28.22 | --- | --- | | --- | |
| Hydrocarbon @ 28.55 | --- | --- | | --- | |
| Hydrocarbon @ 30.38 | --- | --- | | --- | |
| Unknown @ 31.33 | --- | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | |
| Phthalate @ 22.18 | --- | --- | | --- | |
| Unknown @ 25.30 | --- | --- | | --- | |
| Unknown @ 27.65 | --- | --- | | --- | |
| Phosphate @ 28.23 | --- | --- | | --- | |

| Laboratory: WESTON | SDG | | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S83 | | B01S87 | |
| Location | | 216-B-49C | | 216-B-43A | |
| Remarks | | 2.0-4.5 | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | | 01/23/92 | |
| Extraction Date | | 01/29/92 | | 01/29/92 | |
| Analysis Date | | 02/14/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| Alkane @ 28.58 | --- | --- | | --- | |
| Unknown @ 31.35 | --- | --- | | --- | |
| Unknown @ 7.02 | --- | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | |
| Aldol Condensate @ 9.57 | --- | --- | | --- | |
| Phthalate @ 22.18 | --- | --- | | --- | |
| Organic Acid @ 23.07 | --- | --- | | --- | |
| Unknown @ 25.30 | --- | --- | | --- | |
| Unknown @ 31.37 | --- | --- | | --- | |
| Unknown @ 7.12 | --- | --- | | --- | |
| Aldol Condensate @ 7.38 | --- | --- | | --- | |
| Aldol Condensate @ 8.33 | --- | --- | | --- | |
| Unknown @ 11.33 | --- | --- | | --- | |
| Organic Acid @ 23.07 | --- | --- | | --- | |
| Unknown @ 25.28 | --- | --- | | --- | |
| Hydrocarbon @ 28.60 | --- | --- | | --- | |
| Unknown @ 31.33 | --- | --- | | --- | |
| Unknown @ 4.52 | --- | --- | | --- | |
| Unknown @ 4.60 | --- | --- | | --- | |
| Aldol Condensate @ 5.97 | --- | --- | | --- | |
| Aldol Condensate @ 6.65 | --- | --- | | --- | |
| Aldol Condensate @ 7.03 | --- | --- | | --- | |
| Aldol Condensate @ 7.63 | --- | --- | | --- | |
| Unknown @ 24.28 | --- | --- | | --- | |
| Unknown @ 4.48 | --- | 200 | NJ | --- | |
| Unknown @ 4.60 | --- | 400 | U | --- | |
| Aldol Condensate @ 5.97 | --- | 800 | R | --- | |
| Aldol Condensate @ 6.67 | --- | 600 | R | --- | |
| Aldol Condensate @ 7.03 | --- | 200 | R | --- | |
| Unknown @ 9.07 | --- | 200 | NJ | --- | |
| Unknown @ 24.28 | --- | 500 | U | --- | |
| Unknown @ 4.48 | --- | --- | | 300 | NJ |

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| Laboratory: WESTON | SDG | | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S83 | | B01S87 | |
| Location | | 216-B-49C | | 216-B-43A | |
| Remarks | | 2.0-4.5 | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | | 01/23/92 | |
| Extraction Date | | 01/29/92 | | 01/29/92 | |
| Analysis Date | | 02/14/92 | | 02/14/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| Unknown @ 4.60 | --- | --- | | 400 | NJ |
| Aldol Condensate @ 5.97 | --- | --- | | 700 | R |
| Aldol Condensate @ 6.65 | --- | --- | | 300 | R |
| Aldol Condensate @ 7.65 | --- | --- | | 200 | R |
| Unknown @ 24.27 | --- | --- | | 400 | U |

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| Laboratory: WESTON | SDG | 9201L119 | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S65 | | B01S67 | |
| Location | | 216-B-43A | | 216-B-43A | |
| | | EQ. BLNK | | FIELD BLN | |
| Sample Date | | 01/22/92 | | 01/22/92 | |
| Extraction Date | | 01/27/91 | | 01/27/92 | |
| Analysis Date | | 02/04/92 | | 02/05/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| Phenol | 10 | 11 | U | 11 | U |
| bis(2-Chloroethyl)ether | 10 | 11 | U | 11 | U |
| 2-Chlorophenol | 10 | 11 | U | 11 | U |
| 1,3-Dichlorobenzene | 10 | 11 | U | 11 | U |
| 1,4-Dichlorobenzene | 10 | 11 | U | 11 | U |
| Benzyl Alcohol | 10 | 11 | U | 11 | U |
| 1,2-Dichlorobenzene | 10 | 11 | U | 11 | U |
| 2-Methylphenol | 10 | 11 | U | 11 | U |
| bis(2-Chloroisopropyl)ether | 10 | 11 | U | 11 | U |
| 4-Methylphenol | 10 | 11 | U | 11 | U |
| N-Nitroso-di-n-propylamine | 10 | 11 | U | 11 | U |
| Hexachloroethane | 10 | 11 | U | 11 | U |
| Nitrobenzene | 10 | 11 | U | 11 | U |
| Isophorone | 10 | 11 | U | 11 | U |
| 2-Nitrophenol | 10 | 11 | U | 11 | U |
| 2,4-Dimethylphenol | 10 | 11 | U | 11 | U |
| Benzoic acid | 50 | 55 | UJ | 55 | UJ |
| bis(2-Chloroethoxy)methane | 10 | 11 | U | 11 | U |
| 2,4-Dichlorophenol | 10 | 11 | U | 11 | U |
| 1,2,4-Trichlorobenzene | 10 | 11 | U | 11 | U |
| Naphthalene | 10 | 11 | U | 11 | U |
| 4-Chloroaniline | 10 | 11 | U | 11 | U |
| Hexachlorobutadiene | 10 | 11 | U | 11 | U |
| 4-Chloro-3-methylphenol | 10 | 11 | U | 11 | U |
| 2-Methylnaphthalene | 10 | 11 | U | 11 | U |
| Hexachlorocyclopentadiene | 10 | 11 | UJ | 11 | U |
| 2,4,6-Trichlorophenol | 10 | 11 | U | 11 | U |
| 2,4,5-Trichlorophenol | 50 | 55 | U | 55 | U |
| 2-Chloronaphthalene | 10 | 11 | U | 11 | U |
| 2-Nitroaniline | 50 | 55 | U | 55 | U |

9/13/92 1:50

| Laboratory: WESTON | SDG | 9201L119 | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S65 | | B01S67 | |
| Location | | 216-B-43A | | 216-B-43A | |
| | | EQ. BLNK | | FIELD BLN | |
| Sample Date | | 01/22/92 | | 01/22/92 | |
| Extraction Date | | 01/27/91 | | 01/27/92 | |
| Analysis Date | | 02/04/92 | | 02/05/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| Dimethylphthalate | 10 | 11 | U | 11 | U |
| Acenaphthylene | 10 | 11 | U | 11 | U |
| 2,6-Dinitrotoluene | 10 | 11 | U | 11 | U |
| 3-Nitroaniline | 50 | 55 | U | 55 | U |
| Acenaphthene | 10 | 11 | U | 11 | U |
| 2,4-Dinitrophenol | 50 | 55 | UJ | 55 | U |
| 4-Nitrophenol | 50 | 55 | U | 55 | U |
| Dibenzofuran | 10 | 11 | U | 11 | U |
| 2,4-Dinitrotoluene | 10 | 11 | U | 11 | U |
| Diethylphthalate | 10 | 11 | U | 2 | J |
| 4-Chlorophenyl-phenyl ethe | 10 | 11 | U | 11 | U |
| Fluorene | 10 | 11 | U | 11 | U |
| 4-Nitroaniline | 50 | 55 | U | 55 | U |
| 4,6-Dinitro-2-methylphenol | 50 | 55 | U | 55 | U |
| N-Nitrosodiphenylamine | 10 | 11 | U | 11 | U |
| 4-Bromophenyl-phenylether | 10 | 11 | U | 11 | U |
| Hexachlorobenzene | 10 | 11 | U | 11 | U |
| Pentachlorophenol | 50 | 55 | U | 55 | U |
| Phenanthrene | 10 | 11 | U | 11 | U |
| Anthracene | 10 | 11 | U | 11 | U |
| Di-n-butylphthalate | 10 | 11 | U | 11 | U |
| Fluoranthene | 10 | 11 | U | 11 | U |
| Pyrene | 10 | 11 | U | 11 | U |
| Butylbenzylphthalate | 10 | 11 | U | 2 | J |
| 3,3'-Dichlorobenzidine | 20 | 22 | U | 22 | U |
| Benzo(a)anthracene | 10 | 11 | U | 11 | U |
| Chrysene | 10 | 11 | U | 11 | U |
| bis(2-Ethylhexyl)phthalate | 10 | 11 | U | 11 | U |
| Di-n-octylphthalate | 10 | 11 | U | 11 | U |
| Benzo(b)fluoranthene | 10 | 11 | U | 11 | U |

| Laboratory: WESTON | SDG | 9201L119 | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S65 | | B01S67 | |
| Location | | 216-B-43A | | 216-B-43A | |
| | | EQ. BLNK | | FIELD BLN | |
| Sample Date | | 01/22/92 | | 01/22/92 | |
| Extraction Date | | 01/27/91 | | 01/27/92 | |
| Analysis Date | | 02/04/92 | | 02/05/92 | |
| Semivolatile Compound | CRQL | Result | Q | Result | Q |
| Benzo(k)fluoranthene | 10 | 11 | U | 11 | U |
| Benzo(a)pyrene | 10 | 11 | U | 11 | U |
| Indeno(1,2,3-cd)pyrene | 10 | 11 | U | 11 | U |
| Dibenz(a,h)anthracene | 10 | 11 | U | 11 | U |
| Benzo(g,h,i)perylene | 10 | 11 | U | 11 | U |
| Aldol Condensate @ 4.55 | --- | 10 | R | --- | |
| Unknown @ 4.90 | --- | 10 | NJ | --- | |
| Unknown @ 5.32 | --- | 6 | NJ | --- | |
| Unknown @ 5.72 | --- | 4 | NJ | --- | |
| Unknown @ 6.03 | --- | 6 | NJ | --- | |
| Aldol Condensate @ 6.12 | --- | 6 | R | --- | |
| Trichloropropene @ 6.35 | --- | 10 | NJ | --- | |
| Unknown @ 9.60 | --- | 8 | NJ | --- | |
| Unknown @ 19.95 | --- | 40 | NJ | --- | |
| Unknown @ 24.75 | --- | 100 | NJ | --- | |
| Aldol Condensate @ 4.47 | --- | --- | | 10 | R |
| Unknown @ 4.80 | --- | --- | | 9 | NJ |
| Unknown @ 5.23 | --- | --- | | 6 | NJ |
| Unknown @ 5.48 | --- | --- | | 4 | NJ |
| Unknown @ 5.95 | --- | --- | | 9 | NJ |
| Aldol Condensate @ 6.03 | --- | --- | | 7 | R |
| Trichloropropene @ 6.27 | --- | --- | | 10 | NJ |
| Unknown @ 7.07 | --- | --- | | 6 | NJ |
| Unknown @ 9.53 | --- | --- | | 9 | NJ |
| Unknown @ 19.88 | --- | --- | | 100 | NJ |
| Unknown @ 24.68 | --- | --- | | 200 | NJ |

9613946.132

| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-43A | | 216-B-43A | | 216-B-43A | | 216-B-43A | | 216-B-49C | |
| Remarks | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | |
| Sample Date | | 01/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/92 | | 01/22/92 | | 01/24/92 | |
| Extraction Date | | 01/20/92 | | 01/22/92 | | 01/24/92 | | 01/24/92 | | 01/24/92 | | 01/24/92 | | 01/28/92 | | 01/29/92 | |
| Analysis Date | | 02/07/92 | | 02/08/92 | | 02/15/92 | | 02/15/92 | | 02/15/92 | | 02/15/92 | | 02/18/92 | | 02/18/92 | |
| Pesticide/PCB Compound | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| alpha-BHC | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| beta-BHC | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| delta-BHC | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| gamma-BHC (Lindane) | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| Heptachlor | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| Aldrin | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| Heptachlor epoxide | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| Endosulfan I | 8.0 | 16 | UJ | 16 | UJ | 16 | U | 17 | U | 17 | U | 17 | U | 16 | U | 16 | U |
| Dieldrin | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| 4,4'-DDE | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| Endrin | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| Endosulfan II | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| 4,4'-DDD | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| Endosulfan sulfate | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| 4,4'-DDT | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| Methoxychlor | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| Endrin Ketone | 16.0 | 32 | UJ | 32 | UJ | 32 | U | 34 | U | 34 | U | 34 | U | 32 | U | 32 | U |
| alpha-Chlordane | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| gamma-Chlordane | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| Toxaphene | 160.0 | 320 | UJ | 320 | UJ | 320 | U | 340 | U | 340 | U | 340 | U | 320 | U | 320 | U |
| Arochlor-1016 | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| Arochlor-1221 | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| Arochlor-1232 | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| Arochlor-1242 | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| Arochlor-1248 | 80.0 | 160 | UJ | 160 | UJ | 160 | U | 170 | U | 170 | U | 170 | U | 160 | U | 160 | U |
| Arochlor-1254 | 160.0 | 320 | UJ | 320 | UJ | 320 | U | 340 | U | 340 | U | 340 | U | 320 | U | 320 | U |
| Arochlor-1260 | 160.0 | 320 | UJ | 320 | UJ | 320 | U | 340 | U | 340 | U | 340 | U | 320 | U | 320 | U |

| Laboratory: WESTON | SDG | | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S83 | | B01S87 | |
| Location | | 216-B-49C | | 216-B-43A | |
| Remarks | | 2.0-4.5 | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | | 01/23/92 | |
| Extraction Date | | 01/29/92 | | 01/29/92 | |
| Analysis Date | | 02/18/92 | | 02/19/92 | |
| Pesticide/PCB Compound | CRQL | Result | Q | Result | Q |
| alpha-BHC | 8.0 | 16 | U | 17 | U |
| beta-BHC | 8.0 | 16 | U | 17 | U |
| delta-BHC | 8.0 | 16 | U | 17 | U |
| gamma-BHC (Lindane) | 8.0 | 16 | U | 17 | U |
| Heptachlor | 8.0 | 16 | U | 17 | U |
| Aldrin | 8.0 | 16 | U | 17 | U |
| Heptachlor epoxide | 8.0 | 16 | U | 17 | U |
| Endosulfan I | 8.0 | 16 | U | 17 | U |
| Dieldrin | 16.0 | 32 | U | 34 | U |
| 4,4'-DDE | 16.0 | 32 | U | 34 | U |
| Endrin | 16.0 | 32 | U | 34 | U |
| Endosulfan II | 16.0 | 32 | U | 34 | U |
| 4,4'-DDD | 16.0 | 32 | U | 34 | U |
| Endosulfan sulfate | 16.0 | 32 | U | 34 | U |
| 4,4'-DDT | 16.0 | 32 | U | 34 | U |
| Methoxychlor | 80.0 | 160 | U | 170 | U |
| Endrin Ketone | 16.0 | 32 | U | 34 | U |
| alpha-Chlordane | 80.0 | 160 | U | 170 | U |
| gamma-Chlordane | 80.0 | 160 | U | 170 | U |
| Toxaphene | 160.0 | 320 | U | 340 | U |
| Arochlor-1016 | 80.0 | 160 | U | 170 | U |
| Arochlor-1221 | 80.0 | 160 | U | 170 | U |
| Arochlor-1232 | 80.0 | 160 | U | 170 | U |
| Arochlor-1242 | 80.0 | 160 | U | 170 | U |
| Arochlor-1248 | 80.0 | 160 | U | 170 | U |
| Arochlor-1254 | 160.0 | 320 | U | 340 | U |
| Arochlor-1260 | 160.0 | 320 | U | 340 | U |

| Laboratory: WESTON | SDG | 9201L119 | | | |
|---|---|---|---|---|---|
| Sample Number | | B01S65 | | B01S67 | |
| Location | | 216-B-43A | | 216-B-43A | |
| Remarks | | EQUIPMENT BLANK | | FIELD BLAN | |
| Sample Date | | 01/22/92 | | 01/22/92 | |
| Extraction Date | | 01/27/92 | | 01/27/92 | |
| Analysis Date | | 02/14/92 | | 02/15/92 | |
| Pesticide/PCB Compound | CRQL | Result | Q | Result | Q |
| alpha-BHC | 0.05 | 0.05 | U | 0.05 | U |
| beta-BHC | 0.05 | 0.05 | U | 0.05 | U |
| delta-BHC | 0.05 | 0.05 | U | 0.05 | U |
| gamma-BHC (Lindane) | 0.05 | 0.05 | U | 0.05 | U |
| Heptachlor | 0.05 | 0.05 | U | 0.05 | U |
| Aldrin | 0.05 | 0.05 | U | 0.05 | U |
| Heptachlor epoxide | 0.05 | 0.05 | U | 0.05 | U |
| Endosulfan I | 0.05 | 0.05 | U | 0.05 | U |
| Dieldrin | 0.10 | 0.10 | U | 0.10 | U |
| 4,4'-DDE | 0.10 | 0.10 | U | 0.10 | U |
| Endrin | 0.10 | 0.10 | U | 0.10 | U |
| Endosulfan II | 0.10 | 0.10 | U | 0.10 | U |
| 4,4'-DDD | 0.10 | 0.10 | U | 0.10 | U |
| Endosulfan sulfate | 0.10 | 0.10 | U | 0.10 | U |
| 4,4'-DDT | 0.10 | 0.10 | U | 0.10 | U |
| Methoxychlor | 0.50 | 0.50 | U | 0.50 | U |
| Endrin Ketone | 0.10 | 0.10 | U | 0.10 | U |
| alpha-Chlordane | 0.50 | 0.50 | U | 0.50 | U |
| gamma-Chlordane | 0.50 | 0.50 | U | 0.50 | U |
| Toxaphene | 1.00 | 1.00 | U | 1.00 | U |
| Arochlor-1016 | 0.50 | 0.50 | U | 0.50 | U |
| Arochlor-1221 | 0.50 | 0.50 | U | 0.50 | U |
| Arochlor-1232 | 0.50 | 0.50 | U | 0.50 | U |
| Arochlor-1242 | 0.50 | 0.50 | U | 0.50 | U |
| Arochlor-1248 | 0.50 | 0.50 | U | 0.50 | U |
| Arochlor-1254 | 1.00 | 1.00 | U | 1.00 | U |
| Arochlor-1260 | 1.00 | 1.00 | U | 1.00 | U |

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| Laboratory: WESTON | SDG | 9201L008 | | 9201L041 | | 9201L101 | | | | | | | | 9201L119 | | 9201L150 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B015R7 | | B015R9 | | B015J6 | | B015P2 | | B015Q0 | | B01S79 | | B01S81 | | B01S85 | | B01S83 | |
| Location | | 216-B-46C | | 216-B-43A | | 216-B-43A | | 216-B-45A | | 216-B-45A | | 216-B-43A | | 216-B-43A | | 216-B-49C | | 216-B-49C | |
| Remarks | | 27.0-29.5 | | 130.5-133.0 | | 157.5-160.0 | | 3.0-5.5 | | 10.0-12.5 | | 188.5-191.0 | | 214.0-216.5 | | 9.0-11.5 | | 2.0-4.5 | |
| Sample Date | | 1/10/92 | | 01/14/92 | | 01/20/92 | | 01/20/92 | | 01/20/92 | | 01/21/92 | | 01/22/92 | | 01/24/92 | | 01/23/92 | |
| Inorganic Analytes | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Aluminum | 40 | 3600 | J | 3110 | | 4610 | J | 4220 | J | 4390 | J | 5590 | J | 3730 | | 5600 | J | 5130 | J |
| Antimony | 12 | 4.92 | U | 4.73 | U | 4.74 | UJ | 4.63 | UJ | 4.82 | UJ | 4.79 | UJ | 4.66 | U | 4.81 | U | 4.54 | U |
| Arsenic | 2 | 1.3 | B | 1.6 | B | 1.6 | B | 1.5 | B | 2 | B | 2.1 | | 0.99 | B | 4.10 | J | 1.3 | J |
| Barium | 40 | 42.1 | B | 40.8 | B | 66 | | 59.2 | | 54.6 | | 55.4 | | 68 | | 59.20 | | 66 | |
| Beryllium | 1 | 0.24 | B | 0.31 | B | 0.31 | B | 0.2 | U | 0.36 | B | 0.27 | B | 0.32 | B | 0.44 | B | 0.41 | B |
| Cadmium | 1 | 0.71 | B | 0.62 | U | 0.62 | U | 0.6 | U | 0.63 | U | 0.63 | U | 0.61 | U | 0.63 | U | 0.89 | B |
| Calcium | 1000 | 5740 | J | 4800 | | 5970 | J | 4920 | J | 6560 | J | 6360 | J | 4330 | | 7610 | J | 6870 | J |
| Chromium | 2 | 5.4 | | 6 | | 8.2 | | 5.6 | | 6.3 | | 10.4 | | 11.4 | J | 8.90 | | 11.8 | |
| Cobalt | 10 | 5.2 | B | 5.2 | B | 7.3 | B | 7.8 | B | 8.4 | B | 6.9 | B | 6.5 | B | 10.70 | | 9.8 | B |
| Copper | 5 | 12.6 | | 9.2 | | 10.3 | | 9.4 | | 9.9 | | 10.9 | | 10.5 | | 12.30 | | 12.4 | |
| Iron | 20 | 12700 | J | 7930 | | 12800 | J | 13600 | J | 15200 | J | 13400 | J | 10000 | | 19800 | J | 17900 | J |
| Lead | 0.6 | 3.8 | J | 3.1 | | 2.2 | | 27.7 | J | 3.5 | | 3.4 | | 2.6 | | 3.60 | | 7.7 | |
| Magnesium | 1000 | 3230 | | 2590 | | 3410 | J | 2880 | J | 3350 | J | 3770 | J | 2360 | | 3980 | J | 3980 | J |
| Manganese | 3 | 216 | | 188 | | 266 | J | 233 | J | 243 | J | 255 | J | 199 | J | 312 | J | 278 | J |
| Mercury | 0.04 | 0.24 | | 0.05 | U | 0.14 | | 0.05 | U | 0.05 | U | 0.06 | B | 0.05 | U | 0.05 | U | 0.05 | U |
| Nickel | 8 | 8.7 | | 10.3 | | 8.6 | | 5.7 | B | 7 | B | 10.2 | | 7.9 | B | 8.60 | | 11.3 | |
| Potassium | 1000 | 459 | B | 790 | B | 923 | B | 914 | B | 893 | B | 1130 | | 602 | B | 1010 | B | 1160 | |
| Selenium | 1 | 0.43 | UJ | 0.41 | UJ | 0.41 | UJ | 0.38 | UJ | 0.42 | UJ | 0.41 | UJ | 0.4 | U | 0.42 | UJ | 0.4 | UJ |
| Silver | 2 | 0.86 | U | 1.4 | B | 1.1 | B | 1.7 | B | 1.6 | B | 1.4 | B | 1.6 | B | 1.80 | J | 1.5 | J |
| Sodium | 1000 | 2830 | | 717 | B | 3070 | J | 140 | J | 288 | J | 909 | J | 912 | B | 316 | B | 204 | B |
| Thallium | 2 | 0.43 | UJ | 0.41 | U | 0.41 | U | 0.38 | U | 0.42 | U | 0.41 | U | 0.4 | UJ | 0.42 | UJ | 0.4 | UJ |
| Vanadium | 10 | 18 | | 14 | | 22.8 | | 27.2 | | 31.6 | | 24.5 | | 18.3 | | 42.70 | | 42.5 | |
| Zinc | 4 | 24.7 | | 21.9 | | 25.7 | | 27.7 | | 29.1 | | 29.5 | | 25.4 | J | 37.50 | | 35.3 | |
| Cyanide | 2 | 3.2 | | 1.03 | U | 2.86 | | 1 | U | 1 | U | 1.7 | | 1 | UJ | 1.05 | U | 1.03 | U |
| Bismuth | 12 | 32.1 | U | 30.8 | U | 30.9 | U | 30.2 | U | 31.4 | U | 31.2 | U | 30.4 | U | 31.4 | U | 29.6 | U |
| Percent Solids | 0.1 | 93.6 | | 97.3 | | 97.2 | | 96.3 | | 95.4 | | 95.5 | | 98.8 | | 95.6 | | 96.7 | |
| Nitrate by IC | 0.5 | 3350 | J | 458 | J | 4620 | J | 81.4 | J | 46 | J | 1550 | J | 3090 | J | 29.5 | J | 58.8 | J |
| Phosphate by IC | 0.5 | 134 | UJ | 2 | J | 1.3 | UJ | 1.4 | J | 1.3 | UJ | 1.3 | UJ | 1.3 | UJ | 1.3 | UJ | 1.3 | UJ |
| Sulfate by IC | 0.5 | 264 | | 44.2 | | 210 | | 18.6 | | 385 | | 30 | | 70.3 | | 14.7 | | 21.9 | |
| Nitrate Nitrite | 0.5 | 1030 | | 102 | | 1220 | | 19.8 | | 11.6 | | 405 | | 621 | | 8.4 | J | 16.6 | J |
| Total Organic Carbon | 50 | 1220 | | 136 | U | 473 | J | 1080 | J | 727 | J | 845 | J | 474 | | 2290 | J | 1700 | |
| Chloride by IC | 0.5 | --- | | 15.9 | | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Fluoride by IC | 0.5 | --- | | 2.6 | U | --- | | --- | | --- | | --- | | --- | | --- | | --- | |
| Nitrite by IC | 0.5 | --- | | 1.3 | UJ | --- | | --- | | --- | | --- | | --- | | --- | | --- | |

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| Laboratory: WESTON | SDG | | |
|---|---|---|---|
| Sample Number | | B01S87 | |
| Location | | 216-B-43A | |
| Remarks | | 223.0-227.5 | |
| Sample Date | | 01/23/92 | |
| Inorganic Analytes | CRQL | Result | Q |
| Aluminum | 40 | 4180 | J |
| Antimony | 12 | 4.8 | U |
| Arsenic | 2 | 0.54 | J |
| Barium | 40 | 65.5 | |
| Beryllium | 1 | 0.23 | B |
| Cadmium | 1 | 1.4 | |
| Calcium | 1000 | 4240 | J |
| Chromium | 2 | 119 | |
| Cobalt | 10 | 8.2 | B |
| Copper | 5 | 12 | |
| Iron | 20 | 13000 | J |
| Lead | 0.6 | 6.2 | |
| Magnesium | 1000 | 2800 | J |
| Manganese | 3 | 229 | J |
| Mercury | 0.04 | 0.05 | U |
| Nickel | 8 | 66.5 | |
| Potassium | 1000 | 825 | B |
| Selenium | 1 | 0.42 | UJ |
| Silver | 2 | 1.5 | J |
| Sodium | 1000 | 699 | B |
| Thallium | 2 | 0.42 | UJ |
| Vanadium | 10 | 26.7 | |
| Zinc | 4 | 31.3 | |
| Cyanide | 2 | 1.2 | |
| Bismuth | 12 | 31.3 | U |
| Percent Solids | 0.1 | 93.2 | |
| Nitrate by IC | 0.5 | 2970 | J |
| Phosphate by IC | 0.5 | 1.3 | UJ |
| Sulfate by IC | 0.5 | 32.1 | |
| Nitrate Nitrite | 0.5 | 633 | J |
| Total Organic Carbon | 50 | 908 | |
| Chloride by IC | 0.5 | --- | |
| Fluoride by IC | 0.5 | --- | |
| Nitrite by IC | 0.5 | --- | |

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| Laboratory: WESTON | SDG | 9201L119 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number | | B01S65 | | B01S67 | | | | | | | | | | | | | |
| Location | | 216-B-43A | | 216-B-43A | | | | | | | | | | | | | |
| | | EQ. BLNK | | FIELD BLNK | | | | | | | | | | | | | |
| Sample Date | | 01/27/92 | | 01/27/92 | | | | | | | | | | | | | |
| Inorganic Analytes | CRQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Aluminum | 200 | 83 | U | 83 | U | | | | | | | | | | | | |
| Antimony | 60 | 23 | U | 23 | U | | | | | | | | | | | | |
| Arsenic | 10 | 2 | U | 2 | U | | | | | | | | | | | | |
| Barium | 200 | 38 | U | 38 | U | | | | | | | | | | | | |
| Beryllium | 5 | 1 | U | 1 | U | | | | | | | | | | | | |
| Cadmium | 5 | 3 | U | 3 | U | | | | | | | | | | | | |
| Calcium | 5000 | 88 | U | 89.4 | B | | | | | | | | | | | | |
| Chromium | 10 | 6 | U | 6 | U | | | | | | | | | | | | |
| Cobalt | 50 | 5 | U | 5 | U | | | | | | | | | | | | |
| Copper | 25 | 6 | U | 6 | U | | | | | | | | | | | | |
| Iron | 100 | 39 | U | 39 | U | | | | | | | | | | | | |
| Lead | 3 | 18.3 | J | 2 | R | | | | | | | | | | | | |
| Magnesium | 5000 | 78 | U | 78 | U | | | | | | | | | | | | |
| Manganese | 15 | 2 | U | 2 | U | | | | | | | | | | | | |
| Mercury | 0.2 | 0.1 | U | 0.1 | U | | | | | | | | | | | | |
| Nickel | 40 | 18 | U | 18 | U | | | | | | | | | | | | |
| Potassium | 5000 | 734 | U | 734 | U | | | | | | | | | | | | |
| Selenium | 5 | 2 | U | 2 | U | | | | | | | | | | | | |
| Silver | 10 | 4 | R | 4 | R | | | | | | | | | | | | |
| Sodium | 5000 | 638 | U | 638 | U | | | | | | | | | | | | |
| Thallium | 10 | 3 | U | 2 | U | | | | | | | | | | | | |
| Vanadium | 50 | 5 | U | 5 | U | | | | | | | | | | | | |
| Zinc | 20 | 10.2 | J | 14.5 | J | | | | | | | | | | | | |
| Cyanide | 10 | 28.5 | J | 42.7 | J | | | | | | | | | | | | |
| Bismuth | 150 | 150 | U | 150 | U | | | | | | | | | | | | |
| Nitrate by IC, mg/L | 0.5 | 0.25 | UJ | 0.25 | UJ | | | | | | | | | | | | |
| Phosphate by IC, mg/L | 0.5 | 0.25 | UJ | 0.25 | UJ | | | | | | | | | | | | |
| Sulfate by IC, mg/L | 0.5 | 0.25 | U | 0.25 | U | | | | | | | | | | | | |
| Nitrate+Nitrite, mg/L | 0.5 | 0.1 | U | 0.1 | | | | | | | | | | | | | |

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# APPENDIX B

## DATA VALIDATION DOCUMENTATION

SDG: 9201L008

SAMPLE: B015R7

CONTAINS:

ATTACHMENT 1 - GLOSSARY OF DATA REPORTING QUALIFIERS
ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS
ATTACHMENT 3 - AS QUALIFIED LABORATORY DATA
ATTACHMENT 4 - DATA VALIDATION SUPPORTING DOCUMENTATION

# ATTACHMENT 1

## GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

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# ATTACHMENT 2

# SUMMARY OF DATA QUALIFICATIONS

## DATA QUALIFICATION SUMMARY - FORM B-7

7/6/92

| SDG: 9201L008 | REVIEWER: MML | DATE: 6/23/92 | PAGE 1 OF 15 |
|---|---|---|---|
| COMMENTS: VOA | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| 2-Butanone | R | B015R7, B015R7MS | RRF Values < 0.05 ICAL |
| | | B015R7MSD | |
| Chloroethane, | UJ | B015R7, | CCAL % D > 25% |
| ACETONE, | | B015R7-MS, | for several compounds |
| Carbon Tetrachloride, | | and B015R7-MSD | |
| 1,1,2 TCA, | | | |
| Bromoform, | | | |
| 4 Methyl-2-Pentanone | | | |
| and 2-Hexanone | | | |
| | | | |
| 2-butanone | UJ (already R qualified) | B015R7, | CCAL % D > 25% |
| | | B015R7-MS and B015R7-MSD | |
| | | | |
| Acetone | U (already UJ qualified) | B015R7, B015R7MS | Blank contamination |
| | | B015R7MSD | 10X rule |
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## DATA QUALIFICATION SUMMARY - FORM B-7

92012008 pg 2 of 5

| SDG: L008 | REVIEWER: MM | DATE: 6/25/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: S-VOA | | | |

7/6/92

| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
|---|---|---|---|
| ALL TCL and | UJ | B015R7 | Extraction time exceeded by |
| TIC compounds | J | B015R7 | < factor of 2 " " |
| 4,6-Dinitro-2-methyl phenol and 2,4 Dinitrophenol | R | B015R7 | $RRF_{50}$ <0.05 |
| | | | |
| | | | |
| unknown TIC RT 5.32 | U | B015R7 | Blank TIC contamination ±0.06 RT units |
| | | | |
| Alcohol Condensate | R | B015R7 | Common lab contaminant |
| | | | |
| Phosphate (organic acid esther) | JN | B015R7 | Presumptive evidence |
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## DATA QUALIFICATION SUMMARY - FORM B-7

92OIL008 pg 3 of 5

| SDG: L008 | REVIEWER: MMX | DATE: 6/29/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Pesticide / PCB | | | |

7/6/92

| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
|---|---|---|---|
| All Pest | UJ | B015R7 | Extraction time exceeded |
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## DATA QUALIFICATION SUMMARY - FORM B-7

9201L1008

pg 4 of 5

| SDG: L1008 | REVIEWER: MMK | DATE: 6/30/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Metals | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Selenium | UJ | B015R7 | MS recovery <75% |
| Lead | J | B015R7 | ↓ |
| Al, Ca, Fe, ~~Mg~~ | J | B015R7 | Dup recovery |
| ~~Mg~~ 7/9/92 | | | >35% for soils. |
| | | | |
| TL, Se | UJ | B015R7 | SR <85% or >115% and |
| | | | ABS <50% |
| Pb, As | no qual necessary | | |
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7/6/92

7/6/92

# DATA QUALIFICATION SUMMARY - FORM B-7

9201L008 pg 5 of 5

| SDG: L608 | REVIEWER: MML | DATE: 6/28/92 | PAGE ~~1~~ OF ~~1~~ |
|---|---|---|---|
| COMMENTS: wet chem | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Nitrite, phosphate, | J and UJ, Reap. | B015R7 | Holding times exceeded |
| IC | | | |
| | | | |
| ~~Nitrate nitrite~~ | ~~R~~ | ~~B015R7~~ | ~~Disparity with Non-IC data~~ |
| | | MM | |
| | | 7/15/92 | |
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7/6/92

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# ATTACHMENT 3

# AS QUALIFIED DATA SUMMARY

9613446.1148

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000018

CLIENT SAMPLE NO.
216-B-46C

B015R7

27.0 – 29.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L008-001

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

Lab File ID: 0012305

Level: (low/med) LOW

Date Received: 01/14/92

% Moisture: not dec. 6

Date Analyzed: 01/23/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 74-87-3 | Chloromethane | 11 | U | |
| 74-83-9 | Bromomethane | 11 | U | |
| 75-01-4 | Vinyl Chloride | 11 | U | |
| 75-00-3 | Chloroethane | 11 | ~~U~~ | UJ mmL 6/23/92 |
| 75-09-2 | Methylene Chloride | 1 | J | |
| 67-64-1 | Acetone | 16 | ~~B~~ | UJ mmL 6/23/92 |
| 75-15-0 | Carbon Disulfide | 6 | U | |
| 75-35-4 | 1,1-Dichloroethene | 6 | U | |
| 75-34-3 | 1,1-Dichloroethane | 6 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U | |
| 67-66-3 | Chloroform | 6 | U | |
| 107-06-2 | 1,2-Dichloroethane | 6 | U | |
| ~~78-93-3~~ | ~~2-Butanone~~ | ~~11~~ | ~~U~~ | R mmL 6/23/92 |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U | |
| 56-23-5 | Carbon Tetrachloride | 6 | ~~U~~ | UJ mmL 6/23/92 |
| 108-05-4 | Vinyl Acetate | 11 | U | |
| 75-27-4 | Bromodichloromethane | 6 | U | |
| 78-87-5 | 1,2-Dichloropropane | 6 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U | |
| 79-01-6 | Trichloroethene | 6 | U | |
| 124-48-1 | Dibromochloromethane | 6 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | ~~U~~ | UJ |
| 71-43-2 | Benzene | 6 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U | |
| 75-25-2 | Bromoform | 6 | ~~U~~ | UJ |
| 108-10-1 | 4-Methyl-2-pentanone | 11 | ~~U~~ | UJ |
| 591-78-6 | 2-Hexanone | 11 | ~~U~~ | UJ |
| 127-18-4 | Tetrachloroethene | 6 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U | |
| 108-88-3 | Toluene | 6 | U | |
| 108-90-7 | Chlorobenzene | 6 | U | |
| 100-41-4 | Ethylbenzene | 6 | U | |
| 100-42-5 | Styrene | 6 | U | |
| 1330-20-7 | Xylene (total) | 6 | U | |

FORM 1 V-1 12/88 Rev.

MML 6/23/92

9613446.1149

1B

0000018

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46C

B015R7

~~130.5-133.0~~ 7/10/92
27.0-29.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L008-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: J020506

Level: (low/med) LOW Date Received: 01/14/92

% Moisture: not dec. 3 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 340 | UJ |
| 111-44-4 | bis(2-Chloroethyl)ether | 340 | UJ |
| 95-57-8 | 2-Chlorophenol | 340 | UJ |
| 541-73-1 | 1,3-Dichlorobenzene | 340 | UJ |
| 106-46-7 | 1,4-Dichlorobenzene | 340 | UJ |
| 100-51-6 | Benzyl alcohol | 340 | UJ |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | UJ |
| 95-48-7 | 2-Methylphenol | 340 | UJ |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 340 | UJ |
| 106-44-5 | 4-Methylphenol | 340 | UJ |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 340 | UJ |
| 67-72-1 | Hexachloroethane | 340 | UJ |
| 98-95-3 | Nitrobenzene | 340 | UJ |
| 78-59-1 | Isophorone | 340 | UJ |
| 88-75-5 | 2-Nitrophenol | 340 | UJ |
| 105-67-9 | 2,4-Dimethylphenol | 340 | UJ |
| 65-85-0 | Benzoic acid | 1700 | UJ |
| 111-91-1 | bis(2-Chloroethoxy)methane | 340 | UJ |
| 120-83-2 | 2,4-Dichlorophenol | 340 | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 340 | UJ |
| 91-20-3 | Naphthalene | 340 | UJ |
| 106-47-8 | 4-Chloroaniline | 340 | UJ |
| 87-68-3 | Hexachlorobutadiene | 340 | UJ |
| 59-50-7 | 4-Chloro-3-methylphenol | 340 | UJ |
| 91-57-6 | 2-Methylnaphthalene | 340 | UJ |
| 77-47-4 | Hexachlorocyclopentadiene | 340 | UJ |
| 88-06-2 | 2,4,6-Trichlorophenol | 340 | UJ |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | UJ |
| 91-58-7 | 2-Chloronaphthalene | 340 | UJ |
| 88-74-4 | 2-Nitroaniline | 1700 | UJ |
| 131-11-3 | Dimethylphthalate | 340 | UJ |
| 208-96-8 | Acenaphthylene | 340 | UJ |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | UJ |

MMG 6/25/92

9613446.1150

1C 0006019

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46C

BO15R7

~~130.5~~ - 133.0 27.0 - 29.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L008-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: J020506

Level: (low/med) LOW Date Received: 01/14/92

% Moisture: not dec. 3 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | | |
|---|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U J | |
| 83-32-9 | Acenaphthene | 340 | U J | |
| ~~51-28-5~~ | ~~2,4-Dinitrophenol~~ | ~~1700~~ | ~~U J~~ | R |
| 100-02-7 | 4-Nitrophenol | 1700 | U J | |
| 132-64-9 | Dibenzofuran | 340 | U J | |
| 121-14-2 | 2,4-Dinitrotoluene | 340 | U J | |
| 84-66-2 | Diethylphthalate | 340 | U J | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 340 | U J | |
| 86-73-7 | Fluorene | 340 | U J | |
| 100-01-6 | 4-Nitroaniline | 1700 | U J | |
| ~~534-52-1~~ | ~~4,6-Dinitro-2-methylphenol~~ | ~~1700~~ | ~~U J~~ | R |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 340 | U J | |
| 101-55-3 | 4-Bromophenyl-phenylether | 340 | U J | |
| 118-74-1 | Hexachlorobenzene | 340 | U J | |
| 87-86-5 | Pentachlorophenol | 1700 | U J | |
| 85-01-8 | Phenanthrene | 340 | U J | |
| 120-12-7 | Anthracene | 340 | U J | |
| 84-74-2 | Di-n-Butylphthalate | 340 | U J | |
| 206-44-0 | Fluoranthene | 340 | U J | |
| 129-00-0 | Pyrene | 340 | U J | |
| 85-68-7 | Butylbenzylphthalate | 340 | U J | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 680 | U J | |
| 56-55-3 | Benzo(a)anthracene | 340 | U J | |
| 218-01-9 | Chrysene | 340 | U J | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 340 | U J | |
| 117-84-0 | Di-n-Octyl phthalate | 340 | U J | |
| 205-99-2 | Benzo(b)fluoranthene | 340 | U J | |
| 207-08-9 | Benzo(k)fluoranthene | 340 | U J | |
| 50-32-8 | Benzo(a)pyrene | 340 | U J | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 340 | U J | |
| 53-70-3 | Dibenzo(a,h)anthracene | 340 | U J | |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U J | |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

MMh 6/25/92

9613446.1151

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CLIENT SAMPLE NO.
216-B-46C

BO15R7

~~130.5-133.0~~ 27.0-29.5 07/10/92

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L008-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: J020506

Level: (low/med) LOW Date Received: 01/14/92

% Moisture: not dec. 3 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 6.5 Dilution Factor: 1.00

Number TICs found: 3

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | ~~ALCOHOL~~ unknown | 5.32 | 200 | ~~J~~ U |
| 2. | UNKNOWN ~~alcohol~~ condensate | 6.24 | 300 | ~~JA~~ R |
| 3. | ~~PHOSPHORIC ACID~~ Organic phosphate acid esther | 17.32 | 200 | JN |

MMH 6/25/92

FORM 1 SV-TIC 12/88 Rev.

9613446.1152 0000015

1D

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46C

BO15R7

27.0 - 29.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L008-001

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

Lab File ID: 02059213.64

Level: (low/med) LOW

Date Received: 01/14/92

% Moisture: not dec. 3 dec.

Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/07/92

GPC Cleanup: (Y/N) Y pH: 6.5

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.2~~ 16.4 | U J |
| 319-85-7 | Beta-BHC | ~~8.2~~ 16.4 | U J |
| 319-86-8 | Delta-BHC | ~~8.2~~ 16.4 | U J |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.2~~ 16.4 | U J |
| 76-44-8 | Heptachlor | ~~8.2~~ 16.4 | U J |
| 309-00-2 | Aldrin | ~~8.2~~ 16.4 | U J |
| 1024-57-3 | Heptachlor epoxide | ~~8.2~~ 16.4 | U J |
| 959-98-8 | Endosulfan I | ~~8.2~~ 16.4 | U J |
| 60-57-1 | Dieldrin | ~~16~~ 32 | U J |
| 72-55-9 | 4,4'-DDE | ~~16~~ 32 | U J |
| 72-20-8 | Endrin | ~~16~~ 32 | U J |
| 33213-65-9 | Endosulfan II | ~~16~~ 32 | U J |
| 72-54-8 | 4,4'-DDD | ~~16~~ 32 | U J |
| 1031-07-8 | Endosulfan sulfate | ~~16~~ 32 | U J |
| 50-29-3 | 4,4'-DDT | ~~16~~ 32 | U J |
| 72-43-5 | Methoxychlor | ~~82~~ 164 | U J |
| 53494-70-5 | Endrin ketone | ~~16~~ 32 | U J |
| 5103-71-9 | alpha-Chlordane | ~~82~~ 164 | U J |
| 5103-74-2 | gamma-Chlordane | ~~82~~ 164 | U J |
| 8001-35-2 | Toxaphene | ~~160~~ 320 | U J |
| 12674-11-2 | Aroclor-1016 | ~~82~~ 164 | U J |
| 11104-28-2 | Aroclor-1221 | ~~82~~ 164 | U J |
| 11141-16-5 | Aroclor-1232 | ~~82~~ 164 | U J |
| 53469-21-9 | Aroclor-1242 | ~~82~~ 164 | U J |
| 12672-29-6 | Aroclor-1248 | ~~82~~ 164 | U J |
| 11097-69-1 | Aroclor-1254 | ~~160~~ 320 | U J |
| 11096-82-5 | Aroclor-1260 | ~~160~~ 320 | U J |

DS 2-17-92

FORM 1 PEST 12/88 Rev.

MMK 6/29/92

9613446.1193

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-46C
B015R7
27.0-29.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP008

Matrix (soil/water): SOIL Lab Sample ID: 920100801

Level (low/med): LOW Date Received: 1/14/92

% Solids: 93.6

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

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3600.00 | | *J | P | |
| 7440-36-0 | Antimony | 4.92 | U | | P | |
| 7440-38-2 | Arsenic | 1.30 | B | | F | |
| 7440-39-3 | Barium | 42.10 | B | | P | |
| 7440-41-7 | Beryllium | .24 | B | | P | |
| 7440-43-9 | Cadmium | .71 | B | | P | |
| 7440-70-2 | Calcium | 5740.00 | | *J | P | |
| 7440-47-3 | Chromium | 5.40 | | | P | |
| 7440-48-4 | Cobalt | 5.20 | B | | P | |
| 7440-50-8 | Copper | 12.60 | | | P | |
| 7439-89-6 | Iron | 12700.00 | | *J | P | |
| 7439-92-1 | Lead | 3.80 | | ~~S~~ ~~*J~~ J | F | ~~SOK MSA~~ GF-M 7/8/92 |
| 7439-95-4 | Magnesium | 3230.00 | | *~~J~~ OK | P | 7/9/92 |
| 7439-96-5 | Manganese | 216.00 | | *~~J~~ OK | P | 7/9/92 |
| 7439-97-6 | Mercury | .24 | | | CV | |
| 7440-02-0 | Nickel | 8.70 | | | P | |
| 7440-09-7 | Potassium | 459.00 | B | | P | |
| 7782-49-2 | Selenium | .43 | ~~U~~ | ~~NW~~ UJ | F | |
| 7440-22-4 | Silver | .86 | U | | P | |
| 7440-23-5 | Sodium | 2830.00 | | | P | |
| 7440-28-0 | Thallium | .43 | ~~U~~ | ~~W~~ UJ | F | |
| 7440-62-2 | Vanadium | 18.00 | | | P | |
| 7440-66-6 | Zinc | 24.70 | | | P | |
| | Cyanide | 3.17 | U | | C | |
| 7440-69-9 | Bismuth | 32.1 | U | | | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

MMf 6/30/92

9613446.1154

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/14/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L008

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| -001 | B015R7 | % Solids | 93.6 | % | 0.10 |
| | | Nitrate by IC | 3350 J | MG/KG | 134 |
| | | Cyanide, Total | 3.2 | MG/KG | 1.1 |
| | | Phosphate by IC | 134 ~~B~~ uJ | MG/KG | 134 |
| | | Sulfate by IC | 264 | MG/KG | 134 |
| | | ~~Nitrate Nitrite~~ | ~~1030~~ | ~~MG-N/KG~~ | 134 |
| | | Total Organic Carbon | 1220 | MG/KG | 305 |

216-B-46C
27.0-29.5
7/8/92

$NO_3/NO_2$ results OK
7/15/92

MMA 6/28/92

9613446.1155

# ATTACHMENT 4

# DATA VALIDATION SUPPORTING DOCUMENTATION

9613446.1156

WHC-SD-EN-SPP-002, Rev. 1

# VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: M. Langenfeld | DATE: 6/23/92 |
| LABORATORY: Weston | CASE: 92011008 | SDG: 92011008 |
| SAMPLES/MATRIX: B015R7, ~~B015R7-MS~~, ~~B015R7-MSD~~ 8/8/91 Soil | | |
| | | |
| | | |
| | | |

## 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 | | | ✓ |

MWL 6/23/92

| 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

2-butanone out

| | | | |
|---|---|---|---|
| Are all applicable RSD values ≤20.5% (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)? RRF out | Yes | No | N/A |
| Are all %D values ≤25% (2/88 or 3/90 SOW)? Several out | 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 (J) 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). RRF already qualified under ICAL

## 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? Acetone | 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 TCL compounds present in the field blanks? none collected Yes No N/A

ACTION: Qualify all detected sample results ≤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? 1 peak for acetone in STD not in sample **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 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.
Compound identification considered valid

## 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**

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 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):

BFB GC/MS Tune m/e 173 data not provided in deliverables. Unable to check raw data.

ICAL 2-butanone RRF20, RRF100, RRF150, RRF200 and RRF < 0.05

CCAL % D > 25% for Chloroethane, Acetone, 2-Butanone, Carbon tetrachloride, 1,1,2 TCA, Bromoform, 4-Methyl-2-Pentanone, and 2-Hexanone.

Compound identification: one peak for Acetone in STD and not in the sample. This is not considered significant

9613446.1164

pg 1 of 1

MAR 1992 RECEIVED OSM DMO

# Holding Time Summary

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

DATE RECEIVED: 01/14/92 RFW LOT # :9201L008

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | holding times |
|---|---|---|---|---|---|---|---|
| BO15R7 | 001 | S | 92LVQ015 | 01/10/92 | N/A | 01/23/92 | 13 |
| BO15R7 | 001 MS | S | 92LVQ015 | 01/10/92 | N/A | 01/23/92 | 13 |
| BO15R7 | 001 MSD | S | 92LVQ015 | 01/10/92 | N/A | 01/23/92 | 13 |
| LAB QC: | | | | | | | |
| VBLK | MB1 | S | 92LVQ015 | N/A | N/A | 01/23/92 | N/A |

Holding times were met.

MMZ
6/23/92

~~Blank~~ 9613446.1165 Calibration Summary 0000029 pg 1 of 2

7/1/92

6A

# VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L008

Instrument ID: 10500 Calibration Date(s): 12/27/91 12/27/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = 0122712 RRF50 = 0122708
RRF100= 0122709 RRF150= 0122710 RRF200= 0122711

| COMPOUND | | RRF20 | RRF50 | RRF100 | RRF150 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|---|
| Chloromethane | # | 0.980 | 1.633 | 1.355 | 1.721 | 1.514 | 1.441 | 20.2# |
| Bromomethane | | 1.393 | 1.995 | 1.617 | 2.234 | 2.081 | 1.864 | 18.7 |
| Vinyl Chloride | * | 1.194 | 1.531 | 1.316 | 1.808 | 1.760 | 1.522 | 17.6* |
| Chloroethane | | 0.704 | 0.844 | 0.713 | 0.910 | 0.948 | 0.824 | 13.6 |
| Methylene Chloride | | 1.207 | 1.329 | 1.158 | 1.283 | 1.267 | 1.249 | 5.4 |
| Acetone | | 0.630 | 0.785 | 0.521 | 0.540 | 0.617 | 0.619 | 16.9 |
| Carbon Disulfide | | 2.552 | 3.003 | 2.927 | 3.130 | 3.067 | 2.936 | 7.7 |
| 1,1-Dichloroethene | * | 1.249 | 1.364 | 1.273 | 1.301 | 1.252 | 1.288 | 3.7* |
| 1,1-Dichloroethane | # | 2.370 | 2.670 | 2.475 | 2.532 | 2.429 | 2.495 | 4.6# |
| 1,2-Dichloroethene (total) | | 1.291 | 1.395 | 1.386 | 1.432 | 1.383 | 1.377 | 3.8 |
| Chloroform | * | 2.992 | 3.334 | 3.141 | 3.220 | 3.089 | 3.155 | 4.1* |
| 1,2-Dichloroethane | | 2.515 | 2.799 | 2.579 | 2.649 | 2.539 | 2.616 | 4.4 |
| 2-Butanone | | 0.040 | 0.053 | 0.037 | 0.037 | 0.044 | 0.042 | 15.8 |
| 1,1,1-Trichloroethane | | 0.874 | 0.968 | 0.886 | 0.870 | 0.858 | 0.891 | 4.9 |
| Carbon Tetrachloride | | 0.620 | 0.733 | 0.702 | 0.700 | 0.700 | 0.691 | 6.1 |
| Vinyl Acetate | | 0.771 | 0.874 | 0.775 | 0.806 | 0.845 | 0.814 | 5.5 |
| Bromodichloromethane | | 0.750 | 0.826 | 0.773 | 0.762 | 0.764 | 0.775 | 3.8 |
| 1,2-Dichloropropane | * | 0.444 | 0.382 | 0.402 | 0.401 | 0.399 | 0.406 | 5.7* |
| cis-1,3-Dichloropropene | | 0.482 | 0.513 | 0.521 | 0.595 | 0.589 | 0.540 | 9.2 |
| Trichloroethene | | 0.417 | 0.450 | 0.417 | 0.495 | 0.486 | 0.453 | 8.2 |
| Dibromochloromethane | | 0.479 | 0.582 | 0.554 | 0.617 | 0.623 | 0.571 | 10.2 |
| 1,1,2-Trichloroethane | | 0.320 | 0.355 | 0.327 | 0.353 | 0.366 | 0.344 | 5.7 |
| Benzene | | 0.862 | 0.930 | 0.880 | 0.907 | 0.885 | 0.893 | 2.9 |
| Trans-1,3-Dichloropropene | | 0.509 | 0.532 | 0.499 | 0.554 | 0.578 | 0.534 | 6.1 |
| Bromoform | # | 0.365 | 0.476 | 0.422 | 0.473 | 0.503 | 0.448 | 12.2# |
| 4-Methyl-2-pentanone | | 0.437 | 0.531 | 0.383 | 0.415 | 0.454 | 0.444 | 12.5 |
| 2-Hexanone | | 0.382 | 0.450 | 0.316 | 0.354 | 0.393 | 0.379 | 13.1 |
| Tetrachloroethene | | 0.470 | 0.507 | 0.467 | 0.485 | 0.481 | 0.482 | 3.3 |
| 1,1,2,2-Tetrachloroethane | # | 0.561 | 0.688 | 0.537 | 0.588 | 0.632 | 0.601 | 10.0# |
| Toluene | * | 0.611 | 0.676 | 0.619 | 0.649 | 0.633 | 0.638 | 4.1* |
| Chlorobenzene | # | 0.922 | 0.962 | 0.864 | 0.890 | 0.866 | 0.901 | 4.6# |
| Ethylbenzene | * | 0.413 | 0.446 | 0.414 | 0.427 | 0.417 | 0.423 | 3.3* |
| Styrene | | 0.770 | 0.834 | 0.780 | 0.841 | 0.797 | 0.804 | 4.0 |
| Xylene (total) | | 0.416 | 0.463 | 0.441 | 0.453 | 0.437 | 0.442 | 4.0 |
| Toluene-d8 | | 0.983 | 1.013 | 1.023 | 1.055 | 1.041 | 1.023 | 2.7 |
| Bromofluorobenzene | | 0.753 | 0.754 | 0.760 | 0.789 | 0.772 | 0.766 | 2.0 |
| 1,2-Dichloroethane-d4 | | 2.325 | 2.439 | 2.452 | 2.477 | 2.391 | 2.417 | 2.5 |

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7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L008

Instrument ID: 10500 Calibration Date: 01/23/92 Time: 1209

Lab File ID: 0012303 Init. Calib. Date(s): 12/27/91 12/27/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

| COMPOUND | | $\overline{RRF}$ | RRF50 | %D | |
|---|---|---|---|---|---|
| Chloromethane | # | 1.441 | 1.126 | 21.9 | # ✓ |
| Bromomethane | | 1.864 | 1.841 | 1.2 | |
| Vinyl Chloride | * | 1.522 | 1.479 | 2.8 | * ✓ |
| Chloroethane | | 0.824 | 1.097 | -33.1 | ✓ |
| Methylene Chloride | | 1.249 | 1.549 | 24.0 | ✓ |
| Acetone | | 0.619 | 1.035 | -67.2 | ✓ |
| Carbon Disulfide | | 2.936 | 2.967 | -1.1 | |
| 1,1-Dichloroethene | * | 1.288 | 1.306 | -1.4 | * ✓ |
| 1,1-Dichloroethane | # | 2.495 | 3.014 | -20.8 | # ✓ |
| 1,2-Dichloroethene (total) | | 1.377 | 1.614 | -17.2 | |
| Chloroform | * | 3.155 | 3.638 | -15.3 | * ✓ |
| 1,2-Dichloroethane | | 2.616 | 3.062 | -17.0 | |
| 2-Butanone | | 0.042 | 0.055 | -31.0 | |
| 1,1,1-Trichloroethane | | 0.891 | 0.834 | 6.4 | |
| Carbon Tetrachloride | | 0.691 | 0.516 | 25.3 | |
| Vinyl Acetate | | 0.814 | 0.909 | -11.7 | ✓ |
| Bromodichloromethane | | 0.775 | 0.750 | 3.2 | |
| 1,2-Dichloropropane | * | 0.406 | 0.422 | -3.9 | * ✓ |
| cis-1,3-Dichloropropene | | 0.540 | 0.582 | -7.8 | |
| Trichloroethene | | 0.453 | 0.431 | 4.9 | |
| Dibromochloromethane | | 0.571 | 0.518 | 9.3 | |
| 1,1,2-Trichloroethane | | 0.344 | 0.437 | -27.0 | |
| Benzene | | 0.893 | 1.108 | -24.1 | |
| Trans-1,3-Dichloropropene | | 0.534 | 0.569 | -6.6 | |
| Bromoform | # | 0.448 | 0.310 | 30.8 | # ✓ |
| 4-Methyl-2-pentanone | | 0.444 | 0.595 | -34.0 | |
| 2-Hexanone | | 0.379 | 0.495 | -30.6 | |
| Tetrachloroethene | | 0.482 | 0.395 | 18.0 | |
| 1,1,2,2-Tetrachloroethane | # | 0.601 | 0.678 | -12.8 | # ✓ |
| Toluene | * | 0.638 | 0.695 | -8.9 | * ✓ |
| Chlorobenzene | # | 0.901 | 1.073 | -19.1 | # ✓ |
| Ethylbenzene | * | 0.423 | 0.452 | -6.9 | * ✓ |
| Styrene | | 0.804 | 0.849 | -5.6 | |
| Xylene (total) | | 0.442 | 0.503 | -13.8 | |
| Toluene-d8 | | 1.023 | 1.083 | -5.9 | |
| Bromofluorobenzene | | 0.766 | 0.778 | -1.6 | |
| 1,2-Dichloroethane-d4 | | 2.417 | 2.791 | -15.5 | |

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2/7/92

Blank 9213446467 0000067 Pg 1 of 1

1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 92LV0015-MB1

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

Lab File ID: 0012304

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 0

Date Analyzed: 01/23/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 | 5 | U |
| 67-64-1 | Acetone | 6 | J |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

6X10 = 60

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MMF 6/23/92

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WHC-SD-EN-SPP-002,Rev. 1

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

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMK | DATE: 6/25/92 |
| LABORATORY: Weston | CASE: 92011008 | SDG: 92011008 |
| SAMPLES/MATRIX: B015R7, ~~B015R7-MS, B015R7-MSD~~ 7/8/92 | | |
| Soil | | |
| | | |
| | | |
| | | |

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 Spike | ✓ | — | — |
| 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

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

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

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

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

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

MMX 6/25/92

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.

Blank Spike recoveries within limits.

## 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

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~~ |

MMJ 6/26/92

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):

Sample extraction times were exceeded by a factor Less than 2.

RRF-50 ICAL < .05 for 2,4 Dinitrophenol and 4,6-Dinitro-2-methyphenol.

TIC Compounds detected in the lab BLK (MB)

5 Surrogate recoveries were out. Four of these were for MS/MSD and were not qualified. 1 Surrogate recovery was out for Phenol-d5, however qualification is not necessary if only one surrogate is o.t.

Matrix spike / MSD recoveries were out for 9 Compounds. However no qualification was considered necessary as no compounds were detected in the sample and the results had already been qualified due to exceedance of extraction times.

No TCL Compounds were detected in the sample or SBK.

9613446.1176

pg 1 of 1

Holding Time Summary

MAR 1992
RECEIVED
OSM
DMO

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

DATE RECEIVED: 01/14/92 RFW LOT # :9201L008

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext times | ANALYSIS | Holding times |
|---|---|---|---|---|---|---|---|---|
| BO15R7 | 001 | S | 92LE0089 | 01/10/92 | 01/20/92 | 10 | 02/05/92 | 16 |
| BO15R7 | 001 MS | S | 92LE0089 | 01/10/92 | 01/20/92 | 10 | 02/05/92 | 16 |
| BO15R7 | 001 MSD | S | 92LE0089 | 01/10/92 | 01/20/92 | 10 | 02/05/92 | 16 |
| LAB QC: | | | | | | | | |
| SBLK | MB1 | S | 92LE0089 | N/A | 01/20/92 | | 02/05/92 | N/A |
| SBLK | MB1 BS | S | 92LE0089 | N/A | 01/20/92 | | 02/05/92 | N/A |

Holding times exceeded all data qualified as J/UJ.
TMB
2/2/92

MMZ
6/25/92

9613446.1177 Calibration Summary 000032 Pg 1 of 2

6B

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L008

Instrument ID: IN50J Calibration Date(s): 02/04/92 02/04/92

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = J020406 RRF50 = J020402
RRF80 = J020403 RRF120= J020404 RRF160= J020405

| COMPOUND | RRF20 | RRF50 | RRF80 | RRF120 | RRF160 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Phenol * | 1.634 | 1.745 | 1.812 | 1.895 | 2.006 | 1.818 | 7.8* |
| bis(2-Chloroethyl)ether | 1.527 | 1.560 | 1.550 | 1.636 | 1.725 | 1.600 | 5.1 |
| 2-Chlorophenol | 1.312 | 1.412 | 1.458 | 1.563 | 1.656 | 1.480 | 9.0 |
| 1,3-Dichlorobenzene | 1.544 | 1.605 | 1.640 | 1.759 | 1.835 | 1.677 | 7.1 |
| 1,4-Dichlorobenzene * | 1.636 | 1.702 | 1.752 | 1.856 | 1.936 | 1.776 | 6.8* |
| Benzyl alcohol | 0.794 | 0.865 | 0.904 | 0.978 | 1.029 | 0.914 | 10.1 |
| 1,2-Dichlorobenzene | 1.544 | 1.653 | 1.707 | 1.863 | 1.931 | 1.740 | 9.0 |
| 2-Methylphenol | 1.110 | 1.221 | 1.263 | 1.347 | 1.420 | 1.272 | 9.3 |
| bis(2-Chloroisopropyl)ether | 2.189 | 2.229 | 2.183 | 2.247 | 2.341 | 2.238 | 2.8 |
| 4-Methylphenol | 1.117 | 1.243 | 1.286 | 1.368 | 1.436 | 1.290 | 9.5 |
| N-Nitroso-Di-n-propylamine # | 1.128 | 1.170 | 1.171 | 1.224 | 1.259 | 1.190 | 4.3# |
| Hexachloroethane | 0.609 | 0.673 | 0.662 | 0.714 | 0.747 | 0.681 | 7.7 |
| Nitrobenzene | 0.457 | 0.478 | 0.485 | 0.518 | 0.532 | 0.494 | 6.2 |
| Isophorone | 0.841 | 0.869 | 0.897 | 0.969 | 1.002 | 0.916 | 7.4 |
| 2-Nitrophenol * | 0.128 | 0.153 | 0.160 | 0.174 | 0.192 | 0.161 | 14.8* |
| 2,4-Dimethylphenol | 0.336 | 0.361 | 0.387 | 0.414 | 0.445 | 0.389 | 11.0 |
| Benzoic acid | | 0.093 | 0.087 | 0.113 | 0.149 | 0.110 | 25.3 |
| bis(2-Chloroethoxy)methane | 0.491 | 0.515 | 0.536 | 0.609 | 0.629 | 0.556 | 10.8 |
| 2,4-Dichlorophenol * | 0.260 | 0.299 | 0.313 | 0.343 | 0.373 | 0.318 | 13.5* |
| 1,2,4-Trichlorobenzene | 0.339 | 0.359 | 0.373 | 0.414 | 0.440 | 0.385 | 10.7 |
| Naphthalene | 1.080 | 1.135 | 1.202 | 1.341 | 1.329 | 1.217 | 9.5 |
| 4-Chloroaniline | 0.435 | 0.445 | 0.473 | 0.547 | 0.581 | 0.496 | 13.0 |
| Hexachlorobutadiene * | 0.203 | 0.209 | 0.215 | 0.228 | 0.234 | 0.218 | 5.9* |
| 4-Chloro-3-methylphenol * | 0.253 | 0.284 | 0.305 | 0.339 | 0.374 | 0.311 | 15.2* |
| 2-Methylnaphthalene | 0.637 | 0.685 | 0.738 | 0.855 | 0.925 | 0.768 | 15.6 |
| Hexachlorocyclopentadiene # | 0.182 | 0.211 | 0.231 | 0.255 | 0.277 | 0.231 | 16.0# |
| 2,4,6-Trichlorophenol * | 0.278 | 0.320 | 0.342 | 0.377 | 0.423 | 0.348 | 15.9* |
| 2,4,5-Trichlorophenol | | 0.409 | 0.422 | 0.461 | 0.499 | 0.448 | 9.1 |
| 2-Chloronaphthalene | 1.181 | 1.242 | 1.308 | 1.473 | 1.576 | 1.356 | 12.1 |
| 2-Nitroaniline | | 0.446 | 0.469 | 0.510 | 0.531 | 0.489 | 7.9 |
| Dimethylphthalate | 1.267 | 1.330 | 1.374 | 1.483 | 1.542 | 1.399 | 8.0 |
| Acenaphthylene | 1.808 | 1.936 | 2.103 | 2.444 | 2.610 | 2.180 | 15.5 |
| 2,6-Dinitrotoluene | 0.268 | 0.302 | 0.322 | 0.368 | 0.408 | 0.334 | 16.5 |
| 3-Nitroaniline | | 0.326 | 0.332 | 0.361 | 0.382 | 0.350 | 7.5 |
| Acenaphthene * | 1.077 | 1.167 | 1.268 | 1.475 | 1.620 | 1.321 | 16.9* |
| 2,4-Dinitrophenol # | | 0.041 | 0.050 | 0.066 | 0.079 | 0.059 | 28.6# |
| 4-Nitrophenol # | | 0.157 | 0.167 | 0.189 | 0.207 | 0.180 | 12.5# |

Calibration Summary 9613445 1128 0300033 pg 2 of 2

6C

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201I.008

Instrument ID: IN50J Calibration Date(s): 02/04/92 02/04/92

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = J020406 RRF50 = J020402
RRF80 = J020403 RRF120= J020404 RRF160= J020405

| COMPOUND | RRF20 | RRF50 | RRF80 | RRF120 | RRF160 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Dibenzofuran | 1.565 | 1.658 | 1.755 | 1.959 | 2.107 | 1.809 | 12.3 |
| 2,4-Dinitrotoluene | 0.335 | 0.383 | 0.394 | 0.429 | 0.448 | 0.398 | 11.0 |
| Diethylphthalate | 1.222 | 1.324 | 1.381 | 1.506 | 1.550 | 1.397 | 9.6 |
| 4-Chlorophenyl-phenylether | 0.681 | 0.797 | 0.884 | 0.951 | 0.956 | 0.854 | 13.6 |
| Fluorene | 1.339 | 1.614 | 1.861 | 2.112 | 2.175 | 1.820 | 19.2 |
| 4-Nitroaniline | | 0.283 | 0.276 | 0.297 | 0.282 | 0.285 | 3.1 |
| 4,6-Dinitro-2-methylphenol | | 0.046 | 0.055 | 0.067 | 0.078 | 0.061 | 22.7 |
| N-Nitrosodiphenylamine (1) * | 0.568 | 0.596 | 0.636 | 0.710 | 0.782 | 0.658 | 13.3* |
| 4-Bromophenyl-phenylether | 0.236 | 0.249 | 0.265 | 0.283 | 0.308 | 0.268 | 10.6 |
| Hexachlorobenzene | 0.271 | 0.288 | 0.306 | 0.324 | 0.341 | 0.306 | 9.1 |
| Pentachlorophenol * | | 0.075 | 0.093 | 0.112 | 0.126 | 0.101 | 21.9* |
| Phenanthrene | 1.069 | 1.188 | 1.279 | 1.453 | 1.560 | 1.310 | 15.1 |
| Anthracene | 1.069 | 1.211 | 1.367 | 1.477 | 1.524 | 1.330 | 14.2 |
| Di-n-Butylphthalate | 0.900 | 1.132 | 1.280 | 1.401 | 1.448 | 1.232 | 18.0 |
| Fluoranthene * | 0.781 | 1.020 | 1.137 | 1.229 | 1.305 | 1.094 | 18.7* |
| Pyrene | 1.436 | 1.890 | 1.959 | 2.005 | 2.000 | 1.858 | 12.9 |
| Butylbenzylphthalate | 0.583 | 0.723 | 0.721 | 0.751 | 0.770 | 0.710 | 10.4 |
| 3,3'-Dichlorobenzidine | 0.269 | 0.323 | 0.346 | 0.394 | 0.450 | 0.356 | 19.4 |
| Benzo(a)anthracene | 1.164 | 1.333 | 1.395 | 1.438 | 1.510 | 1.368 | 9.6 |
| Chrysene | 1.040 | 1.161 | 1.189 | 1.249 | 1.319 | 1.192 | 8.7 |
| bis(2-Ethylhexyl)phthalate | 0.850 | 1.070 | 1.116 | 1.196 | 1.262 | 1.099 | 14.3 |
| Di-n-Octyl phthalate * | 1.725 | 2.050 | 2.159 | 2.434 | 2.667 | 2.207 | 16.4* |
| Benzo(b)fluoranthene | 1.118 | 1.294 | 1.475 | 1.623 | 1.767 | 1.455 | 17.7 |
| Benzo(k)fluoranthene | 1.220 | 1.348 | 1.352 | 1.557 | 1.740 | 1.443 | 14.2 |
| Benzo(a)pyrene * | 0.975 | 1.095 | 1.171 | 1.293 | 1.476 | 1.202 | 16.0* |
| Indeno(1,2,3-cd)pyrene | 0.860 | 1.058 | 0.974 | 0.974 | 1.079 | 0.989 | 8.7 |
| Dibenzo(a,h)anthracene | 0.671 | 0.883 | 0.833 | 0.901 | 1.042 | 0.866 | 15.4 |
| Benzo(g,h,i)perylene | 0.737 | 0.944 | 0.779 | 0.834 | 0.938 | 0.846 | 11.0 |
| Nitrobenzene-d5 | 0.430 | 0.442 | 0.451 | 0.482 | 0.504 | 0.462 | 6.6 |
| 2-Fluorobiphenyl | 1.312 | 1.389 | 1.452 | 1.628 | 1.746 | 1.505 | 11.8 |
| p-Terphenyl-d14 | 1.029 | 1.439 | 1.487 | 1.476 | 1.445 | 1.375 | 14.2 |
| Phenol-d5 | 1.495 | 1.578 | 1.627 | 1.701 | 1.835 | 1.647 | 7.8 |
| 2-Fluorophenol | 1.287 | 1.343 | 1.349 | 1.393 | 1.470 | 1.368 | 5.0 |
| 2,4,6-Tribromophenol | 0.115 | 0.156 | 0.170 | 0.187 | 0.196 | 0.165 | 19.3 |

(1) Cannot be separated from Diphenylamine

FORM VI SV-2 01/88 Rev.

for mpt 7/8/92

Blank Summary 9613446.1179 0000990 Pg 1 of 3

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0089-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: J020504

Level: (low/med) LOW Date Received: 01/20/92

% Moisture: not dec. 0 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 330 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 330 | U |
| 95-57-8 | 2-Chlorophenol | 330 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 330 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 330 | U |
| 100-51-6 | Benzyl alcohol | 330 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 330 | U |
| 95-48-7 | 2-Methylphenol | 330 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 330 | U |
| 106-44-5 | 4-Methylphenol | 330 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 330 | U |
| 67-72-1 | Hexachloroethane | 330 | U |
| 98-95-3 | Nitrobenzene | 330 | U |
| 78-59-1 | Isophorone | 330 | U |
| 88-75-5 | 2-Nitrophenol | 330 | U |
| 105-67-9 | 2,4-Dimethylphenol | 330 | U |
| 65-85-0 | Benzoic acid | 1700 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 330 | U |
| 120-83-2 | 2,4-Dichlorophenol | 330 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 330 | U |
| 91-20-3 | Naphthalene | 330 | U |
| 106-47-8 | 4-Chloroaniline | 330 | U |
| 87-68-3 | Hexachlorobutadiene | 330 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 330 | U |
| 91-57-6 | 2-Methylnaphthalene | 330 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 330 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 330 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 330 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 330 | U |
| 208-96-8 | Acenaphthylene | 330 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 330 | U |

Blank 9613446.1180 0000091 Pg 2 of 3

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0089-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: J020504

Level: (low/med) LOW Date Received: 01/20/92

% Moisture: not dec. 0 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U |
| 83-32-9 | Acenaphthene | 330 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U |
| 100-02-7 | 4-Nitrophenol | 1700 | U |
| 132-64-9 | Dibenzofuran | 330 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 330 | U |
| 84-66-2 | Diethylphthalate | 330 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 330 | U |
| 86-73-7 | Fluorene | 330 | U |
| 100-01-6 | 4-Nitroaniline | 1700 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 330 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 330 | U |
| 118-74-1 | Hexachlorobenzene | 330 | U |
| 87-86-5 | Pentachlorophenol | 1700 | U |
| 85-01-8 | Phenanthrene | 330 | U |
| 120-12-7 | Anthracene | 330 | U |
| 84-74-2 | Di-n-Butylphthalate | 330 | U |
| 206-44-0 | Fluoranthene | 330 | U |
| 129-00-0 | Pyrene | 330 | U |
| 85-68-7 | Butylbenzylphthalate | 330 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 670 | U |
| 56-55-3 | Benzo(a)anthracene | 330 | U |
| 218-01-9 | Chrysene | 330 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 330 | U |
| 117-84-0 | Di-n-Octyl phthalate | 330 | U |
| 205-99-2 | Benzo(b)fluoranthene | 330 | U |
| 207-08-9 | Benzo(k)fluoranthene | 330 | U |
| 50-32-8 | Benzo(a)pyrene | 330 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 330 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | 330 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 330 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

Blank 96 Bulk Mat'y 0000092 Pg 3 of 3

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0089-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: J020504

Level: (low/med) LOW Date Received: 01/20/92

% Moisture: not dec. 0 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

Number TICs found: 2

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q | |
|---|---|---|---|---|---|
| 1. | UNKNOWN | 5.36 | 100 | J | x5 = 500 |
| 2. | ETHANE | 6.60 | 100 | J | x5 = 500 |

FORM 1 SV-TIC 12/88 Rev.

# PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMZ | DATE: 6/29/92 |
| LABORATORY: Weston | CASE: 9201L008 | SDG: 9201L008 |
| SAMPLES/MATRIX: B015R7, ~~B015R7MS, B015R7MSD~~ Soil | | |
| Soil | | |
| | | |
| | | |
| | | |

## 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).

No TCL compounds detected and quantitation is based on peak height

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
However the quantitation column meets RSD criterion no qualification necessary

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.

9613446.1190



COMMENTS (attach additional sheets as necessary):

DDT Peak resolution was poor. However this is not considered significant as quantitation is based on Peak Height

CRQL's incorrectly reported based upon GPC Cleanup CRQL's mult by X2

9613446.1191

pg 1 of 1

Holding Time Summary

MAR 1992
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 01/14/92 RFW LOT # :9201L008

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| B015R7 | 001 | S | 92LE0090 | 01/10/92 | 01/20/92 | 10 | 02/07/92 | 18 |
| B015R7 | 001 MS | S | 92LE0090 | 01/10/92 | 01/20/92 | 10 | 02/07/92 | 18 |
| B015R7 | 001 MSD | S | 92LE0090 | 01/10/92 | 01/20/92 | 10 | 02/07/92 | 18 |
| LAB QC: | | | | | | | | |
| PBLK | MB1 | S | 92LE0090 | N/A | 01/20/92 | N/A | 02/07/92 | N/A |
| PBLK | MB1 BS | S | 92LE0090 | N/A | 01/20/92 | | 02/07/92 | |

7 day Extraction time exceeded
UJ qual all Data B015R7

MMK
6/29/92

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMZ | DATE: 6/30/92 |
| LABORATORY: Weston | CASE: 92012008 | SDG: 92012008 |
| SAMPLES/MATRIX: B015R7 / Soil | | |
| | | |
| | | |
| | | |
| | | |

## 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.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Silver, zinc 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.

## 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

If no, were MSA analyses performed when required? Yes No N/A

Are MSA correlation coefficients ≥0.995? ~~Yes~~ No N/A MMR 6/30/92

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).

TL, Se ~~of~~ UJ, Pb ~~No~~ qualification necessary MSA CC in As no qualification necessary)

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.

9613446.1197

pg 1 of 2

Holding Time Summary

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/14/92 RFW LOT # :9201L008

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext times | ANALYSIS | holding times |
|---|---|---|---|---|---|---|---|---|
| B015R7 | | | | | | | | |
| SILVER, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | 13 | 02/05/92 | 26 |
| SILVER, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| SILVER, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| ALUMINUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| ALUMINUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| ALUMINUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| ARSENIC, TOTAL | 001 | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | 17 |
| ARSENIC, TOTAL | 001 REP | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | |
| ARSENIC, TOTAL | 001 MS | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | |
| BARIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | 26 |
| BARIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| BARIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| BERYLLIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| BERYLLIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| BERYLLIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| BISMUTH, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| BISMUTH, TOTAL REP | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| BISMUTH, TOTAL SPIKE | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CALCIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CALCIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CALCIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CADMIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CADMIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CADMIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| COBALT, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| COBALT, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| COBALT, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CHROMIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CHROMIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| CHROMIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| COPPER, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| COPPER, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| COPPER, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| IRON, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| IRON, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| IRON, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| MERCURY, TOTAL | 001 | S | 92C0034 | 01/10/92 | 01/31/92 | 21 | 02/03/92 | 24 |

mmf
6/30/92

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pg 2 of 2

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

DATE RECEIVED: 01/14/92 RFW LOT # :9201L008

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| MERCURY, TOTAL | 001 REP | S | 92C0034 | 01/10/92 | 01/31/92 | 21 | 02/03/92 | 24 |
| MERCURY, TOTAL | 001 MS | S | 92C0034 | 01/10/92 | 01/31/92 | | 02/03/92 | ↓ |
| POTASSIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | 26 |
| POTASSIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| POTASSIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| MAGNESIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| MAGNESIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| MAGNESIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| MANGANESE, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| MANGANESE, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| MANGANESE, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| SODIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| SODIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| SODIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| NICKEL, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| NICKEL, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| NICKEL, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | ↓ |
| LEAD, TOTAL | 001 | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/28/92 | 18 |
| LEAD, TOTAL | 001 REP | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/28/92 | ↓ |
| LEAD, TOTAL | 001 MS | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/28/92 | ↓ |
| ANTIMONY, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | 16 |
| ANTIMONY, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | ↓ |
| ANTIMONY, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | ↓ |
| SELENIUM, TOTAL | 001 | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | 17 |
| SELENIUM, TOTAL | 001 REP | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | |
| SELENIUM, TOTAL | 001 MS | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | |
| THALLIUM, TOTAL | 001 | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | |
| THALLIUM, TOTAL | 001 REP | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | |
| THALLIUM, TOTAL | 001 MS | S | 92L0250 | 01/10/92 | 01/23/92 | | 01/27/92 | ↓ |
| VANADIUM, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | 26 |
| VANADIUM, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| VANADIUM, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| ZINC, TOTAL | 001 | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| ZINC, TOTAL | 001 REP | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | |
| ZINC, TOTAL | 001 MS | S | 92L0251 | 01/10/92 | 01/23/92 | | 02/05/92 | ↓ |

LAB QC:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 92L0251 | N/A | 01/23/92 | N/A | 02/05/92 | N/A |
| ALUMINUM LABORTORY | LC1 BS | S | 92L0251 | N/A | 01/23/92 | | 02/05/92 | |

MMf 6/30/92

Accutabs 9613446 1195 Summary 0000030 pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015R7S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP008

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 93.6

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 | 80.9000 | | 4.9174 | U | 106.90 | 75.7 | | P |
| Arsenic | 75-125 | 8.5000 | | 1.3000 | B | 8.60 | 83.7 | | F |
| Barium | 75-125 | 441.3000 | | 42.1000 | B | 427.60 | 93.4 | | P |
| Beryllium | 75-125 | 9.6000 | | .2400 | B | 10.70 | 87 ~~77.4~~ | | P |
| Cadmium | 75-125 | 9.9000 | | .6414 | U | 10.70 | 92.6 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 75-125 | 42.6000 | | 5.4000 | | 42.80 | 86.9 | | P |
| Cobalt | 75-125 | 102.7000 | | 5.2000 | B | 106.90 | 91.2 | | P |
| Copper | 75-125 | 58.6000 | | 12.6000 | | 53.40 | 86.1 | | P |
| Iron | | | | | | | | | NR |
| Lead | 75-125 | 6.1000 | | 3.8000 | | 4.30 | 53.8 | | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 75-125 | 322.3999 | | 215.8000 | | 106.90 | 99.7 | | P |
| Mercury | 75-125 | .7480 | | .2420 | | .53 | 94.5 | | CV |
| Nickel | 75-125 | 100.2000 | | 8.7000 | | 106.90 | 85.6 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 1.5000 | | .4276 | U | 2.10 | 71.4 | N | F |
| Silver | 75-125 | 9.4000 | | .8552 | U | 10.70 | 87.8 | | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 8.4000 | | .4276 | U | 10.70 | 79.0 | | F |
| Vanadium | 75-125 | 124.7000 | | 18.0000 | | 106.90 | 99.7 | | P |
| Zinc | 75-125 | 125.5000 | | 24.7000 | | 106.90 | 94.3 | | P |
| Cyanide | 75-125 | 8.5730 | | 3.1680 | U | 5.69 | 95.0 | | C |

Comments: 75-125%

J/UJ qualify Selenium
J/UJ qualify lead
7/13/92

FORM V (Part 1) - IN 03/90

MMR 6/30/92

Precision Summary 9613446 1200 0000531 pg 1 of 1

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B015R7D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP008

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

% Solids for Sample: 93.6 % Solids for Duplicate: 93.6

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

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | %RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Aluminum | ~~300~~ 40 | 3597.8000 | | 5580.6990 | | 43.2 | * | P |
| Antimony | | 4.9174 | U | 4.9174 | U | | | P |
| Arsenic | | 1.3000 | B | 1.2000 | B | 8.0 | | F |
| Barium | 42.8 | 42.1000 | B | 61.4000 | | OK 37.3 | | P |
| Beryllium | | .2400 | B | .3400 | B | ± 2xCRQL 37.0 | | P |
| Cadmium | 1.1 | .7100 | B | 1.4000 | | 66.7 | | P |
| Calcium | ~~5000~~ 1000 | 5739.6020 | | 10127.2000 | | 55.3 | * | P |
| Chromium | 2.1 | 5.4000 | | 9.0000 | | 49.3 | | P |
| Cobalt | | 5.2000 | B | 6.5000 | B | 20.8 | | P |
| Copper | 5.3 | 12.6000 | | 13.0000 | | 2.7 | | P |
| Iron | 20 | 12667.5000 | | 15903.2000 | | 22.7 | * | P |
| Lead | | 3.8000 | | 3.9000 | | 2.6 | | F |
| Magnesium | 1069.0 | 3232.0000 | | 4509.6990 | | 33.0 | * | P OK |
| Manganese | 3 | 215.8000 | | 282.3000 | | 26.7 | * | P OK |
| Mercury | .1 | .2420 | | .2470 | | 1.9 | | CV |
| Nickel | 8.6 | 8.7000 | | 11.0000 | | 23.4 | | P |
| Potassium | | 459.0000 | B | 909.3999 | B | OK 65.8 | | P |
| Selenium | | .4276 | U | .4276 | U | ±2xCRQL | | F |
| Silver | | .8552 | U | .8552 | U | | | P |
| Sodium | 1069.0 | 2826.6000 | | 3518.0000 | | 21.8 | | P |
| Thallium | | .4276 | U | .4276 | U | OK ±2xCRQL | | F |
| Vanadium | 10.7 | 18.0000 | | 27.2000 | | 40.6 | | P |
| Zinc | | 24.7000 | | 34.7000 | | OK 33.6 | | P |
| Cyanide | 1.1 | 3.1680 | U | 3.5300 | | OK 200.0 | | C |

FORM VI - IN

03/90

7/9/92

GFAA Analytical Spike Recovery 961344 1201 0005962 Pg 1 of 4

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.: CLP008

Instrument ID Number: AA1 Method: F

Start Date: 1/27/92 End Date: 1/27/92

| 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 | 1228 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| S5 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| S10 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| S30 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| S60 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| ICV1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| ICB1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| CRA | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| CCV1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| CCB1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| PBS150 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| PBS150A | 1.00 | | 86.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| CSS150 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| LCSS150A | 1.00 | | 78.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| LCSS250 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| LCSS250A | 1.00 | | 87.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV2 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| CCB2 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| BO15R7 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |
| BO15R7A | 1.00 | | 79.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - |

FORM XIV - IN 03/90

MMF 6/30/92

GFAA ~~Analytical~~ 9613446-12N2 Spike Recovery 0000063 pg 2 of 4

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.: CLP008

Instrument ID Number: AA1 Method: F

Start Date: 1/27/92 End Date: 1/27/92

| 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 |
| CCV3 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB3 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| B015R7D | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| B015R7DA | 1.00 | | 76.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| B015R7S | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV4 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB4 | 1.00 | 1554 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
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FORM XIV - IN 03/90

MMJ 6/30/92

GFAA Analytical Spike Recovery 9613446.1215 0000064 Pg 3 of 4

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.: CLP008

Instrument ID Number: AA2 Method: F

Start Date: 1/27/92 End Date: 1/27/92

| 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 | 1552 | | | | | | | | | | | | | | | | | | | | | | X | | | |
| S10 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| S15 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| S30 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| S60 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| ICV1 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| ICB1 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| CRA | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| CCV1 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| CCB1 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| PBS150 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| PBS150A | 1.00 | | 91.5 | | | | | | | | | | | | | | | | | | | | | X | | | |
| CSS150 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| LCSS150A | 1.00 | | 80.5 | | | | | | | | | | | | | | | | | | | | | X | | | |
| LCSS250 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| LCSS250A | 1.00 | | 82.5 | | | | | | | | | | | | | | | | | | | | | X | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV2 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| CCB2 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BO15R7 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| BO15R7A | 1.00 | | 81.0 | | | | | | | | | | | | | | | | | | | | | X | | | |

FORM XIV - IN 03/90

MMh 6/30/92

GFAA Analytical Spike Recovery 9613446.1204 0000065 pg 4 of 4

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.: CLP008

Instrument ID Number: AA2 Method: F

Start Date: 1/27/92 End Date: 1/27/92

| 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 |
| CCV3 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - |
| CCB3 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - |
| B015R7D | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - |
| B015R7DA | 1.00 | | 80.5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - |
| B015R7S | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | - | - | - |
| CCV4 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - |
| CCB4 | 1.00 | 1853 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 0.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

FORM XIV - IN 03/90

6/30/92
mmf

9613446.1205

WHC-SD-EN-SPP-002, Rev. 1

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: mmk | DATE: 6/28/92 |
| LABORATORY: Weston | CASE: 92011008 | SDG: 92011008 |
| SAMPLES/MATRIX: B015R7 / Soil | | |
| | | |
| | | |
| | | |
| | | |

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~~ MHL 6/28/92

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.

Mart
6/23/92

COMMENTS (attach additional sheets as necessary):

Holding times for phosphate and Nitrite IC exceeded

CN mid range STND distilled

Nitrate/Nitrite CC Calcat 1.0

MS/MSD out for phosphate IC No qualification necessary

9613446.1210

Pg 1 of 1

Holding Time Summary

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

DATE RECEIVED: 01/14/92 RFW LOT # :9201L008

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | Holding time |
|---|---|---|---|---|---|---|---|
| B015R7 | | | | | | | |
| % SOLIDS | 001 | S | 92LRS004 | 01/10/92 | 01/15/92 | 01/16/92 | 6 |
| NITRATE BY IC | 001 | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| NITRATE BY IC | 001 REP | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| NITRATE BY IC | 001 MS | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| NITRATE BY IC | 001 MSD | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| TOTAL CYANIDE | 001 | S | 92LC017 | 01/10/92 | 01/22/92 | 01/22/92 | 12 |
| TOTAL CYANIDE | 001 REP | S | 92LC017 | 01/10/92 | 01/22/92 | 01/22/92 | 12 |
| TOTAL CYANIDE | 001 MS | S | 92LC017 | 01/10/92 | 01/22/92 | 01/22/92 | 12 |
| TOTAL CYANIDE | 001 MSD | S | 92LC017 | 01/10/92 | 01/22/92 | 01/22/92 | 12 |
| PHOSPHATE BY IC | 001 | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| PHOSPHATE BY IC | 001 REP | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| PHOSPHATE BY IC | 001 MS | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| PHOSPHATE BY IC | 001 MSD | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 ✓ |
| SULFATE BY IC | 001 | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 |
| SULFATE BY IC | 001 REP | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 |
| SULFATE BY IC | 001 MS | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 |
| SULFATE BY IC | 001 MSD | S | 92LICA08 | 01/10/92 | 01/20/92 | 01/20/92 | 10 |
| NITRATE NITRITE | 001 | S | 92LNO006 | 01/10/92 | 01/17/92 | 01/17/92 | 7 ✓ OK |
| NITRATE NITRITE | 001 REP | S | 92LNO006 | 01/10/92 | 01/17/92 | 01/17/92 | 7 ✓ OK |
| NITRATE NITRITE | 001 MS | S | 92LNO006 | 01/10/92 | 01/17/92 | 01/17/92 | 7 ✓ OK |
| NITRATE NITRITE | 001 MSD | S | 92LNO006 | 01/10/92 | 01/17/92 | 01/17/92 | 7 ✓ OK |
| TOTAL ORGANIC CARBON | 001 | S | 92LTZ005 | 01/10/92 | 01/27/92 | 01/30/92 | 20 |
| TOTAL ORGANIC CARBON | 001 REP | S | 92LTZ005 | 01/10/92 | 01/27/92 | 01/30/92 | 20 |
| TOTAL ORGANIC CARBON | 001 MS | S | 92LTZ005 | 01/10/92 | 01/27/92 | 01/30/92 | 20 |
| SUB-OUT TEST FOR SUB Radio-chem | 001 | S | | 01/10/92 | | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| CHLORIDE BY IC | MB1 | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| CHLORIDE BY IC | MB1 BS | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| FLUORIDE BY IC | MB1 | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| FLUORIDE BY IC | MB1 BS | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| NITRITE BY IC | MB1 | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| NITRITE BY IC | MB1 BS | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| NITRATE BY IC | MB1 | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| NITRATE BY IC | MB1 BS | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |
| PHOSPHATE BY IC | MB1 | S | 92LICA08 | N/A | 01/20/92 | 01/20/92 |

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APPENDIX C

DATA VALIDATION DOCUMENTATION

SDG: 9201L041

SAMPLE: B015R9

CONTAINS:

ATTACHMENT 1 - GLOSSARY OF DATA REPORTING QUALIFIERS
ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS
ATTACHMENT 3 - AS QUALIFIED LABORATORY DATA
ATTACHMENT 4 - DATA VALIDATION SUPPORTING DOCUMENTATION

# ATTACHMENT 1

## GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

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# ATTACHMENT 2

# SUMMARY OF DATA QUALIFICATIONS

9613446.1214



9201L041

## DATA QUALIFICATION SUMMARY - FORM B-7

pg 1 of 5

| SDG: L041 | REVIEWER: MMZ | DATE: 6/23/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: VOA | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| 2-Hexanone | UJ | B015R9 | %D > 25% CCV |
| | | | |
| Methylene chloride | U | B015R9 | Blank contamination 10X rule |
| Acetone | U | B015R9 | Blank contamination 10X rule |
| | | | |
| ~~Acetone~~ | ~~R (already U qualified)~~ | ~~B015R9~~ | ~~Compound ID questionable~~ |
| | | | ~~RRT units > 5%~~ |

7/6/92

7/9/92

## DATA QUALIFICATION SUMMARY - FORM B-7

pg 2 of 5

| SDG: L041 | REVIEWER: MMY | DATE: 6/25/92 | PAGE ~~1~~ OF ~~1~~ | 7/6/92 |
|---|---|---|---|---|
| COMMENTS: SVOA | | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON | |
| Naphthalene | ~~B015R9~~ UJ | B015R9 | 90D CCAL > | |
| Acenaphthylene | UJ | B015R9 | 259o " | |
| | | | | |
| ALDOL | ~~U~~ R | B015R9 | ~~Blank contaminant~~ no contaminant | 7/8/92 |
| Condensate | 7/8/92 | | | |
| ± 0.06 RT units | | | | |
| | | | | |
| TICS | JN | B015R9 | Presumptive evidence | |
| | | | | |
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## DATA QUALIFICATION SUMMARY - FORM B-7

pg 3 of 5

| SDG: L041 | REVIEWER: MMR | DATE: 6/30/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Pesticides/PCB | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Pesticides/PCBs | UJ | B015R9/Soil | extraction times exceeded |
| | | | |
| ~~Pesticides/PCB~~ | ~~J (already qualified)~~ | ~~B015R9~~ | ~~DBC recoveries outside the advisory limit~~ |
| | | | |

7/6/92

7/8/92

9613446.1217



## DATA QUALIFICATION SUMMARY - FORM B-7

| SDG: 9201L041 | REVIEWER: [illegible] | DATE: 7/10/92 | PAGE 4 OF 5 |
|---|---|---|---|
| COMMENTS: Metals | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Cadmium | UJ | B015R9 | GFAA analytical spike out of control limits |
| Lead | none - analyzed by MSA | B015R9 | ↓ |
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## DATA QUALIFICATION SUMMARY - FORM B-7

5 of 5

| SDG: L041 | REVIEWER: MMR | DATE: 6/28/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Wet Chemistry | | | |
| **COMPOUND** | **QUALIFIER** | **SAMPLES AFFECTED** | **REASON** |
| Nitrate, Nitrite phosphate | Nitrite UJ phosphate, Nitrate J | B015R9 | Hold times exceeded |
| | | | |
| ~~Nitrate - Nitrite~~ | ~~R~~ | ~~B015R9~~ | ~~Result < Nitrate Nitrite by IC~~ |
| | | | MMR 8/15/92 |

7/6/92

9613446.1219

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9613446.1220

1A

0000019

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B015R9

130.5 - 133.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L041-001

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

Lab File ID: Y011712

Level: (low/med) LOW

Date Received: 01/16/92

% Moisture: not dec. 3

Date Analyzed: 01/17/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 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 | 6 | ~~B~~ | u |
| 67-64-1 | Acetone | 32 | ~~B~~ | u |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | U | |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U | |
| 591-78-6 | 2-Hexanone | 10 | ~~U~~ | uJ |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U | |
| 108-88-3 | Toluene | 5 | U | |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

FORM 1 V-1

12/88 Rev.

mmf 6/23/92

9613446.1221 0000018

1B
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-93A

B015R9

130.5 - 133.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

.ient: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L041-001

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: V013013

Level: (low/med) LOW

Date Received: 01/16/92

% Moisture: not dec. 3 dec.

Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/30/92

GPC Cleanup: (Y/N) Y pH: 9.2

Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | |
|---|---|---|---|
| 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 |
| 100-51-6 | Benzyl alcohol | 340 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | U |
| 95-48-7 | 2-Methylphenol | 340 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 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 |
| 65-85-0 | Benzoic acid | 1700 | 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 | UJ |
| 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 | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 340 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 340 | U |
| 208-96-8 | Acenaphthylene | 340 | UJ |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | U |



mm 6/25/92

9613446.1222 0000019

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B015R9

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

130.5- 133 0

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L041-001

Sample wt/vol: 30.5 (g/mL) G Lab File ID: V013013

Level: (low/med) LOW Date Received: 01/16/92

% Moisture: not dec. 3 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/30/92

GPC Cleanup: (Y/N) Y pH: 9.2 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U |
| 83-32-9 | Acenaphthene | 340 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U |
| 100-02-7 | 4-Nitrophenol | 1700 | 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 | 1700 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | 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 | 1700 | U |
| 85-01-8 | Phenanthrene | 340 | U |
| 120-12-7 | Anthracene | 340 | U |
| 84-74-2 | Di-n-Butylphthalate | 700 | |
| 206-44-0 | Fluoranthene | 340 | U |
| 129-00-0 | Pyrene | 340 | U |
| 85-68-7 | Butylbenzylphthalate | 1000 | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 680 | U |
| 56-55-3 | Benzo(a)anthracene | 340 | U |
| 218-01-9 | Chrysene | 340 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 2200 | ~~B~~ B 7/8/92 |
| 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 | Dibenzo(a,h)anthracene | 340 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

MMK 6/23/92

9613446.1223 0000020

CLIENT SAMPLE NO.
216-B-43A

B015R9

130.5 - 133.0

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L041-001

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: V013013

Level: (low/med) LOW

Date Received: 01/16/92

% Moisture: not dec. 3 dec.

Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/30/92

GPC Cleanup: (Y/N) Y pH: 9.2

Dilution Factor: 1.00

Number TICs found: 9

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| ~~1.~~ | ~~ALDOL CONDENSATE~~ | ~~5.47~~ | ~~200~~ | ~~JAB~~ |
| 2. | UNKNOWN | 24.13 | 200 | J N |
| 3. | ALKENE | 25.17 | 2000 | J N |
| 4. | HYDROCARBON | 26.25 | 200 | J N |
| 5. | ~~PHOSPHATE~~ unknown | 26.72 | 1000 | J N |
| 6. | UNKNOWN | 26.83 | 200 | J N |
| 7. | HYDROCARBON | 27.10 | 2000 | J N |
| 8. | ALKANE | 28.02 | 200 | J N |
| 9. | HYDROCARBON | 28.90 | 500 | J N |

7/8/92 RLK R

MMT 6/25/92

9613446.1224 1D 0 0 0 0 0 1 4

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B015R9

130.5 - 133.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L041-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 02059213.72

Level: (low/med) LOW Date Received: 01/16/92

% Moisture: not dec. 3 dec. Date Extracted: 01/22/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/08/92

GPC Cleanup: (Y/N) Y pH: 9.4 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.2~~ 16.4 | U J |
| 319-85-7 | Beta-BHC | ~~8.2~~ 16.4 | U J |
| 319-86-8 | Delta-BHC | ~~8.2~~ 16.4 | U J |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.2~~ 16.4 | U J |
| 76-44-8 | Heptachlor | ~~8.2~~ 16.4 | U J |
| 309-00-2 | Aldrin | ~~8.2~~ 16.4 | U J |
| 1024-57-3 | Heptachlor epoxide | ~~8.2~~ 16.4 | U J |
| 959-98-8 | Endosulfan I | ~~8.2~~ 16.4 | U J |
| 60-57-1 | Dieldrin | ~~16~~ 32 | U J |
| 72-55-9 | 4,4'-DDE | ~~16~~ 32 | U J |
| 72-20-8 | Endrin | ~~16~~ 32 | U J |
| 33213-65-9 | Endosulfan II | ~~16~~ 32 | U J |
| 72-54-8 | 4,4'-DDD | ~~16~~ 32 | U J |
| 1031-07-8 | Endosulfan sulfate | ~~16~~ 32 | U J |
| 50-29-3 | 4,4'-DDT | ~~16~~ 32 | U J |
| 72-43-5 | Methoxychlor | ~~82~~ 164 | U J |
| 53494-70-5 | Endrin ketone | ~~16~~ 32 | U J |
| 5103-71-9 | alpha-Chlordane | ~~82~~ 164 | U J |
| 5103-74-2 | gamma-Chlordane | ~~82~~ 164 | U J |
| 8001-35-2 | Toxaphene | ~~160~~ 320 | U J |
| 12674-11-2 | Aroclor-1016 | ~~82~~ 164 | U J |
| 11104-28-2 | Aroclor-1221 | ~~82~~ 164 | U J |
| 11141-16-5 | Aroclor-1232 | ~~82~~ 164 | U J |
| 53469-21-9 | Aroclor-1242 | ~~82~~ 164 | U J |
| 12672-29-6 | Aroclor-1248 | ~~82~~ 164 | U J |
| 11097-69-1 | Aroclor-1254 | ~~160~~ 320 | U J |
| 11096-82-5 | Aroclor-1260 | ~~160~~ 320 | U J |

DG 2-17-92

FORM 1 PEST 12/88 Rev.

MMR 6/30/92

9613446.1225 0000017

U.S. EPA - CLP

1

# INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-42A
B015R9
130.5-133.0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP041

Matrix (soil/water): SOIL Lab Sample ID: 920104101

Level (low/med): LOW Date Received: 1/16/92

% Solids: 97.3

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

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3110.00 | | | P | |
| 7440-36-0 | Antimony | 4.73 | U | | P | |
| 7440-38-2 | Arsenic | 1.60 | B | | F | |
| 7440-39-3 | Barium | 40.80 | B | | P | |
| 7440-41-7 | Beryllium | .31 | B | | P | |
| 7440-43-9 | Cadmium | .62 | U | | P | |
| 7440-70-2 | Calcium | 4800.00 | | | P | |
| 7440-47-3 | Chromium | 6.00 | | | P | |
| 7440-48-4 | Cobalt | 5.20 | B | | P | |
| 7440-50-8 | Copper | 9.20 | | | P | |
| 7439-89-6 | Iron | 7930.00 | | | P | |
| 7439-92-1 | Lead | 3.10 | | S* | F | |
| 7439-95-4 | Magnesium | 2590.00 | | | P | |
| 7439-96-5 | Manganese | 188.00 | | | P | |
| 7439-97-6 | Mercury | .05 | U | | CV | |
| 7440-02-0 | Nickel | 10.30 | | | P | |
| 7440-09-7 | Potassium | 790.00 | B | | P | |
| 7782-49-2 | Selenium | .41 | ~~U~~ | W | F | US |
| 7440-22-4 | Silver | 1.40 | B | | P | |
| 7440-23-5 | Sodium | 717.00 | B | | P | |
| 7440-28-0 | Thallium | .41 | U | | F | |
| 7440-62-2 | Vanadium | 14.00 | | | P | |
| 7440-66-6 | Zinc | 21.90 | | * | P | |
| | Cyanide | 1.03 | U | | C | |
| 7440-69-9 | Bismuth | 30.8 | U | | P | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

7/10/92

9613446.1226

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/19/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L041

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | B015R9 | % Solids | 97.3 | | % | 0.10 |
| | | Chloride by IC | 15.9 | | MG/KG | 1.3 |
| | | Fluoride by IC | 2.6 | u | MG/KG | 2.6 |
| | | Nitrite by IC | 1.3 | uJ | MG/KG | 1.3 |
| | | Nitrate by IC | 458 | J | MG/KG | 12.8 |
| | | Cyanide, Total | 1.0 | u | MG/KG | 1.0 |
| | | Phosphate by IC | 2.0 | J | MG/KG | 1.3 |
| | | Sulfate by IC | 44.2 | | MG/KG | 1.3 |
| | | ~~Nitrate Nitrite~~ | ~~102~~ | ~~R~~ | ~~MG-N/KG~~ | ~~12.9~~ |
| | | Total Organic Carbon | 136 | u | MG/KG | 136 |

216-B-43A
130.5-133.0
@ 7/8/92

7/15/92
N3/N2 results OK

MMS 6/28/92

9613446.1227

# ATTACHMENT 4

# DATA VALIDATION SUPPORTING DOCUMENTATION

9613446.1228

WHC-SD-EN-SPP-002, Rev. 1

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MML | DATE: 6/23/92 |
| LABORATORY: Weston | CASE: 92011041 | SDG: 92011041 |
| SAMPLES/MATRIX: B015R9, ~~B015R9-MS, B015R9-MSD~~ 8/7/92 | | |
| Soil | | |
| | | |
| | | |
| | | |

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 MML 6/23/92 | ✗ | | ✓ |
| 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% (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)? 2-Hexanone out | 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). 2 - Hexanone

## 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? $MeCl_2$ and Acetone | 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

7/9/92

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? ~~Acetone out~~ 7/9/92 — Yes **No** N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? 1 peak for Acetone out — 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 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**

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 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):

Continuing Calibration %D for 2-Hexanone > 25%

Compound identification, the RRT for Acetone was > ±0.06 RRT units. In addition 1 peak >10% in the standard was not located in the sample spectra. However, this sample was previously blank qualified and therefore was not changed.

9613446.1236

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Holding Time Summary

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/16/92 RFW LOT # :9201L041

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | holding times |
|---|---|---|---|---|---|---|---|
| B015R9 | 001 | S | 92LVY006 | 01/14/92 | N/A | 01/17/92 | 3 |
| B015R9 | 001 MS | S | 92LVY006 | 01/14/92 | N/A | 01/17/92 | 3 |
| B015R9 | 001 MSD | S | 92LVY006 | 01/14/92 | N/A | 01/17/92 | 3 |
| LAB QC: | | | | | | | |
| VBLK | MB1 | S | 92LVY006 | N/A | N/A | 01/17/92 | N/A |

Holding times were met.

MMF
6/23/92

Calib 9613446.1237 Summary 0000056 pg 1 of 1

7A

# VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L041

Instrument ID: 5100Y Calibration Date: 01/17/92 Time: 1019

Lab File ID: Y011702 Init. Calib. Date(s): 01/15/92 01/14/92

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

| COMPOUND | | RRF | RRF50 | %D | |
|---|---|---|---|---|---|
| Chloromethane | # | 1.209 | 1.376 | -13.8 | # |
| Bromomethane | | 1.011 | 1.149 | -13.6 | |
| Vinyl Chloride | * | 1.195 | 1.185 | 0.8 | * |
| Chloroethane | | 0.683 | 0.684 | -0.1 | |
| Methylene Chloride | | 1.380 | 1.406 | -1.9 | |
| Acetone | | 0.708 | 0.743 | -4.9 | |
| Carbon Disulfide | | 3.559 | 3.738 | -5.0 | |
| 1,1-Dichloroethene | * | 1.216 | 1.254 | -3.1 | * |
| 1,1-Dichloroethane | # | 2.598 | 2.700 | -3.9 | # |
| 1,2-Dichloroethene (total) | | 1.437 | 1.465 | -1.9 | |
| Chloroform | * | 3.022 | 3.218 | -6.5 | * |
| 1,2-Dichloroethane | | 2.321 | 2.517 | -8.4 | |
| 2-Butanone | | 0.180 | 0.173 | 3.9 | |
| 1,1,1-Trichloroethane | | 0.578 | 0.633 | -9.5 | |
| Carbon Tetrachloride | | 0.539 | 0.594 | -10.2 | |
| Vinyl Acetate | | 0.959 | 0.970 | -1.1 | |
| Bromodichloromethane | | 0.629 | 0.652 | -3.7 | |
| 1,2-Dichloropropane | * | 0.403 | 0.407 | -1.0 | * |
| cis-1,3-Dichloropropene | | 0.545 | 0.555 | -1.8 | |
| Trichloroethene | | 0.418 | 0.435 | -4.1 | |
| Dibromochloromethane | | 0.507 | 0.508 | -0.2 | |
| 1,1,2-Trichloroethane | | 0.297 | 0.292 | 1.7 | |
| Benzene | | 0.948 | 0.964 | -1.7 | |
| Trans-1,3-Dichloropropene | | 0.508 | 0.494 | 2.8 | |
| Bromoform | # | 0.268 | 0.251 | 6.3 | # |
| 4-Methyl-2-pentanone | | 0.581 | 0.523 | 10.0 | |
| 2-Hexanone | | 0.420 | 0.293 | 30.2 | |
| Tetrachloroethene | | 0.401 | 0.428 | -6.7 | |
| 1,1,2,2-Tetrachloroethane | # | 0.449 | 0.426 | 5.1 | # |
| Toluene | * | 0.673 | 0.677 | -0.6 | * |
| Chlorobenzene | # | 0.851 | 0.862 | -1.3 | # |
| Ethylbenzene | * | 0.373 | 0.356 | 4.6 | * |
| Styrene | | 0.532 | 0.545 | -2.4 | |
| Xylene (total) | | 0.342 | 0.340 | 0.6 | |
| Toluene-d8 | | 1.033 | 1.077 | -4.3 | |
| Bromofluorobenzene | | 0.512 | 0.540 | -5.5 | |
| 1,2-Dichloroethane-d4 | | 2.102 | 2.331 | -10.9 | |

FORM VII VOA 5/88 Rev.

7/8/92

Calibration Summary

1A 000070

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VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LVY006-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: Y011703

Level: (low/med) LOW Date Received: 01/17/92

% Moisture: not dec. 0 Date Analyzed: 01/17/92

Column: (pack/cap) PACK Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 | 4 | J |
| 67-64-1 | Acetone | 17 | |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

4X10 = 40
x10 = 170

FORM 1 V-1 12/88 Rev.

MMJ 6/23/92

9613446.1239



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

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMZ | DATE: 6/25/92 |
| LABORATORY: Weston | CASE: 92014091 | SDG: 92014091 |
| SAMPLES/MATRIX: B015R9, ~~B015R9 MS, B015R9-MSD~~ Soil | | |
| | | |
| | | |
| | | |

7/9/92

## 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% (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 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 ≤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.

Blank spike within specified criteria.

## 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

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 |

MMS 6/25/92

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):

%D CCAL > 25% For Napthalene and Acenapthlene

Benzoic acid and bis (2-Ethyl Hexyl) Phthalate were detected in the method blank. However qualification of the data was not required.

An Aldol Condensate and an unknown TIC were detected in the Method blank. A similar Aldol condensate at a similar RT of within ± 0.06 RT units and was not qualified in the Sample @ 7/8/92

Blank Spike recovery within specified criteria.

A TIC was identified as a phosphate. Evaluation of the spectra indicates that other compounds may match as well and therefore the TIC was requalified as an unknown.

~~Bis 2-Ethyl Hexyl phthalate > 5XCRQL in BC159~~
not significant

9613446.1247

Pg 1 of 1

Holding time Summary

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/16/92 RFW LOT # :9201L041

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | Holding times |
|---|---|---|---|---|---|---|---|---|
| B015R9 | 001 | S | 92LE0092 | 01/14/92 | 01/20/92 | 6 | 01/30/92 | 20 |
| B015R9 | 001 MS | S | 92LE0092 | 01/14/92 | 01/20/92 | 6 | 01/30/92 | 20 |
| B015R9 | 001 MSD | S | 92LE0092 | 01/14/92 | 01/20/92 | 6 | 01/30/92 | 20 |
| LAB QC: | | | | | | | | |
| SBLK | MB1 | S | 92LE0092 | N/A | 01/20/92 | | 01/30/92 | N/A |
| SBLK | MB1 BS | S | 92LE0092 | N/A | 01/20/92 | | 01/30/92 | N/A |

Holding times were met.

[illegible]
7/8/92

MML
6/25/92

Calibration Summary 9613446.1248 0000081 pg 1 of 1

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L041

Instrument ID: 4500V Calibration Date: 01/30/92 Time: 1011

Lab File ID: V013002 Init. Calib. Date(s): 01/24/92 01/24/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

| COMPOUND | | $\overline{RRF}$ | RRF50 | %D | |
|---|---|---|---|---|---|
| Phenol | * | 2.200 | 2.608 | -18.5 | * |
| bis(2-Chloroethyl)ether | | 1.743 | 2.036 | -16.8 | |
| 2-Chlorophenol | | 1.460 | 1.718 | -17.7 | |
| 1,3-Dichlorobenzene | | 1.431 | 1.696 | -18.5 | |
| 1,4-Dichlorobenzene | * | 1.523 | 1.775 | -16.5 | * |
| Benzyl alcohol | | 0.946 | 1.110 | -17.3 | |
| 1,2-Dichlorobenzene | | 1.438 | 1.717 | -19.4 | |
| 2-Methylphenol | | 1.439 | 1.735 | -20.6 | |
| bis(2-Chloroisopropyl)ether | | 2.489 | 3.086 | -24.0 | |
| 4-Methylphenol | | 1.460 | 1.758 | -20.4 | |
| N-Nitroso-Di-n-propylamine | # | 1.171 | 1.389 | -18.6 | # |
| Hexachloroethane | | 0.602 | 0.713 | -18.4 | |
| Nitrobenzene | | 0.392 | 0.469 | -19.6 | |
| Isophorone | | 0.775 | 0.940 | -21.3 | |
| 2-Nitrophenol | * | 0.183 | 0.221 | -20.8 | * |
| 2,4-Dimethylphenol | | 0.318 | 0.392 | -23.3 | |
| Benzoic acid | | 0.181 | 0.198 | -9.4 | |
| bis(2-Chloroethoxy)methane | | 0.496 | 0.598 | -20.6 | |
| 2,4-Dichlorophenol | * | 0.243 | 0.293 | -20.6 | * |
| 1,2,4-Trichlorobenzene | | 0.250 | 0.300 | -20.0 | |
| Naphthalene | | 0.912 | 1.148 | -25.9 | |
| 4-Chloroaniline | | 0.412 | 0.483 | -17.2 | |
| Hexachlorobutadiene | * | 0.109 | 0.130 | -19.3 | * |
| 4-Chloro-3-methylphenol | * | 0.278 | 0.347 | -24.8 | * |
| 2-Methylnaphthalene | | 0.590 | 0.719 | -21.9 | |
| Hexachlorocyclopentadiene | # | 0.216 | 0.223 | -3.2 | # |
| 2,4,6-Trichlorophenol | * | 0.285 | 0.351 | -23.2 | * |
| 2,4,5-Trichlorophenol | | 0.327 | 0.406 | -24.2 | |
| 2-Chloronaphthalene | | 1.046 | 1.287 | -23.0 | |
| 2-Nitroaniline | | 0.401 | 0.480 | -19.7 | |
| Dimethylphthalate | | 1.099 | 1.352 | -23.0 | |
| Acenaphthylene | | 1.612 | 2.034 | -26.2 | |
| 2,6-Dinitrotoluene | | 0.287 | 0.353 | -23.0 | |
| 3-Nitroaniline | | 0.344 | 0.385 | -11.9 | |
| Acenaphthene | * | 0.941 | 1.159 | -23.2 | * |
| 2,4-Dinitrophenol | # | 0.116 | 0.108 | 6.9 | # |
| 4-Nitrophenol | # | 0.090 | 0.100 | -11.1 | # |

BKR 2/4/92

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7/8/92

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1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

0 0 0 0 9 9 CLIENT SAMPLE NO.

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SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0092-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V013003

Level: (low/med) LOW Date Received: 01/20/92

% Moisture: not dec. 0 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/30/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 330 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 330 | U |
| 95-57-8 | 2-Chlorophenol | 330 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 330 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 330 | U |
| 100-51-6 | Benzyl alcohol | 330 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 330 | U |
| 95-48-7 | 2-Methylphenol | 330 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 330 | U |
| 106-44-5 | 4-Methylphenol | 330 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 330 | U |
| 67-72-1 | Hexachloroethane | 330 | U |
| 98-95-3 | Nitrobenzene | 330 | U |
| 78-59-1 | Isophorone | 330 | U |
| 88-75-5 | 2-Nitrophenol | 330 | U |
| 105-67-9 | 2,4-Dimethylphenol | 330 | U |
| 65-85-0 | Benzoic acid | 89 | J |
| 111-91-1 | bis(2-Chloroethoxy)methane | 330 | U |
| 120-83-2 | 2,4-Dichlorophenol | 330 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 330 | U |
| 91-20-3 | Naphthalene | 330 | U |
| 106-47-8 | 4-Chloroaniline | 330 | U |
| 87-68-3 | Hexachlorobutadiene | 330 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 330 | U |
| 91-57-6 | 2-Methylnaphthalene | 330 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 330 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 330 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 330 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 330 | U |
| 208-96-8 | Acenaphthylene | 330 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 330 | U |

x5 = 445

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Reviewed for [illegible] 7/8/92

Blank Summary 9413446.1250 pg 2 of 3

1C
SEMIVOLATILE ORGANICS ANALYSIS SHEET

0000100 CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0092-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V013003

Level: (low/med) LOW Date Received: 01/20/92

% Moisture: not dec. 0 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/30/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | | |
|---|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U | |
| 83-32-9 | Acenaphthene | 330 | U | |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U | |
| 100-02-7 | 4-Nitrophenol | 1700 | U | |
| 132-64-9 | Dibenzofuran | 330 | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 330 | U | |
| 84-66-2 | Diethylphthalate | 330 | U | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 330 | U | |
| 86-73-7 | Fluorene | 330 | U | |
| 100-01-6 | 4-Nitroaniline | 1700 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | U | |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 330 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 330 | U | |
| 118-74-1 | Hexachlorobenzene | 330 | U | |
| 87-86-5 | Pentachlorophenol | 1700 | U | |
| 85-01-8 | Phenanthrene | 330 | U | |
| 120-12-7 | Anthracene | 330 | U | |
| 84-74-2 | Di-n-Butylphthalate | 330 | U | |
| 206-44-0 | Fluoranthene | 330 | U | |
| 129-00-0 | Pyrene | 330 | U | |
| 85-68-7 | Butylbenzylphthalate | 330 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 670 | U | |
| 56-55-3 | Benzo(a)anthracene | 330 | U | |
| 218-01-9 | Chrysene | 330 | U | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 50 | J | x10 = 500 |
| 117-84-0 | Di-n-Octyl phthalate | 330 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 330 | U | |
| 207-08-9 | Benzo(k)fluoranthene | 330 | U | |
| 50-32-8 | Benzo(a)pyrene | 330 | U | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 330 | U | |
| 53-70-3 | Dibenzo(a,h)anthracene | 330 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 330 | U | |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

[illegible] 7/8/92

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1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0092-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V013003

Level: (low/med) LOW Date Received: 01/20/92

% Moisture: not dec. 0 dec. Date Extracted: 01/20/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/30/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

Number TICs found: 2

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | ALDOL CONDENSATE | 5.43 | 200 | JA |
| 2. | UNKNOWN | 30.05 | 100 | J |

R

FORM 1 SV-TIC 12/88 Rev.

7/8/92

# PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MML | DATE: 6/30/92 |
| LABORATORY: Weston | CASE: 92016091 | SDG: 92016091 |
| SAMPLES/MATRIX: B015R9, ~~B015R9 MS/MSD~~ / Soil | | |
| | 07/8/92 | |
| | | |
| | | |
| | | |

## 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 | ✓ | | |

MMH 6/30/92

## 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

qualification is not necessary as quantitation is based on peak Height.

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
Confirmation Column only ~~X~~ >10%

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
Delta BHC out for confirmation Column

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).

The quantitation column meets RSD criteria and therefore qualification is not necessary.

The quantitation column meets %D criteria and therefore qualification is not necessary.

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

CRQL Values were not corrected for GPC cleanup

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):

~~DBC Surrogate recoveries were out for the method and the sample (B015R9). Qualification was not necessary as B015R9 had already been J qualified.~~ 7/8/92

DBC surrogate recoveries were not calculated for sample B015R9 and associated QC samples due to interferences.

7/8/92

7/6/92

9613446.1261

Holding Time Summary

pg 1 of 1

MAR 1992
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 01/16/92 RFW LOT # :9201L041

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext times | ANALYSIS | hold times |
|---|---|---|---|---|---|---|---|---|
| B015R9 | 001 | S | 92LE0103 | 01/14/92 | 01/22/92 | 8 | 02/08/92 | 25 |
| B015R9 | 001 MS | S | 92LE0103 | 01/14/92 | 01/22/92 | 8 | 02/08/92 | 25 |
| B015R9 | 001 MSD | S | 92LE0103 | 01/14/92 | 01/22/92 | 8 | 02/08/92 | 25 |
| LAB QC: | | | | | | | | |
| PBLK | MB1 | S | 92LE0103 | N/A | 01/22/92 | N/A | 02/07/92 | N/A |
| PBLK | MB1 BS | S | 92LE0103 | N/A | 01/22/92 | | 02/08/92 | |

7 day extraction time exceeded

MMf
6/30/92

9613446.1262 0000009

Accuracy Summary

Pg 1 of 1

2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9201L041

| | CLIENT SAMPLE NO. | S1 (DBC)# | OTHER |
|---|---|---|---|
| 01 | B015R9 | I | |
| 02 | B015R9MS | 102 | |
| 03 | B015R9MSD | I | |
| 04 | PBLKLE0103-MB1 | I | |
| 05 | PBLKLE0103-MB1 BS | I | |

ADVISORY QC LIMITS

S1 (DBC) = Di-n-butylchlorendate ( 20-150)

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

MMF 6/30/92

9613446.1263



# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

| | | |
|---|---|---|
| PROJECT: 913 - 1719 | REVIEWER: MML | DATE: 6/30/92 |
| LABORATORY: Weston | CASE: 92016091 | SDG: 92016091 |
| SAMPLES/MATRIX: B015R9 / Soil | | |
| | | |
| | | |
| | | |
| | | |

## 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 | X | | ✓ |
| Laboratory Sample Preparation Records | ✓ | | |

MML 6/30/92

| 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.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? Vanadium ~~Thallium~~ 7/9/92 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.

~~Thallium not detected in the Sample~~ 7/10/92

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.

## 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? ±20% Yes No N/A

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

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

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

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

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

## 17. ANALYTE QUANTITATION AND DETECTION LIMITS

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

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

## 18. OVERALL ASSESSMENT AND SUMMARY

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

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

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Holding Time Summary

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

DATE RECEIVED: 01/16/92 RFW LOT # :9201L041

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| B015R9 | | | | | | | | |
| SILVER, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | 19 | 02/26/92 | 43 |
| SILVER, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| SILVER, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| ALUMINUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| ALUMINUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| ALUMINUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| ARSENIC, TOTAL | 001 | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/08/92 | 25 |
| ARSENIC, TOTAL | 001 REP | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/08/92 | |
| ARSENIC, TOTAL | 001 MS | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/08/92 | |
| BARIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | 43 |
| BARIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| BARIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| BERYLLIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| BERYLLIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| BERYLLIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| BISMUTH, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/25/92 | 42 |
| BISMUTH, TOTAL REP | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/25/92 | |
| BISMUTH, TOTAL SPIKE | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/25/92 | |
| CALCIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | 43 |
| CALCIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| CALCIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| CADMIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| CADMIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| CADMIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| COBALT, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| COBALT, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| COBALT, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| CHROMIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| CHROMIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| CHROMIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| COPPER, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| COPPER, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| COPPER, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| IRON, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| IRON, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| IRON, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| MERCURY, TOTAL | 001 | S | 92C0034 | 01/14/92 | 01/31/92 | 17 | 02/03/92 | 20 |

MMJ 6/30/92

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Holding Time Summary

Pg 2 of 2

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

DATE RECEIVED: 01/16/92 RFW LOT # :9201L041

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| MERCURY, TOTAL | 001 REP | S | 92C0034 | 01/14/92 | 01/31/92 | 17 | 02/03/92 | 20 |
| MERCURY, TOTAL | 001 MS | S | 92C0034 | 01/14/92 | 01/31/92 | ↓ | 02/03/92 | ↓ |
| POTASSIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | 19 | 02/26/92 | 43 |
| POTASSIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| POTASSIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| MAGNESIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| MAGNESIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| MAGNESIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| MANGANESE, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| MANGANESE, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| MANGANESE, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| SODIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| SODIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| SODIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| NICKEL, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| NICKEL, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | |
| NICKEL, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | ↓ |
| LEAD, TOTAL | 001 | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/08/92 | 25 |
| LEAD, TOTAL | 001 REP | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/08/92 | ↓ |
| LEAD, TOTAL | 001 MS | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/08/92 | ↓ |
| ANTIMONY, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | 43 |
| ANTIMONY, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | ↓ |
| ANTIMONY, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | ↓ |
| SELENIUM, TOTAL | 001 | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/07/92 | 24 |
| SELENIUM, TOTAL | 001 REP | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/07/92 | ↓ |
| SELENIUM, TOTAL | 001 MS | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/07/92 | ↓ |
| THALLIUM, TOTAL | 001 | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/10/92 | 27 |
| THALLIUM, TOTAL | 001 REP | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/10/92 | ↓ |
| THALLIUM, TOTAL | 001 MS | S | 92L0371 | 01/14/92 | 02/02/92 | | 02/10/92 | ↓ |
| VANADIUM, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | 43 |
| VANADIUM, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | ↓ |
| VANADIUM, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | ↓ |
| ZINC, TOTAL | 001 | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | ↓ |
| ZINC, TOTAL | 001 REP | S | 92L0372 | 01/14/92 | 02/02/92 | | 02/26/92 | ↓ |
| ZINC, TOTAL | 001 MS | S | 92L0372 | 01/14/92 | 02/02/92 | ↓ | 02/26/92 | ↓ |

LAB QC:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 92L0372 | N/A | 02/02/92 | N/A | 02/26/92 | N/A |
| ALUMINUM LABORTORY | LC1 BS | S | 92L0372 | N/A | 02/02/92 | | 02/26/92 | |

MMT
6/30/92

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Blank Summary

Pg 1 of 1

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.: CLP041

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5x | | | | 5x | | | | | | |
| Aluminum | 83.0 | U | 83.0 | U | 83.0 | U | 83.0 | U | 16.600 | U | P |
| Antimony | 23.0 | U | 23.0 | U | 23.0 | U | 23.0 | U | 4.600 | U | P |
| Arsenic | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Barium | 38.0 | U | 38.0 | U | 38.0 | U | 38.0 | U | 7.600 | U | P |
| Beryllium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .200 | U | P |
| Cadmium | 3.0 | U | 3.0 | U | 3.0 | U | 3.0 | U | .600 | U | P |
| Calcium | 88.0 | U | 88.0 | U | 88.0 | U | 88.0 | U | 17.600 | U | P |
| Chromium | 6.0 | U | 6.0 | U | 6.0 | U | 6.0 | U | 1.200 | U | P |
| Cobalt | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | 1.000 | U | P |
| Copper | 6.0 | U | 6.0 | U | 6.0 | U | 6.0 | U | 1.200 | U | P |
| Iron | 39.0 | U | 39.0 | U | 39.0 | U | 39.0 | U | 7.800 | U | P |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Magnesium | 78.0 | U | 78.0 | U | 78.0 | U | 78.0 | U | 15.600 | U | P |
| Manganese | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | P |
| Mercury | .1 | U | .1 | U | .1 | U | .1 | U | .050 | U | CV |
| Nickel | 18.0 | U | 18.0 | U | 18.0 | U | 18.0 | U | 3.600 | U | P |
| Potassium | 734.0 | U | 734.0 | U | 734.0 | U | 734.0 | U | 146.800 | U | P |
| Selenium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Silver | 4.0 | U | 4.0 | U | 4.0 | U | 4.0 | U | .800 | U | P |
| Sodium | 638.0 | U | 638.0 | U | 638.0 | U | 638.0 | U | 127.600 | U | P |
| Thallium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Vanadium | 26 5.2 | B | 5.0 | U | 44.5 9.9 | B | 5.0 | U | 1.000 | U | P |
| Zinc | 4.0 | U | 4.0 | U | 4.0 | U | 4.0 | U | .800 | U | P |
| Cyanide | 10.0 | U | 10.0 | U | 10.0 | | 10.0 | U | 1.000 | U | C |

FORM III - IN 03/90

CCBI
Assoc. w/
B015R9

MMh 6/30/92

No qualification is required. The sample result (ug/L) is greater than 5x the respective blank concentration. [illegible] 7/10/92

## ACCURACY DATA SUMMARY - FORM B-4

| SDG: [illegible] | REVIEWER: [illegible] | DATE: [illegible] | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: [illegible] | | | |

| SAMPLE ID | COMPOUND | % RECOVERY | SAMPLE(S) AFFECTED | QUALIFIER REQUIRED |
|---|---|---|---|---|
| B015R9 | Lead | 71.1 | B015R9 | none analyzed by MSA. |
| " | Selenium | 82.9 | " | UJ |
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WHC-SD-EN-SPP-002, Rev. 1

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WHC-SD-EN-SPP-002, Rev. 1

# WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMX | DATE: 6/28/92 |
| LABORATORY: Weston | CASE: 92031041 | SDG: 92031041 |
| SAMPLES/MATRIX: B015R9 / Soil | | |
| | | |
| | | |
| | | |
| | | |

## 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 | MMX 6/28/92 | ✓ | | |
| 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.

9613446.1274

Holding Time Summary Pg 1 of 1

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

DATE RECEIVED: 01/16/92 RFW LOT # :9201L041

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | hold times |
|---|---|---|---|---|---|---|---|
| B015R9 | | | | | | | |
| % SOLIDS | 001 | S | 92L%S012 | 01/14/92 | 01/20/92 | 01/21/92 | 7 |
| CHLORIDE BY IC | 001 | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| CHLORIDE BY IC | 001 REP | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| CHLORIDE BY IC | 001 MS | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| CHLORIDE BY IC | 001 MSD | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| FLUORIDE BY IC | 001 | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| FLUORIDE BY IC | 001 REP | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| FLUORIDE BY IC | 001 MS | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| FLUORIDE BY IC | 001 MSD | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRITE BY IC | 001 | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRITE BY IC | 001 REP | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRITE BY IC | 001 MS | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRITE BY IC | 001 MSD | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE BY IC | 001 | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE BY IC | 001 REP | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE BY IC | 001 MS | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE BY IC | 001 MSD | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| TOTAL CYANIDE | 001 | S | 92LC020 | 01/14/92 | 01/27/92 | 01/27/92 | 13 |
| TOTAL CYANIDE | 001 REP | S | 92LC020 | 01/14/92 | 01/27/92 | 01/27/92 | 13 |
| TOTAL CYANIDE | 001 MS | S | 92LC020 | 01/14/92 | 01/27/92 | 01/27/92 | 13 |
| TOTAL CYANIDE | 001 MSD | S | 92LC020 | 01/14/92 | 01/27/92 | 01/27/92 | 13 |
| PHOSPHATE BY IC | 001 | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| PHOSPHATE BY IC | 001 REP | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| PHOSPHATE BY IC | 001 MS | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| PHOSPHATE BY IC | 001 MSD | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| SULFATE BY IC | 001 | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| SULFATE BY IC | 001 REP | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| SULFATE BY IC | 001 MS | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| SULFATE BY IC | 001 MSD | S | 92LICA08 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE NITRITE | 001 | S | 92LNA008 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE NITRITE | 001 REP | S | 92LNA008 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE NITRITE | 001 MS | S | 92LNA008 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| NITRATE NITRITE | 001 MSD | S | 92LNA008 | 01/14/92 | 01/20/92 | 01/20/92 | 6 |
| TOTAL ORGANIC CARBON | 001 | S | 92LTZ006 | 01/14/92 | 02/03/92 | 02/04/92 | 19 |
| TOTAL ORGANIC CARBON | 001 REP | S | 92LTZ006 | 01/14/92 | 02/03/92 | 02/04/92 | 19 |
| TOTAL ORGANIC CARBON | 001 MS | S | 92LTZ006 | 01/14/92 | 02/03/92 | 02/04/92 | 19 |
| SUB-OUT TEST FOR SUB | 001 | S | | 01/14/92 | | | |
| Radio-chem | | | | | | | |

LAB QC:

# APPENDIX D

## DATA VALIDATION DOCUMENTATION

SDG: 9201L101

SAMPLES: B015J6, B015P2, B015Q0, B01S79

CONTAINS:

ATTACHMENT 1 - GLOSSARY OF DATA REPORTING QUALIFIERS
ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS
ATTACHMENT 3 - AS QUALIFIED LABORATORY DATA
ATTACHMENT 4 - DATA VALIDATION SUPPORTING DOCUMENTATION

# ATTACHMENT 1

## GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

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# ATTACHMENT 2

## SUMMARY OF DATA QUALIFICATIONS

## DATA QUALIFICATION SUMMARY - FORM B-7

| SDG: 9201L101 | REVIEWER: [illegible] for MML | DATE: 7/9/92 | PAGE 1 OF 4 |
|---|---|---|---|
| COMMENTS: VOA | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Chloromethane | UJ | All | ICV RSD 730% |
| Acetone | J | ↓ | ↓ |
| Vinyl Acetate | UJ | ↓ | ↓ |
| | | | |
| Chloromethane | UJ | All | CCV 80725% |
| Vinyl Acetate | UJ | ↓ | ↓ |
| 4-Me-2-pentanone | J/UJ | ↓ | ↓ |
| 2-Hexanone | UJ | ↓ | ↓ |
| 1,1,2,2-Tetra chloroethane | UJ | ↓ | ↓ |
| | | | |
| $MeCl_2$ | U | All | Present in blank |
| Acetone | U (UJ) | ↓ | ↓ |
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## DATA QUALIFICATION SUMMARY - FORM B-7

| SDG: 9201L101 | REVIEWER: [illegible] | DATE: 7/9/92 | PAGE 2 OF 4 |
|---|---|---|---|
| COMMENTS: BNA | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| All BNA TCL compounds | UJ/J | B01536, P2, Q0 | Extracted out of holding time |
| | | | |
| bis(2-chloroisopropyl) ether | UJ | B01536 & B01579 | CCV 20725% |
| 2-Nitroaniline | UJ | ↓ | ↓ |
| 2,4-Dinitrotoluene | UJ | | |
| Dibenzo(a,h) anthracene | UJ | | |
| | | | |
| Benzoic Acid | UJ | B01592 & B01500 | CCV 20725% |
| | | | |
| Di-n-Butyl phthalate | U (UJ) | All | Present in blank |
| bis(2-ethylhexyl) phthalate | U (UJ) | All | ↓ |
| | | | |
| TIC Aldol Condensates | R | All | laboratory contaminant |
| | | | |
| TIC compounds except A.C. | NJ | All | Presumptive evidence |
| | | | |
| Benzoic Acid | R | B01536 | RT out of control limits |
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## DATA QUALIFICATION SUMMARY - FORM B-7

| SDG: 9201L101 | REVIEWER: MML | DATE: 7/10/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Pesticides | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| | | | |
| No qualification necessary | | | |

## DATA QUALIFICATION SUMMARY - FORM B-7

pg 3 of 4

| SDG: C101 | REVIEWER: MMR | DATE: 7/1/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Metals | | | |
| **COMPOUND** | **QUALIFIER** | **SAMPLES AFFECTED** | **REASON** |
| Sb, Mn | J/UJ | B015J6, B015Q0 | MS recovery <75% |
| | | B015P2, B01579 | |
| Al, Ca, Fe, Mg | J | " " | ICP Serial Dilution |
| Mn, and Na | | | out side ±10% |
| | | | sample conc > 50 IDL |
| | | | |
| Pb | J | B015P2 | MSA required |
| | | | and up + Conc. Cont |
| Se | UJ | B015J6, B015Q0 | Sample ABS |
| | | B015P2, B01579 | <50% of spike ABS and |
| | | | SR <55% |
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7/6/92

## DATA QUALIFICATION SUMMARY - FORM B-7

pg 4 of 4

| SDG: L101 | REVIEWER: MMR | DATE: 6/28/92 | PAGE ~~1~~ OF ~~1~~ 7/6/92 |
|---|---|---|---|
| COMMENTS: Wet Chemistry | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Nitrate by IC | J | B015J6, B015P2, B015Q0, B015Z9 | Holding Times Exceeded |
| phosphate by IC | uJ | B015J6, B015Q0 B015Z9 | " " |
| phosphate by IC | J | B015P2 | " " |
| | | | |
| ~~Nitrate/Nitrite~~ | ~~R~~ | ~~B015J6, B015P2, B015Q0, B015Z9~~ | ~~$N_2H_4$ Conc less than Nitrate IC Concentration.~~ MMR 9/15/92 |
| | | | |
| TOC | J | B015J6, B015P2 B015Q0, B015Z9 | % recovery MS < 75% |
| | | | > 30% |
| TOC | J (already J qualified) | B015J6, B015P2 B015Q0, B015Z9 | Dup Sample %D > 35% |
| | | | |
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# ATTACHMENT 3

# AS QUALIFIED DATA SUMMARY

9613446.1284

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0000023

# VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-93A

BO15J6

157.5 - 160.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-001

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

Lab File ID: W013109

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 3

Date Analyzed: 01/31/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | ~~U~~ | UJ |
| 74-83-9 | Bromomethane | 10 | U | |
| 75-01-4 | Vinyl Chloride | 10 | U | |
| 75-00-3 | Chloroethane | 10 | U | |
| 75-09-2 | Methylene Chloride | 7 | ~~B~~ | U |
| 67-64-1 | Acetone | 28 | ~~B~~ | ~~U~~ UJ 7/8/92 |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | ~~U~~ | UJ |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 11 | | J |
| 591-78-6 | 2-Hexanone | 10 | ~~U~~ | UJ |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | ~~U~~ | UJ |
| 108-88-3 | Toluene | 2 | J | |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

FORM 1 V-1 12/88 Rev.

MMR 6/29/92

9613446.1285

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0000036

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-45A

BO15P2

3.0 - 5.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-002

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

Lab File ID: W013110

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 4

Date Analyzed: 01/31/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | ~~U~~ UJ |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 8 | ~~B~~ 4 |
| 67-64-1 | Acetone | 26 | ~~B~~ 4 UJ 07/18/92 |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | ~~U~~ UJ |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | ~~U~~ UJ |
| 591-78-6 | 2-Hexanone | 10 | ~~U~~ UJ |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | ~~U~~ UJ |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

FORM 1 V-1

12/88 Rev.

MML 6/29/92

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# VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-95A

B015Q0

10.0 - 12.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-003

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

Lab File ID: W013111

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 5

Date Analyzed: 01/31/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | ~~U~~ UJ |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 11 | ~~B~~ U |
| 67-64-1 | Acetone | 10 ~~5~~ | ~~JB~~ ~~U~~ UJ 7/8/93 |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | ~~U~~ UJ |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | ~~U~~ UJ |
| 591-78-6 | 2-Hexanone | 10 | ~~U~~ UJ |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | ~~U~~ UJ |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |



6/29/92

9613446.1287 1A 0000055

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. 216-B-43A

BO1S79 188.5-191.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-004

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

Lab File ID: W013112

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 5

Date Analyzed: 01/31/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U | US |
| 74-83-9 | Bromomethane | 10 | U | |
| 75-01-4 | Vinyl Chloride | 10 | U | |
| 75-00-3 | Chloroethane | 10 | U | |
| 75-09-2 | Methylene Chloride | 10 | B | U |
| 67-64-1 | Acetone | 22 | B | ~~B~~ US |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | U | US |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U | US |
| 591-78-6 | 2-Hexanone | 10 | U | US |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U | US |
| 108-88-3 | Toluene | 5 | U | |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

FORM 1 V-1 12/88 Rev.

2/10/92

9613446.1288

1B

0000024

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B015J6

157.5-160.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V021304

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 8 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 9.5 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 360 | UJ |
| 111-44-4 | bis(2-Chloroethyl)ether | 360 | UJ |
| 95-57-8 | 2-Chlorophenol | 360 | UJ |
| 541-73-1 | 1,3-Dichlorobenzene | 360 | UJ |
| 106-46-7 | 1,4-Dichlorobenzene | 360 | UJ |
| 100-51-6 | Benzyl alcohol | 360 | UJ |
| 95-50-1 | 1,2-Dichlorobenzene | 360 | UJ |
| 95-48-7 | 2-Methylphenol | 360 | UJ |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 360 | UJ |
| 106-44-5 | 4-Methylphenol | 360 | UJ |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 360 | UJ |
| 67-72-1 | Hexachloroethane | 360 | UJ |
| 98-95-3 | Nitrobenzene | 360 | UJ |
| 78-59-1 | Isophorone | 360 | UJ |
| 88-75-5 | 2-Nitrophenol | 360 | UJ |
| 105-67-9 | 2,4-Dimethylphenol | 360 | UJ |
| ~~65-85-0~~ | ~~Benzoic acid~~ | ~~360 75~~ | ~~UJ~~ ~~B~~ R 02/10/92 |
| 111-91-1 | bis(2-Chloroethoxy)methane | 360 | UJ |
| 120-83-2 | 2,4-Dichlorophenol | 360 | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 360 | UJ |
| 91-20-3 | Naphthalene | 360 | UJ |
| 106-47-8 | 4-Chloroaniline | 360 | UJ |
| 87-68-3 | Hexachlorobutadiene | 360 | UJ |
| 59-50-7 | 4-Chloro-3-methylphenol | 360 | UJ |
| 91-57-6 | 2-Methylnaphthalene | 360 | UJ |
| 77-47-4 | Hexachlorocyclopentadiene | 360 | UJ |
| 88-06-2 | 2,4,6-Trichlorophenol | 360 | UJ |
| 95-95-4 | 2,4,5-Trichlorophenol | 1800 | UJ |
| 91-58-7 | 2-Chloronaphthalene | 360 | UJ |
| 88-74-4 | 2-Nitroaniline | 1800 | UJ |
| 131-11-3 | Dimethylphthalate | 360 | UJ |
| 208-96-8 | Acenaphthylene | 360 | UJ |
| 606-20-2 | 2,6-Dinitrotoluene | 360 | UJ |

FORM 1 SV-1 12/88 Rev.

MMJ 6/26/92

9613446.1289 1c 0000025

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43 A

B015J6

157.5 - 160.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V021304

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 8 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 9.5

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1800 | UJ |
| 83-32-9 | Acenaphthene | 360 | UJ |
| 51-28-5 | 2,4-Dinitrophenol | 1800 | UJ |
| 100-02-7 | 4-Nitrophenol | 1800 | UJ |
| 132-64-9 | Dibenzofuran | 360 | UJ |
| 121-14-2 | 2,4-Dinitrotoluene | 360 | UJ |
| 84-66-2 | Diethylphthalate | 360 | UJ |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 360 | UJ |
| 86-73-7 | Fluorene | 360 | UJ |
| 100-01-6 | 4-Nitroaniline | 1800 | UJ |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1800 | UJ |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 360 | UJ |
| 101-55-3 | 4-Bromophenyl-phenylether | 360 | UJ |
| 118-74-1 | Hexachlorobenzene | 360 | UJ |
| 87-86-5 | Pentachlorophenol | 200 | J |
| 85-01-8 | Phenanthrene | 360 | UJ |
| 120-12-7 | Anthracene | 360 | UJ |
| 84-74-2 | Di-n-Butylphthalate | 760 | ~~B~~ UJ |
| 206-44-0 | Fluoranthene | 360 | UJ |
| 129-00-0 | Pyrene | 360 | UJ |
| 85-68-7 | Butylbenzylphthalate | 1000 | UJ |
| 91-94-1 | 3,3'-Dichlorobenzidine | 720 | UJ |
| 56-55-3 | Benzo(a)anthracene | 360 | UJ |
| 218-01-9 | Chrysene | 360 | UJ |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 2400 | ~~B~~ UJ |
| 117-84-0 | Di-n-Octyl phthalate | 360 | UJ |
| 205-99-2 | Benzo(b)fluoranthene | 360 | UJ |
| 207-08-9 | Benzo(k)fluoranthene | 360 | UJ |
| 50-32-8 | Benzo(a)pyrene | 360 | UJ |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 360 | UJ |
| 53-70-3 | Dibenzo(a,h)anthracene | 360 | UJ |
| 191-24-2 | Benzo(g,h,i)perylene | 360 | UJ |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2

12/88 Rev.

WMT 6/24/92

9613446.1290

1F

0000026

CLIENT SAMPLE NO.
216-B-43A

BO15J6

157.5 - 160.0

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V021304

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 8 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 9.5

Dilution Factor: 1.00

Number TICs found: 9

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 7.12 | 100 | J N |
| ~~2.~~ | ~~ALDOL CONDENSATE~~ | ~~7.38~~ | ~~200~~ | ~~JAB~~ R |
| ~~3.~~ | ~~ALDOL CONDENSATE~~ | ~~8.33~~ | ~~400~~ | ~~JAB~~ R |
| 4. | UNKNOWN | 25.67 | 100 | J N |
| 5. | HYDROCARBON | 26.60 | 1000 | J N |
| 6. | PHOSPHATE | 28.22 | 1000 | J N |
| 7. | HYDROCARBON | 28.55 | 1000 | J N |
| 8. | HYDROCARBON | 30.38 | 300 | J N |
| 9. | UNKNOWN | 31.33 | 500 | J N |

MMF 6/26/92



MMF 6/26/9

9613446.1291 0000049

1B
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-45A

B015P2

3.0-5.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-002

Sample wt/vol: 30.5 (g/mL) G Lab File ID: V022007

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 4 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/20/92

GPC Cleanup: (Y/N) N pH: 8.7 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 340 | UJ |
| 111-44-4 | bis(2-Chloroethyl)ether | 340 | UJ |
| 95-57-8 | 2-Chlorophenol | 340 | UJ |
| 541-73-1 | 1,3-Dichlorobenzene | 340 | UJ |
| 106-46-7 | 1,4-Dichlorobenzene | 340 | UJ |
| 100-51-6 | Benzyl alcohol | 340 | UJ |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | UJ |
| 95-48-7 | 2-Methylphenol | 340 | UJ |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 340 | UJ |
| 106-44-5 | 4-Methylphenol | 340 | UJ |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 340 | UJ |
| 67-72-1 | Hexachloroethane | 340 | UJ |
| 98-95-3 | Nitrobenzene | 340 | UJ |
| 78-59-1 | Isophorone | 340 | UJ |
| 88-75-5 | 2-Nitrophenol | 340 | UJ |
| 105-67-9 | 2,4-Dimethylphenol | 340 | UJ |
| 65-85-0 | Benzoic acid | 1700 | UJ |
| 111-91-1 | bis(2-Chloroethoxy)methane | 340 | UJ |
| 120-83-2 | 2,4-Dichlorophenol | 340 | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | 340 | UJ |
| 91-20-3 | Naphthalene | 340 | UJ |
| 106-47-8 | 4-Chloroaniline | 340 | UJ |
| 87-68-3 | Hexachlorobutadiene | 340 | UJ |
| 59-50-7 | 4-Chloro-3-methylphenol | 340 | UJ |
| 91-57-6 | 2-Methylnaphthalene | 340 | UJ |
| 77-47-4 | Hexachlorocyclopentadiene | 340 | UJ |
| 88-06-2 | 2,4,6-Trichlorophenol | 340 | UJ |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | UJ |
| 91-58-7 | 2-Chloronaphthalene | 340 | UJ |
| 88-74-4 | 2-Nitroaniline | 1700 | UJ |
| 131-11-3 | Dimethylphthalate | 340 | UJ |
| 208-96-8 | Acenaphthylene | 340 | UJ |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | UJ |

FORM 1 SV-1 12/88 Rev.

MMJ 6/26/92

9613446.1292 0000050

1C

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-45 A

B015P2

3.0-5.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-002

Sample wt/vol: 30.5 (g/mL) G Lab File ID: V022007

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 4 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/20/92

GPC Cleanup: (Y/N) N pH: 8.7 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | UJ |
| 83-32-9 | Acenaphthene | 340 | UJ |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | UJ |
| 100-02-7 | 4-Nitrophenol | 1700 | UJ |
| 132-64-9 | Dibenzofuran | 340 | UJ |
| 121-14-2 | 2,4-Dinitrotoluene | 340 | UJ |
| 84-66-2 | Diethylphthalate | 340 | UJ |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 340 | UJ |
| 86-73-7 | Fluorene | 340 | UJ |
| 100-01-6 | 4-Nitroaniline | 1700 | UJ |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | UJ |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 340 | UJ |
| 101-55-3 | 4-Bromophenyl-phenylether | 340 | UJ |
| 118-74-1 | Hexachlorobenzene | 340 | UJ |
| 87-86-5 | Pentachlorophenol | 1700 | UJ |
| 85-01-8 | Phenanthrene | 340 | UJ |
| 120-12-7 | Anthracene | 340 | UJ |
| 84-74-2 | Di-n-Butylphthalate | 2700 ~~2700~~ | ~~B~~ UJ |
| 206-44-0 | Fluoranthene | 340 | UJ |
| 129-00-0 | Pyrene | 340 | UJ |
| 85-68-7 | Butylbenzylphthalate | 1300 | J |
| 91-94-1 | 3,3'-Dichlorobenzidine | 680 | UJ |
| 56-55-3 | Benzo(a)anthracene | 340 | UJ |
| 218-01-9 | Chrysene | 340 | UJ |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 1900 | ~~B~~ UJ |
| 117-84-0 | Di-n-Octyl phthalate | 340 | UJ |
| 205-99-2 | Benzo(b)fluoranthene | 340 | UJ |
| 207-08-9 | Benzo(k)fluoranthene | 340 | UJ |
| 50-32-8 | Benzo(a)pyrene | 340 | UJ |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 340 | UJ |
| 53-70-3 | Dibenzo(a,h)anthracene | 340 | UJ |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | UJ |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

7/9/92

7/9/92

MAL 6/26/92

9613446.1293

0000051

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-45A

B015P2

30-55

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-002

Sample wt/vol: 30.5 (g/mL) G Lab File ID: V022007

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 4 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/20/92

GPC Cleanup: (Y/N) N pH: 8.7 Dilution Factor: 1.00

Number TICs found: 8

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | ~~ALDOL CONDENSATE~~ | ~~7.38~~ | ~~500~~ | ~~JAB~~ |
| 2. | ~~ALDOL CONDENSATE~~ | ~~8.33~~ | ~~200~~ | ~~JAB~~ |
| 3. | PHTHALATE | 22.18 | 100 | J |
| 4. | UNKNOWN | 25.30 | 100 | J |
| 5. | UNKNOWN | 27.65 | 70 | J |
| 6. | PHOSPHATE | 28.23 | 100 | J |
| 7. | ALKANE | 28.58 | 70 | J |
| 8. | UNKNOWN | 31.35 | 600 | J |

RR

MMY 6/26/92

9613446.1294

1B 0000071

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-45A

B015Q0

10.0-12.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V022008

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 5 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/20/92

GPC Cleanup: (Y/N) N pH: 8.2 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 350 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 350 | U |
| 95-57-8 | 2-Chlorophenol | 350 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 350 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 350 | U |
| 100-51-6 | Benzyl alcohol | 350 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 350 | U |
| 95-48-7 | 2-Methylphenol | 350 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 350 | U |
| 106-44-5 | 4-Methylphenol | 350 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 350 | U |
| 67-72-1 | Hexachloroethane | 350 | U |
| 98-95-3 | Nitrobenzene | 350 | U |
| 78-59-1 | Isophorone | 350 | U |
| 88-75-5 | 2-Nitrophenol | 350 | U |
| 105-67-9 | 2,4-Dimethylphenol | 350 | U |
| 65-85-0 | Benzoic acid | 1700 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 350 | U |
| 120-83-2 | 2,4-Dichlorophenol | 350 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 350 | U |
| 91-20-3 | Naphthalene | 350 | U |
| 106-47-8 | 4-Chloroaniline | 350 | U |
| 87-68-3 | Hexachlorobutadiene | 350 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 350 | U |
| 91-57-6 | 2-Methylnaphthalene | 350 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 350 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 350 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 350 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 350 | U |
| 208-96-8 | Acenaphthylene | 350 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 350 | U |

FORM 1 SV-1 12/88 Rev.

8/25/92

9613446.1295

1C 0000072

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-45 A

B015Q0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

10.0 - 125

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-003

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V022008

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 5 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/20/92

GPC Cleanup: (Y/N) N pH: 8.2

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | UJ |
| 83-32-9 | Acenaphthene | 350 | UJ |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | UJ |
| 100-02-7 | 4-Nitrophenol | 1700 | UJ |
| 132-64-9 | Dibenzofuran | 350 | UJ |
| 121-14-2 | 2,4-Dinitrotoluene | 350 | UJ |
| 84-66-2 | Diethylphthalate | 350 | UJ |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 350 | UJ |
| 86-73-7 | Fluorene | 350 | UJ |
| 100-01-6 | 4-Nitroaniline | 1700 | UJ |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | UJ |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 350 | UJ |
| 101-55-3 | 4-Bromophenyl-phenylether | 350 | UJ |
| 118-74-1 | Hexachlorobenzene | 350 | UJ |
| 87-86-5 | Pentachlorophenol | 1700 | UJ |
| 85-01-8 | Phenanthrene | 350 | UJ |
| 120-12-7 | Anthracene | 350 | UJ |
| 84-74-2 | Di-n-Butylphthalate | 2800 | ~~BJ~~ UJ 7/9/92 |
| 206-44-0 | Fluoranthene | 350 | UJ |
| 129-00-0 | Pyrene | 350 | UJ |
| 85-68-7 | Butylbenzylphthalate | 960 | J |
| 91-94-1 | 3,3'-Dichlorobenzidine | 700 | UJ |
| 56-55-3 | Benzo(a)anthracene | 350 | UJ |
| 218-01-9 | Chrysene | 350 | UJ |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 1200 | ~~BJ~~ UJ 7/9/92 |
| 117-84-0 | Di-n-Octyl phthalate | 350 | UJ |
| 205-99-2 | Benzo(b)fluoranthene | 350 | UJ |
| 207-08-9 | Benzo(k)fluoranthene | 350 | UJ |
| 50-32-8 | Benzo(a)pyrene | 350 | UJ |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 350 | UJ |
| 53-70-3 | Dibenzo(a,h)anthracene | 350 | UJ |
| 191-24-2 | Benzo(g,h,i)perylene | 350 | UJ |

(1) - Cannot be separated from Diphenylamine

9613446.1296

1F 0000073

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO. 216-B-43A

B015Q0

10.0 - 12.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-003

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V022008

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 5 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/20/92

GPC Cleanup: (Y/N) N pH: 8.2

Dilution Factor: 1.00

Number TICs found: 8

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 7.02 | 600 | JN |
| ~~2.~~ | ~~ALDOL CONDENSATE~~ | ~~7.38~~ | ~~400~~ | ~~JAB~~ R |
| ~~3.~~ | ~~ALDOL CONDENSATE~~ | ~~8.33~~ | ~~500~~ | ~~JAB~~ R |
| ~~4.~~ | ~~ALDOL CONDENSATE~~ | ~~9.57~~ | ~~600~~ | ~~JA~~ R |
| 5. | PHTHALATE | 22.18 | 100 | JN |
| 6. | ORGANIC ACID | 23.07 | 100 | JN |
| 7. | UNKNOWN | 25.30 | 200 | JN |
| 8. | UNKNOWN | 31.37 | 700 | JN |

9613446.1297

0000093

1B
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S79

188.5 - 191.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-004

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V021308

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 5 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 8.4

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 350 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 350 | U |
| 95-57-8 | 2-Chlorophenol | 350 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 350 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 350 | U |
| 100-51-6 | Benzyl alcohol | 350 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 350 | U |
| 95-48-7 | 2-Methylphenol | 350 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 350 | UJ |
| 106-44-5 | 4-Methylphenol | 350 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 350 | U |
| 67-72-1 | Hexachloroethane | 350 | U |
| 98-95-3 | Nitrobenzene | 350 | U |
| 78-59-1 | Isophorone | 350 | U |
| 88-75-5 | 2-Nitrophenol | 350 | U |
| 105-67-9 | 2,4-Dimethylphenol | 350 | U |
| 65-85-0 | Benzoic acid | 1700 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 350 | U |
| 120-83-2 | 2,4-Dichlorophenol | 350 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 350 | U |
| 91-20-3 | Naphthalene | 350 | U |
| 106-47-8 | 4-Chloroaniline | 350 | U |
| 87-68-3 | Hexachlorobutadiene | 350 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 350 | U |
| 91-57-6 | 2-Methylnaphthalene | 350 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 350 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 350 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 350 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | UJ |
| 131-11-3 | Dimethylphthalate | 350 | U |
| 208-96-8 | Acenaphthylene | 350 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 350 | U |

FORM 1 SV-1

12/88 Rev.

MMR
6/26/92

9613446.1298

1C 0000094

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. 216-B-43A

B01S79

188.5 - 191.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V021308

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 5 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U |
| 83-32-9 | Acenaphthene | 350 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U |
| 100-02-7 | 4-Nitrophenol | 1700 | U |
| 132-64-9 | Dibenzofuran | 350 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 350 | UJ |
| 84-66-2 | Diethylphthalate | 350 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 350 | U |
| 86-73-7 | Fluorene | 350 | U |
| 100-01-6 | 4-Nitroaniline | 1700 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 350 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 350 | U |
| 118-74-1 | Hexachlorobenzene | 350 | U |
| 87-86-5 | Pentachlorophenol | 1700 | U |
| 85-01-8 | Phenanthrene | 350 | U |
| 120-12-7 | Anthracene | 350 | U |
| 84-74-2 | Di-n-Butylphthalate | 3700 | ~~B~~ U |
| 206-44-0 | Fluoranthene | 350 | U |
| 129-00-0 | Pyrene | 350 | U |
| 85-68-7 | Butylbenzylphthalate | 790 | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 700 | U |
| 56-55-3 | Benzo(a)anthracene | 350 | U |
| 218-01-9 | Chrysene | 350 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 850 | ~~B~~ U |
| 117-84-0 | Di-n-Octyl phthalate | 350 | U |
| 205-99-2 | Benzo(b)fluoranthene | 350 | U |
| 207-08-9 | Benzo(k)fluoranthene | 350 | U |
| 50-32-8 | Benzo(a)pyrene | 350 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 350 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | 350 | UJ |
| 191-24-2 | Benzo(g,h,i)perylene | 350 | U |

(1) - Cannot be separated from Diphenylamine



6/27/92

9615446.1299

1F

0000095

CLIENT SAMPLE NO.
216-B-43A

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

B01S79
188.5-191.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V021308

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 5 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 1.00

Number TICs found: 8

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 7.12 | 100 | JN |
| ~~2.~~ | ~~ALDOL CONDENSATE~~ | ~~7.38~~ | ~~700~~ | ~~JAB~~ R |
| ~~3.~~ | ~~ALDOL CONDENSATE~~ | ~~8.33~~ | ~~600~~ | ~~JAB~~ R |
| 4. | UNKNOWN | 11.33 | 200 | JN |
| 5. | ORGANIC ACID | 23.07 | 300 | JN |
| 6. | UNKNOWN | 25.28 | 200 | JN |
| 7. | HYDROCARBON | 28.60 | 500 | JN |
| 8. | UNKNOWN | 31.33 | 700 | JN |

9613446.1300

1D 0000018

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

BO15J6

157.5-160.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-001

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 02149209.24

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 3 dec. Date Extracted: 01/24/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/15/92

GPC Cleanup: (Y/N) Y pH: 9.5 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.1~~ 16.2 | U |
| 319-85-7 | Beta-BHC | ~~8.1~~ 16.2 | U |
| 319-86-8 | Delta-BHC | ~~8.1~~ 16.2 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.1~~ 16.2 | U |
| 76-44-8 | Heptachlor | ~~8.1~~ 16.2 | U |
| 309-00-2 | Aldrin | ~~8.1~~ 16.2 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.1~~ 16.2 | U |
| 959-98-8 | Endosulfan I | ~~8.1~~ 16.2 | U |
| 60-57-1 | Dieldrin | ~~16~~ 32 | U |
| 72-55-9 | 4,4'-DDE | ~~16~~ 32 | U |
| 72-20-8 | Endrin | ~~16~~ 32 | U |
| 33213-65-9 | Endosulfan II | ~~16~~ 32 | U |
| 72-54-8 | 4,4'-DDD | ~~16~~ 32 | U |
| 1031-07-8 | Endosulfan sulfate | ~~16~~ 32 | U |
| 50-29-3 | 4,4'-DDT | ~~16~~ 32 | U |
| 72-43-5 | Methoxychlor | ~~81~~ 162 | U |
| 53494-70-5 | Endrin ketone | ~~16~~ 32 | U |
| 5103-71-9 | alpha-Chlordane | ~~81~~ 162 | U |
| 5103-74-2 | gamma-Chlordane | ~~81~~ 162 | U |
| 8001-35-2 | Toxaphene | ~~160~~ 320 | U |
| 12674-11-2 | Aroclor-1016 | ~~81~~ 162 | U |
| 11104-28-2 | Aroclor-1221 | ~~81~~ 162 | U |
| 11141-16-5 | Aroclor-1232 | ~~81~~ 162 | U |
| 53469-21-9 | Aroclor-1242 | ~~81~~ 162 | U |
| 12672-29-6 | Aroclor-1248 | ~~81~~ 162 | U |
| 11097-69-1 | Aroclor-1254 | ~~160~~ 320 | U |
| 11096-82-5 | Aroclor-1260 | ~~160~~ 320 | U |

DER 2/24/92

FORM 1 PEST 12/88 Rev.

MM 6/27/92

9613446.1301

1D 0000023

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216 - B-95A

BO15P2

3.0 - 5.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-002

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 02149209.27

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 4 dec. Date Extracted: 01/24/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/15/92

GPC Cleanup: (Y/N) Y pH: 8.7 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.3~~ 16.9 | U |
| 319-85-7 | Beta-BHC | ~~8.3~~ 16.9 | U |
| 319-86-8 | Delta-BHC | ~~8.3~~ 16.9 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.3~~ 16.9 | U |
| 76-44-8 | Heptachlor | ~~8.3~~ 16.9 | U |
| 309-00-2 | Aldrin | ~~8.3~~ 16.9 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.3~~ 16.9 | U |
| 959-98-8 | Endosulfan I | ~~8.3~~ 16.9 | U |
| 60-57-1 | Dieldrin | ~~17~~ 32 | U |
| 72-55-9 | 4,4'-DDE | ~~17~~ 32 | U |
| 72-20-8 | Endrin | ~~17~~ 32 | U |
| 33213-65-9 | Endosulfan II | ~~17~~ 32 | U |
| 72-54-8 | 4,4'-DDD | ~~17~~ 32 | U |
| 1031-07-8 | Endosulfan sulfate | ~~17~~ 32 | U |
| 50-29-3 | 4,4'-DDT | ~~17~~ 32 | U |
| 72-43-5 | Methoxychlor | ~~83~~ 166 | U |
| 53494-70-5 | Endrin ketone | ~~17~~ 32 | U |
| 5103-71-9 | alpha-Chlordane | ~~83~~ 166 | U |
| 5103-74-2 | gamma-Chlordane | ~~83~~ 166 | U |
| 8001-35-2 | Toxaphene | ~~170~~ 340 | U |
| 12674-11-2 | Aroclor-1016 | ~~83~~ 166 | U |
| 11104-28-2 | Aroclor-1221 | ~~83~~ 166 | U |
| 11141-16-5 | Aroclor-1232 | ~~83~~ 166 | U |
| 53469-21-9 | Aroclor-1242 | ~~83~~ 166 | U |
| 12672-29-6 | Aroclor-1248 | ~~83~~ 166 | U |
| 11097-69-1 | Aroclor-1254 | ~~170~~ 340 | U |
| 11096-82-5 | Aroclor-1260 | ~~170~~ 340 | U |

DCR 2/24/92

FORM 1 PEST 12/88 Rev.

MML 6/29/92

9613446.1302

1D 0000028

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-95A

B015Q0

10.0 - 12.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L101-003

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

Lab File ID: 02149209.28

Level: (low/med) LOW

Date Received: 01/23/92

% Moisture: not dec. 5 dec.

Date Extracted: 01/24/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/15/92

GPC Cleanup: (Y/N) Y pH: 8.2

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.3~~ 16.6 | U |
| 319-85-7 | Beta-BHC | ~~8.3~~ 16.6 | U |
| 319-86-8 | Delta-BHC | ~~8.3~~ 16.6 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.3~~ 16.6 | U |
| 76-44-8 | Heptachlor | ~~8.3~~ 16.6 | U |
| 309-00-2 | Aldrin | ~~8.3~~ 16.6 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.3~~ 16.6 | U |
| 959-98-8 | Endosulfan I | ~~8.3~~ 16.6 | U |
| 60-57-1 | Dieldrin | ~~17~~ 34 | U |
| 72-55-9 | 4,4'-DDE | ~~17~~ 34 | U |
| 72-20-8 | Endrin | ~~17~~ 34 | U |
| 33213-65-9 | Endosulfan II | ~~17~~ 34 | U |
| 72-54-8 | 4,4'-DDD | ~~17~~ 34 | U |
| 1031-07-8 | Endosulfan sulfate | ~~17~~ 34 | U |
| 50-29-3 | 4,4'-DDT | ~~17~~ 34 | U |
| 72-43-5 | Methoxychlor | ~~83~~ 166 | U |
| 53494-70-5 | Endrin ketone | ~~17~~ 34 | U |
| 5103-71-9 | alpha-Chlordane | ~~83~~ 166 | U |
| 5103-74-2 | gamma-Chlordane | ~~83~~ 166 | U |
| 8001-35-2 | Toxaphene | ~~170~~ 340 | U |
| 12674-11-2 | Aroclor-1016 | ~~83~~ 166 | U |
| 11104-28-2 | Aroclor-1221 | ~~83~~ 166 | U |
| 11141-16-5 | Aroclor-1232 | ~~83~~ 166 | U |
| 53469-21-9 | Aroclor-1242 | ~~83~~ 166 | U |
| 12672-29-6 | Aroclor-1248 | ~~83~~ 166 | U |
| 11097-69-1 | Aroclor-1254 | ~~170~~ 340 | U |
| 11096-82-5 | Aroclor-1260 | ~~170~~ 340 | U |

DER 2/24/91

FORM 1 PEST 12/88 Rev.

MML 6/29/92

9613446.1303

1D 0000033

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S79

188.5 - 191.0

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L101-004

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 02149209.29

Level: (low/med) LOW Date Received: 01/23/92

% Moisture: not dec. 5 dec. Date Extracted: 01/24/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/15/92

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.3~~ 16.6 | U |
| 319-85-7 | Beta-BHC | ~~8.3~~ 16.6 | U |
| 319-86-8 | Delta-BHC | ~~8.3~~ 16.6 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.3~~ 16.6 | U |
| 76-44-8 | Heptachlor | ~~8.3~~ 16.6 | U |
| 309-00-2 | Aldrin | ~~8.3~~ 16.6 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.3~~ 16.6 | U |
| 959-98-8 | Endosulfan I | ~~8.3~~ 16.6 | U |
| 60-57-1 | Dieldrin | ~~17~~ 34 | U |
| 72-55-9 | 4,4'-DDE | ~~17~~ 34 | U |
| 72-20-8 | Endrin | ~~17~~ 34 | U |
| 33213-65-9 | Endosulfan II | ~~17~~ 34 | U |
| 72-54-8 | 4,4'-DDD | ~~17~~ 34 | U |
| 1031-07-8 | Endosulfan sulfate | ~~17~~ 34 | U |
| 50-29-3 | 4,4'-DDT | ~~17~~ 34 | U |
| 72-43-5 | Methoxychlor | ~~83~~ 166 | U |
| 53494-70-5 | Endrin ketone | ~~17~~ 34 | U |
| 5103-71-9 | alpha-Chlordane | ~~83~~ 166 | U |
| 5103-74-2 | gamma-Chlordane | ~~83~~ 166 | U |
| 8001-35-2 | Toxaphene | ~~170~~ 340 | U |
| 12674-11-2 | Aroclor-1016 | ~~83~~ 166 | U |
| 11104-28-2 | Aroclor-1221 | ~~83~~ 166 | U |
| 11141-16-5 | Aroclor-1232 | ~~83~~ 166 | U |
| 53469-21-9 | Aroclor-1242 | ~~83~~ 166 | U |
| 12672-29-6 | Aroclor-1248 | ~~83~~ 166 | U |
| 11097-69-1 | Aroclor-1254 | ~~170~~ 340 | U |
| 11096-82-5 | Aroclor-1260 | ~~170~~ 340 | U |

DCR 2/24/92

FORM 1 PEST 12/88 Rev.

MML 6/29/92

9613446.1304

0000022 7/8/92 216-B-43A 157.5-160.0

U.S. EPA - CLP

EPA SAMPLE NO.

~~216-B-43A~~

B015J6

~~157.5-160.0~~

1

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP101

Matrix (soil/water): SOIL Lab Sample ID: 920110101

Level (low/med): LOW Date Received: 1/23/92

% Solids: 97.1

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4610.00 | | ~~E~~ J | P |
| 7440-36-0 | Antimony | 4.74 | ~~U~~ | ~~N~~ UJ | P |
| 7440-38-2 | Arsenic | 1.60 | B | | F |
| 7440-39-3 | Barium | 66.00 | | | P |
| 7440-41-7 | Beryllium | .31 | B | | P |
| 7440-43-9 | Cadmium | .62 | U | | P |
| 7440-70-2 | Calcium | 5970.00 | | ~~E~~ J | P |
| 7440-47-3 | Chromium | 8.20 | | | P |
| 7440-48-4 | Cobalt | 7.30 | B | | P |
| 7440-50-8 | Copper | 10.30 | | | P |
| 7439-89-6 | Iron | 12800.00 | | ~~E~~ J | P |
| 7439-92-1 | Lead | 2.20 | | J | F |
| 7439-95-4 | Magnesium | 3410.00 | | ~~E~~ | P |
| 7439-96-5 | Manganese | 266.00 | | ~~N~~ ~~E~~ J | P |
| 7439-97-6 | Mercury | .14 | | | CV |
| 7440-02-0 | Nickel | 8.60 | | | P |
| 7440-09-7 | Potassium | 923.00 | B | | P |
| 7782-49-2 | Selenium | .41 | ~~U~~ | ~~W~~ UJ | F |
| 7440-22-4 | Silver | 1.10 | B | | P |
| 7440-23-5 | Sodium | 3070.00 | | J | P |
| 7440-28-0 | Thallium | .41 | U | | F |
| 7440-62-2 | Vanadium | 22.80 | | | P |
| 7440-66-6 | Zinc | 25.70 | | | P |
| | Cyanide | 2.86 | | | C |
| 7440-69-9 | Bismuth | 30.9 | U | | P |

* no qual based on 35% RPD for soils criteria necessary

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

pmm 6/31/92

9613446.1305 0000023

U.S. EPA - CLP

1

# INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-45A
B015P2
3.0-5.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP101

Matrix (soil/water): SOIL Lab Sample ID: 920110102

Level (low/med): LOW Date Received: 1/23/92

% Solids: 96.3

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4220.00 | | ~~E~~ J | P |
| 7440-36-0 | Antimony | 4.63 | ~~U~~ | ~~N~~ UJ | P |
| 7440-38-2 | Arsenic | 1.50 | B | | F |
| 7440-39-3 | Barium | 59.20 | | | P |
| 7440-41-7 | Beryllium | .20 | U | | P |
| 7440-43-9 | Cadmium | .60 | U | | P |
| 7440-70-2 | Calcium | 4920.00 | | ~~E~~ J | P |
| 7440-47-3 | Chromium | 5.60 | | | P |
| 7440-48-4 | Cobalt | 7.80 | B | | P |
| 7440-50-8 | Copper | 9.40 | | | P |
| 7439-89-6 | Iron | 13600.00 | | ~~E~~ J | P |
| 7439-92-1 | Lead | 27.70 | | J | F |
| 7439-95-4 | Magnesium | 2880.00 | | ~~E~~ J | P |
| 7439-96-5 | Manganese | 233.00 | | ~~N~~ ~~E~~ J | P |
| 7439-97-6 | Mercury | .05 | U | | CV |
| 7440-02-0 | Nickel | 5.70 | B | | P |
| 7440-09-7 | Potassium | 914.00 | B | | P |
| 7782-49-2 | Selenium | .38 | ~~U~~ | ~~W~~ UJ | F |
| 7440-22-4 | Silver | 1.70 | B | | P |
| 7440-23-5 | Sodium | 140.00 | ~~B~~ | J | P |
| 7440-28-0 | Thallium | .38 | U | | F |
| 7440-62-2 | Vanadium | 27.20 | | | P |
| 7440-66-6 | Zinc | 27.70 | | | P |
| | Cyanide | 1.04 | U | | C |
| 7440-69-9 | Bismuth | 30.2 | U | | P |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

MMF 7/1/92

9613446.1306 0000024

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-45A
B015Q0
10.0-12.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP101

Matrix (soil/water): SOIL Lab Sample ID: 920110103

Level (low/med): LOW Date Received: 1/23/92

% Solids: 95.4

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4390.00 | | ~~E~~ J | P |
| 7440-36-0 | Antimony | 4.82 | U | ~~N~~ J UJ | P |
| 7440-38-2 | Arsenic | 2.00 | B | | F |
| 7440-39-3 | Barium | 54.60 | | | P |
| 7440-41-7 | Beryllium | .36 | B | | P |
| 7440-43-9 | Cadmium | .63 | U | | P |
| 7440-70-2 | Calcium | 6560.00 | | ~~E~~ J | P |
| 7440-47-3 | Chromium | 6.30 | | | P |
| 7440-48-4 | Cobalt | 8.40 | B | | P |
| 7440-50-8 | Copper | 9.90 | | | P |
| 7439-89-6 | Iron | 15200.00 | | ~~E~~ J | P |
| 7439-92-1 | Lead | 3.50 | | | F |
| 7439-95-4 | Magnesium | 3350.00 | | ~~E~~ J | P |
| 7439-96-5 | Manganese | 243.00 | | ~~N~~E J | P |
| 7439-97-6 | Mercury | .05 | U | | CV |
| 7440-02-0 | Nickel | 7.00 | B | | P |
| 7440-09-7 | Potassium | 893.00 | B | | P |
| 7782-49-2 | Selenium | .42 | ~~U~~ ~~W~~ UJ | | F |
| 7440-22-4 | Silver | 1.60 | B | | P |
| 7440-23-5 | Sodium | 288.00 | ~~B~~ | J | P |
| 7440-28-0 | Thallium | .42 | U | | F |
| 7440-62-2 | Vanadium | 31.60 | | | P |
| 7440-66-6 | Zinc | 29.10 | | | P |
| | Cyanide | 1.05 | U | | C |
| 7440-69-9 | Bismuth | 31.4 | U | | P |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

MMF 7/1/92

9613446.1307

0000025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-43A

B01S79
188.5-191.0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP101

Matrix (soil/water): SOIL Lab Sample ID: 920110104

Level (low/med): LOW Date Received: 1/23/92

% Solids: 95.5

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5590.00 | | ~~E~~ J | P |
| 7440-36-0 | Antimony | 4.79 | ~~U~~ | ~~N~~ UJ | P |
| 7440-38-2 | Arsenic | 2.10 | | | F |
| 7440-39-3 | Barium | 55.40 | | | P |
| 7440-41-7 | Beryllium | .27 | B | | P |
| 7440-43-9 | Cadmium | .63 | U | | P |
| 7440-70-2 | Calcium | 6360.00 | | ~~E~~ J | P |
| 7440-47-3 | Chromium | 10.40 | | | P |
| 7440-48-4 | Cobalt | 6.90 | B | | P |
| 7440-50-8 | Copper | 10.90 | | | P |
| 7439-89-6 | Iron | 13400.00 | | ~~E~~ J | P |
| 7439-92-1 | Lead | 3.40 | | | F |
| 7439-95-4 | Magnesium | 3770.00 | | ~~E~~ J | P |
| 7439-96-5 | Manganese | 255.00 | | ~~NE~~ J | P |
| 7439-97-6 | Mercury | .06 | B | | CV |
| 7440-02-0 | Nickel | 10.20 | | | P |
| 7440-09-7 | Potassium | 1130.00 | | | P |
| 7782-49-2 | Selenium | .41 | ~~U~~ | ~~W~~ UJ | F |
| 7440-22-4 | Silver | 1.40 | B | | P |
| 7440-23-5 | Sodium | 909.00 | ~~B~~ | J | P |
| 7440-28-0 | Thallium | .41 | U | | F |
| 7440-62-2 | Vanadium | 24.50 | | | P |
| 7440-66-6 | Zinc | 29.50 | | | P |
| | Cyanide | 1.68 | | | C |
| 7440-69-9 | Bismuth | 31.2 | U | | P |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

MMK
7/1/92

9613446.1308

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 02/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L101

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | B015J6 | % Solids | 97.2 | | % | 0.10 |
| | | Nitrate by IC | 4620 | J | MG/KG | 129 |
| | 216-B-43A | Cyanide, Total | 2.9 | | MG/KG | 1.0 |
| | 157.5-160.0 | Phosphate by IC | 1.3 | uJ | MG/KG | 1.3 |
| | | Sulfate by IC | 210 | | MG/KG | 12.9 |
| | | ~~Nitrate Nitrite~~ | ~~1220~~ | | MG-N/KG | 103 |
| | | Total Organic Carbon | 473 | J | MG/KG | 81.0 |
| -002 | B015P2 | % Solids | 96.3 | | % | 0.10 |
| | | Nitrate by IC | 81.4 | J | MG/KG | 1.3 |
| | 216-B-45A | Cyanide, Total | 1.0 | u | MG/KG | 1.0 |
| | 3.0-3.5 | Phosphate by IC | 1.4 | J | MG/KG | 1.3 |
| | | Sulfate by IC | 18.6 | | MG/KG | 1.3 |
| | | ~~Nitrate Nitrite~~ | ~~19.8~~ | | MG-N/KG | 5.2 |
| | | Total Organic Carbon | 1080 | J | MG/KG | 89.0 |
| 003 | B015Q0 | % Solids | 95.4 | | % | 0.10 |
| | | Nitrate by IC | 46.0 | J | MG/KG | 1.3 |
| | 216-B-45A | Cyanide, Total | 1.0 | u | MG/KG | 1.0 |
| | 10.0-12.5 | Phosphate by IC | 1.3 | uJ | MG/KG | 1.3 |
| | | Sulfate by IC | 385 | | MG/KG | 13.1 |
| | | ~~Nitrate Nitrite~~ | ~~11.6~~ | | MG-N/KG | 2.6 |
| | | Total Organic Carbon | 727 | J | MG/KG | 123 |
| -004 | B01S79 | % Solids | 95.5 | | % | 0.10 |
| | | Nitrate by IC | 1550 | J | MG/KG | 131 |
| | 216-B-43A | Cyanide, Total | 1.7 | | MG/KG | 1.0 |
| | 188.5-191.0 | Phosphate by IC | 1.3 | uJ | MG/KG | 1.3 |
| | | Sulfate by IC | 30.0 | | MG/KG | 1.3 |
| | | ~~Nitrate Nitrite~~ | ~~405~~ | | MG-N/KG | 52.4 |
| | | Total Organic Carbon | 845 | J | MG/KG | 112 |

$N_2/N_3$ results dc
MM 7/15/92

MMS 6/28/92

9613446.1309

# ATTACHMENT 4

# DATA VALIDATION SUPPORTING DOCUMENTATION

9613446.1310

WHC-SD-EN-SPP-002, Rev. 1

# VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMJ | DATE: 6/23/92 |
| LABORATORY: Weston | CASE: 92011101 | SDG: 92011101 |
| SAMPLES/MATRIX: B015J6, B015P2, B015Q0, B015Q9, ~~B015Q9-MS, B015Q9-MSD~~ Soils | | |
| 07/8/92 | | |
| | | |
| | | |

## 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 | ✓ | — | ✗ MMJ 6/23/92 |
| 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 ~~been~~ provided for all instruments? **Yes** No N/A

Are all RSD values ≤30% (2/88 SOW)? chloromethane, Acetone and vinyl Acetate out Yes **No** N/A

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

| | | | |
|---|---|---|---|
| Are all applicable RSD values ≤20.5% (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)? %D out for several Compounds | 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? $MeCl_2$, Acetone | 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 mmf 6/29/92

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? (Acetone B015J6) (Acetone 92LVW017) other acceptable — 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 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)**

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 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):

The %D between the $\overline{RRF}$ and the $RRF_{50}$ for Continuing calibration associated with the samples is >25% for chloromethane, vinyl acetate, 4-methyl-2-pentanone, 2-Hexanone and 1,1,2,2-Tetrachloroethane. The %D was also out for continuing calibration associated with MS/MSD for chloromethane, bromomethane acetone, vinyl acetate, and 1,1,2,2-Tetrachloroethane.

Methylene chloride and Acetone detected in the Laboratory blanks associated with the samples and the MS/MSD samples.

Surrogate recoveries were out for B01S79 all fractions. Surrogate recoveries were also out for B01S79MSD For the DCE fraction. There was no evidence in the deliverables that the lab reran the samples. recoveries were >10% and the method blank surrogate recoveries were within specifications.

Toluene and 4-M-2-Pentanone have 1 peak >10% in STND but not in sample spectra. This is not considered significant.

Acetone was not within ±0.06 RRT units for B015J6 and 92LVW017 others within ±0.06 criteria. Previously blank qualified and therefore not changed.

9613446.1318

Holding Times Summary

pg 1 of 1

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | holding times |
|---|---|---|---|---|---|---|---|
| BO15J6 | 001 | S | 92LVW016 | 01/20/92 | N/A | 01/31/92 | 11 |
| BO15P2 | 002 | S | 92LVW016 | 01/20/92 | N/A | 01/31/92 | 11 |
| BO15Q0 | 003 | S | 92LVW016 | 01/20/92 | N/A | 01/31/92 | 11 |
| BO1S79 | 004 | S | 92LVW016 | 01/21/92 | N/A | 01/31/92 | 11 |
| BO1S79 | 004 MS | S | 92LVW017 | 01/21/92 | N/A | 02/01/92 | 12 |
| BO1S79 | 004 MSD | S | 92LVW017 | 01/21/92 | N/A | 02/01/92 | 12 |

LAB QC:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| VBLK | MB1 | S | 92LVW016 | N/A | N/A | 01/31/92 | N/A |
| VBLK | MB1 | S | 92LVW017 | N/A | N/A | 02/01/92 | N/A |

Holding times were met. 6/23/92

MAR 1992
RECEIVED
OSM DMO

6/23/92
MML

9613446.1319 Calibration Summary 000067 Pg 1 of 2

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L101

Instrument ID: 1050W Calibration Date(s): 01/29/92 01/29/92

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

Assoc. w/ B015S6, B015P2, B015Q0, B015Z9. 7/9/92

LAB FILE ID: RRF20 = W012905 RRF50 = W012902

RRF100= W012906 RRF150= W012907 RRF200= W012908

| COMPOUND | RRF20 | RRF50 | RRF100 | RRF150 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Chloromethane # | 0.889 | 0.809 | 0.629 | 0.401 | 0.375 | 0.621 | 37.5# |
| Bromomethane | 1.437 | 1.400 | 1.521 | 1.438 | 1.302 | 1.420 | 5.6 |
| Vinyl Chloride * | 1.140 | 1.081 | 1.087 | 1.109 | 1.068 | 1.097 | 2.6* |
| Chloroethane | 0.872 | 0.788 | 0.776 | 0.927 | 0.944 | 0.861 | 9.0 |
| Methylene Chloride | 2.012 | 1.537 | 1.487 | 1.526 | 1.574 | 1.627 | 13.4 |
| Acetone | 1.407 | 0.718 | 0.704 | 0.790 | 0.753 | 0.874 | 34.3 |
| Carbon Disulfide | 2.401 | 2.540 | 2.321 | 2.391 | 2.665 | 2.464 | 5.6 |
| 1,1-Dichloroethene * | 1.271 | 1.174 | 1.098 | 1.119 | 1.173 | 1.167 | 5.7* |
| 1,1-Dichloroethane # | 2.807 | 2.671 | 2.664 | 2.743 | 2.907 | 2.758 | 3.7# |
| 1,2-Dichloroethene (total) | 1.526 | 1.462 | 1.413 | 1.444 | 1.533 | 1.476 | 3.5 |
| Chloroform * | 2.884 | 2.705 | 2.720 | 2.784 | 2.976 | 2.814 | 4.1* |
| 1,2-Dichloroethane | 1.895 | 1.605 | 1.631 | 1.790 | 1.869 | 1.758 | 7.6 |
| 2-Butanone | 0.304 | 0.169 | 0.174 | 0.279 | 0.273 | 0.240 | 26.5 |
| 1,1,1-Trichloroethane | 0.469 | 0.470 | 0.478 | 0.494 | 0.551 | 0.492 | 7.0 |
| Carbon Tetrachloride | 0.388 | 0.432 | 0.430 | 0.438 | 0.483 | 0.434 | 7.8 |
| Vinyl Acetate | 0.423 | 0.374 | 0.798 | 0.977 | 1.207 | 0.756 | 47.3 |
| Bromodichloromethane | 0.642 | 0.690 | 0.706 | 0.740 | 0.832 | 0.722 | 9.8 |
| 1,2-Dichloropropane * | 0.532 | 0.528 | 0.532 | 0.566 | 0.635 | 0.559 | 8.1* |
| cis-1,3-Dichloropropene | 0.475 | 0.541 | 0.604 | 0.663 | 0.760 | 0.609 | 18.1 |
| Trichloroethene | 0.469 | 0.483 | 0.473 | 0.484 | 0.518 | 0.485 | 4.0 |
| Dibromochloromethane | 0.574 | 0.632 | 0.703 | 0.772 | 0.844 | 0.705 | 15.3 |
| 1,1,2-Trichloroethane | 0.399 | 0.374 | 0.401 | 0.434 | 0.460 | 0.414 | 8.1 |
| Benzene | 1.046 | 1.102 | 1.063 | 1.135 | 1.219 | 1.113 | 6.2 |
| Trans-1,3-Dichloropropene | 0.447 | 0.431 | 0.528 | 0.605 | 0.639 | 0.530 | 17.4 |
| Bromoform # | 0.399 | 0.419 | 0.514 | 0.612 | 0.660 | 0.521 | 22.1# |
| 4-Methyl-2-pentanone | 1.013 | 0.688 | 0.930 | 1.171 | 1.129 | 0.986 | 19.5 |
| 2-Hexanone | 0.831 | 0.616 | 0.809 | 1.061 | 1.035 | 0.870 | 21.0 |
| Tetrachloroethene | 0.510 | 0.515 | 0.478 | 0.497 | 0.526 | 0.505 | 3.6 |
| 1,1,2,2-Tetrachloroethane # | 1.000 | 0.848 | 1.016 | 1.179 | 1.229 | 1.054 | 14.5# |
| Toluene * | 0.687 | 0.691 | 0.652 | 0.673 | 0.723 | 0.685 | 3.8* |
| Chlorobenzene # | 1.077 | 1.056 | 0.973 | 0.989 | 1.042 | 1.027 | 4.3# |
| Ethylbenzene * | 0.416 | 0.422 | 0.390 | 0.398 | 0.426 | 0.410 | 3.8* |
| Styrene | 0.735 | 0.765 | 0.758 | 0.768 | 0.819 | 0.769 | 4.0 |
| Xylene (total) | 0.439 | 0.436 | 0.418 | 0.417 | 0.447 | 0.431 | 3.1 |
| Toluene-d8 | 1.180 | 1.146 | 1.183 | 1.213 | 1.273 | 1.199 | 4.0 |
| Bromofluorobenzene | 1.039 | 1.000 | 1.084 | 1.089 | 1.139 | 1.070 | 4.9 |
| 1,2-Dichloroethane-d4 | 1.607 | 1.374 | 1.520 | 1.605 | 1.664 | 1.554 | 7.3 |

9613446.1320 Calibration Summary 0090093 Pg 2 of 2

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L101

Instrument ID: 1050W Calibration Date: 01/31/92 Time: 1015

Lab File ID: W013102 Init. Calib. Date(s): 01/29/92 01/29/92

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

Assoc. w/B015J6, B015P2, B015Q0, B01579 7/9/92

| COMPOUND | | RRF | RRF50 | %D | |
|---|---|---|---|---|---|
| Chloromethane | # | 0.621 | 0.996 | -60.4 | # |
| Bromomethane | | 1.420 | 1.528 | -7.6 | |
| Vinyl Chloride | * | 1.097 | 1.138 | -3.7 | * |
| Chloroethane | | 0.861 | 0.902 | -4.8 | |
| Methylene Chloride | | 1.627 | 1.899 | -16.7 | |
| Acetone | | 0.874 | 0.983 | -12.5 | |
| Carbon Disulfide | | 2.464 | 2.859 | -16.0 | |
| 1,1-Dichloroethene | * | 1.167 | 1.431 | -22.6 | * |
| 1,1-Dichloroethane | # | 2.758 | 3.142 | -13.9 | # |
| 1,2-Dichloroethene (total) | | 1.476 | 1.776 | -20.3 | |
| Chloroform | * | 2.814 | 3.431 | -21.9 | * |
| 1,2-Dichloroethane | | 1.758 | 2.093 | -19.1 | |
| 2-Butanone | | 0.240 | 0.213 | 11.2 | |
| 1,1,1-Trichloroethane | | 0.492 | 0.547 | -11.2 | |
| Carbon Tetrachloride | | 0.434 | 0.482 | -11.1 | |
| Vinyl Acetate | | 0.756 | 0.200 | 73.5 | |
| Bromodichloromethane | | 0.722 | 0.681 | 5.7 | |
| 1,2-Dichloropropane | * | 0.559 | 0.466 | 16.6 | * |
| cis-1,3-Dichloropropene | | 0.609 | 0.518 | 14.9 | |
| Trichloroethene | | 0.485 | 0.544 | -12.2 | |
| Dibromochloromethane | | 0.705 | 0.618 | 12.3 | |
| 1,1,2-Trichloroethane | | 0.414 | 0.372 | 10.1 | |
| Benzene | | 1.113 | 1.042 | 6.4 | |
| Trans-1,3-Dichloropropene | | 0.530 | 0.409 | 22.8 | |
| Bromoform | # | 0.521 | 0.420 | 19.4 | # |
| 4-Methyl-2-pentanone | | 0.986 | 0.585 | 40.7 | |
| 2-Hexanone | | 0.870 | 0.537 | 38.3 | |
| Tetrachloroethene | | 0.505 | 0.529 | -4.8 | |
| 1,1,2,2-Tetrachloroethane | # | 1.054 | 0.607 | 42.4 | # |
| Toluene | * | 0.685 | 0.679 | 0.9 | * |
| Chlorobenzene | # | 1.027 | 1.063 | -3.5 | # |
| Ethylbenzene | * | 0.410 | 0.419 | -2.2 | * |
| Styrene | | 0.769 | 0.753 | 2.1 | |
| Xylene (total) | | 0.431 | 0.447 | -3.7 | |
| Toluene-d8 | | 1.199 | 1.153 | 3.8 | |
| Bromofluorobenzene | | 1.070 | 1.022 | 4.5 | |
| 1,2-Dichloroethane-d4 | | 1.554 | 1.677 | -7.9 | |

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MMJ 6/24/92

Blank 9213486-1321 Mary 000913 Pg 1 of 1

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LVW016-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: W013104

Level: (low/med) LOW Date Received: 01/31/92

% Moisture: not dec. 0 Date Analyzed: 01/31/92

Column: (pack/cap) PACK Dilution Factor: 1.00

Assoc. w/ B015J6, B015P2, B015Q0, B015Z9. 7/9/92

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | | |
|---|---|---|---|---|
| 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 | 4 | J | X10 = 40 |
| 67-64-1 | Acetone | 15 | | X10 = 150 |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | U | |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U | |
| 591-78-6 | 2-Hexanone | 10 | U | |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U | |
| 108-88-3 | Toluene | 5 | U | |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

FORM 1 V-1 12/88 Rev.

6/24/92 MMX

Accuracy Summary 9613446.1322 000015

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2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

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

RFW Lot No.: 9201L101

| | CLIENT SAMPLE NO. | S1 (TOL)# | S2 (BFB)# | S3 (DCE)# | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | BO15J6 | 112 | 116 | 116 | | 0 |
| 02 | BO15P2 | 111 | 117 | 109 | | 0 |
| 03 | BO15Q0 | 104 | 109 | 113 | | 0 |
| 04 | BO1S79 | 118 * | 129 * | 123 * | | 3 |
| 05 | BO1S79MS | 93 | 93 | 117 | | 0 |
| 06 | BO1S79MSD | 104 | 108 | 132 * | | 1 |
| 07 | VBLKLVW016-MB1 | 108 | 113 | 108 | | 0 |
| 08 | VBLKLVW017-MB1 | 96 | 102 | 103 | | 0 |

| | QC LIMITS |
|---|---|
| S1 (TOL) = Toluene-d8 | ( 81-117) |
| S2 (BFB) = Bromofluorobenzene | ( 74-121) |
| S3 (DCE) = 1,2-Dichloroethane-d4 | ( 70-121) |

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

MMF 6/29/92

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

| | | |
|---|---|---|
| PROJECT: 913 - 1719 | REVIEWER: MMX | DATE: 6/26/92 |
| LABORATORY: Weston | CASE: 92012101 | SDG: 92012101 |
| SAMPLES/MATRIX: B015J6, ~~B015J6 MS, B015J6 MSD,~~ B015PZ, B015Q0, B01579 / Soils | | |
| | | |
| | | |
| | | |

## 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% (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 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

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? Benzoic acid, B015J6 — 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):

Extraction times greater than 7 days for B015J6, B015PZ, and B015QD but less than 2 times the criteria. Holding times for all sample and extraction times for B01579 were not exceeded.

% D for bis (2-chloroisopropyl) ether, 2 Nitroaniline, 2,4 - Dinitrotoluene, and Dibenzo (a,h) anthracene were >25% for Samples B015J6 and B01579. B015J6 was already qualified and therefore qualification was not necessary.

% D for benzoic acid CCAL was >25% for Samples B015PZ and B015QD. No qual necessary as these compounds were already qualified.

MS/MSD Calculation errors are considered insignificant.

Benzoic acid for B015J6 not within ± 0.06 RRT units. Remaining compounds detected are within ± 0.06 RRT of the IS. All good matches w/ the exception of benzoic acid

~~The Method blank data for waters is missing. I see the data package therefore blank acid extract for sample [illegible]~~

7/9/92 9613446.1331

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Holding Time and Extraction Time Summary

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | |
|---|---|---|---|---|---|---|---|---|
| B015J6 | 001 | S | 92LE0133 | 01/20/92 | 01/28/92 | 8 | 02/13/92 | 15 |
| B015J6 | 001 MS | S | 92LE0133 | 01/20/92 | 01/28/92 | 8 | 02/13/92 | 15 |
| B015J6 | 001 MSD | S | 92LE0133 | 01/20/92 | 01/28/92 | 8 | 02/13/92 | 15 |
| B015P2 | 002 | S | 92LE0133 | 01/20/92 | 01/28/92 | 8 | 02/20/92 | 23 |
| B015Q0 | 003 | S | 92LE0133 | 01/20/92 | 01/28/92 | 8 | 02/20/92 | 23 |
| B01S79 | 004 | S | 92LE0133 | 01/21/92 | 01/28/92 | 7 | 02/13/92 | 15 |
| LAB QC: | | | | | | | | |
| SBLK | MB1 | S | 92LE0133 | N/A | 01/28/92 | | 02/12/92 | N/A |
| SBLK | MB1 BS | S | 92LE0133 | N/A | 01/28/92 | | 02/13/92 | N/A |

Extraction times exceeded for B015J6, B015P2 and B015Q0.
7/8/92

MAR 1992
RECEIVED
OSM DMO

MML
6/25/92

Calibration Summary 9613446.1332 0000162 pg 1 of 4

7B

# SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L101

Instrument ID: 4500V Calibration Date: 02/13/92 Time: 1629

Lab File ID: V021302 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ B015J6, & B015Z9 only. 7/9/92

| COMPOUND | | $\overline{RRF}$ | RRF50 | %D | |
|---|---|---|---|---|---|
| Phenol | * | 2.078 | 1.913 | 7.9 | * |
| bis(2-Chloroethyl)ether | | 1.720 | 1.484 | 13.7 | |
| 2-Chlorophenol | | 1.452 | 1.305 | 10.1 | |
| 1,3-Dichlorobenzene | | 1.481 | 1.376 | 7.1 | |
| 1,4-Dichlorobenzene | * | 1.629 | 1.442 | 11.5 | * |
| Benzyl alcohol | | 1.012 | 0.885 | 12.5 | |
| 1,2-Dichlorobenzene | | 1.543 | 1.355 | 12.2 | |
| 2-Methylphenol | | 1.399 | 1.252 | 10.5 | |
| bis(2-Chloroisopropyl)ether | | 2.552 | 1.859 | 27.2 | |
| 4-Methylphenol | | 1.478 | 1.299 | 12.1 | |
| N-Nitroso-Di-n-propylamine | # | 1.157 | 0.915 | 20.9 | # |
| Hexachloroethane | | 0.634 | 0.530 | 16.4 | |
| Nitrobenzene | | 0.394 | 0.320 | 18.8 | |
| Isophorone | | 0.801 | 0.685 | 14.5 | |
| 2-Nitrophenol | * | 0.181 | 0.155 | 14.4 | * |
| 2,4-Dimethylphenol | | 0.308 | 0.281 | 8.8 | |
| Benzoic acid | | 0.168 | 0.147 | 12.5 | |
| bis(2-Chloroethoxy)methane | | 0.511 | 0.426 | 16.6 | |
| 2,4-Dichlorophenol | * | 0.263 | 0.234 | 11.0 | * |
| 1,2,4-Trichlorobenzene | | 0.273 | 0.246 | 9.9 | |
| Naphthalene | | 1.020 | 0.941 | 7.7 | |
| 4-Chloroaniline | | 0.429 | 0.388 | 9.6 | |
| Hexachlorobutadiene | * | 0.117 | 0.114 | 2.6 | * |
| 4-Chloro-3-methylphenol | * | 0.291 | 0.244 | 16.2 | * |
| 2-Methylnaphthalene | | 0.687 | 0.596 | 13.2 | |
| Hexachlorocyclopentadiene | # | 0.198 | 0.224 | -13.1 | # |
| 2,4,6-Trichlorophenol | * | 0.300 | 0.262 | 12.7 | * |
| 2,4,5-Trichlorophenol | | 0.332 | 0.292 | 12.0 | |
| 2-Chloronaphthalene | | 1.132 | 0.985 | 13.0 | |
| 2-Nitroaniline | | 0.401 | 0.260 | 35.2 | |
| Dimethylphthalate | | 1.186 | 1.023 | 13.7 | |
| Acenaphthylene | | 1.859 | 1.597 | 14.1 | |
| 2,6-Dinitrotoluene | | 0.304 | 0.247 | 18.8 | |
| 3-Nitroaniline | | 0.328 | 0.246 | 25.0 | * = to 25% |
| Acenaphthene | * | 1.076 | 0.906 | 15.8 | * |
| 2,4-Dinitrophenol | # | 0.113 | 0.086 | 23.9 | # |
| 4-Nitrophenol | # | 0.092 | 0.070 | 23.9 | # |

BCR 2/24/92

FORM VII SV-1 5/88 Rev.

MMY 6/26/92

Calibration Summary 0000163 Pg 2 of 4

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L101

Instrument ID: 4500V Calibration Date: 02/13/92 Time: 1629

Lab File ID: V021302 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ B015J6 & B01579 [illegible] 7/29/92

| COMPOUND | | $\overline{RRF}$ | RRF50 | %D | |
|---|---|---|---|---|---|
| Dibenzofuran | | 1.500 | 1.311 | 12.6 | |
| 2,4-Dinitrotoluene | | 0.380 | 0.276 | 27.4 | |
| Diethylphthalate | | 1.263 | 1.020 | 19.2 | |
| 4-Chlorophenyl-phenylether | | 0.506 | 0.487 | 3.8 | |
| Fluorene | | 1.265 | 1.095 | 13.4 | |
| 4-Nitroaniline | | 0.211 | 0.199 | 5.7 | |
| 4,6-Dinitro-2-methylphenol | | 0.106 | 0.088 | 17.0 | |
| N-Nitrosodiphenylamine (1) | * | 0.567 | 0.508 | 10.4 | * |
| 4-Bromophenyl-phenylether | | 0.176 | 0.186 | -5.7 | |
| Hexachlorobenzene | | 0.193 | 0.200 | -3.6 | |
| Pentachlorophenol | * | 0.098 | 0.106 | -8.2 | * |
| Phenanthrene | | 1.080 | 0.911 | 15.6 | |
| Anthracene | | 1.117 | 0.953 | 14.7 | |
| Di-n-Butylphthalate | | 1.426 | 1.205 | 15.5 | |
| Fluoranthene | * | 0.930 | 0.802 | 13.8 | * |
| Pyrene | | 1.656 | 1.480 | 10.6 | |
| Butylbenzylphthalate | | 0.903 | 0.775 | 14.2 | |
| 3,3'-Dichlorobenzidine | | 0.349 | 0.334 | 4.3 | |
| Benzo(a)anthracene | | 1.207 | 1.029 | 14.7 | |
| Chrysene | | 1.098 | 0.965 | 12.1 | |
| bis(2-Ethylhexyl)phthalate | | 1.262 | 1.115 | 11.6 | |
| Di-n-Octyl phthalate | * | 2.735 | 2.226 | 18.6 | * |
| Benzo(b)fluoranthene | | 1.234 | 1.021 | 17.3 | |
| Benzo(k)fluoranthene | | 1.183 | 0.976 | 17.5 | |
| Benzo(a)pyrene | * | 1.076 | 0.829 | 23.0 | * |
| Indeno(1,2,3-cd)pyrene | | 1.013 | 0.765 | 24.5 | |
| Dibenzo(a,h)anthracene | | 0.820 | 0.604 | 26.3 | |
| Benzo(g,h,i)perylene | | 0.905 | 0.736 | 18.7 | |
| Nitrobenzene-d5 | | 0.381 | 0.317 | 16.8 | |
| 2-Fluorobiphenyl | | 1.171 | 1.066 | 9.0 | |
| p-Terphenyl-d14 | | 1.049 | 1.022 | 2.6 | |
| Phenol-d5 | | 1.861 | 1.654 | 11.1 | |
| 2-Fluorophenol | | 1.256 | 1.261 | -0.4 | |
| 2,4,6-Tribromophenol | | 0.109 | 0.101 | 7.3 | |

BLR 2/24/92

(1) Cannot be separated from Diphenylamine

FORM VII SV-2 5/88 Rev.

[illegible] 6/26/92

Calibration Summary 9613446.1334 0000172 Pg 3 of 4

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L101

Instrument ID: 4500V Calibration Date: 02/20/92 Time: 0741

Lab File ID: V022002 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ B015P2 & B015Q0 only 7/9/92

| COMPOUND | | RRF | RRF50 | %D | |
|---|---|---|---|---|---|
| Phenol | * | 2.078 | 2.071 | 0.3 | * |
| bis(2-Chloroethyl)ether | | 1.720 | 1.594 | 7.3 | |
| 2-Chlorophenol | | 1.452 | 1.454 | -0.1 | |
| 1,3-Dichlorobenzene | | 1.481 | 1.439 | 2.8 | |
| 1,4-Dichlorobenzene | * | 1.629 | 1.532 | 6.0 | * |
| Benzyl alcohol | | 1.012 | 0.776 | 23.3 | |
| 1,2-Dichlorobenzene | | 1.543 | 1.447 | 6.2 | |
| 2-Methylphenol | | 1.399 | 1.348 | 3.6 | |
| bis(2-Chloroisopropyl)ether | | 2.552 | 1.992 | 21.9 | |
| 4-Methylphenol | | 1.478 | 1.409 | 4.7 | |
| N-Nitroso-Di-n-propylamine | # | 1.157 | 0.988 | 14.6 | # |
| Hexachloroethane | | 0.634 | 0.555 | 12.5 | |
| Nitrobenzene | | 0.394 | 0.355 | 9.9 | |
| Isophorone | | 0.801 | 0.719 | 10.2 | |
| 2-Nitrophenol | * | 0.181 | 0.187 | -3.3 | * |
| 2,4-Dimethylphenol | | 0.308 | 0.318 | -3.2 | |
| Benzoic acid | | 0.168 | 0.120 | 28.6 | |
| bis(2-Chloroethoxy)methane | | 0.511 | 0.468 | 8.4 | |
| 2,4-Dichlorophenol | * | 0.263 | 0.256 | 2.7 | * |
| 1,2,4-Trichlorobenzene | | 0.273 | 0.256 | 6.2 | |
| Naphthalene | | 1.020 | 1.019 | 0.1 | |
| 4-Chloroaniline | | 0.429 | 0.436 | -1.6 | |
| Hexachlorobutadiene | * | 0.117 | 0.113 | 3.4 | * |
| 4-Chloro-3-methylphenol | * | 0.291 | 0.265 | 8.9 | * |
| 2-Methylnaphthalene | | 0.687 | 0.653 | 4.9 | |
| Hexachlorocyclopentadiene | # | 0.198 | 0.229 | -15.7 | # |
| 2,4,6-Trichlorophenol | * | 0.300 | 0.289 | 3.7 | * |
| 2,4,5-Trichlorophenol | | 0.332 | 0.327 | 1.5 | |
| 2-Chloronaphthalene | | 1.132 | 1.107 | 2.2 | |
| 2-Nitroaniline | | 0.401 | 0.307 | 23.4 | |
| Dimethylphthalate | | 1.186 | 1.136 | 4.2 | |
| Acenaphthylene | | 1.859 | 1.769 | 4.8 | |
| 2,6-Dinitrotoluene | | 0.304 | 0.293 | 3.6 | |
| 3-Nitroaniline | | 0.328 | 0.313 | 4.6 | |
| Acenaphthene | * | 1.076 | 0.977 | 9.2 | * |
| 2,4-Dinitrophenol | # | 0.113 | 0.105 | 7.1 | # |
| 4-Nitrophenol | # | 0.092 | 0.086 | 6.5 | # |

BKR 2/24/92

FORM VII SV-1 5/88 Rev.

MMF 6/26/92

Calibration Summary 0613446 1335 0000173 pg 4 of 4

7C

# SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L101

Instrument ID: 4500V Calibration Date: 02/20/92 Time: 0741

Lab File ID: V022002 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ B015P2 & B015Q0 only 7/9/92

| COMPOUND | | $\overline{RRF}$ | RRF50 | %D | |
|---|---|---|---|---|---|
| Dibenzofuran | | 1.500 | 1.437 | 4.2 | |
| 2,4-Dinitrotoluene | | 0.380 | 0.337 | 11.3 | |
| Diethylphthalate | | 1.263 | 1.119 | 11.4 | |
| 4-Chlorophenyl-phenylether | | 0.506 | 0.512 | -1.2 | |
| Fluorene | | 1.265 | 1.187 | 6.2 | |
| 4-Nitroaniline | | 0.211 | 0.263 | -24.6 | |
| 4,6-Dinitro-2-methylphenol | | 0.106 | 0.107 | -0.9 | |
| N-Nitrosodiphenylamine (1) | * | 0.567 | 0.586 | -3.4 | * |
| 4-Bromophenyl-phenylether | | 0.176 | 0.189 | -7.4 | |
| Hexachlorobenzene | | 0.193 | 0.199 | -3.1 | |
| Pentachlorophenol | * | 0.098 | 0.099 | -1.0 | * |
| Phenanthrene | | 1.080 | 1.035 | 4.2 | |
| Anthracene | | 1.117 | 1.050 | 6.0 | |
| Di-n-Butylphthalate | | 1.426 | 1.373 | 3.7 | |
| Fluoranthene | * | 0.930 | 0.888 | 4.5 | * |
| Pyrene | | 1.656 | 1.578 | 4.7 | |
| Butylbenzylphthalate | | 0.903 | 0.741 | 17.9 | |
| 3,3'-Dichlorobenzidine | | 0.349 | 0.398 | -14.0 | |
| Benzo(a)anthracene | | 1.207 | 1.139 | 5.6 | |
| Chrysene | | 1.098 | 1.038 | 5.5 | |
| bis(2-Ethylhexyl)phthalate | | 1.262 | 1.157 | 8.3 | |
| Di-n-Octyl phthalate | * | 2.735 | 2.100 | 23.2 | * |
| Benzo(b)fluoranthene | | 1.234 | 1.126 | 8.8 | |
| Benzo(k)fluoranthene | | 1.183 | 1.112 | 6.0 | |
| Benzo(a)pyrene | * | 1.076 | 0.954 | 11.3 | * |
| Indeno(1,2,3-cd)pyrene | | 1.013 | 0.900 | 11.2 | |
| Dibenzo(a,h)anthracene | | 0.820 | 0.747 | 8.9 | |
| Benzo(g,h,i)perylene | | 0.905 | 0.826 | 8.7 | |
| Nitrobenzene-d5 | | 0.381 | 0.354 | 7.1 | |
| 2-Fluorobiphenyl | | 1.171 | 1.164 | 0.6 | |
| p-Terphenyl-d14 | | 1.049 | 1.043 | 0.6 | |
| Phenol-d5 | | 1.861 | 1.824 | 2.0 | |
| 2-Fluorophenol | | 1.256 | 1.298 | -3.3 | |
| 2,4,6-Tribromophenol | | 0.109 | 0.100 | 8.3 | |

BKR 2/24/92

(1) Cannot be separated from Diphenylamine

FORM VII SV-2 5/88 Rev.

MMT 6/24/92

Blank ~~Blank~~ 0000201

Pg 1 of 3

1B
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0133-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V021211

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 0 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/12/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

Assoc. w/ B01556, B01579, B01582, B01600

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | |
|---|---|---|---|
| 108-95-2 | Phenol | 330 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 330 | U |
| 95-57-8 | 2-Chlorophenol | 330 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 330 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 330 | U |
| 100-51-6 | Benzyl alcohol | 330 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 330 | U |
| 95-48-7 | 2-Methylphenol | 330 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 330 | U |
| 106-44-5 | 4-Methylphenol | 330 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 330 | U |
| 67-72-1 | Hexachloroethane | 330 | U |
| 98-95-3 | Nitrobenzene | 330 | U |
| 78-59-1 | Isophorone | 330 | U |
| 88-75-5 | 2-Nitrophenol | 330 | U |
| 105-67-9 | 2,4-Dimethylphenol | 330 | U |
| 65-85-0 | Benzoic acid | 1700 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 330 | U |
| 120-83-2 | 2,4-Dichlorophenol | 330 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 330 | U |
| 91-20-3 | Naphthalene | 330 | U |
| 106-47-8 | 4-Chloroaniline | 330 | U |
| 87-68-3 | Hexachlorobutadiene | 330 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 330 | U |
| 91-57-6 | 2-Methylnaphthalene | 330 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 330 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 330 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 330 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 330 | U |
| 208-96-8 | Acenaphthylene | 330 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 330 | U |

Blank ~~Summary~~ 0000202 Pg 2 of 3

IC

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0133-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V021211

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 0 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/12/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U |
| 83-32-9 | Acenaphthene | 330 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U |
| 100-02-7 | 4-Nitrophenol | 1700 | U |
| 132-64-9 | Dibenzofuran | 330 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 330 | U |
| 84-66-2 | Diethylphthalate | 330 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 330 | U |
| 86-73-7 | Fluorene | 330 | U |
| 100-01-6 | 4-Nitroaniline | 1700 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 330 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 330 | U |
| 118-74-1 | Hexachlorobenzene | 330 | U |
| 87-86-5 | Pentachlorophenol | 1700 | U |
| 85-01-8 | Phenanthrene | 330 | U |
| 120-12-7 | Anthracene | 330 | U |
| 84-74-2 | Di-n-Butylphthalate | 2000 | X10=20,000 |
| 206-44-0 | Fluoranthene | 330 | U |
| 129-00-0 | Pyrene | 330 | U |
| 85-68-7 | Butylbenzylphthalate | 330 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 670 | U |
| 56-55-3 | Benzo(a)anthracene | 330 | U |
| 218-01-9 | Chrysene | 330 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 270 | J X10 = 2700 |
| 117-84-0 | Di-n-Octyl phthalate | 330 | U |
| 205-99-2 | Benzo(b)fluoranthene | 330 | U |
| 207-08-9 | Benzo(k)fluoranthene | 330 | U |
| 50-32-8 | Benzo(a)pyrene | 330 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 330 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | 330 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 330 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

7/8/92

Blank Summary 9613446 1338 0000203 Pg 3 of 3

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0133-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V021211

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 0 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/12/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

Number TICs found: 2

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | ALDOL CONDENSATE | 6.05 | 200 | AJ |
| 2. | ALDOL CONDENSATE | 7.02 | 2000 | AJ |

R
R

FORM 1 SV-TIC 12/88 Rev.

Retention Time 9613446.1339 0000029

Page 1 of 2

Quantitation Report File: V021304

Sample B01556

Data: V021304.TI
02/13/92 18:21:00
mple: 9201L101-001 WESTINGHOUSE
nds.: BNA/4500V 2 UL INJ. 30M RTX-5
Formula: V021301 Instrument: 4500V Weight: 0.006
Submitted by: 021392 Analyst: BKR Acct. No.: RFW

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

| No | Name | | |
|---|---|---|---|
| 1 | CI30 | 1,4-DICHLOROBENZENE-D4 | INTERNAL STANDARD #1 |
| 2 | CI40 | NAPHTHALENE-D8 | INTERNAL STANDARD #2 |
| 3 | CI50 | ACENAPHTHENE-D10 | INTERNAL STANDARD #3 |
| 4 | CI60 | PHENANTHRENE-D10 | INTERNAL STANDARD #4 |
| 5 | CI70 | CHRYSENE-D12 | INTERNAL STANDARD #5 |
| 6 | CI75 | PERYLENE-D12 | INTERNAL STANDARD #6 |
| 7 | CS50 | 2-FLUOROPHENOL | SURROGATE STANDARD #1 |
| 8 | CS45 | PHENOL-D5 | SURROGATE STANDARD #2 |
| 9 | | 2-CHLOROPHENOL-D4 | SURROGATE STANDARD #7 |
| 10 | | 1,2-DICHLOROBENZENE-D4 | SURROGATE STANDARD #8 |
| 11 | CS20 | NITROBENZENE-D5 | SURROGATE STANDARD #3 |
| 12 | CS25 | 2-FLUOROBIPHENYL | SURROGATE STANDARD #4 |
| 13 | CS55 | 2,4,6-TRIBROMOPHENOL | SURROGATE STANDARD #5 |
| 14 | CS30 | P-TERPHENYL-D14 | SURROGATE STANDARD #6 |
| 15 | | N-NITROSODIMETHYLAMINE | |
| 16 | | PYRIDINE | |
| 17 | C315 | PHENOL | |
| 8 | | ANILINE | |
| 19 | C325 | BIS(2-CHLOROETHYL)ETHER | |
| 20 | C330 | 2-CHLOROPHENOL | |
| 21 | C335 | 1,3-DICHLOROBENZENE | |
| 22 | C340 | 1,4-DICHLOROBENZENE | |
| 23 | C345 | BENZYL ALCOHOL | |
| 24 | C350 | 1,2-DICHLOROBENZENE | |
| 25 | C355 | 2-METHYLPHENOL | |
| 26 | C360 | BIS(2-CHLOROISOPROPYL)ETHER | |
| 27 | C365 | 4-METHYLPHENOL | |
| 28 | C370 | N-NITROSO-DI-N-PROPYLAMINE | |
| 29 | C375 | HEXACHLOROETHANE | |
| 30 | C410 | NITROBENZENE | |
| 31 | C415 | ISOPHORONE | |
| 32 | C420 | 2-NITROPHENOL | |
| 33 | C425 | 2,4-DIMETHYLPHENOL | |
| 34 | C430 | BENZOIC ACID | |
| 35 | C435 | BIS(2-CHLOROETHOXY)METHANE | |
| 36 | C440 | 2,4-DICHLOROPHENOL | |
| 37 | C445 | 1,2,4-TRICHLOROBENZENE | |
| 38 | C450 | NAPHTHALENE | |
| 39 | C455 | 4-CHLOROANILINE | |
| 40 | C460 | HEXACHLOROBUTADIENE | |
| 41 | C465 | 4-CHLORO-3-METHYLPHENOL | |
| 42 | C470 | 2-METHYLNAPHTHALENE | |
| 43 | C510 | HEXACHLOROCYCLOPENTADIENE | |
| 44 | C515 | 2,4,6-TRICHLOROPHENOL | |
| 45 | C520 | 2,4,5-TRICHLOROPHENOL | |
| 46 | C525 | 2-CHLORONAPHTHALENE | |
| 47 | C530 | 2-NITROANILINE | |

7/10/92

Pg 2 of 2

0000030

| No | Name | |
|---|---|---|
| 48 | C535 | DIMETHYLPHTHALATE |
| 49 | C543 | 2,6-DINITROTOLUENE |
| 0 | C540 | ACENAPHTHYLENE |

Sample B0156

| No | m/z | Scan | Time | Ref | RRT | Meth | Area(Hght) | Amount | | %Tot |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 152 | 533 | 8:53 | 1 | 1.000 | A BB | 32898. | 40.000 | NG | 5.61 |
| 2 | 136 | 740 | 12:20 | 2 | 1.000 | A BB | 125001. | 40.000 | NG | 5.61 |
| 3 | 164 | 1038 | 17:18 | 3 | 1.000 | A BB | 64230. | 40.000 | NG | 5.61 |
| 4 | 188 | 1287 | 21:27 | 4 | 1.000 | A BV | 79526. | 40.000 | NG | 5.61 |
| 5 | 240 | 1740 | 29:00 | 5 | 1.000 | A BB | 43919. | 40.000 | NG | 5.61 |
| 6 | 264 | 2019 | 33:39 | 6 | 1.000 | A BV | 41652. | 40.000 | NG | 5.61 |
| 7 | 112 | 345 | 5:45 | 1 | 0.647 | A BB | 69523. | 67.049 | NG | 9.40 |
| 8 | 99 | 482 | 8:02 | 1 | 0.904 | A BB | 94025. | 69.121 | NG | 9.69 |
| 9 | NOT FOUND | | | | | | | | | |
| 10 | 152 | 533 | 8:53 | 1 | 1.000 | A BB | 32898. | 48.613 | NG | 6.81 |
| 11 | 82 | 625 | 10:25 | 2 | 0.845 | A BB | 33320. | 33.653 | NG | 4.72 |
| 12 | 172 | 925 | 15:25 | 3 | 0.891 | A BB | 57639. | 33.677 | NG | 4.72 |
| 13 | 330 | 1172 | 19:32 | 3 | 1.129 | A BB | 10378. | 64.158 | NG | 8.99 |
| 14 | 244 | 1561 | 26:01 | 5 | 0.897 | A BB | 38651. | 34.450 | NG | 4.83 |
| 15 | NOT FOUND | | | | | | | | | |
| 16 | NOT FOUND | | | | | | | | | |
| 17 | 94 | 483 | 8:03 | 1 | 0.906 | A BB | 420. | 0.267 | NG | 0.04 |
| 18 | NOT FOUND | | | | | | | | | |
| 19 | NOT FOUND | | | | | | | | | |
| 20 | 128 | 504 | 8:24 | 1 | 0.946 | A BB | 270. | 0.252 | NG | 0.04 |
| 21 | NOT FOUND | | | | | | | | | |
| 22 | NOT FOUND | | | | | | | | | |
| 23 | NOT FOUND | | | | | | | | | |
| 4 | NOT FOUND | | | | | | | | | |
| 25 | NOT FOUND | | | | | | | | | |
| 26 | NOT FOUND | | | | | | | | | |
| 27 | NOT FOUND | | | | | | | | | |
| 28 | NOT FOUND | | | | | | | | | |
| 29 | NOT FOUND | | | | | | | | | |
| 30 | NOT FOUND | | | | | | | | | |
| 31 | NOT FOUND | | | | | | | | | |
| 32 | NOT FOUND | | | | | | | | | |
| 33 | NOT FOUND | | | | | | | | | |
| 34 | 122 | 695 | 11:35 | 2 | 0.939 | A BB | 946. | 2.063 | NG | 0.29 |
| 35 | NOT FOUND | | | | | | | | | |
| 36 | NOT FOUND | | | | | | | | | |
| 37 | NOT FOUND | | | | | | | | | |
| 38 | NOT FOUND | | | | | | | | | |
| 39 | NOT FOUND | | | | | | | | | |
| 40 | NOT FOUND | | | | | | | | | |
| 41 | NOT FOUND | | | | | | | | | |
| 42 | NOT FOUND | | | | | | | | | |
| 43 | NOT FOUND | | | | | | | | | |
| 44 | NOT FOUND | | | | | | | | | |
| 45 | NOT FOUND | | | | | | | | | |
| 46 | NOT FOUND | | | | | | | | | |
| 47 | NOT FOUND | | | | | | | | | |
| 48 | NOT FOUND | | | | | | | | | |
| 49 | NOT FOUND | | | | | | | | | |
| 50 | NOT FOUND | | | | | | | | | |

Benzoic Acid RT
COV RT is 11:45
Reject Data.

9/10/92

9613446.1341



# PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MML | DATE: 6/29/92 |
| LABORATORY: Weston | CASE: 92011101 | SDG: 92011101 |
| SAMPLES/MATRIX: B015J6, ~~B015J6-MS, B015J6-MSD,~~ 7/9/92 | | |
| B015P2, B015Q0 and B015791 Soil | | |
| | | |
| | | |
| | | |

## 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 | ✓ | | ✓ | MML 6/29/92 |
| 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

no qualification necessary

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). only 2 marginally outside criterion. No qualification necessary.

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).

Endrin %D was exceeded in INDA 21-67 analyzed on 2/15/92 and 17.25: This stand was associated w/ method blanks and therefore qualification was not necessary.

MMH
6/29/92

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):

Endrin %D > ~~20%~~ 15% for INDA associated w/ MB's. No qualification necessary

Surrogate recovery at for Matrix Spike. No qualification necessary

MSD recovery for Endrin out %RPD for Heptachlor, Aldrin and Dieldrin out no qualification necessary as sample Surrogate recoveries are within acceptable criterion. No field duplicate samples available for comparison.

CRQL levels not properly adjusted for GPC cleanup. All CRQL's x 2.

Signature for review 3/6/92

9613446.1550

Holding Time Summary

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | holding times |
|---|---|---|---|---|---|---|---|---|
| B015J6 | 001 | S | 92LE0114 | 01/20/92 | 01/24/92 | 4 | 02/15/92 | 21 |
| B015J6 | 001 MS | S | 92LE0114 | 01/20/92 | 01/24/92 | 4 | 02/15/92 | 21 |
| B015J6 | 001 MSD | S | 92LE0114 | 01/20/92 | 01/24/92 | 4 | 02/15/92 | 21 |
| B015P2 | 002 | S | 92LE0114 | 01/20/92 | 01/24/92 | 4 | 02/15/92 | 21 |
| B015Q0 | 003 | S | 92LE0114 | 01/20/92 | 01/24/92 | 4 | 02/15/92 | 21 |
| B01S79 | 004 | S | 92LE0114 | 01/21/92 | 01/24/92 | 3 | 02/15/92 | 21 |
| LAB QC: | | | | | | | | |
| PBLK | MB1 | S | 92LE0114 | N/A | 01/24/92 | | 02/15/92 | N/A |
| PBLK | MB1 BS | S | 92LE0114 | N/A | 01/24/92 | | 02/15/92 | N/A |

Holding times were met.
7/8/92

MAR 1992
RECEIVED
OSM DMO

MMh
6/29/92

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMK | DATE: 7/1/92 |
| LABORATORY: Weston | CASE: 92012101 | SDG: 92012101 |
| SAMPLES/MATRIX: B015J6, B015P2, B015Q0, B015T9/Soil | | |
| | | |
| | | |
| | | |
| | | |

## 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

No qualification necessary as Al, Ca, Fe and Mg concentrations in the samples are < ICS concentrations

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.

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.

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?~~ outside acceptable criteria Yes ~~No~~ N/A MMR 7/1/92

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? ±20% Yes No N/A
only RPD 7000L in Sample

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

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

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

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

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

## 17. ANALYTE QUANTITATION AND DETECTION LIMITS

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

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

## 18. OVERALL ASSESSMENT AND SUMMARY

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

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

9613446.1356

Holding Time Summary

Pg 1 of 4

4 MAR 1992 RECEIVED OSM DMO

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | Hold time |
|---|---|---|---|---|---|---|---|---|
| B015J6 | | | | | | | | |
| SILVER, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | 29 | 02/25/92 | 36 |
| SILVER, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| SILVER, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ALUMINUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ALUMINUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ALUMINUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ARSENIC, TOTAL | 001 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | 28 |
| ARSENIC, TOTAL | 001 REP | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | |
| ARSENIC, TOTAL | 001 MS | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | |
| BARIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/26/92 | 37 |
| BARIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/26/92 | |
| BARIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/26/92 | |
| BERYLLIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| BERYLLIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| BERYLLIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| BISMUTH, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| BISMUTH, TOTAL REP | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| BISMUTH, TOTAL SPIKE | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CALCIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CALCIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CALCIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CADMIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CADMIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CADMIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COBALT, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COBALT, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COBALT, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CHROMIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CHROMIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CHROMIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COPPER, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COPPER, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COPPER, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| IRON, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| IRON, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| IRON, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MERCURY, TOTAL | 001 | S | 92C0039 | 01/20/92 | 02/06/92 | 17 | 02/07/92 | 18 |

MML 7/1/92

Holding Time Summary pg 2 of 4

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext times | ANALYSIS | Hold times |
|---|---|---|---|---|---|---|---|---|
| MERCURY, TOTAL | 001 REP | S | 92C0039 | 01/20/92 | 02/06/92 | 18 | 02/07/92 | 18 |
| MERCURY, TOTAL | 001 MS | S | 92C0039 | 01/20/92 | 02/06/92 | ↓ | 02/07/92 | ↓ |
| POTASSIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | 24 | 02/25/92 | 36 |
| POTASSIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| POTASSIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MAGNESIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MAGNESIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MAGNESIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MANGANESE, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MANGANESE, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MANGANESE, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| SODIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| SODIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| SODIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| NICKEL, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| NICKEL, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| NICKEL, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | ↓ |
| LEAD, TOTAL | 001 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | 28 |
| LEAD, TOTAL | 001 REP | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | |
| LEAD, TOTAL | 001 MS | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | ↓ |
| ANTIMONY, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| ANTIMONY, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ANTIMONY, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | ↓ |
| SELENIUM, TOTAL | 001 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/14/92 | 26 |
| SELENIUM, TOTAL | 001 REP | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/14/92 | |
| SELENIUM, TOTAL | 001 MS | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/14/92 | ↓ |
| THALLIUM, TOTAL | 001 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/18/92 | 30 |
| THALLIUM, TOTAL | 001 REP | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/18/92 | |
| THALLIUM, TOTAL | 001 MS | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/18/92 | ↓ |
| VANADIUM, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| VANADIUM, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| VANADIUM, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ZINC, TOTAL | 001 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ZINC, TOTAL | 001 REP | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ZINC, TOTAL | 001 MS | S | 92L0481 | 01/20/92 | 02/13/92 | ↓ | 02/25/92 | ↓ |
| B015P2 | | | | | | | | |
| SILVER, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | 24 | 02/25/92 | 36 |
| ALUMINUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | ↓ | 02/25/92 | ↓ |

MMF 7/1/92

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| ARSENIC, TOTAL | 002 | S | 92L0480 | 01/20/92 | 02/13/92 | 25 | 02/17/92 | 28 |
| BARIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/26/92 | 17 |
| BERYLLIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| BISMUTH, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CALCIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CADMIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COBALT, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CHROMIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COPPER, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| IRON, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MERCURY, TOTAL | 002 | S | 92C0039 | 01/20/92 | 02/06/92 | 17 | 02/07/92 | 18 |
| POTASSIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | 25 | 02/25/92 | 36 |
| MAGNESIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MANGANESE, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| SODIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| NICKEL, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| LEAD, TOTAL | 002 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | 18 |
| ANTIMONY, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| SELENIUM, TOTAL | 002 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/14/92 | 25 |
| THALLIUM, TOTAL | 002 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/18/92 | 19 |
| VANADIUM, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| ZINC, TOTAL | 002 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| B015Q0 | | | | | | | | |
| SILVER, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | 25 | 02/25/92 | 36 |
| ALUMINUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| ARSENIC, TOTAL | 003 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | 15 |
| BARIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/26/92 | 37 |
| BERYLLIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| BISMUTH, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CALCIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CADMIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COBALT, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| CHROMIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| COPPER, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| IRON, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |
| MERCURY, TOTAL | 003 | S | 92C0039 | 01/20/92 | 02/06/92 | 17 | 02/07/92 | 18 |
| POTASSIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | 25 | 02/25/92 | 36 |
| MAGNESIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | |

mmf 7/1/92

Holding Time Summary pg 4 of 4

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| MANGANESE, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | 24 | 02/25/92 | 36 |
| SODIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | ↓ |
| NICKEL, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | ↓ |
| LEAD, TOTAL | 003 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/17/92 | 28 |
| ANTIMONY, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| SELENIUM, TOTAL | 003 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/14/92 | 25 |
| THALLIUM, TOTAL | 003 | S | 92L0480 | 01/20/92 | 02/13/92 | | 02/18/92 | 29 |
| VANADIUM, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | 36 |
| ZINC, TOTAL | 003 | S | 92L0481 | 01/20/92 | 02/13/92 | | 02/25/92 | ↓ |
| B01S79 | | | | | | | | |
| SILVER, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | Ext time 23 | 02/25/92 | 35 |
| ALUMINUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| ARSENIC, TOTAL | 004 | S | 92L0480 | 01/21/92 | 02/13/92 | | 02/17/92 | 27 |
| BARIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/26/92 | 36 |
| BERYLLIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | 35 |
| BISMUTH, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| CALCIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| CADMIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| COBALT, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| CHROMIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| COPPER, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| IRON, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| MERCURY, TOTAL | 004 | S | 92C0039 | 01/21/92 | 02/06/92 | 16 | 02/07/92 | 17 |
| POTASSIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | 23 | 02/25/92 | 35 |
| MAGNESIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| MANGANESE, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| SODIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| NICKEL, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |
| LEAD, TOTAL | 004 | S | 92L0480 | 01/21/92 | 02/13/92 | | 02/17/92 | 27 |
| ANTIMONY, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | 35 |
| SELENIUM, TOTAL | 004 | S | 92L0480 | 01/21/92 | 02/13/92 | | 02/14/92 | 24 |
| THALLIUM, TOTAL | 004 | S | 92L0480 | 01/21/92 | 02/13/92 | | 02/18/92 | 28 |
| VANADIUM, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | 35 |
| ZINC, TOTAL | 004 | S | 92L0481 | 01/21/92 | 02/13/92 | | 02/25/92 | ↓ |

LAB QC:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 92L0481 | N/A | 02/13/92 | N/A | 02/25/92 | N/A |

MMJ 7/1/92

9613446.1360 0000034

Blank Summary

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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.: CLP101

Preparation Blank Matrix (soil/water): SOIL

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

Not assoc. w/ samples in this SDG. No qualification is necessary. 7/10/92

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | 83.0 | U | 83.0 | U | 83.0 | U | | | P |
| Antimony | | | 23.0 | U | 23.0 | U | 23.0 | U | | | P |
| Arsenic | | | | | | | | | | | NR |
| Barium | | | 38.0 | U | 38.0 | U | 38.0 | U | | | P |
| Beryllium | | | 1.0 | U | 1.0 | U | 1.0 | U | | | P |
| Cadmium | | | 3.0 | U | 3.0 | U | 3.0 | U | | | P |
| Calcium | | | 88.0 | U | 88.0 | U | 88.0 | U | | | P |
| Chromium | | | 6.0 | U | 6.0 | U | 6.0 | U | | | P |
| Cobalt | | | 5.0 | U | 5.0 | U | 5.0 | U | | | P |
| Copper | | | 6.0 | U | 6.0 | U | 6.0 | U | | | P |
| Iron | | | 39.0 | U | 39.0 | U | 39.0 | U | | | P |
| Lead | | | 2.0 | U | | | | | | | F |
| Magnesium | | | 78.0 | U | 78.0 | U | 78.0 | U | | | P |
| Manganese | | | 2.0 | U | 2.0 | U | 2.0 | U | | | P |
| Mercury | | | .1 | U | .1 | U | .1 | U | .050 | U | CV |
| Nickel | | | 18.0 | U | 18.0 | U | 18.0 | U | | | P |
| Potassium | | | 734.0 | U | 734.0 | U | 734.0 | U | | | P |
| Selenium | | | | | | | | | | | NR |
| Silver | | | 4.0 | U | 4.0 | U | 4.0 | U | | | P |
| Sodium | | | 638.0 | U | 638.0 | U | 638.0 | U | | | P |
| Thallium | | | 2.0 | U | | | | | | | F |
| Vanadium | | | 5.0 | U | 5.2 | B | 10.5 | B | | | P |
| Zinc | | | 4.0 | U | 4.0 | U | 4.0 | U | | | P |
| Cyanide | | | | | | | | | | | NR |

5 x 10.2 = 51.0

FORM III - IN 03/90

Convert to soil conc

$\frac{.051 \times 200}{1 \times .96}$ = 10.6 mg/kg

All conc > 10.6 mg/kg
no qual to ✓ necessary

MMR
7/2/92

9613446.1361 Accuracy Summary 0000039 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015J6S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP101

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 97.1

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 | 70.6000 | | 4.7357 | U | 103.00 | 68.5 | N | P |
| Arsenic | 75-125 | 8.0000 | | 1.6000 | B | 8.20 | 78.0 | | F |
| Barium | 75-125 | 422.1001 | | 66.0000 | | 411.80 | 86.5 | | P |
| Beryllium | 75-125 | 8.3000 | | .3100 | B | 10.30 | 77.6 | | P |
| Cadmium | 75-125 | 8.3000 | | .6177 | U | 10.30 | 80.6 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 75-125 | 39.5000 | | 8.2000 | | 41.20 | 76.1 | | P |
| Cobalt | 75-125 | 90.8000 | | 7.3000 | B | 103.00 | 81.1 | | P |
| Copper | 75-125 | 50.7000 | | 10.3000 | | 51.50 | 78.5 | | P |
| Iron | | | | | | | | | NR |
| Lead | 75-125 | 5.9000 | | 2.2000 | | 4.10 | 90.2 | | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 75-125 | 335.6001 | | 266.3000 | | 103.00 | 67.3 | N | P |
| Mercury | 75-125 | .6160 | | .1420 | | .51 | 92.9 | | CV |
| Nickel | 75-125 | 89.5000 | | 8.6000 | | 103.00 | 78.6 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 1.6000 | | .4118 | U | 2.10 | 76.2 | | F |
| Silver | 75-125 | 9.3000 | | 1.1000 | B | 10.30 | 79.6 | | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 8.8000 | | .4118 | U | 10.30 | 85.2 | | F |
| Vanadium | 75-125 | 107.5000 | | 22.8000 | | 103.00 | 82.3 | | P |
| Zinc | 75-125 | 107.8000 | | 25.7000 | | 103.00 | 79.7 | | P |
| Cyanide | 75-125 | 8.1050 | | 2.8600 | | 5.15 | 101.8 | | C |

Comments:

J/UJ qual mn and sb

FORM V (Part 1) - IN 03/90

SR. >50% of SA MSA for Lead required for B015P2

MMR 7/1/92

9613446.1362 0000045 Pg 1 of 1

Precision Summary

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B015J6L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP101

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 | 22397.80 | | 19181.50 | | 14.4 | E | P |
| Antimony | 23.00 | U | 115.00 | U | | | P |
| Arsenic | | | | | | | NR |
| Barium | 320.70 | | 350.00 | B | 9.1 | | P |
| Beryllium | 1.50 | B | 5.00 | U | 100.0 | | P |
| Cadmium | 3.00 | U | 15.00 | U | | | P |
| Calcium | 28987.00 | | 25236.50 | | 12.9 | E | P |
| Chromium | 39.60 | | 43.50 | B | 9.8 | | P |
| Cobalt | 35.30 | B | 35.00 | B | .8 | | P |
| Copper | 50.10 | | 42.50 | B | 15.2 | | P |
| Iron | 62383.50 | | 54583.01 | | 12.5 | E | P |
| Lead | | | | | | | NR |
| Magnesium | 16562.70 | | 14247.00 | B | 14.0 | E | P |
| Manganese | 1293.30 | | 1128.00 | | 12.8 | E | P |
| Mercury | | | | | | | NR |
| Nickel | 41.80 | | 90.00 | U | 96.4 | | P |
| Potassium | 4484.50 | B | 4295.50 | B | 4.2 | | P |
| Selenium | | | | | | | NR |
| Silver | 5.30 | B | 20.00 | U | 100.0 | | P |
| Sodium | 14902.00 | | 12838.00 | B | 13.9 | E | P |
| Thallium | | | | | | | NR |
| Vanadium | 110.60 | | 86.00 | B | 22.2 | | P |
| Zinc | 124.90 | | 101.00 | | 19.1 | | P |

83x10

400 limit. OK

63x50

6x50

46x50

87x50

2x50

110x50 = 5,500

no qual

no qual

no qual

no qual

no qual

±10%

FORM IX - IN

03/90

50x IDL

no evidence of negative interference

J Qualify Al, Ca, Fe, Mg, Mn, and Na

MMH 7/1/92

GFAA Analytical Run Log Summary 0000064 Pg 1 of 2

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.: CLP101

Instrument ID Number: AA3 Method: F

Start Date: 2/17/92 End Date: 2/17/92

| 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 | 1919 | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S3 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S15 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S30 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| S60 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| ICV1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| ICB1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CRA | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCB1 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| PBS180 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| PBS180A | 1.00 | | 99.5 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| LCSS180 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| LCSS180A | 1.00 | | 92.5 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| LCSS280 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| LCSS280A | 1.00 | | 87.0 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B015J6 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B015J6A | 1.00 | | 90.0 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B015J6D | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B015J6DA | 1.00 | | 93.5 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV2 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCB2 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B015J6S | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| ZZZZZZ | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| B015P2 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| B015P2A | 1.00 | | 56.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| B015Q0 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B015Q0A | 1.00 | | 103.5 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B01S79 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| B01S79A | 1.00 | | 108.0 | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCV3 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |
| CCB3 | 1.00 | | | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - |

FORM XIV - IN 03/90

MMC 7/1/92

9613446.1364 Summary 0000066

GFAA Analytical Spike

Pg 2 of 2

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.: CLP101

Instrument ID Number: AA1 Method: F

Start Date: 2/14/92 End Date: 2/14/92

| 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 | 1707 | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S5 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S10 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S30 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| S60 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| ICV1 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| ICB1 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CRA | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCV1 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB1 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| PBS180 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| PBS180A | 1.00 | | 95.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| CSS180 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| LCSS180A | 1.00 | | 96.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| LCSS280 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| LCSS280A | 1.00 | | 96.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15J6 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15J6A | 1.00 | | 67.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15J6D | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15J6DA | 1.00 | | 70.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCV2 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB2 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15J6S | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| ZZZZZZ | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BO15P2 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15P2A | 1.00 | | 68.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15Q0 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO15Q0A | 1.00 | | 73.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO1S79 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| BO1S79A | 1.00 | | 60.0 | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCV3 | 1.00 | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| CCB3 | 1.00 | 1943 | | | | | | | | | | | | | | | | | | | X | | | | | | |

FORM XIV - IN 03/90

Selenium J/UJ qualify

MMF 7/1/92

# WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMZ | DATE: 6/28/92 |
| LABORATORY: Weston | CASE: 92012101 | SDG: 92012101 |
| SAMPLES/MATRIX: B015J6, B015P2, B015Q0 and B01579/ | | |
| Soil | | |
| | | |
| | | |
| | | |

## 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):

CN midrange standard distilled

TOC MS/~~MSD~~ recoveries out for TOC

unable to fully validate the quantitation of TOC concentrations as the instrument reading to ug conc detected conversion factor is not supplied by the lab.

9613446.1370

Pg 1 of 2

Holding Time Summary

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | Hold times | |
|---|---|---|---|---|---|---|---|---|
| B015J6 | | | | | | | | |
| % SOLIDS | 001 | S | 92L%S016 | 01/20/92 | 01/24/92 | 01/25/92 | 5 | |
| NITRATE BY IC | 001 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| TOTAL CYANIDE | 001 | S | 92LC026 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| TOTAL CYANIDE | 001 REP | S | 92LC026 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| TOTAL CYANIDE | 001 MS | S | 92LC026 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| TOTAL CYANIDE | 001 MSD | S | 92LC026 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| PHOSPHATE BY IC | 001 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| SULFATE BY IC | 001 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| NITRATE NITRITE | 001 | S | 92LNC010 | 01/20/92 | 01/24/92 | 01/26/92 | 6 | |
| TOTAL ORGANIC CARBON | 001 | S | 92LTZ007 | 01/20/92 | 02/04/92 | 02/05/92 | 16 | |
| SUB-OUT TEST FOR SUB (Radio-chem) | 001 | S | | 01/20/92 | | | | |
| B015P2 | | | | | | | | |
| % SOLIDS | 002 | S | 92L%S016 | 01/20/92 | 01/24/92 | 01/25/92 | 5 | |
| NITRATE BY IC | 002 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| NITRATE BY IC | 002 REP | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| NITRATE BY IC | 002 MS | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| NITRATE BY IC | 002 MSD | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| TOTAL CYANIDE | 002 | S | 92LC026 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| PHOSPHATE BY IC | 002 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| PHOSPHATE BY IC | 002 REP | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| PHOSPHATE BY IC | 002 MS | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| PHOSPHATE BY IC | 002 MSD | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| SULFATE BY IC | 002 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| SULFATE BY IC | 002 REP | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| SULFATE BY IC | 002 MS | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| SULFATE BY IC | 002 MSD | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| NITRATE NITRITE | 002 | S | 92LNC010 | 01/20/92 | 01/24/92 | 01/26/92 | 6 | |
| NITRATE NITRITE | 002 REP | S | 92LNC010 | 01/20/92 | 01/24/92 | 01/26/92 | 6 | |
| NITRATE NITRITE | 002 MS | S | 92LNC010 | 01/20/92 | 01/24/92 | 01/26/92 | 6 | |
| NITRATE NITRITE | 002 MSD | S | 92LNC010 | 01/20/92 | 01/24/92 | 01/26/92 | 6 | |
| TOTAL ORGANIC CARBON | 002 | S | 92LTZ007 | 01/20/92 | 02/04/92 | 02/05/92 | 16 | |
| TOTAL ORGANIC CARBON | 002 REP | S | 92LTZ007 | 01/20/92 | 02/04/92 | 02/05/92 | 16 | |
| TOTAL ORGANIC CARBON | 002 MS | S | 92LTZ007 | 01/20/92 | 02/04/92 | 02/05/92 | 16 | |
| SUB-OUT TEST FOR SUB | 002 | S | | 01/20/92 | | | | |
| B015Q0 | | | | | | | | |
| % SOLIDS | 003 | S | 92L%S016 | 01/20/92 | 01/24/92 | 01/25/92 | 5 | |

MMX 1/28/92

9613446.1371

Pg 2 of 2

# Holding Time Summary

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

DATE RECEIVED: 01/23/92 RFW LOT # :9201L101

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | hold time (days) | ok |
|---|---|---|---|---|---|---|---|---|
| NITRATE BY IC | 003 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| TOTAL CYANIDE | 003 | S | 92LC026 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| PHOSPHATE BY IC | 003 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | ✓ |
| SULFATE BY IC | 003 | S | 92LICA14 | 01/20/92 | 01/31/92 | 01/31/92 | 11 | |
| NITRATE NITRITE | 003 | S | 92LNC010 | 01/20/92 | 01/24/92 | 01/26/92 | 6 | |
| TOTAL ORGANIC CARBON | 003 | S | 92LTZ007 | 01/20/92 | 02/04/92 | 02/05/92 | 16 | |
| SUB-OUT TEST FOR SUB | 003 | S | | 01/20/92 | | | | |
| B01S79 | | | | | | | | |
| % SOLIDS | 004 | S | 92L%S016 | 01/21/92 | 01/24/92 | 01/25/92 | 4 | |
| NITRATE BY IC | 004 | S | 92LICA14 | 01/21/92 | 01/31/92 | 01/31/92 | 10 | ✓ |
| TOTAL CYANIDE | 004 | S | 92LC026 | 01/21/92 | 01/31/92 | 01/31/92 | 10 | |
| PHOSPHATE BY IC | 004 | S | 92LICA14 | 01/21/92 | 01/31/92 | 01/31/92 | 10 | ✓ |
| SULFATE BY IC | 004 | S | 92LICA14 | 01/21/92 | 01/31/92 | 01/31/92 | 10 | |
| NITRATE NITRITE | 004 | S | 92LNC010 | 01/21/92 | 01/24/92 | 01/26/92 | 5 | |
| TOTAL ORGANIC CARBON | 004 | S | 92LTZ007 | 01/21/92 | 02/04/92 | 02/05/92 | 16 | |
| SUB-OUT TEST FOR SUB | C04 | S | | 01/21/92 | | | | |

LAB QC:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FLUORIDE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | N/A |
| FLUORIDE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| NITRITE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| NITRITE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| NITRATE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| NITRATE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| PHOSPHATE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| PHOSPHATE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| SULFATE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| SULFATE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | |
| TOTAL CYANIDE | LC1 L | S | 92LC026 | N/A | 01/31/92 | 01/31/92 | |
| TOTAL CYANIDE | LC2 L | S | 92LC026 | N/A | 01/31/92 | 01/31/92 | |
| TOTAL CYANIDE | MB1 | S | 92LC026 | N/A | 01/31/92 | 01/31/92 | |
| NITRATE NITRITE | MB1 | S | 92LNC010 | N/A | 01/24/92 | 01/26/92 | |
| NITRATE NITRITE | MB1 BS | S | 92LNC010 | N/A | 01/24/92 | 01/26/92 | |
| NITRATE NITRITE | MB1 BSD | S | 92LNC010 | N/A | 01/24/92 | 01/26/92 | |
| NITRATE NITRITE | MB2 | S | 92LNC010 | N/A | 01/24/92 | 01/26/92 | |
| NITRATE NITRITE | MB2 BS | S | 92LNC010 | N/A | 01/24/92 | 01/26/92 | |
| TOTAL ORGANIC CARBON | MB1 | W | 92LTZ007 | N/A | 02/04/92 | 02/05/92 | |

9613446.1372

Accuracy Summary

Pg 1 of 1

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 02/11/92

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9201L101

WORK ORDER: 6168-02-01-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -001 | B015J6 | Cyanide, Total | 8.1 | 2.9 | 5.1 | 102 |
| | | Cyanide, Total MSD | 8.0 | 2.9 | 5.1 | 99.6 |
| -002 | B015P2 | Nitrate by IC | 141 | 81.4 | 51.9 | 115 |
| | | Nitrate by IC MSD | 142 | 81.4 | 51.9 | 117 |
| | | Phosphate by IC | 51.1 | 1.4 | 51.9 | 95.6 |
| | | Phosphate by IC MSD | 50.2 | 1.4 | 51.9 | 94.0 |
| | | Sulfate by IC | 71.1 | 18.6 | 51.9 | 101 |
| | | Sulfate by IC MSD | 70.6 | 18.6 | 51.9 | 100 |
| | | Nitrate Nitrite | 71.9 | 19.8 | 51.9 | 100 |
| | | Nitrate Nitrite MSD | 72.8 | 19.8 | 51.9 | 102 |
| | | Total Organic Carbon | 1610 | 1080 | 933 | 86.1 |
| BLANK10 | 92LICA14-MB1 | Nitrate by IC | 49.4 | 1.2 u | 50.0 | 98.7 |
| | | Phosphate by IC | 51.1 | 1.2 u | 50.0 | 102 |
| | | Sulfate by IC | 51.2 | 1.2 u | 50.0 | 102 |
| BLANK10 | 92LNC010-MB1 | Nitrate Nitrite | 2.0 | 0.50u | 2.0 | 99.1 |
| | | Nitrate Nitrite MSD | 2.0 | 0.50u | 2.0 | 100 |
| BLANK20 | 92LNC010-MB2 | Nitrate Nitrite | 2.0 | 0.50u | 2.0 | 100 |
| BLANK10 | 92LTZ007-MB1 | Total Organic Carbon | 402 | 20.0 u | 400 | 100 |
| BLANK20 | 92LTZ007-MB2 | Total Organic Carbon | 413 | 20.0 u | 400 | 103 |

75-125

MMK 6/28/92

9613446.1373 Precision Summary

Pg 1 of 1

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 02/11/92

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9201L101

WORK ORDER: 6168-02-01-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | B015J6 | Cyanide, Total | 2.9 | 3.5 | 19.1 |
| -002REP | B015P2 | Nitrate by IC | 81.4 | 82.1 | 0.81 |
| | | Phosphate by IC | 1.4 | 1.6 | 10.9 |
| | | Sulfate by IC | 18.6 | 18.7 | 0.56 |
| | | Nitrate Nitrite | 19.8 | 19.7 | ~~0.71~~ |
| | | Total Organic Carbon | 1080 | 1860 | 52.5 |

MMS 6/28/92

9613446.1374

# APPENDIX E

## DATA VALIDATION DOCUMENTATION

SDG: 9201L119

SAMPLES: B01S81, B01S65, B01S67

CONTAINS:

ATTACHMENT 1 - GLOSSARY OF DATA REPORTING QUALIFIERS
ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS
ATTACHMENT 3 - AS QUALIFIED LABORATORY DATA
ATTACHMENT 4 - DATA VALIDATION SUPPORTING DOCUMENTATION

# ATTACHMENT 1

## GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

9613446.1376

# ATTACHMENT 2

# SUMMARY OF DATA QUALIFICATIONS

9613446.1377



## DATA QUALIFICATION SUMMARY - FORM B-7

| SDG: 9201119 | REVIEWER: [illegible] | DATE: 7/9/92 | PAGE 1 OF 5 |
|---|---|---|---|
| COMMENTS: Volatiles | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Acetone | UJ/J | B01567/B01581 | ICV RSD 73% |
| Chloromethane | UJ | B01581 | ↓ |
| Vinyl Acetate | UJ | B01581 | ↓ |
| | | | |
| 2-Butanone | R | B01567, B01565 | ICV RRF<0.05 CCV RRF<0.05 |
| | | | |
| Chloroethane | UJ | B01567 | CCV 90 72% |
| Chloromethane | UJ | B01581 | ↓ |
| Bromomethane | UJ | ↓ | ↓ |
| Acetone | J | ↓ | ↓ |
| Vinyl Acetate | UJ | ↓ | ↓ |
| 1,1,2,2 Tetrachloroethane | UJ | ↓ | ↓ |
| | | | |
| $MeCl_2$ | U | B01567/B01581 | present in blank |
| Acetone | U | B01565/~~B01581~~ | 4 times ↓ |
| Acetone | U (UJ) | B01581 | present in blank |
| | | | |
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## DATA QUALIFICATION SUMMARY - FORM B-7

9201L119

pg 2 of 5 7/9/92

| SDG: L119 | REVIEWER: MMJ | DATE: 6/27/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: S-VOA | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Benzoic acid | UJ | B01S67 | %RSD > 30% MMJ |
| | | | For ICAL |
| Benzoic Acid | UJ | B01S65 | %D > 25% |
| Hexachlorocyclo Pentadiene | UJ | | For CCAL |
| 2,4 Dinitrophenol | UJ | | |
| | | | |
| Bis(2-Chloroisopropyl) ether | UJ | B01S81 | %D > 25% |
| 2-Nitroaniline | UJ | | for CCAL |
| 2,4-Dinitrotoluene | UJ | | |
| Dibenzo(a,h)anthracene | UJ | | |
| | | | |
| Di-n-butylphthalate | U | B01S81 | Common Blank contaminants in the MB |
| Bis(2-Ethylhexyl) phthalate | U | ↓ | ↓ |
| | | | |
| ALDOL condensate | R | B01S65, B01S81 B01S67 | common Lab contaminant |
| TICs | JN | B01S65, B01S81 B01S67 | Presumptive valid. evidence. |
| Di-n-butylphthalate | U | B01S65 \| B01S67 | present in blank |
| Bis(2-Ethylhexyl) phthalate | U | ↓ | ↓ |
| | | | |
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| | | | |

9613446.1379



## DATA QUALIFICATION SUMMARY - FORM B-7

9201L119

pg 3 of 5 ~~4 of 6~~ 7/9/92

| SDG: L119 | REVIEWER: MML | DATE: 6/29/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: | Pesticides/PCB's | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Heptachlor | .050 U | B01565 and | Blank contamination |
| | | B01567 | and not Confirmed |
| | | | on the Confirmation Column. |

7/6/92

## DATA QUALIFICATION SUMMARY - FORM B-7

| SDG: 9201L119 | REVIEWER: [illegible] | DATE: 7/09/92 | PAGE 4 OF 5 |
|---|---|---|---|
| COMMENTS: Metals | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Thallium | u | B01S65 | present in blank |
| | | | |
| Manganese | J | B01S81 | MS&R > 125 and SR > IDL |
| Thallium | UJ | ↓ | MS&R < 75%. |
| | | | |
| Lead | J | B01S65 | MS&R < 30 and SR > IDL |
| Lead | R | 7/9/92 ~~B01S65~~ B01S67 | MS&R < 30 and SR < IDL |
| Silver | R | B01S65/B01S67 | MS&R < 30 and SR < IDL |
| Cyanide | J | B01S65/B01S67 | MS&R < 75 |
| | | | |
| Chromium | J | B01S81 | Dup RPD out of control limit |
| | | | |
| Zinc | J | B01S65/B01S67 | Dup RPD out of control limit. |
| | | | |
| Thallium | UJ | B01S81 | GFAA Analytical Spike %R out of control limit. |
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92012119

## DATA QUALIFICATION SUMMARY - FORM B-7

pg 5 of 5 ~~6 of 6~~ 7/9/92

| SDG: L119 | REVIEWER: MMX | DATE: 6/28/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: wet chem | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| ~~Nitrate/Nitrite~~ | ~~R~~ | ~~B01581~~ | ~~Nitrate Nitrite Concentration~~ |
| | | ~~7/15/92~~ | ~~7 Nitrate by IC~~ |
| | | | |
| Nitrate | J | B01581 | hold times exceeded |
| Nitrate | UJ | B01565/B01567 | hold times exceeded |
| | | | |
| Phosphate | UJ | B01581, B01565 B01567 | " |
| | | | |
| Cyanide | J | B01565, 67 | % Rec MS < 75% > 30% |
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7/6/92

9613446.1382

# ATTACHMENT 3

# AS QUALIFIED DATA SUMMARY

9613446.1383

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
21L-B-43A

B01S81
214.0-216.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L119-001

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

Lab File ID: W013128

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. 1

Date Analyzed: 02/01/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | ~~U~~ | UJ |
| 74-83-9 | Bromomethane | 10 | ~~U~~ | UJ |
| 75-01-4 | Vinyl Chloride | 10 | U | |
| 75-00-3 | Chloroethane | 10 | U | |
| 75-09-2 | Methylene Chloride | 6 | ~~B~~ | U |
| 67-64-1 | Acetone | 20 | ~~B~~ | ~~B~~ UJ |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | ~~U~~ | UJ |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U | |
| 591-78-6 | 2-Hexanone | 10 | U | |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | ~~U~~ | UJ |
| 108-88-3 | Toluene | 5 | U | |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

FORM 1 V-1 12/88 Rev.

2/10/92

9613446.1384
1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-43 A

B01S81

214-0-216-5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L119-001

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

Lab File ID: W013128

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. 1

Date Analyzed: 02/01/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 1

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| I. | UNKNOWN | 21.40 | 9 | J N |

MMY
6/29/92

FORM 1 VOA-TIC 12/88 Rev.

9613446.1385

1A

# VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S65
Equipment Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9201L119-002

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

Lab File ID: 0012912

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. _____

Date Analyzed: 01/29/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 | 5 | U |
| 67-64-1 | Acetone | ~~3~~ 10 | JB |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| ~~78-93-3~~ | ~~2-Butanone~~ | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

FORM 1 V-1 12/88 Rev.

3/10/92

9613446.1386
1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-R.4-A
B01S67
Field Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9201L119-003

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

Lab File ID: AK2319

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. _____

Date Analyzed: 02/03/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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~~ UJ |
| 75-09-2 | Methylene Chloride | 6 | B |
| 67-64-1 | Acetone | 10 | ~~U~~ UJ |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U R |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

FORM 1 V-1 12/88 Rev.

7/10/92

9613446.1387 1B 0000033

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A
B01S81
219.0 - 216.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L119-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: V021309

Level: (low/med) LOW Date Received: 01/24/92

% Moisture: not dec. 1 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 8.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 330 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 330 | U |
| 95-57-8 | 2-Chlorophenol | 330 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 330 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 330 | U |
| 100-51-6 | Benzyl alcohol | 330 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 330 | U |
| 95-48-7 | 2-Methylphenol | 330 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 330 | UJ |
| 106-44-5 | 4-Methylphenol | 330 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 330 | U |
| 67-72-1 | Hexachloroethane | 330 | U |
| 98-95-3 | Nitrobenzene | 330 | U |
| 78-59-1 | Isophorone | 330 | U |
| 88-75-5 | 2-Nitrophenol | 330 | U |
| 105-67-9 | 2,4-Dimethylphenol | 330 | U |
| 65-85-0 | Benzoic acid | 1700 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 330 | U |
| 120-83-2 | 2,4-Dichlorophenol | 330 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 330 | U |
| 91-20-3 | Naphthalene | 330 | U |
| 106-47-8 | 4-Chloroaniline | 330 | U |
| 87-68-3 | Hexachlorobutadiene | 330 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 330 | U |
| 91-57-6 | 2-Methylnaphthalene | 330 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 330 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 330 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 330 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | UJ |
| 131-11-3 | Dimethylphthalate | 330 | U |
| 208-96-8 | Acenaphthylene | 330 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 330 | U |



MMJ 6/27/92

9613446.1388

1C 0000034

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
218-B-43A

B01S81

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

214-2165

Matrix: SOIL

Lab Sample ID: 9201L119-001

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

Lab File ID: V021309

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. 1 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 8.0

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U |
| 83-32-9 | Acenaphthene | 330 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U |
| 100-02-7 | 4-Nitrophenol | 1700 | U |
| 132-64-9 | Dibenzofuran | 330 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 330 | U J |
| 84-66-2 | Diethylphthalate | 330 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 330 | U |
| 86-73-7 | Fluorene | 330 | U |
| 100-01-6 | 4-Nitroaniline | 1700 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 330 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 330 | U |
| 118-74-1 | Hexachlorobenzene | 330 | U |
| 87-86-5 | Pentachlorophenol | 1700 | U |
| 85-01-8 | Phenanthrene | 330 | U |
| 120-12-7 | Anthracene | 330 | U |
| 84-74-2 | Di-n-Butylphthalate | 3900 | ~~B~~ U |
| 206-44-0 | Fluoranthene | 330 | U |
| 129-00-0 | Pyrene | 330 | U |
| 85-68-7 | Butylbenzylphthalate | 360 | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 670 | U |
| 56-55-3 | Benzo(a)anthracene | 330 | U |
| 218-01-9 | Chrysene | 330 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 330 ~~280~~ | ~~JB~~ U |
| 117-84-0 | Di-n-Octyl phthalate | 330 | U |
| 205-99-2 | Benzo(b)fluoranthene | 330 | U |
| 207-08-9 | Benzo(k)fluoranthene | 330 | U |
| 50-32-8 | Benzo(a)pyrene | 330 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 330 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | 330 | U J |
| 191-24-2 | Benzo(g,h,i)perylene | 330 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

MMF 6/27/92

9613446.1389 0000035

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
218-B-43A
B01S81
214-216.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L119-001

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

Lab File ID: V021309

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. 1 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/13/92

GPC Cleanup: (Y/N) Y pH: 8.0

Dilution Factor: 1.00

Number TICs found: 7

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q | |
|---|---|---|---|---|---|
| 1. | UNKNOWN | 7.12 | 100 | JN | |
| ~~2.~~ | ~~ALDOL CONDENSATE~~ | ~~7.38~~ | ~~500~~ | ~~AJB~~ | R |
| ~~3.~~ | ~~ALDOL CONDENSATE~~ | ~~8.33~~ | ~~400~~ | ~~AJB~~ | R |
| 4. | ORGANIC ACID | 23.05 | 300 | JN | |
| 5. | UNKNOWN | 25.28 | 200 | JN | |
| 6. | HYDROCARBON | 28.62 | 400 | JN | |
| 7. | UNKNOWN | 31.33 | 600 | JN | |

MMJ
6/27/92

9613446.1390

1B

0000053

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S65

Equipment BIK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9201L119-002

Sample wt/vol: 890 (g/mL) ML Lab File ID: M020408

Level: (low/med) LOW Date Received: 01/24/92

% Moisture: not dec. _____ dec. Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 02/04/92

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 11 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 11 | U |
| 95-57-8 | 2-Chlorophenol | 11 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 11 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 11 | U |
| 100-51-6 | Benzyl alcohol | 11 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 11 | U |
| 95-48-7 | 2-Methylphenol | 11 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 11 | U |
| 106-44-5 | 4-Methylphenol | 11 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 11 | U |
| 67-72-1 | Hexachloroethane | 11 | U |
| 98-95-3 | Nitrobenzene | 11 | U |
| 78-59-1 | Isophorone | 11 | U |
| 88-75-5 | 2-Nitrophenol | 11 | U |
| 105-67-9 | 2,4-Dimethylphenol | 11 | U |
| 65-85-0 | Benzoic acid | 55 | U J |
| 111-91-1 | bis(2-Chloroethoxy)methane | 11 | U |
| 120-83-2 | 2,4-Dichlorophenol | 11 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 11 | U |
| 91-20-3 | Naphthalene | 11 | U |
| 106-47-8 | 4-Chloroaniline | 11 | U |
| 87-68-3 | Hexachlorobutadiene | 11 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 11 | U |
| 91-57-6 | 2-Methylnaphthalene | 11 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 11 | U J |
| 88-06-2 | 2,4,6-Trichlorophenol | 11 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 55 | U |
| 91-58-7 | 2-Chloronaphthalene | 11 | U |
| 88-74-4 | 2-Nitroaniline | 55 | U |
| 131-11-3 | Dimethylphthalate | 11 | U |
| 208-96-8 | Acenaphthylene | 11 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 11 | U |

FORM 1 SV-1 12/88 Rev.

MMJ 6/27/92

9613446.1391

1C

0000054

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43.4

B01S65

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

equipment ~~Field~~ Blank

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9201L119-002

Sample wt/vol: 890 (g/mL) ML

Lab File ID: M020408

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. _____ dec.

Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 02/04/92

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 55 | U |
| 83-32-9 | Acenaphthene | 11 | U |
| 51-28-5 | 2,4-Dinitrophenol | 55 | U J |
| 100-02-7 | 4-Nitrophenol | 55 | U |
| 132-64-9 | Dibenzofuran | 11 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 11 | U |
| 84-66-2 | Diethylphthalate | 11 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 11 | U |
| 86-73-7 | Fluorene | 11 | U |
| 100-01-6 | 4-Nitroaniline | 55 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 55 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 11 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 11 | U |
| 118-74-1 | Hexachlorobenzene | 11 | U |
| 87-86-5 | Pentachlorophenol | 55 | U |
| 85-01-8 | Phenanthrene | 11 | U |
| 120-12-7 | Anthracene | 11 | U |
| 84-74-2 | Di-n-Butylphthalate | ~~11~~ | ~~JB~~ ~~X5 = 5~~ u |
| 206-44-0 | Fluoranthene | 11 | U |
| 129-00-0 | Pyrene | 11 | U |
| 85-68-7 | Butylbenzylphthalate | 11 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 22 | U |
| 56-55-3 | Benzo(a)anthracene | 11 | U |
| 218-01-9 | Chrysene | 11 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ~~11~~ | ~~JB~~ ~~X5 = 15~~ u |
| 117-84-0 | Di-n-Octyl phthalate | 11 | U |
| 205-99-2 | Benzo(b)fluoranthene | 11 | U |
| 207-08-9 | Benzo(k)fluoranthene | 11 | U |
| 50-32-8 | Benzo(a)pyrene | 11 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 11 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | 11 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 11 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

MMS 6/27/92

9613446.1392

1F 0000055

CLIENT SAMPLE NO.
216-B-43A

B01S65

Equipment Blank

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9201L119-002

Sample wt/vol: 890 (g/mL) ML Lab File ID: M020408

Level: (low/med) LOW Date Received: 01/24/92

% Moisture: not dec. ____ dec. Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 02/04/92

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 10

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q | |
|---|---|---|---|---|---|
| ~~1.~~ | ~~ALDOL CONDENSATE~~ | ~~4.55~~ | ~~10~~ | ~~JB~~ | R |
| 2. | UNKNOWN | 4.90 | 10 | ~~JB~~ | JN |
| 3. | UNKNOWN | 5.32 | 6 | JN | |
| 4. | UNKNOWN | 5.72 | 4 | JN | |
| 5. | UNKNOWN | 6.03 | 6 | ~~JB~~ | JN |
| ~~6.~~ | ~~CYCLOHEXENONE~~ Aldol Condensate | ~~6.12~~ | ~~6~~ | ~~JB~~ | R |
| 7. | TRICHLOROPROPENE | 6.35 | 10 | ~~JB~~ | JN |
| 8. | UNKNOWN | 9.60 | 8 | ~~JB~~ | JN |
| 9. | UNKNOWN | 19.95 | 40 | ~~JB~~ | JN |
| 10. | UNKNOWN | 24.75 | 100 | ~~JB~~ | JN |

MML
6/27/92

9613446.1393

1B

0000077

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-93A

BO1S67

Field Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9201L119-003

Sample wt/vol: 880 (g/mL) ML Lab File ID: M020513

Level: (low/med) LOW Date Received: 01/24/92

% Moisture: not dec. _____ dec. Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 11 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 11 | U |
| 95-57-8 | 2-Chlorophenol | 11 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 11 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 11 | U |
| 100-51-6 | Benzyl alcohol | 11 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 11 | U |
| 95-48-7 | 2-Methylphenol | 11 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 11 | U |
| 106-44-5 | 4-Methylphenol | 11 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 11 | U |
| 67-72-1 | Hexachloroethane | 11 | U |
| 98-95-3 | Nitrobenzene | 11 | U |
| 78-59-1 | Isophorone | 11 | U |
| 88-75-5 | 2-Nitrophenol | 11 | U |
| 105-67-9 | 2,4-Dimethylphenol | 11 | U |
| 65-85-0 | Benzoic acid | 55 | U J |
| 111-91-1 | bis(2-Chloroethoxy)methane | 11 | U |
| 120-83-2 | 2,4-Dichlorophenol | 11 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 11 | U |
| 91-20-3 | Naphthalene | 11 | U |
| 106-47-8 | 4-Chloroaniline | 11 | U |
| 87-68-3 | Hexachlorobutadiene | 11 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 11 | U |
| 91-57-6 | 2-Methylnaphthalene | 11 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 11 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 11 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 55 | U |
| 91-58-7 | 2-Chloronaphthalene | 11 | U |
| 88-74-4 | 2-Nitroaniline | 55 | U |
| 131-11-3 | Dimethylphthalate | 11 | U |
| 208-96-8 | Acenaphthylene | 11 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 11 | U |

mmf 6/27/92

9613446.1394

1C

0000078

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S67

Field Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9201L119-003

Sample wt/vol: 880 (g/mL) ML

Lab File ID: M020513

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. _____ dec.

Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 55 | U | |
| 83-32-9 | Acenaphthene | 11 | U | |
| 51-28-5 | 2,4-Dinitrophenol | 55 | U | |
| 100-02-7 | 4-Nitrophenol | 55 | U | |
| 132-64-9 | Dibenzofuran | 11 | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 11 | U | |
| 84-66-2 | Diethylphthalate | 2 | J | x5=10 |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 11 | U | |
| 86-73-7 | Fluorene | 11 | U | |
| 100-01-6 | 4-Nitroaniline | 55 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 55 | U | |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 11 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 11 | U | |
| 118-74-1 | Hexachlorobenzene | 11 | U | |
| 87-86-5 | Pentachlorophenol | 55 | U | |
| 85-01-8 | Phenanthrene | 11 | U | |
| 120-12-7 | Anthracene | 11 | U | |
| 84-74-2 | Di-n-Butylphthalate | 11 ~~2~~ | 7/1d/92 ~~J~~ U | 7/1d/92 ~~x5=10~~ |
| 206-44-0 | Fluoranthene | 11 | U | |
| 129-00-0 | Pyrene | 11 | U | 7/1d/92 |
| 85-68-7 | Butylbenzylphthalate | 2 | J | ~~x5=10~~ |
| 91-94-1 | 3,3'-Dichlorobenzidine | 22 | U | |
| 56-55-3 | Benzo(a)anthracene | 11 | U | |
| 218-01-9 | Chrysene | 11 | U | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 11 ~~3~~ | 7/1d/92 ~~J~~ U | 7/1d/92 ~~x5=15~~ |
| 117-84-0 | Di-n-Octyl phthalate | 11 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 11 | U | |
| 207-08-9 | Benzo(k)fluoranthene | 11 | U | |
| 50-32-8 | Benzo(a)pyrene | 11 | U | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 11 | U | |
| 53-70-3 | Dibenzo(a,h)anthracene | 11 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 11 | U | |

MMK 6/27/92

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

9613446.1395

1F

0000079

CLIENT SAMPLE NO.
216-B-43A

BO1S67

Field Blank

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9201L119-003

Sample wt/vol: 880 (g/mL) ML Lab File ID: M020513

Level: (low/med) LOW Date Received: 01/24/92

% Moisture: not dec. _____ dec. Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 02/05/92

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 11

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q | |
|---|---|---|---|---|---|
| ~~1.~~ | ~~ALDOL CONDENSATE~~ | ~~4.47~~ | ~~10~~ | ~~JA~~ | R |
| 2. | UNKNOWN | 4.80 | 9 | ~~JB~~ | JN |
| 3. | UNKNOWN | 5.23 | 6 | JN | |
| 4. | UNKNOWN | 5.48 | 4 | JN | |
| 5. | UNKNOWN | 5.95 | 9 | ~~JB~~ JN | |
| ~~6.~~ | ~~CYCLOHEXENONE~~ ~~Aldol Condensate~~ | ~~6.03~~ | ~~7~~ | ~~JB~~ JN | R 7/9/92 |
| 7. | TRICHLOROPROPENE | 6.27 | 10 | ~~JB~~ JN | |
| 8. | UNKNOWN | 7.07 | 6 | JN | |
| 9. | UNKNOWN | 9.53 | 9 | ~~JB~~ | JN |
| 10. | UNKNOWN | 19.88 | 100 | ~~JB~~ | JN |
| 11. | UNKNOWN | 24.68 | 200 | ~~JB~~ | JN |

MMS 6/27/92

9613446.1396

1D

0000021

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-93A

B01S81

214.0 - 216.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L119-001

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: 02189203.16

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. 1 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/18/92

GPC Cleanup: (Y/N) Y pH: 7.7

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.0~~ 16 | U |
| 319-85-7 | Beta-BHC | ~~8.0~~ 16 | U |
| 319-86-8 | Delta-BHC | ~~8.0~~ 16 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.0~~ 16 | U |
| 76-44-8 | Heptachlor | ~~8.0~~ 16 | U |
| 309-00-2 | Aldrin | ~~8.0~~ 16 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.0~~ 16 | U |
| 959-98-8 | Endosulfan I | ~~8.0~~ 16 | U |
| 60-57-1 | Dieldrin | ~~16~~ 32 | U |
| 72-55-9 | 4,4'-DDE | ~~16~~ 32 | U |
| 72-20-8 | Endrin | ~~16~~ 32 | U |
| 33213-65-9 | Endosulfan II | ~~16~~ 32 | U |
| 72-54-8 | 4,4'-DDD | ~~16~~ 32 | U |
| 1031-07-8 | Endosulfan sulfate | ~~16~~ 32 | U |
| 50-29-3 | 4,4'-DDT | ~~16~~ 32 | U |
| 72-43-5 | Methoxychlor | ~~80~~ 160 | U |
| 53494-70-5 | Endrin ketone | ~~16~~ 32 | U |
| 5103-71-9 | alpha-Chlordane | ~~80~~ 160 | U |
| 5103-74-2 | gamma-Chlordane | ~~80~~ 160 | U |
| 8001-35-2 | Toxaphene | ~~160~~ 320 | U |
| 12674-11-2 | Aroclor-1016 | ~~80~~ 160 | U |
| 11104-28-2 | Aroclor-1221 | ~~80~~ 160 | U |
| 11141-16-5 | Aroclor-1232 | ~~80~~ 160 | U |
| 53469-21-9 | Aroclor-1242 | ~~80~~ 160 | U |
| 12672-29-6 | Aroclor-1248 | ~~80~~ 160 | U |
| 11097-69-1 | Aroclor-1254 | ~~160~~ 320 | U |
| 11096-82-5 | Aroclor-1260 | ~~160~~ 320 | U |

DG 2-21-92

FORM 1 PEST 12/88 Rev.

MMS 6/29/92

9613446.1397 ID 0000026

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-93A

B01S65

Equip. Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9201L119-002

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 02149209.16

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. _____ dec.

Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | 0.050 | U |
| 319-85-7 | Beta-BHC | 0.050 | U |
| 319-86-8 | Delta-BHC | 0.050 | U |
| 58-89-9 | gamma-BHC (Lindane) | 0.050 | U |
| 76-44-8 | Heptachlor | ~~0.060~~ .050 | ~~B~~ U |
| 309-00-2 | Aldrin | 0.050 | U |
| 1024-57-3 | Heptachlor epoxide | 0.050 | U |
| 959-98-8 | Endosulfan I | 0.050 | U |
| 60-57-1 | Dieldrin | 0.10 | U |
| 72-55-9 | 4,4'-DDE | 0.10 | U |
| 72-20-8 | Endrin | 0.10 | U |
| 33213-65-9 | Endosulfan II | 0.10 | U |
| 72-54-8 | 4,4'-DDD | 0.10 | U |
| 1031-07-8 | Endosulfan sulfate | 0.10 | U |
| 50-29-3 | 4,4'-DDT | 0.10 | U |
| 72-43-5 | Methoxychlor | 0.50 | U |
| 53494-70-5 | Endrin ketone | 0.10 | U |
| 5103-71-9 | alpha-Chlordane | 0.50 | U |
| 5103-74-2 | gamma-Chlordane | 0.50 | U |
| 8001-35-2 | Toxaphene | 1.0 | U |
| 12674-11-2 | Aroclor-1016 | 0.50 | U |
| 11104-28-2 | Aroclor-1221 | 0.50 | U |
| 11141-16-5 | Aroclor-1232 | 0.50 | U |
| 53469-21-9 | Aroclor-1242 | 0.50 | U |
| 12672-29-6 | Aroclor-1248 | 0.50 | U |
| 11097-69-1 | Aroclor-1254 | 1.0 | U |
| 11096-82-5 | Aroclor-1260 | 1.0 | U |

FORM 1 PEST 12/88 Rev.

MMC 6/24/92

9613446.1398

1D 0000031

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S67

Field Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9201L119-003

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 02149209.21

Level: (low/med) LOW

Date Received: 01/24/92

% Moisture: not dec. _____ dec.

Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 02/15/92

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | 0.050 | U |
| 319-85-7 | Beta-BHC | 0.050 | U |
| 319-86-8 | Delta-BHC | 0.050 | U |
| 58-89-9 | gamma-BHC (Lindane) | 0.050 | U |
| 76-44-8 | Heptachlor | ~~0.070~~ 0.050 | ~~B~~ U |
| 309-00-2 | Aldrin | 0.050 | U |
| 1024-57-3 | Heptachlor epoxide | 0.050 | U |
| 959-98-8 | Endosulfan I | 0.050 | U |
| 60-57-1 | Dieldrin | 0.10 | U |
| 72-55-9 | 4,4'-DDE | 0.10 | U |
| 72-20-8 | Endrin | 0.10 | U |
| 33213-65-9 | Endosulfan II | 0.10 | U |
| 72-54-8 | 4,4'-DDD | 0.10 | U |
| 1031-07-8 | Endosulfan sulfate | 0.10 | U |
| 50-29-3 | 4,4'-DDT | 0.10 | U |
| 72-43-5 | Methoxychlor | 0.50 | U |
| 53494-70-5 | Endrin ketone | 0.10 | U |
| 5103-71-9 | alpha-Chlordane | 0.50 | U |
| 5103-74-2 | gamma-Chlordane | 0.50 | U |
| 8001-35-2 | Toxaphene | 1.0 | U |
| 12674-11-2 | Aroclor-1016 | 0.50 | U |
| 11104-28-2 | Aroclor-1221 | 0.50 | U |
| 11141-16-5 | Aroclor-1232 | 0.50 | U |
| 53469-21-9 | Aroclor-1242 | 0.50 | U |
| 12672-29-6 | Aroclor-1248 | 0.50 | U |
| 11097-69-1 | Aroclor-1254 | 1.0 | U |
| 11096-82-5 | Aroclor-1260 | 1.0 | U |

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-R-43A
B01S81
214.0-216.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP119

Matrix (soil/water): SOIL Lab Sample ID: 920111901

Level (low/med): LOW Date Received: 1/24/92

% Solids: 98.8

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

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3730.00 | | | P | |
| 7440-36-0 | Antimony | 4.66 | U | | P | |
| 7440-38-2 | Arsenic | .99 | B | | F | |
| 7440-39-3 | Barium | 68.00 | | | P | |
| 7440-41-7 | Beryllium | .32 | B | | P | |
| 7440-43-9 | Cadmium | .61 | U | | P | |
| 7440-70-2 | Calcium | 4330.00 | | | P | |
| 7440-47-3 | Chromium | 11.40 | / | | P | J |
| 7440-48-4 | Cobalt | 6.50 | B | | P | |
| 7440-50-8 | Copper | 10.50 | | | P | |
| 7439-89-6 | Iron | 10000.00 | | | P | |
| 7439-92-1 | Lead | 2.60 | | * | F | |
| 7439-95-4 | Magnesium | 2360.00 | | | P | |
| 7439-96-5 | Manganese | 199.00 | / | N | P | J |
| 7439-97-6 | Mercury | .05 | U | N | CV | |
| 7440-02-0 | Nickel | 7.90 | B | | P | |
| 7440-09-7 | Potassium | 602.00 | B | | P | |
| 7782-49-2 | Selenium | .40 | U | | F | |
| 7440-22-4 | Silver | 1.60 | B | | P | |
| 7440-23-5 | Sodium | 912.00 | B | | P | |
| 7440-28-0 | Thallium | .40 | ~~U~~ | NW | F | UJ |
| 7440-62-2 | Vanadium | 18.30 | | | P | |
| 7440-66-6 | Zinc | 25.40 | | | P | |
| | Cyanide | 1.01 | U | | C | |
| 7440 69-9 | Bismuth | 30.4 | U | | P | |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

7/9/92

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U.S. EPA - CLP

1

# INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

216-B-43A

B01S65

Equipment Blank

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP119

Matrix (soil/water): WATER Lab Sample ID: 920111902

Level (low/med): LOW Date Received: 1/24/92

% Solids: 0.0

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

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 83.00 | U | | P | |
| 7440-36-0 | Antimony | 23.00 | U | | P | |
| 7440-38-2 | Arsenic | 2.00 | U | | F | |
| 7440-39-3 | Barium | 38.00 | U | | P | |
| 7440-41-7 | Beryllium | 1.00 | U | | P | |
| 7440-43-9 | Cadmium | 3.00 | U | | P | |
| 7440-70-2 | Calcium | 88.00 | U | | P | |
| 7440-47-3 | Chromium | 6.00 | U | | P | |
| 7440-48-4 | Cobalt | 5.00 | U | | P | |
| 7440-50-8 | Copper | 6.00 | U | | P | |
| 7439-89-6 | Iron | 39.00 | U | | P | |
| 7439-92-1 | Lead | 18.30 | / | N | F | J |
| 7439-95-4 | Magnesium | 78.00 | U | | P | |
| 7439-96-5 | Manganese | 2.00 | U | | P | |
| 7439-97-6 | Mercury | .10 | U | | CV | |
| 7440-02-0 | Nickel | 18.00 | U | | P | |
| 7440-09-7 | Potassium | 734.00 | U | | P | |
| 7782-49-2 | Selenium | 2.00 | U | | F | |
| ~~7440-22-4~~ | ~~Silver~~ | ~~4.00~~ | ~~U~~ | ~~N~~ | ~~P~~ | R |
| 7440-23-5 | Sodium | 638.00 | U | | P | |
| 7440-28-0 | Thallium | 3.00 | ~~B~~ | | F | U |
| 7440-62-2 | Vanadium | 5.00 | U | | P | |
| 7440-66-6 | Zinc | 10.20 | ~~B~~ | * | P | J |
| | Cyanide | 28.50 | / | N | C | J |
| 7440-69-9 | Bismuth | 150 | U | | P | |

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

7/7/92

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-43A
B01S67
Field Blank

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP119

Matrix (soil/water): WATER Lab Sample ID: 920111903

Level (low/med): LOW Date Received: 1/24/92

% Solids: 0.0

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

| CAS No. | Analyte | Concentration | C | Q | M | |
|---|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 83.00 | U | | P | |
| 7440-36-0 | Antimony | 23.00 | U | | P | |
| 7440-38-2 | Arsenic | 2.00 | U | | F | |
| 7440-39-3 | Barium | 38.00 | U | | P | |
| 7440-41-7 | Beryllium | 1.00 | U | | P | |
| 7440-43-9 | Cadmium | 3.00 | U | | P | |
| 7440-70-2 | Calcium | 89.40 | B | | P | |
| 7440-47-3 | Chromium | 6.00 | U | | P | |
| 7440-48-4 | Cobalt | 5.00 | U | | P | |
| 7440-50-8 | Copper | 6.00 | U | | P | |
| 7439-89-6 | Iron | 39.00 | U | | P | |
| ~~7439-92-1~~ | ~~Lead~~ | ~~2.00~~ | ~~U~~ | ~~N~~ | ~~F~~ | R |
| 7439-95-4 | Magnesium | 78.00 | U | | P | |
| 7439-96-5 | Manganese | 2.00 | U | | P | |
| 7439-97-6 | Mercury | .10 | U | | CV | |
| 7440-02-0 | Nickel | 18.00 | U | | P | |
| 7440-09-7 | Potassium | 734.00 | U | | P | |
| 7782-49-2 | Selenium | 2.00 | U | | F | |
| ~~7440-22-4~~ | ~~Silver~~ | ~~4.00~~ | ~~U~~ | ~~N~~ | ~~P~~ | R |
| 7440-23-5 | Sodium | 638.00 | U | | P | |
| 7440-28-0 | Thallium | 2.00 | U | | F | |
| 7440-62-2 | Vanadium | 5.00 | U | | P | |
| 7440-66-6 | Zinc | 14.50 | ~~B~~ | * | P | |
| | Cyanide | 42.70 | / | N | C | |
| 7440-69-9 | Bismuth | 150 | U | | P | |

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

7/9/92

9613446.1402

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 02/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L119

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| -001 | B01S81 | % Solids | 98.8 | % | 0.10 |
| | | Nitrate by IC | 3090 J | MG/KG | 127 |
| | 216-B-43A | Cyanide, Total | 1.0 u | MG/KG | 1.0 |
| | | Phosphate by IC | 1.3 u J | MG/KG | 1.3 |
| | 214.0 - 216.5 | Sulfate by IC | 70.3 | MG/KG | 1.3 |
| | | ~~Nitrate Nitrite~~ | ~~621~~ | ~~MG-N/KG~~ | 127 |
| | | Total Organic Carbon | 474 | MG/KG | 128 |
| -002 | B01S65 | Nitrate by IC | 0.25 u J | MG/L | 0.25 |
| | | Cyanide, Total | 28.5 J | UG/L | 20.0 |
| | 216-B-43A | Phosphate by IC | 0.25 u J | MG/L | 0.25 |
| | Equipment Blank | Sulfate by IC | 0.25 u | MG/L | 0.25 |
| | | Nitrate Nitrite | 0.10 u | MG-N/L | 0.10 |
| -003 | B01S67 | Nitrate by IC | 0.25 u J | MG/L | 0.25 |
| | | Cyanide, Total | 42.7 J | UG/L | 10.0 |
| | 216-B-43A | Phosphate by IC | 0.25 u J | MG/L | 0.25 |
| | | Sulfate by IC | 0.25 u | MG/L | 0.25 |
| | Field Blank | Nitrate Nitrite | 0.10 | MG-N/L | 0.10 |

Not 7/15/92
$N_3/N_2$ results dc

MMS
6/28/92

9613446.1403

# ATTACHMENT 4

# DATA VALIDATION SUPPORTING DOCUMENTATION

9613446.1404

WHC-SD-EN-SPP-002, Rev. 1

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MML | DATE: 6/29/92 |
| LABORATORY: Weston | CASE: 92011L119 | SDG: 92011L119 |
| SAMPLES/MATRIX: B01S81, ~~B01S81MS, B01S81-MSD,~~ 7/8/92 | | |
| B01S65, ~~B01S65-MS, B01S65-MSD,~~ B01S67- | | |
| Soils/water 7/8/92 | | |
| | | |
| | | |

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 | ✓ | | ✗ |

MML 6/29/92

| 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)? 2-butanone out in several ICALs Yes (No) N/A

| | | | |
|---|---|---|---|
| Are all applicable RSD values ≤20.5% (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)? 2-butanone out for Water CAP and Pack | 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 / Equipment Blanks

MMJ 6/24/92

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

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

No TCL Compounds present after blank qualification.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? DCE 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? B01565MS 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 |
| 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 |
| 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 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):

RIC, RAW and corrected spectra for B01567 by CAP was not legible and therefore could not be qualified.

After validation the field blank and equipment blank were free of TCL compounds

DCE surrogate recoveries out but greater than 10% for B01581, B01581MS and B01581MSD.

TCL compounds were not present in the field blank/ Equipment blank after blank qualification.

ISA area counts out for B01565MS. Matrix spike sample not qualified.

Relative retention time units could not be checked for ~~the~~ B01567 as quantitation sheets were not legible.

One unknown TIC was identified by the l.b. ~~as unknown~~ This ~~selected~~ identification was considered appropriate as the 3 most probable picks selected did not meet the 10%, 20%, 10% criteria

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MAR 1992
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OSM DMO

# Holding Time Summary

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | holding times |
|---|---|---|---|---|---|---|---|
| BO1S81 | 001 | S | 92LVW017 | 01/22/92 | N/A | 02/01/92 | 10 |
| BO1S81 | 001 MS | S | 92LVW017 | 01/22/92 | N/A | 02/01/92 | 10 |
| BO1S81 | 001 MSD | S | 92LVW017 | 01/22/92 | N/A | 02/01/92 | 10 |
| BO1S65 | 002 | W | 92LVQ019 | 01/22/92 | N/A | 01/29/92 | 7 |
| BO1S65 | 002 MS | W | 92LVQ019 | 01/22/92 | N/A | 01/29/92 | 7 |
| BO1S65 | 002 MSD | W | 92LVQ019 | 01/22/92 | N/A | 01/29/92 | 7 |
| BO1S67 | 003 | W | 92LVK018 | 01/22/92 | N/A | 02/03/92 | 12 |
| LAB QC: | | | | | | | |
| VBLK | MB1 | S | 92LVW017 | N/A | N/A | 02/01/92 | N/A |
| VBLK | MB1 | W | 92LVQ019 | N/A | N/A | 01/29/92 | N/A |
| VBLK | MB1 | W | 92LVK018 | N/A | N/A | 02/03/92 | N/A |

Holding times were met.
[illegible]
7/8/92

MML
6/29/92

Calibration Summary pg 1 of 6

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: HP-MSD K Calibration Date(s): 12/26/91 12/26/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

Min RRF for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

Assoc. w/B91567 only 07/9/92

LAB FILE ID: RRF20 = AKCQ07 RRF50 = AKCQ02
RRF100= AKCQ06 RRF150= AKCQ05 RRF200= AKCQ04

| COMPOUND | RRF20 | RRF50 | RRF100 | RRF150 | RRF200 | RRF | % RSD |
|---|---|---|---|---|---|---|---|
| Chloromethane # | 0.560 | 0.611 | 0.478 | 0.509 | 0.494 | 0.530 | 10.3# |
| Bromomethane | 1.234 | 1.348 | 1.153 | 1.147 | 1.101 | 1.197 | 8.1 |
| Vinyl Chloride * | 0.780 | 0.896 | 0.744 | 0.759 | 0.705 | 0.777 | 9.3* |
| Chloroethane | 0.513 | 0.570 | 0.477 | 0.459 | 0.472 | 0.498 | 9.0 |
| Methylene Chloride | 0.985 | 1.087 | 0.900 | 0.905 | 0.851 | 0.946 | 9.8 |
| Acetone | 0.299 | 0.214 | 0.152 | 0.148 | 0.145 | 0.192 | 34.7 |
| Carbon Disulfide | 2.608 | 2.947 | 2.540 | 2.602 | 2.501 | 2.640 | 6.7 |
| 1,1-Dichloroethene * | 1.041 | 1.049 | 0.947 | 0.926 | 0.890 | 0.971 | 7.3* |
| 1,1-Dichloroethane # | 1.949 | 2.162 | 1.974 | 1.975 | 1.866 | 1.985 | 5.5# |
| 1,2-Dichloroethene (total) | 0.983 | 1.089 | 0.996 | 1.001 | 0.945 | 1.003 | 5.3 |
| Chloroform * | 2.798 | 2.870 | 2.620 | 2.609 | 2.486 | 2.677 | 5.8* |
| 1,2-Dichloroethane | 0.500 | 0.469 | 0.458 | 0.462 | 0.421 | 0.462 | 6.1 |
| 2-Butanone | 0.027 | 0.042 | 0.041 | 0.039 | 0.039 | 0.038 | 16.3 |
| 1,1,1-Trichloroethane | 2.667 | 2.660 | 2.470 | 2.447 | 2.355 | 2.520 | 5.5 |
| Carbon Tetrachloride | 2.707 | 2.790 | 2.608 | 2.530 | 2.446 | 2.616 | 5.2 |
| Vinyl Acetate | 1.431 | 1.622 | 1.284 | 1.532 | 1.229 | 1.420 | 11.6 |
| Bromodichloromethane | 0.741 | 0.762 | 0.721 | 0.711 | 0.675 | 0.722 | 4.5 |
| 1,2-Dichloropropane * | 0.288 | 0.316 | 0.290 | 0.288 | 0.272 | 0.291 | 5.5* |
| cis-1,3-Dichloropropene | 0.542 | 0.572 | 0.535 | 0.525 | 0.503 | 0.535 | 4.7 |
| Trichloroethene | 0.439 | 0.438 | 0.469 | 0.415 | 0.413 | 0.435 | 5.2 |
| Dibromochloromethane | 0.849 | 0.849 | 0.833 | 0.818 | 0.770 | 0.824 | 4.0 |
| 1,1,2-Trichloroethane | 0.330 | 0.336 | 0.318 | 0.313 | 0.284 | 0.316 | 6.3 |
| Benzene | 0.592 | 0.637 | 0.579 | 0.577 | 0.552 | 0.587 | 5.3 |
| Trans-1,3-Dichloropropene | 0.481 | 0.506 | 0.489 | 0.480 | 0.451 | 0.481 | 4.2 |
| Bromoform # | 0.700 | 0.721 | 0.696 | 0.702 | 0.636 | 0.691 | 4.7# |
| 4-Methyl-2-pentanone | 0.236 | 0.235 | 0.227 | 0.224 | 0.203 | 0.225 | 5.9 |
| 2-Hexanone | 0.181 | 0.152 | 0.150 | 0.141 | 0.131 | 0.151 | 12.3 |
| Tetrachloroethene | 0.536 | 0.541 | 0.506 | 0.489 | 0.458 | 0.506 | 6.8 |
| 1,1,2,2-Tetrachloroethane # | 0.453 | 0.476 | 0.298 | 0.422 | 0.326 | 0.395 | 19.9# |
| Toluene * | 0.512 | 0.533 | 0.493 | 0.487 | 0.463 | 0.497 | 5.3* |
| Chlorobenzene # | 0.786 | 0.817 | 0.762 | 0.752 | 0.712 | 0.766 | 5.1# |
| Ethylbenzene * | 0.329 | 0.337 | 0.316 | 0.311 | 0.298 | 0.318 | 4.9* |
| Styrene | 0.691 | 0.713 | 0.676 | 0.671 | 0.635 | 0.677 | 4.2 |
| Xylene (total) | 0.403 | 0.414 | 0.384 | 0.381 | 0.362 | 0.389 | 5.3 |
| Toluene-d8 | 1.296 | 1.210 | 1.142 | 1.114 | 1.048 | 1.162 | 8.1 |
| Bromofluorobenzene | 1.297 | 1.176 | 1.106 | 1.087 | 1.000 | 1.133 | 9.8 |
| 1,2-Dichloroethane-d4 | 0.654 | 0.575 | 0.581 | 0.558 | 0.508 | 0.575 | 9.1 |



mmf 6/29/92

Calibration Summary 9613446 1444 0000075 Pg 2 of 6

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: HP-MSD K Calibration Date: 02/03/92 Time: 0930

Lab File ID: AK2302 Init. Calib. Date(s): 12/26/91 12/26/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

Assoc. w/ B01567 only. 07/9/92

| COMPOUND | | RRF | RRF50 | %D | |
|---|---|---|---|---|---|
| Chloromethane | # | 0.530 | 0.635 | -19.7 | # |
| Bromomethane | | 1.197 | 1.437 | -20.1 | |
| Vinyl Chloride | * | 0.777 | 0.821 | -5.6 | * |
| Chloroethane | | 0.498 | 0.659 | -32.4 | |
| Methylene Chloride | | 0.946 | 1.087 | -14.9 | |
| Acetone | | 0.192 | 0.237 | -23.4 | |
| Carbon Disulfide | | 2.640 | 3.000 | -13.6 | |
| 1,1-Dichloroethene | * | 0.971 | 1.098 | -13.0 | * |
| 1,1-Dichloroethane | # | 1.985 | 2.260 | -13.9 | # |
| 1,2-Dichloroethene (total) | | 1.003 | 1.164 | -16.0 | |
| Chloroform | * | 2.677 | 3.344 | -24.9 | * |
| 1,2-Dichloroethane | | 0.462 | 0.547 | -18.5 | |
| 2-Butanone | | 0.038 | 0.035 | 7.0 | |
| 1,1,1-Trichloroethane | | 2.520 | 3.039 | -20.6 | |
| Carbon Tetrachloride | | 2.616 | 3.140 | -20.0 | |
| Vinyl Acetate | | 1.420 | 1.577 | -11.1 | |
| Bromodichloromethane | | 0.722 | 0.880 | -21.9 | |
| 1,2-Dichloropropane | * | 0.291 | 0.314 | -7.8 | * |
| cis-1,3-Dichloropropene | | 0.535 | 0.588 | -9.8 | |
| Trichloroethene | | 0.435 | 0.461 | -6.0 | |
| Dibromochloromethane | | 0.824 | 0.933 | -13.2 | |
| 1,1,2-Trichloroethane | | 0.316 | 0.337 | -6.6 | |
| Benzene | | 0.587 | 0.692 | -17.8 | |
| Trans-1,3-Dichloropropene | | 0.481 | 0.534 | -11.0 | |
| Bromoform | # | 0.691 | 0.746 | -7.9 | # |
| 4-Methyl-2-pentanone | | 0.225 | 0.214 | 4.7 | |
| 2-Hexanone | | 0.151 | 0.147 | 2.9 | |
| Tetrachloroethene | | 0.506 | 0.558 | -10.2 | |
| 1,1,2,2-Tetrachloroethane | # | 0.395 | 0.488 | -23.5 | # |
| Toluene | * | 0.497 | 0.547 | -10.1 | * |
| Chlorobenzene | # | 0.766 | 0.850 | -11.0 | # |
| Ethylbenzene | * | 0.318 | 0.354 | -11.2 | * |
| Styrene | | 0.677 | 0.740 | -9.4 | |
| Xylene (total) | | 0.389 | 0.430 | -10.4 | |
| Toluene-d8 | | 1.162 | 0.913 | 21.4 | |
| Bromofluorobenzene | | 1.133 | 0.938 | 17.2 | |
| 1,2-Dichloroethane-d4 | | 0.575 | 0.505 | 12.1 | |

MMH 8/6/92

Calibration Summary 0000080 Pg 3 of 6

6A

# VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 10500 Calibration Date(s): 01/10/92 01/10/92

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

Assoc. w/Bolsts only

LAB FILE ID: RRF20 = 0011002 RRF50 = 0011003
RRF100= 0011004 RRF150= 0011005 RRF200= 0011006

| COMPOUND | RRF20 | RRF50 | RRF100 | RRF150 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Chloromethane # | 1.457 | 1.163 | 1.276 | 1.386 | 1.639 | 1.384 | 13.1# |
| Bromomethane | 1.835 | 1.615 | 1.740 | 1.961 | 2.279 | 1.886 | 13.5 |
| Vinyl Chloride * | 1.581 | 1.311 | 1.368 | 1.514 | 1.821 | 1.519 | 13.2* |
| Chloroethane | 1.090 | 0.842 | 0.843 | 0.920 | 1.090 | 0.957 | 13.1 |
| Methylene Chloride | 1.523 | 1.427 | 1.373 | 1.413 | 1.467 | 1.441 | 4.0 |
| Acetone | 0.804 | 0.659 | 0.573 | 0.573 | 0.623 | 0.646 | 14.7 |
| Carbon Disulfide | 3.184 | 3.159 | 3.268 | 3.484 | 3.574 | 3.334 | 5.6 |
| 1,1-Dichloroethene * | 1.451 | 1.469 | 1.363 | 1.417 | 1.444 | 1.429 | 2.9* |
| 1,1-Dichloroethane # | 3.270 | 3.038 | 2.902 | 3.018 | 3.005 | 3.047 | 4.4# |
| 1,2-Dichloroethene (total) | 1.642 | 1.644 | 1.596 | 1.665 | 1.697 | 1.649 | 2.2 |
| Chloroform * | 3.877 | 3.842 | 3.621 | 3.754 | 3.743 | 3.767 | 2.6* |
| 1,2-Dichloroethane | 3.275 | 3.132 | 2.892 | 2.904 | 2.954 | 3.031 | 5.5 |
| 2-Butanone | 0.034 | 0.033 | 0.032 | 0.029 | 0.032 | 0.032 | 5.8 |
| 1,1,1-Trichloroethane | 0.915 | 0.881 | 0.828 | 0.872 | 0.875 | 0.874 | 3.5 |
| Carbon Tetrachloride | 0.600 | 0.596 | 0.598 | 0.649 | 0.666 | 0.622 | 5.3 |
| Vinyl Acetate | 0.820 | 0.743 | 0.736 | 0.751 | 0.821 | 0.774 | 5.5 |
| Bromodichloromethane | 0.778 | 0.757 | 0.741 | 0.792 | 0.803 | 0.774 | 3.3 |
| 1,2-Dichloropropane * | 0.410 | 0.386 | 0.383 | 0.402 | 0.399 | 0.396 | 2.9* |
| cis-1,3-Dichloropropene | 0.535 | 0.537 | 0.568 | 0.603 | 0.618 | 0.572 | 6.6 |
| Trichloroethene | 0.405 | 0.426 | 0.418 | 0.438 | 0.438 | 0.425 | 3.3 |
| Dibromochloromethane | 0.450 | 0.483 | 0.521 | 0.562 | 0.602 | 0.524 | 11.6 |
| 1,1,2-Trichloroethane | 0.345 | 0.351 | 0.355 | 0.366 | 0.385 | 0.360 | 4.4 |
| Benzene | 0.960 | 1.015 | 0.994 | 1.037 | 1.020 | 1.005 | 2.9 |
| Trans-1,3-Dichloropropene | 0.533 | 0.514 | 0.556 | 0.605 | 0.638 | 0.569 | 9.0 |
| Bromoform # | 0.278 | 0.307 | 0.334 | 0.356 | 0.389 | 0.333 | 12.9# |
| 4-Methyl-2-pentanone | 0.347 | 0.346 | 0.329 | 0.318 | 0.340 | 0.336 | 3.7 |
| 2-Hexanone | 0.273 | 0.293 | 0.270 | 0.263 | 0.273 | 0.274 | 4.1 |
| Tetrachloroethene | 0.415 | 0.443 | 0.418 | 0.435 | 0.431 | 0.428 | 2.7 |
| 1,1,2,2-Tetrachloroethane # | 0.529 | 0.510 | 0.505 | 0.503 | 0.541 | 0.518 | 3.2# |
| Toluene * | 0.679 | 0.689 | 0.666 | 0.700 | 0.702 | 0.687 | 2.2* |
| Chlorobenzene # | 0.973 | 0.956 | 0.884 | 0.903 | 0.886 | 0.920 | 4.5# |
| Ethylbenzene * | 0.472 | 0.455 | 0.435 | 0.453 | 0.443 | 0.452 | 3.1* |
| Styrene | 0.860 | 0.846 | 0.834 | 0.839 | 0.817 | 0.839 | 1.9 |
| Xylene (total) | 0.480 | 0.490 | 0.449 | 0.482 | 0.465 | 0.473 | 3.4 |
| Toluene-d8 | 1.182 | 1.013 | 1.034 | 1.043 | 1.049 | 1.064 | 6.3 |
| Bromofluorobenzene | 1.014 | 0.818 | 0.794 | 0.811 | 0.789 | 0.845 | 11.3 |
| 1,2-Dichloroethane-d4 | 3.477 | 2.724 | 2.612 | 2.599 | 2.613 | 2.805 | 13.5 |



MMJ 6/29/92

Calibration Summary 9613446.1416 0000108 pg 4 of 6

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 10500 Calibration Date: 01/29/92 Time: 1053

Lab File ID: Q012902 Init. Calib. Date(s): 01/10/92 01/10/92

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

Assoc. w/ B01365 only.

| COMPOUND | | $\overline{RRF}$ | RRF50 | %D | |
|---|---|---|---|---|---|
| Chloromethane | # | 1.384 | 1.423 | -2.8 | # |
| Bromomethane | | 1.886 | 1.751 | 7.2 | |
| Vinyl Chloride | * | 1.519 | 1.460 | 3.9 | * |
| Chloroethane | | 0.957 | 0.835 | 12.7 | |
| Methylene Chloride | | 1.441 | 1.284 | 10.9 | |
| Acetone | | 0.646 | 0.756 | -17.0 | |
| Carbon Disulfide | | 3.334 | 2.861 | 14.2 | |
| 1,1-Dichloroethene | * | 1.429 | 1.318 | 7.8 | * |
| 1,1-Dichloroethane | # | 3.047 | 2.895 | 5.0 | # |
| 1,2-Dichloroethene (total) | | 1.649 | 1.511 | 8.4 | |
| Chloroform | * | 3.767 | 3.642 | 3.3 | * |
| 1,2-Dichloroethane | | 3.031 | 3.240 | -6.9 | |
| 2-Butanone | | 0.032 | 0.029 | 9.4 | |
| 1,1,1-Trichloroethane | | 0.874 | 0.740 | 15.3 | |
| Carbon Tetrachloride | | 0.622 | 0.484 | 22.2 | |
| Vinyl Acetate | | 0.774 | 0.632 | 18.3 | |
| Bromodichloromethane | | 0.774 | 0.627 | 19.0 | |
| 1,2-Dichloropropane | * | 0.396 | 0.362 | 8.6 | * |
| cis-1,3-Dichloropropene | | 0.572 | 0.485 | 15.2 | |
| Trichloroethene | | 0.425 | 0.392 | 7.8 | |
| Dibromochloromethane | | 0.524 | 0.415 | 20.8 | |
| 1,1,2-Trichloroethane | | 0.360 | 0.319 | 11.4 | |
| Benzene | | 1.005 | 0.966 | 3.9 | |
| Trans-1,3-Dichloropropene | | 0.569 | 0.464 | 18.5 | |
| Bromoform | # | 0.333 | 0.251 | 24.6 | # |
| 4-Methyl-2-pentanone | | 0.336 | 0.369 | -9.8 | |
| 2-Hexanone | | 0.274 | 0.303 | -10.6 | |
| Tetrachloroethene | | 0.428 | 0.409 | 4.4 | |
| 1,1,2,2-Tetrachloroethane | # | 0.518 | 0.510 | 1.5 | # |
| Toluene | * | 0.687 | 0.658 | 4.2 | * |
| Chlorobenzene | # | 0.920 | 0.929 | -1.0 | # |
| Ethylbenzene | * | 0.452 | 0.438 | 3.1 | * |
| Styrene | | 0.839 | 0.792 | 5.6 | |
| Xylene (total) | | 0.473 | 0.473 | 0.0 | |
| Toluene-d8 | | 1.064 | 1.073 | -0.8 | |
| Bromofluorobenzene | | 0.845 | 0.789 | 6.6 | |
| 1,2-Dichloroethane-d4 | | 2.805 | 2.941 | -4.8 | |

FORM VII VOA

5/88 Rev.

[illegible] 7/7/92

Calibration Summary 000112 Pg 5 of 6

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 1050W Calibration Date(s): 01/29/92 01/29/92

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

Assoc. w/ B01381 only. 07/9/92

LAB FILE ID: RRF20 = W012905 RRF50 = W012902

RRF100= W012906 RRF150= W012907 RRF200= W012908

| COMPOUND | RRF20 | RRF50 | RRF100 | RRF150 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Chloromethane # | 0.889 | 0.809 | 0.629 | 0.401 | 0.375 | 0.621 | 37.5# |
| Bromomethane | 1.437 | 1.400 | 1.521 | 1.438 | 1.302 | 1.420 | 5.6 |
| Vinyl Chloride * | 1.140 | 1.081 | 1.087 | 1.109 | 1.068 | 1.097 | 2.6* |
| Chloroethane | 0.872 | 0.788 | 0.776 | 0.927 | 0.944 | 0.861 | 9.0 |
| Methylene Chloride | 2.012 | 1.537 | 1.487 | 1.526 | 1.574 | 1.627 | 13.4 |
| Acetone | 1.407 | 0.718 | 0.704 | 0.790 | 0.753 | 0.874 | 34.3 |
| Carbon Disulfide | 2.401 | 2.540 | 2.321 | 2.391 | 2.665 | 2.464 | 5.6 |
| 1,1-Dichloroethene * | 1.271 | 1.174 | 1.098 | 1.119 | 1.173 | 1.167 | 5.7* |
| 1,1-Dichloroethane # | 2.807 | 2.671 | 2.664 | 2.743 | 2.907 | 2.758 | 3.7# |
| 1,2-Dichloroethene (total) | 1.526 | 1.462 | 1.413 | 1.444 | 1.533 | 1.476 | 3.5 |
| Chloroform * | 2.884 | 2.705 | 2.720 | 2.784 | 2.976 | 2.814 | 4.1* |
| 1,2-Dichloroethane | 1.895 | 1.605 | 1.631 | 1.790 | 1.869 | 1.758 | 7.6 |
| 2-Butanone | 0.304 | 0.169 | 0.174 | 0.279 | 0.273 | 0.240 | 26.5 |
| 1,1,1-Trichloroethane | 0.469 | 0.470 | 0.478 | 0.494 | 0.551 | 0.492 | 7.0 |
| Carbon Tetrachloride | 0.388 | 0.432 | 0.430 | 0.438 | 0.483 | 0.434 | 7.8 |
| Vinyl Acetate | 0.423 | 0.374 | 0.798 | 0.977 | 1.207 | 0.756 | 47.3 |
| Bromodichloromethane | 0.642 | 0.690 | 0.706 | 0.740 | 0.832 | 0.722 | 9.8 |
| 1,2-Dichloropropane * | 0.532 | 0.528 | 0.532 | 0.566 | 0.635 | 0.559 | 8.1* |
| cis-1,3-Dichloropropene | 0.475 | 0.541 | 0.604 | 0.663 | 0.760 | 0.609 | 18.1 |
| Trichloroethene | 0.469 | 0.483 | 0.473 | 0.484 | 0.518 | 0.485 | 4.0 |
| Dibromochloromethane | 0.574 | 0.632 | 0.703 | 0.772 | 0.844 | 0.705 | 15.3 |
| 1,1,2-Trichloroethane | 0.399 | 0.374 | 0.401 | 0.434 | 0.460 | 0.414 | 8.1 |
| Benzene | 1.046 | 1.102 | 1.063 | 1.135 | 1.219 | 1.113 | 6.2 |
| Trans-1,3-Dichloropropene | 0.447 | 0.431 | 0.528 | 0.605 | 0.639 | 0.530 | 17.4 |
| Bromoform # | 0.399 | 0.419 | 0.514 | 0.612 | 0.660 | 0.521 | 22.1# |
| 4-Methyl-2-pentanone | 1.013 | 0.688 | 0.930 | 1.171 | 1.129 | 0.986 | 19.5 |
| 2-Hexanone | 0.831 | 0.616 | 0.809 | 1.061 | 1.035 | 0.870 | 21.0 |
| Tetrachloroethene | 0.510 | 0.515 | 0.478 | 0.497 | 0.526 | 0.505 | 3.6 |
| 1,1,2,2-Tetrachloroethane # | 1.000 | 0.848 | 1.016 | 1.179 | 1.229 | 1.054 | 14.5# |
| Toluene * | 0.687 | 0.691 | 0.652 | 0.673 | 0.723 | 0.685 | 3.8* |
| Chlorobenzene # | 1.077 | 1.056 | 0.973 | 0.989 | 1.042 | 1.027 | 4.3# |
| Ethylbenzene * | 0.416 | 0.422 | 0.390 | 0.398 | 0.426 | 0.410 | 3.8* |
| Styrene | 0.735 | 0.765 | 0.758 | 0.768 | 0.819 | 0.769 | 4.0 |
| Xylene (total) | 0.439 | 0.436 | 0.418 | 0.417 | 0.447 | 0.431 | 3.1 |
| Toluene-d8 | 1.180 | 1.146 | 1.183 | 1.213 | 1.273 | 1.199 | 4.0 |
| Bromofluorobenzene | 1.039 | 1.000 | 1.084 | 1.089 | 1.139 | 1.070 | 4.9 |
| 1,2-Dichloroethane-d4 | 1.607 | 1.374 | 1.520 | 1.605 | 1.664 | 1.554 | 7.3 |



MMC 6/29/92

Calibration Summary 0000138 Pg 6 of 6

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 1050W Calibration Date: 01/31/92 Time: 2320

Lab File ID: W013120 Init. Calib. Date(s): 01/29/92 01/29/92

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

Assoc. w/ B01581 only. 07/9/92

| COMPOUND | RRF | RRF50 | %D |
|---|---|---|---|
| Chloromethane # | 0.621 | 0.875 | -40.9 # |
| Bromomethane | 1.420 | 1.777 | -25.1 |
| Vinyl Chloride * | 1.097 | 1.172 | -6.8 * |
| Chloroethane | 0.861 | 0.949 | -10.2 |
| Methylene Chloride | 1.627 | 1.923 | -18.2 |
| Acetone | 0.874 | 1.095 | -25.3 |
| Carbon Disulfide | 2.464 | 2.697 | -9.5 |
| 1,1-Dichloroethene * | 1.167 | 1.407 | -20.6 * |
| 1,1-Dichloroethane # | 2.758 | 3.100 | -12.4 # |
| 1,2-Dichloroethene (total) | 1.476 | 1.778 | -20.5 |
| Chloroform * | 2.814 | 3.391 | -20.5 * |
| 1,2-Dichloroethane | 1.758 | 1.831 | -4.2 |
| 2-Butanone | 0.240 | 0.196 | 18.3 |
| 1,1,1-Trichloroethane | 0.492 | 0.583 | -18.5 |
| Carbon Tetrachloride | 0.434 | 0.500 | -15.2 |
| Vinyl Acetate | 0.756 | 0.331 | 56.2 |
| Bromodichloromethane | 0.722 | 0.730 | -1.1 |
| 1,2-Dichloropropane * | 0.559 | 0.498 | 10.9 * |
| cis-1,3-Dichloropropene | 0.609 | 0.583 | 4.3 |
| Trichloroethene | 0.485 | 0.556 | -14.6 |
| Dibromochloromethane | 0.705 | 0.665 | 5.7 |
| 1,1,2-Trichloroethane | 0.414 | 0.420 | -1.4 |
| Benzene | 1.113 | 1.118 | -0.4 |
| Trans-1,3-Dichloropropene | 0.530 | 0.498 | 6.0 |
| Bromoform # | 0.521 | 0.451 | 13.4 # |
| 4-Methyl-2-pentanone | 0.986 | 0.788 | 20.1 |
| 2-Hexanone | 0.870 | 0.743 | 14.6 |
| Tetrachloroethene | 0.505 | 0.509 | -0.8 |
| 1,1,2,2-Tetrachloroethane # | 1.054 | 0.759 | 28.0 # |
| Toluene * | 0.685 | 0.702 | -2.5 * |
| Chlorobenzene # | 1.027 | 1.082 | -5.4 # |
| Ethylbenzene * | 0.410 | 0.441 | -7.6 * |
| Styrene | 0.769 | 0.842 | -9.5 |
| Xylene (total) | 0.431 | 0.471 | -9.3 |
| Toluene-d8 | 1.199 | 1.384 | -15.4 |
| Bromofluorobenzene | 1.070 | 1.069 | 0.1 |
| 1,2-Dichloroethane-d4 | 1.554 | 1.839 | -18.3 |

FORM VII VOA

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7/9/92

Blank Summary 9613456 1418 0000175 Pg 1 of 3

1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 92LVW017-MB1

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

Lab File ID: W013122

Level: (low/med) LOW

Date Received: 01/31/92

% Moisture: not dec. 0

Date Analyzed: 02/01/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

Assoc. w/BD1581 only. 07/9/92

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg | | |
|---|---|---|---|---|
| 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 | 1 | J | x10 = 10 |
| 67-64-1 | Acetone | 4 | J | x10 = 40 |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | U | |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U | |
| 591-78-6 | 2-Hexanone | 10 | U | |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U | |
| 108-88-3 | Toluene | 5 | U | |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

MMJ 6/24/92

Blank Summary 0000167 Pg 2 of 3

1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 92LV0019-MB1

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

Lab File ID: 0012903

Level: (low/med) LOW

Date Received: 01/29/92

% Moisture: not dec. _____

Date Analyzed: 01/29/92

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

Apply to B01565

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 | 5 | U |
| 67-64-1 | Acetone | 8 | J |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

x10 = 80

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[illegible] 7/8/92

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1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 92LVK018-MB1

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

Lab File ID: AK2304

Level: (low/med) LOW

Date Received: 02/03/92

% Moisture: not dec. ____

Date Analyzed: 02/03/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

Apply to B01567

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 | 4 | J |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

x10 = 30
x10 = 40

FORM 1 V-1 12/88 Rev.

MM L
12/24/92

9613446.1422 Accuracy Summary pg 1 of 1

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

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

RFW Lot No.: 9201L119

Apply to B01S81

| | CLIENT SAMPLE NO. | S1 (TOL)# | S2 (BFB)# | S3 (DCE)# | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | B01S81 | 98 | 96 | 124 * | | 1 |
| 02 | B01S81MS | 106 | 101 | 138 * | | 1 |
| 03 | B01S81MSD | 96 | 92 | 126 * | | 1 |
| 04 | VBLKLVW017-MB1 | 96 | 102 | 103 | | 0 |

| | QC LIMITS |
|---|---|
| S1 (TOL) = Toluene-d8 | ( 81-117) |
| S2 (BFB) = Bromofluorobenzene | ( 74-121) |
| S3 (DCE) = 1,2-Dichloroethane-d4 | ( 70-121) |

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

B01S81
The MS/MSD %R and RPD are all within the control limits. 7/9/92 Therefore, no qualification is required.

MMX 6/29/92

Internal Standard Summary 0000145

Pg 1 of 1

8A

# VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Lab File ID (Standard): 0012902 Date Analyzed: 01/29/92

Instrument ID: 10500 Time Analyzed: 1053

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

| | | IS1(BCM) AREA # | RT | IS2(DFB) AREA # | RT | IS3(CBZ) AREA # | RT |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 73882 | 4.97 | 325678 | 15.13 | 339003 | 20.10 |
| | UPPER LIMIT | 147764 | 5.47 | 651356 | 15.63 | 678006 | 20.60 |
| | LOWER LIMIT | 36941 | 4.47 | 162839 | 14.63 | 169502 | 19.60 |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | B01S65 | 55213 | 4.90 | 269280 | 15.20 | 276310 | 20.17 |
| 02 | B01S65MS | 23152* | 4.90 | 89197* | 15.20 | 93588* | 20.17 |
| 03 | B01S65MSD | 76202 | 4.90 | 314654 | 15.20 | 334856 | 20.17 |
| 04 | VBLKLVQ019-MB1 | 83779 | 4.93 | 349685 | 15.20 | 348539 | 20.20 |

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

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

# Column used to flag internal standard area values with an asterisk

No qualification is necessary since the low area counts for B01S65MS do not directly effect B01S65. [illegible] 7/8/92

MMJ 6/29/92

9613446.1424



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

| | | |
|---|---|---|
| PROJECT: 913-~~88~~ 1719 | REVIEWER: MMK | DATE: 6/26/92 |
| LABORATORY: Weston | CASE: 92011119 | SDG: 92011119 |
| SAMPLES/MATRIX: B01581, ~~B01581 MS, B01581 MSD~~ 07/8/92 | | |
| B01565, ~~B01565 MS, B01565 MSD~~, B01567 07/8/92 | | |
| Soil/water | | |
| | | |

## 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)? benzoic acid | Yes | No | N/A |
| Are all RRF values ≥0.05 (2/88 SOW)? | Yes | No | N/A |
| Are all applicable RSD values ≤20.5% (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 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 ≤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

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.

## 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):

% RSD ICAL > 30% associated w/ B01567 for Benzoic acid.

several CCAL % D values are > 25% and associated data was qualified.

Data for SBLKLE0121-MB1 BS was not provided as analyzed on 2/1/92. Therefore these Blank results could not be applied to the associated water samples. The Blank data provided for Soil was applied to soil samples only.

Diethylpthalate, Di-n-Butylphthalate, Butylbenzylphthalate and Bis(2-Ethylhexyl)phthalate and several TIC's were detected in the field Blank.

No qualification based on field blanks was needed as sample concentrations had already been qualified, the sample concentrations were >5X the field blank concentrations.

One Surrogate SVOA out, no qualification necessary.

~~Several~~ MS % rec out for 4-Nitrophenol, Pentachlorophenol MSD % rec out for Pentachlorophenol, % RPD out for 1,4-Dichlorobenzene, N-Nitroso-Di-n-propylamine, 4 Nitrophenol and pentachlorophenol (Water)
0% recovery for pentachlorophenol

Soil MS/MSD in

Pentachlorophenol was not detected in the water sample indicating potential interference

9613446.1434

Pg 1 of 1

Holding Time Summary

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | Holding times |
|---|---|---|---|---|---|---|---|---|
| BO1S81 | 001 | S | 92LE0133 | 01/22/92 | 01/28/92 | 6 | 02/13/92 | 16 |
| BO1S81 | 001 MS | S | 92LE0133 | 01/22/92 | 01/28/92 | 6 | 02/13/92 | 16 |
| BO1S81 | 001 MSD | S | 92LE0133 | 01/22/92 | 01/28/92 | 6 | 02/14/92 | ~~14~~ 17 |
| BO1S65 | 002 | W | 92LE0121 | 01/22/92 | 01/27/92 | 5 | 02/04/92 | ~~13~~ 7 |
| BO1S65 | 002 MS | W | 92LE0121 | 01/22/92 | 01/27/92 | 5 | 02/05/92 | ~~14~~ 8 |
| BO1S65 | 002 MSD | W | 92LE0121 | 01/22/92 | 01/27/92 | 5 | 02/04/92 | ~~13~~ 7 |
| BO1S67 | 003 | W | 92LE0121 | 01/22/92 | 01/27/92 | 5 | 02/05/92 | 8 |
| **LAB QC:** | | | | | | | | |
| SBLK | MB1 | S | 92LE0133 | N/A | 01/28/92 | | 02/12/92 | N/A |
| SBLK | MB1 BS | S | 92LE0133 | N/A | 01/28/92 | | 02/13/92 | N/A |
| SBLK | MB1 | W | 92LE0121 | N/A | 01/27/92 | | 02/01/92 | N/A |
| SBLK | MB1 BS | W | 92LE0121 | N/A | 01/27/92 | | 02/01/92 | N/A |

Holding times were met.
[illegible]
7/8/92

MMH
6/26/92

9613446.4435 Calibration Summary 0000299 Pg 1 of 6

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 4500V Calibration Date: 02/13/92 Time: 1629

Lab File ID: V021302 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ B01581 only. 07/9/92

| COMPOUND | | RRF | RRF50 | %D | |
|---|---|---|---|---|---|
| Phenol | * | 2.078 | 1.913 | 7.9 | * |
| bis(2-Chloroethyl)ether | | 1.720 | 1.484 | 13.7 | |
| 2-Chlorophenol | | 1.452 | 1.305 | 10.1 | |
| 1,3-Dichlorobenzene | | 1.481 | 1.376 | 7.1 | |
| 1,4-Dichlorobenzene | * | 1.629 | 1.442 | 11.5 | * |
| Benzyl alcohol | | 1.012 | 0.885 | 12.5 | |
| 1,2-Dichlorobenzene | | 1.543 | 1.355 | 12.2 | |
| 2-Methylphenol | | 1.399 | 1.252 | 10.5 | |
| bis(2-Chloroisopropyl)ether | | 2.552 | 1.859 | 27.2 | |
| 4-Methylphenol | | 1.478 | 1.299 | 12.1 | |
| N-Nitroso-Di-n-propylamine | # | 1.157 | 0.915 | 20.9 | # |
| Hexachloroethane | | 0.634 | 0.530 | 16.4 | |
| Nitrobenzene | | 0.394 | 0.320 | 18.8 | |
| Isophorone | | 0.801 | 0.685 | 14.5 | |
| 2-Nitrophenol | * | 0.181 | 0.155 | 14.4 | * |
| 2,4-Dimethylphenol | | 0.308 | 0.281 | 8.8 | |
| Benzoic acid | | 0.168 | 0.147 | 12.5 | |
| bis(2-Chloroethoxy)methane | | 0.511 | 0.426 | 16.6 | |
| 2,4-Dichlorophenol | * | 0.263 | 0.234 | 11.0 | * |
| 1,2,4-Trichlorobenzene | | 0.273 | 0.246 | 9.9 | |
| Naphthalene | | 1.020 | 0.941 | 7.7 | |
| 4-Chloroaniline | | 0.429 | 0.388 | 9.6 | |
| Hexachlorobutadiene | * | 0.117 | 0.114 | 2.6 | * |
| 4-Chloro-3-methylphenol | * | 0.291 | 0.244 | 16.2 | * |
| 2-Methylnaphthalene | | 0.687 | 0.596 | 13.2 | |
| Hexachlorocyclopentadiene | # | 0.198 | 0.224 | -13.1 | # |
| 2,4,6-Trichlorophenol | * | 0.300 | 0.262 | 12.7 | * |
| 2,4,5-Trichlorophenol | | 0.332 | 0.292 | 12.0 | |
| 2-Chloronaphthalene | | 1.132 | 0.985 | 13.0 | |
| 2-Nitroaniline | | 0.401 | 0.260 | 35.2 | |
| Dimethylphthalate | | 1.186 | 1.023 | 13.7 | |
| Acenaphthylene | | 1.859 | 1.597 | 14.1 | |
| 2,6-Dinitrotoluene | | 0.304 | 0.247 | 18.8 | |
| 3-Nitroaniline | | 0.328 | 0.246 | 25.0 | |
| Acenaphthene | * | 1.076 | 0.906 | 15.8 | * |
| 2,4-Dinitrophenol | # | 0.113 | 0.086 | 23.9 | # |
| 4-Nitrophenol | # | 0.092 | 0.070 | 23.9 | # |



6/26/92 MMZ

Calibration Summary 9613446.1436 0000300 pg 2 of 6

7D

# SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 4500V Calibration Date: 02/13/92 Time: 1629

Lab File ID: V021302 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ B0158 only 7/9/92

| COMPOUND | | $\overline{RRF}$ | RRF50 | %D | |
|---|---|---|---|---|---|
| Dibenzofuran | | 1.500 | 1.311 | 12.6 | |
| 2,4-Dinitrotoluene | | 0.380 | 0.276 | 27.4 | |
| Diethylphthalate | | 1.263 | 1.020 | 19.2 | |
| 4-Chlorophenyl-phenylether | | 0.506 | 0.487 | 3.8 | |
| Fluorene | | 1.265 | 1.095 | 13.4 | |
| 4-Nitroaniline | | 0.211 | 0.199 | 5.7 | |
| 4,6-Dinitro-2-methylphenol | | 0.106 | 0.088 | 17.0 | |
| N-Nitrosodiphenylamine (1) | * | 0.567 | 0.508 | 10.4 | * |
| 4-Bromophenyl-phenylether | | 0.176 | 0.186 | -5.7 | |
| Hexachlorobenzene | | 0.193 | 0.200 | -3.6 | |
| Pentachlorophenol | * | 0.098 | 0.106 | -8.2 | * |
| Phenanthrene | | 1.080 | 0.911 | 15.6 | |
| Anthracene | | 1.117 | 0.953 | 14.7 | |
| Di-n-Butylphthalate | | 1.426 | 1.205 | 15.5 | |
| Fluoranthene | * | 0.930 | 0.802 | 13.8 | * |
| Pyrene | | 1.656 | 1.480 | 10.6 | |
| Butylbenzylphthalate | | 0.903 | 0.775 | 14.2 | |
| 3,3'-Dichlorobenzidine | | 0.349 | 0.334 | 4.3 | |
| Benzo(a)anthracene | | 1.207 | 1.029 | 14.7 | |
| Chrysene | | 1.098 | 0.965 | 12.1 | |
| bis(2-Ethylhexyl)phthalate | | 1.262 | 1.115 | 11.6 | |
| Di-n-Octyl phthalate | * | 2.735 | 2.226 | 18.6 | * |
| Benzo(b)fluoranthene | | 1.234 | 1.021 | 17.3 | |
| Benzo(k)fluoranthene | | 1.183 | 0.976 | 17.5 | |
| Benzo(a)pyrene | * | 1.076 | 0.829 | 23.0 | * |
| Indeno(1,2,3-cd)pyrene | | 1.013 | 0.765 | 24.5 | |
| Dibenzo(a,h)anthracene | | 0.820 | 0.604 | 26.3 | |
| Benzo(g,h,i)perylene | | 0.905 | 0.736 | 18.7 | |
| Nitrobenzene-d5 | | 0.381 | 0.317 | 16.8 | |
| 2-Fluorobiphenyl | | 1.171 | 1.066 | 9.0 | |
| p-Terphenyl-d14 | | 1.049 | 1.022 | 2.6 | |
| Phenol-d5 | | 1.861 | 1.654 | 11.1 | |
| 2-Fluorophenol | | 1.256 | 1.261 | -0.4 | |
| 2,4,6-Tribromophenol | | 0.109 | 0.101 | 7.3 | |

(1) Cannot be separated from Diphenylamine

FORM VII SV-2 5/88 Rev.

6/24/92 MMJ

Calibration Summary 0000201 Pg 3 of 6

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 5100M Calibration Date: 02/04/92 Time: 1051

Lab File ID: M020403 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ B01565 only. 07/9/92

| COMPOUND | | RRF | RRF50 | %D | |
|---|---|---|---|---|---|
| Phenol | * | 1.686 | 1.852 | -9.8 | * |
| bis(2-Chloroethyl)ether | | 1.928 | 1.851 | 4.0 | |
| 2-Chlorophenol | | 1.421 | 1.438 | -1.2 | |
| 1,3-Dichlorobenzene | | 1.466 | 1.587 | -8.3 | |
| 1,4-Dichlorobenzene | * | 1.725 | 1.736 | -0.6 | * |
| Benzyl alcohol | | 0.918 | 0.916 | 0.2 | |
| 1,2-Dichlorobenzene | | 1.663 | 1.580 | 5.0 | |
| 2-Methylphenol | | 1.408 | 1.338 | 5.0 | |
| bis(2-Chloroisopropyl)ether | | 2.532 | 2.544 | -0.5 | |
| 4-Methylphenol | | 1.556 | 1.409 | 9.4 | |
| N-Nitroso-Di-n-propylamine | # | 1.622 | 1.431 | 11.8 | # |
| Hexachloroethane | | 1.037 | 0.922 | 11.1 | |
| Nitrobenzene | | 0.512 | 0.534 | -4.3 | |
| Isophorone | | 0.892 | 0.894 | -0.2 | |
| 2-Nitrophenol | * | 0.198 | 0.193 | 2.5 | * |
| 2,4-Dimethylphenol | | 0.400 | 0.341 | 14.8 | |
| Benzoic acid | | 0.132 | 0.074 | 43.9 | |
| bis(2-Chloroethoxy)methane | | 0.613 | 0.608 | 0.8 | |
| 2,4-Dichlorophenol | * | 0.301 | 0.306 | -1.7 | * |
| 1,2,4-Trichlorobenzene | | 0.400 | 0.377 | 5.8 | |
| Naphthalene | | 1.097 | 1.115 | -1.6 | |
| 4-Chloroaniline | | 0.491 | 0.468 | 4.7 | |
| Hexachlorobutadiene | * | 0.229 | 0.213 | 7.0 | * |
| 4-Chloro-3-methylphenol | * | 0.313 | 0.286 | 8.6 | * |
| 2-Methylnaphthalene | | 0.869 | 0.835 | 3.9 | |
| Hexachlorocyclopentadiene | # | 0.221 | 0.160 | 27.6 | # |
| 2,4,6-Trichlorophenol | * | 0.342 | 0.320 | 6.4 | * |
| 2,4,5-Trichlorophenol | | 0.358 | 0.339 | 5.3 | |
| 2-Chloronaphthalene | | 1.013 | 1.044 | -3.1 | |
| 2-Nitroaniline | | 0.389 | 0.353 | 9.3 | |
| Dimethylphthalate | | 1.180 | 1.213 | -2.8 | |
| Acenaphthylene | | 1.624 | 1.740 | -7.1 | |
| 2,6-Dinitrotoluene | | 0.331 | 0.332 | -0.3 | |
| 3-Nitroaniline | | 0.250 | 0.258 | -3.2 | |
| Acenaphthene | * | 1.007 | 0.988 | 1.9 | * |
| 2,4-Dinitrophenol | # | 0.126 | 0.094 | 25.4 | # |
| 4-Nitrophenol | # | 0.140 | 0.136 | 2.9 | # |

MMT 6/24/92

Calibration Summary 9613446.1438 0000202 Pg 4 of 6

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 5100M Calibration Date: 02/04/92 Time: 1051

Lab File ID: M020403 Init. Calib. Date(s): 02/03/92 02/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc - w/B01565 only. 7/9/92

| COMPOUND | RRF | RRF50 | %D |
|---|---|---|---|
| Dibenzofuran | 1.471 | 1.491 | -1.4 |
| 2,4-Dinitrotoluene | 0.381 | 0.367 | 3.7 |
| Diethylphthalate | 1.335 | 1.340 | -0.4 |
| 4-Chlorophenyl-phenylether | 0.736 | 0.699 | 5.0 |
| Fluorene | 1.436 | 1.396 | 2.8 |
| 4-Nitroaniline | 0.168 | 0.176 | -4.8 |
| 4,6-Dinitro-2-methylphenol | 0.140 | 0.114 | 18.6 |
| N-Nitrosodiphenylamine (1) * | 0.495 | 0.526 | -6.3 * |
| 4-Bromophenyl-phenylether | 0.284 | 0.263 | 7.4 |
| Hexachlorobenzene | 0.370 | 0.319 | 13.8 |
| Pentachlorophenol * | 0.152 | 0.135 | 11.2 * |
| Phenanthrene | 0.985 | 1.087 | -10.4 |
| Anthracene | 0.986 | 1.023 | -3.8 |
| Di-n-Butylphthalate | 1.496 | 1.577 | -5.4 |
| Fluoranthene * | 1.139 | 1.091 | 4.2 * |
| Pyrene | 1.823 | 1.651 | 9.4 |
| Butylbenzylphthalate | 1.030 | 0.934 | 9.3 |
| 3,3'-Dichlorobenzidine | 0.309 | 0.265 | 14.2 |
| Benzo(a)anthracene | 1.411 | 1.287 | 8.8 |
| Chrysene | 1.362 | 1.267 | 7.0 |
| bis(2-Ethylhexyl)phthalate | 1.468 | 1.322 | 9.9 |
| Di-n-Octyl phthalate * | 3.889 | 3.883 | 0.2 * |
| Benzo(b)fluoranthene | 1.789 | 1.764 | 1.4 |
| Benzo(k)fluoranthene | 1.681 | 1.417 | 15.7 |
| Benzo(a)pyrene * | 1.235 | 1.195 | 3.2 * |
| Indeno(1,2,3-cd)pyrene | 0.941 | 0.901 | 4.3 |
| Dibenzo(a,h)anthracene | 0.724 | 0.692 | 4.4 |
| Benzo(g,h,i)perylene | 0.939 | 0.916 | 2.4 |
| Nitrobenzene-d5 | 0.456 | 0.477 | -4.6 |
| 2-Fluorobiphenyl | 1.212 | 1.236 | -2.0 |
| p-Terphenyl-d14 | 1.508 | 1.254 | 16.8 |
| Phenol-d5 | 1.403 | 1.609 | -14.7 |
| 2-Fluorophenol | 1.162 | 1.336 | -15.0 |
| 2,4,6-Tribromophenol | 0.206 | 0.167 | 18.9 |

(1) Cannot be separated from Diphenylamine

FORM VII SV-2 5/88 Rev.

MMC 6/26/92

Calibration Summary 0000211 pg 5 of 6

6B

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 5100M Calibration Date(s): 02/05/92 02/05/92

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

Assoc. w/ B01567 only. 7/9/92

LAB FILE ID: RRF20 = M020510 RRF50 = M020506
RRF80 = M020507 RRF120= M020508 RRF160= M020509

| COMPOUND | RRF20 | RRF50 | RRF80 | RRF120 | RRF160 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Phenol * | 2.255 | 2.157 | 2.409 | 2.438 | 2.508 | 2.353 | 6.1* |
| bis(2-Chloroethyl)ether | 2.461 | 2.528 | 2.683 | 2.546 | 2.516 | 2.547 | 3.2 |
| 2-Chlorophenol | 1.620 | 1.590 | 1.670 | 1.669 | 1.684 | 1.647 | 2.4 |
| 1,3-Dichlorobenzene | 1.623 | 1.743 | 1.600 | 1.624 | 1.556 | 1.629 | 4.3 |
| 1,4-Dichlorobenzene * | 1.958 | 1.925 | 1.886 | 1.883 | 1.851 | 1.901 | 2.2* |
| Benzyl alcohol | 1.187 | 1.174 | 1.276 | 1.308 | 1.292 | 1.247 | 5.0 |
| 1,2-Dichlorobenzene | 1.802 | 1.893 | 1.801 | 1.761 | 1.677 | 1.787 | 4.4 |
| 2-Methylphenol | 1.759 | 1.956 | 1.901 | 1.830 | 1.804 | 1.850 | 4.2 |
| bis(2-Chloroisopropyl)ether | 2.742 | 3.294 | 3.071 | 3.158 | 3.156 | 3.084 | 6.7 |
| 4-Methylphenol | 1.831 | 2.089 | 2.041 | 1.969 | 1.936 | 1.973 | 5.0 |
| N-Nitroso-Di-n-propylamine # | 1.546 | 1.764 | 1.721 | 1.719 | 1.627 | 1.675 | 5.2# |
| Hexachloroethane | 0.820 | 0.954 | 0.882 | 0.868 | 0.819 | 0.869 | 6.4 |
| Nitrobenzene | 0.494 | 0.507 | 0.523 | 0.530 | 0.553 | 0.521 | 4.3 |
| Isophorone | 1.036 | 1.174 | 1.044 | 1.057 | 1.127 | 1.088 | 5.5 |
| 2-Nitrophenol * | 0.195 | 0.208 | 0.219 | 0.222 | 0.226 | 0.214 | 5.9* |
| 2,4-Dimethylphenol | 0.384 | 0.430 | 0.437 | 0.415 | 0.441 | 0.421 | 5.5 |
| Benzoic acid | | 0.099 | 0.151 | 0.179 | 0.215 | 0.161 | 30.4 |
| bis(2-Chloroethoxy)methane | 0.627 | 0.692 | 0.645 | 0.664 | 0.687 | 0.663 | 4.2 |
| 2,4-Dichlorophenol * | 0.272 | 0.279 | 0.283 | 0.280 | 0.291 | 0.281 | 2.5* |
| 1,2,4-Trichlorobenzene | 0.311 | 0.308 | 0.296 | 0.294 | 0.287 | 0.299 | 3.4 |
| Naphthalene | 1.171 | 1.167 | 1.042 | 1.017 | 1.000 | 1.079 | 7.7 |
| 4-Chloroaniline | 0.470 | 0.465 | 0.507 | 0.514 | 0.508 | 0.493 | 4.7 |
| Hexachlorobutadiene * | 0.131 | 0.131 | 0.128 | 0.128 | 0.123 | 0.128 | 2.6* |
| 4-Chloro-3-methylphenol * | 0.310 | 0.346 | 0.357 | 0.360 | 0.364 | 0.347 | 6.3* |
| 2-Methylnaphthalene | 0.710 | 0.766 | 0.665 | 0.666 | 0.657 | 0.693 | 6.6 |
| Hexachlorocyclopentadiene # | 0.121 | 0.126 | 0.161 | 0.178 | 0.200 | 0.157 | 21.5# |
| 2,4,6-Trichlorophenol * | 0.294 | 0.286 | 0.311 | 0.324 | 0.337 | 0.310 | 6.8* |
| 2,4,5-Trichlorophenol | | 0.304 | 0.330 | 0.345 | 0.360 | 0.335 | 7.1 |
| 2-Chloronaphthalene | 1.227 | 1.294 | 1.243 | 1.233 | 1.189 | 1.237 | 3.1 |
| 2-Nitroaniline | | 0.465 | 0.517 | 0.551 | 0.560 | 0.523 | 8.2 |
| Dimethylphthalate | 1.223 | 1.314 | 1.228 | 1.276 | 1.221 | 1.252 | 3.3 |
| Acenaphthylene | 1.789 | 1.932 | 1.755 | 1.757 | 1.731 | 1.793 | 4.5 |
| 2,6-Dinitrotoluene | 0.274 | 0.290 | 0.310 | 0.323 | 0.313 | 0.302 | 6.5 |
| 3-Nitroaniline | | 0.338 | 0.367 | 0.400 | 0.411 | 0.379 | 8.7 |
| Acenaphthene * | 1.087 | 1.171 | 1.147 | 1.066 | 1.042 | 1.103 | 4.9* |
| 2,4-Dinitrophenol # | | 0.081 | 0.113 | 0.130 | 0.145 | 0.117 | 23.4# |
| 4-Nitrophenol # | | 0.077 | 0.095 | 0.101 | 0.114 | 0.097 | 15.9# |



MM 6/26/92

Calibration Summary 0000212 Pg 6 of 6

6C

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L119

Instrument ID: 5100M Calibration Date(s): 02/05/92 02/05/92

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

Assoc. w/ B01567 only. 07/9/92

LAB FILE ID: RRF20 = M020510 RRF50 = M020506
RRF80 = M020507 RRF120= M020508 RRF160= M020509

| COMPOUND | RRF20 | RRF50 | RRF80 | RRF120 | RRF160 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Dibenzofuran | 1.410 | 1.478 | 1.371 | 1.434 | 1.397 | 1.418 | 2.9 |
| 2,4-Dinitrotoluene | 0.309 | 0.317 | 0.349 | 0.371 | 0.372 | 0.344 | 8.6 |
| Diethylphthalate | 1.077 | 1.140 | 1.138 | 1.223 | 1.175 | 1.151 | 4.7 |
| 4-Chlorophenyl-phenylether | 0.564 | 0.595 | 0.569 | 0.571 | 0.530 | 0.566 | 4.1 |
| Fluorene | 1.167 | 1.325 | 1.263 | 1.255 | 1.162 | 1.234 | 5.6 |
| 4-Nitroaniline | | 0.237 | 0.276 | 0.286 | 0.296 | 0.274 | 9.4 |
| 4,6-Dinitro-2-methylphenol | | 0.105 | 0.122 | 0.134 | 0.144 | 0.126 | 13.3 |
| N-Nitrosodiphenylamine (1) * | 0.635 | 0.651 | 0.688 | 0.659 | 0.635 | 0.654 | 3.3* |
| 4-Bromophenyl-phenylether | 0.197 | 0.207 | 0.215 | 0.221 | 0.217 | 0.211 | 4.5 |
| Hexachlorobenzene | 0.234 | 0.239 | 0.247 | 0.253 | 0.246 | 0.244 | 3.0 |
| Pentachlorophenol * | | 0.110 | 0.126 | 0.130 | 0.136 | 0.126 | 8.9* |
| Phenanthrene | 1.212 | 1.371 | 1.206 | 1.210 | 1.154 | 1.231 | 6.7 |
| Anthracene | 1.177 | 1.329 | 1.247 | 1.194 | 1.188 | 1.227 | 5.1 |
| Di-n-Butylphthalate | 1.164 | 1.470 | 1.411 | 1.416 | 1.422 | 1.377 | 8.8 |
| Fluoranthene * | 0.892 | 1.025 | 1.024 | 1.055 | 1.075 | 1.014 | 7.1* |
| Pyrene | 2.924 | 3.067 | 2.630 | 2.629 | 2.613 | 2.773 | 7.6 |
| Butylbenzylphthalate | 1.145 | 1.335 | 1.399 | 1.577 | 1.532 | 1.398 | 12.3 |
| 3,3'-Dichlorobenzidine | 0.254 | 0.246 | 0.331 | 0.377 | 0.430 | 0.328 | 24.1 |
| Benzo(a)anthracene | 1.358 | 1.340 | 1.444 | 1.592 | 1.539 | 1.455 | 7.6 |
| Chrysene | 1.182 | 1.357 | 1.263 | 1.375 | 1.341 | 1.304 | 6.2 |
| bis(2-Ethylhexyl)phthalate | 1.511 | 1.850 | 2.071 | 2.152 | 2.191 | 1.955 | 14.4 |
| Di-n-Octyl phthalate * | 3.760 | 4.667 | 4.771 | 5.255 | 5.098 | 4.710 | 12.4* |
| Benzo(b)fluoranthene | 1.507 | 1.514 | 1.744 | 1.850 | 2.061 | 1.735 | 13.5 |
| Benzo(k)fluoranthene | 1.211 | 1.658 | 1.386 | 1.667 | 1.464 | 1.477 | 13.0 |
| Benzo(a)pyrene * | 0.960 | 1.107 | 1.112 | 1.202 | 1.392 | 1.155 | 13.7* |
| Indeno(1,2,3-cd)pyrene | 0.705 | 0.779 | 0.885 | 1.025 | 1.195 | 0.918 | 21.4 |
| Dibenzo(a,h)anthracene | 0.508 | 0.584 | 0.649 | 0.768 | 0.897 | 0.681 | 22.6 |
| Benzo(g,h,i)perylene | 0.702 | 0.830 | 0.852 | 0.984 | 1.031 | 0.880 | 14.9 |
| Nitrobenzene-d5 | 0.487 | 0.520 | 0.505 | 0.542 | 0.560 | 0.523 | 5.5 |
| 2-Fluorobiphenyl | 1.247 | 1.288 | 1.192 | 1.188 | 1.156 | 1.214 | 4.3 |
| p-Terphenyl-d14 | 1.626 | 1.719 | 1.789 | 1.776 | 1.799 | 1.742 | 4.1 |
| Phenol-d5 | 2.132 | 2.015 | 2.233 | 2.238 | 2.427 | 2.209 | 6.9 |
| 2-Fluorophenol | 1.485 | 1.282 | 1.557 | 1.597 | 1.783 | 1.541 | 11.8 |
| 2,4,6-Tribromophenol | 0.088 | 0.098 | 0.108 | 0.111 | 0.118 | 0.105 | 11.2 |

(1) Cannot be separated from Diphenylamine

FORM VI SV-2 01/89 Rev.

6/26/92 MMJ

Blank Summary 9013446.1991 0000346 Pg 1 of 5

1B
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. 7/10/92

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0133-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V021211

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 0 dec. Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/12/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

Assoc. w/ B01581

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 330 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 330 | U |
| 95-57-8 | 2-Chlorophenol | 330 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 330 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 330 | U |
| 100-51-6 | Benzyl alcohol | 330 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 330 | U |
| 95-48-7 | 2-Methylphenol | 330 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 330 | U |
| 106-44-5 | 4-Methylphenol | 330 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 330 | U |
| 67-72-1 | Hexachloroethane | 330 | U |
| 98-95-3 | Nitrobenzene | 330 | U |
| 78-59-1 | Isophorone | 330 | U |
| 88-75-5 | 2-Nitrophenol | 330 | U |
| 105-67-9 | 2,4-Dimethylphenol | 330 | U |
| 65-85-0 | Benzoic acid | 1700 | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 330 | U |
| 120-83-2 | 2,4-Dichlorophenol | 330 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 330 | U |
| 91-20-3 | Naphthalene | 330 | U |
| 106-47-8 | 4-Chloroaniline | 330 | U |
| 87-68-3 | Hexachlorobutadiene | 330 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 330 | U |
| 91-57-6 | 2-Methylnaphthalene | 330 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 330 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 330 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 330 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 330 | U |
| 208-96-8 | Acenaphthylene | 330 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 330 | U |

FORM 1 SV-1 12/88 Rev.

mmf 6/27/92

7/8/92

Blk/Spk Summary 96L3446.MAC 1C 0000347 Pg 2 of 35

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 92LE0133-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V021211

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 0 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/12/92

GPC Cleanup: (Y/N) Y pH: 7.0

Dilution Factor: 1.00

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

Assoc. w/ B0J581

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U | |
| 83-32-9 | Acenaphthene | 330 | U | |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U | |
| 100-02-7 | 4-Nitrophenol | 1700 | U | |
| 132-64-9 | Dibenzofuran | 330 | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 330 | U | |
| 84-66-2 | Diethylphthalate | 330 | U | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 330 | U | |
| 86-73-7 | Fluorene | 330 | U | |
| 100-01-6 | 4-Nitroaniline | 1700 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | U | |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 330 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 330 | U | |
| 118-74-1 | Hexachlorobenzene | 330 | U | |
| 87-86-5 | Pentachlorophenol | 1700 | U | |
| 85-01-8 | Phenanthrene | 330 | U | |
| 120-12-7 | Anthracene | 330 | U | |
| 84-74-2 | Di-n-Butylphthalate | 2000 | | x10=20,000 |
| 206-44-0 | Fluoranthene | 330 | U | |
| 129-00-0 | Pyrene | 330 | U | |
| 85-68-7 | Butylbenzylphthalate | 330 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 670 | U | |
| 56-55-3 | Benzo(a)anthracene | 330 | U | |
| 218-01-9 | Chrysene | 330 | U | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 270 | J | x10 = 2,700 |
| 117-84-0 | Di-n-Octyl phthalate | 330 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 330 | U | |
| 207-08-9 | Benzo(k)fluoranthene | 330 | U | |
| 50-32-8 | Benzo(a)pyrene | 330 | U | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 330 | U | |
| 53-70-3 | Dibenzo(a,h)anthracene | 330 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 330 | U | |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

mmS 6/27/92

for MMS 7/8/92

0000348

1F

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: NONE

Client: LAB

Matrix: SOIL

Lab Sample ID: 92LE0133-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V021211

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 0 dec.

Date Extracted: 01/28/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/12/92

GPC Cleanup: (Y/N) Y pH: 7.0

Dilution Factor: 1.00

Number TICs found: 2

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | ALDOL CONDENSATE | 6.05 | 200 | AJ |
| 2. | ALDOL CONDENSATE | 7.02 | 2000 | AJ |

FORM 1 SV-TIC 12/88 Rev.

Quantitation Report File: M013114 0000377

Data: M013114.TI
02/01/92 2:18:00
Sample: 92LE0121-MB1
onds.: WATER
Formula: M013109 Instrument: 5100M Weight: 0.011
Submitted by: 013192 Analyst: EWS Acct. No.: 5100M

AMOUNT=AREA * REF AMNT/(REF AREA * RESP FACT)
Resp. fac. from Library Entry

| No | Name | |
|---|---|---|
| 51 | C560 | 4-NITROPHENOL |
| 52 | C565 | DIBENZOFURAN |
| 53 | C570 | 2,4-DINITROTOLUENE |
| 54 | C580 | DIETHYLPHTHALATE |
| 55 | C585 | 4-CHLOROPHENYL-PHENYLETHER |
| 56 | C590 | FLUORENE |
| 57 | C595 | 4-NITROANILINE |
| 58 | C610 | 4,6-DINITRO-2-METHYLPHENOL |
| 59 | C615 | N-NITROSODIPHENYLAMINE |
| 60 | | 1,2-DIPHENYLHYDRAZINE (AZOBENZENE) |
| 61 | C625 | 4-BROMOPHENYL-PHENYLETHER |
| 62 | C630 | HEXACHLOROBENZENE |
| 63 | | PENTACHLOROPHENOL |
| 64 | C640 | PHENANTHRENE |
| 65 | C645 | ANTHRACENE |
| 66 | C650 | DI-N-BUTYLPHTHALATE |
| 67 | C655 | FLUORANTHENE |
| 68 | | BENZIDINE |
| 69 | C715 | PYRENE |
| 70 | C720 | BUTYLBENZYLPHTHALATE |
| 71 | C725 | 3,3'-DICHLOROBENZIDINE |
| 72 | C730 | BENZO(A)ANTHRACENE |
| 73 | C745 | BIS(2-ETHYLHEXYL)PHTHALATE |
| 74 | C740 | CHRYSENE |
| 75 | C760 | DI-N-OCTYLPHTHALATE |
| 76 | C765 | BENZO(B)FLUORANTHENE |
| 77 | C770 | BENZO(K)FLUORANTHENE |
| 78 | C775 | BENZO(A)PYRENE |
| 79 | C780 | INDENO(1,2,3-CD)PYRENE |
| 80 | C785 | DIBENZ(A,H)ANTHRACENE |
| 81 | C790 | BENZO(G,H,I)PERYLENE |
| 82 | | 2-METHYL-1,3-DIOXOLANE |
| 83 | | 1,4-DIOXANE |
| 84 | | TRIPHENYLPHOSPHATE |

| No | m/z | Scan | Time | Ref | RRT | Meth | Area(Hght) | Amount | %Tot |
|---|---|---|---|---|---|---|---|---|---|
| 51 | NOT FOUND | | | | | | | | |
| 52 | NOT FOUND | | | | | | | | |
| 53 | NOT FOUND | | | | | | | | |
| 54 | 149 | 940 | 15:40 | 3 | 1.078 | A BB | 435. | 0.342 NG c/ | 0.06 |
| 55 | NOT FOUND | | | | | | | | |
| 56 | NOT FOUND | | | | | | | | |
| 57 | NOT FOUND | | | | | | | | |
| 58 | NOT FOUND | | | | | | | | |
| 59 | NOT FOUND | | | | | | | | |

961346.1445 0000378

| No | m/z | Scan | Time | Ref | RRT | Meth | Area(Hght) | Amount | %Tot |
|---|---|---|---|---|---|---|---|---|---|
| 60 | NOT FOUND | | | | | | | | |
| 61 | NOT FOUND | | | | | | | | |
| 62 | NOT FOUND | | | | | | | | |
| 63 | NOT FOUND | | | | | | | | |
| 64 | NOT FOUND | | | | | | | | |
| 65 | NOT FOUND | | | | | | | | |
| 66 | 149 | 1160 | 19:20 | 4 | 1.067 | A BB | 2932. 14.4 | 1.437 NG | 0.25 |
| 67 | NOT FOUND | | | | | | | | |
| 68 | NOT FOUND | | | | | | | | |
| 69 | NOT FOUND | | | | | | | | |
| 70 | 149 | 1321 | 22:01 | 5 | 0.952 | A BB | 246. | 0.435 NG <1 | 0.08 |
| 71 | NOT FOUND | | | | | | | | |
| 72 | NOT FOUND | | | | | | | | |
| 73 | 149 | 1382 | 23:02 | 5 | 0.996 | A VB | 2439. 30.3 | 3.033 NG | 0.53 |
| 74 | NOT FOUND | | | | | | | | |
| 75 | NOT FOUND | | | | | | | | |
| 76 | NOT FOUND | | | | | | | | |
| 77 | NOT FOUND | | | | | | | | |
| 78 | NOT FOUND | | | | | | | | |
| 79 | NOT FOUND | | | | | | | | |
| 80 | NOT FOUND | | | | | | | | |
| 81 | NOT FOUND | | | | | | | | |
| 82 | NOT FOUND | | | | | | | | |
| 83 | NOT FOUND | | | | | | | | |
| 84 | NOT FOUND | | | | | | | | |

10x 5/1/92

MWM 2/1/92

9613446.1446



# PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMR | DATE: 6/29/92 |
| LABORATORY: Weston | CASE: 92014119 | SDG: 92014119 |
| SAMPLES/MATRIX: B01S81, ~~B07S81 MS/MSD~~ 7/9/92 / Soil and | | |
| B01S65, ~~B07S65 MS/MSD~~, B01S67 / Water | | |
| 7/9/92 | | |
| | | |
| | | |

## 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). Does not occur repeatedly.

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).

No Associated detects are associated with out of specification % RSD and therefore qualification is not necessary.

A few continuing Calibration %D results were greater than specified criteria. As no compounds were detected in the associated samples qualification was not necessary.

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

Heptachlor < CRQL in the water blank (2-Column confirmation)

ACTION: Qualify all associated positive results as nondetects (U) that are <5 times the highest concentration in any acceptable blank. qualification not necessary

### 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? Water out | 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? several with out — 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.

9613446.1454



COMMENTS (attach additional sheets as necessary):

two pesticide standards do not elute within RT windows. this is not significant as no compounds within the RT window.

9613446.1455

Holding Time Summary

pg 1 of 1

MAR 1992
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold times |
|---|---|---|---|---|---|---|---|---|
| B01S81 | 001 | S | 92LE0130 | 01/22/92 | 01/28/92 | 6 | 02/18/92 | 21 |
| B01S81 | 001 MS | S | 92LE0130 | 01/22/92 | 01/28/92 | 6 | 02/19/92 | 22 |
| B01S81 | 001 MSD | S | 92LE0130 | 01/22/92 | 01/28/92 | 6 | 02/19/92 | 22 |
| B01S65 | 002 | W | 92LE0125 | 01/22/92 | 01/27/92 | 5 | 02/14/92 | 18 |
| B01S65 | 002 MS | W | 92LE0125 | 01/22/92 | 01/27/92 | 5 | 02/14/92 | 18 |
| B01S65 | 002 MSD | W | 92LE0125 | 01/22/92 | 01/27/92 | 5 | 02/14/92 | 18 |
| B01S67 | 003 | W | 92LE0125 | 01/22/92 | 01/27/92 | 5 | 02/15/92 | 19 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| PBLK | MB1 | S | 92LE0130 | N/A | 01/28/92 | 02/19/92 |
| PBLK | MB1 BS | S | 92LE0130 | N/A | 01/28/92 | 02/19/92 |
| PBLK | MB1 | W | 92LE0125 | N/A | 01/27/92 | 02/15/92 |
| PBLK | MB1 BS | W | 92LE0125 | N/A | 01/27/92 | 02/15/92 |

holding times met

MMR
6/29/92

Blank 261 5446 1456 0000223 pg 1 of 1

ID

CLIENT SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS SHEET

PBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 92LE0125-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 02149209.23

Level: (low/med) LOW Date Received: 01/27/92

% Moisture: not dec. _____ dec. Date Extracted: 01/27/92

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 02/15/92

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | 0.050 | U |
| 319-85-7 | Beta-BHC | 0.050 | U |
| 319-86-8 | Delta-BHC | 0.050 | U |
| 58-89-9 | gamma-BHC (Lindane) | 0.050 | U |
| 76-44-8 | Heptachlor | ~~0.030~~ 0.05 | ~~J~~ U 7/10/92 |
| 309-00-2 | Aldrin | 0.050 | U |
| 1024-57-3 | Heptachlor epoxide | 0.050 | U |
| 959-98-8 | Endosulfan I | 0.050 | U |
| 60-57-1 | Dieldrin | 0.10 | U |
| 72-55-9 | 4,4'-DDE | 0.10 | U |
| 72-20-8 | Endrin | 0.10 | U |
| 33213-65-9 | Endosulfan II | 0.10 | U |
| 72-54-8 | 4,4'-DDD | 0.10 | U |
| 1031-07-8 | Endosulfan sulfate | 0.10 | U |
| 50-29-3 | 4,4'-DDT | 0.10 | U |
| 72-43-5 | Methoxychlor | 0.50 | U |
| 53494-70-5 | Endrin ketone | 0.10 | U |
| 5103-71-9 | alpha-Chlordane | 0.50 | U |
| 5103-74-2 | gamma-Chlordane | 0.50 | U |
| 8001-35-2 | Toxaphene | 1.0 | U |
| 12674-11-2 | Aroclor-1016 | 0.50 | U |
| 11104-28-2 | Aroclor-1221 | 0.50 | U |
| 11141-16-5 | Aroclor-1232 | 0.50 | U |
| 53469-21-9 | Aroclor-1242 | 0.50 | U |
| 12672-29-6 | Aroclor-1248 | 0.50 | U |
| 11097-69-1 | Aroclor-1254 | 1.0 | U |
| 11096-82-5 | Aroclor-1260 | 1.0 | U |

FORM 1 PEST 12/88 Rev.

7/10/92

9613446.1457

WHC-SD-EN-SPP-002, Rev. 1

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMR | DATE: 7/1/92 |
| LABORATORY: Weston | CASE: 92014119 | SDG: 92014119 |
| SAMPLES/MATRIX: B01581 / Soil B01565/Water | | |
| B01567/Water | | |
| | | |
| | | |
| | | |

## 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.
Sample results within linear range

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.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? TL/water (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.
u qualify TL in B01365

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.

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? ±20% Yes No N/A
only Pb exceeds CRQL

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

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

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

If no, were MSA analyses performed when required? Yes No N/A
MSA performed on B0IS81 Replicate only.

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? ~~MSA for Pb B0IS81 not reported~~ Yes ~~No~~ N/A
7/9/92 7/9/92

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):

Water BLK contains low level thallium.
Water Prep BLK exhibits neg blank concentrations.

Zn ~~and Fe~~ was blank qualified out of the Equip BLK due to FB contamination. Soil conc (comparable) were < 5X these FB contamination levels and were not BLK qualified.

MS % were out for Tl, Hg and Mn, for Soil MS. Hg, Tl soil conc was < EDL and % was > 125 no qual necessary. Mn J qual as it was detected and % MS Rec was > 125%.

MS % recoveries were out for Pb, Ag and CN
Pb and Ag recovery was < 30%
* Pb results were rejected in B01567
Ag " " in B01567 and B01565
Pb " " J qual in B01565

Bismuth Data checked no qual necessary

Ca, ZN, and CN in FB

Ca 89.40 X.5

Initials for review 7/6/91

9613446.1463

pg 1 of 5

Holding Time Summary

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| B01S81 | | | | | | | | |
| SILVER, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | 30 | 02/27/92 | 36 |
| SILVER, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| SILVER, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ALUMINUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ALUMINUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ALUMINUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ARSENIC, TOTAL | 001 | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | 33 |
| ARSENIC, TOTAL | 001 REP | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | |
| ARSENIC, TOTAL | 001 MS | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | |
| BARIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | 36 |
| BARIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| BARIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| BERYLLIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| BERYLLIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| BERYLLIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| BISMUTH, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/26/92 | 35 |
| BISMUTH, TOTAL REP | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/26/92 | |
| BISMUTH, TOTAL SPIKE | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/26/92 | |
| CALCIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | 36 |
| CALCIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| CALCIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| CADMIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| CADMIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| CADMIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| COBALT, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| COBALT, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| COBALT, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| CHROMIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| CHROMIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| CHROMIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| COPPER, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| COPPER, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| COPPER, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| IRON, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| IRON, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| IRON, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| MERCURY, TOTAL | 001 | S | 92C0039 | 01/22/92 | 02/06/92 | 14 | 02/07/92 | 16 |

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Holding Time Summary Pg 2 of 5

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold times |
|---|---|---|---|---|---|---|---|---|
| MERCURY, TOTAL | 001 REP | S | 92C0039 | 01/22/92 | 02/06/92 | ~~30~~ 15 | 02/07/92 | 16 |
| MERCURY, TOTAL | 001 MS | S | 92C0039 | 01/22/92 | 02/06/92 | 15 | 02/07/92 | |
| POTASSIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | 30 | 02/27/92 | 36 |
| POTASSIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| POTASSIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| MAGNESIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| MAGNESIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| MAGNESIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| MANGANESE, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| MANGANESE, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| MANGANESE, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| SODIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| SODIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| SODIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| NICKEL, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| NICKEL, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| NICKEL, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| LEAD, TOTAL | 001 | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/25/92 | 34 |
| LEAD, TOTAL | 001 REP | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/25/92 | |
| LEAD, TOTAL | 001 MS | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/25/92 | |
| ANTIMONY, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | 36 |
| ANTIMONY, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ANTIMONY, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| SELENIUM, TOTAL | 001 | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | 33 |
| SELENIUM, TOTAL | 001 REP | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | |
| SELENIUM, TOTAL | 001 MS | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | |
| THALLIUM, TOTAL | 001 | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | |
| THALLIUM, TOTAL | 001 REP | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | |
| THALLIUM, TOTAL | 001 MS | S | 92L0541 | 01/22/92 | 02/21/92 | | 02/24/92 | |
| VANADIUM, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | 36 |
| VANADIUM, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| VANADIUM, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ZINC, TOTAL | 001 | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ZINC, TOTAL | 001 REP | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| ZINC, TOTAL | 001 MS | S | 92L0542 | 01/22/92 | 02/21/92 | | 02/27/92 | |
| B01S65 | | | | | | | | |
| SILVER, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | ~~30~~ 15 | 02/26/92 | 35 |
| SILVER, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |

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Holding Time Summary Pg 3 of 5

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| SILVER, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | 15 | 02/26/92 | 35 |
| ALUMINUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ALUMINUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ALUMINUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ARSENIC, TOTAL | 002 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | 20 |
| ARSENIC, TOTAL | 002 REP | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | |
| ARSENIC, TOTAL | 002 MS | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | |
| BARIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |
| BARIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| BARIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| BERYLLIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| BERYLLIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| BERYLLIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| BISMUTH, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/25/92 | 34 |
| BISMUTH, TOTAL REP | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/25/92 | |
| BISMUTH, TOTAL SPIKE | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/25/92 | |
| CALCIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |
| CALCIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CALCIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CADMIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CADMIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CADMIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| COBALT, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| COBALT, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| COBALT, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CHROMIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CHROMIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CHROMIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| COPPER, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| COPPER, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| COPPER, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| IRON, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| IRON, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| IRON, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| MERCURY, TOTAL | 002 | W | 92C0037 | 01/22/92 | 02/04/92 | 13 | 02/04/92 | 13 |
| MERCURY, TOTAL | 002 REP | W | 92C0037 | 01/22/92 | 02/04/92 | | 02/04/92 | |
| MERCURY, TOTAL | 002 MS | W | 92C0037 | 01/22/92 | 02/04/92 | | 02/04/92 | |
| POTASSIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | 15 | 02/26/92 | 35 |
| POTASSIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| POTASSIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |

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Holding Time Summary 9613446-1466 pg 4 of 5

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext time | ANALYSIS | hold time |
|---|---|---|---|---|---|---|---|---|
| MAGNESIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | 15 | 02/26/92 | 35 |
| MAGNESIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| MAGNESIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| MANGANESE, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| MANGANESE, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| MANGANESE, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| SODIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| SODIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| SODIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| NICKEL, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| NICKEL, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| NICKEL, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| LEAD, TOTAL | 002 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/12/92 | 21 |
| LEAD, TOTAL | 002 REP | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/12/92 | |
| LEAD, TOTAL | 002 MS | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/12/92 | |
| ANTIMONY, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |
| ANTIMONY, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ANTIMONY, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| SELENIUM, TOTAL | 002 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | 20 |
| SELENIUM, TOTAL | 002 REP | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | |
| SELENIUM, TOTAL | 002 MS | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | |
| THALLIUM, TOTAL | 002 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/13/92 | 22 |
| THALLIUM, TOTAL | 002 REP | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/13/92 | |
| THALLIUM, TOTAL | 002 MS | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/13/92 | |
| VANADIUM, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |
| VANADIUM, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| VANADIUM, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ZINC, TOTAL | 002 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ZINC, TOTAL | 002 REP | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ZINC, TOTAL | 002 MS | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| B01S67 | | | | | | | | |
| SILVER, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | 15 | 02/26/92 | 35 |
| ALUMINUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| ARSENIC, TOTAL | 003 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | 20 |
| BARIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |
| BERYLLIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| BISMUTH, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/25/92 | 34 |
| CALCIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |

MMY 7/1/92

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | | ANALYSIS | |
|---|---|---|---|---|---|---|---|---|
| CADMIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | 15 | 02/26/92 | 35 |
| COBALT, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| CHROMIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| COPPER, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| IRON, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| MERCURY, TOTAL | 003 | W | 92C0037 | 01/22/92 | 02/04/92 | 13 | 02/04/92 | 13 |
| POTASSIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | 15 | 02/26/92 | 35 |
| MAGNESIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| MANGANESE, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| SODIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| NICKEL, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |
| LEAD, TOTAL | 003 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/12/92 | 21 |
| ANTIMONY, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |
| SELENIUM, TOTAL | 003 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/11/92 | 20 |
| THALLIUM, TOTAL | 003 | W | 92L0420 | 01/22/92 | 02/06/92 | | 02/13/92 | 22 |
| VANADIUM, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | 35 |
| ZINC, TOTAL | 003 | W | 92L0421 | 01/22/92 | 02/06/92 | | 02/26/92 | |

LAB QC:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | N/A | 02/27/92 | N/A |
| ALUMINUM LABORTORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| BARIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| BERYLLIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| BISMUTH, LCS | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/26/92 | |
| CALCIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| CADMIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| COBALT LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| CHROMIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| COPPER LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| IRON LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| POTASSIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| MAGNESIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| MANGANESE LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| SODIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| NICKEL LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| ANTIMONY LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| VANADIUM LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| ZINC LABORATORY | LC1 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |
| SILVER LABORATORY | LC2 BS | S | 92L0542 | N/A | 02/21/92 | | 02/27/92 | |

MMY 7/1/92

9613446.1468 0000038

Blank Summary

Pg 1 of 1

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.: CLP119

Preparation Blank Matrix (soil/water): WATER

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

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5x | | | | | | | | | | |
| Aluminum | 83.0 | U | 83.0 | U | 83.0 | U | 83.0 | U | 83.000 | U | P |
| Antimony | 23.0 | U | 23.0 | U | 23.0 | U | 23.0 | U | 23.000 | U | P |
| Arsenic | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 2.000 | U | F |
| Barium | 38.0 | U | 38.0 | U | 38.0 | U | 38.0 | U | 38.000 | U | P |
| Beryllium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | 1.000 | U | P |
| Cadmium | 3.0 | U | 3.0 | U | 3.0 | U | 3.0 | U | 3.000 | U | P |
| Calcium | 88.0 | U | 88.0 | U | 88.0 | U | 88.0 | U | 88.000 | U | P |
| Chromium | 6.0 | U | 6.0 | U | 6.0 | U | 6.0 | U | 6.000 | U | P |
| Cobalt | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | 5.000 | U | P |
| Copper | 6.0 | U | 6.0 | U | 6.0 | U | 6.0 | U | 6.000 | U | P |
| Iron | 39.0 | U | 39.0 | U | 39.0 | U | 39.0 | U | 39.000 | U | P |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 2.000 | U | F |
| Magnesium | 78.0 | U | 78.0 | U | 78.0 | U | 78.0 | U | 78.000 | U | P |
| Manganese | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 2.000 | U | P |
| Mercury | .1 | U | .1 | U | .1 | U | .1 | U | .100 | U | CV |
| Nickel | 18.0 | U | 18.0 | U | 18.0 | U | 18.0 | U | 18.000 | U | P |
| Potassium | 734.0 | U | 734.0 | U | 734.0 | U | 734.0 | U | 734.000 | U | P |
| Selenium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | 2.000 | U | F |
| Silver | 4.0 | U | 4.0 | U | 4.0 | U | 4.0 | U | 4.000 | U | P |
| Sodium | 638.0 | U | 638.0 | U | 638.0 | U | 638.0 | U | 638.000 | U | P |
| Thallium | 12 2.4 | B | 2.0 | U | 20.5 4.1 | B | 2.0 | U | -2.000 | B | F |
| Vanadium | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | -5.100 | B | P |
| Zinc | 4.0 | U | 4.0 | U | 4.0 | U | 4.0 | U | 7.800 | B | P |
| Cyanide | 20.0 | U | 20.0 | U | 20.0 | U | | | 10.000 | U | C |

FORM III - IN 03/90

MMK 7/1/92

Accuracy ~~Summary~~ 9615446.1469 0000045 Pg 1 of 2

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B01S81S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP119

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 98.8

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 | 94.8000 | | 4.6575 | U | 101.20 | 93.6 | | P |
| Arsenic | 75-125 | 8.0000 | | .9900 | B | 8.10 | 86.5 | | F |
| Barium | 75-125 | 456.2000 | | 68.0000 | | 405.00 | 95.8 | | P |
| Beryllium | 75-125 | 9.3000 | | .3200 | B | 10.10 | 88.9 | | P |
| Cadmium | 75-125 | 10.1000 | | .6075 | U | 10.10 | 99.6 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 75-125 | 45.6000 | | 11.4000 | | 40.50 | 84.6 | | P |
| Cobalt | 75-125 | 100.9000 | | 6.5000 | B | 101.20 | 93.3 | | P |
| Copper | 75-125 | 58.7000 | | 10.5000 | | 50.60 | 95.3 | | P |
| Iron | | | | | | | | | NR |
| Lead | 75-125 | 6.5000 | | 2.6000 | | 4.10 | 97.0 | | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 75-125 | 331.0000 | | 199.0000 | | 101.20 | 130.3 | N | P |
| Mercury | 75-125 | .6610 | | .0506 | U | .51 | 129.6 | N | CV |
| Nickel | 75-125 | 97.7000 | | 7.9000 | B | 101.20 | 96.5 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 1.7000 | | .4050 | U | 2.00 | 84.0 | | F |
| Silver | 75-125 | 10.7000 | | 1.6000 | B | 10.10 | 90.1 | | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 7.5000 | | .4050 | U | 10.10 | 74.2 | N | F |
| Vanadium | 75-125 | 116.8000 | | 18.3000 | | 101.20 | 97.4 | | P |
| Zinc | 75-125 | 120.2000 | | 25.4000 | | 101.20 | 93.6 | | P |
| Cyanide | 75-125 | 5.4210 | | 1.0120 | U | 5.06 | 107.1 | | C |

Comments:

B01S81 Mn J qual
Hg not qualified <IDL
TL ~~not qual~~ US <IDL

FORM V (Part 1) - IN 03/90

MMF 7/1/92

Accuracy Summary 9613446.1470 0000046 pg 2 of 2

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B01S65S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP119

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 75-125 | 1942.6000 | | 83.0000 | U | 2000.00 | 97.1 | | P |
| Antimony | 75-125 | 550.2000 | | 23.0000 | U | 500.00 | 110.0 | | P |
| Arsenic | 75-125 | 37.2000 | | 2.0000 | U | 40.00 | 93.0 | | F |
| Barium | 75-125 | 1960.6000 | | 38.0000 | U | 2000.00 | 98.0 | | P |
| Beryllium | 75-125 | 47.9000 | | 1.0000 | U | 50.00 | 95.8 | | P |
| Cadmium | 75-125 | 49.1000 | | 3.0000 | U | 50.00 | 98.2 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 75-125 | 194.3000 | | 6.0000 | U | 200.00 | 97.2 | | P |
| Cobalt | 75-125 | 499.2000 | | 5.0000 | U | 500.00 | 99.8 | | P |
| Copper | 75-125 | 248.5000 | | 6.0000 | U | 250.00 | 99.4 | | P |
| Iron | 75-125 | 1015.9000 | | 39.0000 | U | 1000.00 | 101.6 | | P |
| Lead | 75-125 | 20.8000 | | 18.3000 | | 20.00 | 12.5 | N | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 75-125 | 496.1001 | | 2.0000 | U | 500.00 | 99.2 | | P |
| Mercury | 75-125 | 1.0440 | | .1000 | U | 1.00 | 104.4 | | CV |
| Nickel | 75-125 | 495.2000 | | 18.0000 | U | 500.00 | 99.0 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 9.8000 | | 2.0000 | U | 10.00 | 98.0 | | F |
| Silver | 75-125 | 11.8000 | | 4.0000 | U | 50.00 | 23.6 | N | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 44.7000 | | 3.0000 | B | 50.00 | 83.4 | | F |
| Vanadium | 75-125 | 506.3000 | | 5.0000 | U | 500.00 | 101.3 | | P |
| Zinc | 75-125 | 511.6001 | | 10.2000 | B | 500.00 | 100.3 | | P |
| Cyanide | 75-125 | 99.9470 | | 28.4770 | U | 100.00 | 71.5 | N | C |

Comments:

PD Rejected in B01S60 J qual in B01S65
Ag Rejected
CN J qual

FORM V (Part 1) - IN 03/90

MMK 7/1/92

9613446.1471

Precision Summary 0000048

Pg 1 of 2

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B01S81D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP119

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

% Solids for Sample: 98.8 % Solids for Duplicate: 98.8

No qualification necessary

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

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | %RPD | Q | M | |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 3732.6000 | | 3592.5000 | | 3.8 | | P | |
| Antimony | | 4.6575 | U | 4.6575 | U | | | P | |
| Arsenic | | .9900 | B | .9500 | B | 4.2 | | F | |
| Barium | 40.5 | 68.0000 | | 69.0000 | | 1.4 | | P | |
| Beryllium | | .3200 | B | .2025 | U | 200.0 | | P | No qu. ±20% |
| Cadmium | | .6075 | U | .6075 | U | | | P | |
| Calcium | 1012.5 | 4332.3010 | | 4153.3010 | | 4.2 | | P | |
| Chromium | 2.0 | 11.4000 | | 6.8000 | | 49.9 | | P | |
| Cobalt | | 6.5000 | B | 6.3000 | B | 1.9 | | P | |
| Copper | 5.1 | 10.5000 | | 11.0000 | | 4.9 | | P | |
| Iron | | 10026.2000 | | 10367.3000 | | 3.3 | | P | |
| Lead | .6 | 2.6000 | | 3.3000 | | 23.7 | X | F | No qu. Not 73j |
| Magnesium | 1012.5 | 2357.5000 | | 2348.7000 | | .4 | | P | |
| Manganese | | 199.0000 | | 195.5000 | | 1.8 | | P | |
| Mercury | | .0506 | U | .0506 | U | | | CV | |
| Nickel | | 7.9000 | B | 5.8000 | B | 29.9 | | P | |
| Potassium | | 602.2000 | B | 574.2000 | B | 4.8 | | P | |
| Selenium | | .4050 | U | .4050 | U | | | F | |
| Silver | | 1.6000 | B | 1.3000 | B | 23.8 | | P | |
| Sodium | | 912.2000 | B | 724.8000 | B | 22.9 | | P | |
| Thallium | | .4050 | U | .4050 | U | | | F | |
| Vanadium | 10.1 | 18.3000 | | 19.3000 | | 5.6 | | P | |
| Zinc | | 25.4000 | | 26.2000 | | 3.0 | | P | |
| Cyanide | | 1.0120 | U | 1.0120 | U | | | C | |

35%

FORM VI - IN

03/90

CMK 7/1/92

9613446.1472 0000049

Precision Summary

pg 2 of 2

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B01S65D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP119

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

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

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

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | %RPD | Q | M | |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | 83.0000 | U | 83.0000 | U | | | P | |
| Antimony | | 23.0000 | U | 23.0000 | U | | | P | |
| Arsenic | | 2.0000 | U | 2.0000 | U | | | F | |
| Barium | | 38.0000 | U | 38.0000 | U | | | P | |
| Beryllium | | 1.0000 | U | 1.0000 | U | | | P | |
| Cadmium | | 3.0000 | U | 3.0000 | U | | | P | |
| Calcium | | 88.0000 | U | 88.0000 | U | | | P | |
| Chromium | | 6.0000 | U | 6.0000 | U | | | P | |
| Cobalt | | 5.0000 | U | 5.0000 | U | | | P | |
| Copper | | 6.0000 | U | 6.0000 | U | | | P | |
| Iron | | 39.0000 | U | 42.6000 | B | 200.0 | | P | ±IC ±IC |
| Lead | | 18.3000 | | 2.0000 | U | 200.0 | | F | |
| Magnesium | | 78.0000 | U | 78.0000 | U | | | P | |
| Manganese | | 2.0000 | U | 2.0000 | U | | | P | |
| Mercury | | .1000 | U | .1000 | U | | | CV | |
| Nickel | | 18.0000 | U | 18.0000 | U | | | P | |
| Potassium | | 734.0000 | U | 734.0000 | U | | | P | |
| Selenium | | 2.0000 | U | 2.0000 | U | | | F | |
| Silver | | 4.0000 | U | 4.0000 | U | | | P | |
| Sodium | | 638.0000 | U | 638.0000 | U | | | P | |
| Thallium | | 3.0000 | B | 2.0000 | U | 200.0 | | F | |
| Vanadium | | 5.0000 | U | 5.0000 | U | | | P | |
| Zinc | 20.0 | 10.2000 | B | not within ±(RQL) (20) 55.4000 | | 137.8 | * | P | J |
| Cyanide | 20.0 | 30.8210 | | 28.4770 | | 7.9 | | C | |

FORM VI - IN

03/90

J qual zinc in Water Samples

mark 7/1/92

## ACCURACY DATA SUMMARY - FORM B-4

| SDG: 9201L119 | REVIEWER: [illegible] | DATE: 7/9/92 | PAGE 1 OF 1 | |
|---|---|---|---|---|
| COMMENTS: GFAA Analytical Spike Recoveries | | | | |
| **SAMPLE ID** | **COMPOUND** | **% RECOVERY** | **SAMPLE(S) AFFECTED** | **QUALIFIER REQUIRED** |
| B01567 | Arsenic | RSD A.S. = 20.29<br>RSD AS COMP = 0.73 | B01567 | None since results RSD is OK. |
| B01581 | Thallium | 81% | B01581 | UJ |
| | | | | |
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9613446.1474

WHC-SD-EN-SPP-002, Rev. 1

# WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMR | DATE: 6/28/92 |
| LABORATORY: Weston | CASE: 92012119 | SDG: 92012119 |
| SAMPLES/MATRIX: B01581/Soil B01565 and | | |
| B01567/Water | | |
| | | |
| | | |
| | | |

## 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):

Spiked compounds that were out of specification (%Rec and %RPD) did not have associated surrogates that were out and therefore were not qualified.

Phenol, 4-chloro-3-methyl phenol, and Pentachlorophenol %Recovery out for Blank spike.

B01S65 - TIC cyclohexenone was relabeled as an aldol condensate.

Blank spike recoveries for phenol, 4-chloro-3-methylphenol and pentachlorophenol were outside QC limits for ~~the~~ water. The soil BS recoveries were in. No qual necessary.

The method blank for water was missing in the data package. ~~Therefore, blank adjustment, if required, could not be performed in compliance with SOP.~~ 7/10/92

Blank adjustment of water was performed by using the water method blank quant report. 7/10/92

7/10/92

9613446.1478

Holding Times Summary

pg 1 of 2

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | hold times | Ex |
|---|---|---|---|---|---|---|---|---|
| B01S81 | | | | | | | | |
| % SOLIDS | 001 | S | 92L%S017 | 01/22/92 | 01/28/92 | 01/29/92 | 7 | |
| NITRATE BY IC | 001 | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| NITRATE BY IC | 001 REP | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| NITRATE BY IC | 001 MS | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| NITRATE BY IC | 001 MSD | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| TOTAL CYANIDE | 001 | S | 92LC026 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| TOTAL CYANIDE | 001 REP | S | 92LC026 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| TOTAL CYANIDE | 001 MS | S | 92LC026 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| TOTAL CYANIDE | 001 MSD | S | 92LC026 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| PHOSPHATE BY IC | 001 | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| PHOSPHATE BY IC | 001 REP | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| PHOSPHATE BY IC | 001 MS | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| PHOSPHATE BY IC | 001 MSD | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| SULFATE BY IC | 001 | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| SULFATE BY IC | 001 REP | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| SULFATE BY IC | 001 MS | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| SULFATE BY IC | 001 MSD | S | 92LICA14 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| NITRATE NITRITE | 001 | S | 92LNC011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| NITRATE NITRITE | 001 REP | S | 92LNC011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| NITRATE NITRITE | 001 MS | S | 92LNC011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| NITRATE NITRITE | 001 MSD | S | 92LNC011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| TOTAL ORGANIC CARBON | 001 | S | 92LTZ007 | 01/22/92 | 02/04/92 | 02/05/92 | 14 | |
| TOTAL ORGANIC CARBON | 001 REP | S | 92LTZ007 | 01/22/92 | 02/04/92 | 02/05/92 | 14 | |
| TOTAL ORGANIC CARBON | 001 MS | S | 92LTZ007 | 01/22/92 | 02/04/92 | 02/05/92 | 14 | |
| SUB-OUT TEST FOR SUB Radio-Nuc | 001 | S | | 01/22/92 | | | | |
| B01S65 | | | | | | | | |
| NITRATE BY IC | 002 | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| NITRATE BY IC | 002 REP | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| NITRATE BY IC | 002 MS | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| NITRATE BY IC | 002 MSD | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| TOTAL CYANIDE | 002 | W | 92LC025 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| TOTAL CYANIDE | 002 REP | W | 92LC025 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| TOTAL CYANIDE | 002 MS | W | 92LC025 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| TOTAL CYANIDE | 002 MSD | W | 92LC025 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| PHOSPHATE BY IC | 002 | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |

MMK 6/28/92

9613446.1479

Holding Time Summary pg 2 of 2

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

DATE RECEIVED: 01/24/92 RFW LOT # :9201L119

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | hold times | hd tim exce |
|---|---|---|---|---|---|---|---|---|
| PHOSPHATE BY IC | 002 REP | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| PHOSPHATE BY IC | 002 MS | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| PHOSPHATE BY IC | 002 MSD | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| SULFATE BY IC | 002 | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| SULFATE BY IC | 002 REP | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| SULFATE BY IC | 002 MS | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| SULFATE BY IC | 002 MSD | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| NITRATE NITRITE | 002 | W | 92LNB011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| NITRATE NITRITE | 002 REP | W | 92LNB011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| NITRATE NITRITE | 002 MS | W | 92LNB011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| NITRATE NITRITE | 002 MSD | W | 92LNB011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| SUB-OUT TEST FOR SUB | 002 | W | | 01/22/92 | | | | |
| B01S67 | | | | | | | | |
| NITRATE BY IC | 003 | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| TOTAL CYANIDE | 003 | W | 92LC025 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| PHOSPHATE BY IC | 003 | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | ✓ |
| SULFATE BY IC | 003 | W | 92LIC012 | 01/22/92 | 01/31/92 | 01/31/92 | 9 | |
| NITRATE NITRITE | 003 | W | 92LNB011 | 01/22/92 | 01/30/92 | 01/30/92 | 8 | |
| SUB-OUT TEST FOR SUB | 003 | W | | 01/22/92 | | | | |
| Rab 10 - N+C ✓ | | | | | | | | |
| LAB QC: | | | | | | | | |
| FLUORIDE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | N/A | |
| FLUORIDE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| NITRITE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| NITRITE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| NITRATE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| NITRATE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| PHOSPHATE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| PHOSPHATE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| SULFATE BY IC | MB1 | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| SULFATE BY IC | MB1 BS | S | 92LICA14 | N/A | 01/31/92 | 01/31/92 | | |
| TOTAL CYANIDE | LC1 L | S | 92LC026 | N/A | 01/31/92 | 01/31/92 | | |
| TOTAL CYANIDE | LC2 L | S | 92LC026 | N/A | 01/31/92 | 01/31/92 | | |
| TOTAL CYANIDE | MB1 | S | 92LC026 | N/A | 01/31/92 | 01/31/92 | | |
| NITRATE NITRITE | MB1 | S | 92LNC011 | N/A | 01/30/92 | 01/30/92 | | |
| NITRATE NITRITE | MB1 BS | S | 92LNC011 | N/A | 01/30/92 | 01/30/92 | | |
| NITRATE NITRITE | MB1 BSD | S | 92LNC011 | N/A | 01/30/92 | 01/30/92 | | |

9615446.1480 Accuracy Summary



ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 02/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L119

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -001 | B01S81 | Nitrate by IC | 8080 | 3090 | 5060 | 98.5 |
| | | Nitrate by IC MSD | 7960 | 3090 | 5060 | 96.2 |
| | | Cyanide, Total | 5.4 | 1.0 u | 5.1 | 107 |
| | | Cyanide, Total MSD | 5.7 | 1.0 u | 5.1 | 114 |
| | | Phosphate by IC | 46.5 | 1.3 u | 50.6 | 91.9 |
| | | Phosphate by IC MSD | 47.6 | 1.3 u | 50.6 | 94.1 |
| | | Sulfate by IC | 128 | 70.3 | 50.6 | 114 |
| | | Sulfate by IC MSD | 125 | 70.3 | 50.6 | 108 |
| | | Nitrate Nitrite | 1990 | 621 | 1270 | 108 |
| | | Nitrate Nitrite MSD | 2000 | 621 | 1270 | 109 |
| | | Total Organic Carbon | 1460 | 474 | 802 | 123 |
| -002 | B01S65 | Nitrate by IC | 10.0 | 0.25u | 10.0 | 100 |
| | | Nitrate by IC MSD | 10.2 | 0.25u | 10.0 | 102 |
| | | Cyanide, Total | 99.9 | 28.5 | 100 | 71.5 |
| | | Cyanide, Total MSD | 92.9 | 28.5 | 100 | 64.4 |
| | | Phosphate by IC | 9.8 | 0.25u | 10.0 | 98.4 |
| | | Phosphate by IC MSD | 9.9 | 0.25u | 10.0 | 99.2 |
| | | Sulfate by IC | 10 | 0.25u | 10.0 | 99.9 |
| | | Sulfate by IC MSD | 10 | 0.25u | 10.0 | 99.8 |
| | | Nitrate Nitrite | 0.96 | 0.10u | 1.0 | 95.7 |
| | | Nitrate Nitrite MSD | 0.97 | 0.10u | 1.0 | 97.2 |
| BLANK10 | 92LICA14-MB1 | Nitrate by IC | 49.4 | 1.2 u | 50.0 | 98.7 |
| | | Phosphate by IC | 51.1 | 1.2 u | 50.0 | 102 |
| | | Sulfate by IC | 51.2 | 1.2 u | 50.0 | 102 |
| BLANK10 | 92LNC011-MB1 | Nitrate Nitrite | 2.0 | 0.50u | 2.0 | 99.2 |
| | | Nitrate Nitrite MSD | 2.0 | 0.50u | 2.0 | 99.2 |
| BLANK20 | 92LNC011-MB2 | Nitrate Nitrite | 1.9 | 0.50u | 2.0 | 97.4 |
| BLANK10 | 92LTZ007-MB1 | Total Organic Carbon | 402 | 20.0 u | 400 | 100 |
| BLANK20 | 92LTZ007-MB2 | Total Organic Carbon | 413 | 20.0 u | 400 | 103 |
| BLANK10 | 92LIC012-MB1 | Nitrate by IC | 10.0 | 0.25u | 10.0 | 100 |
| | | Nitrate by IC MSD | 10.0 | 0.25u | 10.0 | 100 |
| | | Phosphate by IC | 10 | 0.25u | 10.0 | 99.8 |
| | | Phosphate by IC MSD | 10 | 0.25u | 10.0 | 99.5 |
| | | Sulfate by IC | 10 | 0.25u | 10.0 | 99.9 |
| | | Sulfate by IC MSD | 10 | 0.25u | 10.0 | 99.7 |
| BLANK10 | 92LNB011-MB1 | Nitrate Nitrite | 0.40 | 0.10u | 0.40 | 99.2 |
| | | Nitrate Nitrite MSD | 0.40 | 0.10u | 0.40 | 99.2 |
| BLANK20 | 92LNB011-MB2 | Nitrate Nitrite | 0.39 | 0.10u | 0.40 | 97.5 |

MMT. 6/20/92

9613446.1481

# APPENDIX F

## DATA VALIDATION DOCUMENTATION

SDG: 9201L150

SAMPLES: B01S83, B01S85, B01S87

CONTAINS:

ATTACHMENT 1 - GLOSSARY OF DATA REPORTING QUALIFIERS
ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS
ATTACHMENT 3 - AS QUALIFIED LABORATORY DATA
ATTACHMENT 4 - DATA VALIDATION SUPPORTING DOCUMENTATION

# ATTACHMENT 1

## GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

9613446.1483

# ATTACHMENT 2

# SUMMARY OF DATA QUALIFICATIONS

7/8/92

9201L150 **DATA QUALIFICATION SUMMARY - FORM B-7** 1 of 4

| SDG: ~~9201150~~ | REVIEWER: [illegible] for MMK | DATE: 7/06/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Volatile | | | |
| **COMPOUND** | **QUALIFIER** | **SAMPLES AFFECTED** | **REASON** |
| Acetone | J for detects | B01S85, B01S83 | RSD > 30% ICAL |
| | | B01S87, B01S87 ms | |
| | | B01S87 MSD | |
| 2-Butanone | UJ for non-detects | B01S85, B01S83 | RSD > 30% ICAL |
| | | B01S87 | |
| 2-Butanone | J for detects | B01S87 ms/msD | ICAL > 30% already J qualified |
| | | | |
| 4-Methy-2-Pentanone | UJ for non-detects | B01S85, B01S83 | ICAL > 30% RSD |
| | | B01S87, B01S87ms | |
| | | B01S87 MSD | |
| Acetone | UJ (already qual. as J) | B01S85, B01S83 | Acetone Blank Contamination 10x rule |
| | | B01S87 B01S87MS/MSD | |
| ~~2-butanone~~ | ~~UJ (already J qualified)~~ | ~~B01S87ms/msD~~ | ~~2-butanone 10x Blank contamination~~ |
| Toluene | ~~UJ (already~~ mmk 6/23/92 | B01S85, B01S83 | Toluene Blank Contamination |
| | | B01S87 | ~~5x~~ 10x rule |
| Methylene chloride | U | B01S85, B01S83 | MECl2 blank Contamination 10x rule |
| | | B01S87, B01S87ms/msD | |
| 4-Methy-2-Pentanone | UJ (already UJ qualified) | B01S85, B01S83, | CCV %D > 25% |
| | | B01S87, B01S87MS | |
| | | B01S87 MSD | |
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7/8/92

7/6/92

mmk 6/23/93

7/8/92

## DATA QUALIFICATION SUMMARY - FORM B-7

92012.150 2 of 4

| SDG: L150 | REVIEWER: MML | DATE: 6/25/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: S-VOA | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Benzoic Acid | UJ | B01S85, | % RSD ICAL > 30% |
| 2,4 Dinitrophenol | | B01S83, B01S87 | |
| | | | |
| 4-Nitrophenol | R | B01S85, B01S83 and B01S87 | RRF < 0.05 CCAL |
| | | | |
| Benzoic Acid, | already UJ qualified UJ | B01S85, B01S83 and B01S87 | %D > 30% CCAL |
| Hexachlorocyclopentadiene, | UJ | " | " |
| 3-Nitroaniline | UJ | | |
| 4-Nitrophenol | UJ (already R qualified) | " | " |
| 4-Nitroaniline and | UJ | " | " |
| 3,3'-Dichlorobenzidine | UJ | " | " |
| | | | |
| Di-n-butylphthalate | U | B01S85, B01S87 | Blank contamination |
| and | | | |
| Bis(2-ethylhexyl) | | | |
| Phthalate | | | |
| | | | |
| Di-n-butylphthalate | U | B01S83 | " |
| TIC @ 4.60 Unknown | U | All | present in blank 7/8/92 |
| Aldol Condensate RT 5.99 ± 6.00 ± .06 | ~~U~~ R 7/8/92 | B01S85, B01S83, B01S87 | ++ lab contaminant 7/8/92 |
| | | | |
| Aldol Condensate RT 6.00 ± .06 | R | (3) - B01S85 | Common lab Contaminant |
| | | (2) B01S83 (2) B01S87 | " |
| unknown TIC | U | B01S87, B01S83, | |
| RT 24.32 ± 0.04 | | B01S85 | |
| unknown TIC | JN | B01S87, B01S83 B01S85 | TIC Valid |
| unknown TIC | JN | B01S87, B01S83 B01S85 | TIC Valid |
| unknown TIC | JN | B01S83, | |

7/6/92

92011L150

## DATA QUALIFICATION SUMMARY - FORM B-7

Pg 3 of 4 ~~4 of 5~~ 7/8/92

| SDG: L150 | REVIEWER: MML | DATE: 6/30/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: | Metals | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Silver, Arsenic, | J | B01585, B01583 | ~~Etc~~ MS |
| Manganese | | B01587 | %R > 125 or < 75% Sample Conc > IDL |
| | | | |
| thallium | UJ | B01585, B01583 and B01587 | MS % 30-75% and thallium ND. |
| selenium | UJ | B01585, B01583 | ~~Reinjection~~ ~~% R~~ ~~% RSD~~ Outside |
| | | B01587 | Control limits |
| ~~Arsenic~~ | ~~J (already J qualified)~~ | ~~" "~~ | ~~Duplicate results >35%~~ |
| | | | |
| | | | |
| Aluminum | J | All | ICP Serial Dilu >10% and SR > IDL |
| Calcium | J | | |
| Iron | J | | |
| Magnesium | J | | |
| Manganese | J | | |
| ~~Sodium~~ | ~~J~~ | | |
| | | | |
| Thallium | UJ | B01585/B01587 | GFAA Analytical Spike %R out of control limits. |
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7/8/92

7/6/92

7/8/92

7/8/92

## DATA QUALIFICATION SUMMARY - FORM B-7

92016150 pg 4 of 4 ~~5 of 5~~ 7/8/92 7/6/92

| SDG: 4150 | REVIEWER: MMY | DATE: 6/27/92 | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: Wet Chem | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Nitrate and phosphate by IC | B01S85, B01S83 | Nitrate J, phosphate U | Hold times exceeded |
| Nitrate/Nitrite | B01S87 | Nitri/Nitric J | |
| TOC | B01S85 | J | % MS recov = 125% |
| | | | |
| ~~Nitrate/Nitrite~~ | ~~B01S87, B01S83~~ ~~B01S87~~ | ~~R~~ | ~~Does not compare favorably w/ Nitrate IC Dup~~ |
| | | ~~Mut 7/15/92~~ | |
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9613446.1488

# ATTACHMENT 3

# AS QUALIFIED DATA SUMMARY

9613446.1489

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0005519

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49C

B01S85

9.0-11.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-001

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

Lab File ID: B020512

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 4

Date Analyzed: 02/05/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 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 | 7 | ~~B~~ | u mmL 6/22/92 |
| 67-64-1 | Acetone | 10 | ~~B~~ UJ | J mmL 6/22/92 |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | ~~U~~ | UJ mmL 6/22/92 |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | U | |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | ~~U~~ U | ~~UJ~~ mmL 6/22/92 |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | ~~U~~ | UJ mmL 6/22/92 |
| 591-78-6 | 2-Hexanone | 10 | U | |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U | |
| 108-88-3 | Toluene | ~~2~~ 5 | ~~JB~~ | u mmL 6/22/92 |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

FORM 1 V-1

12/88 Rev.

MML 6/22/92

9613446.1490

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0000031

# VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49C

B01S83

2.0-4.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-002

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

Lab File ID: B020513

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 3

Date Analyzed: 02/05/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 | 7 | ~~B~~ u mmL 6/22/92 |
| 67-64-1 | Acetone | 13 | ~~B~~ UJ ~~B~~ mmL 6/22/92 |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | ~~B~~ uJ mmL 6/22/92 |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | ~~B~~ uJ mmL 6/22/92 |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | ~~5~~ 5 | ~~B~~ u mmL 6/22/92 |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

FORM 1 V-1 12/88 Rev.

MWL 6/22/92

9613446.1491

1A

0000043

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S87

223.0-227.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-003

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

Lab File ID: B020514

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 7

Date Analyzed: 02/05/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 74-87-3 | Chloromethane | 11 | U | |
| 74-83-9 | Bromomethane | 11 | U | |
| 75-01-4 | Vinyl Chloride | 11 | U | |
| 75-00-3 | Chloroethane | 11 | U | |
| 75-09-2 | Methylene Chloride | 8 | ~~B~~ | U mmf 6/22/92 |
| 67-64-1 | Acetone | 20 | ~~B~~ UJ | B mmf 6/22/92 |
| 75-15-0 | Carbon Disulfide | 6 | U | |
| 75-35-4 | 1,1-Dichloroethene | 6 | U | |
| 75-34-3 | 1,1-Dichloroethane | 6 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | U | |
| 67-66-3 | Chloroform | 6 | U | |
| 107-06-2 | 1,2-Dichloroethane | 6 | U | |
| 78-93-3 | 2-Butanone | 11 | ~~U~~ | UJ mmf 6/22/92 |
| 71-55-6 | 1,1,1-Trichloroethane | 6 | U | |
| 56-23-5 | Carbon Tetrachloride | 6 | U | |
| 108-05-4 | Vinyl Acetate | 11 | U | |
| 75-27-4 | Bromodichloromethane | 6 | U | |
| 78-87-5 | 1,2-Dichloropropane | 6 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 6 | U | |
| 79-01-6 | Trichloroethene | 6 | U | |
| 124-48-1 | Dibromochloromethane | 6 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 6 | U | |
| 71-43-2 | Benzene | 6 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 6 | U | |
| 75-25-2 | Bromoform | 6 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 11 | ~~U~~ | UJ mmf 6/22/92 |
| 591-78-6 | 2-Hexanone | 1 | J | |
| 127-18-4 | Tetrachloroethene | 6 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 | U | |
| 108-88-3 | Toluene | ~~1~~ 6 | ~~JB~~ | U mmf 6/22/92 |
| 108-90-7 | Chlorobenzene | 6 | U | |
| 100-41-4 | Ethylbenzene | 6 | U | |
| 100-42-5 | Styrene | 6 | U | |
| 1330-20-7 | Xylene (total) | 6 | U | |

FORM 1 V-1 12/88 Rev.

mmf 6/22/92

9613446.1492 0000023

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49C

B01S85

9.0-11.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L150-001

Sample wt/vol: 30.5 (g/mL) G Lab File ID: M021413

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 4 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.7 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 |
| 100-51-6 | Benzyl alcohol | 340 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | U |
| 95-48-7 | 2-Methylphenol | 340 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 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 |
| 65-85-0 | Benzoic acid | 1700 | U J |
| 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 J |
| 88-06-2 | 2,4,6-Trichlorophenol | 340 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 340 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 340 | U |
| 208-96-8 | Acenaphthylene | 340 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | U |

FORM 1 SV-1 12/88 Rev.

MMJ 6/25/92

9613446.1493 0000024

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49C

B01S85

9.0 - 11.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L150-001

Sample wt/vol: 30.5 (g/mL) G Lab File ID: M021413

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 4 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.7 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U J |
| 83-32-9 | Acenaphthene | 340 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U J |
| ~~100-02-7~~ | ~~4-Nitrophenol~~ | ~~1700~~ | ~~U~~ R |
| 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 | 1700 | U J |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | 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 | 1700 | U |
| 85-01-8 | Phenanthrene | 340 | U |
| 120-12-7 | Anthracene | 340 | U |
| 84-74-2 | Di-n-Butylphthalate | 820 | ~~B~~ u |
| 206-44-0 | Fluoranthene | 340 | U |
| 129-00-0 | Pyrene | 340 | U |
| 85-68-7 | Butylbenzylphthalate | 340 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 680 | U J |
| 56-55-3 | Benzo(a)anthracene | 340 | U |
| 218-01-9 | Chrysene | 340 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ~~78~~ 340 | ~~JB~~ u |
| 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 | Dibenzo(a,h)anthracene | 340 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

WMS 6/25/92

9613446.1494 0000025

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-49C

B01S85

9.0-11.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-001

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: M021413

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 4 dec.

Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.7

Dilution Factor: 1.00

Number TICs found: 7

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q | |
|---|---|---|---|---|---|
| 1. | UNKNOWN | 4.52 | 200 | ~~J~~ | JN |
| 2. | UNKNOWN | 4.60 | 300 | ~~JB~~ | JN |
| ~~3.~~ | ~~ALDOL CONDENSATE~~ | ~~5.97~~ | ~~1000~~ | ~~JAB~~ | RY |
| ~~4.~~ | ~~ALDOL CONDENSATE~~ | ~~6.65~~ | ~~600~~ | ~~JA~~ | R |
| ~~5.~~ | ~~ALDOL CONDENSATE~~ | ~~7.03~~ | ~~400~~ | ~~JA~~ | R |
| ~~6.~~ | ~~ALDOL CONDENSATE~~ | ~~7.63~~ | ~~200~~ | ~~JA~~ | R |
| 7. | UNKNOWN | 24.28 | 300 | ~~JB~~ | U |

7/8/92 U R 7/8/92

MMZ 6/25/92

9613446.1495 0000044

1B

# SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49C

B01S83

2.0-9.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L150-002

Sample wt/vol: 30.4 (g/mL) G Lab File ID: M021411

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 3 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 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 |
| 100-51-6 | Benzyl alcohol | 340 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 340 | U |
| 95-48-7 | 2-Methylphenol | 340 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 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 |
| 65-85-0 | Benzoic acid | 1700 | U J |
| 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 J |
| 88-06-2 | 2,4,6-Trichlorophenol | 340 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 340 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 340 | U |
| 208-96-8 | Acenaphthylene | 340 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 340 | U |



MMJ 6/25/92

9613446.1496

1C

0000045

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. 216-B-49C

B01S83

2.0-95

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L150-002

Sample wt/vol: 30.4 (g/mL) G Lab File ID: M021411

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 3 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U J |
| 83-32-9 | Acenaphthene | 340 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U J |
| ~~100-02-7~~ | ~~4-Nitrophenol~~ | ~~1700~~ | ~~U~~ R |
| 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 | 1700 | U J |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | 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 | 1700 | U |
| 85-01-8 | Phenanthrene | 340 | U |
| 120-12-7 | Anthracene | 340 | U |
| 84-74-2 | Di-n-Butylphthalate | 360 | ~~B~~ U |
| 206-44-0 | Fluoranthene | 340 | U |
| 129-00-0 | Pyrene | 340 | U |
| 85-68-7 | Butylbenzylphthalate | 340 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 680 | U J |
| 56-55-3 | Benzo(a)anthracene | 340 | U |
| 218-01-9 | Chrysene | 340 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 340 | U |
| 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 | Dibenzo(a,h)anthracene | 340 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 340 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

MMJ 6/25/92

9613446.1497

1F

0000546

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-49C

B01S83

2.0-9.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-002

Sample wt/vol: 30.4 (g/mL) G

Lab File ID: M021411

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 3 dec.

Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.4

Dilution Factor: 1.00

Number TICs found: 7

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q | |
|---|---|---|---|---|---|
| 1. | UNKNOWN | 4.48 | 200 | ~~J~~ | JN 7/8/9 |
| 2. | UNKNOWN | 4.60 | 400 | ~~JB~~ | JN U |
| ~~3.~~ | ~~ALDOL CONDENSATE~~ | ~~5.97~~ | ~~800~~ | ~~JAB~~ | ~~RM~~ R |
| ~~4.~~ | ~~ALDOL CONDENSATE~~ | ~~6.67~~ | ~~600~~ | ~~JA~~ | ~~R~~ R 7/8/9 |
| ~~5.~~ | ~~ALDOL CONDENSATE~~ | ~~7.03~~ | ~~200~~ | ~~JA~~ | R |
| 6. | UNKNOWN | 9.07 | 200 | ~~J~~ | JN |
| 7. | UNKNOWN | 24.28 | 500 | ~~JB~~ | U |

MMF
6/25/92

FORM 1 SV-TIC 12/88 Rev.

9613446.1498 0000065

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-45A

B01S87
223-227.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L150-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M021412

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 9 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 370 | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 370 | U |
| 95-57-8 | 2-Chlorophenol | 370 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 370 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 370 | U |
| 100-51-6 | Benzyl alcohol | 370 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 370 | U |
| 95-48-7 | 2-Methylphenol | 370 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 370 | U |
| 106-44-5 | 4-Methylphenol | 370 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 370 | U |
| 67-72-1 | Hexachloroethane | 370 | U |
| 98-95-3 | Nitrobenzene | 370 | U |
| 78-59-1 | Isophorone | 370 | U |
| 88-75-5 | 2-Nitrophenol | 370 | U |
| 105-67-9 | 2,4-Dimethylphenol | 370 | U |
| 65-85-0 | Benzoic acid | 1800 | U J |
| 111-91-1 | bis(2-Chloroethoxy)methane | 370 | U |
| 120-83-2 | 2,4-Dichlorophenol | 370 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 370 | U |
| 91-20-3 | Naphthalene | 370 | U |
| 106-47-8 | 4-Chloroaniline | 370 | U |
| 87-68-3 | Hexachlorobutadiene | 370 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 370 | U |
| 91-57-6 | 2-Methylnaphthalene | 370 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 370 | U J |
| 88-06-2 | 2,4,6-Trichlorophenol | 370 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1800 | U |
| 91-58-7 | 2-Chloronaphthalene | 370 | U |
| 88-74-4 | 2-Nitroaniline | 1800 | U |
| 131-11-3 | Dimethylphthalate | 370 | U |
| 208-96-8 | Acenaphthylene | 370 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 370 | U |



MM L 6/25/92

9613446.1499

1C

0000066

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A

B01S87

223.0 – 227.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9201L150-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M021412

Level: (low/med) LOW Date Received: 01/28/92

% Moisture: not dec. 9 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1800 | U J |
| 83-32-9 | Acenaphthene | 370 | U |
| 51-28-5 | 2,4-Dinitrophenol | 1800 | U J |
| ~~100-02-7~~ | ~~4-Nitrophenol~~ | ~~1800~~ | ~~U~~ R |
| 132-64-9 | Dibenzofuran | 370 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 370 | U |
| 84-66-2 | Diethylphthalate | 370 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 370 | U |
| 86-73-7 | Fluorene | 370 | U |
| 100-01-6 | 4-Nitroaniline | 1800 | U J |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1800 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 370 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 370 | U |
| 118-74-1 | Hexachlorobenzene | 370 | U |
| 87-86-5 | Pentachlorophenol | 1800 | U |
| 85-01-8 | Phenanthrene | 370 | U |
| 120-12-7 | Anthracene | 370 | U |
| 84-74-2 | Di-n-Butylphthalate | 410 | ~~B~~ U |
| 206-44-0 | Fluoranthene | 370 | U |
| 129-00-0 | Pyrene | 370 | U |
| 85-68-7 | Butylbenzylphthalate | 370 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 730 | U J |
| 56-55-3 | Benzo(a)anthracene | 370 | U |
| 218-01-9 | Chrysene | 370 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ~~39~~ 370 | ~~JB~~ U |
| 117-84-0 | Di-n-Octyl phthalate | 370 | U |
| 205-99-2 | Benzo(b)fluoranthene | 370 | U |
| 207-08-9 | Benzo(k)fluoranthene | 370 | U |
| 50-32-8 | Benzo(a)pyrene | 370 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 370 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | 370 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 370 | U |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

MMJ 6/25/92

9613446.1500

1F

0000067

# SEMIVOLATILE ORGANICS ANALYSIS SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-43A

B01S87

223.0-227.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-003

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M021412

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 9 dec.

Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 8.0

Dilution Factor: 1.00

Number TICs found: 6

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 4.48 | 300 | ~~J~~ JN |
| 2. | UNKNOWN | 4.60 | 400 | ~~JB~~ JN u |
| ~~3.~~ | ~~ALDOL CONDENSATE~~ | ~~5.97~~ | ~~700~~ | ~~JAB~~ R |
| ~~4.~~ | ~~ALDOL CONDENSATE~~ | ~~6.65~~ | ~~300~~ | ~~JA~~ R |
| ~~5.~~ | ~~ALDOL CONDENSATE~~ | ~~7.65~~ | ~~200~~ | ~~JA~~ R |
| 6. | UNKNOWN | 24.27 | 400 | ~~JB~~ u |

R u R

MMK
6/25/92

9613446.1501 0000018

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-99C

B01S85

9.0-11.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-001

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: 02179213.35

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 4 dec.

Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/18/92

GPC Cleanup: (Y/N) Y pH: 8.7

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.2~~ 16.4 | U |
| 319-85-7 | Beta-BHC | ~~8.2~~ 16.4 | U |
| 319-86-8 | Delta-BHC | ~~8.2~~ 16.4 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.2~~ 16.4 | U |
| 76-44-8 | Heptachlor | ~~8.2~~ 16.4 | U |
| 309-00-2 | Aldrin | ~~8.2~~ 16.4 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.2~~ 16.4 | U |
| 959-98-8 | Endosulfan I | ~~8.2~~ 16.4 | U |
| 60-57-1 | Dieldrin | ~~16~~ 32 | U |
| 72-55-9 | 4,4'-DDE | ~~16~~ 32 | U |
| 72-20-8 | Endrin | ~~16~~ 32 | ~~U~~ R |
| 33213-65-9 | Endosulfan II | ~~16~~ 32 | U |
| 72-54-8 | 4,4'-DDD | ~~16~~ 32 | U |
| 1031-07-8 | Endosulfan sulfate | ~~16~~ 32 | U |
| 50-29-3 | 4,4'-DDT | ~~16~~ 32 | U |
| 72-43-5 | Methoxychlor | ~~82~~ 164 | U |
| 53494-70-5 | Endrin ketone | ~~16~~ 32 | U |
| 5103-71-9 | alpha-Chlordane | ~~82~~ 164 | U |
| 5103-74-2 | gamma-Chlordane | ~~82~~ 164 | U |
| 8001-35-2 | Toxaphene | ~~160~~ 320 | U |
| 12674-11-2 | Aroclor-1016 | ~~82~~ 164 | U |
| 11104-28-2 | Aroclor-1221 | ~~82~~ 164 | U |
| 11141-16-5 | Aroclor-1232 | ~~82~~ 164 | U |
| 53469-21-9 | Aroclor-1242 | ~~82~~ 164 | U |
| 12672-29-6 | Aroclor-1248 | ~~82~~ 164 | U |
| 11097-69-1 | Aroclor-1254 | ~~160~~ 320 | U |
| 11096-82-5 | Aroclor-1260 | ~~160~~ 320 | U |

AS 3-1-92

u 7/8/92

FORM 1 PEST 12/88 Rev.

MMh 6/29/92

9613446.1502

1D 0000023

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49C

B01S83

2.0 - 4.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-002

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: 02179213.36

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 3 dec.

Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/18/92

GPC Cleanup: (Y/N) Y pH: 8.4

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.1~~ 16.2 | U |
| 319-85-7 | Beta-BHC | ~~8.1~~ 16.2 | U |
| 319-86-8 | Delta-BHC | ~~8.1~~ 16.2 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.1~~ 16.2 | U |
| 76-44-8 | Heptachlor | ~~8.1~~ 16.2 | U |
| 309-00-2 | Aldrin | ~~8.1~~ 16.2 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.1~~ 16.2 | U |
| 959-98-8 | Endosulfan I | ~~8.1~~ 16.2 | U |
| 60-57-1 | Dieldrin | ~~16~~ 32 | U |
| 72-55-9 | 4,4'-DDE | ~~16~~ 32 | U |
| 72-20-8 | Endrin | ~~16~~ 32 | ~~U~~ |
| 33213-65-9 | Endosulfan II | ~~16~~ 32 | U |
| 72-54-8 | 4,4'-DDD | ~~16~~ 32 | U |
| 1031-07-8 | Endosulfan sulfate | ~~16~~ 32 | U |
| 50-29-3 | 4,4'-DDT | ~~16~~ 32 | U |
| 72-43-5 | Methoxychlor | ~~81~~ 162 | U |
| 53494-70-5 | Endrin ketone | ~~16~~ 32 | U |
| 5103-71-9 | alpha-Chlordane | ~~81~~ 162 | U |
| 5103-74-2 | gamma-Chlordane | ~~81~~ 162 | U |
| 8001-35-2 | Toxaphene | ~~160~~ 320 | U |
| 12674-11-2 | Aroclor-1016 | ~~81~~ 162 | U |
| 11104-28-2 | Aroclor-1221 | ~~81~~ 162 | U |
| 11141-16-5 | Aroclor-1232 | ~~81~~ 162 | U |
| 53469-21-9 | Aroclor-1242 | ~~81~~ 162 | U |
| 12672-29-6 | Aroclor-1248 | ~~81~~ 162 | U |
| 11097-69-1 | Aroclor-1254 | ~~160~~ 320 | U |
| 11096-82-5 | Aroclor-1260 | ~~160~~ 320 | U |

DS 3-1-92

RW 7/8/92

FORM 1 PEST 12/88 Rev.

6/29/92 MMJ

9613446.1503 1D 0000028

# PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-93A

B01S87

223.0-227.5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9201L150-003

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

Lab File ID: 02179213.41

Level: (low/med) LOW

Date Received: 01/28/92

% Moisture: not dec. 7 dec.

Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 02/19/92

GPC Cleanup: (Y/N) Y pH: 8.0

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 319-84-6 | Alpha-BHC | ~~8.5~~ 17 | U |
| 319-85-7 | Beta-BHC | ~~8.5~~ 17 | U |
| 319-86-8 | Delta-BHC | ~~8.5~~ 17 | U |
| 58-89-9 | gamma-BHC (Lindane) | ~~8.5~~ 17 | U |
| 76-44-8 | Heptachlor | ~~8.5~~ 17 | U |
| 309-00-2 | Aldrin | ~~8.5~~ 17 | U |
| 1024-57-3 | Heptachlor epoxide | ~~8.5~~ 17 | U |
| 959-98-8 | Endosulfan I | ~~8.5~~ 17 | U |
| 60-57-1 | Dieldrin | ~~17~~ 34 | U |
| 72-55-9 | 4,4'-DDE | ~~17~~ 34 | U |
| 72-20-8 | Endrin | ~~17~~ 34 | U |
| 33213-65-9 | Endosulfan II | ~~17~~ 34 | U |
| 72-54-8 | 4,4'-DDD | ~~17~~ 34 | U |
| 1031-07-8 | Endosulfan sulfate | ~~17~~ 34 | U |
| 50-29-3 | 4,4'-DDT | ~~17~~ 34 | U |
| 72-43-5 | Methoxychlor | ~~85~~ 170 | U |
| 53494-70-5 | Endrin ketone | ~~17~~ 34 | U |
| 5103-71-9 | alpha-Chlordane | ~~85~~ 170 | U |
| 5103-74-2 | gamma-Chlordane | ~~85~~ 170 | U |
| 8001-35-2 | Toxaphene | ~~170~~ 340 | U |
| 12674-11-2 | Aroclor-1016 | ~~85~~ 170 | U |
| 11104-28-2 | Aroclor-1221 | ~~85~~ 170 | U |
| 11141-16-5 | Aroclor-1232 | ~~85~~ 170 | U |
| 53469-21-9 | Aroclor-1242 | ~~85~~ 170 | U |
| 12672-29-6 | Aroclor-1248 | ~~85~~ 170 | U |
| 11097-69-1 | Aroclor-1254 | ~~170~~ 340 | U |
| 11096-82-5 | Aroclor-1260 | ~~170~~ 340 | U |

AS 3-1-92

RW

FORM 1 PEST 12/88 Rev.

MAK 6/25/92

9615446.1504 000020

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-49C
B01S85
9.0-11.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP150

Matrix (soil/water): SOIL Lab Sample ID: 920115001

Level (low/med): LOW Date Received: 1/28/92

% Solids: 95.6

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5600.00 | | ~~E~~ J | P |
| 7440-36-0 | Antimony | 4.81 | U | | P |
| 7440-38-2 | Arsenic | 4.10 | | ~~N*~~ J | F |
| 7440-39-3 | Barium | 59.20 | | | P |
| 7440-41-7 | Beryllium | .44 | B | | P |
| 7440-43-9 | Cadmium | .63 | U | | P |
| 7440-70-2 | Calcium | 7610.00 | | ~~E~~ J | P |
| 7440-47-3 | Chromium | 8.90 | | | P |
| 7440-48-4 | Cobalt | 10.70 | | | P |
| 7440-50-8 | Copper | 12.30 | | | P |
| 7439-89-6 | Iron | 19800.00 | | ~~E~~ J | P |
| 7439-92-1 | Lead | 3.60 | | | F |
| 7439-95-4 | Magnesium | 3980.00 | | ~~E~~ J | P |
| 7439-96-5 | Manganese | 312.00 | | ~~NE~~ J | P |
| 7439-97-6 | Mercury | .05 | U | | CV |
| 7440-02-0 | Nickel | 8.60 | | | P |
| 7440-09-7 | Potassium | 1010.00 | B | | P |
| 7782-49-2 | Selenium | .42 | ~~U~~ | ~~W~~ UJ | F |
| 7440-22-4 | Silver | 1.80 | ~~B~~ | ~~N~~ J | P |
| 7440-23-5 | Sodium | 316.00 | B | | P |
| 7440-28-0 | Thallium | .42 | ~~U~~ | ~~NW~~ UJ | F |
| 7440-62-2 | Vanadium | 42.70 | | | P |
| 7440-66-6 | Zinc | 37.50 | | | P |
| | Cyanide | 1.05 | U | | C |
| 7440 69-9 | Bismuth | 31.4 | U | | P |

7/15/92

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

mmh 6/30/92

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-49C

B01S83
2.0-4.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP150

Matrix (soil/water): SOIL Lab Sample ID: 920115002

Level (low/med): LOW Date Received: 1/28/92

% Solids: 96.7

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5130.00 | | ~~E~~ J | P |
| 7440-36-0 | Antimony | 4.54 | U | | P |
| 7440-38-2 | Arsenic | 1.30 | ~~B~~ | ~~N*~~ J | F |
| 7440-39-3 | Barium | 66.00 | | | P |
| 7440-41-7 | Beryllium | .41 | B | | P |
| 7440-43-9 | Cadmium | .89 | B | | P |
| 7440-70-2 | Calcium | 6870.00 | | ~~E~~ J | P |
| 7440-47-3 | Chromium | 11.80 | | | P |
| 7440-48-4 | Cobalt | 9.80 | B | | P |
| 7440-50-8 | Copper | 12.40 | | | P |
| 7439-89-6 | Iron | 17900.00 | | ~~E~~ J | P |
| 7439-92-1 | Lead | 7.70 | | | F |
| 7439-95-4 | Magnesium | 3980.00 | | ~~E~~ J | P |
| 7439-96-5 | Manganese | 278.00 | | ~~NE~~ J | P |
| 7439-97-6 | Mercury | .05 | U | | CV |
| 7440-02-0 | Nickel | 11.30 | | | P |
| 7440-09-7 | Potassium | 1160.00 | | | P |
| 7782-49-2 | Selenium | .40 | ~~U~~ | ~~W~~ UJ | F |
| 7440-22-4 | Silver | 1.50 | ~~B~~ | ~~N~~ J | P |
| 7440-23-5 | Sodium | 204.00 | B | | P |
| 7440-28-0 | Thallium | .40 | ~~U~~ | ~~NW~~ UJ | F |
| 7440-62-2 | Vanadium | 42.50 | | | P |
| 7440-66-6 | Zinc | 35.30 | | | P |
| | Cyanide | 1.03 | U | | C |
| 7440-69-9 | Bismuth | 29.6 | U | | P |

7/8/92

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

MMR 6/30/92

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U.S. EPA - CLP

1

# INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-43A

B01S87
223.0-227.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP150

Matrix (soil/water): SOIL Lab Sample ID: 920115003

Level (low/med): LOW Date Received: 1/28/92

% Solids: 93.2

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

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 4180.00 | | ~~E~~ J | P |
| 7440-36-0 | Antimony | 4.80 | U | | P |
| 7440-38-2 | Arsenic | .54 | ~~B~~ | ~~N*~~ J | F |
| 7440-39-3 | Barium | 65.50 | | | P |
| 7440-41-7 | Beryllium | .23 | B | | P |
| 7440-43-9 | Cadmium | 1.40 | | | P |
| 7440-70-2 | Calcium | 4240.00 | | ~~E~~ J | P |
| 7440-47-3 | Chromium | 119.00 | | | P |
| 7440-48-4 | Cobalt | 8.20 | B | | P |
| 7440-50-8 | Copper | 12.00 | | | P |
| 7439-89-6 | Iron | 13000.00 | | ~~E~~ J | P |
| 7439-92-1 | Lead | 6.20 | | | F |
| 7439-95-4 | Magnesium | 2800.00 | | ~~E~~ J | P |
| 7439-96-5 | Manganese | 229.00 | | ~~NE~~ J | P |
| 7439-97-6 | Mercury | .05 | U | | CV |
| 7440-02-0 | Nickel | 66.50 | | | P |
| 7440-09-7 | Potassium | 825.00 | B | | P |
| 7782-49-2 | Selenium | .42 | ~~U~~ | ~~W~~ UJ | F |
| 7440-22-4 | Silver | 1.50 | ~~B~~ | ~~N~~ J | P |
| 7440-23-5 | Sodium | 699.00 | B | | P |
| 7440-28-0 | Thallium | .42 | ~~U~~ | ~~NW~~ UJ | F |
| 7440-62-2 | Vanadium | 26.70 | | | P |
| 7440-66-6 | Zinc | 31.30 | | | P |
| | Cyanide | 1.19 | U | | C |
| 7/8/92 7440-69-9 | Bismuth | 31.3 | U | | P |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

MMR 6/30/92

9613446.1507

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 03/03/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L150

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | B01S85 | % Solids | 95.6 | | % | 0.10 |
| | | Nitrate by IC | 29.5 | J | MG/KG | 1.3 |
| | 216-B-49C | Cyanide, Total | 1.0 | u | MG/KG | 1.0 |
| | | Phosphate by IC | 1.3 | uJ | MG/KG | 1.3 |
| | 9.0-11.5 | Sulfate by IC | 14.7 | | MG/KG | 1.3 |
| | | ~~Nitrate Nitrite~~ | ~~8.4~~ | ~~J~~ | ~~MG-N/KG~~ | 2.1 |
| | | Total Organic Carbon | 2290 | J | MG/KG | 140 |
| -002 | B01S83 | % Solids | 96.7 | | % | 0.10 |
| | | Nitrate by IC | 58.8 | J | MG/KG | 12.9 |
| | 216-B-49C | Cyanide, Total | 1.0 | u | MG/KG | 1.0 |
| | | Phosphate by IC | 1.3 | uJ | MG/KG | 1.3 |
| | 2.0-4.5 | Sulfate by IC | 21.9 | | MG/KG | 1.3 |
| | | ~~Nitrate Nitrite~~ | ~~16.6~~ | ~~J~~ | ~~MG-N/KG~~ | 2.1 |
| | | Total Organic Carbon | 1700 | | MG/KG | 197 |
| -003 | B01S87 | % Solids | 93.2 | | % | 0.10 |
| | | Nitrate by IC | 2970 | J | MG/KG | 134 |
| | 216 B-43A | Cyanide, Total | 1.2 | | MG/KG | 1.1 |
| | | Phosphate by IC | 1.3 | uJ | MG/KG | 1.3 |
| | 223.0-227.5 | Sulfate by IC | 32.1 | | MG/KG | 1.3 |
| | | ~~Nitrate Nitrite~~ | ~~633~~ | ~~J~~ | ~~MG-N/KG~~ | 42.9 |
| | | Total Organic Carbon | 908 | | MG/KG | 158 |

MAT 3/15/92

MAT 6/23/92

9613446.1508

# ATTACHMENT 4

# DATA VALIDATION SUPPORTING DOCUMENTATION

9613446.1509

WHC-SD-EN-SPP-002, Rev. 1

# VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: M. Langenfeld | DATE: 6-22-92 |
| LABORATORY: Weston | CASE: 92012150 | SDG: ~~CLP-150~~ |
| SAMPLES/MATRIX: B01585, B01583, B01587, ~~B01587-MS,~~ ~~B01587-MSD~~ 8/6/92 / Soils | | |
| | | |
| | | |
| | | |

92012150 MML 6/22/92

## 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 8A | ✓ | | | |
| 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 | | | ✓ | no TIC's reported |
| Quantitation and calculation data for all TIC | | | ✓ | |
| Standards Data | | | | |
| Initial calibration report | ✓ | | | |
| RIC and quantitation reports for initial calibration | ✓ | | | |
| Continuing calibration reports | | ✗ | ✓ | MML 6/23/92 |
| RIC and quantitation reports for cont. calibrations | | ✗ | ✓ | |
| Internal standard summary report | ✓ | | | |
| Raw QC Data | | | | |
| Tuning report, spectra and mass lists | ✓ | | | ~~except tuning report~~ |
| Blank analysis reports | ✓ | | | 6/23/92 |
| TIC reports for all blanks | ✓ | | | MML |
| 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 | | | ✓ | no TICs reported |



MML 6/22/92

| Data Package Item | Present?: Yes | No | N/A | |
|---|---|---|---|---|
| Quantitation and calculation data for all TIC | | | ✓ | no TICs reported |
| MS/MSD report forms | ✓ | | | |
| RIC and quantitation reports for MS/MSD | ✓ | | | |
| **Additional Data** | | | | |
| Moisture/% solids data sheets | ✓ | | | |
| Reduction formulae | ✓ | ✗ | | |
| Instrument time logs tuning | ✓ | ✓ | | MM 6/23/92 |
| Chemist notebook pages | ✓ | ✗ | | |
| Sample preparation sheets | ✓ | | | |
| Extraction record | ✓ | | | |

## 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** meets tuning criteria

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)? Acetone, 2-butanone, and 4-Methyl-2-Pentanone Yes **No** N/A

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

MMJ 6/22/92

| | | | |
|---|---|---|---|
| Are all applicable RSD values ≤20.5% (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). RSD out for Acetone, 2-butanone and 4-methyl-2-pentanone

$RRF = \frac{A_x}{A_{is}} \times \frac{C_{is}}{C_x}$

## 3.3. CONTINUING CALIBRATION

| | | | |
|---|---|---|---|
| Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? 12-hr period covered by ICAL | 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)? 4-methyl-2-Pentanone out (UJ qualify) | 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 |

Continuing Calibration Form 7 not provided in deliverables

mmL 6/23/92.

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). Not possible to validate data based on CCV on 6/22/92 ICAL equivalent to CCV

## 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? MB1-VBIK | 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.

Methylene chloride 7 µg/Kg x 10 = 70
Acetone 10 µg/Kg x 10 = 100
Toluene 2 µg/Kg x 5 = 10

mmL 6/22/92

4.2. FIELD BLANKS

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

ACTION: Qualify all detected sample results ≤5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative. Apparently trip blanks and equipment blks were not collected for analyses.

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.

MWL 4/22/92

## 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).

MMF 6/22/92

# 8. COMPOUND IDENTIFICATION AND QUANTITATION

## 8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? VSTD-50 Samples and ms/msD spiked compounds checked — Yes No N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? However, this is not considered significant — Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? w/ exceptions listed above — 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 present 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). Note the results in the validation narrative.
Compound ID considered valid

## 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

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).

MMH 6/22/92

## 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.

6/22/92
MMT

Holding Time Summary

pg 1 of 1

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | holding times |
|---|---|---|---|---|---|---|---|
| B01S85 | 001 | S | 92LVB018 | 01/24/92 | N/A | 02/05/92 | 12 |
| B01S83 | 002 | S | 92LVB018 | 01/23/92 | N/A | 02/05/92 | 13 |
| B01S87 | 003 | S | 92LVB018 | 01/23/92 | N/A | 02/05/92 | 13 |
| B01S87 | 003 MS | S | 92LVB018 | 01/23/92 | N/A | 02/05/92 | 13 |
| B01S87 | 003 MSD | S | 92LVB018 | 01/23/92 | N/A | 02/05/92 | 13 |

LAB QC:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| VBLK | MB1 | S | 92LVB018 | N/A | N/A | 02/05/92 | N/A |

Holding times were met.

7/8/92

MML
6/22/92

Calibration Summary 0 0 0 5 5 8 Pg 1 of 1

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L150

Instrument ID: 5100B Calibration Date(s): 02/05/92 02/05/92

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = B020508 RRF50 = B020507
RRF100= B020506 RRF150= B020505 RRF200= B020504

| COMPOUND | RRF20 | RRF50 | RRF100 | RRF150 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Chloromethane # | 1.579 | 1.403 | 1.564 | 1.250 | 1.441 | 1.447 | 9.3# |
| Bromomethane | 0.342 | 0.297 | 0.519 | 0.241 | 0.368 | 0.353 | 29.5 |
| Vinyl Chloride * | 1.020 | 0.825 | 1.005 | 0.737 | 1.018 | 0.921 | 14.3* |
| Chloroethane | 0.346 | 0.281 | 0.360 | 0.251 | 0.335 | 0.315 | 14.8 |
| Methylene Chloride | 1.567 | 1.180 | 1.267 | 1.024 | 1.281 | 1.264 | 15.7 |
| Acetone | 2.329 | 1.849 | 1.035 | 1.395 | 0.925 | 1.507 | 38.8 |
| Carbon Disulfide | 3.723 | 3.134 | 4.081 | 2.879 | 4.102 | 3.584 | 15.5 |
| 1,1-Dichloroethene * | 0.869 | 0.747 | 0.933 | 0.754 | 1.096 | 0.880 | 16.4* |
| 1,1-Dichloroethane # | 3.749 | 3.499 | 3.495 | 3.247 | 3.392 | 3.476 | 5.3# |
| 1,2-Dichloroethene (total) | 1.526 | 1.395 | 1.381 | 1.127 | 1.496 | 1.385 | 11.4 |
| Chloroform * | 3.602 | 3.257 | 3.243 | 2.992 | 3.073 | 3.233 | 7.3* |
| 1,2-Dichloroethane | 0.583 | 0.519 | 0.487 | 0.487 | 0.436 | 0.502 | 10.7 |
| 2-Butanone | 0.455 | 0.434 | 0.309 | 0.358 | 0.185 | 0.348 | 31.1 |
| 1,1,1-Trichloroethane | 2.271 | 2.110 | 2.224 | 2.014 | 2.330 | 2.190 | 5.8 |
| Carbon Tetrachloride | 1.926 | 1.801 | 1.859 | 1.686 | 1.928 | 1.840 | 5.5 |
| Vinyl Acetate | 6.172 | 6.016 | 7.000 | 6.211 | 4.720 | 6.024 | 13.7 |
| Bromodichloromethane | 0.515 | 0.482 | 0.452 | 0.454 | 0.429 | 0.466 | 7.1 |
| 1,2-Dichloropropane * | 0.525 | 0.469 | 0.448 | 0.448 | 0.409 | 0.460 | 9.2* |
| cis-1,3-Dichloropropene | 0.582 | 0.565 | 0.527 | 0.484 | 0.435 | 0.519 | 11.6 |
| Trichloroethene | 0.359 | 0.327 | 0.291 | 0.301 | 0.291 | 0.314 | 9.3 |
| Dibromochloromethane | 0.413 | 0.378 | 0.348 | 0.354 | 0.331 | 0.365 | 8.7 |
| 1,1,2-Trichloroethane | 0.354 | 0.335 | 0.308 | 0.311 | 0.281 | 0.318 | 8.8 |
| Benzene | 1.291 | 1.181 | 1.137 | 1.065 | 0.874 | 1.110 | 14.0 |
| Trans-1,3-Dichloropropene | 0.563 | 0.556 | 0.513 | 0.541 | 0.533 | 0.541 | 3.6 |
| Bromoform # | 0.361 | 0.323 | 0.299 | 0.304 | 0.250 | 0.307 | 13.1# |
| 4-Methyl-2-pentanone | 1.119 | 1.096 | 0.782 | 0.757 | 0.439 | 0.839 | 33.4 |
| 2-Hexanone | 1.133 | 1.113 | 0.920 | 0.869 | 0.517 | 0.910 | 27.3 |
| Tetrachloroethene | 0.253 | 0.237 | 0.230 | 0.226 | 0.249 | 0.239 | 4.9 |
| 1,1,2,2-Tetrachloroethane # | 0.714 | 0.660 | 0.640 | 0.577 | 0.413 | 0.601 | 19.3# |
| Toluene * | 0.916 | 0.804 | 0.747 | 0.678 | 0.633 | 0.756 | 14.7* |
| Chlorobenzene # | 0.939 | 0.890 | 0.809 | 0.689 | 0.601 | 0.786 | 17.8# |
| Ethylbenzene * | 0.476 | 0.459 | 0.446 | 0.432 | 0.398 | 0.442 | 6.7* |
| Styrene | 1.096 | 1.035 | 0.886 | 0.708 | 0.613 | 0.868 | 23.8 |
| Xylene (total) | 0.620 | 0.598 | 0.562 | 0.490 | 0.450 | 0.544 | 13.2 |
| Toluene-d8 | 1.155 | 1.077 | 1.006 | 0.885 | 0.811 | 0.987 | 14.2 |
| Bromofluorobenzene | 0.636 | 0.592 | 0.566 | 0.502 | 0.435 | 0.546 | 14.4 |
| 1,2-Dichloroethane-d4 | 0.503 | 0.444 | 0.416 | 0.427 | 0.387 | 0.435 | 9.9 |

%D 25%

%D out 30.6%

FORM VI VOA 01/89 Rev.

$RRF20 = \frac{30625}{48480} \frac{50}{20} = 1.579$ chloromethane

$RRF200 = \frac{261854}{70808} \times \frac{50}{200} = 0.925$

% RSD Calculated on HP 15C

6/22/92 MMR

Blank 96 [illegible] 0000088

IA

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. Pg 1 of 1

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 92LVB018-MB1

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

Lab File ID: B020510

Level: (low/med) LOW

Date Received: 02/05/92

% Moisture: not dec. 0

Date Analyzed: 02/05/92

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 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 | 7 | | X 10 = 70 |
| 67-64-1 | Acetone | 10 | | X 10 = 100 |
| 75-15-0 | Carbon Disulfide | 5 | U | |
| 75-35-4 | 1,1-Dichloroethene | 5 | U | |
| 75-34-3 | 1,1-Dichloroethane | 5 | U | |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U | |
| 67-66-3 | Chloroform | 5 | U | |
| 107-06-2 | 1,2-Dichloroethane | 5 | U | |
| 78-93-3 | 2-Butanone | 10 | U | |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U | |
| 56-23-5 | Carbon Tetrachloride | 5 | U | |
| 108-05-4 | Vinyl Acetate | 10 | U | |
| 75-27-4 | Bromodichloromethane | 5 | U | |
| 78-87-5 | 1,2-Dichloropropane | 5 | U | |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U | |
| 79-01-6 | Trichloroethene | 5 | U | |
| 124-48-1 | Dibromochloromethane | 5 | U | |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U | |
| 71-43-2 | Benzene | 5 | U | |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U | |
| 75-25-2 | Bromoform | 5 | U | |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U | |
| 591-78-6 | 2-Hexanone | 10 | U | |
| 127-18-4 | Tetrachloroethene | 5 | U | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U | |
| 108-88-3 | Toluene | 2 | J | 10 ≥ 0 ~~X 8 = 10~~ |
| 108-90-7 | Chlorobenzene | 5 | U | |
| 100-41-4 | Ethylbenzene | 5 | U | |
| 100-42-5 | Styrene | 5 | U | |
| 1330-20-7 | Xylene (total) | 5 | U | |

MMY 6/23/92

FORM 1 V-1 12/88 Rev.

MMY 6/22/92

CALCULATION SUMMARY - FORM B-6

9201L150

| SDG: 150 | REVIEWER: [signature] | DATE: 7/8/92 | PAGE 1 OF 1 |
|---|---|---|---|

COMMENTS:

%D for CCV

$$\%D = \frac{\overline{RRF} - \overline{RRF50 \text{ from CCV}}}{\overline{RRF}} \times 100\%$$

7/8/92

$$\%D \text{ 4-Me-2-pentanone} = \frac{0.839 - 1.096}{0.839} \times 100\%$$

$$= 30.6\%$$

9613446.1520



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

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMK | DATE: 6/29/92 |
| LABORATORY: Weston | CASE: 92-1150 | SDG: 92-1150 |
| SAMPLES/MATRIX: B01585, B01585-MS, B01585-MSD, B01583, B01587 | | |
| | | |
| | | |
| | | |

## 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 | ✓ | | |

MMK 6/29/92

| 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% (3/90 SOW)? | Yes | No | N/A |
| Are all applicable RSD values ≤40% (3/90 SOW)? | Yes | No | N/A |



MMf 12/5/92

| | | | |
|---|---|---|---|
| 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.

MM f 6/2-2/92

## 4.2. FIELD BLANKS

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

ACTION: Qualify all detected sample results ≤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

MMS 6/25/92

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.

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## 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

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).

MWL 6/22/92

## 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).

MMW 6/22/96

## 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.

MWH 6/22/92

COMMENTS (attach additional sheets as necessary):

ICAL %RSD > 30% for Benzoic Acid and 2,4-Dinitrophenol

CCAL RRF-50 < 0.05 for 4-Nitrophenol

CCAL %D > 30% for benzoic Acid, Hexachloro~~butadiene~~ pentadiene, 3-Nitroaniline, 4-Nitrophenol, 4-Nitroaniline and 3,3'-Dichlorobenzidine.

Blank contaminants detected Phenol, Benzoic acid, Di-n-butylphthalate, Bis(2-ethylhexyl)phthalate, unknown, Aldol condensate, hydrocarbon, unknown.

Blank (MS) contaminant detected (bis(2-ethylhexyl)phthalate)

Aldol condensate TIC compounds identified in the samples and not in the blank sample were R qualified. Aldol condensate TIC compounds identified in the samples and in the blanks were also R qualified. Several blank contaminants were detected and were qualified in the sample results.

SVOA MS/MSD % Rec out for 2,4-Dinitrotoluene. No qualification necessary as surrogates are in and 2,4-Dinitrotoluene was not detected. SVOA Blank Spike % rec out for 2,4-Dinitrotoluene. No qualification necessary as surrogates in and 2,4-Dinitrotoluene was not detected in the samples. This Blank spike is considered a performance audit sample.

MWJ 4/22/92

9613446.1528

Holding Time Summary

pg 1 of 1

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext times | ANALYSIS | holding Times |
|---|---|---|---|---|---|---|---|---|
| B01S85 | 001 | S | 92LE0136 | 01/24/92 | 01/29/92 | 5 | 02/14/92 | 21 |
| B01S85 | 001 MS | S | 92LE0136 | 01/24/92 | 01/29/92 | 5 | 02/14/92 | 21 |
| B01S85 | 001 MSD | S | 92LE0136 | 01/24/92 | 01/29/92 | 5 | 02/14/92 | 21 |
| B01S83 | 002 | S | 92LE0136 | 01/23/92 | 01/29/92 | 6 | 02/14/92 | 22 |
| B01S87 | 003 | S | 92LE0136 | 01/23/92 | 01/29/92 | 6 | 02/14/92 | 22 |
| LAB QC: | | | | | | | | |
| SBLK | MB1 | S | 92LE0136 | N/A | 01/29/92 | | 02/14/92 | N/A |
| SBLK | MB1 BS | S | 92LE0136 | N/A | 01/29/92 | | 02/14/92 | N/A |

Holding times were met
[illegible] 7/8/92

9613446.1529 0000060

Calibration Summary

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6B

# SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L150

Instrument ID: 5100M Calibration Date(s): 02/10/92 02/10/92

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = M021008 RRF50 = M021004
RRF80 = M021005 RRF120= M021006 RRF160= M021007

| COMPOUND | RRF20 | RRF50 | RRF80 | RRF120 | RRF160 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Phenol * | 1.522 | 1.578 | 1.779 | 1.521 | 1.728 | 1.626 | 7.4* |
| bis(2-Chloroethyl)ether | 1.700 | 1.688 | 1.737 | 1.647 | 1.600 | 1.674 | 3.1 |
| 2-Chlorophenol | 1.368 | 1.405 | 1.474 | 1.424 | 1.409 | 1.416 | 2.7 |
| 1,3-Dichlorobenzene | 1.589 | 1.613 | 1.770 | 1.548 | 1.507 | 1.605 | 6.3 |
| 1,4-Dichlorobenzene * | 2.088 | 1.967 | 1.993 | 1.907 | 1.783 | 1.948 | 5.8* |
| Benzyl alcohol | 0.802 | 0.841 | 0.898 | 0.863 | 0.872 | 0.855 | 4.2 |
| 1,2-Dichlorobenzene | 1.838 | 1.767 | 1.839 | 1.682 | 1.566 | 1.738 | 6.7 |
| 2-Methylphenol | 1.179 | 1.290 | 1.349 | 1.234 | 1.235 | 1.257 | 5.1 |
| bis(2-Chloroisopropyl)ether | 1.337 | 1.385 | 1.520 | 1.411 | 1.438 | 1.418 | 4.8 |
| 4-Methylphenol | 1.212 | 1.317 | 1.417 | 1.266 | 1.244 | 1.291 | 6.2 |
| N-Nitroso-Di-n-propylamine # | 0.853 | 0.901 | 0.998 | 0.891 | 0.900 | 0.909 | 5.9# |
| Hexachloroethane | 0.604 | 0.592 | 0.648 | 0.601 | 0.616 | 0.612 | 3.6 |
| Nitrobenzene | 0.324 | 0.327 | 0.354 | 0.327 | 0.309 | 0.328 | 4.9 |
| Isophorone | 0.751 | 0.757 | 0.785 | 0.676 | 0.615 | 0.717 | 9.7 |
| 2-Nitrophenol * | 0.179 | 0.182 | 0.196 | 0.198 | 0.204 | 0.192 | 5.6* |
| 2,4-Dimethylphenol | 0.259 | 0.312 | 0.331 | 0.303 | 0.299 | 0.301 | 8.8 |
| Benzoic acid | 0.010 | 0.063 | 0.100 | 0.116 | 0.140 | 0.105 | 30.8 |
| bis(2-Chloroethoxy)methane | 0.441 | 0.444 | 0.472 | 0.422 | 0.395 | 0.435 | 6.6 |
| 2,4-Dichlorophenol * | 0.273 | 0.288 | 0.295 | 0.289 | 0.292 | 0.287 | 3.0* |
| 1,2,4-Trichlorobenzene | 0.307 | 0.296 | 0.289 | 0.303 | 0.296 | 0.298 | 2.3 |
| Naphthalene | 1.129 | 1.026 | 0.932 | 0.771 | 0.665 | 0.905 | 20.8 |
| 4-Chloroaniline | 0.420 | 0.420 | 0.442 | 0.416 | 0.385 | 0.417 | 4.9 |
| Hexachlorobutadiene * | 0.167 | 0.161 | 0.157 | 0.162 | 0.161 | 0.162 | 2.2* |
| 4-Chloro-3-methylphenol * | 0.226 | 0.245 | 0.267 | 0.257 | 0.246 | 0.248 | 6.2* |
| 2-Methylnaphthalene | 0.684 | 0.657 | 0.640 | 0.566 | 0.494 | 0.608 | 12.7 |
| Hexachlorocyclopentadiene # | 0.117 | 0.128 | 0.150 | 0.173 | 0.194 | 0.152 | 20.8# |
| 2,4,6-Trichlorophenol * | 0.277 | 0.286 | 0.292 | 0.334 | 0.350 | 0.308 | 10.5* |
| 2,4,5-Trichlorophenol 0.2894 | 0.1353 | 0.308 | 0.310 | 0.347 | 0.381 | 0.336 | 10.3 |
| 2-Chloronaphthalene | 1.475 | 1.436 | 1.420 | 1.247 | 1.135 | 1.343 | 10.8 |
| 2-Nitroaniline | 0.2835 | 0.313 | 0.367 | 0.358 | 0.370 | 0.352 | 7.5 |
| Dimethylphthalate | 1.304 | 1.299 | 1.305 | 1.182 | 1.109 | 1.240 | 7.2 |
| Acenaphthylene | 2.048 | 1.958 | 1.931 | 1.570 | 1.402 | 1.782 | 15.7 |
| 2,6-Dinitrotoluene | 0.281 | 0.295 | 0.315 | 0.332 | 0.322 | 0.309 | 6.7 |
| 3-Nitroaniline | | 0.324 | 0.347 | 0.373 | 0.381 | 0.356 | 7.3 |
| Acenaphthene * | 1.293 | 1.306 | 1.305 | 1.154 | 1.050 | 1.222 | 9.4* |
| 2,4-Dinitrophenol # | | 0.053 | 0.082 | 0.109 | 0.135 | 0.095 | 37.2# |
| 4-Nitrophenol # | | 0.064 | 0.078 | 0.081 | 0.091 | 0.078 | 14.2# |

SOW allows these exceptions

FORM VI SV-1

mmf 6/25/92

01/89 Rev.

Calibration Summary 9613446.1530 0000128 Pg 2 of 3

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L150

Instrument ID: 5100M Calibration Date: 02/14/92 Time: 1138

Lab File ID: M021402 Init. Calib. Date(s): 02/10/92 02/10/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

| COMPOUND | RRF | RRF50 | %D |
|---|---|---|---|
| Phenol * | 1.626 | 1.620 | 0.4 * |
| bis(2-Chloroethyl)ether | 1.674 | 1.695 | -1.3 |
| 2-Chlorophenol | 1.416 | 1.404 | 0.8 |
| 1,3-Dichlorobenzene | 1.605 | 1.532 | 4.5 |
| 1,4-Dichlorobenzene * | 1.948 | 1.822 | 6.5 * |
| Benzyl alcohol | 0.855 | 0.829 | 3.0 |
| 1,2-Dichlorobenzene | 1.738 | 1.647 | 5.2 |
| 2-Methylphenol | 1.257 | 1.269 | -1.0 |
| bis(2-Chloroisopropyl)ether | 1.418 | 1.613 | -13.8 |
| 4-Methylphenol | 1.291 | 1.289 | 0.2 |
| N-Nitroso-Di-n-propylamine # | 0.909 | 1.029 | -13.2 # |
| Hexachloroethane | 0.612 | 0.672 | -9.8 |
| Nitrobenzene | 0.328 | 0.373 | -13.7 |
| Isophorone | 0.717 | 0.822 | -14.6 |
| 2-Nitrophenol * | 0.192 | 0.203 | -5.7 * |
| 2,4-Dimethylphenol | 0.301 | 0.310 | -3.0 |
| Benzoic acid | 0.105 | 0.067 | 36.2 |
| bis(2-Chloroethoxy)methane | 0.435 | 0.482 | -10.8 |
| 2,4-Dichlorophenol * | 0.287 | 0.306 | -6.6 * |
| 1,2,4-Trichlorobenzene | 0.298 | 0.365 | -22.5 |
| Naphthalene | 0.905 | 1.045 | -15.5 |
| 4-Chloroaniline | 0.417 | 0.414 | 0.7 |
| Hexachlorobutadiene * | 0.162 | 0.198 | -22.2 * |
| 4-Chloro-3-methylphenol * | 0.248 | 0.263 | -6.0 * |
| 2-Methylnaphthalene | 0.608 | 0.723 | -18.9 |
| Hexachlorocyclopentadiene # | 0.152 | 0.106 | 30.3 # |
| 2,4,6-Trichlorophenol * | 0.308 | 0.324 | -5.2 * |
| 2,4,5-Trichlorophenol | 0.336 | 0.339 | -0.9 |
| 2-Chloronaphthalene | 1.343 | 1.240 | 7.7 |
| 2-Nitroaniline | 0.352 | 0.286 | 18.8 |
| Dimethylphthalate | 1.240 | 1.268 | -2.3 |
| Acenaphthylene | 1.782 | 1.763 | 1.1 |
| 2,6-Dinitrotoluene | 0.309 | 0.315 | -1.9 |
| 3-Nitroaniline | 0.356 | 0.246 | 30.9 |
| Acenaphthene * | 1.222 | 1.102 | 9.8 * |
| 2,4-Dinitrophenol # | 0.095 | 0.073 | 23.2 # |
| 4-Nitrophenol # | 0.078 | 0.047 | 39.7 # |
| | | | |

FORM VII SV-1 5/88 Rev.

MMK 6/25/92

9613446.1531 Calibration Summary 0000129 Pg 3 of 3

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9201L150

Instrument ID: 5100M Calibration Date: 02/14/92 Time: 1138

Lab File ID: M021402 Init. Calib. Date(s): 02/10/92 02/10/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

| COMPOUND | RRF | RRF50 | %D |
|---|---|---|---|
| Dibenzofuran | 1.544 | 1.571 | -1.7 |
| 2,4-Dinitrotoluene | 0.349 | 0.341 | 2.3 |
| Diethylphthalate | 1.142 | 1.152 | -0.9 |
| 4-Chlorophenyl-phenylether | 0.601 | 0.583 | 3.0 |
| Fluorene | 1.246 | 1.232 | 1.1 |
| 4-Nitroaniline | 0.238 | 0.137 | 42.4 |
| 4,6-Dinitro-2-methylphenol | 0.118 | 0.114 | 3.4 |
| N-Nitrosodiphenylamine (1) * | 0.809 | 0.679 | 16.1 * |
| 4-Bromophenyl-phenylether | 0.268 | 0.272 | -1.5 |
| Hexachlorobenzene | 0.245 | 0.247 | -0.8 |
| Pentachlorophenol * | 0.125 | 0.106 | 15.2 * |
| Phenanthrene | 1.309 | 1.186 | 9.4 |
| Anthracene | 1.273 | 1.157 | 9.1 |
| Di-n-Butylphthalate | 1.206 | 1.303 | -8.0 |
| Fluoranthene * | 0.978 | 0.888 | 9.2 * |
| Pyrene | 2.899 | 2.970 | -2.4 |
| Butylbenzylphthalate | 1.363 | 1.445 | -6.0 |
| 3,3'-Dichlorobenzidine | 0.196 | 0.137 | 30.1 |
| Benzo(a)anthracene | 1.329 | 1.193 | 10.2 |
| Chrysene | 1.070 | 1.002 | 6.4 |
| bis(2-Ethylhexyl)phthalate | 1.958 | 1.949 | 0.5 |
| Di-n-Octyl phthalate * | 5.179 | 5.407 | -4.4 * |
| Benzo(b)fluoranthene | 1.498 | 1.241 | 17.2 |
| Benzo(k)fluoranthene | 1.194 | 1.202 | -0.7 |
| Benzo(a)pyrene * | 0.940 | 0.857 | 8.8 * |
| Indeno(1,2,3-cd)pyrene | 0.550 | 0.608 | -10.5 |
| Dibenzo(a,h)anthracene | 0.595 | 0.523 | 12.1 |
| Benzo(g,h,i)perylene | 0.680 | 0.629 | 7.5 |
| Nitrobenzene-d5 | 0.370 | 0.399 | -7.8 |
| 2-Fluorobiphenyl | 1.205 | 1.263 | -4.8 |
| p-Terphenyl-d14 | 1.578 | 1.731 | -9.7 |
| Phenol-d5 | 1.573 | 1.503 | 4.5 |
| 2-Fluorophenol | 1.220 | 1.204 | 1.3 |
| 2,4,6-Tribromophenol | 0.098 | 0.094 | 4.1 |

(1) Cannot be separated from Diphenylamine

FORM VII SV-2 5/88 Rev.

MMf 6/25/92

9613446.1532 Blank Summary

pg 1 of 3

1B 000149

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0136-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M021403

Level: (low/med) LOW Date Received: 01/29/92

% Moisture: not dec. 0 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | |
|---|---|---|---|
| 108-95-2 | Phenol | 35 | J |
| 111-44-4 | bis(2-Chloroethyl)ether | 330 | U |
| 95-57-8 | 2-Chlorophenol | 330 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 330 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 330 | U |
| 100-51-6 | Benzyl alcohol | 330 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 330 | U |
| 95-48-7 | 2-Methylphenol | 330 | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 330 | U |
| 106-44-5 | 4-Methylphenol | 330 | U |
| 621-64-7 | N-Nitroso-Di-n-propylamine | 330 | U |
| 67-72-1 | Hexachloroethane | 330 | U |
| 98-95-3 | Nitrobenzene | 330 | U |
| 78-59-1 | Isophorone | 330 | U |
| 88-75-5 | 2-Nitrophenol | 330 | U |
| 105-67-9 | 2,4-Dimethylphenol | 330 | U |
| 65-85-0 | Benzoic acid | 83 | J |
| 111-91-1 | bis(2-Chloroethoxy)methane | 330 | U |
| 120-83-2 | 2,4-Dichlorophenol | 330 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 330 | U |
| 91-20-3 | Naphthalene | 330 | U |
| 106-47-8 | 4-Chloroaniline | 330 | U |
| 87-68-3 | Hexachlorobutadiene | 330 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 330 | U |
| 91-57-6 | 2-Methylnaphthalene | 330 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 330 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 330 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 1700 | U |
| 91-58-7 | 2-Chloronaphthalene | 330 | U |
| 88-74-4 | 2-Nitroaniline | 1700 | U |
| 131-11-3 | Dimethylphthalate | 330 | U |
| 208-96-8 | Acenaphthylene | 330 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 330 | U |

x5 = 175

x5 = 415

FORM 1 SV-1 12/88 Rev.

MMY 6/25/92

9613446-1533
Blank Summary



1C 0000150

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0136-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M021403

Level: (low/med) LOW Date Received: 01/29/92

% Moisture: not dec. 0 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

| CAS NO. | COMPOUND | | | |
|---|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 1700 | U | |
| 83-32-9 | Acenaphthene | 330 | U | |
| 51-28-5 | 2,4-Dinitrophenol | 1700 | U | |
| 100-02-7 | 4-Nitrophenol | 1700 | U | |
| 132-64-9 | Dibenzofuran | 330 | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 330 | U | |
| 84-66-2 | Diethylphthalate | 330 | U | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 330 | U | |
| 86-73-7 | Fluorene | 330 | U | |
| 100-01-6 | 4-Nitroaniline | 1700 | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 1700 | U | |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 330 | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 330 | U | |
| 118-74-1 | Hexachlorobenzene | 330 | U | |
| 87-86-5 | Pentachlorophenol | 1700 | U | |
| 85-01-8 | Phenanthrene | 330 | U | |
| 120-12-7 | Anthracene | 330 | U | |
| 84-74-2 | Di-n-Butylphthalate | 610 | | x10=6,100 |
| 206-44-0 | Fluoranthene | 330 | U | |
| 129-00-0 | Pyrene | 330 | U | |
| 85-68-7 | Butylbenzylphthalate | 330 | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 670 | U | |
| 56-55-3 | Benzo(a)anthracene | 330 | U | |
| 218-01-9 | Chrysene | 330 | U | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 49 | J | x10 = 490 |
| 117-84-0 | Di-n-Octyl phthalate | 330 | U | |
| 205-99-2 | Benzo(b)fluoranthene | 330 | U | |
| 207-08-9 | Benzo(k)fluoranthene | 330 | U | |
| 50-32-8 | Benzo(a)pyrene | 330 | U | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 330 | U | |
| 53-70-3 | Dibenzo(a,h)anthracene | 330 | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 330 | U | |

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

MMJ 6/25/92

9613446.1534 Blank Summary

pg 3 of 3

1F 0300151 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 92LE0136-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M021403

Level: (low/med) LOW Date Received: 01/29/92

% Moisture: not dec. 0 dec. Date Extracted: 01/29/92

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/14/92

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

Number TICs found: 4

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q | |
|---|---|---|---|---|---|
| 1. | UNKNOWN | 4.67 | 300 | J X | 5 = 1500 |
| 2. | ALDOL CONDENSATE | 6.00 | 900 | J ~~X~~ | ~~5 = 4500~~ |
| 3. | HYDROCARBON | 22.33 | 300 | J X | 5 4,500 |
| 4. | UNKNOWN | 24.32 | 400 | J X | 5 2,000 |

ALDOL Reaction product of Acetone (Reject) 7/8/92

~~Apply unknown: ±RT ±.06 (Reject)~~
7/8/92

MMY
6/25/92

9613446.1535



# PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMK | DATE: 6/29/92 |
| LABORATORY: Weston | CASE: 9201L150 | SDG: 9201L150 |
| SAMPLES/MATRIX: B01585, B01583, and B01587/Soil | | |
| | | |
| | | |
| | | |
| | | |

## 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 | MMK 6/29/92 | ✗ | | ✓ |
| 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 | | ✓ | | |

MMK 6/29/92

| 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 | ✓ | | |

MMH 6/29/92

## 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). N/A no peaks near RT windows

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

MMH 6/29/92

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%? DBC meets < 10% criterion | 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).

[illegible] 6/27/92

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

MM K 6/29/92

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.

MWH 4/25/92

## 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.

MMY 4/15/92

## 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)

6/25/92
MM

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

OK MMH 6/29/92 ~~the laboratory did not account for GPC cleanup (dilution factor)~~ not applicable

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.

6/25/92 MMH

COMMENTS (attach additional sheets as necessary):

Resolution of peak Height for DDT is acceptable. However 20% was not checked as compounds were not detected within DDT window.

% B for Endrin out SP2100.

% RSD was exceeded However if no compounds were detected on DBC must be within the 10% Criteria as it is for the quant column only.

Out of specification DBC surrogate recoveries impact the MSD only. No qualification is necessary.

The MS/MSD Heptachlor % Recov & % RPD were not calculated.

No associated Surrogates out when compared to MS/MSD data. No qualification necessary

CRQL's not mult X2 for GPC cleanup as required by SOW 2/88. CRQL's corrected X2.

Le 5/5/92
mwd

9613446.1544

pg 1 of 1

Holding Times Summary

MAR 1992
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Ext times | ANALYSIS | hold times |
|---|---|---|---|---|---|---|---|---|
| B01S85 | 001 | S | 92LE0137 | 01/24/92 | 01/29/92 | 5 | 02/18/92 | 25 |
| B01S83 | 002 | S | 92LE0137 | 01/23/92 | 01/29/92 | 6 | 02/18/92 | 25 |
| B01S83 | 002 MS | S | 92LE0137 | 01/23/92 | 01/29/92 | 6 | 02/18/92 | 25 |
| B01S83 | 002 MSD | S | 92LE0137 | 01/23/92 | 01/29/92 | 6 | 02/18/92 | 25 |
| B01S87 | 003 | S | 92LE0137 | 01/23/92 | 01/29/92 | 6 | 02/19/92 | 26 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| PBLK | MB1 | S | 92LE0137 | N/A | 01/29/92 | 02/18/92 |
| PBLK | MB1 BS | S | 92LE0137 | N/A | 01/29/92 | 02/18/92 |

Holding times were met.

[illegible] 7/8/92

6/25/92
WMY

Calibration Summary 9213446-1545

0000935

Pg 1 of 1

8D

# PESTICIDE EVALUATION STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 02179214

RFW Lot No.: 9201L150

Instrument ID: 14' GC Column ID: SP2100 (confirmation column)

Dates of Analyses: 02/17/92 to 02/19/92

## Evaluation Check for Linearity

| PESTICIDE | CALIBRATION FACTOR EVAL MIX A | CALIBRATION FACTOR EVAL MIX B | CALIBRATION FACTOR EVAL MIX C | %RSD (</= 10.0%) | |
|---|---|---|---|---|---|
| ALDRIN | 3720623 | 5152397 | 5716813 | 21.2 | |
| ENDRIN | 855199 | 1027934 | 998951 | 9.6 | |
| 4,4'-DDT | 316210 | 476466 | 523381 | 24.8 | (1) |
| DBC | 486145 | 599927 | 595048 | 11.5 | |

No qualification necessary since all results are ND.

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve.

7/8/92

## Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

| | | DATE ANALYZED | TIME ANALYZED | ENDRIN | 4,4'-DDT | COMBINED (2) |
|---|---|---|---|---|---|---|
| 01 | INIT. EVAL MIX B | 02/17/92 | 2331 | Endrin % exceeds 20% | | 18.2 |
| 02 | EVAL MIX B | 02/18/92 | 1212 | | | 16.1 |
| 03 | EVAL MIX B | 02/18/92 | 2004 | | | 17.2 |
| 04 | EVAL MIX B | 02/19/92 | 1032 | | | 20.8 |
| 05 | EVAL MIX B | 02/19/92 | 1841 | | | 22.0 |

(2) See Form Instructions.

This applies to quantitation only. No qualification is needed since this is the confirmation column.

MMK 6/29/92

7/8/92

FORM VIII PEST-1 11/88 Rev.

MMK 4/29/92

9613446.1546

WHC-SD-EN-SPP-002, Rev. 1

# INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: mmL | DATE: 6/30/92 |
| LABORATORY: Weston | CASE: ~~92015~~ 92014150 | SDG: 92014150 |
| SAMPLES/MATRIX: | | |
| B01S85, B01S83, B01S87 / Soil | | |
| | | |
| | | |
| | | |

## 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 | ✓ | — | — |

mmL 6/29/92

| 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.

MWR 6/29/95

6. LABORATORY BLANKS

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

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

7. FIELD BLANKS

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

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U). No qualification necessary

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Silver out 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.
J qualify silver

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.

[illegible] 6/29/92

## 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

MML 6/30/92

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

6/29/92 MMF

07/8/92

If no, were MSA analyses performed when required? MSA was not performed. not required. 07/8/92 ~~Yes~~ ~~No~~ N/A

N/A

Are MSA correlation coefficients ≥0.995? Yes ~~No~~ N/A

MMR 6/30/92

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.

6/29/92 MMR

COMMENTS (attach additional sheets as necessary):

Blank qualification of Mg and V was not necessary as concentrations were >5X Blank contaminant concentrations.

ICP serial Dilution Aluminum, Ca, Fe, Mg, Mn Exceed criteria and detected concentrations >50X IDL

MSA was not performed and was not required

6/29/92
MMJ

9615446.1552

Pg 1 of 4

Holding Time Summary

MAR 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Days | ANALYSIS | Days |
|---|---|---|---|---|---|---|---|---|
| B01S85 | | | | | | | | |
| SILVER, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | 14 | 03/05/92 | 42 |
| SILVER, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| SILVER, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ALUMINUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ALUMINUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ALUMINUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ARSENIC, TOTAL | 001 | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/14/92 | 21 |
| ARSENIC, TOTAL | 001 REP | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/14/92 | |
| ARSENIC, TOTAL | 001 MS | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/14/92 | |
| BARIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | 42 |
| BARIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| BARIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| BERYLLIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| BERYLLIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| BERYLLIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| BISMUTH, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/06/92 | 43 |
| BISMUTH, TOTAL REP | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/06/92 | |
| BISMUTH, TOTAL SPIKE | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/06/92 | |
| CALCIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | 42 |
| CALCIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| CALCIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| CADMIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| CADMIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| CADMIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| COBALT, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| COBALT, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| COBALT, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| CHROMIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| CHROMIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| CHROMIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| COPPER, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| COPPER, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| COPPER, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| IRON, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| IRON, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| IRON, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| MERCURY, TOTAL | 001 | S | 92C0041 | 01/24/92 | 02/10/92 | | 02/11/92 | 15 |

MNL 4/30/92

96L3446.1553 Holding Time Summary

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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | DMS | ANALYSIS | Pg 7 |
|---|---|---|---|---|---|---|---|---|
| MERCURY, TOTAL | 001 REP | S | 92C0041 | 01/24/92 | 02/10/92 | 14 | 02/11/92 | 15 |
| MERCURY, TOTAL | 001 MS | S | 92C0041 | 01/24/92 | 02/10/92 | | 02/11/92 | ↓ |
| POTASSIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | 42 |
| POTASSIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| POTASSIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| MAGNESIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| MAGNESIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| MAGNESIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| MANGANESE, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| MANGANESE, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| MANGANESE, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| SODIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| SODIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| SODIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| NICKEL, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| NICKEL, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| NICKEL, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | ↓ |
| LEAD, TOTAL | 001 | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/14/92 | 21 |
| LEAD, TOTAL | 001 REP | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/14/92 | |
| LEAD, TOTAL | 001 MS | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/14/92 | ↓ |
| ANTIMONY, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | 42 |
| ANTIMONY, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ANTIMONY, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | ↓ |
| SELENIUM, TOTAL | 001 | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/13/92 | 17 |
| SELENIUM, TOTAL | 001 REP | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/13/92 | |
| SELENIUM, TOTAL | 001 MS | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/13/92 | ↓ |
| THALLIUM, TOTAL | 001 | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/17/92 | 21 |
| THALLIUM, TOTAL | 001 REP | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/17/92 | |
| THALLIUM, TOTAL | 001 MS | S | 92L0453 | 01/24/92 | 02/10/92 | | 02/17/92 | ↓ |
| VANADIUM, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | 42 |
| VANADIUM, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| VANADIUM, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ZINC, TOTAL | 001 | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ZINC, TOTAL | 001 REP | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | |
| ZINC, TOTAL | 001 MS | S | 92L0454 | 01/24/92 | 02/10/92 | | 03/05/92 | ↓ |
| B01S83 | | | | | | | | |
| SILVER, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | 13 | 03/05/92 | 43 |
| ALUMINUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |

MMK 6/30/92

9613446.1554

Holding Time Summary

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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | Days | ANALYSIS | Days |
|---|---|---|---|---|---|---|---|---|
| ARSENIC, TOTAL | 002 | S | 92L0453 | 01/23/92 | 02/10/92 | 13 | 02/14/92 | 22 |
| BARIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| BERYLLIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| BISMUTH, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/06/92 | 44 |
| CALCIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| CADMIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| COBALT, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| CHROMIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| COPPER, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| IRON, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| MERCURY, TOTAL | 002 | S | 92C0041 | 01/23/92 | 02/10/92 | | 02/11/92 | 16 |
| POTASSIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| MAGNESIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| MANGANESE, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| SODIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| NICKEL, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| LEAD, TOTAL | 002 | S | 92L0453 | 01/23/92 | 02/10/92 | | 02/14/92 | 22 |
| ANTIMONY, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| SELENIUM, TOTAL | 002 | S | 92L0453 | 01/23/92 | 02/10/92 | | 02/13/92 | 17 |
| THALLIUM, TOTAL | 002 | S | 92L0453 | 01/23/92 | 02/10/92 | | 02/17/92 | 22 |
| VANADIUM, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| ZINC, TOTAL | 002 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| B01S87 | | | | | | | | |
| SILVER, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| ALUMINUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| ARSENIC, TOTAL | 003 | S | 92L0453 | 01/23/92 | 02/10/92 | | 02/14/92 | 22 |
| BARIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| BERYLLIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| BISMUTH, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/06/92 | 44 |
| CALCIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| CADMIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| COBALT, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| CHROMIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| COPPER, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| IRON, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| MERCURY, TOTAL | 003 | S | 92C0041 | 01/23/92 | 02/10/92 | | 02/11/92 | 14 |
| POTASSIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| MAGNESIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |

MMK 6/20/92

9613446.1555

Holding Time Summary



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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | DAYS | ANALYSIS | DAYS |
|---|---|---|---|---|---|---|---|---|
| MANGANESE, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | 18 | 03/05/92 | 43 |
| SODIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| NICKEL, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |
| LEAD, TOTAL | 003 | S | 92L0453 | 01/23/92 | 02/10/92 | | 02/14/92 | 22 |
| ANTIMONY, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| SELENIUM, TOTAL | 003 | S | 92L0453 | 01/23/92 | 02/10/92 | | 02/13/92 | 21 |
| THALLIUM, TOTAL | 003 | S | 92L0453 | 01/23/92 | 02/10/92 | | 02/17/92 | 25 |
| VANADIUM, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | 43 |
| ZINC, TOTAL | 003 | S | 92L0454 | 01/23/92 | 02/10/92 | | 03/05/92 | ↓ |

LAB QC:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | N/A |
| ALUMINUM LABORTORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| BARIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| BERYLLIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| BISMUTH, LCS | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/06/92 | |
| CALCIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| CADMIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| COBALT LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| CHROMIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| COPPER LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| IRON LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| POTASSIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| MAGNESIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| MANGANESE LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| SODIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| NICKEL LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| ANTIMONY LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| VANADIUM LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| ZINC LABORATORY | LC1 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| SILVER LABORATORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| ALUMINUM LABORTORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| BARIUM LABORATORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| BERYLLIUM LABORATORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| BISMUTH, LCS | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/06/92 | |
| CALCIUM LABORATORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| CADMIUM LABORATORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| COBALT LABORATORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |
| CHROMIUM LABORATORY | LC2 BS | S | 92L0454 | N/A | 02/10/92 | 03/05/92 | |

MMS 6/30/92

9613446.1556 0000027

Blank Summary

Pg 1 of 1

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.: CLP150

Preparation Blank Matrix (soil/water): SOIL

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

No qual

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5x | | 5x | | | | | | | | |
| Aluminum | 88.0 | U | 88.0 | U | 88.0 | U | 88.0 | U | 17.600 | U | P |
| Antimony | 23.0 | U | 23.0 | U | 23.0 | U | 23.0 | U | 4.600 | U | P |
| Arsenic | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Barium | 38.0 | U | 38.0 | U | 38.0 | U | 38.0 | U | 7.600 | U | P |
| Beryllium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .200 | U | P |
| Cadmium | 3.0 | U | 3.0 | U | 3.0 | U | 3.0 | U | .600 | U | P |
| Calcium | 88.0 | U | 88.0 | U | 88.0 | U | 88.0 | U | 17.600 | U | P |
| Chromium | 6.0 | U | 6.0 | U | 6.0 | U | 6.0 | U | 1.200 | U | P |
| Cobalt | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | 1.000 | U | P |
| Copper | 6.0 | U | 6.0 | U | 6.0 | U | 6.0 | U | 1.200 | U | P |
| Iron | 39.0 | U | 39.0 | U | 39.0 | U | 39.0 | U | 7.800 | U | P |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Magnesium | 78.0 | U | 98.9 | B | 78.0 | U | 94.9 | B | 15.600 | U | P |
| Manganese | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | P |
| Mercury | .1 | U | .1 | U | .1 | U | .1 | U | .050 | U | CV |
| Nickel | 18.0 | U | 18.0 | U | 18.0 | U | 18.0 | U | 3.600 | U | P |
| Potassium | 734.0 | U | 734.0 | U | 734.0 | U | 734.0 | U | 146.800 | U | P |
| Selenium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Silver | 4.0 | U | 4.0 | U | 4.0 | U | 4.0 | U | .800 | U | P |
| Sodium | 638.0 | U | 638.0 | U | 638.0 | U | 638.0 | U | 127.600 | U | P |
| Thallium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Vanadium | 7.6 | B | 10.2 | B | 9.2 | B | 10.4 | B | 1.000 | U | P |
| Zinc | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | 1.000 | U | P |
| Cyanide | 20.0 | U | 20.0 | U | 20.0 | U | | | 1.000 | U | C |

Case JM

494 5

38 51

FORM III - IN 03/90

CCB1
Assoc w/
9209L150-001
-002
-003

7/8/92

MMR 6/30/92

All sample results are greater than 5x the blank conc in ug/L units Therefore, no qualification is necessary

7/8/92

Accuracy Summary 9613446.1557 0000030 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B01S85S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP150

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 95.6

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 | | | | | | | 83% | | NR |
| Antimony | 75-125 | 91.8000 | | 4.8116 | U | 104.60 | 87.8 | | P |
| Arsenic | 75-125 | 9.4000 | | 4.1000 | | 8.40 | 63.8 | N | F |
| Barium | 75-125 | 412.2000 | | 59.2000 | | 418.40 | 84.4 | | P |
| Beryllium | 75-125 | 9.5000 | | .4400 | B | 10.50 | 86.3 | | P |
| Cadmium | 75-125 | 9.2000 | | .6276 | U | 10.50 | 87.8 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | 75-125 | 43.1000 | | 8.9000 | | 41.80 | 81.6 | | P |
| Cobalt | 75-125 | 102.0000 | | 10.7000 | | 104.60 | 87.3 | | P |
| Copper | 75-125 | 55.8000 | | 12.3000 | | 52.30 | 83.3 | | P |
| Iron | | | | | | | | | NR |
| Lead | 75-125 | 7.8000 | | 3.6000 | | 4.20 | 100.0 | | F |
| Magnesium | | | | | | | | | NR |
| Manganese | 75-125 | 342.3999 | | 311.8999 | | 104.60 | 29.2 | N | P |
| Mercury | 75-125 | .5510 | | .0523 | U | .52 | 106.0 | | CV |
| Nickel | 75-125 | 98.3000 | | 8.6000 | | 104.60 | 85.8 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 1.8000 | | .4184 | U | 2.10 | 85.0 | | F |
| Silver | 75-125 | 23.2000 | | 1.8000 | B | 10.50 | 221.6 | N | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 6.0000 | | .4184 | U | 10.50 | 57.8 | N | F |
| Vanadium | 75-125 | 129.4000 | | 42.7000 | | 104.60 | 82.9 | | P |
| Zinc | 75-125 | 120.1000 | | 37.5000 | | 104.60 | 79.0 | | P |
| Cyanide | 75-125 | 4.4030 | | 1.0460 | U | 5.23 | 84.2 | | C |

Comments:

FORM V (Part 1) - IN 03/90

MMh
6/30/92

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B01S85D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP150

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

% Solids for Sample: 95.6 % Solids for Duplicate: 95.6

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

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | %RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Aluminum | | 5598.6020 | | 4776.1990 | | 15.9 | | P |
| Antimony | | 4.8116 | U | 4.8116 | U | | | P |
| Arsenic | 2.1 | 4.1000 | | 1.6000 | B | 87.4 | * | F |
| Barium | 41.8 | 59.2000 | | 54.5000 | | 8.2 | | P |
| Beryllium | | .4400 | B | .2700 | B | 47.1 | | P |
| Cadmium | | .6276 | U | .6276 | U | | | P |
| Calcium | | 7607.0000 | | 6833.1020 | | 10.7 | | P |
| Chromium | 2.1 | 8.9000 | | 8.3000 | | 7.8 | | P |
| Cobalt | 10.5 | 10.7000 | | 10.0000 | B | 6.9 | | P |
| Copper | 5.2 | 12.3000 | | 13.8000 | | 11.9 | | P |
| Iron | | 19844.0000 | | 18869.5000 | | 5.0 | | P |
| Lead | | 3.6000 | | 4.3000 | | 17.3 | | F |
| Magnesium | 1046.0 | 3975.0000 | | 3581.7000 | | 10.4 | | P |
| Manganese | | 311.8999 | | 291.0000 | | 6.9 | | P |
| Mercury | | .0523 | U | .0523 | U | | | CV |
| Nickel | 8.4 | 8.6000 | | 8.5000 | | 1.0 | | P |
| Potassium | | 1010.8000 | B | 1042.8000 | B | 3.1 | | P |
| Selenium | | .4184 | U | .4184 | U | | | F |
| Silver | | 1.8000 | B | 1.8000 | B | 3.5 | | P |
| Sodium | | 315.7000 | B | 267.5000 | B | 16.5 | | P |
| Thallium | | .4184 | U | .4184 | U | | | F |
| Vanadium | 10.5 | 42.7000 | | 37.1000 | | 14.0 | | P |
| Zinc | | 37.5000 | | 33.8000 | | 10.4 | | P |
| Cyanide | | 1.0460 | U | 1.0460 | U | | | C |

FORM VI - IN

03/90

No qual necessary since results within 2 x CRDL limit

7/13/92

Precision Summary 9613446.1559 0000036 Pg 1 of 1

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B01S85L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP150

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 | 26761.90 | | 21864.49 | | 18.3 | E | P |
| Antimony | 23.00 | U | 115.00 | U | | | P |
| Arsenic | | | | | | | NR |
| Barium | 282.80 | | 229.00 | B | 19.0 | | P |
| Beryllium | 2.10 | B | 5.00 | U | 100.0 | | P |
| Cadmium | 3.00 | U | 15.00 | U | | | P |
| Calcium | 36362.10 | | 29651.99 | | 18.5 | E | P |
| Chromium | 42.70 | | 44.50 | B | 4.2 | | P |
| Cobalt | 51.10 | | 45.50 | B | 11.0 | | P |
| Copper | 58.70 | | 60.00 | B | 2.2 | | P |
| Iron | 94856.50 | | 78370.50 | | 17.4 | E | P |
| Lead | | | | | | | NR |
| Magnesium | 19001.00 | | 15179.00 | B | 20.1 | E | P |
| Manganese | 1490.70 | | 1222.50 | | 18.0 | E | P |
| Mercury | | | | | | | NR |
| Nickel | 41.00 | | 90.00 | U | 100.0 | | P |
| Potassium | 4831.90 | B | 4965.50 | B | 2.8 | | P |
| Selenium | | | | | | | NR |
| Silver | 8.50 | B | 23.50 | B | 176.5 | | P |
| Sodium | 1509.20 | B | 3190.00 | U | 100.0 | | P |
| Thallium | | | | | | | NR |
| Vanadium | 204.10 | | 180.00 | B | 11.8 | | P |
| Zinc | 179.30 | | 148.50 | | 17.2 | | P |

ok ok

no evidence of negative interference

FORM IX - IN

03/90

MMR 6/30/92

## ACCURACY DATA SUMMARY - FORM B-4

| SDG: 9201L50 | REVIEWER: [illegible] | DATE: 7/8/92 | PAGE 1 OF 1 | |
|---|---|---|---|---|
| COMMENTS: CLP AA Analysis [illegible] | | | | |
| **SAMPLE ID** | **COMPOUND** | **% RECOVERY** | **SAMPLE(S) AFFECTED** | **QUALIFIER REQUIRED** |
| B01S85 | Selenium | 68.9 | See sample ID column | |
| B01S83 | ↓ | 69.6 | ↓ | |
| B01S87 | ↓ | 72.8 | ↓ | |
| B01S85 | Thallium | 83.2 | ↓ | |
| B01S87 | ↓ | 80.5 | ↓ | |
| | | | | |
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9613446.1560

9613446.1561

WHC-SD-EN-SPP-002, Rev. 1

# WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

| | | |
|---|---|---|
| PROJECT: 913-1719 | REVIEWER: MMR | DATE: 6/28/92 |
| LABORATORY: Weston | CASE: 92016150 | SDG: 92016150 |
| SAMPLES/MATRIX: B01585, B01583, B01587 / Soil | | |
| | | |
| | | |
| | | |
| | | |

## 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).

MMR 6/29/92

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 |

MMh 6/28/92

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).

MMh 6/29/92

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.

6/29/92

## 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.

6/29/92

COMMENTS (attach additional sheets as necessary):

ICV and CCV ran at after 21 samples for IC associated w/ B01S85 and B01S83. Not considered significant.

Low level < 2.6 MG/L TOC blank but sample results higher no qualification. Nitrate/Nitrite similar, CN similar. IC blanks are clean. Blank adjustment not necessary

B01S85 % recov MS out

Mid Range CN stnd distilled. CN LCS in

6/29/92

9613446.1566

Holding Time Summary



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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS | Holding Times (days) |
|---|---|---|---|---|---|---|---|
| B01S85 | | | | | | | |
| % SOLIDS | 001 | S | 92L%S018 | 01/24/92 | 01/29/92 | 01/30/92 | 6 |
| NITRATE BY IC | 001 | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| NITRATE BY IC | 001 REP | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| NITRATE BY IC | 001 MS | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| NITRATE BY IC | 001 MSD | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| TOTAL CYANIDE | 001 | S | 92LC028 | 01/24/92 | 02/03/92 | 02/04/92 | 11 |
| TOTAL CYANIDE | 001 REP | S | 92LC028 | 01/24/92 | 02/03/92 | 02/04/92 | 11 |
| TOTAL CYANIDE | 001 MS | S | 92LC028 | 01/24/92 | 02/03/92 | 02/04/92 | 11 |
| TOTAL CYANIDE | 001 MSD | S | 92LC028 | 01/24/92 | 02/03/92 | 02/04/92 | 11 |
| PHOSPHATE BY IC | 001 | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| PHOSPHATE BY IC | 001 REP | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| PHOSPHATE BY IC | 001 MS | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| PHOSPHATE BY IC | 001 MSD | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| SULFATE BY IC | 001 | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| SULFATE BY IC | 001 REP | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| SULFATE BY IC | 001 MS | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| SULFATE BY IC | 001 MSD | S | 92LICA15 | 01/24/92 | 02/01/92 | 02/01/92 | 8 |
| NITRATE NITRITE | 001 | S | 92LNA025 | 01/24/92 | 02/27/92 | 02/27/92 | 34 |
| NITRATE NITRITE | 001 REP | S | 92LNA025 | 01/24/92 | 02/27/92 | 02/27/92 | 34 |
| NITRATE NITRITE | 001 MS | S | 92LNA025 | 01/24/92 | 02/27/92 | 02/27/92 | 34 |
| NITRATE NITRITE | 001 MSD | S | 92LNA025 | 01/24/92 | 02/27/92 | 02/27/92 | 34 |
| TOTAL ORGANIC CARBON | 001 | S | 92LTZ008 | 01/24/92 | 02/10/92 | 02/11/92 | 18 |
| TOTAL ORGANIC CARBON | 001 REP | S | 92LTZ008 | 01/24/92 | 02/10/92 | 02/11/92 | 18 |
| TOTAL ORGANIC CARBON | 001 MS | S | 92LTZ008 | 01/24/92 | 02/10/92 | 02/11/92 | 18 |
| SUB-OUT TEST FOR SUB | 001 | S | | 01/24/92 | | | |
| B01S83 | | | | | | | |
| % SOLIDS | 002 | S | 92L%S018 | 01/23/92 | 01/29/92 | 01/30/92 | 7 |
| NITRATE BY IC | 002 | S | 92LICA15 | 01/23/92 | 02/01/92 | 02/01/92 | 9 |
| TOTAL CYANIDE | 002 | S | 92LC028 | 01/23/92 | 02/03/92 | 02/04/92 | 12 |
| PHOSPHATE BY IC | 002 | S | 92LICA15 | 01/23/92 | 02/01/92 | 02/01/92 | 9 |
| SULFATE BY IC | 002 | S | 92LICA15 | 01/23/92 | 02/01/92 | 02/01/92 | 9 |
| NITRATE NITRITE | 002 | S | 92LNA025 | 01/23/92 | 02/27/92 | 02/27/92 | 34 |
| TOTAL ORGANIC CARBON | 002 | S | 92LTZ008 | 01/23/92 | 02/10/92 | 02/11/92 | 18 |
| SUB-OUT TEST FOR SUB | 002 | S | | 01/23/92 | | | |
| B01S87 | | | | | | | |
| % SOLIDS | 003 | S | 92L%S018 | 01/23/92 | 01/29/92 | 01/30/92 | 7 |

MMY 6/28/92

9613446.1567

Holding Time Summary pg 2 of 2

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

DATE RECEIVED: 01/28/92 RFW LOT # :9201L150

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| NITRATE BY IC | 003 | S | 92LICA15 | 01/23/92 | 02/01/92 | 02/01/92 13 ✓ |
| TOTAL CYANIDE | 003 | S | 92LC028 | 01/23/92 | 02/03/92 | 02/04/92 ~~16~~ 12 |
| PHOSPHATE BY IC | 003 | S | 92LICA15 | 01/23/92 | 02/01/92 | 02/01/92 13 ✓ |
| SULFATE BY IC | 003 | S | 92LICA15 | 01/23/92 | 02/01/92 | 02/01/92 13 |
| NITRATE NITRITE | 003 | S | 92LNA025 | 01/23/92 | 02/27/92 | 02/27/92 34 ✓ |
| TOTAL ORGANIC CARBON | 003 | S | 92LTZ008 | 01/23/92 | 02/10/92 | 02/11/92 18 |
| SUB-OUT TEST FOR SUB Radio-chem | 003 | S | | 01/23/92 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| NITRATE BY IC | MB1 | S | 92LICA15 | N/A | 02/01/92 | 02/01/92 |
| NITRATE BY IC | MB1 BS | S | 92LICA15 | N/A | 02/01/92 | 02/01/92 |
| PHOSPHATE BY IC | MB1 | S | 92LICA15 | N/A | 02/01/92 | 02/01/92 |
| PHOSPHATE BY IC | MB1 BS | S | 92LICA15 | N/A | 02/01/92 | 02/01/92 |
| SULFATE BY IC | MB1 | S | 92LICA15 | N/A | 02/01/92 | 02/01/92 |
| SULFATE BY IC | MB1 BS | S | 92LICA15 | N/A | 02/01/92 | 02/01/92 |
| TOTAL CYANIDE | LC1 L | S | 92LC028 | N/A | 02/03/92 | 02/04/92 |
| TOTAL CYANIDE | LC2 L | S | 92LC028 | N/A | 02/03/92 | 02/04/92 |
| TOTAL CYANIDE | MB1 | S | 92LC028 | N/A | 02/03/92 | 02/04/92 |
| NITRATE NITRITE | MB1 | S | 92LNA025 | N/A | 02/27/92 | 02/27/92 |
| NITRATE NITRITE | MB1 BS | S | 92LNA025 | N/A | 02/27/92 | 02/27/92 |
| NITRATE NITRITE | MB1 BSD | S | 92LNA025 | N/A | 02/27/92 | 02/27/92 |
| NITRATE NITRITE | MB2 | S | 92LNA025 | N/A | 02/27/92 | 02/27/92 |
| NITRATE NITRITE | MB2 BS | S | 92LNA025 | N/A | 02/27/92 | 02/27/92 |
| TOTAL ORGANIC CARBON | MB1 | W | 92LTZ008 | N/A | 02/10/92 | 02/11/92 |
| TOTAL ORGANIC CARBON | MB1 BS | W | 92LTZ008 | N/A | 02/10/92 | 02/11/92 |
| TOTAL ORGANIC CARBON | MB2 | W | 92LTZ008 | N/A | 02/10/92 | 02/11/92 |
| TOTAL ORGANIC CARBON | MB2 BS | W | 92LTZ008 | N/A | 02/10/92 | 02/11/92 |

MML 6/28/92

Accuracy Summary



ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 03/09/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9201L150

75-175%

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -001 | B01S85 | Nitrate by IC | 54.5 | 29.5 | 26.1 | 95.5 |
| | | Nitrate by IC MSD | 55.8 | 29.5 | 26.1 | 100 |
| | | Cyanide, Total | 4.4 | 1.0 u | 5.2 | 84.2 |
| | | Cyanide, Total MSD | 4.8 | 1.0 u | 5.2 | 91.3 |
| | | Phosphate by IC | 26.4 | 1.3 u | 26.1 | 101 |
| | | Phosphate by IC MSD | 26.2 | 1.3 u | 26.1 | 100 |
| | | Sulfate by IC | 39.3 | 14.7 | 26.1 | 94.2 |
| | | Sulfate by IC MSD | 38.9 | 14.7 | 26.1 | 92.6 |
| | | Nitrate Nitrite | 34.7 | 8.4 | 26.2 | 101 |
| | | Nitrate Nitrite MSD | 34.2 | 8.4 | 26.2 | 98.8 |
| | | Total Organic Carbon | 6130 | 2290 | 1550 | 248 |
| BLANK10 | 92LICA15-MB1 | Nitrate by IC | 25.4 | 1.2 u | 25.0 | 102 |
| | | Phosphate by IC | 26.0 | 1.2 u | 25.0 | 104 |
| | | Sulfate by IC | 25.6 | 1.2 u | 25.0 | 102 |
| BLANK10 | 92LNA025-MB1 | Nitrate Nitrite | 2.0 | 0.20u | 2.0 | 101 |
| | | Nitrate Nitrite MSD | 2.1 | 0.20u | 2.0 | 104 |
| BLANK20 | 92LNA025-MB2 | Nitrate Nitrite | 2.1 | 0.20u | 2.0 | 104 |
| BLANK10 | 92LTZ008-MB1 | Total Organic Carbon | 406 | 20.0 u | 400 | 102 |
| BLANK20 | 92LTZ008-MB2 | Total Organic Carbon | 393 | 20.0 u | 400 | 98.2 |

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