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9109L733-WES-178

0043870

133

WESTON

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

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 09-18-91
RFW #: 9109L733, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of two (2) soil samples collected on 09-16-91.

The samples were analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Volatile target compounds on 09-20,23-91.

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. All surrogate recoveries were within EPA QC limits.
3. All matrix spike recoveries were within EPA QC limits.
4. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less than 2x the CRQL.
5. Internal standard area and retention time criteria were met for all samples and blanks.

Jack R. Tuschall

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

10.22.91

Date



TASK 91-019

Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only
9109L733

Client Westinghouse Hanford Co.	Refrigerator #	SM-79, poly cooler	
Est. Final Proj. Sampling Date	#/Type Container	Liquid	
Work Order # 91-019-6168-02-01-0000		Solid	← glass →
Project Contact/Phone # WS Thompson (509) 376-2153	Volume	Liquid	
AD Project Manager Peg Beaty / Jamie King		Solid	125, 950, 100
QC CLP Del CLP TAT 35 Day	Preservatives		← 40 →
Date Rec'd 9-18-91 Date Due As Specified	ANALYSES REQUESTED		
Account # WS-HANFORD in Statement of Work			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)	Matrix	Date Collected	ORGANIC			ANIONS		INORG		NO ₂ /NO ₃
						VOA	BNA	Pesticide PCB	Herb	1	2	3	
S - Soil													
SE - Sediment													
SO - Solid													
SL - Sludge													
W - Water	001	B00XC7		S	9/16/91	X	X	X	X	X	X	X	X
OW - Oil	002	B00XC9		S	9/16/91	X	X	X	X	X	X	X	X
OA - Air													
DS - Drum Solids													
DL - Drum Liquids													
L - EP/TCLP Leachate													
WI - Wipe													
OX - Other													
OF - Fish													
ANALYSES REQUESTED													
1. VOA (CLP)													
2. Semi-VOA, Pesticides, PCB's, TOC, ICP/AA Metals, Bismuth, Cyanide (CLP); IC Anions NO ₂ /NO ₃													
3. Total alpha/beta, GEa, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, Ru-106, Total Uranium													

Special Instructions: Please call to confirm receipt and condition of sample ANIONS = Iecl, Iecl, ENO₂, ENO₃, ICSCY, ICP04 MS/MSD Required ON EACH BATCH & EACH MATRIX	DATE/REVISIONS: 10.3.91: Badixchem subscribed to Tetedyne	WESTON Analytics Use Only
		Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered 2) Ambient or Chilled 3) Received in Good Condition 4) Properly Preserved 5) Received Within Holding Time
		COC Tape was: 1) Present on Outer Package 2) Unbroken on Outer Package 3) Present on Sample 4) Unbroken on Sample 5) COC Record Present Upon Sample Rec'l
Relinquished by: See WHC C of C	Received by: 9-18-91 12:20	Discrepancies Between Samples Labels and COC Record? <input checked="" type="checkbox"/> Y or <input type="checkbox"/> N NOTES:
Relinquished by: 9-18-91 12:20	Received by: 9-18-91	

Sample Information	Cust ID:	BOOXC7	BOOXC9	BOOXC9	BOOXC9	BOOXC9	VBLK	VBLK
	RFW#:	001	002	002 MS	002 MSD	91LVB378-MB1	91LVB379-MB1	
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
	D.F.:	1.02	1.00	1.00	1.00	1.00	1.00	
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	
Surrogate	Toluene-d8	101 %	88 %	100 %	98 %	97 %	102 %	
Recovery	Bromofluorobenzene	95 %	82 %	95 %	91 %	93 %	96 %	
	1,2-Dichloroethane-d4	107 %	95 %	107 %	108 %	103 %	104 %	
=====f1=====f1=====f1=====f1=====f1=====f1=====								
Chloromethane		11 U	10 U	10 U	10 U	10 U	10 U	
Bromomethane		11 U	10 U	10 U	10 U	10 U	10 U	
Vinyl Chloride		11 U	10 U	10 U	10 U	10 U	10 U	
Chloroethane		11 U	10 U	10 U	10 U	10 U	10 U	
Methylene Chloride		110 B	67 B	39 B	42 B	4 J	6	
Acetone		21 B	14 B	16 B	14 B	5 J	2 J	
Carbon Disulfide		6 U	5 U	5 U	5 U	5 U	5 U	
1,1-Dichloroethene		6 U	5 U	167 %	148 %	5 U	5 U	
1,1-Dichloroethane		6 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloroethene (total)		6 U	5 U	5 U	5 U	5 U	5 U	
Chloroform		6 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloroethane		6 U	5 U	5 U	5 U	5 U	5 U	
2-Butanone		11 U	10 U	10 U	10 U	10 U	10 U	
1,1,1-Trichloroethane		6 U	5 U	5 U	5 U	5 U	5 U	
Carbon Tetrachloride		6 U	5 U	5 U	5 U	5 U	5 U	
Vinyl Acetate		11 U	10 U	10 U	10 U	10 U	10 U	
Bromodichloromethane		6 U	5 U	5 U	5 U	5 U	5 U	
1,2-Dichloropropane		6 U	5 U	5 U	5 U	5 U	5 U	
cis-1,3-Dichloropropene		6 U	5 U	5 U	5 U	5 U	5 U	
Trichloroethene		6 U	5 U	123 %	122 %	5 U	5 U	
Dibromochloromethane		6 U	5 U	5 U	5 U	5 U	5 U	
1,1,2-Trichloroethane		6 U	5 U	5 U	5 U	5 U	5 U	
Benzene		6 U	5 U	129 %	123 %	5 U	5 U	
Trans-1,3-Dichloropropene		6 U	5 U	5 U	5 U	5 U	5 U	
Bromoform		6 U	5 U	5 U	5 U	5 U	5 U	
4-Methyl-2-pentanone		11 U	10 U	10 U	10 U	10 U	10 U	
2-Hexanone		11 U	10 U	10 U	10 U	10 U	10 U	
Tetrachloroethene		6 U	5 U	5 U	5 U	5 U	5 U	
1,1,2,2-Tetrachloroethane		6 U	5 U	5 U	5 U	5 U	5 U	

*=Outside of EPA CLP QC limits.

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	Cust ID:	BOOXC7	BOOXC9	BOOXC9	BOOXC9	VBLK	VBLK
	RFW#:	001	002	002 MS	002 MSD	91LVB378-MB1	91LVB379-MB1
Toluene		6 U	5 U	128 %	121 %	5 U	5 U
Chlorobenzene		6 U	5 U	123 %	118 %	5 U	5 U
Ethylbenzene		6 U	5 U	5 U	5 U	5 U	5 U
Styrene		6 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)		6 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

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9613427.1216

BOOXC7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001

Sample wt/vol: 4.90 (g/mL) G Lab File ID: B092006

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 7 Date Analyzed: 09/20/91

Column: (pack/cap) CAP Dilution Factor: 1.02

CAS NO. COMPOUND CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/Kg

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	110	B
67-64-1	-----Acetone	21	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

96E3427 1218 0000018

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOOK7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9109L733-001

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: B092006

Level: (low/med) LOW

Date Received: 09/18/91

% Moisture: not dec. 7

Date Analyzed: 09/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.02

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 60-29-7	DIETHYL ETHER	6.60	44	C

C: Response Factor from daily standard.

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VOLATILE ORGANICS ANALYSIS SHEET

0000029

CLIENT SAMPLE NO.

BOOXC9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B092007

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 4 Date Analyzed: 09/20/91

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

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

CAS NO.	COMPOUND	CONCENTRATION	UNITS
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	67	B
67-64-1	Acetone	14	B
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

961427 1220 0000030
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOOKC9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9109L733-002

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

Lab File ID: B092007

Level: (low/med) LOW

Date Received: 09/18/91

% Moisture: not dec. 4

Date Analyzed: 09/20/91

Column: (pack/cap) CAP

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
1. 60-29-7	DIETHYL ETHER	6.60	34	C

C: Response Factor from daily standard.

Sample Information	Cust ID:	BOOXC7	BOOXC7	BOOXC7	BOOXC9	SBLK	SBLK BS
	RFW#:	001	001 MS	001 MSD	002	91LE1202-MB1	91LE1202-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate	Nitrobenzene-d5	59 %	63 %	66 %	62 %	69 %	71 %
Recovery	2-Fluorobiphenyl	71 %	74 %	76 %	76 %	84 %	84 %
	p-Terphenyl-d14	86 %	89 %	94 %	93 %	109 %	100 %
	Phenol-d5	68 %	76 %	81 %	76 %	81 %	83 %
	2-Fluorophenol	75 %	82 %	87 %	83 %	89 %	89 %
	2,4,6-Tribromophenol	74 %	78 %	83 %	80 %	80 %	83 %
=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====							
	Phenol	360 U	79 %	84 %	360 U	330 U	88 %
	bis(2-Chloroethyl)ether	360 U	360 U	360 U	360 U	330 U	330 U
	2-Chlorophenol	360 U	77 %	83 %	360 U	330 U	87 %
	1,3-Dichlorobenzene	360 U	360 U	360 U	360 U	330 U	330 U
	1,4-Dichlorobenzene	360 U	71 %	74 %	360 U	330 U	79 %
	Benzyl alcohol	360 U	360 U	360 U	360 U	330 U	330 U
	1,2-Dichlorobenzene	360 U	360 U	360 U	360 U	330 U	330 U
	2-Methylphenol	360 U	360 U	360 U	360 U	330 U	330 U
	bis(2-Chloroisopropyl)ether	360 U	360 U	360 U	360 U	330 U	330 U
	4-Methylphenol	360 U	360 U	360 U	360 U	330 U	330 U
	N-Nitroso-Di-n-propylamine	360 U	70 %	76 %	360 U	330 U	77 %
	Hexachloroethane	360 U	360 U	360 U	360 U	330 U	330 U
	Nitrobenzene	360 U	360 U	360 U	360 U	330 U	330 U
	Isophorone	360 U	360 U	360 U	360 U	330 U	330 U
	2-Nitrophenol	360 U	360 U	360 U	360 U	330 U	330 U
	2,4-Dimethylphenol	360 U	360 U	360 U	360 U	330 U	330 U
	Benzoic acid	1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
	bis(2-Chloroethoxy)methane	360 U	360 U	360 U	360 U	330 U	330 U
	2,4-Dichlorophenol	360 U	360 U	360 U	360 U	330 U	330 U
	1,2,4-Trichlorobenzene	360 U	75 %	79 %	360 U	330 U	82 %
	Naphthalene	360 U	360 U	360 U	360 U	330 U	330 U
	4-Chloroaniline	360 U	360 U	360 U	360 U	330 U	330 U
	Hexachlorobutadiene	360 U	360 U	360 U	360 U	330 U	330 U
	4-Chloro-3-methylphenol	360 U	77 %	84 %	360 U	330 U	83 %
	2-Methylnaphthalene	360 U	360 U	360 U	360 U	330 U	330 U
	Hexachlorocyclopentadiene	360 U	360 U	360 U	360 U	330 U	330 U

*= Outside of EPA CLP QC limits.

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	Cust ID:	BOOXC7	BOOXC7	BOOXC7	BOOXC9	SBLK	SBLK BS
	RFW#:	001	001 MS	001 MSD	002	91LE1202-MB1	91LE1202-MB1
2,4,6-Trichlorophenol		360 U	360 U	360 U	360 U	330 U	330 U
2,4,5-Trichlorophenol		1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
2-Chloronaphthalene		360 U	360 U	360 U	360 U	330 U	330 U
2-Nitroaniline		1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
Dimethylphthalate		360 U	360 U	360 U	360 U	330 U	330 U
Acenaphthylene		360 U	360 U	360 U	360 U	330 U	330 U
2,6-Dinitrotoluene		360 U	360 U	360 U	360 U	330 U	330 U
3-Nitroaniline		1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
Acenaphthene		360 U	72 %	75 %	360 U	330 U	80 %
2,4-Dinitrophenol		1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
4-Nitrophenol		1800 U	89 %	95 %	1800 U	1700 U	97 %
Dibenzofuran		360 U	360 U	360 U	360 U	330 U	330 U
2,4-Dinitrotoluene		360 U	78 %	85 %	360 U	330 U	84 %
Diethylphthalate		360 U	360 U	360 U	360 U	330 U	330 U
4-Chlorophenyl-phenylether		360 U	360 U	360 U	360 U	330 U	330 U
Fluorene		360 U	360 U	360 U	360 U	330 U	330 U
4-Nitroaniline		1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
4,6-Dinitro-2-methylphenol		1800 U	1800 U	1800 U	1800 U	1700 U	1700 U
N-Nitrosodiphenylamine (1)		360 U	360 U	360 U	360 U	330 U	330 U
4-Bromophenyl-phenylether		360 U	360 U	360 U	360 U	330 U	330 U
Hexachlorobenzene		360 U	360 U	360 U	360 U	330 U	330 U
Pentachlorophenol		1800 U	85 %	90 %	1800 U	1700 U	94 %
Phenanthrene		360 U	360 U	360 U	360 U	330 U	330 U
Anthracene		360 U	360 U	360 U	360 U	330 U	330 U
Di-n-Butylphthalate		43 JB	360 U	180 JB	360 U	81 J	96 JB
Fluoranthene		360 U	360 U	360 U	360 U	330 U	330 U
Pyrene		360 U	79 %	84 %	360 U	330 U	86 %
Butylbenzylphthalate		360 U	360 U	360 U	360 U	330 U	330 U
3,3'-Dichlorobenzidine		720 U	720 U	720 U	710 U	670 U	670 U
Benzo(a)anthracene		360 U	360 U	360 U	360 U	330 U	330 U
Chrysene		360 U	360 U	360 U	360 U	330 U	330 U
bis(2-Ethylhexyl)phthalate		230 JB	250 JB	220 JB	200 JB	260 J	270 JB
Di-n-Octyl phthalate		360 U	360 U	360 U	360 U	330 U	330 U
Benzo(b)fluoranthene		360 U	360 U	360 U	360 U	330 U	330 U
Benzo(k)fluoranthene		360 U	360 U	360 U	360 U	330 U	330 U
Benzo(a)pyrene		360 U	360 U	360 U	360 U	330 U	330 U
Indeno(1,2,3-cd)pyrene		360 U	360 U	360 U	360 U	330 U	330 U
Dibenzo(a,h)anthracene		360 U	360 U	360 U	360 U	330 U	330 U
Benzo(g,h,i)perylene		360 U	360 U	360 U	360 U	330 U	330 U

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

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

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 09-18-91
RFW #: 9109L733, SEMIVOLATILE
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of two (2) soil samples collected on 09-16-91.

The samples were extracted on 09-25-91 and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 09-25-91.

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

1. Non-target compounds were detected in these samples.
2. All surrogate recoveries were within EPA QC limits.
3. All blank spike recoveries were within EPA QC limits.
4. All matrix spike recoveries were within EPA QC limits.
5. Internal standard area and retention time criteria were met for all samples and blank.
6. The laboratory blank contained the common contaminants di-n-butylphthalate and bis(2-ethylhexyl)phthalate at levels less than the CRQL.



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

10.24.91
Date

9618427.1224
SEMIVOLATILE ORGANICS ANALYSIS SHEET

0000015

CLIENT SAMPLE NO.

BOOXC7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001

Sample wt/vol: 29.8 (g/mL) G Lab File ID: J092512

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 7 dec. Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic acid	1800	U
111-91-1	bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

9613427.1225
SEMIVOLATILE ORGANICS ANALYSIS SHEET

0000018

CLIENT SAMPLE NO.

BOOXC7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001

Sample wt/vol: 29.8 (g/mL) G Lab File ID: J092512

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 7 dec. Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

99-09-2-----	3-Nitroaniline	1800	U
83-32-9-----	Acenaphthene	360	U
51-28-5-----	2,4-Dinitrophenol	1800	U
100-02-7-----	4-Nitrophenol	1800	U
132-64-9-----	Dibenzofuran	360	U
121-14-2-----	2,4-Dinitrotoluene	360	U
84-66-2-----	Diethylphthalate	360	U
7005-72-3-----	4-Chlorophenyl-phenylether	360	U
86-73-7-----	Fluorene	360	U
100-01-6-----	4-Nitroaniline	1800	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1800	U
86-30-6-----	N-Nitrosodiphenylamine (1)	360	U
101-55-3-----	4-Bromophenyl-phenylether	360	U
118-74-1-----	Hexachlorobenzene	360	U
87-86-5-----	Pentachlorophenol	1800	U
85-01-8-----	Phenanthrene	360	U
120-12-7-----	Anthracene	360	U
84-74-2-----	Di-n-Butylphthalate	43	JB
206-44-0-----	Fluoranthene	360	U
129-00-0-----	Pyrene	360	U
85-68-7-----	Butylbenzylphthalate	360	U
91-94-1-----	3,3'-Dichlorobenzidine	720	U
56-55-3-----	Benzo(a)anthracene	360	U
218-01-9-----	Chrysene	360	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	230	JB
117-84-0-----	Di-n-Octyl phthalate	360	U
205-99-2-----	Benzo(b)fluoranthene	360	U
207-08-9-----	Benzo(k)fluoranthene	360	U
50-32-8-----	Benzo(a)pyrene	360	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	360	U
53-70-3-----	Dibenzo(a,h)anthracene	360	U
191-24-2-----	Benzo(g,h,i)perylene	360	U

(1) - Cannot be separated from Diphenylamine

9613427.1226

0000017

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOOXC7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001

Sample wt/vol: 29.8 (g/mL) G Lab File ID: J092512

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 7 dec. Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.00

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

Number TICs found: 10

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	5.40	200	J
2.	UNKNOWN	5.56	200	J
3.	ALDOL CONDENSATE	6.19	2000	JAB
4.	ALDOL CONDENSATE	7.42	400	JAB
5.	UNKNOWN	8.50	70	J
6.	UNKNOWN	10.87	100	J
7.	ALKANE	12.88	400	JB
8.	ALKANE	12.96	400	JB
9.	UNKNOWN	20.24	100	J
10.	UNKNOWN	23.07	100	J

961427 1227 0000039
 SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOKC9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-002
 Sample wt/vol: 29.2 (g/mL) G Lab File ID: J092513
 Level: (low/med) LOW Date Received: 09/18/91
 % Moisture: not dec. 4 dec. Date Extracted: 09/25/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91
 GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

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

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

9643427.1228 0000040
 SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOKC9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-002

Sample wt/vol: 29.2 (g/mL) G Lab File ID: J092513

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 4 dec. Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/Kg</u>	
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	710	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)phthalate	200	JB
117-84-0	Di-n-Octyl phthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenzo(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

(1) - Cannot be separated from Diphenylamine

96153427.1229 0000047

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOOXC9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-002

Sample wt/vol: 29.2 (g/mL) G Lab File ID: J092513

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 4 dec. Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

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

Number TICs found: 9

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	5.36	400	J
2.	UNKNOWN	5.52	200	J
3.	ALDOL CONDENSATE	6.16	3000	JAB
4.	ALDOL CONDENSATE	6.66	100	JA
5.	UNKNOWN	7.38	400	JB
6.	UNKNOWN	10.82	200	J
7.	ALKANE	12.84	400	JB
8.	ALKANE	12.92	400	JB
9.	UNKNOWN	20.20	100	J

WESTON RADIOACTIVE SAMPLE EVALUATION (Page 2 of 2)

RFW Batch # 9109L733

Completed By C. P. PER

Activity Rating*	Sample ID	Form (liq or sol)	RFW ID	Gamma microR/hr	Alpha			nCi/g	Mass (g)	nCi
					cpm	eff. fact	dpm			
1	RODKC7-304		001	4	0		0.0069			
1	LC9	L	002	L	0		0.0261			
<p>CSF 9-18-91</p>										

*Activity Rating:
 (per lab NRC License)

- 1 Not Radioactive
- 2 Radioactive
- 3 Too Radioactive to Handle at Lab

Sample Information	Cust ID:	BOOXC7	BOOXC7	BOOXC7	BOOXC9	PBLK	PBLK BS
	RFW#:	001	001 MS	001 MSD	002	91LE1178-MB1	91LE1178-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	4.00	4.00	1.00	0.500	4.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate: Di-n-butylchlorendate		116 %	88 %	75 %	60 %	110 %	115 %
Alpha-BHC		8.5 U	34 U	34 U	8.2 U	4.0 U	32 U
Beta-BHC		8.5 U	34 U	34 U	8.2 U	4.0 U	32 U
Delta-BHC		8.5 U	34 U	34 U	8.2 U	4.0 U	32 U
gamma-BHC (Lindane)		8.5 U	50 %	43 * %	8.2 U	4.0 U	72 %
Heptachlor		8.5 U	68 %	68 %	8.2 U	4.0 U	80 %
Aldrin		8.5 U	63 %	60 %	8.2 U	4.0 U	78 %
Heptachlor epoxide		8.5 U	34 U	34 U	8.2 U	4.0 U	32 U
Endosulfan I		8.5 U	34 U	34 U	8.2 U	4.0 U	32 U
Dieldrin		17 U	60 %	56 %	16 U	8.0 U	80 %
4,4'-DDE		17 U	68 U	68 U	16 U	8.0 U	64 U
Endrin		17 U	73 %	66 %	16 U	8.0 U	74 %
Endosulfan II		17 U	68 U	68 U	16 U	8.0 U	64 U
4,4'-DDD		17 U	68 U	68 U	16 U	8.0 U	64 U
Endosulfan sulfate		17 U	68 U	68 U	16 U	8.0 U	64 U
4,4'-DDT		17 U	50 %	45 %	16 U	8.0 U	78 %
Methoxychlor		85 U	340 U	340 U	82 U	40 U	320 U
Endrin ketone		17 U	68 U	68 U	16 U	8.0 U	64 U
alpha-Chlordane		85 U	340 U	340 U	82 U	40 U	320 U
gamma-Chlordane		85 U	340 U	340 U	82 U	40 U	320 U
Toxaphene		170 U	680 U	680 U	160 U	80 U	640 U
Aroclor-1016		85 U	340 U	340 U	82 U	40 U	320 U
Aroclor-1221		85 U	340 U	340 U	82 U	40 U	320 U
Aroclor-1232		85 U	340 U	340 U	82 U	40 U	320 U
Aroclor-1242		85 U	340 U	340 U	82 U	40 U	320 U
Aroclor-1248		85 U	340 U	340 U	82 U	40 U	320 U
Aroclor-1254		170 U	680 U	680 U	160 U	80 U	640 U
Aroclor-1260		170 U	680 U	680 U	160 U	80 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

0000004
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ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD SAMPLES RECEIVED: 09-18-91
RFW #: 9109L733, PEST/PCB
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of two (2) soil samples collected on 09-16-91.

The samples were extracted on 09-19-91 and analyzed according to criteria set forth in the Contract Laboratory Program for Pesticide and PCB target compounds on 10-07,09-91.

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

NOTE: Analysis of the samples in this data package were completed in two (2) separate run sequences.

1. For the first analysis initiated on 10-07-91, linearity and breakdown criteria were met on the primary column prior to sample extracts.

Continuing calibration criteria were exceeded for several compounds, but this occurred in standards analyzed after the sample extracts, so there were no re-analysis requirements.

Retention time criteria were met for all compounds on the primary column. Retention time criteria were met on the confirmation column for all compounds which required a confirmation analysis.

2. For the second analysis initiated on 10-08-91, linearity and breakdown criteria were met on the primary column.

Continuing calibration criteria were exceeded for several compounds, but this occurred in standards analyzed after the sample extracts, so there were no re-analysis requirements.

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

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

WESTON

-2-

5. One (1) of twelve (12) matrix spike recoveries was outside the EPA QC limits. The matrix spike recovery for gamma-BHC (43%) was outside the EPA QC limit of 46%.
6. The blank spike and matrix spike samples required four-fold dilutions to maintain the pesticide concentrations within the linear range of the instrument.

Jack R. Tuschall 10.25.91.
Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

9615427 1234 0000013
 PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOK7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 10089103.13

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 7 dec. Date Extracted: 09/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) Y pH: 7.5 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

319-84-6	Alpha-BHC	8.5	U
319-85-7	Beta-BHC	8.5	U
319-86-8	Delta-BHC	8.5	U
58-89-9	gamma-BHC (Lindane)	8.5	U
76-44-8	Heptachlor	8.5	U
309-00-2	Aldrin	8.5	U
1024-57-3	Heptachlor epoxide	8.5	U
959-98-8	Endosulfan I	8.5	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	85	U
53494-70-5	Endrin ketone	17	U
5103-71-9	alpha-Chlordane	85	U
5103-74-2	gamma-Chlordane	85	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	85	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	85	U
53469-21-9	Aroclor-1242	85	U
12672-29-6	Aroclor-1248	85	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

[Handwritten signature]
 10-15-91

9645427.1235 0000018
 PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOKC9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-002

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 10079103.16

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 4 dec. Date Extracted: 09/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 10/07/91

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

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

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

85
10-15-91



ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD
RWF #: 9109L733
W.O. #: 6168-02-01-0000

SAMPLES RECEIVED: 09-18-91

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 preparation blank results were below the required detection limit.
2. All laboratory control standards (blank spikes) were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.
3. Calibration verification checks were within the required control limits of 90-110% with the exception of TOC. Calibration verification is performed using independent standards.
4. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. Recoveries were within the 75-125% guidance limits with the exception of TOC, fluoride by IC, nitrate by IC and phosphate by IC. All %RPD were within the 20% guidance limit.
5. Replicate results are summarized on the Inorganic Precision Report contained within this document. Results were within the 20% RPD guidance limit with the exception of TOC.
6. 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).
7. Sample-002 was analyzed for TOC by ASTM Method D2974.

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

11.14.91
Date



9613427.1257

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/13/91

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

WESTON BATCH #: 9109L733

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
=====	=====	=====	=====	=====	=====
-001	BOOXC7	% Solids	93.3	%	0.10
		Chloride by IC	12.3	MG/KG	1.3
		Fluoride by IC	1.4	MG/KG	1.3
		Nitrite by IC	1.3	u MG/KG	1.3
		Nitrate by IC	172	MG/KG	13.4
		Cyanide, Total	1.1	u MG/KG	1.1
		Phosphate by IC	1.3	u MG/KG	1.3
		Sulfate by IC	139	MG/KG	13.4
		Nitrate Nitrite	737	MG/KG	53.6
		Total Organic Carbon	1260	MG/KG	155
-002	BOOXC9	% Solids	96.2	%	0.10
		Chloride by IC	10.3	MG/KG	1.3
		Fluoride by IC	1.3	u MG/KG	1.3
		Nitrite by IC	1.3	u MG/KG	1.3
		Nitrate by IC	507	MG/KG	13.4
		Cyanide, Total	1.0	u MG/KG	1.0
		Phosphate by IC	1.3	u MG/KG	1.3
		Sulfate by IC	57.5	MG/KG	1.3
		Nitrate Nitrite	123	MG/KG	13.0
		Total Organic Carbon	0.36	%	0.10

iii 9/25/95 M.H.



Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD
RFW #: 9109L733
W.O. #: 6168-02-01

SAMPLES RECEIVED: 09/18/91

METALS NARRATIVE

The set of samples consisted of two (2) soil samples collected on 09/16/91.

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 Sb, As, Be, Cd, Pb. All corresponding samples were flagged with an "N" according to CLP protocol.
7. All duplicate analyses were within the 20% RPD control limit.
8. 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.



- 9. 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).
- 10. Quarterly Detection Limits for IC2 are included in this package.

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

11.08.91.
Date

9613427.1240

0000007

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/07/91

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

WESTON BATCH #: 9109L733

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
=====	=====	=====	=====	=====	=====
-001	BOOXC7	Silver, Total	.21	u MG/KG	2.1
		Aluminum, Total	4160	MG/KG	41.2
		Arsenic, Total	2.0	u MG/KG	2.0
		Barium, Total	70.9	MG/KG	41.2
		Beryllium, Total	1.0	u MG/KG	1.0
		Bismuth, Total	41.2	u MG/KG	41.2
		Calcium, Total	5160	MG/KG	1030
		Cadmium, Total	1.0	u MG/KG	1.0
		Cobalt, Total	10.3	u MG/KG	10.3
		Chromium, Total	8.2	MG/KG	2.1
		Copper, Total	13.5	MG/KG	5.1
		Iron, Total	13100	MG/KG	20.6
		Mercury, Total	0.11	u MG/KG	0.11
		Potassium, Total	1030	u MG/KG	1030
		Magnesium, Total	3070	MG/KG	1030
		Manganese, Total	220	MG/KG	3.1
		Sodium, Total	1030	u MG/KG	1030
		Nickel, Total	8.5	MG/KG	8.2
		Lead, Total	2.7	MG/KG	0.59
		Antimony, Total	12.4	u MG/KG	12.4
		Selenium, Total	0.98	u MG/KG	0.98
		Thallium, Total	2.0	u MG/KG	2.0
		Vanadium, Total	24.2	MG/KG	10.3
		Zinc, Total	24.2	MG/KG	4.1

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00000009

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/07/91

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

WESTON BATCH #: 9109L733

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-002	BOOXC9	Silver, Total	2.0	u MG/KG	2.0
		Aluminum, Total	2720	MG/KG	39.4
		Arsenic, Total	2.0	u MG/KG	2.0
		Barium, Total	39.4	u MG/KG	39.4
		Beryllium, Total	0.98	u MG/KG	0.98
		Bismuth, Total	39.4	u MG/KG	39.4
		Calcium, Total	7120	MG/KG	984
		Cadmium, Total	0.98	u MG/KG	0.98
		Cobalt, Total	9.8	u MG/KG	9.8
		Chromium, Total	3.4	MG/KG	2.0
		Copper, Total	7.7	MG/KG	4.9
		Iron, Total	6710	MG/KG	19.7
		Mercury, Total	0.10	u MG/KG	0.10
		Potassium, Total	984	u MG/KG	984
		Magnesium, Total	2310	MG/KG	984
		Manganese, Total	146	MG/KG	3.0
		Sodium, Total	984	u MG/KG	984
		Nickel, Total	7.9	u MG/KG	7.9
		Lead, Total	2.7	MG/KG	0.61
		Antimony, Total	11.8	u MG/KG	11.8
		Selenium, Total	1.0	u MG/KG	1.0
		Thallium, Total	2.0	u MG/KG	2.0
		Vanadium, Total	11.6	MG/KG	9.8
		Zinc, Total	15.2	MG/KG	3.9

1
INORGANIC ANALYSIS DATA SHEET

BOOXC7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP733

Matrix (soil/water): SOIL Lab Sample ID: 910973301

Level (low/med): LOW Date Received: 9/18/91

% Solids: 93.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4160.00			P
7440-36-0	Antimony	4.12	U	N	P
7440-38-2	Arsenic	1.10	B	N	F
7440-39-3	Barium	70.90			P
7440-41-7	Beryllium	.43	B	N	P
7440-43-9	Cadmium	.66	B	N	P
7440-70-2	Calcium	5160.00			P
7440-47-3	Chromium	8.20			P
7440-48-4	Cobalt	8.60	B		P
7440-50-8	Copper	13.50			P
7439-89-6	Iron	13100.00			P
7439-92-1	Lead	2.70		N	F
7439-95-4	Magnesium	3070.00			P
7439-96-5	Manganese	220.00			P
7439-97-6	Mercury	.11	U		CV
7440-02-0	Nickel	8.50			P
7440-09-7	Potassium	919.00	B		P
7782-49-2	Selenium	.39	U		F
7440-22-4	Silver	2.06	U		P
7440-23-5	Sodium	382.00	B		P
7440-28-0	Thallium	.39	U	W	F
7440-62-2	Vanadium	24.20			P
7440-66-6	Zinc	24.20			P
	Cyanide	1.07	U		C

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments:

1
 INORGANIC ANALYSIS DATA SHEET

BOOXC9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP733

Matrix (soil/water): SOIL Lab Sample ID: 910973302

Level (low/med): LOW Date Received: 9/18/91

% Solids: 96.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2720.00	-		P
7440-36-0	Antimony	3.94	U	N	P
7440-38-2	Arsenic	1.50	B		F
7440-39-3	Barium	30.80	B		P
7440-41-7	Beryllium	.20	U	N	P
7440-43-9	Cadmium	.59	U		P
7440-70-2	Calcium	7120.00			P
7440-47-3	Chromium	3.40			P
7440-48-4	Cobalt	3.90	B		P
7440-50-8	Copper	7.70			P
7439-89-6	Iron	6710.00			P
7439-92-1	Lead	2.70		N	F
7439-95-4	Magnesium	2310.00			P
7439-96-5	Manganese	146.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	7.60	B		P
7440-09-7	Potassium	673.00	B		P
7782-49-2	Selenium	.41	U		F
7440-22-4	Silver	1.97	U		P
7440-23-5	Sodium	139.00	B		P
7440-28-0	Thallium	.41	U	W	F
7440-62-2	Vanadium	11.60			P
7440-66-6	Zinc	15.20			P
	Cyanide	1.04	U		C

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments:

9613427.1244

VALIDATION SUMMARY

9613427.1245
9109L733-WES-178

Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS

Data Package: 9109L733-WES-178

Sample ID: B00XC7, B00XC9

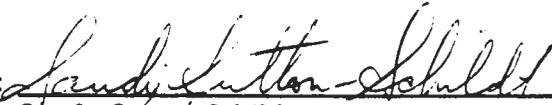
Sample Matrix: Soil

Analysis Type: Organics/Metals/Cyanide/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

Validated by: 
Kent Angelos
Associate

Reviewed by: 
Sandy Sutton-Schildt
Staff Environmental Scientist

May 15, 1992

913-1719

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LIST OF ATTACHMENTS

1	Glossary of Data Qualifiers
2	Summary of Data Qualifications - Form B-7
3	As-Qualified Data Summary
4	Data Review Supporting Documentation

1. INTRODUCTION

This report presents the results of data validation on data package 9109L733 consisting of two (2) soil samples for contract laboratory program target compound list (CLP/TCL) volatile, semivolatile and pesticide/PCB organic analysis; target analyte list (CLP/TAL) metals (including bismuth) and cyanide analysis; and wet chemistry analysis (percent solids, chloride, fluoride, nitrite, nitrate, phosphate, sulfate, nitrate+nitrite and total organic carbon).

Sample identifications, locations and sample dates are provided in the tabular data summary provided in Attachment 3. Data validation was conducted in accordance with the Westinghouse Hanford Company statement of work (WHC 1991) and validation 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 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 percent solids and sample dilution factors.

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

Aldol condensates, alkane and unknown tentatively identified compounds detected in the samples were qualified as unusable (R) since they are suspected laboratory contaminants or were detected in the associated method blank. All remaining tentatively identified compounds were qualified as presumptively present at an estimated concentration (NJ).

Nitrate+nitrite was determined by the hydrazine reduction method and the results have been rejected (R) since they are as much as 2-times lower than the nitrate results obtained by IC. This may be due to inadequate pH adjustment during analysis since if the sample extract is not adjusted to a pH of between 5 and 9 prior to analysis, reduction of nitrate to nitrite during application of the hydrazine reagent may be inhibited.

Results for phosphate have been rejected (R) due to associated spike recoveries of less than 30%.

Bismuth results have been rejected (R) due to spike sample recoveries of less than 30%.

3.2 MINOR DEFICIENCIES

The following qualifications were required as a result of the validation. Attachment 2 provides a summary of the samples affected.

3.2.1 Volatile Organics

- Continuing calibration check percent differences (%D) were acceptable with the exception of 2-butanone, 4-methyl-2-pentanone and 2-hexanone which have been qualified as estimated (U) in both samples.
- Methylene chloride and acetone were detected in the associated method blank. Results for acetone in the samples were less than ten times the associated blank concentration and have been qualified as undetected (U).
- Diethyl ether was reported as a tentatively identified compound (TIC) and was quantitated from the daily response standard. The compound identification was deemed valid and the result has been qualified as estimated (J).

3.2.2 Semivolatile Organics

- The extraction holding time limit was exceeded by 2 days (9 days). All associated sample results have been qualified as estimated (U).
- Di-n-butylphthalate and bis(2-Ethylhexyl)phthalate were detected in the associated method blank. Sample results for these compounds were less than ten times the blank concentrations and have been qualified as undetected at an estimated concentration (U).

3.2.3 Pesticide/PCB Organics

- Percent breakdown of 4,4'-DDT was greater than 20% in one evaluation check standard analyzed after the associated sample (B00XC7), however, no qualification is necessary since the compound was not detected.
- Continuing calibration factor %D were exceeded for several pesticide compounds on both the quantitation and confirmation columns, however, no qualification is necessary since no compounds were detected in either sample.
- Matrix spike recoveries were acceptable with the exception of gamma-BHC, however, no qualification is necessary since DBC surrogate recoveries were acceptable and no target compounds were detected.

3.2.4 Metals and Cyanide

- Calcium, magnesium and vanadium were detected in an associated calibration blank, however, no qualification is necessary since sample concentrations were greater than five times the blank concentrations.
- Spike sample recoveries were acceptable with the exception of antimony, arsenic, beryllium, cadmium, and lead, therefore, associated sample results have been qualified as estimated (J for detects, UJ for non-detects).
- ICP serial dilution percent differences were acceptable with the exception of aluminum, calcium and manganese, therefore, associated sample results have been qualified as estimated (J).
- Graphite furnace analytical spike recoveries were acceptable with the exception of thallium, therefore, all thallium results have been qualified as estimated (UJ).

3.2.5 Wet Chemistry

- Sample holding times were met with the exception of all ion chromatography analyses (chloride, fluoride, nitrate, nitrite, phosphate and sulfate) and total organic carbon analyses, therefore, all associated sample results for these analyses have been qualified as estimated (J for detects, UJ for non-detects).
- Matrix spike recoveries were acceptable with the exception of fluoride, nitrate and phosphate. The fluoride results have already been qualified due to holding time exceedances. Results for nitrate are not affected since sample concentrations exceed the spike concentrations by a factor of 4 or more. Results for phosphate have been rejected (R) due to spike recoveries of less than 30%.
- TOC results were reported by two different procedures; one, a direct instrument measurement and the other, a gravimetric procedure. We are unable to fully validate data from either procedure since no sample preparation bench sheets or analytical method references are provided. Based on the raw data provided, the results appear to be valid, however, we are requesting that the laboratory provide sample preparation sheets and analytical method references. We are able to recalculate the gravimetric organic carbon results by using the following formula: $TOC = (\text{percent organic matter} - 0.35) \div 1.80$ which comes from "Methods of Soil Analysis, Part 2, Chemical and Microbiological Properties. 2nd Ed., American Society of Agronomy, No. 9, 1982, pp 574". Finally, the duplicate precision for TOC by the direct instrument procedure exceeded the 35% RPD values (sample, B00XC7) however, no qualification is necessary since the holding times were exceeded.

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 nitrate+nitrite and aldol condensate TICs. The attachments provide supporting documentation and a 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. 2, April, 1992. Westinghouse Hanford Company, Richland, Washington.

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: 909L733		REVIEWER: KWT	DATE: 5/12/92	PAGE 1 OF 3
COMMENTS: Volatiles, Semivolatiles				
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON	
Methylene Cl.	none	B00XC7, 9	Valid	
Acetone	U	"	<10X Blank	
2-Butanone	UJ	B00XC7, 9	CCV %D	
4-Methyl-2-Pentanone	↓	↓	>25%	
2-Hexanone	↓ not slide	↓	↓	
Diethyl Ether	UJ	B00XC7, XC9	Valid	
<i>Pi-n-butyl phthalate</i>	360 UJ	B00XC7	<10X Blank	
<i>Bis-2-ethylhexyl phthalate</i>	360 UJ	B00XC7, XC9	<10X Blank	
All remaining TCL's	UJ	B00XC7, XC9	Holding Time exceeded	
Alkane @ 5.4	UJ	B00XC7	Valid	
Unknown @ 5.56, 8.5, 10.87, 20.24	↓	↓	↓	
Alde Cond.	R	B00XC7	Present in blank and suspected	
Alkanes @ 12.88, 12.96	↓	↓	↓	
Unknown @ 23.07	↓	↓	lab contaminant	
<i>Alkane @ 5.36, 5.52</i>				

not slide 5/12/92

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91091733	REVIEWER: <i>gmk</i>	DATE: 5/12/92	PAGE 2 OF 3
COMMENTS: <i>Semiconductiles, Metals</i>			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
<i>Alkane @ 5.36</i>	<i>NT</i>	<i>100XC9</i>	<i>Valid TIC</i>
<i>Unknown @ 5.52</i>	↓	↓	↓
<i>Unknown @ 10.82</i>	↓	↓	↓
<i>Unknown @ 20.20</i>	↓	↓	↓
<i>Alc'd Cond 7.82</i>	<i>R</i>	<i>100XC9</i>	<i>Suspect</i>
<i>Unknown @ 6.82</i>	↓	↓	<i>lab cont. and</i>
<i>Alkane @ 12.84</i>	↓	↓	<i>present in</i>
<i>12.92</i>	↓	↓	<i>blank</i>
<i>Antimony</i>	<i>UT</i>	<i>600XC7, XC9</i>	<i>Spike %R</i>
<i>Arsenic</i>	<i>J</i>	↓	<i>275, 730</i>
<i>Bismuth</i>	<i>J/UT</i>	↓	↓
<i>Cadmium</i>	<i>J/UT</i>	↓	↓
<i>Lead</i>	<i>J</i>	↓	↓
<i>Aluminum</i>	<i>J</i>	<i>100XC7, XC9</i>	<i>TCP Serial</i>
<i>Calcium</i>	<i>J</i>	↓	<i>dil >10% D</i>
<i>Manganese</i>	<i>J</i>	↓	↓
<i>Thallium</i>	<i>UT</i>	<i>600XC7, XC9</i>	<i>6FAA Spike</i>
			<i>>115%</i>
<i>Bismuth</i>	<i>R</i>	<i>100XC7, XC9</i>	<i>Spike %R</i>
			<i><30%</i>

*Not
Spike*

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ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

Project		200-BP-1																	
Laboratory		WESTON																	
Case		SDG		9109L733															
Sample Number		B00XC7				B00XC9													
Location		216-B-57B				216-B-57B													
Remarks		17.0-18.0				27.0-29.5													
Sample Date		9/16/91				9/16/91													
Analysis Date		9/20/91				9/20/91													
Organic Compounds	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														
Bromomethane	10	11	U	10	U														
Vinyl Chloride	10	11	U	10	U														
Chloroethane	10	11	U	10	U														
Methylene Chloride	5	110		67															
Acetone	10	21	U	14	U														
Carbon Disulfide	5	6	U	5	U														
1,1-Dichloroethene	5	6	U	5	U														
1,1-Dichloroethane	5	6	U	5	U														
1,2-Dichloroethene (total)	5	6	U	5	U														
Chloroform	5	6	U	5	U														
1,2-Dichloroethane	5	6	U	5	U														
2-Butanone	10	11	UJ	10	UJ														
1,1,1-Trichloroethane	5	6	U	5	U														
Carbon Tetrachloride	5	6	U	5	U														
Vinyl Acetate	10	11	U	10	U														
Bromodichloromethane	5	6	U	5	U														
1,2-Dichloropropane	5	6	U	5	U														
cis-1,3-Dichloropropene	5	6	U	5	U														
Trichloroethene	5	6	U	5	U														
Dibromochloromethane	5	6	U	5	U														
1,1,2-Trichloroethane	5	6	U	5	U														
Benzene	5	6	U	5	U														
Trans-1,3-Dichloropropene	5	6	U	5	U														
Bromoform	5	6	U	5	U														
4-Methyl-2-pentanone	10	11	UJ	10	UJ														
2-Hexanone	10	11	UJ	10	UJ														
Tetrachloroethene	5	6	U	5	U														
1,1,2,2-Tetrachloroethane	5	6	U	5	U														
Toluene	5	6	U	5	U														
Chlorobenzene	5	6	U	5	U														
Ethylbenzene	5	6	U	5	U														
Styrene	5	6	U	5	U														
Xylene (total)	5	6	U	5	U														
Diethyl Ether		44	J	34	J														

963427.257

Project		200-BP-1															
Laboratory		WESTON															
Case		SDG		9109L733													
Sample Number		B00XC7				B00XC9											
Location		216-B-57B				216-B-57B											
Remarks		17.0-18.0				27.0-29.5											
Sample Date		9/16/91				9/16/91											
Extraction Date		9/25/91				9/25/91											
Analysis Date		9/25/91				9/25/91											
Organic Compounds	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	360	UJ	360	UJ												
bis(2-Chloroethyl)ether	330	360	UJ	360	UJ												
2-Chlorophenol	330	360	UJ	360	UJ												
1,3-Dichlorobenzene	330	360	UJ	360	UJ												
1,4-Dichlorobenzene	330	360	UJ	360	UJ												
Benzyl alcohol	330	360	UJ	360	UJ												
1,2-Dichlorobenzene	330	360	UJ	360	UJ												
2-Methylphenol	330	360	UJ	360	UJ												
bis(2-Chloroisopropyl)ether	330	360	UJ	360	UJ												
4-Methylphenol	330	360	UJ	360	UJ												
N-Nitroso-di-n-propylamine	330	360	UJ	360	UJ												
Hexachloroethane	330	360	UJ	360	UJ												
Nitrobenzene	330	360	UJ	360	UJ												
Isophorone	330	360	UJ	360	UJ												
2-Nitrophenol	330	360	UJ	360	UJ												
2,4-Dimethylphenol	330	360	UJ	360	UJ												
Benzoic acid	1600	1800	UJ	1800	UJ												
bis(2-Chloroethoxy)methane	330	360	UJ	360	UJ												
2,4-Dichlorophenol	330	360	UJ	360	UJ												
1,2,4-Trichlorobenzene	330	360	UJ	360	UJ												
Naphthalene	330	360	UJ	360	UJ												
4-Chloroaniline	330	360	UJ	360	UJ												
Hexachlorobutadiene	330	360	UJ	360	UJ												
4-Chloro-3-methylphenol	330	360	UJ	360	UJ												
2-Methylnaphthalene	330	360	UJ	360	UJ												
Hexachlorocyclopentadiene	330	360	UJ	360	UJ												
2,4,6-Trichlorophenol	330	360	UJ	360	UJ												
2,4,5-Trichlorophenol	1600	1800	UJ	1800	UJ												
2-Chloronaphthalene	330	360	UJ	360	UJ												
2-Nitroaniline	1600	1800	UJ	1800	UJ												
Dimethylphthalate	330	360	UJ	360	UJ												
Acenaphthylene	330	360	UJ	360	UJ												
2,6-Dinitrotoluene	330	360	UJ	360	UJ												

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<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
RIC and quantitation reports for MS/MSD		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moisture/% solids data sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduction formulae		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument time logs		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemist notebook pages		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample preparation sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. HOLDING TIMES

Were all samples extracted within holding time?

Yes No N/A

See table

Were all samples analyzed within holding time?

Yes No N/A

Not 5/2/02

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 transcription 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 $\leq 30\%$ (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 $\leq 20.5\%$ (3/90 SOW)?

Yes No N/A

Are all applicable RSD values $\leq 40\%$ (3/90 SOW)?

Yes No N/A

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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)? *Samples run immed. after init. cal* Yes No N/A

Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values $\leq 40\%$ (3/90 SOW)? *Met 5/12/92* 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.

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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.

Project		200-BP-1																					
Laboratory		WESTON																					
Case		SDG		9109L733																			
Sample Number		B00XC7				B00XC9																	
Location		216-B-57B				216-B-57B																	
Remarks		17.0-18.0				27.0-29.5																	
Sample Date		9/16/91				9/16/91																	
Extraction Date		9/25/91				9/25/91																	
Analysis Date		9/25/91				9/25/91																	
Organic Compounds		CRQL		Result		Q		Result		Q		Result		Q		Result		Q		Result		Q	
3-Nitroaniline		1600		1800		UJ		1800		UJ													
Acenaphthene		330		360		UJ		360		UJ													
2,4-Dinitrophenol		1600		1800		UJ		1800		UJ													
4-Nitrophenol		1600		1800		UJ		1800		UJ													
Dibenzofuran		330		360		UJ		360		UJ													
2,4-Dinitrotoluene		330		360		UJ		360		UJ													
Diethylphthalate		330		360		UJ		360		UJ													
4-Chlorophenyl-phenyl ether		330		360		UJ		360		UJ													
Fluorene		330		360		UJ		360		UJ													
4-Nitroaniline		1600		1800		UJ		1800		UJ													
4,6-Dinitro-2-methylphenol		1600		1800		UJ		1800		UJ													
N-Nitrosodiphenylamine		330		360		UJ		360		UJ													
4-Bromophenyl-phenylether		330		360		UJ		360		UJ													
Hexachlorobenzene		330		360		UJ		360		UJ													
Pentachlorophenol		1600		1800		UJ		1800		UJ													
Phenanthrene		330		360		UJ		360		UJ													
Anthracene		330		360		UJ		360		UJ													
Di-n-butylphthalate		330		360		UJ		360		UJ													
Fluoranthene		330		360		UJ		360		UJ													
Pyrene		330		360		UJ		360		UJ													
Butylbenzylphthalate		330		360		UJ		360		UJ													
3,3'-Dichlorobenzidine		660		720		UJ		710		UJ													
Benz(a)anthracene		330		360		UJ		360		UJ													
Chrysene		330		360		UJ		360		UJ													
bis(2-Ethylhexyl)phthalate		330		360		UJ		360		UJ													
Di-n-octylphthalate		330		360		UJ		360		UJ													
Benzo(b)fluoranthene		330		360		UJ		360		UJ													
Benzo(k)fluoranthene		330		360		UJ		360		UJ													
Benzo(a)pyrene		330		360		UJ		360		UJ													
Indeno(1,2,3-cd)pyrene		330		360		UJ		360		UJ													
Dibenzo(a,h)anthracene		330		360		UJ		360		UJ													
Benzo(g,h,i)perylene		330		360		UJ		360		UJ													
Alkane @ 5.40				200		NJ																	

96-5427-262

Project		200-BP-1																									
Laboratory		WESTON																									
Case		SDG 9109L733																									
Sample Number		B00XC7				B00XC9																					
Location		216-B-57B				216-B-57B																					
Remarks		17.0-18.0				27.0-29.5																					
Sample Date		9/16/91				9/16/91																					
Extraction Date		9/25/91				9/25/91																					
Analysis Date		9/25/91				9/25/91																					
Organic Compounds		CRQL		Result		Q		Result		Q		Result		Q		Result		Q		Result		Q		Result		Q	
Unknown @ 5.56				200	NJ																						
Aldol Condensate @ 6.19				2000	R																						
Aldol Condensate @ 7.42				400	R																						
Unknown @ 8.50				70	NJ																						
Unknown @ 10.87				100	NJ																						
Alkane @ 12.88				400	R																						
Alkane @ 12.96				400	R																						
Unknown @ 20.24				100	NJ																						
Unknown @ 23.07				100	R																						
Alkane @ 5.36						400	NJ																				
Unknown @ 5.52						200	NJ																				
Aldol Condensate @ 6.16						3000	R																				
Aldol Condensate @ 6.66						100	R																				
Unknown @ 7.38						400	R																				
Unknown @ 10.82						200	NJ																				
Alkane @ 12.84						400	R																				
Alkane @ 12.92						400	R																				
Unknown @ 20.20						100	NJ																				

9613427.263

Project		200-BP-1																
Laboratory		WESTON																
Case		SDG	9109L733															
Sample Number		B00XC7		B00XC9														
Location		216-B-57B		216-B-57B														
Remarks		17.0-18.0		27.0-29.5														
Sample Date		9/16/91		9/16/91														
Extraction Date		9/19/91		9/19/91														
Analysis Date		10/9/91		10/7/91														
Organic Compounds	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
alpha-BHC	8.0	8.5	U	8.2	U													
beta-BHC	8.0	8.5	U	8.2	U													
delta-BHC	8.0	8.5	U	8.2	U													
gamma-BHC (Lindane)	8.0	8.5	U	8.2	U													
Heptchlor	8.0	8.5	U	8.2	U													
Aldrin	8.0	8.5	U	8.2	U													
Heptachlor epoxide	8.0	8.5	U	8.2	U													
Endosulfan I	8.0	8.5	U	8.2	U													
Dieldrin	16.0	17	U	16	U													
4,4'-DDE	16.0	17	U	16	U													
Endrin	16.0	17	U	16	U													
Endosulfan II	16.0	17	U	16	U													
4,4'-DDD	16.0	17	U	16	U													
Endosulfan sulfate	16.0	17	U	16	U													
4,4'-DDT	16.0	17	U	16	U													
Methoxychlor	80.0	85	U	82	U													
Endrin Ketone	16.0	17	U	16	U													
alpha-Chlordane	80.0	85	U	82	U													
gamma-Chlordane	80.0	85	U	82	U													
Toxaphene	160.0	170	U	160	U													
Arochlor-1016	80.0	85	U	82	U													
Arochlor-1221	80.0	85	U	82	U													
Arochlor-1232	80.0	85	U	82	U													
Arochlor-1242	80.0	85	U	82	U													
Arochlor-1248	80.0	85	U	82	U													
Arochlor-1254	160.0	170	U	160	U													
Arochlor-1260	160.0	170	U	160	U													

963427-264

9613427.1266

1A

0000010

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

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

BOOK 7 216-B-57B
17.0 - 18.0

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001

Sample wt/vol: 4.90 (g/mL) G Lab File ID: B092006

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 7 Date Analyzed: 09/20/91

Column: (pack/cap) CAP Dilution Factor: 1.02

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:
		(ug/L or ug/Kg) <u>ug/Kg</u>
74-87-3	Chloromethane	11
74-83-9	Bromomethane	11
75-01-4	Vinyl Chloride	11
75-00-3	Chloroethane	11
75-09-2	Methylene Chloride	110
67-64-1	Acetone	21
75-15-0	Carbon Disulfide	6
75-35-4	1,1-Dichloroethene	6
75-34-3	1,1-Dichloroethane	6
540-59-0	1,2-Dichloroethene (total)	6
67-66-3	Chloroform	6
107-06-2	1,2-Dichloroethane	6
78-93-3	2-Butanone	11
71-55-6	1,1,1-Trichloroethane	6
56-23-5	Carbon Tetrachloride	6
108-05-4	Vinyl Acetate	11
75-27-4	Bromodichloromethane	6
78-87-5	1,2-Dichloropropane	6
10061-01-5	cis-1,3-Dichloropropene	6
79-01-6	Trichloroethene	6
124-48-1	Dibromochloromethane	6
79-00-5	1,1,2-Trichloroethane	6
71-43-2	Benzene	6
10061-02-6	Trans-1,3-Dichloropropene	6
75-25-2	Bromoform	6
108-10-1	4-Methyl-2-pentanone	11
591-78-6	2-Hexanone	11
127-18-4	Tetrachloroethene	6
79-34-5	1,1,2,2-Tetrachloroethane	6
108-88-3	Toluene	6
108-90-7	Chlorobenzene	6
100-41-4	Ethylbenzene	6
100-42-5	Styrene	6
1330-20-7	Xylene (total)	6

>10X Blank
LL

UJ

UJ
UJ

Handwritten signature
5/15/92

9613427.1267
1E

0000019

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

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

BOOKC7 216-B-57R
17.0-18.0

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001

Sample wt/vol: 4.90 (g/mL) G Lab File ID: B092006

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 7 Date Analyzed: 09/20/91

Column: (pack/cap) CAP Dilution Factor: 1.02

Number TICs found: 1 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 60-29-7	DIETHYL ETHER	6.60	44	<input checked="" type="checkbox"/>

C: Response Factor from daily standard.

Handwritten: 5/12/92

9613427.1268

0000029

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

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

BOOKC9
216-B-57B
270-29.5

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9109L733-002

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

Lab File ID: B092007

Level: (low/med) LOW

Date Received: 09/18/91

% Moisture: not dec. 4

Date Analyzed: 09/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	67	B
67-64-1	Acetone	14	B
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
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
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

210X Blank
u

uJ

uJ
uJ

Phy
5/15/92

9613427.1269

1E

0000030

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOOKC9
216-B-57B
270-29.5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9109L733-002

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

Lab File ID: B092007

Level: (low/med) LOW

Date Received: 09/18/91

% Moisture: not dec. 4

Date Analyzed: 09/20/91

Column: (pack/cap) CAP

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
1. 60-29-7	DIETHYL ETHER	6.60	34	<u>C</u>

Handwritten initials

C: Response Factor from daily standard.

Handwritten note:
mst
5/12/92

9613427.1270

0000015

1B

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

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

BOOKC7

216-13-57B17.0 - 18.0Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001
 Sample wt/vol: 29.8 (g/mL) G Lab File ID: J092512
 Level: (low/med) LOW Date Received: 09/18/91
 % Moisture: not dec. 7 dec. Date Extracted: 09/25/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91
 GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

108-95-2	Phenol	360	u
111-44-4	bis(2-Chloroethyl)ether	360	u
95-57-8	2-Chlorophenol	360	u
541-73-1	1,3-Dichlorobenzene	360	u
106-46-7	1,4-Dichlorobenzene	360	u
100-51-6	Benzyl alcohol	360	u
95-50-1	1,2-Dichlorobenzene	360	u
95-48-7	2-Methylphenol	360	u
108-60-1	bis(2-Chloroisopropyl)ether	360	u
106-44-5	4-Methylphenol	360	u
621-64-7	N-Nitroso-Di-n-propylamine	360	u
67-72-1	Hexachloroethane	360	u
98-95-3	Nitrobenzene	360	u
78-59-1	Isophorone	360	u
88-75-5	2-Nitrophenol	360	u
105-67-9	2,4-Dimethylphenol	360	u
65-85-0	Benzoic acid	1800	u
111-91-1	bis(2-Chloroethoxy)methane	360	u
120-83-2	2,4-Dichlorophenol	360	u
120-82-1	1,2,4-Trichlorobenzene	360	u
91-20-3	Naphthalene	360	u
106-47-8	4-Chloroaniline	360	u
87-68-3	Hexachlorobutadiene	360	u
59-50-7	4-Chloro-3-methylphenol	360	u
91-57-6	2-Methylnaphthalene	360	u
77-47-4	Hexachlorocyclopentadiene	360	u
88-06-2	2,4,6-Trichlorophenol	360	u
95-95-4	2,4,5-Trichlorophenol	1800	u
91-58-7	2-Chloronaphthalene	360	u
88-74-4	2-Nitroaniline	1800	u
131-11-3	Dimethylphthalate	360	u
208-96-8	Acenaphthylene	360	u
606-20-2	2,6-Dinitrotoluene	360	u

uJ

mck
5/12/92

9613427.1271

0000010

1C

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

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

BOOK7

216-13-57317.0-18.0Client: WESTINGHOUSE HANFORDMatrix: SOILLab Sample ID: 9109L733-001Sample wt/vol: 29.8 (g/mL) GLab File ID: J092512Level: (low/med) LOWDate Received: 09/18/91% Moisture: not dec. 7 dec.Date Extracted: 09/25/91Extraction: (SepF/Cont/Sonc) SONCDate Analyzed: 09/25/91GPC Cleanup: (Y/N) N pH: 7.9Dilution Factor: 1.00

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

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2

12/88 Rev.

9613427.1272

0000017

1F

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOOXC7

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000216-B-57B
17.0-18.0Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-001
 Sample wt/vol: 29.8 (g/mL) G Lab File ID: J092512
 Level: (low/med) LOW Date Received: 09/18/91
 % Moisture: not dec. 7 dec. Date Extracted: 09/25/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91
 GPC Cleanup: (Y/N) N pH: 7.9 Dilution Factor: 1.00

Number TICs found: 10

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	ALKANE	5.40	200	J	NJ
2.	UNKNOWN	5.56	200	J	NJ
3.	ALDOL CONDENSATE	6.19	2000	JAB	R
4.	ALDOL CONDENSATE	7.42	400	JAB	R
5.	UNKNOWN	8.50	70	J	NJ
6.	UNKNOWN	10.87	100	J	NJ
7.	ALKANE	12.08	400	JB	R
8.	ALKANE	12.96	400	JB	R
9.	UNKNOWN	20.24	100	J	NJ
10.	UNKNOWN	23.07	100	J	R

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5/12/92

9613427.1273

0000039

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

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

BOOKS

216-B-57B

270-29.5

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9109L733-002

Sample wt/vol: 29.2 (g/mL) G

Lab File ID: J092513

Level: (low/med) LOW

Date Received: 09/18/91

% Moisture: not dec. 4 dec.

Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N

pH: 8.1

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-Di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic acid	1800	U
111-91-1	bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

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5/12/02

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CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

BOOKC9

216-B-57B

17.0 - 18.0
27.0 - 29.5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9109L733-002

Sample wt/vol: 29.2 (g/mL) G

Lab File ID: J092513

Level: (low/med) LOW

Date Received: 09/18/91

% Moisture: not dec. 4 dec.

Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 8.1

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/Kg

99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	360	U
51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	710	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)phthalate	360 360	U
117-84-0	Di-n-Octyl phthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenzo(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

WJ

WJ

5/12/92

(1) - Cannot be separated from Diphenylamine

9613427.1275

0000047

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOOKC9
216-B-57B
27.0-29.5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9109L733-002

Sample wt/vol: 29.2 (g/mL) G Lab File ID: J092513

Level: (low/med) LOW Date Received: 09/18/91

% Moisture: not dec. 4 dec. Date Extracted: 09/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.00

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

Number TICs found: 9

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	5.36	400	J NJ
2.	UNKNOWN	5.52	200	J NJ
3.	ALDOL CONDENSATE	6.16	3000	JAB R
4.	ALDOL CONDENSATE	6.66	100	JA R
5.	UNKNOWN	7.38	400	JB R
6.	UNKNOWN	10.82	200	J NJ
7.	ALKANE	12.84	400	JB R
8.	ALKANE	12.92	400	JB R
9.	UNKNOWN	20.20	100	J NJ

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5/15/91

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CLIENT SAMPLE NO.

1D

PESTICIDE ORGANICS ANALYSIS SHEET

BOOK7

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

216-B-57B

17.0 - 18.0

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9109L733-001

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: 10089103.13

Level: (low/med) LOW

Date Received: 09/18/91

% Moisture: not dec. 7 dec.

Date Extracted: 09/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 10/09/91

GPC Cleanup: (Y/N) Y pH: 7.5

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/Kg

319-84-6	Alpha-BHC	8.5	U
319-85-7	Beta-BHC	8.5	U
319-86-8	Delta-BHC	8.5	U
58-89-9	gamma-BHC (Lindane)	8.5	U
76-44-8	Heptachlor	8.5	U
309-00-2	Aldrin	8.5	U
1024-57-3	Heptachlor epoxide	8.5	U
959-98-8	Endosulfan I	8.5	U
60-57-1	Dieldrin	17	U
72-55-9	4,4'-DDE	17	U
72-20-8	Endrin	17	U
33213-65-9	Endosulfan II	17	U
72-54-8	4,4'-DDD	17	U
1031-07-8	Endosulfan sulfate	17	U
50-29-3	4,4'-DDT	17	U
72-43-5	Methoxychlor	85	U
53494-70-5	Endrin ketone	17	U
5103-71-9	alpha-Chlordane	85	U
5103-74-2	gamma-Chlordane	85	U
8001-35-2	Toxaphene	170	U
12674-11-2	Aroclor-1016	85	U
11104-28-2	Aroclor-1221	85	U
11141-16-5	Aroclor-1232	85	U
53469-21-9	Aroclor-1242	85	U
12672-29-6	Aroclor-1248	85	U
11097-69-1	Aroclor-1254	170	U
11096-82-5	Aroclor-1260	170	U

10-15-91

9613427.1277

1D

0000018

CLIENT SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS SHEET

BOOKC9

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000216-13-57B27.0-29.5Client: WESTINGHOUSE HANFORDMatrix: SOILLab Sample ID: 9109L733-002Sample wt/vol: 30.3 (g/mL) GLab File ID: 10079103.16Level: (low/med) LOWDate Received: 09/18/91% Moisture: not dec. 4 dec.Date Extracted: 09/19/91Extraction: (SepF/Cont/Sonc) SONCDate Analyzed: 10/07/91GPC Cleanup: (Y/N) Y pH: 7.0Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) ug/Kg

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


 10-15-91

9613427.1279

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U.S. EPA - CLP

EPA SAMPLE NO.

1
INORGANIC ANALYSIS DATA SHEET

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

BOOKC9
216-B-57B

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

270-29.5
SDG No.: CLP733

Matrix (soil/water): SOIL

Lab Sample ID: 910973302

Level (low/med): LOW

Date Received: 9/18/91

% Solids: 96.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2720.00	-		P	J
7440-36-0	Antimony	3.94	U	N	P	UJ
7440-38-2	Arsenic	1.50	B		F	J
7440-39-3	Barium	30.80	B		P	
7440-41-7	Beryllium	.20	U	N	P	UJ
7440-43-9	Cadmium	.59	U		P	UJ
7440-70-2	Calcium	7120.00			P	J
7440-47-3	Chromium	3.40			P	
7440-48-4	Cobalt	3.90	B		P	
7440-50-8	Copper	7.70			P	
7439-89-6	Iron	6710.00			P	
7439-92-1	Lead	2.70		N	F	J
7439-95-4	Magnesium	2310.00			P	
7439-96-5	Manganese	146.00			P	J
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	7.60	B		P	
7440-09-7	Potassium	673.00	B		P	
7782-49-2	Selenium	.41	U		F	
7440-22-4	Silver	1.970.771.97	U		P	BU
7440-23-5	Sodium	139.00	B		P	
7440-28-0	Thallium	.41	U	W	F	UJ
7440-62-2	Vanadium	11.60			P	
7440-66-6	Zinc	15.20			P	
	Cyanide	1.04	U		C	
7440-69-9	Bismuth	39.4	U		P	R

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments:

WWT
5/12/92

9613427.1280

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/13/91

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

WESTON BATCH #: 9109L733

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOXC7	% Solids	93.3	%	0.10
		Chloride by IC	12.3	MG/KG	J 1.3
		Fluoride by IC	1.4	MG/KG	J 1.3
		Nitrite by IC	1.3	MG/KG	WJ 1.3
		Nitrate by IC	2120 172	MG/KG	J 13.4
		Cyanide, Total	1.1	u MG/KG	1.1
		Phosphate by IC	1.3	MG/KG	WJ 1.3 R
		Sulfate by IC	139	MG/KG	J 13.4
		Nitrate Nitrite	737	MG/KG	53.8 R
		Total Organic Carbon	1260	MG/KG	J 155
-002	BOOXC9	% Solids	96.2	%	0.10
		Chloride by IC	10.3	MG/KG	J 1.3
		Fluoride by IC	1.3	MG/KG	WJ 1.3
		Nitrite by IC	1.3	MG/KG	WJ 1.3
		Nitrate by IC	507 507	MG/KG	J 13.4
		Cyanide, Total	1.0	u MG/KG	1.0
		Phosphate by IC	1.3	MG/KG	WJ 1.3 R
		Sulfate by IC	57.5	MG/KG	J 1.3
		Nitrate Nitrite	125	MG/KG	13.0 R
		Total Organic Carbon	0.36	%	0.10

216-B-57B
17.0-18.0

216-B-57B
27.0-29.5

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5/1/2002

9613427.1281

ATTACHMENT 4

DATA REVIEW SUPPORTING DOCUMENTATION

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 913-1719	REVIEWER: <i>[Signature]</i>	DATE: 5/12/02
LABORATORY: Weston	CASE: —	SDG: 91096733
SAMPLES/MATRIX:		
BODXC7 Soil		
BODXC9 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.

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

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

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quantitation and calculation data for all TIC		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD report forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for MS/MSD		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Data				
Moisture/% solids data sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduction formulae		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument time logs		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemist notebook pages		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample preparation sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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 transcription 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 $\leq 30\%$ (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 $\leq 20.5\%$ (3/90 SOW)?	Yes	No	<u>N/A</u>
Are all applicable RSD values $\leq 40\%$ (3/90 SOW)?	Yes	No	<u>N/A</u>
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	<u>N/A</u>
Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?	Yes	No	<u>N/A</u>

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?	<u>Yes</u>	No	N/A
Are all RRF values ≥ 0.05 (2/88 SOW)?	<u>Yes</u>	No	N/A
Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)?	Yes	<u>No</u>	N/A
Are all %D values $\leq 40\%$ (3/90 SOW)?	Yes	No	<u>N/A</u>
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	<u>N/A</u>
Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?	Yes	No	<u>N/A</u>

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?	<u>Yes</u>	No	N/A
Are TCL compounds present in the laboratory blanks?	<u>Yes</u>	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?

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 $> 5 \times \text{CRQL}$ 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 $\geq 10\%$ 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 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.

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 $5 \times \text{CRQL}$ 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): _____

*See attached lab forms
for various deficiencies.*

*Wub
5/1/02*

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QC

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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	<i>Days</i>
BOOXC7	001	S	91LVB378	09/16/91	N/A	09/20/91	4
BOOXC9	002	S	91LVB378	09/16/91	N/A	09/20/91	4
BOOXC9	002 MS	S	91LVB379	09/16/91	N/A	09/23/91	
BOOXC9	002 MSD	S	91LVB379	09/16/91	N/A	09/23/91	

LAB QC:

VBLK	MB1	S	91LVB378	N/A	N/A	09/20/91
VBLK	MB1	S	91LVB379	N/A	N/A	09/23/91

*Holding times
met
No qualifications
required*

*MBL
5/12/92*



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VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDRFW Lot: 9109L733Instrument ID: 5100BCalibration Date: 09/20/91 Time: 1035Lab File ID: B092002Init. Calib. Date(s): 09/11/91 09/11/91Matrix: (soil/water) SOILLevel: (low/med) LOWColumn: (pack/cap) CAP

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

COMPOUND	RRF	RRF50	%D
Chloromethane	0.461	0.382	17.1
Bromomethane	0.288	0.283	1.7
Vinyl Chloride	0.364	0.301	17.3
Chloroethane	0.174	0.152	12.6
Methylene Chloride	1.179	1.186	-0.6
Acetone	0.492	0.440	10.6
Carbon Disulfide	2.374	2.557	-7.7
1,1-Dichloroethene	0.732	0.860	-17.5
1,1-Dichloroethane	2.040	1.968	3.5
1,2-Dichloroethene (total)	1.062	1.016	4.3
Chloroform	2.355	2.396	-1.7
1,2-Dichloroethane	0.309	0.298	3.6
2-Butanone	0.170	0.124	27.1
1,1,1-Trichloroethane	1.631	1.758	-7.8
Carbon Tetrachloride	1.630	1.816	-11.4
Vinyl Acetate	2.419	2.457	-1.6
Bromodichloromethane	0.371	0.364	1.9
1,2-Dichloropropane	0.308	0.285	7.5
cis-1,3-Dichloropropene	0.426	0.392	8.0
Trichloroethene	0.345	0.341	1.2
Dibromochloromethane	0.422	0.422	0.0
1,1,2-Trichloroethane	0.291	0.262	10.0
Benzene	0.936	0.901	3.7
Trans-1,3-Dichloropropene	0.392	0.358	8.7
Bromoform	0.432	0.437	-1.2
4-Methyl-2-pentanone	0.396	0.262	33.8
2-Hexanone	0.350	0.237	32.3
Tetrachloroethene	0.328	0.335	-2.1
1,1,2,2-Tetrachloroethane	0.505	0.436	13.7
Toluene	0.651	0.602	7.5
Chlorobenzene	0.821	0.839	-2.2
Ethylbenzene	0.425	0.425	0.0
Styrene	0.862	0.935	-8.5
Xylene (total)	0.504	0.550	-9.1
Toluene-d8	1.009	1.055	-4.6
Bromofluorobenzene	0.501	0.536	-7.0
1,2-Dichloroethane-d4	0.283	0.290	-2.5

*Sample's
qualifiers**UJ**UJ
UJ**76
10/12/91**5/12/02
5/15/88 Rev.*

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CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LVB379-MB1

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

Lab File ID: B092304

Level: (low/med) LOW

Date Received: 09/23/91

% Moisture: not dec. 0

Date Analyzed: 09/23/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/Kg

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/Kg</u>	
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	
67-64-1	Acetone	2	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

XU = 60
XU = 20
No sample
qual. needed
used
9/20/91
VISIK
not
5/2/02

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0000097

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LVB379-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B092304

Level: (low/med) LOW Date Received: 09/23/91

% Moisture: not dec. 0 Date Analyzed: 09/23/91

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

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

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NONE FOUND			

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CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LVB378-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B092003

Level: (low/med) LOW Date Received: 09/20/91

% Moisture: not dec. 0 Date Analyzed: 09/20/91

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

CONCENTRATION UNITS:

CAS NO. COMPOUND (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
67-64-1	Acetone	5	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 = 40
X10 = 50

Handwritten signature
5/12/91

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CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LVB378-MB1

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

Lab File ID: B092003

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. 0

Date Analyzed: 09/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) ug/Kg

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

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

PROJECT: 200B01 913-1719	REVIEWER: VNA	DATE: 5/12/92
LABORATORY: Weston	CASE: —	SDG: 91096733
SAMPLES/MATRIX:		
B00XC7 Soil		
B00XC9 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		/	—	—
Quantitation and calculation data for all TIC		/	—	—
MS/MSD report forms		/	—	—

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 $> 5 \times \text{CRQL}$ 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).

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

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 $\geq 10\%$ 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 $5 \times \text{CRQL}$ 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): _____

*See attached data sheets for
minor deficiencies.*

*Mut
5/12/92*

9613427.1301

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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	Days	ANALYSIS	Days
BOOXC7	001	S	91LE1202	09/16/91	09/25/91	9	09/25/91	0
BOOXC7	001 MS	S	91LE1202	09/16/91	09/25/91	9	09/25/91	0
BOOXC7	001 MSD	S	91LE1202	09/16/91	09/25/91	9	09/25/91	0
BOOXC9	002	S	91LE1202	09/16/91	09/25/91	9	09/25/91	0

LAB QC:

SBLK	MB1	S	91LE1202	N/A	09/25/91		09/25/91
SBLK	MB1 BS	S	91LE1202	N/A	09/25/91		09/25/91

*Extract Holding time exceeded
by 2 days all results
qualified as estimated*

*WJW
5/1/91*



9613427.1302

0000907

1B

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

SBLK

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

Matrix: SOIL Lab Sample ID: 91LE1202-MB1
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: J092510
 Level: (low/med) LOW Date Received: 09/25/91
 % Moisture: not dec. 0 dec. Date Extracted: 09/25/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91
 GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (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

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0000102

1C

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000Client: WESTINGHOUSE HANFORDMatrix: SOIL Lab Sample ID: 91LE1202-MB1Sample wt/vol: 30.0 (g/mL) G Lab File ID: J092510Level: (low/med) LOW Date Received: 09/25/91% Moisture: not dec. 0 dec. Date Extracted: 09/25/91Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (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	81	J
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	260	J
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

X10 = 810

X10 = 2600

Vand
5/15/92

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2

12/88 Rev.

9613427.1304

0000103

1F

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SBLK

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

Matrix: SOIL Lab Sample ID: 91LE1202-MB1
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: J092510
 Level: (low/med) LOW Date Received: 09/25/91
 % Moisture: not dec. 0 dec. Date Extracted: 09/25/91
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 09/25/91
 GPC Cleanup: (Y/N) N pH: 7.0 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	4.48	4000	J
2.	UNKNOWN	4.51	4000	J
3.	UNKNOWN	5.02	80000	J
4.	ALDOL CONDENSATE	6.16	2000	JA
5.	UNKNOWN	7.38	300	J
6.	ALKANE	12.84	100	J
7.	ALKANE	12.92	100	J
8.	ADIPATE	23.04	600	J

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200 BPI 9131719	REVIEWER: GMA	DATE: 5/2/02
LABORATORY: Weston	CASE: —	SDG: 91092933
SAMPLES/MATRIX:		
B00XC7 Soil		
B00XC9 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		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain-of-Custody		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surrogate report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GC integration reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worksheets		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
UV traces from GPC		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GC/MS confirmation spectra		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides Evaluation Standards Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides/PCB Standards Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides/PCB identification		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pesticides standard chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw QC Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank analysis report forms and chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD report forms and chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Additional Data				
Moisture/% solids data sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduction formulae		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument time logs		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemist notebook pages		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample preparation sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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 ≤ 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

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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 occurring 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 $\leq 10\%$?

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 $\leq 15\%$ for quantitation standards and $\leq 20\%$ 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).

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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 $\leq 20.0\%$ 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

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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 $\leq 25.0\%$?

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 $\leq 20.0\%$ ($\leq 30.0\%$ 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.

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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 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 $> 5 \times \text{CRQL}$ 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 dissimilar 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 multiplex 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

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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 dissimilar 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): _____

*See attached sheets for minor
deficiencies*
ML
5/2/92

9613427.1314

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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
						<i>Days</i>
BOOXC7	001	S	91LE1178	09/16/91	09/19/91	3 10/09/91 <i>20</i>
BOOXC7	001 MS	S	91LE1178	09/16/91	09/19/91	3 10/07/91 <i>18</i>
BOOXC7	001 MSD	S	91LE1178	09/16/91	09/19/91	3 10/07/91 <i>18</i>
BOOXC9	002	S	91LE1178	09/16/91	09/19/91	3 10/07/91 <i>18</i>

LAB QC:

PBLK	MB1	S	91LE1178	N/A	09/19/91	10/07/91
PBLK	MB1 BS	S	91LE1178	N/A	09/19/91	10/07/91

*Holding Times met
No qualification
Needed
WWT
5/12/92*



9613127.1315

0000027

8D

PESTICIDE EVALUATION STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDGC Sample ID: 10079103RFW Lot No.: 9109L733Instrument ID: 03GC Column ID: 2250/2401Dates of Analyses: 10/07/91 to 10/08/91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION	CALIBRATION	CALIBRATION	%RSD (\leq 10.0%)
	FACTOR EVAL MIX A	FACTOR EVAL MIX B	FACTOR EVAL MIX C	
ALDRIN	8450137 ✓	8774347 ✓	9108871 ✓	3.8 ✓
ENDRIN	2159793 ✓	2156687 ✓	2179445 ✓	0.6 ✓
4,4'-DDT	1585243	1642655	1691191	3.2 (1)
DBC	1126151	1085153	1087123	2.1

- (1) If $> 10.0\%$ RSD, plot a standard curve and determine the ng for each sample in that set from the curve.

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	10/07/91	0959	0.0	1.0
02	EVAL MIX B	10/07/91	2006	0.0	8.9
03	EVAL MIX B	10/08/91	0345	0.0	42.9

- (2) See Form Instructions.

*DDT breakdown
exceeded limit
No qual. needed 5/12/92
since all results NO
5/12/92*

9613427.1316

0000025

8D

PESTICIDE EVALUATION STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDGC Sample ID: 10079104RFW Lot No.: 9109L733Instrument ID: 04GC Column ID: SP2100Dates of Analyses: 10/07/91 to 10/08/91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (\leq 10.0%)
ALDRIN	3017511 ✓	3498089 ✓	4014557 ✓	14.2 ✓
ENDRIN	1092089 ✓	1170701 ✓	1258159 ✓	7.1 ✓
4,4'-DDT	534817 ✓	635244 ✓	748280 ✓	16.7 ✓ (1)
DBC	572894	577181	605061	3.0

(1) If $> 10.0\%$ RSD, plot a standard curve and determine the ng for each sample in that set from the curve.

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	10/07/91	1002			7.3
02 EVAL MIX B	10/07/91	2009			12.3
03 EVAL MIX B	10/08/91	0347			49.1

(2) See Form Instructions.

*Combined DDT
breakdown exceeded
no qual. needed
since all
results
ND
5/12/92*

9613427.1317

0000037

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

GC Sample ID: 10079103.40

RFW Lot No.: 9109L733

Instrument ID: 03

GC Column ID: 2250/2401

DATE(S) OF FROM: <u>10/07/91</u>	DATE OF ANALYSIS <u>10/08/91</u>
ANALYSIS TO: <u>10/07/91</u>	TIME OF ANALYSIS <u>0735</u>
TIME(S) OF FROM: <u>1105</u>	EPA SAMPLE NO.
ANALYSIS TO: <u>1617</u>	(STANDARD) <u>INDB 27-56</u>

COMPOUND	RT	RT WINDOW		CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
		FROM	TO					
Alpha-BHC	1.97	1.95	1.99	11752193	1.96	9339761	Y	20.5
Beta-BHC	2.72	2.69	2.75	5382665	2.73	4136347	Y	23.2
Delta-BHC	3.15	3.12	3.18	5698707	3.15	1029246	Y	81.9
gamma-BHC (Lindane)	2.44	2.41	2.47	10289273				
Heptachlor	2.97	2.94	3.00	11306753				
Aldrin	3.55	3.52	3.58	8543219	3.53	8241099	Y	3.5
Heptachlor epoxide	5.13	5.09	5.17	6650015				
Endosulfan I	6.38	6.32	6.44	4515417				
Dieldrin	7.70	7.63	7.77	3996501				
4,4'-DDE	7.19	7.13	7.25	4389535	7.16	4304257	Y	1.9
Endrin	9.29	9.21	9.37	2202227	9.25	2519779	Y	14.4
Endosulfan II	11.08	10.97	11.19	2343145				
4,4'-DDD	10.73	10.63	10.83	1710771	10.70	1501833	Y	12.2
Endosulfan sulfate	17.00	16.86	17.14	1512773	16.91	573104	Y	62.1
4,4'-DDT	12.85	12.71	12.99	1595461				
Methoxychlor	23.69	23.43	23.95	566993				
Endrin ketone	22.99	22.97	23.01	416679	22.99	642002	Y	54.1
alpha-Chlordane	6.15	6.10	6.20	4133423	6.13	3973273	Y	3.9
gamma-Chlordane	5.66	5.61	5.71	4620549	5.65	4343075	Y	6.0
Toxaphene	11.30	11.22	11.40	298673				
Aroclor-1016	2.90	2.87	2.93	1746585				
Aroclor-1221	1.84	1.82	1.86	490117				
Aroclor-1232	2.91	2.89	2.93	795121				
Aroclor-1242	2.91	2.88	2.94	1592751				
Aroclor-1248	2.90	2.87	2.93	1978969				
Aroclor-1254	8.93	8.84	9.02	1917683				
Aroclor-1260	9.98	9.91	10.05	1603223				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
 %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CROI. is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

*ms
5/12/92
No qual. needed since all sample results ND
01/89 Rev. ND*

9613427.1318

0000039

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDGC Sample ID: 10079104.40RFW Lot No.: 9109L733Instrument ID: 04GC Column ID: SP2100

COMPOUND	RT	RT WINDOW		CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
		FROM	TO					
Alpha-BHC	2.19	2.17	2.21	2030033	2.19	2205119	N	8.6
Beta-BHC	2.34	2.32	2.36	3093955	2.37	1880599	N	39.2
Delta-BHC	2.61	2.59	2.63	2133225				
gamma-BHC (Lindane)	2.53	2.51	2.55	3807401				
Heptachlor	3.88	3.86	3.90	5017761				
Aldrin	4.73	4.71	4.75	3333457	4.73	3034691	N	9.0
Heptachlor epoxide	5.65	5.62	5.68	3282845				
Endosulfan I	6.94	6.91	6.97	2228463				
Dieldrin	8.00	7.95	8.05	1877987				
4,4'-DDE	7.74	7.69	7.79	1513205	7.82	1525843	N	0.8
Endrin	8.90	8.84	8.96	1113003	8.90	1131527	N	1.7
Endosulfan II	9.07	9.02	9.12	1604771				
4,4'-DDD	9.65	9.58	9.72	1098125	9.74	529169	N	51.8
Endosulfan sulfate	11.44	11.37	11.51	837304	11.42	152854	N	81.7
4,4'-DDT	12.48	12.38	12.58	591935				
Methoxychlor	17.84	17.73	17.95	570931				
Endrin ketone	14.54	14.44	14.64	1079119	14.59	873293	N	19.1
alpha-Chlordane	7.03	6.98	7.08	2485115	7.03	2190523	N	11.9
gamma-Chlordane	6.41	6.36	6.46	2732331	6.41	2732481	N	0.0
Toxaphene	9.69	9.39	9.99	245130				
Aroclor-1016	3.41	3.38	3.44	1101045				
Aroclor-1221	2.21	2.19	2.23	375374				
Aroclor-1232	2.21	2.19	2.23	553411				
Aroclor-1242	3.42	3.40	3.44	1034037				
Aroclor-1248	5.71	5.68	5.74	1157563				
Aroclor-1254	6.68	6.63	6.73	1156425				
Aroclor-1260	11.10	11.01	11.19	811913				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
 %D must be less than or equal to 15.0% for quantitation, and less than
 or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of
 quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic
 of the component should be used to establish retention time and %D.
 Identification of such analytes is based primarily on pattern recognition.

9613427.1319

0000040

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDGC Sample ID: 10089103.26RFW Lot No.: 9109L733Instrument ID: 03GC Column ID: 2250/2401

COMPOUND	RT	RT WINDOW		CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
		FROM	TO					
Alpha-BHC	1.98	1.96	2.00	7900075				
Beta-BHC	2.73	2.70	2.76	3557271				
Delta-BHC	3.17	3.14	3.20	3714347				
gamma-BHC (Lindane)	2.45	2.42	2.48	6749401	2.45	8456231	Y	25.3
Heptachlor	2.98	2.95	3.01	7437837	2.98	9638025	Y	29.6
Aldrin	3.56	3.53	3.59	5485821	3.56	7071259	Y	28.9
Heptachlor epoxide	5.15	5.11	5.19	3961275	5.15	5249437	Y	32.5
Endosulfan I	6.42	6.36	6.48	2903677	6.42	3779337	Y	30.2
Dieldrin	7.74	7.68	7.82	2371451	7.74	3144891	Y	32.6
4,4'-DDE	7.22	7.16	7.28	2868889				
Endrin	9.34	9.26	9.42	1109923				
Endosulfan II	11.15	11.04	11.26	1492633	11.14	1948155	Y	30.5
4,4'-DDD	10.79	10.69	10.89	1119921				
Endosulfan sulfate	17.11	16.97	17.25	944922				
4,4'-DDT	12.93	12.79	13.07	889798	12.92	1272395	Y	43.0
Methoxychlor	23.80	23.54	24.06	293580	23.80	440621	Y	50.1
Endrin ketone	22.99	22.97	23.01	416679				
alpha-Chlordane	6.18	6.13	6.23	2547817				
gamma-Chlordane	5.69	5.64	5.74	2898729				
Toxaphene	11.36	11.28	11.46	215876				
Aroclor-1016	2.92	2.89	2.95	1209201				
Aroclor-1221	1.84	1.82	1.86	381435				
Aroclor-1232	2.91	2.89	2.93	587170				
Aroclor-1242	2.92	2.89	2.95	1230093				
Aroclor-1248	2.92	2.89	2.95	1603247				
Aroclor-1254	8.98	8.89	9.07	1469737				
Aroclor-1260	10.03	9.96	10.10	1048927				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
 %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CROL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

9613427.1320

0000047

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDGC Sample ID: 10089103.40RFW Lot No.: 9109L733Instrument ID: 03GC Column ID: 2250/2401

COMPOUND	RT	RT WINDOW		CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
		FROM	TO					
Alpha-BHC	1.98	1.96	2.00	7900075	1.98	10013929	Y	26.8
Beta-BHC	2.73	2.70	2.76	3557271	2.74	4646367	Y	30.6
Delta-BHC	3.17	3.14	3.20	3714347	3.17	4709543	Y	26.8
gamma-BHC (Lindane)	2.45	2.42	2.48	6749401				
Heptachlor	2.98	2.95	3.01	7437837				
Aldrin	3.56	3.53	3.59	5485821	3.56	7491039	Y	36.6
Heptachlor epoxide	5.15	5.11	5.19	3961275				
Endosulfan I	6.42	6.36	6.48	2903677				
Dieldrin	7.74	7.68	7.82	2371451				
4,4'-DDE	7.22	7.16	7.28	2868889	7.23	3774619	Y	31.6
Endrin	9.34	9.26	9.42	1109923	9.34	2047471	Y	84.5
Endosulfan II	11.15	11.04	11.26	1492633				
4,4'-DDD	10.79	10.69	10.89	1119921	10.80	1473675	Y	31.6
Endosulfan sulfate	17.11	16.97	17.25	944922	17.12	1344253	Y	42.3
4,4'-DDT	12.93	12.79	13.07	889798				
Methoxychlor	23.80	23.54	24.06	293580				
Endrin ketone	*****	*****	*****	COELUTES *				
alpha-Chlordane	6.18	6.13	6.23	2547817	6.19	3495643	Y	37.2
gamma-Chlordane	5.69	5.64	5.74	2898729	5.70	3888731	Y	34.2
Toxaphene	11.36	11.28	11.46	215876				
Aroclor-1016	2.92	2.89	2.95	1209201				
Aroclor-1221	1.84	1.82	1.86	381435				
Aroclor-1232	2.91	2.89	2.93	587170				
Aroclor-1242	2.92	2.89	2.95	1230093				
Aroclor-1248	2.92	2.89	2.95	1603247				
Aroclor-1254	8.98	8.89	9.07	1469737				
Aroclor-1260	10.03	9.96	10.10	1048927				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
 %D must be less than or equal to 15.0% for quantitation, and less than
 or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the GCOL is a form of
 quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic
 of the component should be used to establish retention time and %D.
 Identification of such analytes is based primarily on pattern recognition.

9613427.1321

0000043

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDGC Sample ID: 10089104.40RFW Lot No.: 9109L733Instrument ID: 04GC Column ID: SP2100

DATE(S) OF FROM: <u>10/08/91</u>	DATE OF ANALYSIS <u>10/10/91</u>
ANALYSIS TO: <u>10/09/91</u>	TIME OF ANALYSIS <u>0328</u>
TIME(S) OF FROM: <u>1708</u>	EPA SAMPLE NO.
ANALYSIS TO: <u>1003</u>	(STANDARD) <u>INDB 27-56</u>

COMPOUND	RT	RT WINDOW		CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
		FROM	TO					
Alpha-BHC	2.20	2.18	2.22	1664287	2.19	2043373	N	22.8
Beta-BHC	2.34	2.32	2.36	2612617	2.34	3017965	N	15.5
Delta-BHC	2.61	2.59	2.63	1678449	2.61	2001865	N	19.3
gamma-BHC (Lindane)	2.53	2.51	2.55	3128715				
Heptachlor	3.89	3.87	3.91	4005371				
Aldrin	4.73	4.71	4.75	2611553	4.73	3135769	N	20.1
Heptachlor epoxide	5.66	5.64	5.70	2625933				
Endosulfan I	6.95	6.92	6.98	1751437				
Dieldrin	8.02	7.96	8.06	1426763				
4,4'-DDE	7.82	7.77	7.87	1288485	7.82	1525503	N	18.4
Endrin	8.91	8.85	8.97	849610	8.91	1099961	N	29.5
Endosulfan II	9.08	9.04	9.14	1248687				
4,4'-DDD	9.75	9.68	9.82	608821	9.74	675926	N	11.0
Endosulfan sulfate	11.46	11.39	11.53	668071	11.45	773044	N	15.7
4,4'-DDT	12.50	12.40	12.60	434136				
Methoxychlor	17.87	17.76	17.98	428954				
Endrin ketone	14.56	14.46	14.66	848444	14.56	976096	N	15.0
alpha-Chlordane	7.04	6.99	7.09	1874851	7.04	2223033	N	18.6
gamma-Chlordane	6.42	6.37	6.47	2125105	6.41	2484187	N	16.9
Toxaphene	9.70	9.40	10.0	191433				
Aroclor-1016	3.41	3.38	3.44	931262				
Aroclor-1221	2.21	2.19	2.23	308926				
Aroclor-1232	2.21	2.19	2.23	460968				
Aroclor-1242	3.41	3.39	3.43	793700				
Aroclor-1248	3.41	3.38	3.44	1026887				
Aroclor-1254	6.70	6.65	6.75	973691				
Aroclor-1260	11.10	11.01	11.19	626668				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
 %D must be less than or equal to 15.0% for quantitation, and less than
 or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of
 quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic
 of the component should be used to establish retention time and %D.
 Identification of such analytes is based primarily on pattern recognition.

9613427.1322

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3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9109L733-001

MATRIX Spike - Sample No.: BOOXC7

Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
gamma-BHC (Lindane)	28.2	0	14.1	50 ✓	46-127
Heptachlor	28.2	0	19.0	68 ✓	35-130
Aldrin	28.2	0	17.6	63 ✓	34-132
Dieldrin	70.5	0	42.3	60 ✓	31-134
Endrin	70.5	0	51.5	73 ✓	42-139
4,4'-DDT	70.5	0	35.3	50 ✓	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC
gamma-BHC (Lindane)	28.3	12.0	43 *	15 ✓	50 46-127
Heptachlor	28.3	19.1	68 ✓	0 ✓	31 35-130
Aldrin	28.3	17.0	60 ✓	4 ✓	43 34-132
Dieldrin	70.8	39.6	56 ✓	6 ✓	38 31-134
Endrin	70.8	46.7	66 ✓	10 ✓	45 42-139
4,4'-DDT	70.8	31.8	45 ✓	10 ✓	50 23-134

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

* Values outside of QC limits

RPD: 0 out of 6 outside limits

Spike Recovery: 1 out of 12 outside limits

COMMENTS:

*MS % R for
Lindane low
no qual. needed
since surrogate
acceptable
DWT
5/12/92*

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: <i>200 BP-1</i>	REVIEWER: <i>[Signature]</i>	DATE: <i>5/12/92</i>
LABORATORY: <i>Western</i>	CASE: <i>—</i>	SDG: <i>9109 L733</i>
SAMPLES/MATRIX:		
<i>BOD X C7 Soil</i>		
<i>BOD X C9 Soil</i>		

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.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cover Page		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Traffic Reports <i>Chain of Custody [Signature] 5/12/92</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inorganic Analysis Data Sheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial and Continuing Calibration Verification		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRDL Standard for AA and ICP		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Interference Check Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spike Sample Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Post-Digestion Spike Sample Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Duplicate		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Control Sample		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standard Addition Results		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICP Serial Dilutions		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument Detection Limits		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Interelement Correction Factors		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Linear Ranges		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preparation Log		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analysis Run Log		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICP Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Furnace AA Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mercury Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cyanide Raw Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal laboratory chain-of-custody		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Sample Preparation Records		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Percent Solids Analysis Records		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduction Formulae		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Instrument Run Logs		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chemist Notebook Pages		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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?

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

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

If no, were MSA analyses performed when required?

Yes No N/A

Are MSA correlation coefficients ≥ 0.995 ?

Yes No N/A

If no, was a second MSA analysis performed?

Yes No N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is $< 40\%$ qualify detects as estimated (J). If the analytical spike recovery is $\geq 10\%$ 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 correlation coefficient was < 0.995 , qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?

Yes No N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP?

Yes No N/A

Are all detection limits below the CRQL?

Yes No N/A

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

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

Yes No N/A

Were project specific data quality objectives met for this analysis?

Yes No N/A

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

COMMENTS (attach additional sheets as necessary): _____

See attached for deficiencies

*mt
5/2/02*

9615427.1329



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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID /ANALYSIS RFW # MTX PREP # COLLECTION EXTR/PREP ANALYSIS

BOOKC7

SILVER, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
SILVER, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
SILVER, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
ALUMINUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
ALUMINUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
ALUMINUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
ARSENIC, TOTAL	001	S	91L1899	09/16/91	10/01/91	10/02/91
ARSENIC, TOTAL	001 REP	S	91L1899	09/16/91	10/01/91	10/02/91
ARSENIC, TOTAL	001 MS	S	91L1899	09/16/91	10/01/91	10/02/91
BARIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
BARIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
BARIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
BERYLLIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
BERYLLIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
BERYLLIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
BISMUTH, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/25/91
BISMUTH, TOTAL REP	001 REP	S	91L1900	09/16/91	10/01/91	10/25/91
BISMUTH, TOTAL DUP S	001 MSD	S	91L1900	09/16/91	10/01/91	10/25/91
CALCIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
CALCIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
CALCIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
CADMIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
CADMIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
CADMIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
COBALT, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
COBALT, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
COBALT, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
CHROMIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
CHROMIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
CHROMIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
COPPER, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
COPPER, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
COPPER, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
IRON, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91
IRON, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91
IRON, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91
MERCURY, TOTAL	001	S	91C278	09/16/91	10/01/91	10/02/91

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5/12/92

9613427.1330

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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
MERCURY, TOTAL	001 REP	S	91C278	09/16/91	10/01/91	10/02/91	17
MERCURY, TOTAL	001 MS	S	91C278	09/16/91	10/01/91	10/02/91	17
POTASSIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	41
POTASSIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	
POTASSIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	
MAGNESIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	
MAGNESIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	
MAGNESIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	
MANGANESE, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	
MANGANESE, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	
MANGANESE, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	
SODIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	
SODIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	
SODIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	
NICKEL, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	
NICKEL, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	
NICKEL, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	
LEAD, TOTAL	001	S	91L1899	09/16/91	10/01/91	10/02/91	17
LEAD, TOTAL	001 REP	S	91L1899	09/16/91	10/01/91	10/02/91	1
LEAD, TOTAL	001 MS	S	91L1899	09/16/91	10/01/91	10/02/91	1
ANTIMONY, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	41
ANTIMONY, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	1
ANTIMONY, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	1
SELENIUM, TOTAL	001	S	91L1899	09/16/91	10/01/91	10/02/91	17
SELENIUM, TOTAL	001 REP	S	91L1899	09/16/91	10/01/91	10/02/91	1
SELENIUM, TOTAL	001 MS	S	91L1899	09/16/91	10/01/91	10/02/91	1
THALLIUM, TOTAL	001	S	91L1899	09/16/91	10/01/91	10/02/91	1
THALLIUM, TOTAL	001 REP	S	91L1899	09/16/91	10/01/91	10/02/91	1
THALLIUM, TOTAL	001 MS	S	91L1899	09/16/91	10/01/91	10/02/91	1
VANADIUM, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	41
VANADIUM, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	1
VANADIUM, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	1
ZINC, TOTAL	001	S	91L1900	09/16/91	10/01/91	10/26/91	1
ZINC, TOTAL	001 REP	S	91L1900	09/16/91	10/01/91	10/26/91	1
ZINC, TOTAL	001 MS	S	91L1900	09/16/91	10/01/91	10/26/91	1

BOOXC9

SILVER, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91	41
ALUMINUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91	1

West
5/12/92

9613427.1331

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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	002	S	91L1899	09/16/91	10/01/91	10/02/91 17
BARIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91 41
BERYLLIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91 1
BISMUTH, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/25/91 90
CALCIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91 41
CADMIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
COBALT, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
CHROMIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
COPPER, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
IRON, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
MERCURY, TOTAL	002	S	91C278	09/16/91	10/01/91	10/02/91 17
POTASSIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91 41
MAGNESIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
MANGANESE, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
SODIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
NICKEL, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91
LEAD, TOTAL	002	S	91L1899	09/16/91	10/01/91	10/02/91 17
ANTIMONY, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91 41
SELENIUM, TOTAL	002	S	91L1899	09/16/91	10/01/91	10/02/91 17
THALLIUM, TOTAL	002	S	91L1899	09/16/91	10/01/91	10/02/91 1
VANADIUM, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91 41
ZINC, TOTAL	002	S	91L1900	09/16/91	10/01/91	10/26/91 1

LAB QC:

No qualifications needed

Mark 5/15/92

SILVER LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
ALUMINUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
BARIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
BERYLLIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
CALCIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
CADMIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
COBALT LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
CHROMIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
COPPER LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
IRON LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
POTASSIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
MAGNESIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
MANGANESE LABORATORY	LC1 BS	S	91L190C	N/A	10/01/91	10/26/91
SODIUM LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91
NICKEL LABORATORY	LC1 BS	S	91L1900	N/A	10/01/91	10/26/91

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.: CLP733
 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)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminum	91.0	U	91.0	U	91.0	U	91.0	U	18.200	U	P
Antimony	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	16.0	U	16.0	U	16.0	U	16.0	U	3.200	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	63.0	U	63.0	U	63.0	U	65.5	B	12.600	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	46.0	U	46.0	U	46.0	U	46.0	U	9.200	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	87.0	U	87.0	U	87.0	U	134.3	B	17.400	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	P
Mercury	.2	U	.2	U	.2	U	.2	U	.100	U	CV
Nickel	11.0	U	11.0	U	11.0	U	11.0	U	2.200	U	P
Potassium	862.0	U	862.0	U	862.0	U	862.0	U	172.400	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Sodium	110.0	U	110.0	U	110.0	U	110.0	U	22.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Vanadium	8.0	U	8.0	U	8.0	U	9.6	B	1.600	U	P
Zinc	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Cyanide	20.0	U	20.0	U	20.0	U			1.000	U	C

FORM III - IN *Aqueous CCB* 03/90

Concentrations not sufficiently high to warrant qualification.
WWT
5/12/92

9613427.1333

0000010

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/07/91

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

WESTON BATCH #: 9109L733

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	BOOXC7	Silver, Total	8.7	2.1 u	10.2	85.3
		Aluminum, Total	5960	4160	406	445 *
		Arsenic, Total	6.5	2.0 u	7.9	82.3
		Barium, Total	404	70.9	406	82.0
		Beryllium, Total	6.5	1.0 u	10.2	63.7
		Bismuth, Total MSD	870	41.2 u	8960	9.7
		Calcium, Total	11300	5160	5080	122
		Cadmium, Total	8.0	1.0 u	10.2	78.4
		Cobalt, Total	85.8	10.3 u	102	84.5
		Chromium, Total	42.5	8.2	40.6	84.5
		Copper, Total	53.5	13.5	50.7	78.9
		Iron, Total	16100	13100	203	1450 *
		Mercury, Total	0.54	0.11u	0.54	101
		Potassium, Total	5520	1030 u	5080	109
		Magnesium, Total	8090	3070	5080	98.9
		Manganese, Total	313	220	102	90.7
		Sodium, Total	5080	1030 u	5080	100
		Nickel, Total	88.5	8.5	102	78.8
		Lead, Total	5.4	0.00 y.l	3.9	138
		Antimony, Total	49.8	12.4 u	102	49.1
		Selenium, Total	1.5	0.98u	2.0	75.0
		Thallium, Total	10.0	2.0 u	9.9	101
		Vanadium, Total	105	24.2	102	79.3
		Zinc, Total	109	24.2	102	83.8

*Bismuth %R < 30
 dual result
 as R
 5/12/92*

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0000025

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOOXC7S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP733

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 93.3

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	49.8000	4.1180 U	101.50	49.1		P
Arsenic	75-125	6.5000	1.1000 B	7.90	68.4		F
Barium	75-125	403.8000	70.9000	406.00	82.0		P
Beryllium	75-125	6.5000	.4300 B	10.20	59.5		P
Cadmium	75-125	8.0000	.6600 B	10.20	72.0		P
Calcium							NR
Chromium	75-125	42.5000	8.2000	40.60	84.5		P
Cobalt	75-125	85.8000	8.6000 B	101.50	76.1		P
Copper	75-125	53.5000	13.5000	50.70	78.9		P
Iron							NR
Lead	75-125	5.4000	2.7000	3.90	69.2		F
Magnesium							NR
Manganese	75-125	312.6001	220.5000	101.50	90.7		P
Mercury	75-125	.5410	.1072 U	.54	100.2		CV
Nickel	75-125	88.5000	8.5000	101.50	78.8		P
Potassium							NR
Selenium	75-125	1.5000	.3910 U	2.00	75.0		F
Silver	75-125	8.7000	2.06 1.9000 B U	10.20	55.3 66.7		P
Sodium							NR
Thallium	75-125	10.0000	.3910 U	9.90	101.0		F
Vanadium	75-125	104.7000	24.2000	101.50	79.3		P
Zinc	75-125	109.3000	24.2000	101.50	83.8		P
Cyanide	75-125	10.7120	1.0720 U	10.72	99.9		C

Comments:

Circled analytes are outside 75-125% limits but >30 assoc. sample results

MWT 5/12/92

FORM V (Part 1) - IN

03/90

5/12/92 to be qual. as estimated J or NJ

MWT 5/12/92

9613427.1335

0000031

U.S. EPA - CLP

9

EPA SAMPLE NO.

ICP SERIAL DILUTIONS

BOOXC7L

Lab Name: ROY F. WESTON, INC - L372

Contract: 6168-02-01

Lab Code: WESTON

Case No.: WEST

SAS No.:

SDG No.: CLP733

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	20197.90	-	17989.50	-	10.9	E	P
Antimony	20.00	U	100.00	U			P
Arsenic							NR
Barium	344.50		307.50	B	10.7		P
Beryllium	2.10	B	5.00	U	100.0		P
Cadmium	3.20	B	15.00	U	100.0		P
Calcium	25072.40		22544.49	B	10.1	E	P
Chromium	39.90		42.00	B	5.3		P
Cobalt	41.90	B	50.00	U	100.0		P
Copper	65.80		88.00	B	33.7		P
Iron	63768.30		57618.01		9.6		P
Lead							NR
Magnesium	14923.00		13647.00	B	8.6		P
Manganese	1070.80		959.50		10.4	E	P
Mercury							NR
Nickel	41.50		55.00	U	100.0		P
Potassium	4465.50	B	5229.00	B	17.1		P
Selenium							NR
Silver	10.00	U	50.00	U			P
Sodium	1855.00	B	1789.00	B	3.6		P
Thallium							NR
Vanadium	117.70		128.00	B	8.8		P
Zinc	117.30		112.00		4.5		P

Sample
final
J

J

J

FORM IX - IN

03/90

M
5/12/92

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

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? *IC*

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 than the IDL qualify the data as unusable (R).

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

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 *Met 5/14/92*

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.

COMMENTS (attach additional sheets as necessary): _____

All attached for deficiencies

*MW
5/15/00*

9615427.1542

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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
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BOOXC7

% SOLIDS	001	S	91L&S179	09/16/91	09/20/91	09/21/91	6
CHLORIDE BY IC	001	S	91LICA59	09/16/91	10/29/91	10/29/91	44
CHLORIDE BY IC	001 REP	S	91LICA59	09/16/91	10/29/91	10/29/91	
CHLORIDE BY IC	001 MS	S	91LICA59	09/16/91	10/29/91	10/29/91	
CHLORIDE BY IC	001 MSD	S	91LICA59	09/16/91	10/29/91	10/29/91	
FLUORIDE BY IC	001	S	91LICA59	09/16/91	10/29/91	10/29/91	
FLUORIDE BY IC	001 REP	S	91LICA59	09/16/91	10/29/91	10/29/91	
FLUORIDE BY IC	001 MS	S	91LICA59	09/16/91	10/29/91	10/29/91	
FLUORIDE BY IC	001 MSD	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRITE BY IC	001	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRITE BY IC	001 REP	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRITE BY IC	001 MS	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRITE BY IC	001 MSD	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRATE BY IC	001	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRATE BY IC	001 REP	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRATE BY IC	001 MS	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRATE BY IC	001 MSD	S	91LICA59	09/16/91	10/29/91	10/29/91	
TOTAL CYANIDE	001	S	91LC300	09/16/91	09/29/91	09/29/91	14
TOTAL CYANIDE	001 REP	S	91LC300	09/16/91	09/29/91	09/29/91	1
TOTAL CYANIDE	001 MS	S	91LC300	09/16/91	09/29/91	09/29/91	
PHOSPHATE BY IC	001	S	91LICA59	09/16/91	10/29/91	10/29/91	44
PHOSPHATE BY IC	001 REP	S	91LICA59	09/16/91	10/29/91	10/29/91	
PHOSPHATE BY IC	001 MS	S	91LICA59	09/16/91	10/29/91	10/29/91	
PHOSPHATE BY IC	001 MSD	S	91LICA59	09/16/91	10/29/91	10/29/91	
SULFATE BY IC	001	S	91LICA59	09/16/91	10/29/91	10/29/91	
SULFATE BY IC	001 REP	S	91LICA59	09/16/91	10/29/91	10/29/91	
SULFATE BY IC	001 MS	S	91LICA59	09/16/91	10/29/91	10/29/91	
SULFATE BY IC	001 MSD	S	91LICA59	09/16/91	10/29/91	10/29/91	
NITRATE NITRITE	001	S	91LNO225	09/16/91	10/02/91	10/02/91	17
NITRATE NITRITE	001 REP	S	91LNO225	09/16/91	10/02/91	10/02/91	
NITRATE NITRITE	001 MS	S	91LNO225	09/16/91	10/02/91	10/02/91	
NITRATE NITRITE	001 MSD	S	91LNO225	09/16/91	10/02/91	10/02/91	
TOTAL ORGANIC CARBON	001	S	91LTZ020	09/16/91	10/18/91	10/18/91	53
TOTAL ORGANIC CARBON	001 REP	S	91LTZ020	09/16/91	10/18/91	10/18/91	
TOTAL ORGANIC CARBON	001 MS	S	91LTZ020	09/16/91	10/18/91	10/18/91	
SUB-OUT TEST FOR SUB	001	S		09/16/91			

BOOXC9

% SOLIDS	002	S	91L&S179	09/16/91	09/20/91	09/21/91	6
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Handwritten signature/initials

9613427.1343

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

DATE RECEIVED: 09/18/91

RFW LOT # :9109L733

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	91LICA59	09/16/91	10/29/91	10/29/91
FLUORIDE BY IC	002	S	91LICA59	09/16/91	10/29/91	10/29/91
NITRITE BY IC	002	S	91LICA59	09/16/91	10/29/91	10/29/91
NITRATE BY IC	002	S	91LICA59	09/16/91	10/29/91	10/29/91
TOTAL CYANIDE	002	S	91LC300	09/16/91	09/29/91	09/29/91
PHOSPHATE BY IC	002	S	91LICA59	09/16/91	10/29/91	10/29/91
SULFATE BY IC	002	S	91LICA59	09/16/91	10/29/91	10/29/91
NITRATE NITRITE	002	S	91LNO225	09/16/91	10/02/91	10/02/91
TOTAL ORGANIC CARBON	002	S	91LOM052	09/16/91	10/11/91	10/14/91
TOTAL ORGANIC CARBON	002 REP	S	91LOM052	09/16/91	10/11/91	10/14/91
SUB-OUT TEST FOR SUB	002	S		09/16/91		

Handwritten notes:
 44 J/W
 14
 44 J/W
 17
 29 J/W
 1 J/W

LAB QC:

Handwritten signature:
 5/12/02

CHLORIDE BY IC	MB1	S	91LICA59	N/A	10/29/91	10/29/91
CHLORIDE BY IC	MB1 BS	S	91LICA59	N/A	10/29/91	10/29/91
FLUORIDE BY IC	MB1	S	91LICA59	N/A	10/29/91	10/29/91
FLUORIDE BY IC	MB1 BS	S	91LICA59	N/A	10/29/91	10/29/91
NITRITE BY IC	MB1	S	91LICA59	N/A	10/29/91	10/29/91
NITRITE BY IC	MB1 BS	S	91LICA59	N/A	10/29/91	10/29/91
NITRATE BY IC	MB1	S	91LICA59	N/A	10/29/91	10/29/91
NITRATE BY IC	MB1 BS	S	91LICA59	N/A	10/29/91	10/29/91
PHOSPHATE BY IC	MB1	S	91LICA59	N/A	10/29/91	10/29/91
PHOSPHATE BY IC	MB1 BS	S	91LICA59	N/A	10/29/91	10/29/91
SULFATE BY IC	MB1	S	91LICA59	N/A	10/29/91	10/29/91
SULFATE BY IC	MB1 BS	S	91LICA59	N/A	10/29/91	10/29/91
TOTAL CYANIDE	LC1 L	S	91LC300	N/A	09/29/91	09/29/91
TOTAL CYANIDE	LC2 L	S	91LC300	N/A	09/29/91	09/29/91
TOTAL CYANIDE	MB1	S	91LC300	N/A	09/29/91	09/29/91
NITRATE NITRITE	MB1	S	91LNO225	N/A	10/02/91	10/02/91
NITRATE NITRITE	MB1 BS	S	91LNO225	N/A	10/02/91	10/02/91
NITRATE NITRITE	MB1 BSD	S	91LNO225	N/A	10/02/91	10/02/91
NITRATE NITRITE	MB2	S	91LNO225	N/A	10/02/91	10/02/91
NITRATE NITRITE	MB2 BS	S	91LNO225	N/A	10/02/91	10/02/91
TOTAL ORGANIC CARBON	MB1	W	91LTZ020	N/A	10/18/91	10/18/91
TOTAL ORGANIC CARBON	MB1 BS	W	91LTZ020	N/A	10/18/91	10/18/91
TOTAL ORGANIC CARBON	MB2	W	91LTZ020	N/A	10/18/91	10/18/91
TOTAL ORGANIC CARBON	MB2 BS	W	91LTZ020	N/A	10/18/91	10/18/91

9613427.1344

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/13/91

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

WESTON BATCH #: 9109L733

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	BOOXC7	Chloride by IC	64.8 ✓	12.3	53.6	97.9
		Chloride by IC MSD	66.1 ✓	12.3	53.6	100
		Fluoride by IC	72.1 ✓	1.4	107	66.0
		Fluoride by IC MSD	73.3 ✓	1.4	107	67.1
		Nitrite by IC	52.8 ✓	1.3 u	53.6	98.6
		Nitrite by IC MSD	53.9 ✓	1.3 u	53.6	101
		Nitrate by IC	177 2260	172 2120	53.6	10.0 260
		Nitrate by IC MSD	177 2260	172 2120	53.6	10.0 260
		Cyanide, Total	10.7 ✓	1.1 u	10.7	100
		Phosphate by IC	4.7 ✓	1.3 u	53.6	8.8
		Phosphate by IC MSD	5.1 ✓	1.3 u	53.6	9.6
		Sulfate by IC	186 ✓	139	53.6	87.4
		Sulfate by IC MSD	186 ✓	139	53.6	87.9
		Nitrate Nitrite	837 ✓	737	107	93.5 *
		Nitrate Nitrite MSD	851 ✓	737	107	107 *
		Total Organic Carbon	6340 ✓	1260	2520	201
BLANK10	91LICA59-MB1	Chloride by IC	50.2 ✓	1.2 u	50.0	100
		Fluoride by IC	96.6 ✓	1.2 u	100	96.6
		Nitrite by IC	48.7 ✓	1.2 u	50.0	97.5
		Nitrate by IC	52.0 ✓	1.2 u	50.0	104
		Phosphate by IC	48.7 ✓	1.2 u	50.0	97.4
		Sulfate by IC	49.3 ✓	1.2 u	50.0	98.6
BLANK10	91LNO225-MB1	Nitrate Nitrite	2.0 ✓	0.50u	2.0	99.8
		Nitrate Nitrite MSD	2.0 ✓	0.50u	2.0	101
BLANK20	91LNO225-MB2	Nitrate Nitrite	2.0 ✓	0.50u	2.0	102
BLANK10	91LTZ020-MB1	Total Organic Carbon	444 ✓	20.0 u	400	111
BLANK20	91LTZ020-MB2	Total Organic Carbon	430 ✓	20.0 u	400	108

*230% R
 Reject Data*

*Med
 5/12/92*

9613427.1345

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/13/91

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

WESTON BATCH #: 9109L733

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	& DIFF
-001REP	BOOXC7	Chloride by IC	12.3	12.5	1.7
		Fluoride by IC	1.4	1.4	2.7
		Nitrite by IC	1.3 u	1.3 u	NC
		Nitrate by IC	172	171	0.31
		Cyanide, Total	1.1 u	1.1 u	NC
		Phosphate by IC	1.3 u	1.3 u	NC
		Sulfate by IC	139	139	0.003
		Nitrate Nitrite	737	760	3.1
		Total Organic Carbon	1260	675	60.7
-002REP	BOOXC9	Total Organic Carbon	0.10u	0.40	NC

*TOC RPD > 35%
results already
Qualified as estimated*

*Wnt
5/12/92*