



From: Office of Sample Management  
Phone: 3-3419 MO-346/200W T6-08  
Date: JULY 1, 1991  
Subject: TRANSMITTAL OF VALIDATED DATA FOR THE B-POND PHASE III  
PROJECT (TRANS #1)

28600-91-073

To: R. C. Roos H4-55  
cc: M. R. Adams H4-55\*  
R. P. Henckel H4-55\*  
J. H. Kessner *JK* T6-08\*  
E. J. Kosiancic S0-61\*  
JAL File/LB  
\*w/o enclosures

Validated sample data from the B-Pond Project is being transmitted by the Office of Sample Management (OSM) for the following Weston Analytical delivery group:

RFW # 9102L600 (Inorganics, VOA, SemiVOA, Pect/PCB)

The delivery group contains results for samples analyzed and reported according to Contract Laboratory Program (CLP) protocol.

The OSM data validation procedure is a review of laboratory performance and implementation of applicable protocols. Subsequent technical data evaluation by project lead personnel should include a determination of the appropriateness of results from a standpoint of past history and present knowledge of the sample site.

If you have any questions, please contact me at the number listed above.

*J. A. Lerch*  
J. A. Lerch  
Scientist

tjn

Enclosure

*Approved for  
Public Release  
4/26/95  
JC*





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U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

B00GT6

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP694

Matrix (soil/water): soil

Lab Sample ID: 9102694001

Level (low/med): low

Date Received: 02/23/91

% Solids: 94.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic	0.417	U	W	F
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron				
7439-92-1	Lead	2.50			F
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury	0.106	U		CV
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

INFORMATION ONLY

JJ 6/22/91

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments:

Four horizontal lines for handwritten comments.

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U.S. EPA - CLP

1

EPA SAMPLE NO.

## INORGANIC ANALYSIS DATA SHEET

BOOGW5

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP694

Matrix (soil/water): soil

Lab Sample ID: 9103843001

Level (low/med): low

Date Received: 03/07/91

% Solids: 96.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2210			P
7440-36-0	Antimony	4.30	U		P
7440-38-2	Arsenic	1.00	B W		F
7440-39-3	Barium	58.3			P
7440-41-7	Beryllium	0.205	U		P
7440-43-9	Cadmium	0.819	U		P
7440-70-2	Calcium	5220			P
7440-47-3	Chromium	0.614	U		P
7440-48-4	Cobalt	6.10	B		P
7440-50-8	Copper	8.60			P
7439-89-6	Iron	9620			P
7439-92-1	Lead	0.535	U		F
7439-95-4	Magnesium	1990			P
7439-96-5	Manganese	152			P
7439-97-6	Mercury	0.103	U		CV
7440-02-0	Nickel	4.30	B		P
7440-09-7	Potassium	491	B		P
7782-49-2	Selenium	0.356	U		F
7440-22-4	Silver	1.02	U		P
7440-23-5	Sodium	132	B		P
7440-28-0	Thallium	0.713	U		F
7440-62-2	Vanadium	11.3			P
7440-66-6	Zinc	17.7			P
	Cyanide	0.517	U		C

INFORMATION  
ONLY

JJ  
6/22/91

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments:

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U.S. EPA - CLP

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

BOOGV4

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WESTI

SAS No.:

SDG No.: CLP788

Matrix (soil/water): soil

Lab Sample ID: 9103788001

Level (low/med): low

Date Received: 03/02/91

% Solids: 93.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2590			P
7440-36-0	Antimony	3.76	U		P
7440-38-2	Arsenic	0.600	B		F
7440-39-3	Barium	43.7			P
7440-41-7	Beryllium	0.280	B		P
7440-43-9	Cadmium	0.792	U		P
7440-70-2	Calcium	3450			P
7440-47-3	Chromium	2.90			P
7440-48-4	Cobalt	6.30	B		P
7440-50-8	Copper	10.1			P
7439-89-6	Iron	9140			P
7439-92-1	Lead	7.30	S		F
7439-95-4	Magnesium	2210			P
7439-96-5	Manganese	151			P
7439-97-6	Mercury	0.106	U		CV
7440-02-0	Nickel	6.10	B		P
7440-09-7	Potassium	390	B		P
7782-49-2	Selenium				
7440-22-4	Silver	0.792	U		P
7440-23-5	Sodium	341	B		P
7440-28-0	Thallium				
7440-62-2	Vanadium	15.4			P
7440-66-6	Zinc	15.6			P
	Cyanide				

INFORMATION ONLY  
JF 4/22/91

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments:

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

CLIENT: WESTINGHOUSE HANFORD SAMPLES RECEIVED: 02-16-91  
RFW #: 9102L600, PEST/PCB  
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 02-15-91.

The sample and its associated QC samples were extracted on 02-25-91 and analyzed according to criteria set forth in the Contract Laboratory Program for Pesticide and PCB target compounds on 04-15-91.

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

1. Linearity and breakdown criteria were met for the primary column.
2. Continuing calibration criteria were exceeded for several compounds, but this occurred in standards analyzed after sample extracts, so there was no re-analysis requirement.
3. Retention time criteria were met for all compounds on both the primary and confirmation columns.
4. All surrogate recoveries were outside EPA QC limits. These high recoveries were attributed to a possible co-eluting interference.
5. All blank spike recoveries were within EPA QC limits.
6. The matrix spike samples required dilutions to obtain spike recoveries within the linear range of the instrument.
7. Seven (7) of twelve (12) matrix spike recoveries were outside EPA QC limits. It appears that the matrix spike extract was inadvertently injected with twice the amount of spike solution as all recoveries were approximately 2x expected value. The matrix spike duplicate recovery for endrin was also above EPA QC limits.

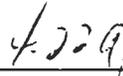
**WESTON**

-2-

8. The laboratory blank contained the target compound 4,4'-DDT at a level less than the CRQL.



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



Date



## GLOSSARY OF PEST/PCB DATA

### DATA QUALIFIERS

- U - Indicates that the compounds was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J - Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E - Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I - Interference.

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### ABBREVIATIONS

- BS - Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD - Indicates blank spike duplicate.
- MS - Indicates matrix spike.
- MSD - Indicates matrix spike duplicate.
- DL - Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA - Not applicable.
- DF - Dilution factor.
- NR - Not required.

91022600

# Custody Transfer Record/Lab Work Request

Refrigerator #	1 5 →	2 2 2
#/Type Container	2 LB 0 0 0 0	1 kg → 1 kg
Volume	Liquid 2 kg 1 kg →	1 kg → 1 kg
Preservatives	Solid 4 ml 2 ml →	2 ml → 20 ml
	none none →	none → none
ANALYSES REQUESTED →	ORGANIC	
	VOA	INA
	Pest/PCB	Herb
	INORG	
	Metal	CN

Date Rec'd 2/16/91 Date Due 3/23/91  
 Account # W2S-Hanford

- MATRIX CODES:
- S - Soil
  - SE - Sediment
  - SO - Solid
  - SL - Sludge
  - W - Water
  - O - Oil
  - A - Air
  - DS - Drum Solds
  - DL - Drum Liquids
  - L - EPIC Leach
  - WI - Wine
  - X - Other
  - F - Fish

Lab ID	Client ID/Description	Matrix OC Chosen (✓)	Matrix	Date Collected	VOA	INA	Pest/PCB	Herb
001	[REDACTED]	✓	Soil	2/15/91	✓	✓	✓	

Metal	CN	PAD
✓	✓	✓

Handwritten notes: MMS/MS, ICN/TC, See Below For

Special Instructions:

RAD = Gross Alpha, Beta, Gamma Scan 901.1  
 SE-90(905)  
 original rewritten pg

DATE/REVISIONS:

1. 2/25/91, CHANGE WCH PER. JESUKI/LSI
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

WESTON Analytics Use Only

- |   |   |
|---|---|
| Samples were:   | COC Tape was:   |
| 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered            | 1) Present on Outer Package <input checked="" type="checkbox"/> Y or N          |
| Airbill # _____   | 2) Unbroken on Outer Package <input checked="" type="checkbox"/> Y or N         |
| 2) Ambient or Chilled <input checked="" type="checkbox"/>                   | 3) Present on Sample Condition <input checked="" type="checkbox"/> Y or N       |
| 3) Received in Good Condition <input checked="" type="checkbox"/> Y or N    | 4) Unbroken on Sample <input checked="" type="checkbox"/> Y or N                |
| 4) Properly Preserved <input checked="" type="checkbox"/> Y or N            | 5) Received Within Holding Times <input checked="" type="checkbox"/> Y or N     |
| 5) Received Within Holding Times <input checked="" type="checkbox"/> Y or N | COC Record Present Upon Sample Rec'l <input checked="" type="checkbox"/> Y or N |

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
[Signature]	[Signature]	2/16/91	9:30				

Discrepancies Between Samples Labels and COC Record?  Y or  N

NOTES:

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II. QC SUMMARY

- A. SURROGATE % RECOVERY, FORM(S) 2
- B. MATRIX SPIKE/MATRIX SPIKE DUPLICATE, FORM(S) 3
- C. METHOD BLANK, FORM(S) 4

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2F  
SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9102L600

	CLIENT SAMPLE NO.	S1 (DBC)#	OTHER
01	B00-GS	196 *	
02	B00-GSMS	237 *	
03	B00-GSMSD	193 *	
04	PBLKLE0244-MB2	229 *	
05	PBLKLE0244-MB2 BS	253 *	

ADVISORY  
QC LIMITS  
( 20-150)

S1 (DBC) = Di-n-butylchloredate

# Column to be used to flag recovery values

\* Values outside of QC limits

D Surrogates diluted out

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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.: 9102L600-001

MATRIX Spike - Sample No.: B00-GS

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)	32.6	0	67.7	208 *	46-127
Heptachlor	32.6	0	70.1	215 *	35-130
Aldrin	32.6	0	53.0	163 *	34-132
Dieldrin	81.5	0	170	209 *	31-134
Endrin	81.5	1.62	216	263 *	42-139
4,4'-DDT	81.5	0	179	220 *	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD   REC
gamma-BHC (Lindane)	32.3	39.6	123	51 *	50   46-127
Heptachlor	32.3	40.4	125	52 *	31   35-130
Aldrin	32.3	29.9	93	54 *	43   34-132
Dieldrin	80.7	103	128	48 *	38   31-134
Endrin	80.7	120	147 *	56 *	45   42-139
4,4'-DDT	80.7	99.3	123	56 *	50   23-134

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

\* Values outside of QC limits

RPD: 6 out of 6 outside limits

Spike Recovery: 7 out of 12 outside limits

COMMENTS:

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3F

SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: NONE

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9102L600

MATRIX Spike - Sample No.: PBLKLE0244-MB2

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)	26.7	0	21.3	80	46-127
Heptachlor	26.7	0	24.7	93	35-130
Aldrin	26.7	0	16.7	63	34-132
Dieldrin	66.7	0	61.3	92	31-134
Endrin	66.7	0	77.3	116	42-139
4,4'-DDT	66.7	6.00	63.3	86	23-134

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

\* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

COMMENTS:

0000010

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III. SAMPLE DATA PACKAGE

A. SAMPLE DATA IN ORDER OF RFW NUMBER

1. TABULATED RESULTS, FORMS 1

2. RAW DATA IN ORDER BY:

a. 2250/2401 Column

b. SP2100 Column

0000012

4C  
PESTICIDE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000  
 Case No.: WESTINGHOUSE HANFORD  
 Lab Sample ID: 91LE0244-MB2 Lab File ID: 04049103 .28  
 Matrix:(Soil/Water) SOIL Level:(low/med) LOW  
 Date Extracted: 02/25/91 Extraction:  
 (SepF/Cont/Sonc) SONC  
 Date Analyzed (1): 04/05/91 Date Analyzed (2): 04/05/91  
 Time Analyzed (1): 1018 Time Analyzed (2): 1845  
 Instrument ID (1): 03 Instrument ID (2): 04  
 GC Column ID (1): 2250/2401 GC Column ID (2): SP2100

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	B00-GS	9102L600-001	04/05/91	04/05/91
02	B00-GSMS	9102L600-001S	04/05/91	04/05/91
03	B00-GSMSD	9102L600-001T	04/05/91	04/05/91
04	PBLKLE0244-MB2 BS	91LE0244-MB2S	04/05/91	04/05/91

COMMENTS:

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ID

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B00-GS

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9102L600-001

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: 04049103.30

Level: (low/med) LOW

Date Received: 02/16/91

% Moisture: not dec. 19 dec.

Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 04/05/91

GPC Cleanup: (Y/N) Y pH: 7.1

Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:

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

319-84-6-----	Alpha-BHC	9.7
319-85-7-----	Beta-BHC	9.7
319-86-8-----	Delta-BHC	9.7
58-89-9-----	gamma-BHC (Lindane)	9.7
76-44-8-----	Heptachlor	9.7
309-00-2-----	Aldrin	9.7
1024-57-3-----	Heptachlor epoxide	9.7
959-98-8-----	Endosulfan I	9.7
60-57-1-----	Dieldrin	19
72-55-9-----	4,4'-DDE	19
72-20-8-----	Endrin	19
33213-65-9-----	Endosulfan II	19
72-54-8-----	4,4'-DDD	19
1031-07-8-----	Endosulfan sulfate	19
50-29-3-----	4,4'-DDT	19
72-43-5-----	Methoxychlor	97
53494-70-5-----	Endrin ketone	19
5103-71-9-----	alpha-Chlordane	97
5103-74-2-----	gamma-Chlordane	97
8001-35-2-----	Toxaphene	190
12674-11-2-----	Aroclor-1016	97
11104-28-2-----	Aroclor-1221	97
11141-16-5-----	Aroclor-1232	97
53469-21-9-----	Aroclor-1242	97
12672-29-6-----	Aroclor-1248	97
11097-69-1-----	Aroclor-1254	190
11096-82-5-----	Aroclor-1260	190

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PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

PBLK

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

Client: WESTINGHOUSE HANFORD

Matrix:	<u>SOIL</u>	Lab Sample ID:	<u>91LE0244-MB2</u>
Sample wt/vol:	<u>30.0 (g/mL) G</u>	Lab File ID:	<u>04049103.28</u>
Level: (low/med)	<u>LOW</u>	Date Received:	<u>02/25/91</u>
% Moisture: not dec.	<u>0</u> dec.	Date Extracted:	<u>02/25/91</u>
Extraction: (SepF/Cont/Sonc)	<u>SONC</u>	Date Analyzed:	<u>04/05/91</u>
GPC Cleanup: (Y/N)	<u>Y</u> pH: <u>7.0</u>	Dilution Factor:	<u>1.00</u>

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	<u>ug/Kg</u>
319-84-6	Alpha-BHC	8.0	U
319-85-7	Beta-BHC	8.0	U
319-86-8	Delta-BHC	8.0	U
58-89-9	gamma-BHC (Lindane)	8.0	U
76-44-8	Heptachlor	8.0	U
309-00-2	Aldrin	8.0	U
1024-57-3	Heptachlor epoxide	8.0	U
959-98-8	Endosulfan I	8.0	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	6.0	J
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	80	U
5103-74-2	gamma-Chlordane	80	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

M  
4/11/91  
0000127

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Westinghouse  
Hanford Company

OSM ORGANIC DATA ASSESSMENT

DATE 6/22/91 SAMPLES/MATRIX Boogs soil  
 REVIEWED BY JA Lerch  
 LABORATORY WESTON  
 CASE # —  
 SDG # —  
RFW# 9102L600

DATA ASSESSMENT SUMMARY

	VOA	ABN	PEST
1. Holding Times (Form I)	<del>—</del>	<del>—</del>	<u>X</u>
2. Surrogate Recovery (II)	<del>—</del>	<del>—</del>	<u>M</u>
3. Matrix Spike/ MSD (III)	<del>—</del>	<del>—</del>	<u>M</u>
4. Blanks (IV)	<del>—</del>	<del>—</del>	<u>X</u>
5. GC/MS Tune (V)	<del>—</del>	<del>—</del>	<u>—</u>
6. Calibration (VI-VII; VIII pest)	<del>—</del>	<del>—</del>	<u>O</u>
7. Internal Standards (VIII)	<del>—</del>	<del>—</del>	<u>—</u>
8. Instr. Perform. (IX pest)	<del>—</del>	<del>—</del>	<u>O</u>
9. Other ( )	<del>—</del>	<del>—</del>	<u>none</u>

O = data had no problems  
 X = data qualified due to minor problems  
 M = data qualified due to major problems, some data may be unusable

OVERALL ASSESSMENT: all results estimated due to surrogate and MS/MSD results

NOTES : none

Refer to the corresponding attachments for explanation of any problems.

ORGANIC QC - Holding Times

Name

JA Kerch

Date

6/22/91

COMMENTS:

sample extracted outside the holding  
time for water samples (7 days), was  
extracted after 10 days, analysis ok

no Holding time requirements established  
for soils, 10 day extraction not likely to  
affect data quality

ACTION:

nonesample # constituent value/qualsample # constituent value/qual

ORGANIC OC - Surrogate RecoveryName JA Lerch *JL* Date 6/22/91COMMENTS: all Pest surrogate recoveries high;  
• suspected to be co-elution problem  
as documented in Case NarrativeACTION: qualify associated results as  
per OSM guidelines

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
BOOGS	all	UJ

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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ORGANIC QC - MS/MSD

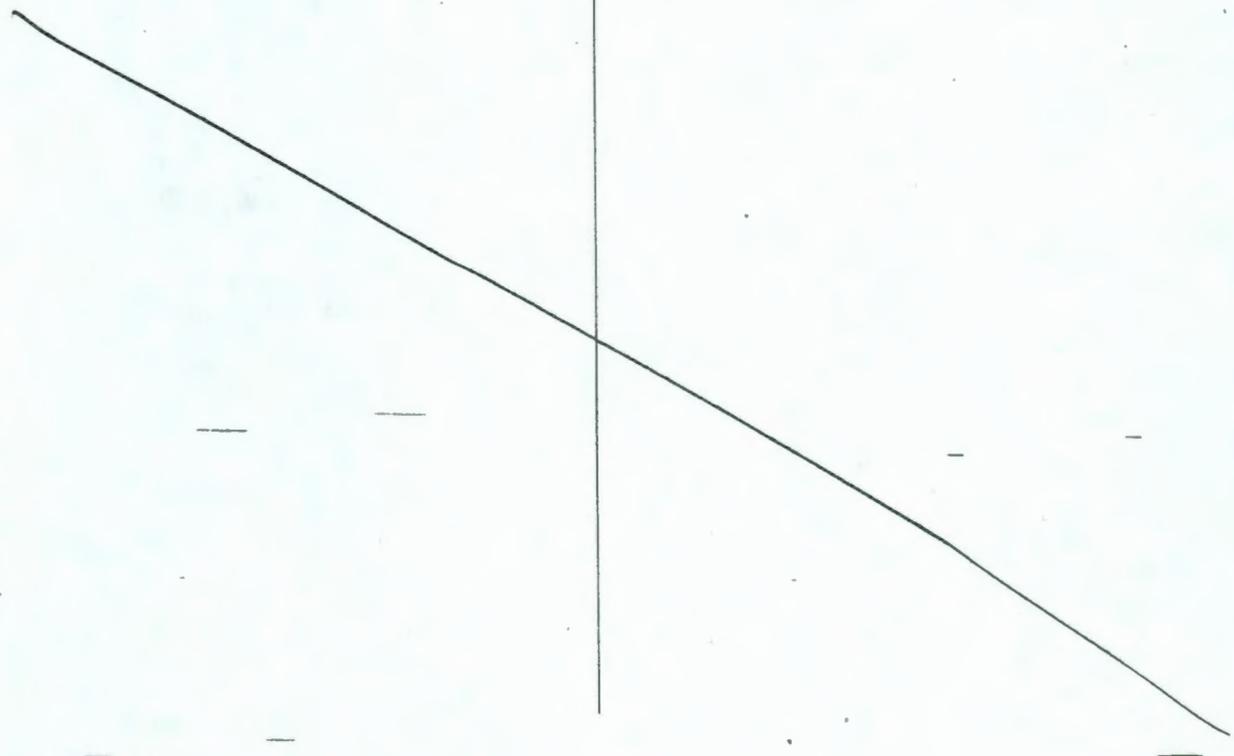
Name JA Lerch *JL* Date 6/22/91

COMMENTS: BOOGS - all MS recoveries high (suspected  
samples spiked a 2X levels; see Case Narrative);  
all RPD's outside limits, endrin MSD recovery  
high

PBLKMS - all spike recoveries within limits

ACTION: qualify results as per OSM guidelines

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
BOOGS	all	UJ			



ORGANIC OC - BlanksName JA Lerch *JL* Date 6/22/91COMMENTS: - Pest method blank summary ok  
PBLK - 4,4'-DDT detected in pest blankACTION: qualify associated results as per  
OSM guidelines

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
<u>Boogs</u>	<u>4,4'-DDT</u>	<u>acceptable</u> <u>(not detected)</u>			

ORGANIC QC - GC/MS Tune

Name JA Lerch *JA* Date 6/22/91

COMMENTS: N/A  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ACTION: —  
\_\_\_\_\_  
\_\_\_\_\_

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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## ORGANIC QC - Calibrations

Name

JA Lerch

Date

6/22/91

COMMENTS:

-initial calibration linearity checkok for primary column- analytical sequence reqs met- continuing calibration reqs met for%D on primary & conf. columns

ACTION:

nonesample # constituent value/qualsample # constituent value/qual

9513357.2616

ORGANIC QC - ~~Instrument Performance (post)~~  
Internal Stds

Name JA Lerch *[Signature]* Date 6/22/91

COMMENTS: N/A  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ACTION: —  
\_\_\_\_\_  
\_\_\_\_\_

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
-----------------	--------------------	-------------------	-----------------	--------------------	-------------------

~~\_\_\_\_\_~~

ORGANIC QC - ~~Internal Standards~~  
Instrument PerformanceName JA Lerch Date 6/22/91

COMMENTS: endrin/DDT ?obreakdown check ok  
- DBC retention time shift criteria  
met for all SDG samples + STD's  
- all DDT retention times > 12 min  
- all retention time window criteria met

ACTION: none

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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Roy F. Weston, INC.  
Lionville Laboratory

CLIENT:WESTINGHOUSE  
RFW #:9102L600  
W.O.#:6168-02-01

SAMPLES RECEIVED:2/16/91

METALS NARRATIVE

The set of samples consisted of (1) soil sample collected on 2/15/91.

The samples were analyzed according to criteria set forth in CLP SOW 7/87.

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.

Note: The USEPA has dropped control limits for antimony and silver due to documented difficulties in obtaining reliable results. WESTON Analytics has adopted the same policy.

6. All matrix spike recoveries were within the 75-125% control limits with the exception of Sb. All corresponding samples were flagged with an "N" according to CLP protocol.
7. All duplicate analyses were within the 20% RPD control limit.

4000000



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

0000005

*Jack R. Tuschall*

-----  
Jack R. Tuschall, Ph.D.  
Laboratory Manager  
WESTON Analytical Laboratories

*4/18/91*

-----  
Date



91022600

# Custody Transfer Record/Lab Work Request

Client: <u>Household</u>	Refrigerator #	1 5 →	2 2 2
Est. Final P... Sampling Date: <u>2/16/91</u>	#/Type Container	Liquid	16 → 16
Work Order: <u>44-0000</u>		Solid	16 → 16
Project Contact/Phone: <u>PSATU KING</u>	Volume	Liquid	
AD Project Manager:		Solid	40ml → 200ml
QC: <u>CLP</u> Del: <u>CLP</u> TAT: <u>35 days</u>	Preservatives		none → none
Date Rec'd: <u>2/16/91</u> Date Due: <u>3/23/91</u>	ANALYSES REQUESTED	ORGANIC	
Account #: <u>WS-Hanford</u>		VOA	INORG
		ENA	Metals
		Pest. PCB	CN
		Herb	RAD WOLF

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓)	Matrix	Date Collected	VOA	ENA	Pest. PCB	Herb	Metals	CN	Other
S - Soil	001	BOOKS		Soil	2/15/91	✓	✓	✓		✓	✓	✓
SE - Sediment												
SO - Solid												
SL - Sludge												
W - Water												
O - Oil												
A - Air												
DS - Drum Solids												
DL - Drum Liquids												
L - EP/TCLP Leachate												
WI - Wipe												
X - Other												
F - Fish												

9513357 2622

Special Instructions: RAD = Mass Alpha, Beta, Gamma Scan 901.1 SR-90(905)  
original rewritten pg

DATE/REVISIONS:  
 1. 2/23/91 change with per. PSATU KING  
 2. \_\_\_\_\_  
 3. \_\_\_\_\_  
 4. \_\_\_\_\_  
 5. \_\_\_\_\_  
 6. \_\_\_\_\_

WESTON Analytics Use Only

Samples were:

- 1) Shipped  or Hand Delivered
- 2) Ambient or Chilled
- 3) Received in Good Condition Y or N
- 4) Properly Preserved Y or N
- 5) Received Within Holding Times Y or N

COC Tape was:

- 1) Present on Outer Package Y or N
- 2) Unbroken on Outer Package Y or N
- 3) Present on Sample Y or N
- 4) Unbroken on Sample Y or N
- 5) COC Record Present Upon Sample Rec'l Y or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>2/16/91</u>	<u>9:30 AM</u>				

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

9513357.2623

U.S. EPA - CLP

1  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOO-GS

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

Lab Code: WESTON Case No: WEST SAS No.: SDG No.: CLP600

Matrix (soil/water): soil Lab Sample ID: 9102600001

Level (low/med): low Date Received:

% Solids: 83.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4020			P
7440-36-0	Antimony	4.00	UN		P
7440-38-2	Arsenic	4.40	S		F
7440-39-3	Barium	75.0			P
7440-41-7	Beryllium	0.340	B		P
7440-43-9	Cadmium	0.762	U		P
7440-70-2	Calcium	11600			P
7440-47-3	Chromium	0.572	U		P
7440-48-4	Cobalt	10.4			P
7440-50-8	Copper	13.8			P
7439-89-6	Iron	15700			P
7439-92-1	Lead	8.70	JW		F
7439-95-4	Magnesium	4670			P
7439-96-5	Manganese	354	J		P
7439-97-6	Mercury	0.120	U		CV
7440-02-0	Nickel	6.60	B		P
7440-09-7	Potassium	1110	U		P
7782-49-2	Selenium	0.348	UW		F
7440-22-4	Silver	0.952	U		P
7440-23-5	Sodium	131	B		P
7440-28-0	Thallium	0.696	UW		F
7440-62-2	Vanadium	18.2			P
7440-66-6	Zinc	32.4			P
	Cyanide	0.600	UI		C

*JF*  
*6/23/91*

8000000

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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U.S. EPA - CLP

3  
BLANKS

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

Preparation Blank Matrix (soil/water): soil

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

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank	M	
	C		1	C	2	C	3	C			
Aluminum	124.0	U	124.0	U	124.0	U	124.0	U	24.800	U	P
Antimony	21.0	U	21.0	U	21.0	U	21.0	U	4.200	U	P
Arsenic	2.0	U	13.3		2.0	U	2.0	U	0.400	U	F
Barium	4.0	U	4.0	U	4.0	U	4.0	U	0.800	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	4.0	U	4.0	U	4.0	U	4.0	U	0.800	U	P
Calcium	123.0	U	123.0	U	123.0	U	123.0	U	24.600	U	P
Chromium	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P
Cobalt	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Copper	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Iron	55.0	U	55.0	U	55.0	U	55.0	U	11.000	U	P
Lead	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	F
Magnesium	90.0	U	90.0	U	90.0	U	90.0	U	18.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.100	U	CV
Nickel	8.0	U	8.0	U	8.0	U	8.0	U	1.600	U	P
Potassium	1077.4	B	816.0	U	816.0	U	816.0	U	235.100	B	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	0.400		F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Sodium	85.0	U	85.0	U	85.0	U	85.0	U	17.000	U	P
Thallium	4.0	U	4.0	U	4.0	U	4.0	U	0.800	U	F
Vanadium	4.0	U	4.0	U	5.0	B	5.8	B	0.800	U	P
Zinc	4.0	U	4.0	U	4.0	U	4.0	U	0.800	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	0.500	U	C

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U.S. EPA - CLP

3  
BLANKS

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

Preparation Blank Matrix (soil/water): soil

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

Analyte	Initial	Continuing Calibration						Preparation	M
	Calib.	Blank (ug/L)							
	Blank		1	C	2	C	3	C	
	(ug/L)	C							
Aluminum									
Antimony									
Arsenic			2.0	U	2.0	U	2.0	U	F
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead	3.0	U	3.0	U	3.0	U	3.0	U	F
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium	2.0	U							F
Silver									
Sodium									
Thallium			4.0	U					F
Vanadium									
Zinc									
Cyanide			10.0	U					C

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U.S. EPA - CLP

3  
BLANKS

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

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	M
			1	C	2	C	3	C		
Aluminum										
Antimony										
Arsenic			2.0	U						F
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead	3.0	U								F
Magnesium										
Manganese										
Mercury										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Thallium										
Vanadium										
Zinc										
Cyanide										

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U.S. EPA - CLP

5A  
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOO-GS

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

Matrix (soil/water): soil

Level: low

% Solids for sample: 83.4

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							
Antimony	75-125	80.1000	21.0000 U	110.60	72.4	N	P
Arsenic	75-125	10.8000	4.4000	9.10	118.5		F
Barium	75-125	513.7000	75.0000	442.40	99.2		P
Beryllium	75-125	11.2000	0.3400 B	11.10	101.4		P
Cadmium	75-125	10.8000	4.0000 U	11.10	98.0		P
Calcium							
Chromium	75-125	40.4000	3.0000 U	44.20	91.3		P
Cobalt	75-125	117.7000	10.4000	110.60	97.0		P
Copper	75-125	68.1000	13.8000	55.30	98.2		P
Iron							
Lead	75-125	12.6000	8.7000	4.60	84.8		F
Magnesium							
Manganese	75-125	481.2000	354.5000	110.60	114.5		P
Mercury	75-125	0.5920	0.2000 U	0.60	97.1		CV
Nickel	75-125	114.9000	6.6000 B	110.60	103.9		P
Potassium							
Selenium	75-125	1.9000	2.0000 U	2.30	84.0		F
Silver	75-125	10.5000	5.0000 U	11.10	94.6		P
Sodium							
Thallium	75-125	9.2000	4.0000 U	11.40	80.4		F
Vanadium	75-125	129.1000	18.2000	110.60	100.3		P
Zinc	75-125	139.8000	32.4000	110.60	97.1		P
Cyanide							

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Comments:

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U.S. EPA - CLP

5B  
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOO-GS

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

Matrix (soil/water):

Level:

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Aluminum							NR
Antimony	75-125	31.60 B	21.00 U	120.0	26.3		P
Arsenic							NR
Barium							NR
Beryllium							NR
Cadmium							NR
Calcium							NR
Chromium							NR
Cobalt							NR
Copper							NR
Iron							NR
Lead							NR
Magnesium							NR
Manganese							NR
Mercury							NR
Nickel							NR
Potassium							NR
Selenium							NR
Silver							NR
Sodium							NR
Thallium							NR
Vanadium							NR
Zinc							NR
Cyanide							NR

0000020

Comments:

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U.S. EPA - CLP

6  
DUPLICATES

EPA SAMPLE NO.

BOO-GS

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

Matrix (soil/water): soil

Level: low

% Solids for sample: 83.9

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

Analyte	Control Limit	Sample (S) C	Duplicate (D) C	RPD	Q	M
Aluminum		4022.4000	3725.1000	7.7		P
Antimony	11.0	4.0005 U	3.8640 U			P
Arsenic	2.0	4.4000	4.4000	0.0		F
Barium	36.8	75.0000	79.2000	5.4		P
Beryllium	0.9	0.3400 B	0.3300 B	3.5		P
Cadmium	0.9	0.7620 U	0.7360 U			P
Calcium		11644.2000	12371.7000	6.1		P
Chromium	1.8	0.5715 U	0.5520 U			P
Cobalt	9.2	10.4000	9.1000 B	13.3		P
Copper	4.6	13.8000	14.5000	4.8		P
Iron		15686.4000	13683.7000	13.6		P
Lead		8.7000	6.8000	14.2		F
Magnesium	920.0	4671.3980	4258.5000	9.2		P
Manganese		354.5000	341.8000	3.6		P
Mercury	0.1	0.1199 U	0.1199 U			CV
Nickel	7.4	6.6000 B	6.4000 B	2.9		P
Potassium	920.0	1105.5000	1009.2000	9.1		P
Selenium	1.0	0.3478 U	0.4076 U			F
Silver	1.8	0.9525 U	0.9200 U			P
Sodium	920.0	131.3000 B	135.9000 B	3.4		P
Thallium	2.0	0.6956 U	0.9360 U			F
Vanadium	9.2	18.2000	15.4000	16.7		P
Zinc		32.4000	29.8000	8.3		P
Cyanide						

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Comments:

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U.S. EPA - CLP

11

## INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

ICP ID Number:

ICP61

Date:

1/26/91

Flame AA ID Number:

Furnace AA ID Number:

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	308.20		200.0	124.0	P
Antimony	206.80		60.0	21.0	P
Arsenic					
Barium	493.40		200.0	4.0	P
Beryllium	313.00		5.0	1.0	P
Cadmium	228.80		5.0	4.0	P
Calcium	317.90		5000.0	123.0	P
Chromium	267.70		10.0	3.0	P
Cobalt	228.60		50.0	5.0	P
Copper	324.70		25.0	5.0	P
Iron	259.90		100.0	55.0	P
Lead					
Magnesium	279.00		5000.0	90.0	P
Manganese	257.60		15.0	2.0	P
Mercury					
Nickel	231.60		40.0	8.0	P
Potassium	766.40		5000.0	816.0	P
Selenium					
Silver	328.00		10.0	5.0	P
Sodium	588.90		5000.0	85.0	P
Thallium					
Vanadium	292.40		50.0	4.0	P
Zinc	213.80		20.0	4.0	P

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Comments:

9513357.2631

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

ICP ID Number:

ICP61

Date:

1/26/91

Flame AA ID Number:

Furnace AA ID Number: AA1

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum					
Antimony					
Arsenic	193.70		10.0	2.0	F
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	283.30		5.0	3.0	F
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium	196.00		5.0	2.0	F
Silver					
Sodium					
Thallium	276.80		10.0	4.0	F
Vanadium					
Zinc					

0000028

Comments:

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9513357.2632

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

ICP ID Number:

ICP61

Date:

01/26/91

Flame AA ID Number:

Furnace AA ID Number: AA2

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum					
Antimony					
Arsenic	193.70		10.0	2.0	F
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	283.30		5.0	3.0	F
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium	196.00		5.0	2.0	F
Silver					
Sodium					
Thallium	276.80		10.0	4.0	F
Vanadium					
Zinc					

0000029

Comments:

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9513357.2633

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01

Lab Code: WESTON

Case No: WEST

SAS No.:

SDG No.: CLP600

ICP ID Number:

ICP61

Date:

01/26/91

Flame AA ID Number:

Furnace AA ID Number: AA3

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	283.30		5.0	3.0	F
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium	276.80		10.0	4.0	F
Vanadium					
Zinc					

0000030

Comments:

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U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01  
Lab Code: WESTON Case No: WEST SAS No.: SDG No.: CLP600  
ICP ID Number: ICP61 Date: 01/26/91  
Flame AA ID Number:  
Furnace AA ID Number: AA4

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum					
Antimony					
Arsenic	193.70		10.0	2.0	F
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	283.30		5.0	3.0	F
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium	196.00		5.0	2.0	F
Silver					
Sodium					
Thallium	276.80		10.0	4.0	F
Vanadium					
Zinc					

0000031

Comments:

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OSM INORGANIC DATA ASSESSMENT

DATE 6/23/91 SAMPLES/MATRIX Boogs Soil  
 REVIEWED BY JA Kerch  
 LABORATORY Weston  
 CASE # WEST  
 SDG # CLP600

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CN
1. Calibrations (Form II)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
2. Blanks (III)	<u>X</u>	<u>0</u>	<u>0</u>	<u>0</u>
3. ICS (IV)	<u>X</u>			
4. Matrix Spike (V)	<u>X</u>	<u>0</u>	<u>0</u>	<u>NR - not reported</u>
5. Duplicate Analysis (VI)	<u>0</u>	<u>0</u>	<u>0</u>	<u>NR</u>
6. LCS (VII)	<u>0</u>	<u>0</u>		
7. Serial Dilution (IX)	<u>0</u>			
8. GFAA		<u>X</u>		
9. Holding Times (XIV)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
10. Other QC	<u>see attachment</u>			

0 = data had no problems  
 X = data qualified due to minor problems  
 M = data qualified due to major problems/some data may be unusable

OVERALL ASSESSMENT: all CN results qualified as "Information Only" (I); all other results acceptable w/ attached qualifiers

NOTES: none

o Refer to the corresponding attachments for explanation of any problems.

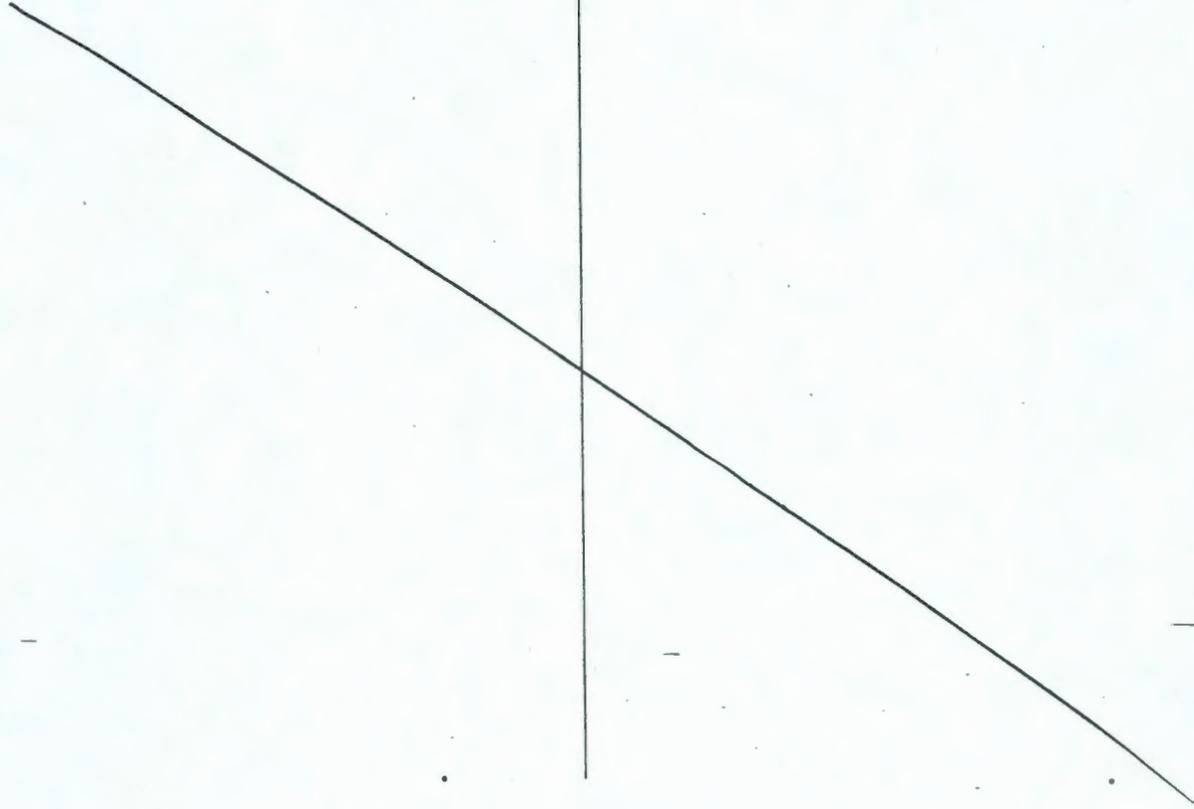
INORGANIC QC - Calibrations

Name JA Lerch Date 6/23/91

COMMENTS: all ICV + CCV 7.2 within control limits  
- no Form XIV present to evaluate run sequences  
- CN + Hg r-values ok

ACTION: none

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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INORGANIC QC - Blanks

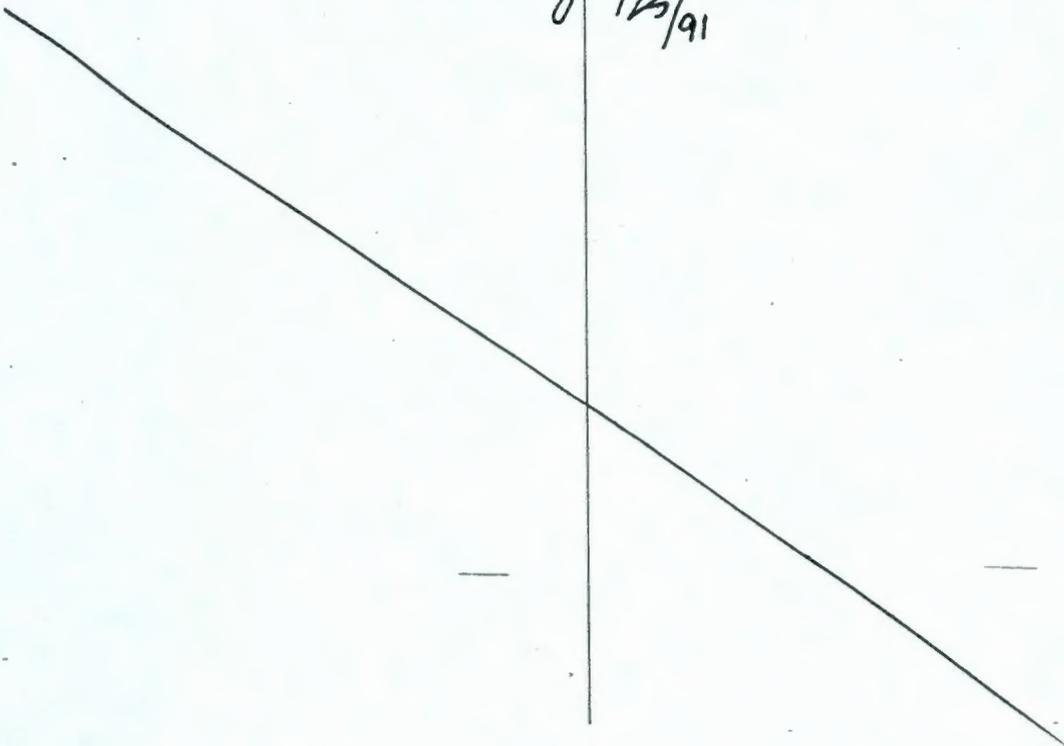
Name JA Lerch *jl* Date 6/23/91

COMMENTS: K, V detected in blanks

ACTION: qualify associated results as per OSM guidelines

sample #   constituent   value/qual   |   sample #   constituent   value/qual

BOOGS   K   1110 U  
~~✓   ~~18.2 U~~~~ *jl*  
*6/23/91*



## INORGANIC QC - ICS

Name JA Lerch Date 6/23/91

COMMENTS: all ICS solution recoveries within limits  
-possible false negatives for Sb, Na ;  
false positives for Mn may exist

ACTION: qualify associated results as per  
OSM guidelines

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
BOOGS	Sb	UJ			
	Mn	J			
	Na	acceptable			

INORGANIC QC - ~~Blanks~~  
Matrix Spike

Name JA Lerch *JL* Date 6/23/91

COMMENTS: BOOGS - Sb recovery low; all other GFAA,  
ICP + Hg recoveries within limits  
- no spike results provided for CN

ACTION: qualify associated results as per  
OSM guidelines - see other QC for  
CN qualification

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
BOOGS	Sb	4.0 UJ			

INORGANIC QC - Duplicate AnalysisName JA Kerch Date 6/23/91COMMENTS: BOGS - all ICP, GFAA, Hg duplicate  
results within control limits  
- no dup data provided for CNACTION: none - see other QC for CN  
qualifications

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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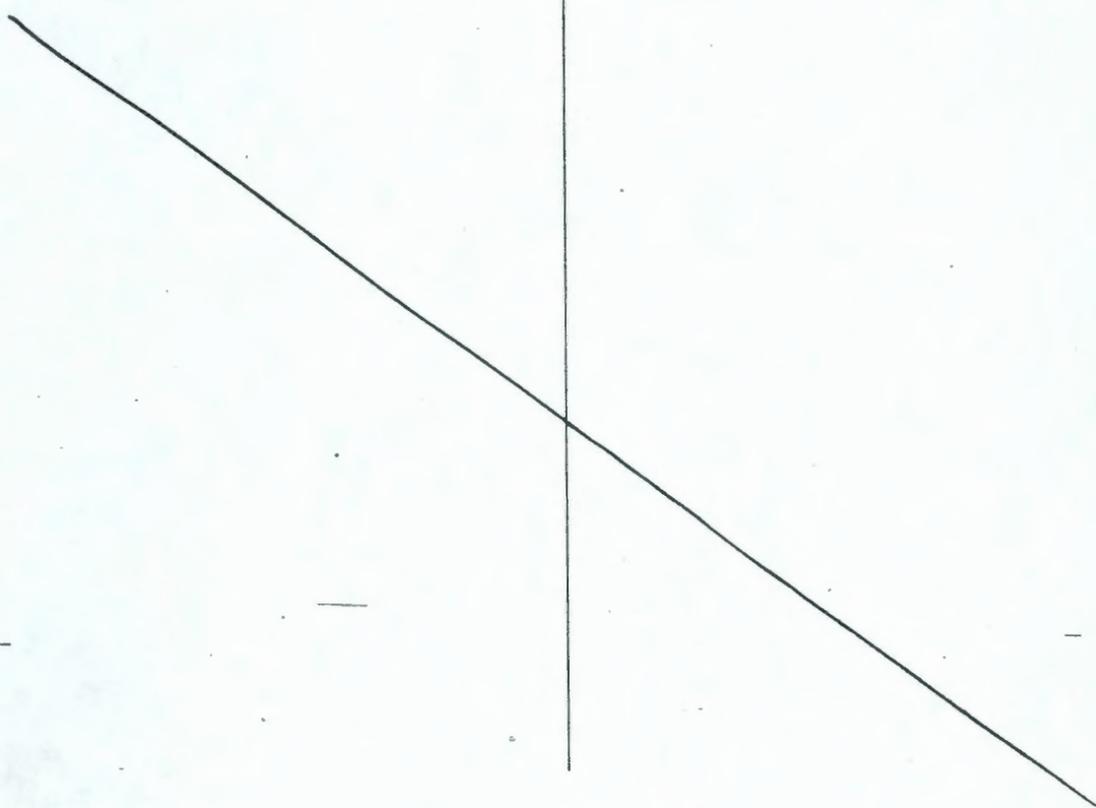
INORGANIC OC - LCS

Name JA Lerch Date 6/23/91

COMMENTS: -all solid LCS results within  
control limits for ICP, GFAA, Hg + CN

ACTION: none

sample #   constituent   value/qual   |   sample #   constituent   value/qual



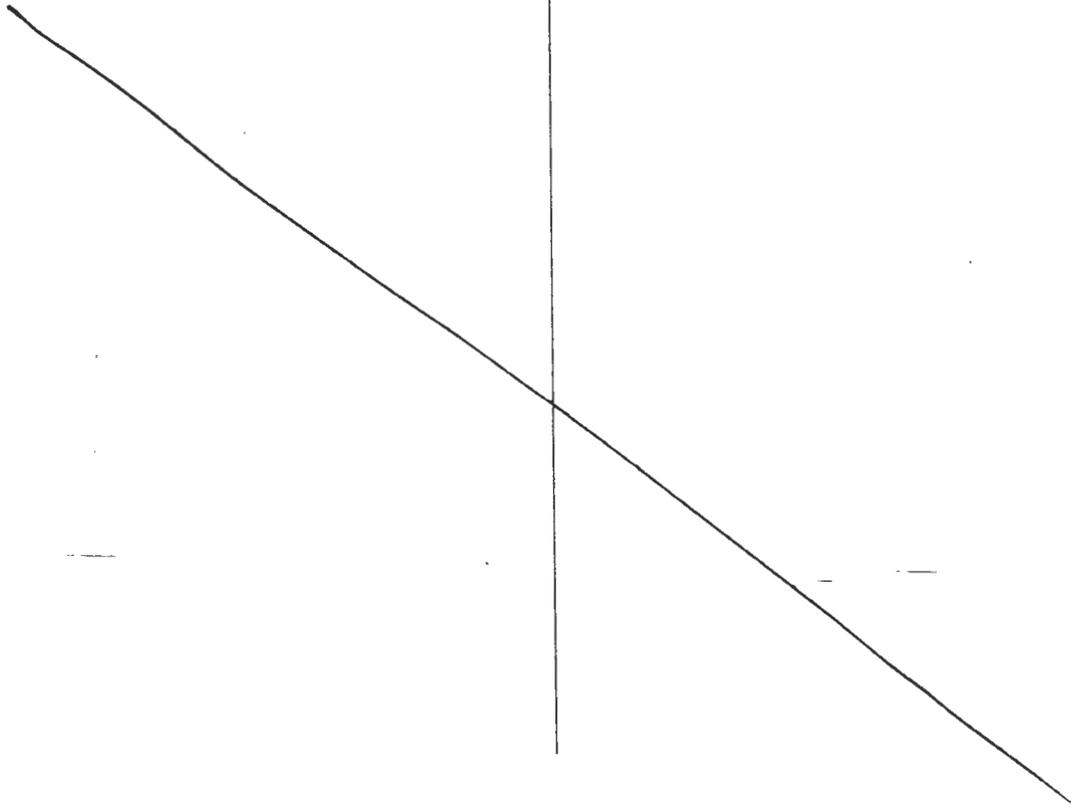
INORGANIC QC - Serial Dilution

Name JA Lerch Date 6/23/91

COMMENTS: all dilution results within applicable control limits (BOOGS)

ACTION: none

sample #   constituent   value/qual   |   sample #   constituent   value/qual



INORGANIC OC - Holding Times

Name JA Lerch *JA* Date 6/23/91

COMMENTS: all ICP, GFAA, Hg, CN holding  
time reqs. met

ACTION: none

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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## INORGANIC QC - GFAA

Name

JA Lerch

Date

6/23/91

COMMENTS:

As determined by MSA, r-value > .995  
-analytical spike recoveries outside limits  
for Pb, Se, Tl

ACTION:

qualify associated results as  
per OSM guidelines

sample #	constituent	value/qual
B0065	Pb	8.70 J-
	Se	0.348 UJ
	Tl	0.696 UJ

sample #	constituent	value/qual
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INORGANIC QC - otherName JA Lech Date 6/23/91COMMENTS: no MS + duplicate results provided  
for CNACTION: contact lab to obtain analytical  
batch MS + dup info → all CN  
results qualified "Information only"

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
30065	CN	I			

I = info only

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OSM ORGANIC DATA ASSESSMENT

DATE 6/21/91 SAMPLES/MATRIX 200GS soil

REVIEWED BY JA Lerch

LABORATORY Weston

CASE # —

SDG # —

RFW # 9102L600

DATA ASSESSMENT SUMMARY

	VOA	ABN	PEST
1. Holding Times (Form I)	<u>0</u>	<u>0</u>	<u> </u>
2. Surrogate Recovery (II)	<u>0</u>	<u>X</u>	<u> </u>
3. Matrix Spike/ MSD (III)	<u>0</u>	<u>X</u>	<u> </u>
4. Blanks (IV)	<u>X</u>	<u>X</u>	<u> </u>
5. GC/MS Tune (V)	<u>0</u>	<u>0</u>	<u> </u>
6. Calibration (VI-VII; VIII pest)	<u>0</u>	<u>0</u>	<u> </u>
7. Internal Standards (VIII)	<u>0</u>	<u>0</u>	<u> </u>
8. Instr. Perform. (IX pest)			<u> </u>
9. Other ( )	<u>none</u>		<u> </u>

0 = data had no problems  
 X = data qualified due to minor problems  
 M = data qualified due to major problems, some data may be unusable

OVERALL ASSESSMENT: no major problems - all results  
acceptable w/ attached qualifiers

NOTES : none

Refer to the corresponding attachments for explanation of any problems.

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ORGANIC OC - Holding Times

Name JA Lerch Date 6/21/91

COMMENTS: all VOA & SemivOA holding time  
requirements met

ACTION: none

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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ORGANIC QC - Surrogate Recovery

Name JA Lerch Date 6/21/91

COMMENTS: VOA - all surrogate recoveries within limits  
for samples and blanks

SemiVOA - surrogates S3 (TPH) high for BOOGS, BOOGSMS,  
and SBLK; S4 (PHL) high for SBLKBS; all other  
recoveries ok

ACTION: no action taken if only 1 surrogate  
is out of control limits/sample for SemiVOA  
analysis

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>

ORGANIC QC - MS/MSDName JA Lerch *JL* Date 6/21/91COMMENTS: VOA (BOOGSMS/MSD) - all MS + MSD recoveries  
and all RPD's within limitsSemiVOA - (BOOGSMS/MSD) - phenol MS, 4-nitrophenol MSD  
recoveries outside limits, RPD out; all other recoveries  
and RPD's ok (SBLKBS) phenol, 2,4-dinitrotoluene  
MS recovery highACTION: advisory limits, no indication of major  
problems or matrix effects - NO ACTION

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
/					



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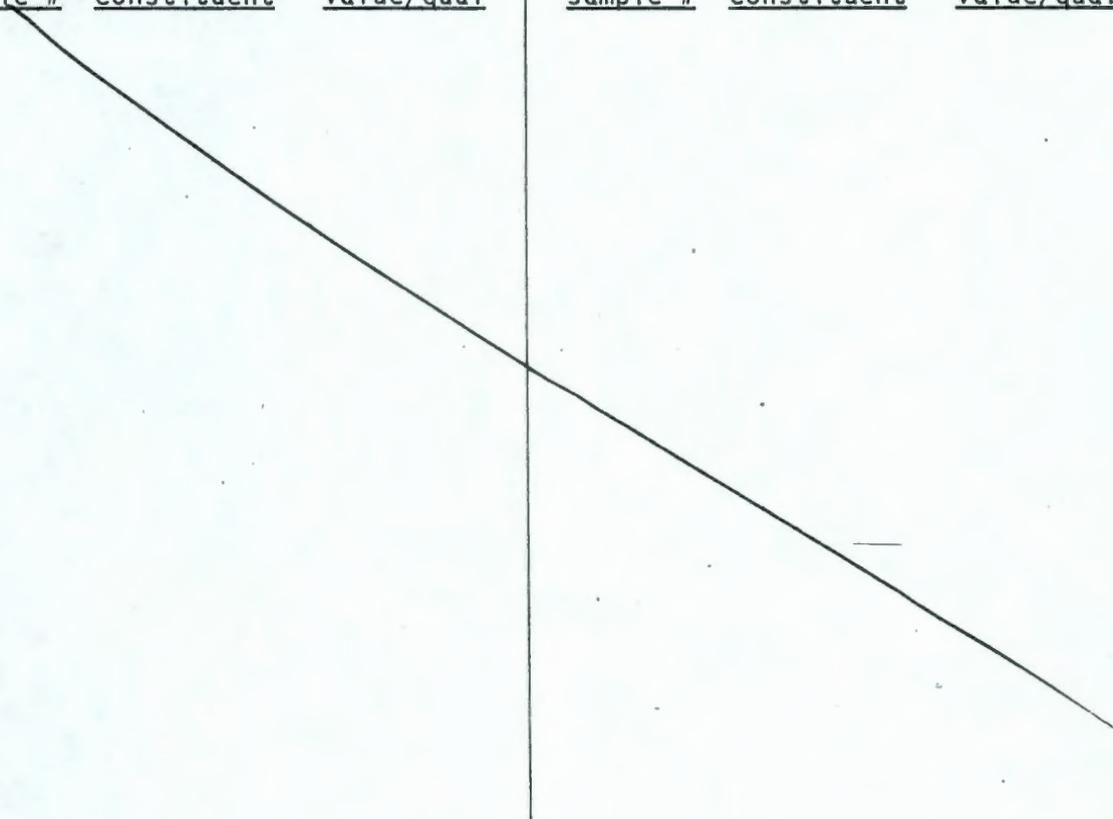
ORGANIC QC - GC/MS Tune

Name JA Lerch Date 6/21/91

COMMENTS: all VOA + SemivOA GC/MS tune  
and mass calibration criteria met

ACTION: none

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
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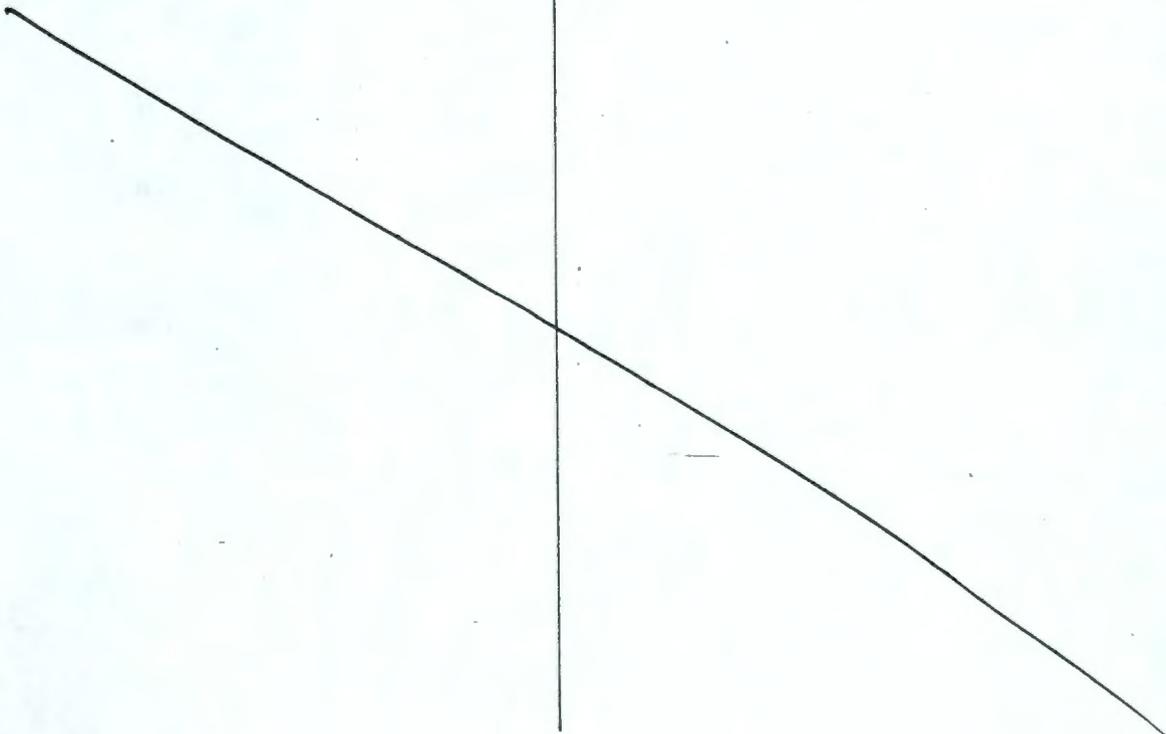
ORGANIC QC - Calibrations

Name JA Lerch *JA* Date 6/21/91

COMMENTS: all VOA + SemivOA initial & cont. cal.  
requirements met for SPLC & CCC  
compounds

ACTION: none

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
-----------------	--------------------	-------------------	-----------------	--------------------	-------------------

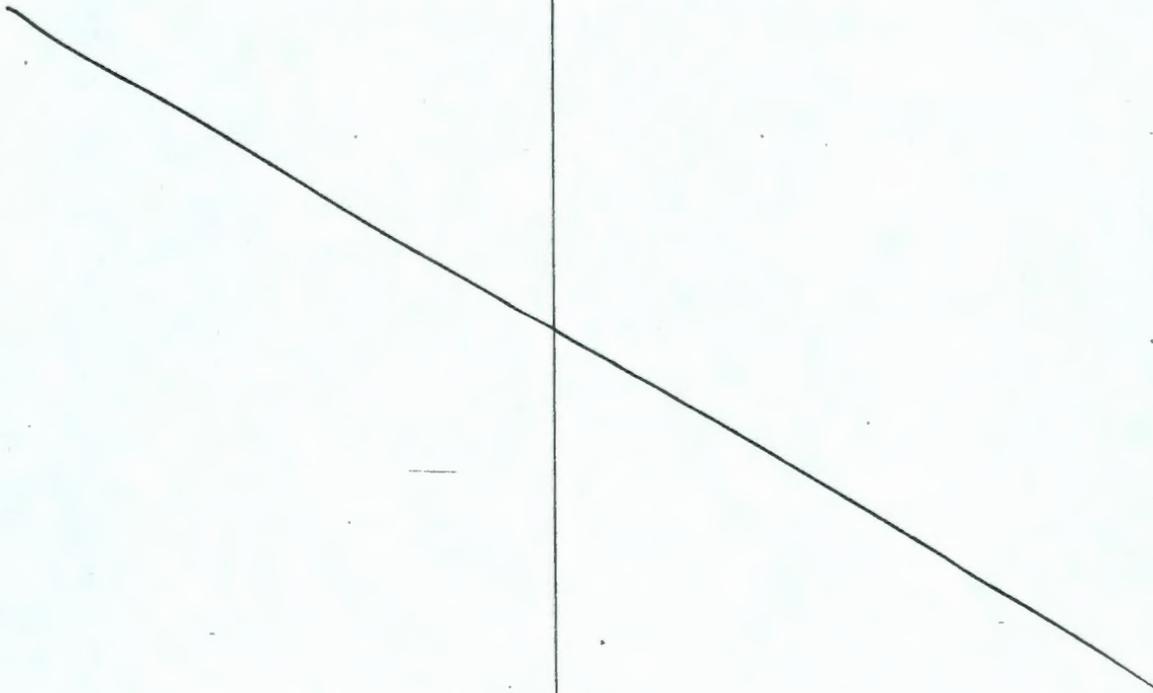


ORGANIC QC - Internal Standards

Name JA Lerch Date 6/21/91

COMMENTS: -all VOA + SemivOA internal std  
area counts + retention times shifts  
within control limits

ACTION: none

<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
					

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ORGANIC OC - Instrument Performance (pest)

Name JA Lerch Date 6/21/91

COMMENTS: N/A

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ACTION: —

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<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>	<u>sample #</u>	<u>constituent</u>	<u>value/qual</u>
<del> </del>					

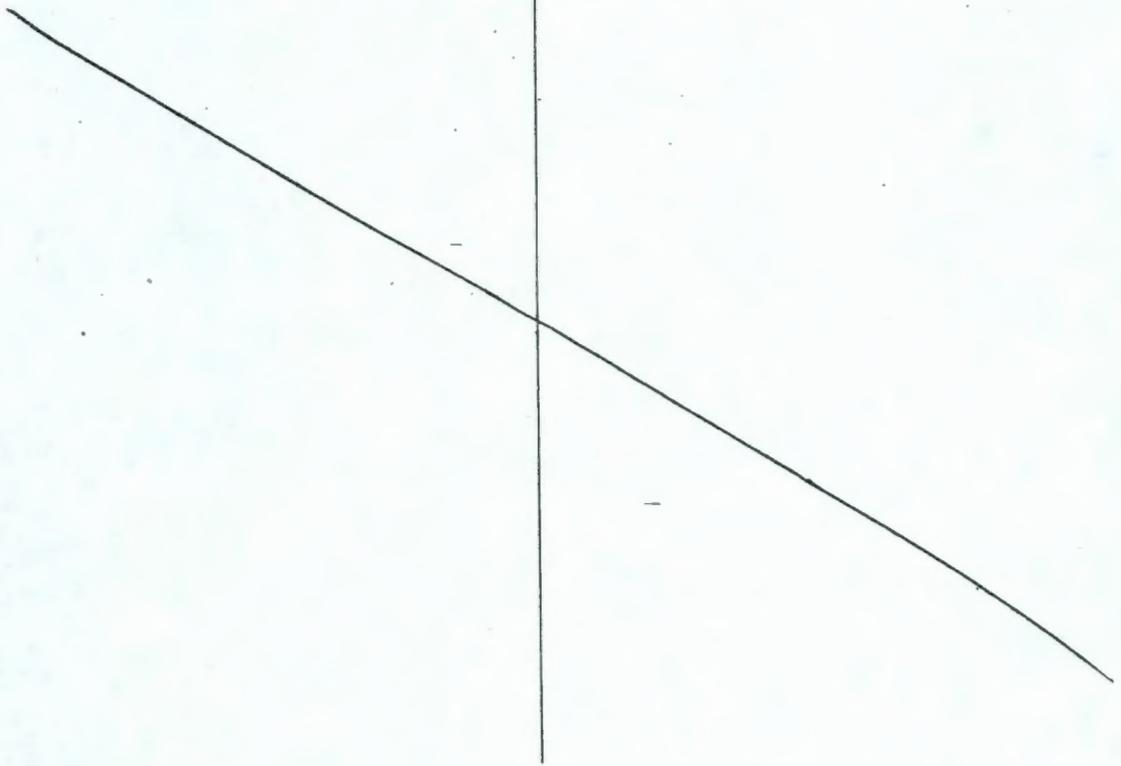
ORGANIC QC - Other

Name JA Lerch *JA* Date 6/21/91

COMMENTS: none  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ACTION: —  
\_\_\_\_\_  
\_\_\_\_\_

sample # constituent value/qual | sample # constituent value/qual



The table area is completely crossed out with a single diagonal line from the top-left to the bottom-right.

**WESTON**ROY F. WESTON, INC.  
Lionville LaboratoryCLIENT: WESTINGHOUSE HANFORD      SAMPLES RECEIVED: 02-16-91  
RWF #: 9102L600, GC/MS VOLATILE  
W.O. #: 6168-02-01NARRATIVE

One (1) soil sample was collected on 02-15-91.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Volatile target compounds on 02-26-91.

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 not detected in these samples.
2. All surrogate recoveries were within EPA QC limits.
3. All matrix spike recoveries were within EPA QC limits.
4. The laboratory blank contained the common contaminants acetone and methylene chloride at levels less than the CRQL.
5. Internal standard area and retention time criteria were met for all samples and blanks.

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

6-5-91  
Date

GLOSSARY OF VOA DATADATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.
- X = Additional qualifiers used as required are explained in the case narrative.
- NQ = Result qualitatively confirmed but not able to quantify.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not applicable.
- DF = Dilution factor.
- NR = Not required.

9102L600

# Custody Transfer Record/Lab Work Request

5



Est. Final Work Order Project AD Project OC <i>CLM Del TAT</i>	Refrigerator #	1	5	→					2	2	2
	#/Type Container	Liquid							1g	→	1g
	Volume	Solid	2kg	1kg	→						
	Preservatives	Liquid							125ml	→	200ml
Date Rec'd	2/16/91	Date Due	3/23/91								
Account #	105-Danford										

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓)	Matrix	Date Collected	ANALYSES REQUESTED				INORG			
						VOA	SNA	Pest/PCB	Herb	Metal	CN	RAD WORK	
S - Soil	001	00068		Soil	2/15/91	✓	✓	✓					
SE - Sediment													
SO - Solid													
SL - Sludge													
W - Water													
O - Oil													
A - Air													
DS - Drum Solids													
DL - Drum Liquids													
L - EP/TCLP Leachate													
WI - Wipe													
X - Other													
F - Fish													

Special Instructions:

RAD = Gamma Alpha, Beta, Gamma Scan 901.1  
 3L-90(905)  
 Original rewritten pg

DATE/REVISIONS:

- 2/25/91 1. CHANGE WITH PER. JCS/UKING
- 
- 
- 
- 
- 

WESTON Analytics Use Only

Samples were:	COC Tape was:
1) Shipped <input checked="" type="checkbox"/> or Hand Delivered	1) Present on Outer Package <input checked="" type="checkbox"/> Y or N
Airbill #	2) Unbroken on Outer Package <input checked="" type="checkbox"/> Y or N
2) Ambient or Chilled	3) Present on Sample <input checked="" type="checkbox"/> Y or N
3) Received in Good Condition <input checked="" type="checkbox"/> Y or N	4) Unbroken on Sample <input checked="" type="checkbox"/> Y or N
4) Properly Preserved <input checked="" type="checkbox"/> Y or N	COC Record Present Upon Sample Rec'l <input checked="" type="checkbox"/> Y or N
5) Received Within Holding Times <input checked="" type="checkbox"/> Y or N	

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<i>[Signature]</i>	<i>[Signature]</i>	2/16/91	9:30 AM				

Discrepancies Between Samples Labels and COC Record?  Y or N

NOTES:

**II. QC SUMMARY**

- A. SURROGATE % RECOVERY SUMMARY  
(FORM 2)
- B. MATRIX SPIKE  
(FORM 3)
- C. REAGENT BLANK SUMMARY  
(FORM 4)
- D. GC/MS TUNING AND CALIBRATION STANDARD  
(FORM 5)

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0000010

2B

## SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDRFW Lot No.: 9102L600

	CLIENT SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	BOO-GS	97	91	107		0
02	BOQ-GSMS	96	90	111		0
03	BOO-GSMSD	95	92	111		0
04	VBLKLVB246-MB1	100	96	113		0

## QC LIMITS

S1 (TOL) = Toluene-d8

( 81-117)

S2 (BFB) = Bromofluorobenzene

( 74-121)

S3 (DCE) = 1,2-Dichloroethane-d4

( 70-121)

# Column to be used to flag recovery values

\* Values outside of QC limits

D Surrogates diluted out

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0000011

3B

## SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDRFW Lot No.: 9102L600-001MATRIX Spike - Sample No.: BOO-GSLevel: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
1,1-Dichloroethene	65.0	0	54.1	83	59-172
Trichloroethene	65.0	0	57.2	88	62-137
Benzene	65.0	0	57.7	89	66-142
Toluene	65.0	0	56.6	87	59-139
Chlorobenzene	65.0	0	57.4	88	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD   REC
1,1-Dichloroethene	65.0	50.5	78	6	22   59-172
Trichloroethene	65.0	60.5	93	5	24   62-137
Benzene	65.0	60.2	93	4	21   66-142
Toluene	65.0	59.3	91	4	21   59-139
Chlorobenzene	65.0	61.6	95	7	21   60-133

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

\* Values outside of QC limits

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

COMMENTS:

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4A 0000012

VOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: B022603

Lab Sample ID: 91LVB246-MB1

Date Analyzed: 02/26/91

Time Analyzed: 1103

Matrix:(Soil/Water) SOIL

Level:(low/med) LOW

Instrument ID: 5100B

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	BOO-GS	9102L600-001	B022604	1206
02	BOO-GSMS	9102L600-001S	B022608	1500
03	BOO-GSMSD	9102L600-001T	B022609	1537

COMMENTS:

9513357.2663

5A

VOLATILE ORGANIC GAS/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: B020401

BFB Injection Date: 02/04/91

Instrument ID: 5100B

BFB Injection Time: 831

Matrix: (soil/water) WATER

Level: (low/med) LOW

Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.0
75	30.0 - 60.0% of mass 95	42.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0( 0.0)1
174	Greater than 50.0% of mass 95	77.4
175	5.0 - 9.0% of mass 174	5.5( 7.1)1
176	Greater than 95.0% but less than 101.0% of mass 174	75.6( 97.7)1
177	5.0 - 9.0% of mass 176	4.7( 6.2)2

1-Value is % mass 174

2-Value is % mass 176

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

CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	B020403	02/04/91	1008
02	VSTD100	B020404	02/04/91	1201
03	VSTD150	B020405	02/04/91	1346
04	VSTD200	B020406	02/04/91	1420
05	VSTD20	B020407	02/04/91	1454
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

9513357.2664

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDLab File ID: B022601BFB Injection Date: 02/26/91Instrument ID: 5100BBFB Injection Time: 933Matrix: (soil/water) SOILLevel: (low/med) LOWColumn: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.2
75	30.0 - 60.0% of mass 95	42.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.2 ( 0.17)1
174	Greater than 50.0% of mass 95	86.4
175	5.0 - 9.0% of mass 174	6.0 ( 6.9)1
176	Greater than 95.0% but less than 101.0% of mass 174	84.0 ( 97.2)1
177	5.0 - 9.0% of mass 176	5.6 ( 6.7)2

1-Value is % mass 174

2-Value is % mass 176

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

CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	B022602	02/26/91	1003
02	VBLKLV246-MB1	B022603	02/26/91	1103
03	BOO-GS	B022604	02/26/91	1206
04	BOO-GSMS	B022608	02/26/91	1500
05	BOO-GSMSD	B022609	02/26/91	1537
06				
07				
08				
09				
10				
11				
12				
13				
14				
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17				
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19				
20				

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1A  
VOLATILE ORGANICS ANALYSIS SHEET 0000016

CLIENT SAMPLE NO.

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

BOO-GS

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9102L600-001

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

Lab File ID: B022604

Level: (low/med) LOW

Date Received: 02/16/91

% Moisture: not dec. 19

Date Analyzed: 02/26/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	30	U
67-64-1	Acetone	18	U
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	12	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	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	12	U
591-78-6	2-Hexanone	12	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

*JF*  
*6/22/91*

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1E

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS 0000017

BOO-GS

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9102L600-001

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

Lab File ID: B022604

Level: (low/med) LOW

Date Received: 02/16/91

% Moisture: not dec. 19

Date Analyzed: 02/26/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

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1A

VOLATILE ORGANICS ANALYSIS SHEET 0000058

CLIENT SAMPLE NO.

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LVB246-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: B022603

Level: (low/med) LOW Date Received: 02/26/91

% Moisture: not dec. 0 Date Analyzed: 02/26/91

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

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	3	J
67-64-1	Acetone	8	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS 0000059

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LVB246-MB1

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

Lab File ID: 8022603

Level: (low/med) LOW

Date Received: 02/26/91

% Moisture: not dec. 0

Date Analyzed: 02/26/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

**WESTON**ROY F. WESTON, INC.  
Lionville LaboratoryCLIENT: WESTINGHOUSE HANFORD      SAMPLES RECEIVED: 02-16-91  
RFW #: 9102L600, SEMIVOLATILE  
W.O. #: 6168-02-01NARRATIVE

One (1) soil sample was collected on 02-15-91.

The sample and its associated QC samples were extracted on 02-25-91 and analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Semivolatile target compounds on 03-12,13-91 and 04-02-91.

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. Four (4) of thirty (30) surrogate recoveries were outside EPA QC limits; however, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
3. Two (2) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
4. Two (2) of eleven (11) blank spike recoveries were outside EPA QC limits.
5. The laboratory blanks contained the common contaminants di-n-butylphthalate, butylbenzylphthalate, and bis(2-ethylhexyl) phthalate and the target compounds pyrene, chrysene, and flourenthene at levels less than the CRQL.
6. Internal standard area and retention time criteria were met for all samples and blanks.

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

6-4-91  
Date

GLOSSARY OF HNA DATADATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.
- A = Aldol Condensation Product.
- X = Additional qualifiers used as required are explained in the case narrative.
- NQ = Result qualitatively confirmed but not able to quantify.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not applicable.
- DF = Dilution factor.
- NR = Not required.

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II. QC SUMMARY

- A. SURROGATE % RECOVERY SUMMARY  
(FORM 2)
- B. MATRIX SPIKE  
(FORM 3)
- C. REAGENT BLANK SUMMARY  
(FORM 4)
- D. GC/MS TUNING AND CALIBRATION STANDARD  
(FORM 5)

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2D

## SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDLevel: (low/med) LOWRFW Lot No.: 9102L600

	CLIENT SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	SC (TBP)#	OTHER	TOT OUT
01	BOO-GS	95	93	165 *	88	80	41		1
02	BOO-GSMS	92	96	145 *	98	95	80		1
03	BOO-GSMSD	77	90	118	85	84	63		0
04	SBLKLE0244-MB1	78	77	151 *	78	77	52		1
05	SBLKLE0244-MB1 BS	112	113	135	115 *	103	87		1

## QC LIMITS

S1 (NBZ) = Nitrobenzene-d5	( 23-120)
S2 (FBP) = 2-Fluorobiphenyl	( 30-115)
S3 (TPH) = p-Terphenyl-d14	( 18-137)
S4 (PHL) = Phenol-d5	( 24-113)
S5 (2FP) = 2-Fluorophenol	( 25-121)
S6 (TBP) = 2,4,6-Tribromophenol	( 19-122)

# Column to be used to flag recovery values

\* Values outside of QC limits

D Surrogates diluted out

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3D

## SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDRFW Lot No.: 9102L600-001MATRIX Spike - Sample No.: BOO-GSLevel: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
Phenol	4070	0	3740	92 *	26- 90
2-Chlorophenol	4070	0	3520	86	25-102
1,4-Dichlorobenzene	2040	0	1690	83	28-104
N-Nitroso-Di-n-propylamine	2040	0	1800	88	41-126
1,2,4-Trichlorobenzene	2040	0	1960	96	38-107
4-Chloro-3-methylphenol	4070	0	3310	81	26-103
Acenaphthene	2040	0	2060	101	31-137
4-Nitrophenol	4070	0	2190	54	11-114
2,4-Dinitrotoluene	2040	0	1800	88	28- 89
Pentachlorophenol	4070	0	3850	95	17-109
Pyrene	2040	235	2450	109	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD   REC
Phenol	4040	3460	86	6	35   26- 90
2-Chlorophenol	4040	3140	78	9	50   25-102
1,4-Dichlorobenzene	2020	1770	88	5	27   28-104
N-Nitroso-Di-n-propylamine	2020	1500	74	17	38   41-126
1,2,4-Trichlorobenzene	2020	1800	89	7	23   38-107
4-Chloro-3-methylphenol	4040	2810	70	14	33   26-103
Acenaphthene	2020	1790	89	12	19   31-137
4-Nitrophenol	4040	0	0 *	200 *	50   11-114
2,4-Dinitrotoluene	2020	1240	61	36	47   28- 89
Pentachlorophenol	4040	2860	71	28	47   17-109
Pyrene	2020	2410	108	0	36   35-142

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

\* Values outside of QC limits

RPD: 1 out of 11 outside limitsSpike Recovery: 2 out of 22 outside limits

COMMENTS:

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35 0000012

## SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: NONECase No.: WESTINGHOUSE HANFORDRFW Lot No.: 9102L600BLANK Spike - Sample No.: SBLKLE0244-MB1Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC LIMITS REC
Phenol	3330	0	3810	114 *	26- 90
2-Chlorophenol	3330	0	3380	101	25-102
1,4-Dichlorobenzene	1670	0	1720	103	28-104
N-Nitroso-Di-n-propylamine	1670	0	1690	101	41-126
1,2,4-Trichlorobenzene	1670	0	1750	105	38-107
4-Chloro-3-methylphenol	3330	0	3380	101	26-103
Acenaphthene	1670	0	1930	116	31-137
4-Nitrophenol	3330	0	2470	74	11-114
2,4-Dinitrotoluene	1670	0	1720	103 *	28- 89
Pentachlorophenol	3330	0	3490	105	17-109
Pyrene	1670	247	2240	119	35-142

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

\* Values outside of QC limits

Spike Recovery: 2 out of 11 outside limits

COMMENTS:

9102L600

# Custody Transfer Record/Lab Work Request



Client: <u>Weston Environmental</u>	Refrigerator #	1	5	→						2	2	2			
Est. Final Proj. Sampling Date: <u>1/16/91</u>	#/Type Container	Liquid													
Work Order #		Solid	2	1	1	1	1	1	1	1	1	1	1	1	1
Project Contact/Phone	Volume	Liquid													
AD Project Manager		Solid	1	1	1	1	1	1	1	1	1	1	1	1	1
Del. Cont. #	Preservatives														
Date Rec'd: <u>2/16/91</u>	ANALYSES REQUESTED	ORGANIC				INORG									
Account #		VOA	BNA	Pest/PCB	Herb	Metal	CN								

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓)	Matrix	Date Collected	VOA	BNA	Pest/PCB	Herb	Metal	CN
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	001	BOO/GS		001	2/15/91	✓	✓	✓		✓	✓

Special Instructions: RAD = Gross Alpha, Beta, Gamma Scan 901.1 SE-90(905)  
original rewritten pg

DATE/REVISIONS:  
2/25/91 1. Change work per. results  
4/14/91 2. Radiochem subbed to Teledyne

**WESTON Analytics Use Only**

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

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>2/16/91</u>	<u>9:30</u>	<u>[Signature]</u>	<u>[Signature]</u>	<u>3/15/91</u>	<u>11:30</u>

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

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4B 0000013

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: S031213

Lab Sample ID: 91LE0244-MB1

Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/12/91

Time Analyzed: 2106

Matrix: (Soil/Water) SOIL

Level: (low/med) LOW

Instrument ID: 5100SP

THIS METHOD

BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BOO-GS	9102L600-001	S031215	03/12/91
02	BOO-GSMS	9102L600-001S	S031216	03/12/91
03	BOO-GSMSD	9102L600-001T	S031305	03/13/91
04	SBLKLE0244-MB1 BS	91LE0244-MB1S	S040206	04/02/91

COMMENTS:

9513357.2677

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS  
 CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDLab File ID: S030106DFTPP Injection Date: 03/01/91Instrument ID: 5100SPDFTPP Injection Time: 1905

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	31.4
68	Less than 2.0% of mass 69	0.0( 0.0)1
69	Mass 69 relative abundance	40.7
70	Less than 2.0% of mass 69	0.3( 0.63)1
127	40.0 - 60.0% of mass 198	45.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.6
275	10.0 - 30.0% of mass 198	18.3
365	Greater than 1.00% of mass 198	1.73
441	Present, but less than mass 443	6.2
442	Greater than 40.0% of mass 198	59.7
443	17.0 - 23.0% of mass 442	11.8( 19.9)2

1-Value is % mass 69

2-Value is % mass 442

hcc  
3/10/91

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD50	SSTD50	S030107	03/01/91	1919
02	SSTD80	SSTD80	S030108	03/01/91	2006
03	SSTD120	SSTD120	S030109	03/01/91	2051
04	SSTD160	SSTD160	S030110	03/01/91	2136
05	SSTD20	SSTD20	S030111	03/01/91	2221
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

9513357.2678

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS  
 CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDLab File ID: S031204DFTPP Injection Date: 03/12/91Instrument ID: 5100SPDFTPP Injection Time: 1134

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	36.0
68	Less than 2.0% of mass 69	0.0( 0.0)1
69	Mass 69 relative abundance	35.8
70	Less than 2.0% of mass 69	0.3( 0.82)1
127	40.0 - 60.0% of mass 198	43.8
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.3
275	10.0 - 30.0% of mass 198	18.7
365	Greater than 1.00% of mass 198	1.57
441	Present, but less than mass 443	4.8
442	Greater than 40.0% of mass 198	49.2
443	17.0 - 23.0% of mass 442	9.2( 18.7)2

1-Value is % mass 69

2-Value is % mass 442

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD50	SSTD50	S031206	03/12/91	1434
02	SBLKLE0244-MB1	91LE0244-MB1	S031213	03/12/91	2106
03	BOO-GS	9102L600-001	S031215	03/12/91	2237
04	BOO-GSMS	9102L600-001s	S031216	03/12/91	2323
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS  
 CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

0000016

Lab Name: Roy F. Weston, Inc.Contract: 6168-02-01-0000Case No.: WESTINGHOUSE HANFORDLab File ID: S031301DFTPP Injection Date: 03/13/91Instrument ID: 5100SPDFTPP Injection Time: 0818

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	30.3
68	Less than 2.0% of mass 69	0.0( 0.0)1
69	Mass 69 relative abundance	43.9
70	Less than 2.0% of mass 69	0.0( 0.0)1
127	40.0 - 60.0% of mass 198	46.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.2
275	10.0 - 30.0% of mass 198	17.2
365	Greater than 1.00% of mass 198	1.46
441	Present, but less than mass 443	5.7
442	Greater than 40.0% of mass 198	58.8
443	17.0 - 23.0% of mass 442	10.3( 17.5)2

1-Value is % mass 69

2-Value is % mass 442

rec  
5/14/91

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD50	SSTD50	S031302	03/13/91	0837
02	BOO-GSMSD	9102L600-001T	S031305	03/13/91	1243
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

9513357.2680

5B

SEMIVOLATILE ORGANIC COMPOUND TUNING AND MASS  
 CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: S032504

DFTPP Injection Date: 03/25/91

Instrument ID: 5100SP

DFTPP Injection Time: 1242

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	34.2
68	Less than 2.0% of mass 69	0.0( 0.0)1
69	Mass 69 relative abundance	45.0
70	Less than 2.0% of mass 69	0.3( 0.65)1
127	40.0 - 60.0% of mass 198	46.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	5.7
275	10.0 - 30.0% of mass 198	17.1
365	Greater than 1.00% of mass 198	1.30
441	Present, but less than mass 443	4.7
442	Greater than 40.0% of mass 198	50.1
443	17.0 - 23.0% of mass 442	9.5( 19.0)2

*REC 5/10/91*

1-Value is % mass 69

2-Value is % mass 442

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

CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD50	S032505	03/25/91	1302
02	SSTD80	S032506	03/25/91	1422
03	SSTD120	S032507	03/25/91	1515
04	SSTD160	S032508	03/25/91	1604
05	SSTD20	S032509	03/25/91	1654
06				
07				
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09				
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17				
18				
19				
20				

9513357,2681

5B

SEMIVOLATILE ORGANIC COMPOUND TUNING AND MASS  
 CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

Lab File ID: S040201

DFTPP Injection Date: 04/02/91

Instrument ID: 5100SP

DFTPP Injection Time: 0816

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	33.8
68	Less than 2.0% of mass 69	0.09( 0.18)1
69	Mass 69 relative abundance	50.1
70	Less than 2.0% of mass 69	0.0( 0.0)1
127	40.0 - 60.0% of mass 198	47.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	5.8
275	10.0 - 30.0% of mass 198	17.4
365	Greater than 1.00% of mass 198	1.55
441	Present, but less than mass 443	4.8
442	Greater than 40.0% of mass 198	50.3
443	17.0 - 23.0% of mass 442	10( 19.8)2

not  
5/14/91

1-Value is % mass 69

2-Value is % mass 442

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

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD50	SSTD50	S040203	04/02/91	1028
02	SBLKLE0244-MB1 BS	91LE0244-MB1S	S040206	04/02/91	1353
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

**III. SAMPLE DATA PACKAGE**

- A. SAMPLE DATA IN ORDER OF RFW SAMPLE NUMBER
  - 1. TABULATED RESULTS  
(FORM 1)
  - 2. TENTATIVELY IDENTIFIED COMPOUND  
(FORM 1E)
  - 3. RAW DATA IN ORDER:
    - a. RECONSTRUCTED ION  
CHROMATOGRAM(S)
    - b. QUANTITATION REPORT(S)
    - c. HSL MASS SPECTRA
    - d. TIC MASS SPECTRA
    - e. GC/MS LIBRARY SEARCH FOR TIC

9513357.2683

1B  
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

0000020

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

BOO-GS

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9102L600-001  
 Sample wt/vol: 30.6 (g/mL) G Lab File ID: S031215  
 Level: (low/med) LOW Date Received: 02/16/91  
 % Moisture: not dec. 19 dec. Date Extracted: 02/25/91  
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/12/91  
 GPC Cleanup: (Y/N) Y pH: 7.1 Dilution Factor: 1.11

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

108-95-2-----	Phenol	450	U
111-44-4-----	bis(2-Chloroethyl)ether	450	U
95-57-8-----	2-Chlorophenol	450	U
541-73-1-----	1,3-Dichlorobenzene	450	U
106-46-7-----	1,4-Dichlorobenzene	450	U
100-51-6-----	Benzyl alcohol	450	U
95-50-1-----	1,2-Dichlorobenzene	450	U
95-48-7-----	2-Methylphenol	450	U
108-60-1-----	bis(2-Chloroisopropyl)ether	450	U
106-44-5-----	4-Methylphenol	450	U
621-64-7-----	N-Nitroso-Di-n-propylamine	450	U
67-72-1-----	Hexachloroethane	450	U
98-95-3-----	Nitrobenzene	450	U
78-59-1-----	Isophorone	450	U
88-75-5-----	2-Nitrophenol	450	U
105-67-9-----	2,4-Dimethylphenol	450	U
65-85-0-----	Benzoic acid	2200	U
111-91-1-----	bis(2-Chloroethoxy)methane	450	U
120-83-2-----	2,4-Dichlorophenol	450	U
120-82-1-----	1,2,4-Trichlorobenzene	450	U
91-20-3-----	Naphthalene	450	U
106-47-8-----	4-Chloroaniline	450	U
87-68-3-----	Hexachlorobutadiene	450	U
59-50-7-----	4-Chloro-3-methylphenol	450	U
91-57-6-----	2-Methylnaphthalene	450	U
77-47-4-----	Hexachlorocyclopentadiene	450	U
88-06-2-----	2,4,6-Trichlorophenol	450	U
95-95-4-----	2,4,5-Trichlorophenol	2200	U
91-58-7-----	2-Chloronaphthalene	450	U
88-74-4-----	2-Nitroaniline	2200	U
131-11-3-----	Dimethylphthalate	450	U
208-96-8-----	Acenaphthylene	450	U
606-20-2-----	2,6-Dinitrotoluene	450	U

9513357,2684

1C  
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

0000021

BOO-GS

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9102L600-001

Sample wt/vol: 30.6 (g/mL) G Lab File ID: S031215

Level: (low/med) LOW Date Received: 02/16/91

% Moisture: not dec. 19 dec. Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/12/91

GPC Cleanup: (Y/N) Y pH: 7.1 Dilution Factor: 1.11

CONCENTRATION UNITS:

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

99-09-2	3-Nitroaniline	2200	U
83-32-9	Acenaphthene	450	U
51-28-5	2,4-Dinitrophenol	2200	U
100-02-7	4-Nitrophenol	2200	U
132-64-9	Dibenzofuran	450	U
121-14-2	2,4-Dinitrotoluene	450	U
84-66-2	Diethylphthalate	95	J
7005-72-3	4-Chlorophenyl-phenylether	450	U
86-73-7	Fluorene	450	U
100-01-6	4-Nitroaniline	2200	U
534-52-1	4,6-Dinitro-2-methylphenol	2200	U
86-30-6	N-Nitrosodiphenylamine (1)	450	U
101-55-3	4-Bromophenyl-phenylether	450	U
118-74-1	Hexachlorobenzene	450	U
87-86-5	Pentachlorophenol	2200	U
85-01-8	Phenanthrene	450	U
120-12-7	Anthracene	450	U
84-74-2	Di-n-Butylphthalate	78 450	JB U
206-44-0	Fluoranthene	82 450	JB U
129-00-0	Pyrene	230 450	JB U
85-68-7	Butylbenzylphthalate	34 450	JB U
91-94-1	3,3'-Dichlorobenzidine	900	U
56-55-3	Benzo(a)anthracene	450	U
218-01-9	Chrysene	450	U
117-81-7	bis(2-Ethylhexyl)phthalate	81 450	JB U
117-84-0	Di-n-Octyl phthalate	450	U
205-99-2	Benzo(b)fluoranthene	450	U
207-08-9	Benzo(k)fluoranthene	450	U
50-32-8	Benzo(a)pyrene	450	U
193-39-5	Indeno(1,2,3-cd)pyrene	450	U
53-70-3	Dibenzo(a,h)anthracene	450	U
191-24-2	Benzo(g,h,i)perylene	450	U

(1) - Cannot be separated from Diphenylamine

9513357.2685

1F

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

0000022

BOO-GS

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9102L600-001

Sample wt/vol: 30.6 (g/mL) G Lab File ID: S031215

Level: (low/med) LOW Date Received: 02/16/91

% Moisture: not dec. 19 dec. Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/12/91

GPC Cleanup: (Y/N) Y pH: 7.1 Dilution Factor: 1.11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	5.48	200	JA

9513357.2686

1B

CLIENT SAMPLE NO.

## SEMIVOLATILE ORGANICS ANALYSIS SHEET

0000166

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000Client: WESTINGHOUSE HANFORDMatrix: SOILLab Sample ID: 91LE0244-MB1Sample wt/vol: 30.0 (g/mL) GLab File ID: S031213Level: (low/med) LOWDate Received: 02/25/91% Moisture: not dec. 0 dec.Date Extracted: 02/25/91Extraction: (SepF/Cont/Sonc) SONCDate Analyzed: 03/12/91GPC Cleanup: (Y/N) Y pH: 7.0Dilution Factor: 1.11

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

108-95-2-----	Phenol	370	U
111-44-4-----	bis(2-Chloroethyl)ether	370	U
95-57-8-----	2-Chlorophenol	370	U
541-73-1-----	1,3-Dichlorobenzene	370	U
106-46-7-----	1,4-Dichlorobenzene	370	U
100-51-6-----	Benzyl alcohol	370	U
95-50-1-----	1,2-Dichlorobenzene	370	U
95-48-7-----	2-Methylphenol	370	U
108-60-1-----	bis(2-Chloroisopropyl)ether	370	U
106-44-5-----	4-Methylphenol	370	U
621-64-7-----	N-Nitroso-Di-n-propylamine	370	U
67-72-1-----	Hexachloroethane	370	U
98-95-3-----	Nitrobenzene	370	U
78-59-1-----	Isophorone	370	U
88-75-5-----	2-Nitrophenol	370	U
105-67-9-----	2,4-Dimethylphenol	370	U
65-85-0-----	Benzoic acid	1800	U
111-91-1-----	bis(2-Chloroethoxy)methane	370	U
120-83-2-----	2,4-Dichlorophenol	370	U
120-82-1-----	1,2,4-Trichlorobenzene	370	U
91-20-3-----	Naphthalene	370	U
106-47-8-----	4-Chloroaniline	370	U
87-68-3-----	Hexachlorobutadiene	370	U
59-50-7-----	4-Chloro-3-methylphenol	370	U
91-57-6-----	2-Methylnaphthalene	370	U
77-47-4-----	Hexachlorocyclopentadiene	370	U
88-06-2-----	2,4,6-Trichlorophenol	370	U
95-95-4-----	2,4,5-Trichlorophenol	1800	U
91-58-7-----	2-Chloronaphthalene	370	U
88-74-4-----	2-Nitroaniline	1800	U
131-11-3-----	Dimethylphthalate	370	U
208-96-8-----	Acenaphthylene	370	U
606-20-2-----	2,6-Dinitrotoluene	370	U

9513357.2687  
1C

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

0000167

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LE0244-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S031213

Level: (low/med) LOW Date Received: 02/25/91

% Moisture: not dec. 0 dec. Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 03/12/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.11

CONCENTRATION UNITS:

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

99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	370	U
51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
84-74-2	Di-n-Butylphthalate	48	J
206-44-0	Fluoranthene	84	J
129-00-0	Pyrene	250	J
85-68-7	Butylbenzylphthalate	49	J
91-94-1	3,3'-Dichlorobenzidine	740	U
56-55-3	Benzo(a)anthracene	370	U
218-01-9	Chrysene	63	J
117-81-7	bis(2-Ethylhexyl)phthalate	92	J
117-84-0	Di-n-Octyl phthalate	370	U
205-99-2	Benzo(b)fluoranthene	370	U
207-08-9	Benzo(k)fluoranthene	370	U
50-32-8	Benzo(a)pyrene	370	U
193-39-5	Indeno(1,2,3-cd)pyrene	370	U
53-70-3	Dibenzo(a,h)anthracene	370	U
191-24-2	Benzo(g,h,i)perylene	370	U

(1) - Cannot be separated from Diphenylamine

9513357,2688  
1F

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

0000168

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LE0244-MB1

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

Lab File ID: S031213

Level: (low/med) LOW

Date Received: 02/25/91

% Moisture: not dec. 0 dec.

Date Extracted: 02/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 03/12/91

GPC Cleanup: (Y/N) Y pH: 7.0

Dilution Factor: 1.11

Number TICs found: 0

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

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