9310L147-WES-1285

WESTON
MANAGERS DESIGNERS CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

GC/MS VOLATILE

The set of samples consisted of two (2) water samples collected on 09-27-93.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 10-08-93.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

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

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

5. The laboratory blank contained the common contaminant Acetone at a level less than the CRQL.

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

Margaret M. Healy for

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

10/19/93
Date

sma/voa/10-147v.cn

WESTON Analytics Use Only: 9310L147

Custody Transfer Record/Lab Work Request

WESTON

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 06168-CO2-001-9999-00
Project Contact/Phone #:
AD Project Manager: Jose Edwards
QC: 3L546 Del: Special TAT: 35 Days
Date Rec'd: 10/1/93 Date Due: 11/05/93
Account #: WS-HANFORD

	VOA	BNA	Pest/PCB	Herb	8/2	Chloride	TDS/TSS		Metal	CN	F, Cl, SO4, NO3, NO2, PO4	O&G		Radiochem	
Refrigerator #	1	6	6		1	4	4	4			4	4		SLB	
#/Type Container – Liquid	4G/L	1AG	1AG		2G/L	1P	1AG	1P			1AG	1AG			
#/Type Container – Solid															
Volume – Liquid	40ml	950ml	400ml		40ml	250ml	500ml	1L			500ml	950ml			
Volume – Solid															
Preservatives	Na2S2O3	none	none		Na2S2O3	none	none	HNO3			none	H2SO4			

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	06W4H	OG43H	Pest/PCB	0812	ICL	TDS/TSS	ICP			F,Cl,SO4,NO3,NO2,PO4	O&G		TSLR	
001	93260-01, I27 (RAD)			W	9/27/93	1000	X	X	X	X (cancelled)	X	X	X			X	X		X	
002	93260-02, I27 (RAD)			W	9/27/93	1000	X													

Metals = HSL + Sn, Ti

Radiochem = Americium-241, Pu-238, -239, -240, -241, Total U, Gamma Scan, Gross Alpha/Beta, Tritium

10/12/93 Cancel 001 for 0812 per SDR93PM1218

RCRA Protocol

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

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: SAF# 93-260 TAT = Priority

Target Date = 16
Temp = 2.7°C
Original Rewritten

DATE/REVISIONS:
10-4-93 1. All samples are RAD
10-5-93 2. 0605X should be 0608H per
3. SDR93PM1183 93PM1196
10-6-93 4. Change TAT to Priority (10 Days)
10-6-93 5. ICPO4 rec'd past hold per
6. SDR93WC0206

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 2529885069
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times Y or (N)

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Chiery	M. Horrie	10-1-93	4:30 pm				
		10/2/93				10-2-93	

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: ICPO4 rec'd past hold.

9613401.1782

Westinghouse
Hanford Company

Chain of Custody / Sample Analysis Request

COC # 5217 | page: 1 of 2

Collector: Steffler RZ | Project Designation: 1325N Waste Stream-3 | Sampling Location: 1325N FUEL BASIN
SAF #: 93-260 | Sample Date: 9/27/93 | Company Contact : MS HENDRIX | Phone #: 372-3916 | Bill of Lading #:
Laboratory: Weston | Protocol: RCRA | Log book #: WHC-N 23-28 pages: | Offsite Prop #:

Sample Id #	Analysis (Parameters)	Matrix *	Preservative(s)	Container	Date / Time	Serial #	E#/R#	IC#
( )93260-01.127	AMERICIUM-241 (Lab Specific)	WATER	HNO3	04000mL P	9/27/93 / 1000			
	Pu-238,-239,-240,-241. TOTAL URANIUM (ALL LAB SPECIFIC)							
( )93260-01.127	ANIONS (EPA 300.0)	WATER	4 DEG. C	00500mL aG	9/27/93 / 1000			
	(F,Cl,SO4,NO2,NO3,PO4)							
( )93260-01.127	CHLORIDE (9250)	WATER	NONE	00250mL P	9/27/93 / 1000			
( )93260-01.127	GAMMA SCAN (Lab Specific)	WATER	HNO3	04000mL P	9/27/93 / 1000			
	Sr89/90,Ra-226,TOTAL RADIUM, (ALL LAB SPECIFIC)							
( )93260-01.127	GROSS ALPHA/BETA (Lab Specific)	WATER	HNO3	01000mL P	9/27/93 / 1000			
( )93260-01.127	ICP METALS (6010)	WATER	HNO3	01000mL P	9/27/93 / 1000			
	TIN,TITANIUM, ARSENIC(7060), SELENIUM(7740),THALLIUM(7841),MERCURY(7470)							
( )93260-01.127	PCB/PEST (8080)	WATER	4 deg. C	01000mL aG	9/27/93 / 1000			
( )93260-01.127	SEMI-VOA (8270)	WATER	4 deg. C	02500mL aG	9/27/93 / 1000			
( )93260-01.127	TDS (EPA 160.1)	WATER	4 deg. C	00500mL aG	9/27/93 / 1000			
	TSS (EPA 160.2)							
( )93260-01.127	TOTAL RECOVERABLE OIL & GREASE (9070)	WATER	H2SO4	01000mL aG	9/27/93 / 1000			
( )93260-01.127	TRITUM (Lab Specific)	WATER	None	00250mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA (8240)	WATER	4 deg. C	00040mL aGs	9/27/93 / 1000			

B613401 1283

Temp. = 2.7°C

(sign and print names)

Relinquished By: RZ Steffler | Date/Time: | Received By: | Date/Time:
RZ Steffler 9-29-93 0830
Relinquished By: | Date/Time: | Received By: | Date/Time:
Relinquished By: | Date/Time: | Received By: | Date/Time:

Special Instructions/Conditions

Laboratory Section | Received By: | Title: | Date/Time:

(Sample Disposition) | Disposal Method: | Disposed of By: | Date/Time:

Westinghouse
Hanford Company

Chain of Custody / Sample Analysis Request

COC # 5217

page: 2 of 2

0017010

Collector: Steffler RZ Project Designation: 1325N Waste Stream-3 Sampling Location: 1325N FUEL BASIN
SAF #: 93-260 Sample Date: 9/27/93 Company Contact : MS HENDRIX Phone #: 372-3916 Bill of Lading #: _____
Laboratory: Weston Protocol: RCRA Log book #: WHC-N-215-25 pages: Offsite Prop #: _____

Sample Id #	Analysis (Parameters)	Matrix *	Preservative(s)	Container	Date / Time	Serial #	E#/R#	IC#
( )93260-01.127	VOA (8240)	WATER	4 deg. C	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA AROMATIC (8020)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA AROMATIC (8020)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA HALOGENATED (8010)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA HALOGENATED (8010)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
93260-02.I27	VOA (8240)	WATER	4 deg. C.	40ml aGs	9/27/93 / 1000			
93260-02.I27	VOA (8240)	WATER	4 deg C.	40ml aGs	9/27/93 / 1000			

6134O1.1784

(sign and print names)

Relinquished By: RZ Steffler R.Z. Steffler Date/Time: 9-29-93 0930 Received By: Date/Time:

Special Instructions/Conditions

Relinquished By: Date/Time: Received By: Date/Time:

Relinquished By: Date/Time: Received By: Date/Time:

Laboratory Section Received By: Title: Date/Time:

(Sample Disposition) Disposal Method: Disposed of By: Date/Time:

OFFSITE RADIOACTIVE SHIPMENT RECORD

– EXTERIOR INSPECTION PERMITTED –

19723

SHIPPING INST.

SHIP TO:
Company: Ray F Weston Inc.
Address: 256 Welsh Pool Road
City, State, Zip: Lionville, PA 19341-1313
Attention: Josie King

Contractor: ☐ PNL ☐ KEH ☒ WHC
Site Carrier: R.T. SICKLE
PR No.: 67312 Veh. No.: 4555 HO 6813

Ship: ☒ Prepaid ☐ Collect Via:
☐ Motor-Rail ☒ Air Psgr.
☐ Excl. Use ☐ Air Cargo
☐ DOE Veh. ☐ Mail
☐ UPS Sur. ☐ _____

SHIPMENT DESCRIPTION AND CERTIFICATION

Proper Shipping Name – Radioactive Material,	UN Number
1. Empty Packages	☐ UN 2908
2. Low Specific Activity, n.o.s	☐ UN 2912
3. Limited quantity, n.o.s.	☒ UN 2910
4. N.O.S.	☐ UN 2982
5. Fissile n.o.s.	☐ UN 2918
6. Special Form, n.o.s.	☐ UN 2974
7. Instruments & Articles	☐ UN 2911
8. _____	☐ _____

Material Form: ☐ Special (A1) ☒ Normal (A2)

Labels Applied: ☐ Empty ☐ Radioactive LSA ☐ White I ☐ Yellow II ☐ Yellow III ☒ None ☐ Danger (Air Cargo) ☐ Secondary _____

Material Category: ☐ Empty ☐ Low Specific Act. (LSA) ☒ Limited Quantity ☐ Type A Quantity ☐ Type B Quantity ☐ Highway Route Controlled Quantity

For Normal Form Identify:
Physical Form: ☐ Solid ☒ Liquid ☐ Gas
Chemical Form: ☐ Metal ☐ Oxide ☒ Elemental ☐ Nitrate
Other _____

TYPE PACKAGE: ☒ Strong Tight ☐ Type A ☐ Type B ☐ Type B (U) ☐ Type B (M)

CONSTRUCTION: ☐ Box, FB ☐ Wood ☐ Steel ☐ Drum ☐ Cask ☒ Other Poly-Coolers

FISSILE CLASS: ☒ Non Fissile ☐ Fissile Exempt ☐ Fissile I ☐ Fissile II ☐ Fissile III
Grams Fissile: N/A

SNM: ☒ No ☐ Yes ☐ <1 gr ☐ Category I ☐ Category II ☐ Category III

ACCOUNTABILITY/SECURITY CONTROL: ☐ Classified ☒ Unclassified
Consignee authorized to receive this qty ☒
Sig. Security Svc. Req. ☐ NA ☒
~~Pu, EU > 1 kg~~ ☐ N/A ~~NU, DU > 1 kg~~ ☐ NA
Security Escorts Req. ☐ Not. Req. ☒
External Cask Temperature N/A ☒ (Max. 122° F LTL, 180° F Ex. Use) _____ °F

Packaging conforms to appropriate packaging procedure ☐ N/A ☒ Yes
Complies with D. O. T. packaging marking and labeling requirements ☐ N/A ☒ Yes
Container acceptability documented (incl. 7A cert.) ☒ N/A ☐ Yes

Container examined: No evidence of deterioration or damage ☒ Yes
QA Inspection Current ☐ Yes ☒ N/A Seals required ☒ No ☐ Yes
Shipping Doc. 49CFR 173.421 Authorization No. NA

No. Pkgs.	Model Package	COC/Spec. No.	Serial No.	Seal No.	Isotopes	Curies/Pkg	T. I.	Gr. Wt.
2	Poly Coolers	NA		NA	Cs 137, Cs-134	.43848 mCi	NA	
				NA	Cs-137	.0354 mCi	NA	
	Cooler # 169	containing	16240 ml	total	sample			72 lbs
	Cooler # SML-272	containing	15240 ml	total	sample			71 lbs
(Shipper may describe package in detail on one of unused lines above)					TOTAL	.474 mCi	NA	143 lbs

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.

Certifier's Signature: R.J. Stiffler | Date: 9-29-93 | Organization: Sampling + Mobile Labs | Complete Cost Code (inc. end function): Org Code 12911 / E17205

AREA MONITOR

Surface Dose Rate of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)
Dose Rate at 1 Meter from Surface of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)
Smears of Outer Container: ☒ ≤22 dpm βγ/cm² ☒ ≤2.2 dpm α/cm²

TRUCK LOAD OR EXCLUSIVE USE
Surface: ☒ ≤ 200 mrem/hr (N + βγ)
@ 6 feet: ☒ ≤ 10 mrem/hr (N + βγ)
@ Cab or Sleeper ☒ ≤2.0 mrem/hr (N + βγ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: Joe Valdez | Bldg.: 222-S | Survey No.: 167063 | Date: 9-29-93

APPROVAL

AUTHORIZATION FOR SHIPMENT

AIR TRANSPORT CERTIFICATION ▸ | Cargo Only: ☐ Danger Labels Applied | Passenger: ☐ 1. Ltd. Qty: ☐ 2. ≤3 T. I ☐ 3. Research or Medical Diagnosis ☐ 4. Human Medical Research | Pkg. Dimensions

Traffic has inspected and verified preshipment compliance to DOT regulations.

Authorized Signature ▸ M.C. Sams | Printed Name ▸ M.A. SAMS | Date ▸ 9-29-93

APPROVED FOR OFFSITE SHIPMENT

TRAFFIC

B. L. No.: RMW-8259 | Date Shipped: 9-29-93 | E. T. A.: 9-30-93 | Routing: Emery Air | ☐ N/A | Placards: ☐ Yes ☒ No
Surveyed By: (TW) | Date: 9-29-93 | Approved for Shipment Westinghouse Hanford Company: John E Mitchell | Date: 9-29-93 | Route Plan: ☐ Yes ☒ No

*U.S. GPO: 1992-791-064/80001

L54-6000-088 (10/88)

0015

93106-1416
93106 1417

EMERY WORLDWIDE — A CF Company

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

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

E | Shipper's Account Number: 850281585

SERVICES **

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

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

Date	Origin	Shipment Number
9-30-93	PSC	252988850 4

From:	To:
J.E. MAXWELL (509)376-7493	JOSIE KING
U.S. DEPT. OF ENERGY C/O	ROY F. WESTON, INC.
WESTINGHOUSE HANFORD COMPANY	256 WELSH POOL ROAD
2355 STEVENS DRIVE, G2-03	LIONVILLE PA
RICHLAND WA. 99352 Canada ☐	Hold for Pick Up ☐ Canada ☐
Customer's Reference Numbers: 12911/E17205 RMW-8259	E Consignee's Account Number: 19341-1313

Tariff Dest. | Gateway

Check to Shipper $

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

Description	Pcs	L	W	H	Total Pieces	Total Weight (In Lbs.)
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - LIMITED QUANTITY OF MATERIAL	2	18"	17"	16"	2	143

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

2529888504

Remarks

DOT EMERGENCY RESPONSE GUIDE #61 ATTACHED
EMERGENCY CONTACT PHONE NUMBER (509)373-3800

Shipper's Signature X [signature]

Zip Ship ☐

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

Mark if Emery Packaging is used

Urgent Letter 9X12 ☐ Urgent Pack 12X15 ☐

International Shipments: Free Domicile ☐ | Commodity Code

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

Base Charge ________

International Customs Value | International Insurance

Total Transportation Charges

Other Charges/Advance at Origin: ☐ OCAO $

3 PHL A

Terms and Conditions on Back

BEST AVAILABLE COPY

0016

9413104.1306

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

RFW Batch Number: 9310L147 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1a Report Date: 10/13/93 14:05

	Cust ID:	93260-01.I27	93260-02.I27	93260-02.I27	93260-02.I27	VBLK	VBLK BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	93LVQ174-MB1	93LVQ174-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	Toluene-d8	95 %	94 %	91 %	91 %	99 %	92 %
	Bromofluorobenzene	92 %	94 %	90 %	90 %	101 %	91 %
	1,2-Dichloroethane-d4	81 %	81 %	80 %	81 %	85 %	83 %
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		5 U	3 J	3 J	3 J	5 U	5 U
Acetone		8 JB	8 JB	4 JB	5 JB	6 J	10 U
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	93 %	94 %	5 U	86 %
1,1-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	5 U	5 U	5 U	5 U
Chloroform		2 J	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene		5 U	5 U	96 %	98 %	5 U	88 %
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Benzene		5 U	5 U	98 %	100 %	5 U	88 %
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9310L147 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1b

Cust ID:	93260-01.I27	93260-02.I27	93260-02.I27	93260-02.I27	VBLK	VBLK BS
RFW#:	001	002	002 MS	002 MSD	93LVQ174-MB1	93LVQ174-MB1
Toluene	5 U	5 U	99 %	96 %	5 U	89 %
Chlorobenzene	5 U	5 U	103 %	99 %	5 U	92 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

0019

9613401.1788

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-001

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

Lab File ID: 0100809

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____

Date Analyzed: 10/08/93

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	8	JB
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	2	J
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

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-001

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

Lab File ID: Q100809

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____

Date Analyzed: 10/08/93

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-02.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-002

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

Lab File ID: Q100810

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____

Date Analyzed: 10/08/93

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

93260-02.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-002

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

Lab File ID: Q100810

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____

Date Analyzed: 10/08/93

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

WESTON MANAGERS ENGINEERS CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

SEMIVOLATILE

One (1) water sample was collected on 09-27-93.

The sample and its associated QC samples were extracted on 10-04-93 and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 10-11-93.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

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

4. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.

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

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

Susan M. Broomhall

10.26.93

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

Date

sma/dlc/bna/10-147b.cn

Roy F. Weston, Inc. - Lionville Laboratory
Semivolatiles by GC/MS, HSL List
Report Date: 10/13/93 11:18

RFW Batch Number: 9310L147 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1a

0018

	Cust ID:	93260-01.I27	93260-01.I27	93260-01.I27	SBLK	SBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	93LE1751-MB1	93LE1751-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	Nitrobenzene-d5	86 %	78 %	77 %	90 %	80 %
	2-Fluorobiphenyl	94 %	87 %	88 %	97 %	88 %
	p-Terphenyl-d14	98 %	105 %	103 %	106 %	106 %
	Phenol-d5	73 %	66 %	62 %	84 %	66 %
	2-Fluorophenol	66 %	61 %	60 %	79 %	59 %
	2,4,6-Tribromophenol	79 %	86 %	90 %	81 %	86 %
Phenol		10 U	75 %	75 %	10 U	76 %
bis(2-Chloroethyl)ether		10 U	14 U	14 U	10 U	10 U
2-Chlorophenol		10 U	106 %	103 %	10 U	105 %
1,3-Dichlorobenzene		10 U	14 U	14 U	10 U	10 U
1,4-Dichlorobenzene		10 U	93 %	90 %	10 U	91 %
Benzyl alcohol		10 U	14 U	14 U	10 U	10 U
1,2-Dichlorobenzene		10 U	14 U	14 U	10 U	10 U
2-Methylphenol		10 U	14 U	14 U	10 U	10 U
bis(2-Chloroisopropyl)ether		10 U	14 U	14 U	10 U	10 U
4-Methylphenol		10 U	14 U	14 U	10 U	10 U
N-Nitroso-Di-n-propylamine		10 U	97 %	100 %	10 U	103 %
Hexachloroethane		10 U	14 U	14 U	10 U	10 U
Nitrobenzene		10 U	14 U	14 U	10 U	10 U
Isophorone		10 U	14 U	14 U	10 U	10 U
2-Nitrophenol		10 U	14 U	14 U	10 U	10 U
2,4-Dimethylphenol		10 U	14 U	14 U	10 U	10 U
Benzoic acid		50 U	70 U	70 U	50 U	50 U
bis(2-Chloroethoxy)methane		10 U	14 U	14 U	10 U	10 U
2,4-Dichlorophenol		10 U	14 U	14 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	116 * %	116 * %	10 U	116 * %
Naphthalene		10 U	14 U	14 U	10 U	10 U
4-Chloroaniline		10 U	14 U	14 U	10 U	10 U
Hexachlorobutadiene		10 U	14 U	14 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	64 %	66 %	10 U	65 %
2-Methylnaphthalene		10 U	14 U	14 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	14 U	14 U	10 U	10 U

*= Outside of EPA CLP QC limits.

961340I.1794

RFW Batch Number: 9310L147 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1b

	Cust ID:	93260-01.I27	93260-01.I27	93260-01.I27	SBLK	SBLK BS
	RFW#:	001	001 MS	001 MSD	93LE1751-MB1	93LE1751-MB1
2,4,6-Trichlorophenol		10 U	14 U	14 U	10 U	10 U
2,4,5-Trichlorophenol		50 U	70 U	70 U	50 U	50 U
2-Chloronaphthalene		10 U	14 U	14 U	10 U	10 U
2-Nitroaniline		50 U	70 U	70 U	50 U	50 U
Dimethylphthalate		10 U	14 U	14 U	10 U	10 U
Acenaphthylene		10 U	14 U	14 U	10 U	10 U
2,6-Dinitrotoluene		10 U	14 U	14 U	10 U	10 U
3-Nitroaniline		50 U	70 U	70 U	50 U	50 U
Acenaphthene		10 U	92 %	97 %	10 U	93 %
2,4-Dinitrophenol		50 U	70 U	70 U	50 U	50 U
4-Nitrophenol		50 U	75 %	80 %	50 U	74 %
Dibenzofuran		10 U	14 U	14 U	10 U	10 U
2,4-Dinitrotoluene		10 U	89 %	94 %	10 U	89 %
Diethylphthalate		10 U	14 U	14 U	10 U	10 U
4-Chlorophenyl-phenylether		10 U	14 U	14 U	10 U	10 U
Fluorene		10 U	14 U	14 U	10 U	10 U
4-Nitroaniline		50 U	70 U	70 U	50 U	50 U
4,6-Dinitro-2-methylphenol		50 U	70 U	70 U	50 U	50 U
N-Nitrosodiphenylamine (1)		10 U	14 U	14 U	10 U	10 U
4-Bromophenyl-phenylether		10 U	14 U	14 U	10 U	10 U
Hexachlorobenzene		10 U	14 U	14 U	10 U	10 U
Pentachlorophenol		50 U	106 * %	109 * %	50 U	103 %
Phenanthrene		10 U	14 U	14 U	10 U	10 U
Anthracene		10 U	14 U	14 U	10 U	10 U
Di-n-Butylphthalate		10 U	14 U	3 JB	0.4 J	10 U
Fluoranthene		10 U	14 U	14 U	10 U	10 U
Pyrene		10 U	109 %	108 %	10 U	106 %
Butylbenzylphthalate		10 U	14 U	14 U	10 U	10 U
3,3'-Dichlorobenzidine		20 U	28 U	28 U	20 U	20 U
Benzo(a)anthracene		10 U	14 U	14 U	10 U	10 U
Chrysene		10 U	14 U	14 U	10 U	10 U
bis(2-Ethylhexyl)phthalate		10 U	14 U	14 U	10 U	10 U
Di-n-Octyl phthalate		10 U	14 U	14 U	10 U	10 U
Benzo(b)fluoranthene		10 U	14 U	14 U	10 U	10 U
Benzo(k)fluoranthene		10 U	14 U	14 U	10 U	10 U
Benzo(a)pyrene		10 U	14 U	14 U	10 U	10 U
Indeno(1,2,3-cd)pyrene		10 U	14 U	14 U	10 U	10 U
Dibenzo(a,h)anthracene		10 U	14 U	14 U	10 U	10 U
Benzo(g,h,i)perylene		10 U	14 U	14 U	10 U	10 U

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

0019

9613401.1795

9613401.1796

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M101105

Level: (low/med) LOW Date Received: 10/01/93

% Moisture: not dec. _____ dec. Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/11/93

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

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

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M101105

Level: (low/med) LOW Date Received: 10/01/93

% Moisture: not dec. _____ dec. Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/11/93

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-Octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M101105

Level: (low/med) LOW Date Received: 10/01/93

% Moisture: not dec. _____ dec. Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/11/93

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

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

WESTON

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

PESTICIDE/PCB

1. One (1) water sample was collected on 09-27-93.

2. The sample and its associated QC samples were analyzed based on SW-846, 3rd Edition, procedures. The extraction procedure used was based on Method 3520 and the extracts were analyzed based on Method 8080.

3. All required holding times for extraction and analysis were met.

4. The method blank was below the reporting limits for all target compounds.

5. It appears that the laboratory blank spike and blank spike duplicate were inadvertently double surrogated and not spiked. Insufficient sample volume was available for re-extraction. A Sample Discrepancy Report (SDR) has been enclosed.

6. All surrogate recoveries were within laboratory control limits with the following exceptions:

Sample ID	% Recovery	Control Limits
93LE1747-MB1 BS	169 (DCB)	22% - 126%
93LE1747-MB1 BS	132 (TCX)	27% - 129%
93LE1747-MB1 BSD	185 (DCB)	22% - 126%
93LE1747-MB1 BSD	145 (TCX)	27% - 129%

A Sample Discrepancy Report (SDR) has been enclosed.

7. Due to insufficient sample volume, matrix spike QC could not be performed on the sample in this data set.

8. All initial and continuing standard calibrations associated with this data set were within acceptance criteria.

WESTON
MANAGERS DESIGNERS CONSULTANTS

9. This narrative has been revised to reflect the correct method (Method 8080) used for these analyses.

11.02.93
Date

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

sma/jkd/pcb/10-147pp.cn

005A

9613401.1803 GL203

WESTON SAMPLE DISCREPANCY REPORT (SDR)

SDR IN-PROGRESS ROUTING: (see other side)

Initiator: J. HOHL
Date: 10/11/93
Client: Westinghouse Hanford
RFW Lot #: 9310L140, 9310L147
Samples: ALL

Parameter: 0608H
Matrix: Water
Prep Batch: 93LE1747
Urgency: X Immediate ___ Other

Category for Discrepancy:
___ Log-In
___ LIMS
X Analysis/Sample
___ Project Revision
___ Other:

A. Reason for SDR:

A1a. Requires Verification By (circle): Log-In or Prep Group

A2. Verified By (circle): Log-In or Prep Group (signature) (date)

___ Missing Sample/Extract
___ Wrong Sample Pulled
___ Improper Bottle Type
___ Container Broken
___ Preservation Wrong
___ Received Past Hold
___ Insufficient Sample
___ Label ID's Illegible

A1b.

___ Re-Log: Tech Profile Error..Client Changed Request..
Sampler Error on C-O-C..Transcription Error..
Wrong Test Code, Re-Log As _____
___ Re-Leach: Metals/Inorg/VOA/BNA/Pest/Herb/___
___ Re-Digest: AA/ICP/HG/_____
___ Re-Extract: BNA/PEST/_____
X QC Out: (SURR)/MS...High/Low/<10%/Missing (2X)
X QC Out: B/(BS)/(BSD)/LCS/LCS-D...High/Low
___ Hold Time Exceeded: Prep/Analysis/Report
___ Not Amenable to Analysis
___ Other (describe)

The BS & BSD for batch [1747] appear to both have been double surrogated and inadvertently not spiked.

B. PM Instructions For Disposition (signature/date): Deb Haydt 10/12/93

___ Cancel ___ Add ___ Subout Analysis
___ Place On Hold ___ Take Off Hold
___ Change W.O. # to: _____
___ MS/MSD on Sample ___, if enough sample: ORG/INORG
___ MS/DUP on Sample ___, if enough sample: ORG/INORG
___ Change Client name to: _____
___ Wrong Test Code, Re-Log As _____
___ Include in Narrative

___ Other, explain:

~~Reextract~~ DH 10/11/93
Please include in narrative

C. FINAL ACTION: a clear description of what was done for resolution, when it was done, and by whom it was done

Action Taken:
___ Revision To Chain-of-Custody Completed
___ LIMS Corrections Completed
X Other, explain

Additional sample volume is not available for re-extraction.
NOTED IN NARRATIVE DBH 10/20/93

Action By (name/date): Dina Osei-Mensah 10/12/93
Forward to Pat Feldman, QA for distribution ---

D. Distribution of Completed SDR (include name):

X Initiator: J. HOHL
X Lab Manager: J. PETER HERSHEY
X Project Mgr: J. Edwards
X Unit Leader: D. Skrzat
X QA (original): K. RYAN
___ Log-In: _____
___ Data Reporting: _____
___ Billing: S. BRENER
X K. Cramer
X D. Osei Mensah

Distributed By: (signature/date) 0017

RFW 21-21-006/E-10/90 (SDR Revision 5.0)

Roy F. Weston, Inc. - Lionville Laboratory
Pesticide/PCBs by GC, CLP List
Report Date: 10/21/93 10:39

RFW Batch Number: 9310L147 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1

0019

	Cust ID:	93260-01.I27	PBLK	PBLK BS	PBLK BSD
Sample Information	RFW#:	001	93LE1747-MB1	93LE1747-MB1	93LE1747-MB1
	Matrix:	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L
Surrogate:	Decachlorobiphenyl	39 %	102 %	169 * %	185 * %
	Tetrachloro-m-xylene	32 %	75 %	132 * %	145 * %
Alpha-BHC		0.050 U	0.050 U	0.050 U	0.050 U
Beta-BHC		0.050 U	0.050 U	0.050 U	0.050 U
Delta-BHC		0.050 U	0.050 U	0.050 U	0.050 U
gamma-BHC (Lindane)		0.050 U	0.050 U	NS %	NS %
Heptachlor		0.050 U	0.050 U	NS %	NS %
Aldrin		0.050 U	0.050 U	NS %	NS %
Heptachlor epoxide		0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I		0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin		0.10 U	0.10 U	NS %	NS %
4,4'-DDE		0.10 U	0.10 U	0.10 U	0.10 U
Endrin		0.10 U	0.10 U	NS %	NS %
Endosulfan II		0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDD		0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan sulfate		0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDT		0.10 U	0.10 U	NS %	NS %
Methoxychlor		0.50 U	0.50 U	0.50 U	0.50 U
Endrin ketone		0.10 U	0.10 U	0.10 U	0.10 U
alpha-Chlordane		0.50 U	0.50 U	0.50 U	0.50 U
gamma-Chlordane		0.50 U	0.50 U	0.50 U	0.50 U
Toxaphene		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1016		0.50 U	0.50 U	0.50 U	0.50 U
Aroclor-1221		0.50 U	0.50 U	0.50 U	0.50 U
Aroclor-1232		0.50 U	0.50 U	0.50 U	0.50 U
Aroclor-1242		0.50 U	0.50 U	0.50 U	0.50 U
Aroclor-1248		0.50 U	0.50 U	0.50 U	0.50 U
Aroclor-1254		1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	1.0 U	1.0 U	1.0 U

9310L147 - 10/12/93

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

9613401 1803

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 10089309.23

Level: (low/med) LOW Date Received: 10/01/93

% Moisture: not dec. _____ dec. Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/09/93

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
319-84-6	Alpha-BHC	0.050	U
319-85-7	Beta-BHC	0.050	U
319-86-8	Delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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10/20/93

FORM 1 PEST 12/88 Rev.

WESTON MANAGERS DESIGNERS CONSULTANTS

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

Client : WESTINGHOUSE HANFORD
RFW# : 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

INORGANIC

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

1. All sample holding times as required by 40CFR136 were met with the exception of Nitrate by IC, Nitrite by IC and Phosphate by IC, which were received past hold.

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

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

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

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

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

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

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

10.19.93
Date

0001

pas/i10-147

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/11/93

CLIENT: WESTINGHOUSE HANFORD WESTON BATCH #: 9310L147

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	93260-01.I27	Chloride by IC	2.2		MG/L	0.25	1.0
		Fluoride by IC	0.50	u	MG/L	0.50	1.0
		Chloride	1.2		MG/L	0.25	1.0
		Nitrite by IC	0.25	u	MG/L	0.25	1.0
		Nitrate by IC	1.0		MG/L	0.25	1.0
		Phosphate by IC	0.25	u	MG/L	0.25	1.0
		Sulfate by IC	4.4		MG/L	0.25	1.0
		Oil & Grease Gravimetri	5.0	u	MG/L	5.0	1.0
		Total Dissolved Solids	100		MG/L	5.0	1.0
		Total Suspended Solids	5.0		MG/L	5.0	1.0

WESTON
MANAGERS DESIGNERS CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

CLP METALS

1. This narrative covers the analysis of one (1) water sample.

2. The sample and associated QC samples were prepared and analyzed in accordance with the following protocols: SW-846.

3. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory and High Purity.

4. All analyses were performed within the required holding times.

5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.

7. All Preparation/Method Blanks were below Reporting Limits.

8. All ICP Interference Check Samples (ICSA and ICSAB) were within control limits.

9. All Laboratory Control Samples (LCS) were within the 80-120% control limits.

10. All Serial Dilution percent differences were within SW-846 control limits except for:

RFW #	Element	%Difference
001	Sodium	10.5

11. All Matrix Spike recoveries were within the 75-125% control limits (exception allowed when sample concentration exceeds the spike added concentration by a factor of 4 or more).

    Matrix spike analyses are not required for Ca, Mg, Na, and K in waters.

WESTON MANAGERS DESIGNERS CONSULTANTS

12. All Matrix Spike Duplicates were within the 20% Relative Percent Difference (RPD) control limits except for:

RFW #	Element	%RPD
001	Tin	26.2

13. All Duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits for samples values greater than 5X Reporting Limit, or +/- the Reporting Limits for sample values less than 5X Reporting Limit.

14. Method of Standard Additions (MSA) analyses were not required.

15. 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.

16. 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).

17. ICP Interelement Correction Factors for IC1 and IC3 are included in this package, but do not appear on EDD.

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

19. The sample ID was changed to accommodate the EPA naming convention which allows a maximum of 6 characters on all CLP Forms. Refer to the Cover Page of the CLP Forms to correlate the modified sample ID to the RFW#. Refer to the Chain of Custody to correlate RFW# to the original client ID.

Raymond A. Sierra
Inorganic Section Manager
Lionville Analytical Laboratory

10.20.93
Date

mlj/clp-met.nar

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

CLP METALS ADDENDUM

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

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

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

10.20.93
Date

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/18/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9310L147

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	93260-01.I27	Silver, Total	10.0	u	UG/L	10.0	1.0
		Aluminum, Total	866		UG/L	200	1.0
		Arsenic, Total	10.0	u	UG/L	10.0	1.0
		Barium, Total	2590		UG/L	200	1.0
		Beryllium, Total	5.0	u	UG/L	5.0	1.0
		Calcium, Total	24400		UG/L	5000	1.0
		Cadmium, Total	5.0	u	UG/L	5.0	1.0
		Cobalt, Total	50.0	u	UG/L	50.0	1.0
		Chromium, Total	10.0	u	UG/L	10.0	1.0
		Copper, Total	25.0	u	UG/L	25.0	1.0
		Iron, Total	146		UG/L	100	1.0
		Mercury, Total	0.20	u	UG/L	0.20	1.0
		Potassium, Total	5000	u	UG/L	5000	1.0
		Magnesium, Total	5000	u	UG/L	5000	1.0
		Manganese, Total	15.8		UG/L	15.0	1.0
		Sodium, Total	5000	u	UG/L	5000	1.0
		Nickel, Total	40.0	u	UG/L	40.0	1.0
		Lead, Total	3.3		UG/L	3.0	1.0
		Antimony, Total	60.0	u	UG/L	60.0	1.0
		Selenium, Total	5.0	u	UG/L	5.0	1.0
		Tin, Total	100	u	UG/L	100	1.0
		Titanium, Total	100	u	UG/L	100	1.0
		Thallium, Total	10.0	u	UG/L	10.0	1.0
		Vanadium, Total	50.0	u	UG/L	50.0	1.0
		Zinc, Total	32.9		UG/L	20.0	1.0

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

01.I27

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP147

Matrix (soil/water): WATER Lab Sample ID: 931014701

Level (low/med): LOW Date Received: 10/01/93

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	866.00			P
7440-36-0	Antimony	47.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	2590.00			P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	5.00	U		P
7440-70-2	Calcium	24400.00			P
7440-47-3	Chromium	5.00	U		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	146.00			P
7439-92-1	Lead	3.30			F
7439-95-4	Magnesium	588.00	B		P
7439-96-5	Manganese	15.80			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	14.00	U		P
7440-09-7	Potassium	854.00	B		P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	6.00	U		P
7440-23-5	Sodium	3460.00	B	E	P
7440-28-0	Thallium	4.00	U		F
7440-62-2	Vanadium	9.00	U		P
7440-66-6	Zinc	32.90			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

VALIDATION SUMMARY

9613401.1811

9310L147-WES-12885

Los Alamos Technical Associates, Inc.

8633 Gage Blvd. / Kennewick, WA 99336 / Telephone (509) 783-4369 / FAX (509) 783-9661

January 21, 1994

Karl Pool
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Dear Karl,

Attached is the data validation report for analytical results for 1325N Waste Stream 3 (SDG 9310L147-WES-1285). The package was received by Westinghouse Hanford Analytical Services Management (HASM) on November 17, 1993. Los Alamos Technical Associates received the package on December 15, 1993.

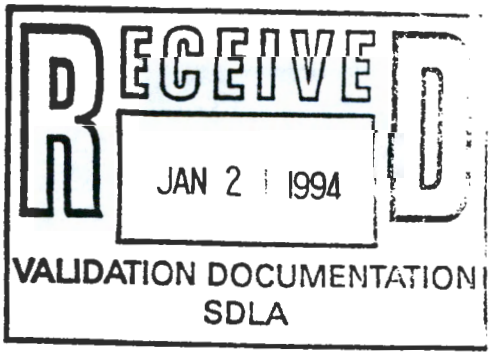
If you have any questions, please let me know.

Sincerely,

A. T. DiCenso

A.T. DiCenso
Senior Environmental Engineer

cc: Chris Haecker, LATA
Joan Kessner, WHC
WH552 file



DATA VALIDATION REPORT
for
1325N WASTE STREAM 3
SDG: 9310L147-WES-1285

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

January 20, 1994

1325N Waste Stream 3 Data Validation Summary

Validation of the analytical data package was performed to the requirements provided in Section 2.0, of WHC-CM-5-3. The overriding QA document was the Liquid Effluent Sampling Quality Assurance Program Plan (WHC-SD-WM-QAPP-011). The sample analyses were performed by Weston Laboratories.

The primary objective of the data validation effort was to ensure the usability and defensibility of the data produced for the project. This was accomplished through a detailed examination of the data package to recreate the analytical process and verify that proper and acceptable analytical techniques had been applied. The data package was checked for correct submission of required deliverables, correct transcription of raw data to the summary forms, and for proper calculation of a number of parameters. Additionally, supplemental radiochemical documentation was reviewed for evidence of proper initial instrument calibrations. An overall assessment of the data is provided on the Data Assessment Summary Form as required by WHC-CM-5-3. Assessments of individual quality control checks performed by the laboratory are located with the Data Assessment Summary Forms.

Data qualifiers are assigned to any results that have been determined to be deficient. If required, the following data qualifiers are added by the data validator to the laboratory data summary to signify the nature and magnitude of a deficiency:

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.

UJ — This qualifier indicates that the analyte was analyzed for and not detected. Since a quality control deficiency has been identified during the validation process, the value reported may not accurately reflect the sample detection limit.

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

R — Indicates the analyte was analyzed for and found to be unusable due to significant quality control deficiencies.

Data Validation Narrative

Analyses Requested

Samples 93260-01.I27 and 93260-02.I27 were collected on September 27, 1993 by WHC and transferred to Weston Laboratories for analysis. All of the sample containers were received unbroken.

The radiochemical portion of the data package will be validated separately. The chemical portion was received for validation on December 15, 1993. In addition, the following determinations were conducted on samples 93260-01.I27 and 93260-02.I27:

Volatiles (SW-846; by Method 8240)
Volatiles - Aromatic (SW-846; by Method 8020)
Volatiles - Halogenated (SW-846; by Method 8010)
SemiVOA by Method 8270
Pesticide/PCB by Method 8080
ICP Metals/AA--Tin, Titanium, Arsenic, Selenium, Tl, Hg
Anions - F, Cl, SO4, NO2, NO3, PO4
Chloride
TDS and TSS
Total Recoverable Oil and Grease

MAJOR DEFICIENCIES (REJECTED DATA)

The following major deficiencies resulted in the qualification of the results as unusable.

- Sample 93260-01.I27 was qualified as unusable (R) due to high DCB and TCX blank spike and blank spike duplicate recoveries. It appears that the laboratory blank spike and blank spike duplicate were double surrogated and not spiked. Insufficient sample volume was available for re-extraction.

- Holding times for sample 93260-01.I27 were met with the exception of those for the IC analysis of NO2, NO3, and PO3, which were exceeded by a factor of 7. Nitrite and Phosphate were qualified as unusable (R).

MINOR DEFICIENCIES

The following minor deficiencies were discovered. These minor shortcomings are not expected to significantly affect the overall quality of the data.

- Acetone was detected in the blank specimen. The acetone results for the samples were not greater than or equal to five times the blank results; therefore, acetone was qualified as non-detect (U) for both 93260-01.I27 and 93260-02.I27.

- All semi-volatile constituents in sample 93260-01.I27 were qualified as estimated, non-detect (UJ) due to high matrix spike and matrix spike duplicate 1,2,4-Trichlorobenzene and Pentachlorophenol recoveries.

- In sample 93260-01.I27, 4,4'-DDT and Methoxychlor percent differences (%D) were greater than 20 percent; therefore, the sample was qualified as estimated, non-detect (UJ).

- Potassium, was qualified as estimated, non-detect (UJ) in sample 93260-01.I27 due to high RPD values. In addition, sample 93260-01.I27 had unacceptable spike recoveries; therefore, Tin was qualified as estimated, non-detect (UJ). Sodium was also qualified as estimated, non-detect (UJ) for unacceptable serial dilution percent differences.

- In sample 93260-01.I27, Nitrate was qualified as estimated (J) for exceeding the recommended holding times.

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VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER — Lab Sample ID: 9310L147-001

Sample wt/vol: 5.00 (g/mL) ML — Lab File ID: 0100809

Level: (low/med) LOW — Date Received: 10/01/93

% Moisture: not dec. ____ — Date Analyzed: 10/08/93

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

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

CAS NO.	COMPOUND	Concentration	Q	
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	5	U	
67-64-1	Acetone	8	JB	u
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	2	J	
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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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-001

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

Lab File ID: 0100809

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. ____

Date Analyzed: 10/08/93

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

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FORM 1 VOA-TIC 12/88 Rev.

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VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-02.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-002

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

Lab File ID: 0100810

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____

Date Analyzed: 10/08/93

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
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	JB	u
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
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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VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

93260-02.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-002

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

Lab File ID: Q100810

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____

Date Analyzed: 10/08/93

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

MJ 1-18-94

FORM I VOA-TIC 12/88 Rev.

9613401.1820

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: M101105

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____ dec.

Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 10/11/93

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

Dilution Factor: 1.00

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

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

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FORM 1 SV-1 12/88 Rev.

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SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M101105

Level: (low/med) LOW Date Received: 10/01/93

% Moisture: not dec. _____ dec. Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 10/11/93

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
99-09-2	3-Nitroaniline	50	U	UJ
83-32-9	Acenaphthene	10	U	
51-28-5	2,4-Dinitrophenol	50	U	
100-02-7	4-Nitrophenol	50	U	
132-64-9	Dibenzofuran	10	U	
121-14-2	2,4-Dinitrotoluene	10	U	
84-66-2	Diethylphthalate	10	U	
7005-72-3	4-Chlorophenyl-phenylether	10	U	
86-73-7	Fluorene	10	U	
100-01-6	4-Nitroaniline	50	U	
534-52-1	4,6-Dinitro-2-methylphenol	50	U	
86-30-6	N-Nitrosodiphenylamine (1)	10	U	
101-55-3	4-Bromophenyl-phenylether	10	U	
118-74-1	Hexachlorobenzene	10	U	
87-86-5	Pentachlorophenol	50	U	
85-01-8	Phenanthrene	10	U	
120-12-7	Anthracene	10	U	
84-74-2	Di-n-Butylphthalate	10	U	
206-44-0	Fluoranthene	10	U	
129-00-0	Pyrene	10	U	
85-68-7	Butylbenzylphthalate	10	U	
91-94-1	3,3'-Dichlorobenzidine	20	U	
56-55-3	Benzo(a)anthracene	10	U	
218-01-9	Chrysene	10	U	
117-81-7	bis(2-Ethylhexyl)phthalate	10	U	
117-84-0	Di-n-Octyl phthalate	10	U	
205-99-2	Benzo(b)fluoranthene	10	U	
207-08-9	Benzo(k)fluoranthene	10	U	
50-32-8	Benzo(a)pyrene	10	U	
193-39-5	Indeno(1,2,3-cd)pyrene	10	U	
53-70-3	Dibenzo(a,h)anthracene	10	U	
191-24-2	Benzo(g,h,i)perylene	10	U	

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev. DAS 1-19-94

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SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: M101105

Level: (low/med) LOW

Date Received: 10/01/93

% Moisture: not dec. _____ dec.

Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 10/11/93

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

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 SV-TIC 12/88 Rev.

NCD 1-19-94

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9613401.1823

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

93260-01.I27

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: WATER | Lab Sample ID: 9310L147-001

Sample wt/vol: 1000 (g/mL) ML | Lab File ID: 10089309.23

Level: (low/med) LOW | Date Received: 10/01/93

% Moisture: not dec. _____ dec. | Date Extracted: 10/04/93

Extraction: (SepF/Cont/Sonc) CONT | Date Analyzed: 10/09/93

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

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

CAS NO.	COMPOUND		Q
319-84-6	Alpha-BHC	0.050	U
319-85-7	Beta-BHC	0.050	U
319-86-8	Delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

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1-19-94

FORM 1 PEST 12/88 Rev.

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/18/93

CLIENT: WESTINGHOUSE HANFORD WESTON BATCH #: 9310L147

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR	
-001	93260-01.I27	Silver, Total	10.0	u	UG/L	10.0	1.0	
		Aluminum, Total	866		UG/L	200	1.0	
		Arsenic, Total	10.0	u	UG/L	10.0	1.0	
		Barium, Total	2590		UG/L	200	1.0	
		Beryllium, Total	5.0	u	UG/L	5.0	1.0	
		Calcium, Total	24400		UG/L	5000	1.0	
		Cadmium, Total	5.0	u	UG/L	5.0	1.0	
		Cobalt, Total	50.0	u	UG/L	50.0	1.0	
		Chromium, Total	10.0	u	UG/L	10.0	1.0	
		Copper, Total	25.0	u	UG/L	25.0	1.0	
		Iron, Total	146		UG/L	100	1.0	
		Mercury, Total	0.20	u	UG/L	0.20	1.0	
		Potassium, Total	5000	u	UG/L	5000	1.0	UJ
		Magnesium, Total	5000	u	UG/L	5000	1.0	
		Manganese, Total	15.8		UG/L	15.0	1.0	
		Sodium, Total	5000	u	UG/L	5000	1.0	UJ
		Nickel, Total	40.0	u	UG/L	40.0	1.0	
		Lead, Total	3.3		UG/L	3.0	1.0	
		Antimony, Total	60.0	u	UG/L	60.0	1.0	
		Selenium, Total	5.0	u	UG/L	5.0	1.0	
		Tin, Total	100	u	UG/L	100	1.0	UJ
		Titanium, Total	100	u	UG/L	100	1.0	
		Thallium, Total	10.0	u	UG/L	10.0	1.0	
		Vanadium, Total	50.0	u	UG/L	50.0	1.0	
		Zinc, Total	32.9		UG/L	20.0	1.0	

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/11/93

CLIENT: WESTINGHOUSE HANFORD WESTON BATCH #: 9310L147

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR	
-001	93260-01.I27	Chloride by IC	2.2		MG/L	0.25	1.0	
		Fluoride by IC	0.50	u	MG/L	0.50	1.0	
		Chloride	1.2		MG/L	0.25	1.0	
		Nitrite by IC	0.25	u	MG/L	0.25	1.0	R
		Nitrate by IC	1.0		MG/L	0.25	1.0	J
		Phosphate by IC	0.25	u	MG/L	0.25	1.0	R
		Sulfate by IC	4.4		MG/L	0.25	1.0	
		Oil & Grease Gravimetri	5.0	u	MG/L	5.0	1.0	
		Total Dissolved Solids	100		MG/L	5.0	1.0	
		Total Suspended Solids	5.0		MG/L	5.0	1.0	

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12/30/93

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VOA DATA ASSESSMENT

DATE 1-17-94 **SAMPLES/MATRIX** 93260-01.I27, 93260-02.I27, WATER

REVIEWED BY D.E. STROUP 1-18-94

LABORATORY WESTON

CASE # 1325N WASTE STREAM 3

SDG # 9310L147-WES-1285

DATA ASSESSMENT SUMMARY

		VOA
1.	Chain of Custody/Holding Times	O
2.	Instrument Calibration	O
3.	Blanks	X
4.	Accuracy	O
5.	Precision	O
6.	Instrument Performance	O

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

OVERALL ASSESSMENT: The data is acceptable with no qualifiers.

NOTES: None

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

VOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: CHAIN OF CUSTODY/HOLDING TIMES

COMMENTS: Volatile organic analyses are to be conducted within fourteen days of sample collection. The samples were collected by WHC on 9-27-93 and transferred to WESTON for qualitative and quantitative evaluation. The volatile organic analyses were completed on 10-8-93.

ACTION: No action was required.

sample #	constituent	value/qualifier

VOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: INSTRUMENT CALIBRATION

COMMENTS: A GC/MS tune shall be performed at twelve hour intervals, and the bromofluorobenzene (BFB) percent relative ion abundance results must satisfy the ion abundance criteria.

With respect to initial calibration data, all average RRF values for system performance check compounds (SPCC) must be greater than the specified minimum of 0.300; the RRF value corresponding to bromoform must exceed 0.250. The percent relative standard deviation (%RSD) results of all calibration check compounds (CCC) are to be $\leq$ 30%. Initial calibration was conducted on 9-13-93.

All applicable SPCC RRF50 values associated with the continuing calibration data must be greater than 0.300, and the bromoform result shall exceed 0.250. The percent differences (%D) associated with the calibration check compounds are to be within $\pm$ 25%. Continuing calibration checks were run on 10-8-93.

ACTION: All of the above criteria were met.

sample #	constituent	value/qualifier

VOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: BLANKS

COMMENTS: The laboratory must conduct a blank analysis within every twelve hour period in which samples are analyzed. All analytes exhibiting a concentration ≤ 5 times the corresponding blank result shall be qualified as non-detects.

Acetone was detected in the blank specimen. The acetone results for the samples are not greater than or equal to five times the blank results.

Qualify acetone as non detect (U) for both samples.
ACTION: No action was required.

sample #	constituent	value/qualifier
93260-01.I27	Acetone	8 ug/L U
93260-02.I27	Acetone	8 " U

VOA QC

Name D.E. Stroup **Date** 1-17-93

QC Check: ACCURACY (Surrogate and Matrix Spike Recoveries)

COMMENTS: The recoveries of the following surrogate compounds are to fall within the control limits as specified by the RCRA guidelines: Toluene-d_8, bromofluorobenzene, and 1,2-dichloroethane-d_4.

Sample 93260-02.I27 was spiked with the following compounds: 1,1-dichloroethene, trichloroethene, benzene, toluene, and chlorobenzene.

The recoveries resulting from the matrix spike and matrix spike duplicate analyses must satisfy the laboratory defined quality control criteria.

ACTION: All of the above criteria were met.

sample #	constituent	value/qualifier

VOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: PRECISION

COMMENTS: The relative percent difference (%RPD) values calculated from the matrix spike and matrix spike duplicate data must be within the laboratory specified quality control limits.

ACTION: The above criteria were met.

sample #	constituent	value/qualifier

VOA QC

Name D.E. Stroup **Date** 1-17-93

QC Check: INSTRUMENT PERFORMANCE

COMMENTS: Bromochloromethane, 1,4-dichlorobenzene, and chlorobenzene-d_5 were utilized as internal standards and evaluated on 10-8-93.

The extracted ion current profile (EICP) area of each internal standard must be within its corresponding control limit, and all internal standard retention times shall be within thirty seconds of the respective twelve hour standard.

ACTION: The above criteria were met.

sample #	constituent	value/qualifier

SemiVOA DATA ASSESSMENT

DATE 1-17-94 **SAMPLES/MATRIX** 93260-01.I27 WATER

REVIEWED BY D.E. STROUP Des 1-19-94

LABORATORY WESTON

CASE # 1325N WASTE STREAM 3

SDG # 9310L147-WES-1285

DATA ASSESSMENT SUMMARY

		SVOA
1.	Chain of Custody/Holding Times	O
2.	Instrument Calibration	O
3.	Blanks	O
4.	Accuracy	X
5.	Precision	O
6.	Instrument Performance	O

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

OVERALL ASSESSMENT: *The data is acceptable with the minor qualification noted above and on the corresponding attachment.*

NOTES: None

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

SemiVOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: CHAIN OF CUSTODY/HOLDING TIMES

COMMENTS: Samples submitted for semivolatile organic analysis are required to be extracted within seven days of collection and evaluated within forty days of extraction. The samples were collected by WHC on 9-27-93 and transferred to WESTON for qualitative and quantitative evaluation. The extraction procedures were conducted on 10-4-93, and the semivolatile organic analyses were completed on 10-11-93.

ACTION: No action was required.

sample #	constituent	value/qualifier

SemiVOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: INSTRUMENT CALIBRATION

COMMENTS: A GC/MS tune shall be performed at twelve hour intervals, and the decafluorotriphenylphosphine (DFTPP) percent relative ion abundance results must satisfy the ion abundance criteria.

With respect to initial calibration data, all average RRF values for system performance check compounds (SPCC) must be greater than the specified minimum of 0.050. The percent relative standard deviation (%RSD) results of all calibration check compounds (CCC) are to be $\leq$ 30%. Initial calibration was conducted on 10-8-93.

All applicable SPCC RRF50 values associated with the continuing calibration data must be greater than 0.050, and the percent differences (%D) associated with the calibration check compounds (CCC) are to be within $\pm$ 25%. Continuing calibration checks were run on 10-11-93.

ACTION: All of the above criteria were met.

sample #	constituent	value/qualifier

SemiVOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: BLANKS

COMMENTS: The laboratory must conduct a blank analysis within every twelve hour period in which samples are analyzed. All analytes exhibiting a concentration $\leq$ 5 times the corresponding blank result shall be qualified as non-detects.

ACTION: No action was required.

sample #	constituent	value/qualifier

SemiVOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: ACCURACY (Surrogate and Matrix Spike Recoveries)

COMMENTS: The recoveries of the following surrogate compounds are to fall within the control limits as specified by the RCRA guidelines: nitrobenzene-d_5, 2-fluorobiphenyl, terphenyl, phenol-d_5, 2-fluorophenol, and 2,4,6-tribromophenol.

The recoveries resulting from the matrix spike and matrix spike duplicate analyses must satisfy the laboratory defined quality control criteria.

ACTION: The matrix spike and matrix spike duplicate 1,2,4-Trichlorobenzene and Pentachlorophenol recoveries are high.
Qualify all results as noted below.

sample #	constituent	value/qualifier	
93260-01.I27	All	See attached data sheet	UJ

SemiVOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: PRECISION

COMMENTS: The relative percent difference (%RPD) values calculated from the matrix spike and matrix spike duplicate data must be within the laboratory specified quality control limits.

ACTION: The criteria were met.

sample #	constituent	value/qualifier

SemiVOA QC

Name D.E. Stroup **Date** 1-17-94

QC Check: INSTRUMENT PERFORMANCE

COMMENTS: 1,4-dichlorobenzene-d_4, naphthalene-d_8, acenaphthene-d_{10}, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12} were utilized as internal standards and evaluated on 10-11-93.

The extracted ion current profile (EICP) area of each internal standard must be within its corresponding control limit, and all internal standard retention times shall be within thirty seconds of the respective twelve hour standard.

ACTION: The above criteria were met.

sample #	constituent	value/qualifier

PESTICIDE/PCB DATA ASSESSMENT

DATE 1-17-94 **SAMPLES/MATRIX** 93260-01.I27 WATER

REVIEWED BY D.E. STROUP *DES 1-19-94*

LABORATORY WESTON

CASE # 1325N WASTE STREAM 3

SDG # 9310L147-WES-1285

DATA ASSESSMENT SUMMARY

		Pest/PCB
1.	Chain of Custody/Holding Times	O
2.	Instrument Performance	O
3.	Instrument Calibration	X
4.	Blanks	O
5.	Accuracy	M
6.	Precision	O

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

OVERALL ASSESSMENT: The data is unusable due to high surrogate recoveries and no matrix spike quality control check.

NOTES: None

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

PESTICIDE/PCB QC

Name D.E. Stroup **Date** 1-17-94

QC Check: CHAIN OF CUSTODY/HOLDING TIMES

COMMENTS: Samples submitted for pesticide/PCB analysis are required to be extracted within seven days of collection and evaluated within forty days of extraction. The samples were collected by WHC on 9-27-93 and transferred to WESTON for qualitative and quantitative evaluation. The extraction procedures were conducted on 10-4-93, and the pesticide/PCB analyses were completed on 10-9-93.

ACTION: No action was required.

sample #	constituent	value/qualifier

PESTICIDE/PCB QC

Name D.E. Stroup **Date** 1-17-94

QC Check: INSTRUMENT PERFORMANCE

COMMENTS: The retention times for DDT on the quantitative and confirmation columns must be greater than twelve minutes, and all pesticide standards are to elute within their corresponding retention time windows on both columns.

ACTION: The above criteria were met.

sample #	constituent	value/qualifier

PESTICIDE/PCB QC

Name D.E. Stroup **Date** 1-17-94

QC Check: INSTRUMENT CALIBRATION

COMMENTS: Initial calibration of the quantitative and confirmation columns shall be conducted by analyzing five standard solutions of each analyte of interest, three for polybrominated biphenyl. A calibration factor is then calculated for every analyte at each standard concentration. The percent relative standard deviation (%RSD) associated with the calibration factors for Aldrin, Endrin, DDT, and DBC must be less than or equal to 10% on quantitative columns, and all standard analyte %RSD values must be less than 20% on both columns.

With respect to continuing calibration data, the percent difference (%D) values, which are determined by comparing the initial and subsequent standard analyte calibration factors, must be $\leq$ 15% on quantitative columns and $\leq$ 20% on confirmation columns.

4,4'-DDT and Methoxychlor %D are greater than 20 percent.

ACTION: Qualify 4,4'-DDT and Methoxychlor as noted below.

sample #	constituent	value/qualifier	
93260-01.I27	4,4'-DDT	0.10 ug/L	UJ
	Methoxychlor	0.50 "	UJ

PESTICIDE/PCB QC

Name D.E. Stroup **Date** 1-17-94

QC Check: BLANKS

COMMENTS: One blank analysis is to be conducted for every batch of samples. All analytes exhibiting a concentration ≤ 5 times the corresponding blank result shall be qualified as non-detects.

ACTION: No action was required.

sample #	constituent	value/qualifier

PESTICIDE/PCB QC

Name D.E. Stroup **Date** 1-17-94

QC Check: ACCURACY (Surrogate and Matrix Spike Recoveries)

COMMENTS: The surrogate compounds, decachlorobiphenyl (DCB) and tetrachloro-m-xylene (TCX), are required to yield recoveries within the laboratory specified quality control limits.

Sample 93260-01.I27 was spiked with the following compounds: gamma-BHC (Lindane), Heptachlor, Aldrin, Dieldrin, Endrin, and 4,4'-DDT.

The recoveries resulting from the matrix spike and matrix spike duplicate analyses must satisfy the laboratory defined quality control criteria.

ACTION: The blank spike and blank spike duplicate have high DCB and TCX recoveries. An explanation is given in the laboratory narrative. No matrix spike QC was performed due to insufficient sample volume.
Qualify all results as noted below.

sample #	constituent	value/qualifier	
93260-01.I27	All	See attached data sheet	R

PESTICIDE/PCB QC

Name D.E. Stroup **Date** 1-17-94

QC Check: PRECISION

COMMENTS: The relative percent difference (%RPD) values calculated from the matrix spike and matrix spike duplicate data must be within the laboratory defined quality control limits.

ACTION: Please see the previous attachment for Accuracy.

sample #	constituent	value/qualifier

ICP DATA ASSESSMENT

DATE 01-18-94 SAMPLES/MATRIX 93260-01.I27/WATER

REVIEWED BY D.E. Berkowitz dat for 1-21-94

LABORATORY Weston

CASE # 1325N Waste Stream

SDG # 9310L147-WES-1285

DATA ASSESSMENT SUMMARY

		ICP/AA			
1.	Chain of Custody/Holding Times	O			
2.	Instrument Calibration	O			
3.	ICV/CCV Standards	O			
4.	Blanks	O			
5.	Interference Check Sample	O			
6.	Laboratory Control Sample	O			
7.	Duplicate Analysis	X			
8.	Matrix Spike/Matrix Spike Dup.	X			
9.	CRDL Standard	O			
10	Serial Dilution	X			
11.	Other Quality Control	NA			

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

OVERALL ASSESSMENT: The data is acceptable with the minor qualifications noted above and on the corresponding quality control attachments.

NOTES: None

- Refer to the corresponding attachments for explanations of any problems.

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: HOLDING TIMES

COMMENTS: Analytical holding times were assessed to determine whether the requirements for metals analyses were met. The maximum holding time for metals is 180 days. The samples were collected on 09-27-94 and analyzed on 10-11-94. All samples were received in good condition and preserved in accordance with SW-846.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: INSTRUMENT CALIBRATION

COMMENTS: The data was examined to determine whether the instruments used were calibrated at the correct frequency and that the calibration was performed correctly. All instruments must be calibrated on a daily basis or upon each set-up. Atomic Absorption calibration must be performed with a minimum of a blank and 3 standards with a minimum correlation coefficient of 0.995. Data is qualified as unusable if reported from an instrument that was not calibrated or was calibrated with less than the minimum number of standards. Associated sample results were qualified as estimated if the correlation coefficient is less than 0.995.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: INITIAL AND CONTINUING CALIBRATION VERIFICATION

COMMENTS: An Initial Calibration Verification (ICV) standard must be run at the beginning of each run. A Continuing Calibration Standard (CCV) must be run at a 10% frequency. The recoveries for all ICVs must be within ± 10% of the true value and the recoveries for CCVs within ± 20% for AA and ± 10% for ICP. If the ICV/CCV results are outside the acceptable range, all associated sample results are qualified as estimated.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: BLANKS

COMMENTS: Calibration and preparation blanks were evaluated for the presence of contaminants. Calibration blanks should be run at a 10% frequency. At least one preparation blank is required for each sample batch. If the concentration of analytes in the sample is less than 5 times the blank concentration, the associated sample results were qualified as nondetected (U). If the absolute value of any negative blank values exceeded the Instrument Detection Limit (IDL), non-detects were qualified as estimated (UJ) and positive results within 2 times the absolute value of the blank value as estimated.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: INTERFERENCE CHECK SAMPLE

COMMENTS: The ICP Interference Check Sample (ICS) is run to verify the instrumental interelement and background correction factors. An ICS must be run at the beginning and end of each sample analysis run or twice per 8 hour shift. The results for the ICS solution AB analysis must fall within the control limits of ± 20% of the true value. In addition, the ICS raw data is examined for results with an absolute value of > IDL for those analytes which are not present in the ICS solution. Associated sample results are qualified as estimated when the ICS criteria are not met.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: LABORATORY CONTROL STANDARD

COMMENTS: The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of all steps in the analysis, including sample preparation. All LCS results must fall within the control limits of ± 20% of the true value. If the LCS recovery is > 120% or 50 - 79%, sample results are qualified as estimated. Results associated with an LCS recovery of < 50% are qualified as unusable.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: DUPLICATE ANALYSIS

COMMENTS: Duplicate analyses are indicators of laboratory precision based on each sample matrix. Duplicate analysis must be performed at a 5% frequency or 1 per batch, whichever is greater. The relative percent deviation (RPD) for duplicate analyses should be less than 20% for sample results greater than 10 times the IDL. If the RPD is greater than 20%, the associated sample results are qualified as estimated.

ACTION: With the exception of the analyte noted below all criteria were met.

sample #	constituent	value/qualifier
260-01.I27	K	< 5000 ug/L UJ

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: MATRIX SPIKE/MATRIX SPIKE DUPLICATE

COMMENTS: Matrix spikes sample analysis provide information about the effect of each sample matrix on the digestion and measurement methodology. Matrix spikes must be performed at a 5% frequency and recoveries should be between 75-125%. If the spike result is between 30-74% or >125%, results are qualified as estimated. Sample results associated with a spike recovery of less than 30% are qualified as unusable.

ACTION: With the exception of the analyte noted below all criteria were met.

sample #	constituent	value/qualifier
260-01.I27	Sn	< 100 ug/L UJ

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: CONTRACT REQUIRED DETECTION LIMIT STANDARD

COMMENTS: A Contract Required Detection Limit Standard (CRA) is performed to evaluate instrument performance near the detection limit for AA and ICP metals. The control limit is only advisory.

ACTION: No action required.

sample #	constituent	value/qualifier

INORGANIC QC

Name D.E. Berkowitz **Date** 01-18-94

QC Check: SERIAL DILUTION

COMMENTS: Serial dilutions are run to determine whether significant physical or chemical interferences exist due to sample matrix. In addition, the results of the serial dilution can be used to determine whether sample results greater than the instrument linear range can be reported as valid results. Analyte results for a five fold dilution that are greater than 50 times the IDL must agree within 10% difference (%D) of the original results. If the criteria are not met, the results are qualified as estimated. In the presence of negative interferences, professional judgement is used to qualify the data.

ACTION: With the exception of the analyte noted below all criteria were met.

sample #	constituent	value/qualifier
206-01.127	Na	<5000 ug/L UJ

WET CHEMISTRY DATA ASSESSMENT

DATE	12/30/93	**SAMPLES/MATRIX**	93260-01.I27 WATER
REVIEWED BY	J.D. Franklin JDF 12/30/93		
LABORATORY	WESTON		
CASE #	1325N WST STRM 3		
SDG #	9310L147-WES-1285		

DATA ASSESSMENT SUMMARY

		IC	CHLOR.	TDS/TSS	OIL/GR.
1.	Chain of Custody/Holding Times	M	O	O	O
2.	Instrument Calibration	O	O	O	O
3.	ICV/CCV Standards	O	N/A	N/A	N/A
4.	Blanks	O	O	O	O
5.	Laboratory Control Sample	O	O	O	O
6.	Duplicate Analysis	O	O	O	O
7.	Matrix Spike/Matrix Spike Dup.	O	O	O	O
8.	Other Quality Control	N/A	N/A	N/A	N/A

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

OVERALL ASSESSMENT: Analyses were performed in accordance with quality control requirements with the exception that holding time requirements were violated for three analytes, resulting in data being qualified.

NOTES: Analyses were conducted in accordance with EPA 300.0, EPA 160.1, 160.2, and SW-946 Method 9250 and 9070.

WET CHEMISTRY QC

Name J.D. Franklin **Date** 12/30/93

QC Check: HOLDING TIMES

COMMENTS: Analytical holding times were assessed to determine whether the requirements for wet chemistry analyses were met. The maximum holding times for NO_3, NO_2, and PO_3 are 48 hours; and for F, Cl, and SO_4 are 28 days. The samples were collected on 09/27/93 and received by the Roy F. Weston Lionville Analytical Laboratory on 10/01/93. Analyses were completed on 10/08/93. All samples were received in good condition and preserved in accordance with SW-846.

ACTION: Holding times were met with the exception of those for the IC analysis of NO_2, NO_3, and PO_3, which were exceeded by a factor of 7.

sample #	constituent	value/qualifier	
93260-01.I27	NO_2	<.25 mg/L	R
	NO_3	1.0 mg/L	J
	PO_3	<.25 mg/L	R

WET CHEMISTRY QC

Name J.D. Franklin **Date** 12/30/93

QC Check: INSTRUMENT CALIBRATION

COMMENTS: The data was examined to determine whether the instruments used were calibrated at the correct frequency and that the calibration was performed correctly. All instruments must be calibrated on a daily basis or upon each set-up. Initial calibration was conducted on 10/07/93. Ion Chromatography calibration must be performed with a minimum of a blank and 3 standards with a minimum correlation coefficient of 0.995. Data is qualified as unusable if reported from an instrument that was not calibrated or was calibrated with less than the minimum number of standards. Associated sample results were qualified as estimated if the correlation coefficient was less than 0.995.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

WET CHEMISTRY QC

Name J.D. Franklin **Date** 12/30/93

QC Check: INITIAL AND CONTINUING CALIBRATION VERIFICATION

COMMENTS: An Initial Calibration Verification (ICV) standard must be run at the beginning of each run. A Continuing Calibration Verification (CCV) standard must be run at a 10% frequency. The recoveries for all ICVs and CCVs must be within ± 10% of the true value. If the ICV/CCV results are outside the acceptable range, all associated sample results are qualified as estimated. Initial and continuing calibration checks were run on 10/07/93 and 10/07/93, respectively.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

WET CHEMISTRY QC

Name J.D. Franklin **Date** 12/30/93

QC Check: BLANKS

COMMENTS: Calibration and preparation blanks were evaluated for the presence of contaminants. Calibration blanks should be run at a 10% frequency. Analytes exhibiting a concentration less than five times the corresponding blank result shall be qualified as non-detects. If the absolute value of any negative blank values exceeded the Instrument Detection Limit (IDL), non-detects were qualified as estimated (UJ) and positive results within 2 times the absolute value of the blank value as estimated.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

WET CHEMISTRY QC

Name J.D. Franklin **Date** 12/30/93

QC Check: LABORATORY CONTROL STANDARD

COMMENTS: The Laboratory Control Sample (LCS) serves as a monitor of the overall performance of all steps in the analysis, including sample preparation. All LCS results must fall within the control limits of ± 20% of the true value. If the LCS recovery is > 120% or 50 - 79%, sample results are qualified as estimated. Results associated with an LCS recovery of < 50% are qualified as unusable.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

WET CHEMISTRY QC

Name J.D. Franklin **Date** 12/30/93

QC Check: DUPLICATE ANALYSIS

COMMENTS: Duplicate analyses are indicators of laboratory precision based on each sample matrix. Duplicate analysis must be performed at a 5% frequency or 1 per batch, whichever is greater. The relative percent deviation (RPD) for duplicate analyses should be less than 20% for sample results greater than 10 times the IDL. If the RPD is greater than 20%, the associated sample results are qualified as estimated.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

WET CHEMISTRY QC

Name J.D. Franklin **Date** 12/30/93

QC Check: MATRIX SPIKE/MATRIX SPIKE DUPLICATE

COMMENTS: Matrix spike sample analyses provide information about the effect of each sample matrix on the digestion and measurement methodology. Matrix spikes must be performed at a 5% or once per batch, whichever is the greater frequency and recoveries should be between 75-125%. If the spike result is between 30-74% or >125%, results are qualified as estimated. Sample results associated with a spike recovery of less than 30% are qualified as unusable.

ACTION: All criteria were met.

sample #	constituent	value/qualifier

WESTON

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

GC/MS VOLATILE

The set of samples consisted of two (2) water samples collected on 09-27-93.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 10-08-93.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

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

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

5. The laboratory blank contained the common contaminant Acetone at a level less than the CRQL.

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

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

10/19/93
Date

sma/voa/10-147v.cn

9613401.1867

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

SEMIVOLATILE

One (1) water sample was collected on 09-27-93.

The sample and its associated QC samples were extracted on 10-04-93 and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 10-11-93.

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

1. Non-target compounds were not detected in these samples.
2. All surrogate recoveries were within EPA QC limits.
3. Four (4) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
4. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.
5. The laboratory blank contained the common contaminant Di-n-butylphthalate at a level less than the CRQL.
6. All internal standard area and retention time criteria were met.

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

10.26.93
Date

sma/dlc/bna/10-147b.cn

000005

WESTON

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

PESTICIDE/PCB

1. One (1) water sample was collected on 09-27-93.

2. The sample and its associated QC samples were analyzed based on SW-846, 3rd Edition, procedures. The extraction procedure used was based on Method 3520 and the extracts were analyzed based on Method 8080.

3. All required holding times for extraction and analysis were met.

4. The method blank was below the reporting limits for all target compounds.

5. It appears that the laboratory blank spike and blank spike duplicate were inadvertently double surrogated and not spiked. Insufficient sample volume was available for re-extraction. A Sample Discrepancy Report (SDR) has been enclosed.

6. All surrogate recoveries were within laboratory control limits with the following exceptions:

Sample ID	% Recovery	Control Limits
93LE1747-MB1 BS	169 (DCB)	22% - 126%
93LE1747-MB1 BS	132 (TCX)	27% - 129%
93LE1747-MB1 BSD	185 (DCB)	22% - 126%
93LE1747-MB1 BSD	145 (TCX)	27% - 129%

A Sample Discrepancy Report (SDR) has been enclosed.

7. Due to insufficient sample volume, matrix spike QC could not be performed on the sample in this data set.

8. All initial and continuing standard calibrations associated with this data set were within acceptance criteria.

WESTON

9. This narrative has been revised to reflect the correct method (Method 8080) used for these analyses.

11.02.93

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

Date

sma/jkd/pcb/10-147pp.cn

WESTON

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

CLP METALS

1. This narrative covers the analysis of one (1) water sample.

2. The sample and associated QC samples were prepared and analyzed in accordance with the following protocols: SW-846.

3. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory and High Purity.

4. All analyses were performed within the required holding times.

5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.

7. All Preparation/Method Blanks were below Reporting Limits.

8. All ICP Interference Check Samples (ICSA and ICSAB) were within control limits.

9. All Laboratory Control Samples (LCS) were within the 80-120% control limits.

10. All Serial Dilution percent differences were within SW-846 control limits except for:

RFW #	Element	%Difference
001	Sodium	10.5

11. All Matrix Spike recoveries were within the 75-125% control limits (exception allowed when sample concentration exceeds the spike added concentration by a factor of 4 or more).

    Matrix spike analyses are not required for Ca, Mg, Na, and K in waters.

WESTON

12. All Matrix Spike Duplicates were within the 20% Relative Percent Difference (RPD) control limits except for:

RFW #	Element	%RPD
001	Tin	26.2

13. All Duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits for samples values greater than 5X Reporting Limit, or +/- the Reporting Limits for sample values less than 5X Reporting Limit.

14. Method of Standard Additions (MSA) analyses were not required.

15. 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.

16. 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).

17. ICP Interelement Correction Factors for IC1 and IC3 are included in this package, but do not appear on EDD.

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

19. The sample ID was changed to accommodate the EPA naming convention which allows a maximum of 6 characters on all CLP Forms. Refer to the Cover Page of the CLP Forms to correlate the modified sample ID to the RFW#. Refer to the Chain of Custody to correlate RFW# to the original client ID.

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

10.20.93
Date

mlj/clp-met.nar

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

Client: WESTINGHOUSE HANFORD
RFW #: 9310L147

W.O. #: 06168-002-001-9999-00
Date Received: 10-01-93

CLP METALS ADDENDUM

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

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

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

10.20.93
Date

mlj\clp-met.nar

Shipping, Receiving and Custody Record

WESTON Analytics Use Only
93106147

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 06168-002-001-9999-00
Project Contact/Phone #:
AD Project Manager: Jesse Edwards
QC: Level D
Del: Special
TAT: 35 Days
Date Rec'd: 10/1/93
Date Due: 11/05/93
Account #: WS-HANFORD

	VOA	BNA	Pest/PCB	Herb	8/2	Chloride	TDS TSS		Metal	CN		O/G		Radiochem	
Refrigerator #															
#/Type Container Liquid	1	6	6		1	4	4	4			4	4			
Volume Liquid	40ml	250ml	1000ml		40ml	250ml	500ml	1L			1L	250ml			
Preservatives		none	none			none	none	HNO3			none				
WESTON Analytics Use Only	CLP VOA	OG BNA			8/2	IC	TDS TSS				TCFL	O&G			

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	8/2	Chloride	TDS/TSS		Metal	CN		O/G		Radiochem	
001	93260-01, I27 (MD)			W	9/27/93	1000	X	X	X		X	X	X	X			X	X		X	
002	93260-02, I27 (MD)			W	9/27/93	1000	X														

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

Metals = HSL + Sn, Ti

Radiochem = Americium-241, Pu-238, 239, 240, 241, Total U, Gamma Scan, Gross Alpha/Beta, Tritium

10/12/93 Cancel 001 for 8/2 per SDR93PM1218

RCRA Protocol

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: SAF# 93-260 TAT = Priority

Target Date = 16
Temp = 2.7°C
Original Rewritten

DATE/REVISIONS:
10-4-93 1. All samples are RAD
10-5-93 2. 06068 should be 06084 per
3. SDR93PM1183 93PM1196
10-6-93 4. Change TAT to Priority (10 Days)
10-6-93 5. ICP04 rec'd past hold per
6. SDR93WC0206

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Emery	M. Horrie	10-1-93	1:30 pm				
		10/2/93				10-2-93	

WESTON Analytics Use Only

Samples were: 1) Shipped ✓ or Hand Delivered; Airbill # 2529585564; 2) Ambient or Chilled; 3) Received in Good Condition (Y) or N; 4) Labels Indicate Properly Preserved (Y) or N; 5) Received Within Holding Times Y or (N)

COC Tape was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N; COC Record Present Upon Sample Rec't (Y) or N

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: ICP04 rec'd past hold.

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

9613401.1874

Westinghouse
Hanford Company

Chain of Custody / Sample Analysis Request

COC # 5217 | page: 1 of 2

Collector: Steffler RZ | Project Designation: 1325N Waste Stream-3 | Sampling Location: 1325N FUEL BASIN
SAF #: 93-260 | Sample Date: 9/27/93 | Company Contact : MS HENDRIX | Phone #: 372-3916 | Bill of Lading #:
Laboratory: Weston | Protocol: RCRA | Log book #: WHC-N-225-25 pages: | Offsite Prop #:

Sample Id #	Analysis (Parameters)	Matrix *	Preservative(s)	Container	Date / Time	Serial #	E#/R#	ICD
( )93260-01.127	AMERICIUM-241 (Lab Specific)	WATER	HNO3	04000mL P	9/27/93 / 1000			
	Pu-238,-239,-240,-241. TOTAL URANIUM (ALL LAB SPECIFIC)							
( )93260-01.127	ANIONS (EPA 300.0)	WATER	4 DEG. C	00500mL aG	9/27/93 / 1000			
	(F,Cl,SO4,NO2,NO3,PO4)							
( )93260-01.127	CHLORIDE (9250)	WATER	NONE	00250mL P	9/27/93 / 1000			
( )93260-01.127	GAMMA SCAN (Lab Specific)	WATER	HNO3	04000mL P	9/27/93 / 1000			
	Sr89/90,Ra-226,TOTAL RADIUM, (ALL LAB SPECIFIC)							
( )93260-01.127	GROSS ALPHA/BETA (Lab Specific)	WATER	HNO3	01000mL P	9/27/93 / 1000			
( )93260-01.127	ICP METALS (6010)	WATER	HNO3	01000mL P	9/27/93 / 1000			
	TIN,TITANIUM, ARSENIC(7060), SELENIUM(7740),THALLIUM(7841),MERCURY(7470)							
( )93260-01.127	PCB/PEST (8080)	WATER	4 deg. C	01000mL aG	9/27/93 / 1000			
( )93260-01.127	SEMI-VOA (8270)	WATER	4 deg. C	02500mL aG	9/27/93 / 1000			
( )93260-01.127	TDS (EPA 160.1)	WATER	4 deg. C	00500mL aG	9/27/93 / 1000			
	TSS (EPA 160.2)							
( )93260-01.127	TOTAL RECOVERABLE OIL & GREASE (9070)	WATER	H2SO4	01000mL aG	9/27/93 / 1000			
( )93260-01.127	TRITUM (Lab Specific)	WATER	None	00250mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA (8240)	WATER	4 deg. C	00040mL aGs	9/27/93 / 1000			

0613401.1875

TEMP. = 2.7°C

(sign and print names)

Relinquished By: RZ Steffler RZ Steffler | Date/Time: 9-29-93 0830 | Received By: | Date/Time:

Special Instructions/Conditions

Relinquished By: | Date/Time: | Received By: | Date/Time:

Relinquished By: | Date/Time: | Received By: | Date/Time:

Laboratory Section | Received By: | Title: | Date/Time:

(Sample Disposition) | Disposal Method: | Disposed of By: | Date/Time:

Westinghouse
Hanford Company

Chain of Custody / Sample Analysis Request

COC # 5217 | page: 2 of

Collector: Steffler RZ | Project Designation: 1325N Waste Stream-3 | Sampling Location: 1325N FUEL BASIN
SAF #: 93-260 | Sample Date: 9/27/93 | Company Contact : MS HENDRIX | Phone #: 372-3916 | Bill of Lading #:
Laboratory: Weston | Protocol: RCRA | Log book #: WHK N-225-25 pages: | Offsite Prop #:

*Sample Id #	Analysis (Parameters)	Matrix *	Preservative(s)	Container	Date / Time	Serial #	E#/R#	IC#
( )93260-01.127	VOA (8240)	WATER	4 deg. C	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA AROMATIC (8020)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA AROMATIC (8020)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA HALOGENATED (8010)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
( )93260-01.127	VOA HALOGENATED (8010)	WATER	Na2S2O3	00040mL aGs	9/27/93 / 1000			
93260-02.127	VOA (8240)	WATER	4 deg. C.	40ml aGs	9/27/93 / 1000			
93260-02.127	VOA (8240)	WATER	4 deg. C.	40ml aGs	9/27/93 / 1000			

9613401.1876

(sign and print names)

Relinquished By: RZ Steffler R.Z. Steffler | Date/Time: 9-29-93 0830 | Received By: | Date/Time:

Special Instructions/Conditions

Relinquished By: | Date/Time: | Received By: | Date/Time:

Relinquished By: | Date/Time: | Received By: | Date/Time:

Laboratory Section | Received By: | Title: | Date/Time:

(Sample Disposition) | Disposal Method: | Disposed of By: | Date/Time:

9613401.1877

SAMPLE STATUS REPORT FOR E 2325. E-BLANK 93260-01 TIME: 9/28/93 10: 5
DISPATCHED: 9/27/93 15:16 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 9/28/93 10: 0

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
2162	GEA-LIQ	4.14000E-03 uCi/L	Cs-134 $\Lambda^2 = 10$	N	Y	VOGEL
2162	GEA-LIQ	2.10000E 00 uCi/L	Cs-137 $\Lambda^2 = 10$	N	Y	VOGEL
4271	TOT-ACT	2.70000E 04 pCi/G		N	Y	VOGEL

END OF REPORT 16240 ml.

27000. pCi/ml x 16240 =

.000027 mCi/ml x 16240ml = .43848 mCi/pkg

4.14^{-3} mCi/L = .00414 mCi/L = .0000000414 Ci/L

2.1 mCi/L = .0000021 Ci/L

LA - $\frac{10}{10,000}$ = .00

0 0 1 3

9613401.1878

93260-02.I27

SAMPLE STATUS REPORT FOR E 1853. E-BLANK ~~B092B5~~ TIME: 9/28/93 8:44
DISPATCHED: 9/ 9/93 13:26 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 9/28/93 7:49

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

9613401 1879

OFFSITE RADIOACTIVE SHIPMENT RECORD

– EXTERIOR INSPECTION PERMITTED –

19723

SHIPPING INST.

SHIP TO: S L O

Company: Roy F Weston Inc.

Address: 256 Welsh Pool Road

City, State, Zip: Lionville, PA 19341-1313

Attention: Josie King

Contractor: ☐ PNL ☐ KEH ☒ WHC

Site Carrier: R.T. SICKLE

PR No: 67312 Veh. No: 4555 HO 6813

Ship: ☒ Prepaid ☐ Collect Via:
☐ Motor-Rail ☒ Air Psgr.
☐ Excl. Use ☐ Air Cargo
☐ DOE Veh. ☐ Mail
☐ UPS Sur. ☐ _____

SHIPMENT DESCRIPTION AND CERTIFICATION

Proper Shipping Name – Radioactive Material,	UN Number
1. Empty Packages	☐ UN 2908
2. Low Specific Activity, n.o.s	☐ UN 2912
3. Limited quantity, n.o.s.	☒ UN 2910
4. N.O.S.	☐ UN 2982
5. Fissile n.o.s.	☐ UN 2918
6. Special Form, n.o.s.	☐ UN 2974
7. Instruments & Articles	☐ UN 2911
8. _____	☐ _____

Material Form: ☐ Special (A1) ☒ Normal (A2)

Labels Applied: ☐ Empty ☐ Radioactive LSA ☐ White I ☐ Yellow II ☐ Yellow III ☒ None ☐ Danger (Air Cargo) ☐ Secondary _____

Material Category: ☐ Empty ☐ Low Specific Act. (LSA) ☒ Limited Quantity ☐ Type A Quantity ☐ Type B Quantity ☐ Highway Route Controlled Quantity

For Normal Form Identify:

Physical Form: ☐ Solid ☒ Liquid ☐ Gas

Chemical Form: ☐ Metal ☐ Oxide ☒ Elemental ☐ Nitrate

Other _____

TYPE PACKAGE: ☒ Strong Tight ☐ Type A ☐ Type B ☐ Type B (U) ☐ Type B (M)

CONSTRUCTION: ☐ Box, FB ☐ Wood ☐ Steel ☐ Drum ☐ Cask ☒ Other Poly - Cooler

FISSILE CLASS: ☒ Non Fissile ☐ Fissile Exempt ☐ Fissile I ☐ Fissile II ☐ Fissile III

Grams Fissile: N/A

SNM: ☒ No ☐ Yes ☐ <1 gr ☐ Category I ☐ Category II ☐ Category III

ACCOUNTABILITY/SECURITY CONTROL: ☐ Classified ☒ Unclassified

Consignee authorized to receive this qty ☒

Sig. Security Svc. Req. ☐ NA ☒

~~Pu, EU > 1 g~~ ☐ N/A ~~NU, DU > 1 kg~~ ☐ NA

Security Escorts Req. ☐ Not. Req. ☒

External Cask Temperature (Max. 122° F LTL, 180° F Ex. Use) N/A ☒ _____ °F

Packaging conforms to appropriate packaging procedure ☐ N/A ☒ Yes

Complies with D. O. T. packaging marking and labeling requirements ☐ N/A ☒ Yes

Container acceptability documented (incl. 7A cert.) ☒ N/A ☐ Yes

Container examined: No evidence of deterioration or damage ☒ Yes

QA Inspection Current ☐ Yes ☒ N/A Seals required ☒ No ☐ Yes

Shipping Doc. 49CFR 173.421 Authorization No. NA

No. Pkgs.	Model Package	COC/Spec. No.	Serial No.	Seal No.	Isotopes	Curies/Pkg	T. I.	Gr. Wt.
2	Poly Coolers	NA		NA	Cs 137, Cs-134	.43848 mCi	NA	
	/			NA	Cs-137	.0354 mCi	NA	
	Cooler # 169 contains	16240 ml	total sample					72 lbs
	Cooler # SMI-272 contains	15240 ml	total sample					71 lbs
(Shipper may describe package in detail on one of unused lines above)					TOTAL	.474 mCi	NA	143 lbs

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.

Certifier's Signature: R. Stiffler | Date: 9-29-93 | Organization: Sampling + Mobile Labs | Complete Cost Code (inc. end function): Our Code 12911 / E17205

AREA MONITOR

Surface Dose Rate of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)

Dose Rate at 1 Meter from Surface of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)

Smears of Outer Container: ☑ ≤22 dpm βγ/cm² ☑ ≤2.2 dpm α/cm²

TRUCK LOAD OR EXCLUSIVE USE
Surface: ☑ ≤ 200 mrem/hr (N + βγ)
@6 feet: ☑ ≤ 10 mrem/hr (N + βγ)
@Cab or Sleeper ☑ ≤2.0 mrem/hr (N + βγ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: Joe Valdez | Bldg. 222-S | Survey No. 167063 | Date 9-29-93

APPROVAL

AUTHORIZATION FOR SHIPMENT

AIR TRANSPORT CERTIFICATION ▸ | Cargo Only: ☐ Danger Labels Applied | Passenger: ☐ 1. Ltd. Qty: ☐ 3 Research or Medical Diagnosis ☐ 2. ≤3 T. I ☐ 4. Human Medical Research | Pkg. Dimensions

Traffic has inspected and verified prshipment compliance to DOT regulations

Authorized Signature ▸ M.C. Sams | Printed Name ▸ M. A. SAMS | Date ▸ 9-29-93

APPROVED FOR OFFSITE SHIPMENT

TRAFFIC

B. L. No.	Date Shipped	E. T. A.	Routing	☐ N/A	Placards
RMW-8259	9-29-93	9-30-93	Emery Air		☐ Yes ☒ No
Surveyed By (TF)	Date 9-29-93	Approved for Shipment Westinghouse Hanford Company: Peter E. Mitchell (PM)		Date 9-29-93	Route Plan ☐ Yes ☒ No

*U.S. GPO: 1992-791-064/80001

54-6000-088 (10/88)

93101-1416
93101-1417

EMERY WORLDWIDE

A CF Company

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

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

E Shipper's Account Number: 8 5 0 2 8 1 5 8 5

SERVICES

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

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

Date	Origin	Shipment Number
9-30-93	PSC	252988850 4

From:	To:
J.E. MAXWELL (509)376-7493	JOSIE KIM
U.S. DEPT. OF ENERGY C/O	
WESTINGHOUSE HANFORD COMPANY	ROY F. WESTON, INC.
2355 STEVENS DRIVE, G2-03	256 WELSH POOL ROAD
RICHLAND WA.	LIONVILLE PA
Canada ☐	Hold for Pick Up ☐ Canada ☐

Tariff Dest. | Gateway

Chg to Shipper $

Customer's Reference Numbers: 12911/E17205 WHN-8259 99352

E Consignee's Account Number: 19341-1318

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

FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)

Declared Value $

Description	Pcs	L	W	H	Total Pieces	Total Weight (In Lbs)
RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - LIMITED QUANTITY OF MATERIAL	2	58"	17"	16"	2	143

2 5 2 9 8 8 8 5 0 4

Remarks: DOT EMERGENCY RESPONSE GUIDE #61 ATTACHED EMERGENCY CONTACT PHONE NUMBER (509)373-3800

Shipper's Signature X

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

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

International Shipments: Free Domicile ☐ | Commodity Code

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

International Customs Value | International Insurance

Base Charge | Total Transportation Charges | Other Charges/Advance at Origin ☐ COD/AO $

3 PHL A

Terms and Conditions on Back

0000689

DON'T SAY IT — *Write It!*

DATE: December 8, 1993

TO: 9309L109
9309L110
9310L146
9310L147

FROM: Michelle Hendrix H4-23
Telephone: 372-3916

cc: Joan Kessner
Karl Pool
Briana Colley
Doris Ayres
Jon Ball

SUBJECT: CANCELLATION OF METHOD 8010/8020 DUE TO INSTRUMENT PROBLEMS.

Due to instrument difficulties, WESTON could not provide analyses for Volatiles - Aromatic (8020) and Volatiles - Halogenated (8010) in a timely fashion. Since Volatiles (8240) was also requested, the customer opted to cancel the 8010 and 8020 analyses for the above listed sample delivery groups. WESTON assured the customer that essentially the same analyte list with comparable detection limits could be obtained using the Volatile 8240 method.

Before the instrument problems, Weston was able to analyze some of the samples for 8010 and 8020 (see table below). These analyses were not canceled.

93260-01.I27	SAF 93-260	canceled 8010/8020
93261-01.I27	SAF 93-261	canceled 8010/8020
93261-07.I27	SAF 93-261	8010/8020 data provided
93261-09.I27	SAF 93-261	8010/8020 data provided
93261-05.I27	SAF 93-261	canceled 8010/8020
93262-01.I27	SAF 93-262	8010/8020 data provided