START 9613402.2606

9401L186-WES-1462

0043057

WESTON

MANAGERS DESIGNERS/CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

GC/MS VOLATILE

The set of samples consisted of two (2) soil samples collected on 01-05-94.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 01-14-94.

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

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

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

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

4. The laboratory blanks contained the common contaminants Methylene Chloride and Acetone at levels less than the CRQL.

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

6. Sample pH information has been reported in Section XI (Preparation Logs).

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

2/23/94
Date

0005

sma/voa/01-186v.cn

FEB 1996
RECEIVED
EDMC

WESTON Analytics Use Only
9401L186

Custody Transfer Record/Lab Work Request

WESTON

Page ___ of ___

010

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 06168-002-001-9999-00
Project Contact/Phone #:
AD Project Manager: Josie Edwards
QC: CLP Del: CLP TAT: 35 Days
Date Rec'd: 1/10/94 Date Due: 2/14/94
Account #: WS-HANFORD

Refrigerator #		1	16				3	3	3	3	0	5-B				
#/Type Container	Liquid															
	Solid	1GL	1GL				1GL	1GL	1GL	1GL		1GL				
Volume	Liquid										0					
	Solid	125ml	125ml				125ml	125ml	125ml	125ml		1GL				
Preservatives		—	—				—	—	—	—		—				
ANALYSES REQUESTED →	ORGANIC: VOA								INORG: Metal							
	BNA								CN							
	Pest/PCB															
	Herb															
							8082	FL CL 604				Radiochem				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb		8082	FL CL 604	See Total	TOTC		ISYS				
001	B09D35			S	1-5-94	1245	X	X				X	X	X	X		X				
002	B09D37			S	1-5-94	0700	X														
	Metals = HSL+Tl																				

WESTON Analytics Use Only

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp = 4.2°C
Radiochem = Gross Alpha/Beta (PRO-032-005)
Gamma Spec to include, Cs-134, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, K-40, Ru-106, Na-22 (PRO-042-5), U-235, U-234, U-238 (PRO-002-32), Np-237, Pu-238, 239/240, Sr-90, Tc-99, Am-241, Cm-244, Se-79
Original Rewritten

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 320 303329
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:

Relinquished by	Received by	Date	Time
Bernington			
FedEx	J. M. Hennie	1/10/94	1030
MDOH	MDOH	1/10/94	

Relinquished by	Received by	Date	Time
	MDOH	1/10/94	

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

9613402.2607

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector L E ROGERS S.A.F. # 93-263 Date 1-6-94
Company Contact L E ROGERS Telephone (509) 376-7690

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B09D55	S	1-5-94	1245	1,500ml P:CLP;TAL Metals,Hg,Ti 1,125ml Gs:VOA CLP 1,500ml aG:Semi-VOA CLP 1,250ml G:Anions F,Cl,SO4 (EPA 300.0) 1,125ml P/G:Anions NO2,NO3 (EPA 353.1) 1,250ml G:Cyanide CLP 1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79
B09D57	S	1-5-94	0700	~~1,500ml P:CLP;TAL Metals,Hg,Ti~~ 1,125ml Gs:VOA CLP ~~1,500ml aG:Semi-VOA CLP~~ ~~1,250ml G:Anions F,Cl,SO4 (EPA 300.0)~~ ~~1,125ml P/G:Anions NO2,NO3 (EPA 353.1)~~ ~~1,250ml G:Cyanide CLP~~ ~~1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79~~ JEP 1-6-94
			JEP 1-6-94	1,500ml P:CLP;TAL Metals,Hg,Ti 1,125ml Gs:VOA CLP 1,500ml aG:Semi-VOA CLP 1,250ml G:Anions F,Cl,SO4 (EPA 300.0) 1,125ml P/G:Anions NO2,NO3 (EPA 353.1) 1,250ml G:Cyanide CLP 1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

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

Field Information **WESTON**

Special Handling and/or Storage Maintain at 4C ; (SOIL)

Possible Sample Hazards NONE NOTED

0011

A-6000-406 (06/91) WEF060

9613402.2609

4.01L150

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 1-5-94

Ice Chest No.: JML-161

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 520-303324

Offsite Property No.: ~~W94-0-0138~~ 46

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: WESTON

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09D55

1,500ml P:CLP;TAL Metals,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

2) B09D57

~~1,500ml P:CLP;TAL Metals,Hg,Ti~~
1,125ml Gs:VOA CLP
~~1,500ml aG:Semi-VOA CLP~~
~~1,250ml G:Anions F,Cl,SO4 (EPA 300.0)~~
~~1,125ml P/G:Anions NO2,NO3 (EPA 353.1)~~
~~1,250ml G:Cyanide CLP~~
~~1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79~~

JLR 1-6-94

~~3)~~

1,500ml P:CLP;~~TAL~~ Metals,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

JLR ~~1-6-94~~ 1-6-94

[] Field Transfer of Custody — Chain of Possession — Temp. = 4.2°C — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1100 Loren E. Rogers 1-6-94	W. V. Seltzer	1.6.94 1100
Relinquished by: W. V. Seltzer	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 0012
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

001 001

BURLINGTON AIR EXPRESS

CORPORATE SUPPORT GROUP
18200 VON KARMAN AVE
IRVINE, CA 92715

9401L186

520 303 324
AIRBILL NUMBER

DATE	ORIGIN	DEST SORT CODE
01-06-94		

1 SHIPPER'S REFERENCE NO. 481710 PT2AB W94-0138
SHIPPER'S ACCOUNT NO.
COMPANY #46
DEPT./FLOOR C/O WESTINGHOUSE
FROM (YOUR NAME) HANFORD COMPANY
PHONE NO. WESTINGHOUSE SHIPPING DEPT (509) 376-6665
STREET ADDRESS
CITY
STATE
ZIP (REQUIRED)

2 CONSIGNEE'S REFERENCE NO.
CONSIGNEE'S ACCOUNT NO.
COMPANY RF WESTON INC
DEPT./FLOOR
TO (CONSIGNEE NAME) RF WESTON INC
PHONE NO. JOSIE EDWARDS
ACCURATE STREET ADDRESS (BURLINGTON CANNOT DELIVER TO A P.O. BOX) 256 WELSH POOL ROAD
CITY LIONVILLE
STATE PA
ZIP (REQUIRED) 19341

3 C.O.D.
$
CONSIGNEE'S CHECK O.K. MARK IF APPLICABLE ☐
BURLINGTON AIR EXPRESS WILL COLLECT CONSIGNEE'S CHECK MADE PAYABLE ONLY TO THE SHIPPER FOR THE VALUE OF THE GOODS IN THE AMOUNT SHOWN ABOVE

DECLARED VALUE
$

LIMIT OF LIABILITY
LIABILITY IS AGREED AND UNDERSTOOD TO BE $50.00 OR $.50 PER POUND, WHICHEVER IS GREATER, UNLESS A HIGHER VALUE IS DECLARED AND APPLICABLE CHARGES PAID. SEE REVERSE SIDE OF AIRBILL, PARAGRAPH 8, FOR DECLARED VALUE LIMITATIONS.

1-800-CALL-BAX
FOR INFORMATION OR THE BAX OFFICE NEAREST YOU

4 BILLING INFORMATION
☒ PREPAID (SHIPPER) $ _____ CASH RECEIVED (PAID IN ADVANCE)
☐ COLLECT (CONSIGNEE)
☐ 3RD PARTY (ACCT. NO. OR BILLING ADDRESS REQ'D.)
ACCOUNT NO
COMPANY/NAME
STREET ADDRESS
CITY
STATE
ZIP

5 SERVICE REQUESTED
☒ OVERNIGHT (NEXT BUSINESS DAY)
☐ SECOND DAY
☐ NEXT FLIGHT OUT
☐ _____
CHECK BELOW IF PACKAGE IS:
☐ LETTER
☐ G.O.H. (GARMENT ON HANGER)

6 HANDLING INFORMATION (* SPECIAL RATE MAY APPLY)
☐ HOLD AT BAX ☐ *DANGEROUS GOODS ☐ *SATURDAY DELIVERY ☐ *SPECIAL DELIVERY ☐ *CONVENTION ☐ *GOVERNMENT SHIPMENT
SPECIAL INSTRUCTIONS / ADDITIONAL REFERENCE INFORMATION

NO. OF PCS	WEIGHT	LENGTH	WIDTH	HEIGHT	DESCRIPTION
1	46				COOLER SML 161 SOIL SAMPLES

TOTAL PCS	TOTAL WT
1	46 LBS

_____ SKID(S) SAID TO CONTAIN _____ NO. OF PIECES
RATE QUOTE NUMBER
RECEIVED BY BAX AT ☒ SHIPPER'S DOOR ☐ BAX TERMINAL
TIME/DATE OF PICK-UP
DRIVER NO.
SIGNED FOR BAX X

OUTSIDE CARRIER:
CHARGES ADVANCED $
PRO NUMBER
CARRIER NAME

7 SIGNATURE OF SHIPPER X
RELEASE SIGNATURE (SENDER AUTHORIZES BAX TO DELIVER SHIPMENT WITHOUT A DELIVERY SIGNATURE AS PER CONDITIONS ON REVERSE OF THIS PAGE.) X

520 303 324
AIRBILL NUMBER

OP 100 (11-92)

NON-NEGOTIABLE AIRBILL SUBJECT TO TERMS AND CONDITIONS OF CONTRACT ON REVERSE SIDE

CONSIGNEE COPY

0015

0192 3047 2610

9613402.2611

Overnight Delivery

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
Westinghouse Hanford Company		W94-0-0138-46

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Environmental	Env Field Services	Env Charac & Sampling

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

Routing Air ☒ Contractor ☐ Vendor

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

Off-site Custodian
Josie Edwards

Full Title
Project Coodinator

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

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

Necessity for the Off-Site Use of this Property

To support drilling and sampling at the 200 Areas

Bill of Lading [illegible]

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

RM Clearance for Public Release	RM Survey No	Date
[illegible]	[illegible]	1-10-94

Location of Property (Area & Bldg.)	Contact	Phone
200 Area	L. E. Rogers	376-7690

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
[illegible]	81710/PT2AB	N/A

Originated By	Date	Authorized By	Date
Relinquished by: [illegible]	[illegible]	[illegible]	1-13-94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	1/13/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date [illegible]				

DISTRIBUTION

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

Roy F. Weston, Inc. - Lionville Laboratory

Volatiles by GC/MS, OLM01.8

Report Date: 02/16/94 16:41

RFW Batch Number: **9401L186** Client: **WESTINGHOUSE HANFORD** Work Order: 06168002001 Page: 1a

	Cust ID:	B09DS5	B09DS7	B09DS7	B09DS7	VBLK
Sample Information	RFW#:	001	002	002 MS	002 MSD	94LVX008-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.962	0.980	0.980	0.980	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	97 %	98 %	100 %	107 %	106 %
	Bromofluorobenzene	93 %	93 %	99 %	104 %	101 %
	1,2-Dichloroethane-d4	96 %	94 %	107 %	112 %	97 %
Chloromethane		12 U	10 U	10 U	10 U	10 U
Bromomethane		12 U	10 U	10 U	10 U	10 U
Vinyl Chloride		12 U	10 U	10 U	10 U	10 U
Chloroethane		12 U	10 U	10 U	10 U	10 U
Methylene Chloride		14 B	17 B	15 B	14 B	8 J
Acetone		23 B	26 B	31 B	29 B	4 J
Carbon Disulfide		12 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		12 U	10 U	100 %	110 %	10 U
1,1-Dichloroethane		12 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		12 U	10 U	10 U	10 U	10 U
Chloroform		12 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		12 U	10 U	10 U	10 U	10 U
2-Butanone		12 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		12 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride		12 U	10 U	10 U	10 U	10 U
Bromodichloromethane		12 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		12 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		12 U	10 U	10 U	10 U	10 U
Trichloroethene		12 U	10 U	91 %	101 %	10 U
Dibromochloromethane		12 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		12 U	10 U	10 U	10 U	10 U
Benzene		12 U	10 U	99 %	113 %	10 U
Trans-1,3-Dichloropropene		12 U	10 U	10 U	10 U	10 U
Bromoform		12 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		12 U	10 U	10 U	10 U	10 U
2-Hexanone		12 U	10 U	10 U	10 U	10 U
Tetrachloroethene		12 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		12 U	10 U	10 U	10 U	10 U
Toluene		12 U	10 U	96 %	110 %	10 U

*= Outside of EPA CLP QC limits.

9613402.2612

RFW Batch Number: 9401L186 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1b

Cust ID:	B09DS5		B09DS7		B09DS7		B09DS7		VBLK	
RFW#:	001		002		002 MS		002 MSD		94LVX008-MB1	
Chlorobenzene	12	U	10	U	96	%	109	%	10	U
Ethylbenzene	12	U	10	U	10	U	10	U	10	U
Styrene	12	U	10	U	10	U	10	U	10	U
Xylene (total)	12	U	10	U	10	U	10	U	10	U

*= Outside of EPA CLP QC limits.

0019

9613402.2613

9613402.2614

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-001

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: AX1E11

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 16

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.962

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	14	B
67-64-1	Acetone	23	B
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	Trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

0027

FORM 1 VOA 3/90

4/5/94 4/5/94

9613402.2615

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-001

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: AX1E11

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 16

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.962

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.14	10	J

0028

9613402.2616

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09DS7

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-002

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: AX1E12

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 0

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.980

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	17	B
67-64-1	Acetone	26	B
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

0036

9613402.2617

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09DS7

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-002

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: AX1E12

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 0

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.962

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.12	400	J
2.	UNKNOWN	26.65	7	J

9613402.2618

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

SEMIVOLATILE

One (1) soil sample was collected on 01-05-94.

The sample and its associated QC samples were extracted on 01-17-94 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 01-29-94 and 02-01-94.

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

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

2. All surrogate recoveries were within EPA QC limits.

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

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

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

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

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

2/16/94
Date

0005

sma/bna/01-186b.cn

Roy F. Weston, Inc. - Lionville Laboratory

Semivolatiles by GC/MS, OLM01.8 Report Date: 02/16/94 13:54

RFW Batch Number: **9401L186** Client: **WESTINGHOUSE HANFORD** Work Order: 06168002001 Page: 1a

0017

	Cust ID:	B09DS5		B09DS5		B09DS5		SBLK		SBLK BS	
Sample Information	RFW#:	001		001 MS		001 MSD		94LE0087-MB1		94LE0087-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	50	%	49	%	61	%	74	%	51	%
	2-Fluorobiphenyl	53	%	61	%	62	%	73	%	67	%
	Terphenyl-d14	81	%	89	%	87	%	88	%	96	%
	Phenol-d5	58	%	61	%	67	%	75	%	66	%
	2-Fluorophenol	52	%	50	%	62	%	71	%	54	%
	2,4,6-Tribromophenol	83	%	82	%	78	%	68	%	92	%
	2-Chlorophenol-d4	52	%	53	%	62	%	73	%	58	%
	1,2-Dichlorobenzene-d4	39	%	34	%	52	%	70	%	37	%
		fl		fl		fl		fl		fl	
Phenol		390	U	51	%	56	%	330	U	55	%
bis(2-Chloroethyl)ether		390	U	390	U	400	U	330	U	330	U
2-Chlorophenol		390	U	47	%	57	%	330	U	51	%
1,3-Dichlorobenzene		390	U	390	U	400	U	330	U	330	U
1,4-Dichlorobenzene		390	U	30	%	51	%	330	U	33	%
1,2-Dichlorobenzene		390	U	390	U	400	U	330	U	330	U
2-Methylphenol		390	U	390	U	400	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		390	U	390	U	400	U	330	U	330	U
4-Methylphenol		390	U	390	U	400	U	330	U	330	U
N-Nitroso-di-n-propylamine		390	U	50	%	58	%	330	U	55	%
Hexachloroethane		390	U	390	U	400	U	330	U	330	U
Nitrobenzene		390	U	390	U	400	U	330	U	330	U
Isophorone		390	U	390	U	400	U	330	U	330	U
2-Nitrophenol		390	U	390	U	400	U	330	U	330	U
2,4-Dimethylphenol		390	U	390	U	400	U	330	U	330	U
bis(2-Chloroethoxy)methane		390	U	390	U	400	U	330	U	330	U
2,4-Dichlorophenol		390	U	390	U	400	U	330	U	330	U
1,2,4-Trichlorobenzene		390	U	40	%	55	%	330	U	44	%
Naphthalene		390	U	390	U	400	U	330	U	330	U
4-Chloroaniline		390	U	390	U	400	U	330	U	330	U
Hexachlorobutadiene		390	U	390	U	400	U	330	U	330	U
4-Chloro-3-methylphenol		390	U	70	%	66	%	330	U	76	%
2-Methylnaphthalene		390	U	390	U	400	U	330	U	330	U
Hexachlorocyclopentadiene		390	U	390	U	400	U	330	U	330	U

*= Outside of EPA CLP QC limits.

9403102.2619

Cust ID:	B09DS5		B09DS5		B09DS5		SBLK		SBLK BS	
RFW#:	001		001 MS		001 MSD		94LE0087-MB1		94LE0087-MB1	
2,4,6-Trichlorophenol	390	U	390	U	400	U	330	U	330	U
2,4,5-Trichlorophenol	980	U	970	U	990	U	840	U	840	U
2-Chloronaphthalene	390	U	390	U	400	U	330	U	330	U
2-Nitroaniline	980	U	970	U	990	U	840	U	840	U
Dimethylphthalate	390	U	390	U	400	U	330	U	330	U
Acenaphthylene	390	U	390	U	400	U	330	U	330	U
2,6-Dinitrotoluene	390	U	390	U	400	U	330	U	330	U
3-Nitroaniline	980	U	970	U	990	U	840	U	840	U
Acenaphthene	390	U	61	%	62	%	330	U	68	%
2,4-Dinitrophenol	980	U	970	U	990	U	840	U	840	U
4-Nitrophenol	980	U	81	%	82	%	840	U	96	%
Dibenzofuran	390	U	390	U	400	U	330	U	330	U
2,4-Dinitrotoluene	390	U	74	%	72	%	330	U	83	%
Diethylphthalate	390	U	390	U	400	U	330	U	330	U
4-Chlorophenyl-phenylether	390	U	390	U	400	U	330	U	330	U
Fluorene	390	U	390	U	400	U	330	U	330	U
4-Nitroaniline	980	U	970	U	990	U	840	U	840	U
4,6-Dinitro-2-methylphenol	980	U	970	U	990	U	840	U	840	U
N-Nitrosodiphenylamine (1)	390	U	390	U	400	U	330	U	330	U
4-Bromophenyl-phenylether	390	U	390	U	400	U	330	U	330	U
Hexachlorobenzene	390	U	390	U	400	U	330	U	330	U
Pentachlorophenol	980	U	81	%	80	%	840	U	87	%
Phenanthrene	390	U	390	U	400	U	330	U	330	U
Anthracene	390	U	390	U	400	U	330	U	330	U
Carbazole	390	U	390	U	400	U	330	U	330	U
Di-n-butylphthalate	120	JB	150	JB	160	JB	180	J	120	JB
Fluoranthene	390	U	390	U	400	U	330	U	330	U
Pyrene	390	U	83	%	83	%	330	U	91	%
Butylbenzylphthalate	390	U	390	U	400	U	330	U	330	U
3,3'-Dichlorobenzidine	390	U	390	U	400	U	330	U	330	U
Benzo(a)anthracene	390	U	390	U	400	U	330	U	330	U
Chrysene	390	U	390	U	400	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	24	J	18	J	14	J	330	U	330	U
Di-n-octyl phthalate	390	U	390	U	400	U	330	U	330	U
Benzo(b)fluoranthene	390	U	390	U	400	U	330	U	330	U
Benzo(k)fluoranthene	390	U	390	U	400	U	330	U	330	U
Benzo(a)pyrene	390	U	390	U	400	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	390	U	390	U	400	U	330	U	330	U
Dibenz(a,h)anthracene	390	U	390	U	400	U	330	U	330	U
Benzo(g,h,i)perylene	390	U	390	U	400	U	330	U	330	U

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

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0018

9613402.2621

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9401L186-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S020104

Level: (low/med) LOW Date Received: 01/10/94

% Moisture: not dec. 16 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/01/94

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 0.500

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

CAS NO.	COMPOUND		
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-di-n-propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	bis(2-Chloroethoxy)methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	980	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	980	U
131-11-3	Dimethylphthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U
99-09-2	3-Nitroaniline	980	U
83-32-9	Acenaphthene	390	U

9613402.2622

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9401L186-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S020104

Level: (low/med) LOW Date Received: 01/10/94

% Moisture: not dec. 16 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/01/94

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 0.500

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	
51-28-5	2,4-Dinitrophenol	980	U
100-02-7	4-Nitrophenol	980	U
132-64-9	Dibenzofuran	390	U
121-14-2	2,4-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	980	U
534-52-1	4,6-Dinitro-2-methylphenol	980	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	980	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-n-butylphthalate	120	JB
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
56-55-3	Benzo(a)anthracene	390	U
218-01-9	Chrysene	390	U
117-81-7	bis(2-Ethylhexyl)phthalate	24	J
117-84-0	Di-n-octyl phthalate	390	U
205-99-2	Benzo(b)fluoranthene	390	U
207-08-9	Benzo(k)fluoranthene	390	U
50-32-8	Benzo(a)pyrene	390	U
193-39-5	Indeno(1,2,3-cd)pyrene	390	U
53-70-3	Dibenz(a,h)anthracene	390	U
191-24-2	Benzo(g,h,i)perylene	390	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

9613402.2623

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9401L186-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S020104

Level: (low/med) LOW Date Received: 01/10/94

% Moisture: not dec. 16 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/01/94

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 0.500

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	6.83	1000	JAB
2.	UNKNOWN	7.25	100	JB
3.	ALDOL CONDENSATE	8.92	200	JAB
4.	PHTHALATE	23.43	300	JB
5.	UNKNOWN	24.33	90	J
6.	UNKNOWN	25.25	90	J
7.	UNKNOWN	27.80	100	J
8.	ALKANE	29.52	200	J
9.	ALKANE	30.98	1000	J
10.	ALKANE	32.98	400	J
11.	UNKNOWN	33.37	100	J

9613402.2624

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SDLA

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

Client : WESTINGHOUSE HANFORD
RFW# : 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

INORGANIC

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

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

2. All preparation blank results were below the required detection 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 the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

RECORD COPY

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

2/10/94
Date

pas/i01-186

9613402.2625

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/02/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L186

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B09DS5	% Solids	83.5		%	0.10	1.0
		Chloride by IC	17.8		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Cyanide, Total	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	54.4		MG/KG	1.5	1.0
		Nitrate Nitrite	1.3		MG-N/KG	0.12	1.0
-002	B09DS7	% Solids	100		%	0.10	1.0

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

CLP METALS

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

2. The samples were prepared and analyzed in accordance with the following protocols: CLP SOW 3/90.

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 USEPA SOW control limits except for the following for sample 001:

Element	%Difference
Zinc	17.7

WESTON

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) except for the following for sample 001:

Element	%Recovery
Lead	33.3
Selenium	58.3

For analytes where the Matrix Spike is out of control, a Post-digestion Matrix Spike and Serial Dilution are performed (exception allowed for Ag).

Matrix spike analyses are not required for Al, Ca, Fe, Mg, Na, and K in soils.

12. 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.

13. Method of Standard Additions (MSA) analyses were performed on the following samples:

Element	Sample #'s
Lead	001,001R

14. 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.

15. 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).

16. 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.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

17. 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.

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

2.18.94
Date

rls/m01-186.clp

9613402.2629

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/15/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L186

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B09DS5	Silver, Total	2.4	u	MG/KG	2.4	1.0
		Aluminum, Total	7050		MG/KG	47.9	1.0
		Arsenic, Total	2.4	u	MG/KG	2.4	1.0
		Barium, Total	80.4		MG/KG	47.9	1.0
		Beryllium, Total	1.2	u	MG/KG	1.2	1.0
		Calcium, Total	14100		MG/KG	1200	1.0
		Cadmium, Total	1.2	u	MG/KG	1.2	1.0
		Cobalt, Total	12.0	u	MG/KG	12.0	1.0
		Chromium, Total	16.6		MG/KG	2.4	1.0
		Copper, Total	17.1		MG/KG	6.0	1.0
		Iron, Total	15300		MG/KG	23.9	1.0
		Mercury, Total	0.09	u	MG/KG	0.09	1.0
		Potassium, Total	1460		MG/KG	1200	1.0
		Magnesium, Total	6160		MG/KG	1200	1.0
		Manganese, Total	301		MG/KG	3.6	1.0
		Sodium, Total	1200	u	MG/KG	1200	1.0
		Nickel, Total	15.4		MG/KG	9.6	1.0
		Lead, Total	6.5		MG/KG	0.71	1.0
		Antimony, Total	14.4	u	MG/KG	14.4	1.0
		Selenium, Total	1.2	u	MG/KG	1.2	1.0
		Titanium, Total	501		MG/KG	23.9	1.0
		Thallium, Total	2.4	u	MG/KG	2.4	1.0
		Vanadium, Total	18.7		MG/KG	12.0	1.0
		Zinc, Total	38.3		MG/KG	4.8	1.0

9613402.2630

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DS5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP186

Matrix (soil/water): SOIL Lab Sample ID: 940118601

Level (low/med): LOW Date Received: 1/10/94

% Solids: 83.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7050.00			P
7440-36-0	Antimony	6.47	U		P
7440-38-2	Arsenic	1.90	B		F
7440-39-3	Barium	80.40			P
7440-41-7	Beryllium	.43	B		P
7440-43-9	Cadmium	.72	U		P
7440-70-2	Calcium	14100.00			P
7440-47-3	Chromium	16.60			P
7440-48-4	Cobalt	8.10	B		P
7440-50-8	Copper	17.10			P
7439-89-6	Iron	15300.00			P
7439-92-1	Lead	6.50		NS	F
7439-95-4	Magnesium	6160.00			P
7439-96-5	Manganese	301.00			P
7439-97-6	Mercury	.04	U		CV
7440-02-0	Nickel	15.40			P
7440-09-7	Potassium	1460.00			P
7782-49-2	Selenium	.48	U	N	F
7440-22-4	Silver	.77	B		P
7440-23-5	Sodium	223.00	B		P
7440-28-0	Thallium	.48	U		F
7440-62-2	Vanadium	18.70			P
7440-66-6	Zinc	38.30		E	P
	Cyanide	1.20	U		C

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Lead was flagged with a "+" for 001R - MSA result=0.9920; the better of two runs.

9613402.2631

VALIDATION SUMMARY

9401L186-WES-1462

9613402.2632

MEMORANDUM

APR 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

April 15, 1994

FR: Susan Winter, Golder Associates Inc.

RE: VOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9401L186-WES-1462 (923-E418, Filename 9401L186.VOA)

INTRODUCTION

This memo presents the results of data validation on data package 9401L186-WES-1462 prepared by the Weston Analytical laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DS5 B09DS7	01/05/94 01/05/94	SOIL SOIL	SEE NOTE 1
Note 1. All samples were analyzed for CLP TCL volatile organics.			

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

VALIDATION DOCUMENTATION SDLA

APR 1 1994

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of two samples were validated in this data package with a total of 66 determinations reported, all of

which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Laboratory Blanks

- Methylene chloride and acetone were detected in the associated laboratory blank. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

TENTATIVELY IDENTIFIED COMPOUND EVALUATION

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the samples and determined to be valid, resulting in qualification of the results as presumptive and valid (JN).

- TICs were detected in the samples and identified as common laboratory contaminants, resulting in qualification of the results as unusable (R) as shown in Attachment 3.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9613402.2634

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9613402.2636

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

SDG: 9401L186-WES-1462	VALIDATOR:	DATE: April 6, 1994	PAGE 1 OF 1
COMMENTS: VOLATILE ORGANICS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
METHYLENE CHLORIDE	U	B09DS5 B09DS7	PRESENT IN BLANK
ACETONE	U	B09DS5 B09DS7	PRESENT IN BLANK

9613402.2638

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9401L186-WES-1462

	Samp#	B09DS5		B09DS7	
	Date	1-5-94		1-5-94	
	Location	---		---	
	Depth	---		---	
	Type	---		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
CHLOROMETHANE	UG/KG	12.000	U	10.000	U
BROMOMETHANE	UG/KG	12.000	U	10.000	U
VINYL CHLORIDE	UG/KG	12.000	U	10.000	U
CHLOROETHANE	UG/KG	12.000	U	10.000	U
METHYLENE CHLORIDE	UG/KG	14.000	U	17.000	U
ACETONE	UG/KG	23.000	U	26.000	U
CARBON DISULFIDE	UG/KG	12.000	U	10.000	U
1,1-DICHLOROETHENE	UG/KG	12.000	U	10.000	U
1,1-DICHLOROETHANE	UG/KG	12.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	UG/KG	12.000	U	10.000	U
CHLOROFORM	UG/KG	12.000	U	10.000	U
1,2-DICHLOROETHANE	UG/KG	12.000	U	10.000	U
2-BUTANONE	UG/KG	12.000	U	10.000	U
1,1,1-TRICHLOROETHANE	UG/KG	12.000	U	10.000	U
CARBON TETRACHLORIDE	UG/KG	12.000	U	10.000	U
BROMODICHLOROMETHANE	UG/KG	12.000	U	10.000	U
1,2-DICHLOROPROPANE	UG/KG	12.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	UG/KG	12.000	U	10.000	U
TRICHLOROETHENE	UG/KG	12.000	U	10.000	U
DIBROMOCHLOROMETHANE	UG/KG	12.000	U	10.000	U
1,1,2-TRICHLOROETHANE	UG/KG	12.000	U	10.000	U
BENZENE	UG/KG	12.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	UG/KG	12.000	U	10.000	U
BROMOFORM	UG/KG	12.000	U	10.000	U
4-METHYL-2-PENTANONE	UG/KG	12.000	U	10.000	U
2-HEXANONE	UG/KG	12.000	U	10.000	U
TETRACHLOROETHENE	UG/KG	12.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	UG/KG	12.000	U	10.000	U
TOLUENE	UG/KG	12.000	U	10.000	U
CHLOROBENZENE	UG/KG	12.000	U	10.000	U
ETHYLBENZENE	UG/KG	12.000	U	10.000	U
STYRENE	UG/KG	12.000	U	10.000	U
XYLENES (TOTAL)	UG/KG	12.000	U	10.000	U

Verified: [signature] 4/6/94

9613402.2639

008

9613402.2640

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-001

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: AX1E11

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 16

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.962

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	14	~~B~~ U
67-64-1	Acetone	23	~~B~~ U
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	Trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

~~0027~~

FORM 1 VOA 3/90

Verified 4/8/94

009

9613402.2641

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-001

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: AX1E11

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 16

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.962

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.14	10	~~J~~ ~~JH~~ R

Q

4/15/94

Verified 4/6/94

0028

FORM 1 VOA-TIC 3/90

010

9613402.2642

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09DS7

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-002

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: AX1E12

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 0

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.980

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	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	17	~~B~~	U
67-64-1	Acetone	26	~~B~~	U
75-15-0	Carbon Disulfide	10	U	
75-35-4	1,1-Dichloroethene	10	U	
75-34-3	1,1-Dichloroethane	10	U	
540-59-0	1,2-Dichloroethene (total)	10	U	
67-66-3	Chloroform	10	U	
107-06-2	1,2-Dichloroethane	10	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	10	U	
56-23-5	Carbon Tetrachloride	10	U	
75-27-4	Bromodichloromethane	10	U	
78-87-5	1,2-Dichloropropane	10	U	
10061-01-5	cis-1,3-Dichloropropene	10	U	
79-01-6	Trichloroethene	10	U	
124-48-1	Dibromochloromethane	10	U	
79-00-5	1,1,2-Trichloroethane	10	U	
71-43-2	Benzene	10	U	
10061-02-6	Trans-1,3-Dichloropropene	10	U	
75-25-2	Bromoform	10	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	10	U	
79-34-5	1,1,2,2-Tetrachloroethane	10	U	
108-88-3	Toluene	10	U	
108-90-7	Chlorobenzene	10	U	
100-41-4	Ethylbenzene	10	U	
100-42-5	Styrene	10	U	
1330-20-7	Xylene (total)	10	U	

~~0036~~

FORM 1 VOA 3/90

Verified 4/6/94

011

9613402.2643

1E

CLIENT SAMPLE NO.

B09DS7

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9401L186-002

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: AX1E12

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec. 0

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 0.962

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	SILOXANE	22.12	400	~~J~~	~~JH~~ R
2.	UNKNOWN	26.65	7	~~J~~	JH

4/15/94

Verified 4/6/94

FORM 1 VOA-TIC 3/90 ~~0037~~

012

9613402.2644

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

WESTON

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

GC/MS VOLATILE

The set of samples consisted of two (2) soil samples collected on 01-05-94.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 01-14-94.

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

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

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

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

4. The laboratory blanks contained the common contaminants Methylene Chloride and Acetone at levels less than the CRQL.

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

6. Sample pH information has been reported in Section XI (Preparation Logs).

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

2/23/94
Date

~~0005~~

sma/voa/01-186v.cn

9613402.2646

4.01L 15t

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 1-5-94

Ice Chest No.: JML-161

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 520-303324

Offsite Property No.: ~~U194-0-0138~~ 46

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: WESTON

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09D55

1,500ml P:CLP;TAL Metals,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

2) B09D57

~~1,500ml P:CLP;TAL Metals,Hg,Ti~~
1,125ml Gs:VOA CLP
~~1,500ml aG:Semi-VOA CLP~~
~~1,250ml G:Anions F,Cl,SO4 (EPA 300.0)~~
~~1,125ml P/G:Anions NO2,NO3 (EPA 353.1)~~
~~1,250ml G:Cyanide CLP~~
~~1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79~~

JER 1-6-94

~~3)~~

1,500ml P:CLP;~~TAL~~ Metals,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

JER ~~1-6-94~~ 1-6-94

[] Field Transfer of Custody — Chain of Possession — Temp. = 4.2°C — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1100 Lorene E. Rogers 1-6-94	W. V. Seltzer	1.6.94 1100
Relinquished by: W. V. Seltzer	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: ~~0012~~
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613402.2647

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2	DATA PACKAGE: 9401L186-WES-1462	
VALIDATOR: [illegible]	LAB: Weston	DATE: 04/06/94
CASE:	SDG: 9401L186-WES-1462	

ANALYSES PERFORMED

☒ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☐ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX Soils

B09D55

B09D57

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

017

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

Are continuing calibrations acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: MeCl2 and acetone were detected in the lab blank. Therefore associated results have been qualified as undetected (u).

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . Yes No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? Yes No N/A

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD results acceptable? . . . . . Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

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

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

Comments:

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

Sample locations are not currently available, however they will be evaluated in the final summary report.

4/6/94

9615402.2652

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

DATE RECEIVED: 01/10/94 RFW LOT # :9401L186

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	# Days
B09DS5	001	S	94LVX008	01/05/94	N/A	01/14/94	9
B09DS7	002	S	94LVX008	01/05/94	N/A	01/14/94	9
B09DS7	002 MS	S	94LVX008	01/05/94	N/A	01/14/94	9
B09DS7	002 MSD	S	94LVX008	01/05/94	N/A	01/14/94	9

LAB QC:

VBLK	MB1	S	94LVX008	N/A	N/A	01/14/94

4/5/94

~~0002~~

9613402.2653

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 94LVX008-MB1

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

Lab File ID: AX1E03

Level: (low/med) LOW

Date Received: 01/14/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

x10 = 80

x10 = 40

~~0079~~

FORM 1 VOA 3/90

4/8/94

022

9613402.2655

MEMORANDUM

APR 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record April 15, 1994

FR: Susan Winter, Golder Associates Inc.

RE: SEMIVOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9401L186-WES-1462 (923-E418, Filename 9401L186.BNA)

INTRODUCTION

This memo presents the results of data validation on data package 9401L186-WES-1462 prepared by the Weston Analytical laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DS5	01/05/94	SOIL	SEE NOTE 1
Note 1. All samples were analyzed for CLP TCL semivolatile organics.			

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED APR 1 1994 VALIDATION DOCUMENTATION SDLA

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data package with a total of 64 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

001

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Laboratory Blanks

- Di-n-butylphthalate and bis(2-ethylhexyl)phthalate were detected in the associated laboratory blank. Attachments 2 and 5 provide a summary of the sample affected, data qualification applied and supporting documentation.

TENTATIVELY IDENTIFIED COMPOUND EVALUATION

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the sample and associated laboratory blank and were common laboratory contaminants, resulting in qualification of the TICs as unusable (UR) as shown in Attachment 3.

- TICs were detected in the sample and associated laboratory blank and have been qualified due to associated blank contamination and have been determined to be presumptive and valid (UJN).

- TICs were detected in the sample and determined to be valid, resulting in qualification of the results as presumptive and valid (JN).

- Two TICs reported by the laboratory as "unknown" for sample B09DS5 have been corrected to "hexadecanoic acid isomer" following review of the spectra and have been qualified as estimated and presumptive (JN).

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9613402.2657

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9613402.2659

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

SDG: 9401L186-WES-1462	VALIDATOR:	DATE: April 6, 1994	PAGE 1 OF 1
COMMENTS: SEMIVOLATILE ORGANICS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
DI-N-BUTYLPHTHALATE	U	B09DS5	PRESENT IN BLANK
BIS(2-ETHYLHEXYL)PHTHALATE	U	B09DS5	PRESENT IN BLANK

9613402.2661

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9401L186-WES-1462

	Samp#	B09DS5	
	Date	1-5-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
PHENOL	UG/KG	390.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	390.000	U
2-CHLOROPHENOL	UG/KG	390.000	U
1,3-DICHLOROBENZENE	UG/KG	390.000	U
1,4-DICHLOROBENZENE	UG/KG	390.000	U
1,2-DICHLOROBENZENE	UG/KG	390.000	U
2-METHYLPHENOL	UG/KG	390.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	390.000	U
4-METHYLPHENOL	UG/KG	390.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	390.000	U
HEXACHLOROETHANE	UG/KG	390.000	U
NITROBENZENE	UG/KG	390.000	U
ISOPHORONE	UG/KG	390.000	U
2-NITROPHENOL	UG/KG	390.000	U
2,4-DIMETHYLPHENOL	UG/KG	390.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	390.000	U
2,4-DICHLOROPHENOL	UG/KG	390.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	390.000	U
NAPHTHALENE	UG/KG	390.000	U
4-CHLOROANILINE	UG/KG	390.000	U
HEXACHLOROBUTADIENE	UG/KG	390.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	390.000	U
2-METHYLNAPHTHALENE	UG/KG	390.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	390.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	390.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	980.000	U
2-CHLORONAPHTHALENE	UG/KG	390.000	U
2-NITROANILINE	UG/KG	980.000	U
DIMETHYLPHTHALATE	UG/KG	390.000	U
ACENAPHTHYLENE	UG/KG	390.000	U
3-NITROANILINE	UG/KG	980.000	U
ACENAPHTHENE	UG/KG	390.000	U

Verified.
4/6/94

9613402.2662

U008

Validated Data Summary, Data Package: 9401L186-WES-1462

	Samp#	B09DS5	
	Date	1-5-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
2,4-DINITROPHENOL	UG/KG	980.000	U
4-NITROPHENOL	UG/KG	980.000	U
DIBENZOFURAN	UG/KG	390.000	U
2,4-DINITROTOLUENE	UG/KG	390.000	U
2,6-DINITROTOLUENE	UG/KG	390.000	U
DIETHYLPHTHALATE	UG/KG	390.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	390.000	U
FLUORENE	UG/KG	390.000	U
4-NITROANILINE	UG/KG	980.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	980.000	U
N-NITROSODIPHENYLAMINE	UG/KG	390.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	390.000	U
HEXACHLOROBENZENE	UG/KG	390.000	U
PENTACHLOROPHENOL	UG/KG	980.000	U
PHENANTHRENE	UG/KG	390.000	U
ANTHRACENE	UG/KG	390.000	U
CARBAZOLE	UG/KG	390.000	U
DI-N-BUTYLPHTHALATE	UG/KG	390.000	U
FLUORANTHENE	UG/KG	390.000	U
PYRENE	UG/KG	390.000	U
BUTYLBENZYLPHTHALATE	UG/KG	390.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	390.000	U
BENZO(A)ANTHRACENE	UG/KG	390.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	390.000	U
CHRYSENE	UG/KG	390.000	U
DI-N-OCTYLPHTHALATE	UG/KG	390.000	U
BENZO(B)FLUORANTHENE	UG/KG	390.000	U
BENZO(K)FLUORANTHENE	UG/KG	390.000	U
BENZO(A)PYRENE	UG/KG	390.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	390.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	390.000	U
BENZO(G,H,I)PERYLENE	UG/KG	390.000	U

Verified
4/6/94

9613402.2663

009

9613402.2664

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9401L186-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S020104

Level: (low/med) LOW Date Received: 01/10/94

% Moisture: not dec. 16 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/01/94

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 0.500

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

CAS NO.	COMPOUND		
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-di-n-propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	bis(2-Chloroethoxy)methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	980	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	980	U
131-11-3	Dimethylphthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U
99-09-2	3-Nitroaniline	980	U
83-32-9	Acenaphthene	390	U

U010

FORM 1 SV-1 Verified 12/88 Rev.

4/6/94

~~0031~~

9613402.2665

IC

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9401L186-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S020104

Level: (low/med) LOW Date Received: 01/10/94

% Moisture: not dec. 16 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/01/94

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 0.500

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

CAS NO.	COMPOUND			Q
51-28-5	2,4-Dinitrophenol	980	U	
100-02-7	4-Nitrophenol	980	U	
132-64-9	Dibenzofuran	390	U	
121-14-2	2,4-Dinitrotoluene	390	U	
84-66-2	Diethylphthalate	390	U	
7005-72-3	4-Chlorophenyl-phenylether	390	U	
86-73-7	Fluorene	390	U	
100-01-6	4-Nitroaniline	980	U	
534-52-1	4,6-Dinitro-2-methylphenol	980	U	
86-30-6	N-Nitrosodiphenylamine (1)	390	U	
101-55-3	4-Bromophenyl-phenylether	390	U	
118-74-1	Hexachlorobenzene	390	U	
87-86-5	Pentachlorophenol	980	U	
85-01-8	Phenanthrene	390	U	
120-12-7	Anthracene	390	U	
86-74-8	Carbazole	390	U	
84-74-2	Di-n-butylphthalate	390 ~~120~~	~~JB~~	u
206-44-0	Fluoranthene	390	U	
129-00-0	Pyrene	390	U	
85-68-7	Butylbenzylphthalate	390	U	
91-94-1	3,3'-Dichlorobenzidine	390	U	
56-55-3	Benzo(a)anthracene	390	U	
218-01-9	Chrysene	390	U	
117-81-7	bis(2-Ethylhexyl)phthalate	390 ~~24~~	~~J~~	u
117-84-0	Di-n-octyl phthalate	390	U	
205-99-2	Benzo(b)fluoranthene	390	U	
207-08-9	Benzo(k)fluoranthene	390	U	
50-32-8	Benzo(a)pyrene	390	U	
193-39-5	Indeno(1,2,3-cd)pyrene	390	U	
53-70-3	Dibenz(a,h)anthracene	390	U	
191-24-2	Benzo(g,h,i)perylene	390	U	

(1) - Cannot be separated from Diphenylamine

Verified

FORM 1 SV-2 12/88 Rev.

4/6/94

U011

~~0032~~

9613402.2666

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09DS5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9401L186-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S020104

Level: (low/med) LOW Date Received: 01/10/94

% Moisture: not dec. 16 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 02/01/94

GPC Cleanup: (Y/N) Y pH: 8.4 Dilution Factor: 0.500

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1.	ALDOL CONDENSATE	6.83	1000	~~JAB~~	UR
2.	UNKNOWN	7.25	100	~~JB~~	UJN
3.	ALDOL CONDENSATE	8.92	200	~~JAB~~	UR
4.	PHTHALATE	23.43	300	~~JB~~	~~UJN~~ UR
5.	~~UNKNOWN~~ Hexadecanoic Acid Isomer	24.33	90	~~J~~	JN
6.	UNKNOWN	25.25	90	~~J~~	JN
7.	~~UNKNOWN~~ Hexadecanoic Acid Isomer	27.80	100	~~J~~	JN
8.	ALKANE	29.52	200	~~J~~	JN
9.	ALKANE	30.98	1000	~~J~~	JN
10.	ALKANE	32.98	400	~~J~~	JN
11.	UNKNOWN	33.37	100	~~J~~	JN

4/15/94

Verified
4/6/94

U012

FORM 1 SV-TIC 12/88 Rev.

9613402.2667

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9613402.2668

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

SEMIVOLATILE

One (1) soil sample was collected on 01-05-94.

The sample and its associated QC samples were extracted on 01-17-94 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 01-29-94 and 02-01-94.

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

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

2. All surrogate recoveries were within EPA QC limits.

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

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

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

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

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

2/16/94
Date

U014

~~0005~~

sma/bna/01-186b.cn

9613402.2669

4.01L 150

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 1-5-94

Ice Chest No.: JML-161

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 520-303324

Offsite Property No.: ~~6194-0-00138~~ 46

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: WESTON

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09D55

1,500ml P:CLP;TAL Metals,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

2) B09D57

~~1,500ml P:CLP;TAL Metals,Hg,Ti~~
1,125ml Gs:VOA CLP
~~1,500ml aG:Semi-VOA CLP~~
~~1,250ml G:Anions F,Cl,SO4 (EPA 300.0)~~
~~1,125ml P/G:Anions NO2,NO3 (EPA 353.1)~~
~~1,250ml G:Cyanide CLP~~
~~1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79~~

1-6-94

~~3)~~

1,500ml P:CLP;~~TAL Metals~~,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

1-6-94

[] Field Transfer of Custody — Chain of Possession — Temp. = 4.2°C — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1100 Loren E. Rogers 1-6-94	W. V. Seltzer	1.6.94 1100
Relinquished by: W. V. Seltzer	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

L015

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

~~0011~~

9613402.2670

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: 9401L186-WES-1462
VALIDATOR: [illegible]	LAB: Weston	DATE: 04/06/94
CASE:		SDG: 9401L186-WES-1462

ANALYSES PERFORMED

☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☒ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX B09D55 - Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

Are continuing calibrations acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Sample locations are not currently available but will be evaluated in the Final Summary report. - Di-n-butyl phthalate and bis(2-ethylhexyl) phthalate were detected in the lab blank. Therefore affec. results have been qualified as undetected.

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . Yes No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? Yes No N/A

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD results acceptable? . . . . . Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes (No) N/A

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

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

Comments: MS/MSD RPD for 1,4-dichlorobenzene and 1,2,4-trichlorobenzene are above the control limits at 52% and 31%, respectively. No qualification was required since all assoc. results are nondetects.

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . (Yes) No N/A

Are internal standard areas acceptable? . . . . . (Yes) No N/A

Are internal standard retention times acceptable? . . . . . (Yes) No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . (Yes) No N/A

Is compound quantitation acceptable? . . . . . (Yes) No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are all results supported in the raw data? . . . . . (Yes) No N/A

Do results meet the CRQLs? . . . . . (Yes) No N/A

Has the laboratory properly identified and coded all TIC? . . . ~~Yes~~ (No) N/A (N)

Comments: 4/6/94

2 TICs labeled as unknowns have been properly identified as hexadecanoic acid isomers. The ~~TIC~~ qualification has been applied.

9613402.2674

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

DATE RECEIVED: 01/10/94 RFW LOT # :9401L186

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	#Days	ANALYSIS	#Days
B09DS5	001	S	94LE0087	01/05/94	01/17/94	12	02/01/94	15
B09DS5	001 MS	S	94LE0087	01/05/94	01/17/94	12	01/29/94	12
B09DS5	001 MSD	S	94LE0087	01/05/94	01/17/94	12	01/29/94	12

LAB QC:

SBLK	MB1	S	94LE0087	N/A	01/17/94	01/29/94
SBLK	MB1 BS	S	94LE0087	N/A	01/17/94	01/29/94

4/6/94

9613402.2675

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 94LE0087-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S012903

Level: (low/med) LOW Date Received: 01/17/94

% Moisture: not dec. 0 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/29/94

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 0.500

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	
51-28-5	2,4-Dinitrophenol	840	U	
100-02-7	4-Nitrophenol	840	U	
132-64-9	Dibenzofuran	330	U	
121-14-2	2,4-Dinitrotoluene	330	U	
84-66-2	Diethylphthalate	330	U	
7005-72-3	4-Chlorophenyl-phenylether	330	U	
86-73-7	Fluorene	330	U	
100-01-6	4-Nitroaniline	840	U	
534-52-1	4,6-Dinitro-2-methylphenol	840	U	
86-30-6	N-Nitrosodiphenylamine (1)	330	U	
101-55-3	4-Bromophenyl-phenylether	330	U	
118-74-1	Hexachlorobenzene	330	U	
87-86-5	Pentachlorophenol	840	U	
85-01-8	Phenanthrene	330	U	
120-12-7	Anthracene	330	U	
86-74-8	Carbazole	330	U	
84-74-2	Di-n-butylphthalate	180	J	X10=1800
206-44-0	Fluoranthene	330	U	
129-00-0	Pyrene	330	U	
85-68-7	Butylbenzylphthalate	330	U	
91-94-1	3,3'-Dichlorobenzidine	330	U	
56-55-3	Benzo(a)anthracene	330	U	
218-01-9	Chrysene	330	U	
117-81-7	bis(2-Ethylhexyl)phthalate	~~330~~ 7	~~U~~ J	X10=70
117-84-0	Di-n-octyl phthalate	330	U	
205-99-2	Benzo(b)fluoranthene	330	U	
207-08-9	Benzo(k)fluoranthene	330	U	
50-32-8	Benzo(a)pyrene	330	U	
193-39-5	Indeno(1,2,3-cd)pyrene	330	U	
53-70-3	Dibenz(a,h)anthracene	330	U	
191-24-2	Benzo(g,h,i)perylene	330	U	

~~0137~~

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

4/6/94

9613402.2676

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 94LE0087-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S012903

Level: (low/med) LOW Date Received: 01/17/94

% Moisture: not dec. 0 dec. Date Extracted: 01/17/94

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/29/94

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 0.500

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	UNKNOWN	5.98	100	J	
2.	ALDOL CONDENSATE	6.85	1000	~~JA~~	R
3.	UNKNOWN	7.27	200	J	
4.	UNKNOWN	7.55	80	J	
5.	ALDOL CONDENSATE	8.47	200	~~JA~~	R
6.	ALDOL CONDENSATE	8.92	100	~~JA~~	R
7.	PHTHALATE	23.45	70	~~J~~	R

4/6/94

~~0138~~

FORM 1 SV-TIC 12/88 Rev.

022

9613402.2677

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
58	NOT FOUND								
59	NOT FOUND								
60	NOT FOUND								
61	NOT FOUND								
62	NOT FOUND								
63	NOT FOUND								
64	NOT FOUND								
65	NOT FOUND								
66	NOT FOUND								
67	NOT FOUND								
68	NOT FOUND								
69	167	1407	23:27	4	1.033	A BB	451.	0.265 NG <0.5	0.03
70	149	1472	24:32	4	1.081	A BB	35829.	10.837 NG	1.10
71	NOT FOUND								
72	NOT FOUND								
73	NOT FOUND								
74	NOT FOUND								
75	NOT FOUND								
76	NOT FOUND								
77	149	1726	28:46	5	0.998	A BB	705.	0.399 NG <0.5	0.04
78	NOT FOUND								
79	NOT FOUND								
80	NOT FOUND								
81	NOT FOUND								
82	NOT FOUND								
83	NOT FOUND								
84	NOT FOUND								
85	NOT FOUND								
86	NOT FOUND								

Bis(2-ethylhexyl) phthalate

$$\frac{ug}{kg}\ \text{bis(2-ethylhexyl) phthalate} = \frac{(7.5)(40)(2)(500)}{(41631)(1.696)(2)(30)(1)}$$

$= 6.7 = 7$ ug/kg

4/6/94

1/31/94

4/6/94

~~0144~~
0023

9613402.2678

MEMORANDUM

APR 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

April 15, 1994

FR: Susan Winter, Golder Associates Inc.

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9401L186-WES-1462 (923-E418, Filename 9401L186.GCH)

INTRODUCTION

This memo presents the results of data validation on data package 9401L186-WES-1462 prepared by the Weston Analytical laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DS5 B09DS7	01/05/94 01/05/94	SOIL SOIL	SEE NOTE 1
Note 1. Sample B09DS5 was analyzed for anions (chloride, fluoride, and sulfate), nitrate+nitrite-N, and percent solids. Sample B09DS7 was analyzed for percent solids only.			

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED APR 1 1994 VALIDATION DOCUMENTATION SDLA

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of two samples were validated in this data package with a total of 7 determinations reported, all of

which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of data as estimated.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9613402.2680

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

9613402.2682

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

SDG: 9401L186-WES-1462	VALIDATOR:	DATE: April 6, 1994	PAGE 1 OF 1
COMMENTS: GENERAL CHEMISTRY			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
NO QUALIFICATION REQUIRED			

9613402.2684

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9401L186-WES-1462

	Samp#	B09DS5		B09DS7	
	Date	1-5-94		1-5-94	
	Location	---		---	
	Depth	---		---	
	Type	---		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
PERCENT SOLIDS	%	83.500		100.000	
CHLORIDE	MG/KG	17.800		---	
FLUORIDE	MG/KG	3.000	U	---	
CYANIDE	MG/KG	1.200	U	---	
SULFATE	MG/KG	54.400		---	
NITRATE+NITRITE	MG-N/KG	1.300		---	

Verified

4/18/94

9613407.7665

9613402.2686

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/02/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L186

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B09DS5	% Solids	83.5		%	0.10	1.0
		Chloride by IC	17.8		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Cyanide, Total	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	54.4		MG/KG	1.5	1.0
		Nitrate Nitrite	1.3		MG-N/KG	0.12	1.0
-002	B09DS7	% Solids	100		%	0.10	1.0

Verified

4/6/94

009

~~0007~~

9613402.2687

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9613402.2688

MAR 1994
RECEIVED
SDLA

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

Client : WESTINGHOUSE HANFORD
RFW# : 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

INORGANIC

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

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

2. All preparation blank results were below the required detection 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 the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

RECORD COPY

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

2/10/94
Date

L011

pas/i01-186

0001

9613402.2689

4.01L 1st

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 1-5-94

Ice Chest No.: JML-161

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 520-303324

Offsite Property No.: ~~6194-6-0138~~ 46

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: WESTON

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09D55

1,500ml P:CLP;TAL Metals,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

2) B09D57

~~1,500ml P:CLP;TAL Metals,Hg,Ti~~
1,125ml Gs:VOA CLP
~~1,500ml aG:Semi-VOA CLP~~
~~1,250ml G:Anions F,Cl,SO4 (EPA 300.0)~~
~~1,125ml P/G:Anions NO2,NO3 (EPA 353.1)~~
~~1,250ml G:Cyanide CLP~~
~~1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79~~

1-6-94

~~3)~~

1,500ml P:CLP;~~TAL Metals~~,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-~~238,Pu~~-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

1-6-94

[] Field Transfer of Custody — Chain of Possession — Temp. = 4.2°C — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
1100 Loren E. Rogers 1-6-94	W. V. Seltzer	1.6.94 1100
Relinquished by: W. V. Seltzer	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

~~0018~~

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2	DATA PACKAGE: 9401L186-WES-1462	
VALIDATOR: [illegible]	LAB: Weston	DATE: 04/06/94
CASE:	SDG: 9401L186-WES-1462	

ANALYSES PERFORMED

☒ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ pH	☒ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☒ CN-CLP	☒ % Solids	☐	☐	☐	☐

SAMPLES/MATRIX Soils

B09D55

B09D57

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? Yes No N/A

Are initial calibration results acceptable? . . . . . Yes No N/A

Was a calibration check performed for all applicable analyses? Yes No N/A

Are calibration check results acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Sample locations are not currently available but will be ~~possi~~ evaluated in the final summary report.

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . Yes No N/A

Are spike recoveries acceptable? . . . . . Yes No N/A

Were LCS analyses performed at the required frequency? . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments:

6. PRECISION

Were laboratory duplicate samples analyzed at the required frequency? . . . . . Yes No N/A

Are laboratory duplicate sample RPD values acceptable? . . . . Yes No N/A

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

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

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments: Sample locations are not currently available but will be evaluated in the final summary report.

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

9613402.2694

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

DATE RECEIVED: 01/10/94 RFW LOT # :9401L186

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	#Days
B09DS5							
% SOLIDS	001	S	94L%S005	01/05/94	01/11/94	01/12/94	7
% SOLIDS	001 REP	S	94L%S005	01/05/94	01/11/94	01/12/94	7
CHLORIDE BY IC	001	S	94LCCS06	01/05/94	01/18/94	01/18/94	13
CHLORIDE BY IC	001 REP	S	94LCCS06	01/05/94	01/18/94	01/18/94	13
CHLORIDE BY IC	001 MS	S	94LCCS06	01/05/94	01/18/94	01/18/94	13
CHLORIDE BY IC	001 MSD	S	94LCCS06	01/05/94	01/18/94	01/18/94	13
FLUORIDE BY IC	001	S	94LFCS06	01/05/94	01/18/94	01/18/94	13
FLUORIDE BY IC	001 REP	S	94LFCS06	01/05/94	01/18/94	01/18/94	13
FLUORIDE BY IC	001 MS	S	94LFCS06	01/05/94	01/18/94	01/18/94	13
FLUORIDE BY IC	001 MSD	S	94LFCS06	01/05/94	01/18/94	01/18/94	13
TOTAL CYANIDE	001	S	94LC005A	01/05/94	01/13/94	01/13/94	8
TOTAL CYANIDE	001 REP	S	94LC005A	01/05/94	01/13/94	01/13/94	8
TOTAL CYANIDE	001 MS	S	94LC005A	01/05/94	01/13/94	01/13/94	8
TOTAL CYANIDE	001 MSD	S	94LC005A	01/05/94	01/13/94	01/13/94	8
SULFATE BY IC	001	S	94LSCS06	01/05/94	01/18/94	01/18/94	13
SULFATE BY IC	001 REP	S	94LSCS06	01/05/94	01/18/94	01/18/94	13
SULFATE BY IC	001 MS	S	94LSCS06	01/05/94	01/18/94	01/18/94	13
SULFATE BY IC	001 MSD	S	94LSCS06	01/05/94	01/18/94	01/18/94	13
NITRATE NITRITE	001	S	94LNT019	01/05/94	01/26/94	01/26/94	21
NITRATE NITRITE	001 REP	S	94LNT019	01/05/94	01/26/94	01/26/94	21
NITRATE NITRITE	001 MS	S	94LNT019	01/05/94	01/26/94	01/26/94	21
NITRATE NITRITE	001 MSD	S	94LNT019	01/05/94	01/26/94	01/26/94	21
SUB-OUT TEST FOR SUB	001	S		01/05/94			
B09DS7							
% SOLIDS	002	S	94L%S011	01/05/94	01/24/94	01/25/94	20
% SOLIDS	002 REP	S	94L%S011	01/05/94	01/24/94	01/25/94	20

LAB QC:

4/6/94

CHLORIDE BY IC	MB1	S	94LCCS06	N/A	01/18/94	01/18/94
CHLORIDE BY IC	MB1 BS	S	94LCCS06	N/A	01/18/94	01/18/94
CHLORIDE BY IC	MB1 BSD	S	94LCCS06	N/A	01/18/94	01/18/94
CHLORIDE BY IC	MB2	S	94LCCS06	N/A	01/18/94	01/18/94

9613402.2695

MEMORANDUM

APR 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record April 15, 1994

FR: Susan Winter, Golder Associates Inc

RE: METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9401L186-WES-1462 (923-E418, Filename 9401L186.MET)

INTRODUCTION

This memo presents the results of data validation on data package 9401L186-WES-1462 prepared by the Weston Analytical laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09DS5	01/05/94	SOIL	SEE NOTE 1
Note 1. Sample B09DS5 was analyzed for CLP TAL metals, cyanide and titanium.			

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

APR 1 1994
VALIDATION DOCUMENTATION
SDLA

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of the deficiencies discussed below.

Accuracy. Goals for accuracy were met with the exception of the deficiencies discussed below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses with the exception of titanium which was requested for but was not analyzed. A total of one sample was

6001

validated in this data package with a total of 24 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Laboratory Blanks

- **Positive Blanks.** Beryllium and nickel were detected at positive concentrations in the associated calibration blanks. Attachments 2 and 5 provide a summary of the sample affected, data qualification applied and supporting documentation.

- **Negative Blanks.** Cadmium, thallium, potassium, and vanadium were detected at negative concentrations in the calibration or preparation blanks. Attachments 2 and 5 provide a summary of the sample affected, data qualifications applied and supporting documentation.

Matrix Spike

- The matrix spike percent recoveries (MS %R) for lead and selenium were unacceptable. Attachments 2 and 5 provide a summary of the sample affected, data qualifications applied and supporting documentation.

ICP Serial Dilution

- ICP serial dilution percent difference (%D) for zinc was unacceptable. Attachments 2 and 5 provide a summary of the sample affected, data qualification applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9613402.2697

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

9613402.2699

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

SDG: 9401L186-WES-1462	VALIDATOR:	DATE: April 7, 1994	PAGE 1 OF 1
COMMENTS: METALS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
BERYLLIUM	U	B09DS5	PRESENT IN CCB AT A POSITIVE CONCENTRATION
NICKEL	U	B09DS5	PRESENT IN CCB AT A POSITIVE CONCENTRATION
CADMIUM	UJ	B09DS5	PRESENT IN CCB AT A NEGATIVE CONCENTRATION
THALLIUM	UJ	B09DS5	PRESENT IN CCB AT A NEGATIVE CONCENTRATION
POTASSIUM	J	B09DS5	PRESENT IN PREP BLANK AT A NEGATIVE CONCENTRATION
VANADIUM	J	B09DS5	PRESENT IN PREP BLANK AT A NEGATIVE CONCENTRATION
LEAD	J	B09DS5	MS %R < 75% BUT > 30%
SELENIUM	UJ	B09DS5	MS %R < 75% BUT > 30%
ZINC	J	B09DS5	ICP SERIAL DILUTION %D > 10% AND SAMPLE RESULT > 50xIDL

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9401L186-WES-1462

	Samp#	B09DS5	
	Date	1-5-94	
	Location	---	
	Depth	---	
	Type	---	
	Comments	---	
Parameter	Units	Result	Q
ALUMINUM	MG/KG	7050.000	
ANTIMONY	MG/KG	6.470	U
ARSENIC	MG/KG	1.900	B
BARIUM	MG/KG	80.400	
BERYLLIUM	MG/KG	0.430	U
CADMIUM	MG/KG	0.720	UJ
CALCIUM	MG/KG	14100.000	
CHROMIUM	MG/KG	16.600	
COBALT	MG/KG	8.100	B
COPPER	MG/KG	17.100	
IRON	MG/KG	15300.000	
LEAD	MG/KG	6.500	J
MAGNESIUM	MG/KG	6160.000	
MANGANESE	MG/KG	301.000	
MERCURY	MG/KG	0.040	U
NICKEL	MG/KG	15.400	U
POTASSIUM	MG/KG	1460.000	J
SELENIUM	MG/KG	0.480	UJ
SILVER	MG/KG	0.770	B
SODIUM	MG/KG	223.000	B
THALLIUM	MG/KG	0.480	UJ
VANADIUM	MG/KG	18.700	J
ZINC	MG/KG	38.300	J
CYANIDE	MG/KG	1.200	U

Verified
[illegible] 4/7/94

9613402.2702

008

9613402.2703

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09DS5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP186

Matrix (soil/water): SOIL Lab Sample ID: 940118601

Level (low/med): LOW Date Received: 1/10/94

% Solids: 83.5

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	7050.00			P	
7440-36-0	Antimony	6.47	U		P	
7440-38-2	Arsenic	1.90	B		F	
7440-39-3	Barium	80.40			P	
7440-41-7	Beryllium	.43	~~B~~		P	3/5
7440-43-9	Cadmium	.72	~~U~~		P	3/5
7440-70-2	Calcium	14100.00			P	
7440-47-3	Chromium	16.60			P	
7440-48-4	Cobalt	8.10	B		P	
7440-50-8	Copper	17.10			P	
7439-89-6	Iron	15300.00			P	
7439-92-1	Lead	6.50	—	NS	F	5
7439-95-4	Magnesium	6160.00			P	
7439-96-5	Manganese	301.00			P	
7439-97-6	Mercury	.04	U		CV	
7440-02-0	Nickel	15.40	—		P	~~X~~ 2
7440-09-7	Potassium	1460.00	—		P	3/5
7782-49-2	Selenium	.48	~~U~~	N	F	3/5
7440-22-4	Silver	.77	B		P	
7440-23-5	Sodium	223.00	B		P	
7440-28-0	Thallium	.48	~~U~~		F	3/5
7440-62-2	Vanadium	18.70	—		P	3/5
7440-66-6	Zinc	38.30	—	E	P	3/5
	Cyanide	1.20	U		C	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Lead was flagged with a "+" for 001R - MSA result=0.9920; the better of two runs.

FORM I - IN 03/90

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L186

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

CLP METALS

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

2. The samples were prepared and analyzed in accordance with the following protocols: CLP SOW 3/90.

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 USEPA SOW control limits except for the following for sample 001:

Element	%Difference
Zinc	17.7

WESTON

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) except for the following for sample 001:

Element	%Recovery
Lead	33.3
Selenium	58.3

For analytes where the Matrix Spike is out of control, a Post-digestion Matrix Spike and Serial Dilution are performed (exception allowed for Ag).

Matrix spike analyses are not required for Al, Ca, Fe, Mg, Na, and K in soils.

12. 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.

13. Method of Standard Additions (MSA) analyses were performed on the following samples:

Element	Sample #'s
Lead	001,001R

14. 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.

15. 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).

16. 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.

WESTON

17. 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.

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

2.18.94
Date

rls/m01-186.clp

9613402.2708

4.01L 1.80

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 1-5-94

Ice Chest No.: JML-161

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 520-303324

Offsite Property No.: ~~WW94-0-0138~~ 46

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: WESTON

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09D55

1,500ml P:CLP;TAL Metals,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

2) B09D57

~~1,500ml P:CLP;TAL Metals,Hg,Ti~~
1,125ml Gs:VOA CLP
~~1,500ml aG:Semi-VOA CLP~~
~~1,250ml G:Anions F,Cl,SO4 (EPA 300.0)~~
~~1,125ml P/G:Anions NO2,NO3 (EPA 353.1)~~
~~1,250ml G:Cyanide CLP~~
~~1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-238,Pu-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79~~

JCR 1-6-94

~~3)~~

1,500ml P:CLP;~~TAL Metals~~,Hg,Ti
1,125ml Gs:VOA CLP
1,500ml aG:Semi-VOA CLP
1,250ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.1)
1,250ml G:Cyanide CLP
1,1000ml P/G:Gross alpha/beta (PRO-032-15), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (PRO-042-5), U-235,U-234,U-238 (PRO-052-32) Np-237,(PRO-042-5) Pu-~~238,Pu~~-239/240 (PRO-052-32) Sr-90 (PRO-032-38,PRO-032-25) Tc-99 (PRO-032-78) Am-241,Cm-244 (PRO-052-32 or PRO-062-109) Se-79

JCR ~~1-6-94~~ 1-6-94

[] Field Transfer of Custody — Chain of Possession — Temp. = 4.2°C — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Loren E. Rogers 1100 1-6-94	W. V. Seltzer	1.6.94 1100
W. V. Seltzer		

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: 9401L186-WES-1462
VALIDATOR: [signature]	LAB: Weston	DATE: 04/06/94
CASE:		SDG: 9401L186-WES-1462

ANALYSES PERFORMED					
☒ CLP/ICP	☒ CLP/GFAA	☒ CLP/Hg	☒ CLP/Cyanide	☒ Tetrium-DDB/CLP	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX Soil

B-9055

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A
Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A
Comments: See blank summary form for blank adjustments.

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A
Comments: MS%R for lead and selenium are less than 75% but greater than 30%. Qualify assoc results as estimated (J/UJ).

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A
Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A
Were ICP serial dilution samples analyzed? . . . . . Yes No N/A
Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A
Are field duplicate RPD values acceptable? . . . . . Yes No N/A
Are field split RPD values acceptable? . . . . . Yes No N/A

4/6/94. Comments: ICP Serial dilution %D for zinc was >10% and sample result is >50xIDL. Qualify as estimated (J).

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A
Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A
Were analytical spikes performed as required? . . . . . Yes No N/A
Are analytical spike recoveries acceptable? . . . . . Yes No N/A 4/6/94
Was MSA performed as required? . . . . . Yes No N/A
Are MSA results acceptable? . . . . . Yes No N/A

4/6/94 Comments: ~~Duplicate injection %RSD for arsenic was >20% and arsenic conc. is >IDL.~~

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A 4/15/94
Are all results supported in the raw data? . . . . . Yes No N/A
Are results calculated properly? . . . . . Yes No N/A
Do results meet the CRDLs? . . . . . Yes No N/A

Comments: Titanium was requested for but was not analyzed. No qualification is required.

9613402.2713

RECORD COPY

MAR 1994 RECEIVED SDLA

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

DATE RECEIVED: 01/10/94 RFW LOT # :9401L186

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	# Days
B09DS5							
SILVER, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	34
SILVER, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
SILVER, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
ALUMINUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
ALUMINUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
ALUMINUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
ARSENIC, TOTAL	001	S	94L0174	01/05/94	02/02/94	02/05/94	31
ARSENIC, TOTAL	001 REP	S	94L0174	01/05/94	02/02/94	02/05/94	
ARSENIC, TOTAL	001 MS	S	94L0174	01/05/94	02/02/94	02/05/94	
BARIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	34
BARIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
BARIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
BERYLLIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
BERYLLIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
BERYLLIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
CALCIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
CALCIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
CALCIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
CADMIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
CADMIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
CADMIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
COBALT, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
COBALT, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
COBALT, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
CHROMIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
CHROMIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
CHROMIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
COPPER, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
COPPER, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
COPPER, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
IRON, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94	
IRON, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94	
IRON, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94	
MERCURY, TOTAL	001	S	94C0037	01/05/94	02/01/94	02/01/94	27
MERCURY, TOTAL	001 REP	S	94C0037	01/05/94	02/01/94	02/01/94	

4/6/94

9613402.2714

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

DATE RECEIVED: 01/10/94 RFW LOT # :9401L186

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 MS	S	94C0037	01/05/94	02/01/94	02/01/94 27
POTASSIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94 34
POTASSIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
POTASSIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
MAGNESIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94
MAGNESIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
MAGNESIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
MANGANESE, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94
MANGANESE, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
MANGANESE, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
SODIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94
SODIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
SODIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
NICKEL, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94
NICKEL, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
NICKEL, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
LEAD, TOTAL	001	S	94L0174	01/05/94	02/02/94	02/07/94 33
LEAD, TOTAL	001 REP	S	94L0174	01/05/94	02/02/94	02/07/94
LEAD, TOTAL	001 MS	S	94L0174	01/05/94	02/02/94	02/07/94
ANTIMONY, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94 34
ANTIMONY, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
ANTIMONY, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
SELENIUM, TOTAL	001	S	94L0174	01/05/94	02/02/94	02/05/94 31
SELENIUM, TOTAL	001 REP	S	94L0174	01/05/94	02/02/94	02/05/94
SELENIUM, TOTAL	001 MS	S	94L0174	01/05/94	02/02/94	02/05/94
TITANIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94 34
TITANIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
TITANIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
THALLIUM, TOTAL	001	S	94L0174	01/05/94	02/02/94	02/05/94 31
THALLIUM, TOTAL	001 REP	S	94L0174	01/05/94	02/02/94	02/05/94
THALLIUM, TOTAL	001 MS	S	94L0174	01/05/94	02/02/94	02/05/94
VANADIUM, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94 34
VANADIUM, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
VANADIUM, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
ZINC, TOTAL	001	S	94L0175	01/05/94	02/02/94	02/08/94
ZINC, TOTAL	001 REP	S	94L0175	01/05/94	02/02/94	02/08/94
ZINC, TOTAL	001 MS	S	94L0175	01/05/94	02/02/94	02/08/94
Cyanide				1/05/94		01/13/94 8

LAB QC:

4/6/94

SILVER LABORATORY	LC1 BS	S	94L0175	N/A	02/02/94	02/08/94

BLANK AND SAMPLE DATA SUMMARY

9401L186-TMA-1462

SDG:	VALIDATOR: [illegible]	DATE: 4/6/94	PAGE 1 OF 1
COMMENTS: Metals			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB1	Beryllium	1.2	B		ug/L	6		B09055	U
CCB1	Nickel	14.5	B		ug/L	72.5		B09055	U
CCB2	Cadmium	-3.5	B		ug/L	x2 = -7.0		B09055	UJ
CCB1	Thallium	-2.0	B		ug/L	x2 = -4.0		B09055	UJ
Prep Blank	Potassium	-180	B		mg/kg		-1800	B09055	J
Prep Blank	Vanadium	-2.7	B		mg/kg		27	B09055	J

9613402.2716

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B09DS5S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP186

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 83.5

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	119.0000		6.4665	U	119.80	99.4		P
Arsenic	75-125	10.0000		1.9000	B	9.60	84.4		F
Barium	75-125	523.0000		80.4000		479.00	92.4		P
Beryllium	75-125	12.0000		.4300	B	12.00	96.4		P
Cadmium	75-125	11.5000		.7185	U	12.00	96.4		P
Calcium									NR
Chromium	75-125	60.2000		16.6000		47.90	91.0		P
Cobalt	75-125	120.1000		8.1000	B	119.80	93.5		P
Copper	75-125	71.7000		17.1000		59.90	91.2		P
Iron									NR
Lead	75-125	8.1000		6.5000		4.80	33.3	N	F
Magnesium									NR
Manganese	75-125	402.7000		301.3000		119.80	84.6		P
Mercury	75-125	.4650		.0428	U	.43	108.1		CV
Nickel	75-125	128.4000		15.4000		119.80	94.4		P
Potassium									NR
Selenium	75-125	1.4000		.4790	U	2.40	58.3	N	F
Silver	75-125	12.5000		.7700	B	12.00	~~104.2~~ 97.8		P
Sodium									NR
Thallium	75-125	10.1000		.4790	U	12.00	84.2		F
Vanadium	75-125	134.6000		18.7000		119.80	96.7		P
Zinc	75-125	149.4000		38.3000		119.80	92.7		P
Cyanide	75-125	6.1770		1.1980	U	5.99	103.1		C

Comments: Qualify lead and selenium results as estimated (J/UJ).

FORM V (Part 1) - IN 03/90

Silver %R = $\frac{12.5 - 0.77}{12.0} \times 100 = 97.8\%$

4/6/94

022

~~0031~~

9613402.2717

U.S. EPA - CLP

9
ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B09DS5L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP186

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	29416.20		31433.01		6.9		P
Antimony	27.00	U	135.00	U			P
Arsenic							
Barium	335.70		357.50	B	6.5		P
Beryllium	1.80	B	6.00	B	233.3		P
Cadmium	3.00	U	15.50	B	100.0		P
Calcium	58985.70		64051.50		8.6		P
Chromium	69.30		58.50		15.6		P
Cobalt	33.70	B	10.00	U	100.0		P
Copper	71.60		80.50	B	12.4		P
Iron	64043.40		69530.50		8.6		P
Lead							
Magnesium	25702.80		27733.50		7.9		P
Manganese	1257.90		1368.50		8.8		P
Mercury							
Nickel	64.10		91.00	B	42.0		P
Potassium	6087.00		3330.00	U	100.0		P
Selenium							
Silver	3.20	B	15.00	U	100.0		P
Sodium	932.70	B	1012.00	B	8.5		P
Thallium							
Vanadium	77.90		104.50	B	34.1		P
Zinc	160.10		188.50		17.7	E	P

Qualify the zinc sample result as estimated (J).

FORM IX - IN

03/90

4/6/94