 9308L675-WES-1241

174

WESTON MANAGERS DESIGNERS CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

GC/MS VOLATILE

The set of samples consisted of two (2) soil samples collected on 08-22-93.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 08-27,28-93.

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

1. Non-target compounds were 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. All blank spike recoveries were within EPA QC limits.

5. The laboratory blanks contained the common contaminants Methylene Chloride and/or Acetone at levels less than 3x the CRQL.

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

Stanley Boonthanom 09.27.93

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

Date

sma/voa/08-675v.cn

0005

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-93-0204
Record of Disposition No.

DATE: September 22, 1993

LABORATORY: Weston

PROJECT TITLE/NO.: 200-UP-2

NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: B09314, B09322

DESCRIPTION OF EVENT:

After the samples were shipped, it was decided that the analysis of PCBs was needed.

DISPOSITION OF SAMPLES:

Weston was instructed with the customer's concurrence to analyze for PCBs on a priority basis, even though holding times were exceeded.

APPROVAL SIGNATURES:

Jon W. Ball — 9-22-93
OSM Project Coordinator (Print/Sign Name) — Date

Michael Galgoul — 9-22-93
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

HANFORD ANALYTICAL SERVICES MANAGEMENT

RECORD OF DISPOSITION

ROD-93-0206
Record of Disposition No.

DATE: September 24, 1993

LABORATORY: Weston

PROJECT TITLE/NO.: 200-UP-2

NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: B09322

DESCRIPTION OF EVENT:

It was determined that sample B09322 was a field blank and did not require PCB analysis as requested on ROD-93-204.

DISPOSITION OF SAMPLES:

Weston was instructed with customer's concurrence to not analyze for PCBs on sample B09322. Weston was instructed to analyze for PCBs on all other samples listed on ROD-93-204 using CLP methods.

APPROVAL SIGNATURES:

Jon W. Ball / Jon W. Ball — 9-24-93
OSM Project Coordinator (Print/Sign Name) — **Date**

Michael Galgoul / Michael D. Galgoul — 9-24-93
Technical Representative (Print/Sign Name) — **Date**

N/A
Quality Assurance (Print/Sign Name) — **Date**

WESTON Analytics Use Only
9308L675

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse - Hanford
Est. Final Proj. Sampling Date:
Work Order #: 06168-002-001-9999-00
Project Contact/Phone #:
AD Project Manager: Josie Edwards
QC: CLP Del: CLP TAT: 35 DAY
Date Rec'd: 8/24/93 Date Due: 9/28/93
Account #: WS-HANFORD

		VOA	BNA	Pest/PCB	Herb	FLUR CL SO4	NBN2	Radio Chem	Metal	CN
Refrigerator #		1	6			3	3	SUB	3	3
#/Type Container	Liquid									
	Solid	1/6L	1/1G			1/6L	1/1L	1/6L	1/pL	1/4L
Volume	Liquid									
	Solid	125ml	500ml			250ml	125ml	4L	500ml	250ml
Preservatives		—	—			—	—	—	—	—
ANALYSES REQUESTED		ORGANIC							INORG	

WESTON Analytics Use Only: 0604C, 0605C, ICFL ICCL IC04, INBN2, ISUB, see below, ICNTO

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	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	FLUR CL SO4	NBN2	Radio Chem	Metal	CN
001	B09314 (RAD)			S	8/22/93	07:40	X	X			X	X	X	X	X
002	B09322 ~~RAD~~ (BB 8/24/93)			S	8/22/93	11:30	X								
	metals = HSL+Ti														
	SAF # 93-263														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp. = 5.6°C (samples 001)
7.2°C (sample 002)
SAF # 93-263
Note: Sample 002 VOA COC cross off's were done in Field not by LAB personnel

DATE/REVISIONS:
8/24/93 1. Sample 001 Rad
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 6062041915
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	B. Burnett	8-24-93	09:00		B.B. 8-24-93		
B.B. 8-24-93							

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

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

9613407.1849

9613407.1856

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: 8/22/93

Ice Chest No.: — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~WESTON TMA~~ Lexton

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE 93081675-00

Sample Identification

1) B09314 Temp.: 5.6°

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)

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 8/22/93

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

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
8/22/93 Jeanne Rogers 1131	Melanie Meyers Melanie Meyers	8/22/93 1133
Relinquished by: 8/23/93 Melanie Meyers 0915	Received by:	Date/Time:
Relinquished by: Fed Ex	Received by: B. Burnett	Date/Time: 8-24-93 09:00
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

0011

9613407.1851

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector L E ROGERS S.A.F. # 93-263 Date 8/22/93

Company Contact L E ROGERS Telephone (509) 376-7690

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B0R314	S	8/22/93	0740	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
				1,500ml 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
			8/22/93	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 Radioactive

A-6000-406 (06/91) WEF060

0012

9613407.1852

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: 8/22/93

Ice Chest No.: — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~WESTON~~ TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) — 9308L675-002

Sample Identification

B09322

1)

~~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)

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 8/23/93

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)		
Relinquished by: 8/22/93 1131	Received by: Melanie Myers	Date/Time: 8/22/93 1132
Relinquished by: 8/23/93 1015	Received by:	Date/Time:
Relinquished by: Fed Ex	Received by: B. Burnett	Date/Time: 8-24-93 09:00
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

0014

9613407.1853

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector L E ROGERS S.A.F. # 93-263 Date 8/23/93

Company Contact L E ROGERS Telephone (509) 376-7690

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B09322	S	8/22/93	1130	~~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~~
			JDR 8/23/93	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
				1,500ml 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 OBSERVED

A-6000-406 (06/91) WEF060

0015

ERG #61 Overnight Delivery Air Bill #

OFFSITE RADIOACTIVE SHIPMENT RECORD
– EXTERIOR INSPECTION PERMITTED –

17864

SHIPPING INST.

Emergency Contact: (509) 373-3800

Company: ROY F. WESTON

Address: ~~200~~ 256 WELSH POOP ROAD

City, State, Zip: LIONVILLE PA 19341-1313

Attention: Josie Edwards

Contractor: ☐ PNL ☐ KEH ☒ WHC

Site Carrier: Loren E. Rogers

PR No: 84682 Veh. No: 1582

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

SHIPMENT DESCRIPTION AND CERTIFICATION

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

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

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

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

For Normal Form Identify:

Physical Form: ☒ Solid ☐ Liquid ☐ Gas

Chemical Form: ☐ Metal ☐ Oxide ☒ Elemental ☐ Nitrate

Other _____

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

CONSTRUCTION: ☐ Box, FB ☐ Wood ☐ Steel ☐ Drum ☐ Cask ☒ Other poly cooler

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

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

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

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

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

No. Pkgs.	Model Package	COC/Spec. No.	Serial No.	Seal No.	Isotopes	Curies/Pkg	T.I.	Gr. Wt.
~~1~~	Strong Tight	N/A	N/A	N/A	Cs-137	81nCi	N/A	~~70lbs~~ 56lbs

E.R. Smith E.R. Smith

Cooler # ~~BABE~~ JERRY Sample Bottles and Volume

Soil samples in glass bottles. Bottles are double-bagged and packed in wet ice surrounded by vermiculite absorbent. Sample # BOR322, BC9814

(Shipper may describe package in detail on one of unused lines above) TOTAL 81nCi N/A ~~70lbs~~ 56lbs

E.R. Smith

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

Certifier's Signature: Loren E. Rogers Date: 8/23/93 Organization: EFS Complete Cost Code (inc. end function): B1710/PT2BE

AREA MONITOR

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

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

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

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

Additional Data and Instructions (inc. Readings of Internal Packaging): <0.5 mrem/hr Smears <D α βγ

Signature - Radiation Monitoring: Charles L. Felder Bldg: 2025 Annex Survey No. 125841 Date: 8-23-93

AUTHORIZATION FOR SHIPMENT

APPROVAL

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

Traffic has inspected and verified preshipment compliance to DOT regulations.

Authorized Signature ▸ Eli R. Smith Printed Name ▸ Eli R. Smith Date ▸ 8/23/93

APPROVED FOR OFFSITE SHIPMENT

TRAFFIC

B. L. No. RMW-8197 Date Shipped 8/23/93 E.T.A. 8/24/93 Routing FEDX ☐ N/A Placards ☐ Yes ☑ No

Surveyed By Date 8-23-93 Approved for Shipment Westinghouse Hanford Company Date 8/23/93 Route Plan ☐ Yes ☒ No

*U.S. GPO: 1991-691-714/40068

54-6000-088 (10/88)

FEDERAL EXPRESS [redacted] 2

QUESTIONS? CALL 800-238-5355 TOLL FREE.

6062041915

AIRBILL
PACKAGE
TRACKING NUMBER

606204191

RECIPIENT'S COPY

1 [redacted]

Date: 8-23-93

From (Your Name) Please Print: J.E. MAXWELL

Your Phone Number (Very Important): (509) 376-7493

Company: U.S. DEPT. OF ENERGY c/o [illegible] PERATION

Department/Floor No.:

(EMERGENCY CONTACT PHONE NUMBER 509-373-3800)

Street Address: [illegible]

City: [illegible] **State:** [illegible] **ZIP Required:** [illegible]

2 **To (Recipient's Name) Please Print:** JOSIE EDWARDS

Recipient's Phone Number (Very Important): ( )

Company: ROY F. WESTON

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 256 WELSH POOL ROAD

City: LIONVILLE **State:** PA **ZIP Required:** 19341-1313

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)
RWM-8197 RADIOACTIVE MATERIAL, EXCEPTED PACKAGE - LIMITED QUANTITY
81710/PT2BE OF MATERIAL (DOT EMERGENCY RESPONSE GUIDE 61 ATTACHED)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here (Not available at all locations)
Street Address
City State ZIP Required

3 **PAYMENT** 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card
5 [ ] Cash/Check [redacted]

4 **SERVICES** (Check only one box)

- Priority Overnight (Delivery by next business morning†) 11 [X]
- Standard Overnight (Delivery by next business afternoon No Saturday Delivery†) 51 [ ]
- Economy Two-Day (Delivery by second business day†) 30 [ ]
- Government Overnight (Restricted for authorized users only) 41 [ ]

Freight Service (for packages over 150 lbs.)
- 70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
- 80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas. **Call for delivery schedule

INSTRUCTIONS (Mark appropriate boxes)
- Dangerous Goods as per attached Shipper's Declaration [ ]
- Dangerous Goods Shipper's Declaration not required [X]
- Cargo Aircraft only [ ]

5 **DELIVERY AND SPECIAL HANDLING** (Check services required)

HOLD FOR PICK-UP (Fill in Box H): 1 [ ] WEEKDAY or 31 [ ] SATURDAY

DELIVER: 2 [X] WEEKDAY or 3 [ ] SATURDAY (Extra charge) (Not available to all locations)

- 4 [X] DANGEROUS GOODS (Extra charge)
- 5 [ ]
- 6 [ ] DRY ICE Dangerous Goods Shipper's Declaration not required — Dry Ice 9 UN 1845 x kg
- 7 [ ] OTHER SPECIAL SERVICE
- 9 [ ] SATURDAY PICK-UP (Extra charge)
- [ ]
- 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	56	-0-
Total 1	Total 56	-0-

DIM SHIPMENT (Chargeable Weight) [ ] lbs.
L x W x H

Received At: 1 [X] Regular Stop 2 [ ] On-Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [ ] Station

Emp. No. Date
- [ ] Cash Received
- [ ] Return Shipment
- [ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold

Street Address
City State Zip

Received By: X Brian E Shaffer

Date/Time Received: 8/24/93 0900 Am FedEx Employee Number

SIGNATURE RELEASE UNAVAILABLE

Federal Express Use
- Base Charges
- Declared Value Charge
- Other 1
- Other 2
- Total Charges

REVISION DATE 8/92
PART #137211 MBFAN
FORMAT #145 10/92
145

9613107.1855

0019

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, OLM01.8 Report Date: 09/09/93 09:35

RFW Batch Number: 9308L675 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1a

	Cust ID:	B09314	B09322	B09322	B09322	VBLK	VBLK BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	93LVR127-MB1	93LVR127-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.02	1.02	1.02	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	101 %	106 %	97 %	94 %	102 %	101 %
	Bromofluorobenzene	96 %	110 %	98 %	92 %	98 %	97 %
	1,2-Dichloroethane-d4	118 %	110 %	108 %	102 %	106 %	114 %
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		6 JB	22 B	21 B	19 B	5 J	6 JB
Acetone		1 J	33 B	13 B	16 B	10 U	4 J
Carbon Disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	88 %	105 %	10 U	115 %
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	92 %	102 %	10 U	111 %
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	92 %	103 %	10 U	112 %
Trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	95 %	107 %	10 U	108 %

*= Outside of EPA CLP QC limits.

002

96 3407 1856

RFW Batch Number: 9308L675 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1b

Cust ID:	B09314	B09322	B09322	B09322	VBLK	VBLK BS
RFW#:	001	002	002 MS	002 MSD	93LVR127-MB1	93LVR127-MB1
Chlorobenzene	10 U	10 U	96 %	104 %	10 U	109 %
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

0022

9308L857

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: R082719

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 4

Date Analyzed: 08/28/93

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	6	JB
67-64-1	Acetone	1	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

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: R082719

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 4

Date Analyzed: 08/28/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

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

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09322

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-002

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

Lab File ID: AX8R11

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 0

Date Analyzed: 08/27/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.02

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	22	B
67-64-1	Acetone	33	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

1E

CLIENT SAMPLE NO.

B09322

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-002

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

Lab File ID: AX8R11

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 0

Date Analyzed: 08/27/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.02

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	22.15	100	J

FORM 1 VOA-TIC 3/90

WESTON MANAGERS DESIGNERS/CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

SEMIVOLATILE

One (1) soil sample was collected on 08-22-93.

The sample and its associated QC samples were extracted on 09-02-93 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 09-10,11-93.

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

1. Non-target compounds were detected in these samples.
2. All surrogate recoveries were within EPA QC limits.
3. Four (4) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
4. All blank spike recoveries were within EPA QC limits.
5. All internal standard area and retention time criteria were met.

[signature]
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

09.20.93
Date

sma/bna/08-675b.cn

Roy F. Weston, Inc. - Lionville Laboratory
Semivolatiles by GC/MS, OLM01.8 Report Date: 09/13/93 16:04

RFW Batch Number: 9308L675 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1a

0021

	Cust ID:	B09314	B09314	B09314	SBLK	SBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	93LE1525-MB1	93LE1525-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	73 %	96 %	93 %	81 %	77 %
	2-Fluorobiphenyl	78 %	97 %	96 %	86 %	80 %
	Terphenyl-d14	114 %	112 %	119 %	107 %	103 %
	Phenol-d5	72 %	98 %	94 %	73 %	68 %
	2-Fluorophenol	68 %	93 %	87 %	67 %	58 %
	2,4,6-Tribromophenol	115 %	115 %	108 %	105 %	108 %
	2-Chlorophenol-d4	69 %	93 %	89 %	76 %	69 %
	1,2-Dichlorobenzene-d4	68 %	90 %	85 %	79 %	71 %
Phenol		340 U	80 %	77 %	330 U	56 %
bis(2-Chloroethyl)ether		340 U	350 U	340 U	330 U	330 U
2-Chlorophenol		340 U	83 %	80 %	330 U	61 %
1,3-Dichlorobenzene		340 U	350 U	340 U	330 U	330 U
1,4-Dichlorobenzene		340 U	75 %	72 %	330 U	58 %
1,2-Dichlorobenzene		340 U	350 U	340 U	330 U	330 U
2-Methylphenol		340 U	350 U	340 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		340 U	350 U	340 U	330 U	330 U
4-Methylphenol		340 U	350 U	340 U	330 U	330 U
N-Nitroso-di-n-propylamine		340 U	80 %	78 %	330 U	75 %
Hexachloroethane		340 U	350 U	340 U	330 U	330 U
Nitrobenzene		340 U	350 U	340 U	330 U	330 U
Isophorone		340 U	350 U	340 U	330 U	330 U
2-Nitrophenol		340 U	350 U	340 U	330 U	330 U
2,4-Dimethylphenol		340 U	350 U	340 U	330 U	330 U
bis(2-Chloroethoxy)methane		340 U	350 U	340 U	330 U	330 U
2,4-Dichlorophenol		340 U	350 U	340 U	330 U	330 U
1,2,4-Trichlorobenzene		340 U	83 %	81 %	330 U	68 %
Naphthalene		340 U	350 U	340 U	330 U	330 U
4-Chloroaniline		340 U	350 U	340 U	330 U	330 U
Hexachlorobutadiene		340 U	350 U	340 U	330 U	330 U
4-Chloro-3-methylphenol		340 U	90 %	89 %	330 U	75 %
2-Methylnaphthalene		340 U	350 U	340 U	330 U	330 U
Hexachlorocyclopentadiene		340 U	350 U	340 U	330 U	330 U

*= Outside of EPA CLP QC limits.

Cust ID:	B09314		B09314		B09314		SBLK		SBLK BS	
RFW#:	001		001 MS		001 MSD		93LE1525-MB1		93LE1525-MB1	
2,4,6-Trichlorophenol	340	U	350	U	340	U	330	U	330	U
2,4,5-Trichlorophenol	860	U	860	U	860	U	840	U	840	U
2-Chloronaphthalene	340	U	350	U	340	U	330	U	330	U
2-Nitroaniline	860	U	860	U	860	U	840	U	840	U
Dimethylphthalate	340	U	350	U	340	U	330	U	330	U
Acenaphthylene	340	U	350	U	340	U	330	U	330	U
2,6-Dinitrotoluene	340	U	350	U	340	U	330	U	330	U
3-Nitroaniline	860	U	860	U	860	U	840	U	840	U
Acenaphthene	340	U	87	%	87	%	330	U	71	%
2,4-Dinitrophenol	860	U	860	U	860	U	840	U	840	U
4-Nitrophenol	860	U	107	%	112	%	840	U	85	%
Dibenzofuran	340	U	350	U	340	U	330	U	330	U
2,4-Dinitrotoluene	340	U	96 *	%	99 *	%	330	U	81	%
Diethylphthalate	340	U	350	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	350	U	340	U	330	U	330	U
Fluorene	340	U	350	U	340	U	330	U	330	U
4-Nitroaniline	860	U	860	U	860	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	860	U	860	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	350	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	350	U	340	U	330	U	330	U
Hexachlorobenzene	340	U	350	U	340	U	330	U	330	U
Pentachlorophenol	860	U	113 *	%	118 *	%	840	U	98	%
Phenanthrene	340	U	350	U	340	U	330	U	330	U
Anthracene	340	U	350	U	340	U	330	U	330	U
Carbazole	340	U	350	U	340	U	330	U	330	U
Di-n-butylphthalate	340	U	290	J	340	U	330	U	330	U
Fluoranthene	340	U	350	U	340	U	330	U	330	U
Pyrene	340	U	93	%	99	%	330	U	83	%
Butylbenzylphthalate	340	U	350	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	350	U	340	U	330	U	330	U
Benzo(a)anthracene	340	U	350	U	340	U	330	U	330	U
Chrysene	340	U	350	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	350	U	25	J	330	U	330	U
Di-n-octyl phthalate	340	U	350	U	340	U	330	U	330	U
Benzo(b)fluoranthene	340	U	350	U	340	U	330	U	330	U
Benzo(k)fluoranthene	340	U	350	U	340	U	330	U	330	U
Benzo(a)pyrene	340	U	350	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	350	U	340	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	350	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	350	U	340	U	330	U	330	U

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

0022

9612407.1861

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: S091010

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/10/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	860	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	860	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	860	U
83-32-9	Acenaphthene	340	U

1C

CLIENT SAMPLE NO.

B09314

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: S091010

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/10/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	860	U
100-02-7	4-Nitrophenol	860	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	860	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	860	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	340	U
117-84-0	Di-n-octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F

CLIENT SAMPLE NO.

B09314

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: S091010

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/10/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

Number TICs found: 7

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	5.73	90	JB
2.		ALDOL CONDENSATE	7.08	200	JA
3.		UNKNOWN	20.18	100	J
4.		ORGANIC ACID	24.82	400	J
5.		ORGANIC ACID	26.57	80	J
6.		ADIPATE	28.22	100	J
7.		UNKNOWN	28.85	600	J

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

PCB

One (1) soil sample was collected on 08-22-93.

The sample and its associated QC samples were extracted on 10-15-93 and analyzed according to criteria set forth in the Contract Laboratory Program 03/90 SOW for PCB target compounds on 10-19,20-93.

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

1. The sample was extracted outside of holding time per client request. A Sample Discrepancy Report (SDR) has been enclosed.

2. Linearity and breakdown criteria were met for each of the analytical columns.

3. Retention time criteria were met for all compounds on both analytical columns.

4. Resolution of all pesticides in the Resolution Check Standard were within EPA QC limits.

5. The RPDs of the pesticides in the Individual Mixes analyzed for calibration verification were within 25% for both analytical columns.

6. The RPDs of the pesticides in the Performance Evaluation Mixes analyzed for calibration verification were within 25% for both analytical columns.

7. Several surrogate recoveries were outside EPA QC limits. A reanalysis of the before GPC extract B09314 MSD was reported along with associated pre-GPC QC due to low surrogates in the initial extract.

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

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

WESTON MANAGERS DESIGNERS CONSULTANTS

10. Recoveries of pesticides for the Florisil Cartridge Check were within EPA QC limits.

11. Recoveries of pesticides for the GPC Calibration Check were within EPA QC limits.

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

10.28.93
Date

sma/pcb/08-675pp.cn

93PM1131 9413402.1970

SAMPLE DISCREPANCY REPORT (SDR)

SDR IN-PROGRESS ROUTING: (see other side)

Initiator: Deb Haydt
Date: 9/23/93
Client: WH-Hanford
RFW Lot #: 9308L675
Samples: ______

Parameter: ~~Pest~~ PCB (D.H.)
Matrix: ______
Prep Batch: ______
Urgency: ✓ Immediate ___ Other

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

A. Reason for SDR:

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

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

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

A1b.

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

B. PM Instructions For Disposition (signature/date): Deb Haydt 9/24/93

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

___ Other, explain:

Please add PCB only to C.O.C + in Lims on sample #1.

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

Action Taken:
✓ Revision To Chain-of-Custody Completed
✓ LIMS Corrections Completed D. Haydt 9/24/93
✓ Other, explain

RECEIVED
SEP 30 1993
QA/H&S - L372 Lab
WESTON, Analytics Division

Action By (name/date): Mary Henric 9/27/93
Forward to Pat Feldman, QA for distribution ---

D. Distribution of Completed SDR (include name):

X Initiator: D Haydt
X Lab Manager: J.Peter Hershey
X Project Mgr: C. [illegible]
X Unit Leader: D Skriba
X QA (original): ~~D.S. Therry~~ K. [illegible]
X Log-In: 9/30/93 B Shaffer
X Data Reporting: Sam B
X Billing: Karen Olsen
X Dina Osei-Mensah
X K Chow

Distributed By: (signature/date)

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

Roy F. Weston, Inc. - Lionville Laboratory

PCBs by GC

Report Date: 10/21/93 16:56

RFW Batch Number: 9308L675 Client: WESTINGHOUSE HANFORD Work Order: 06168-002-001-9999-00 Page: 1

0021

	Cust ID:	B09314	B09314	B09314	B09314	B09314	B09314
Sample Information	RFW#:	001	001	001 MS	001 MS	001 MSD	001 MSD
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
			CONFIRM		CONFIRM		CONFIRM
Surrogate: Tetrachloro-m-xylene		75 %	72 %	68 %	72 %	45 * %	45 * %
Surrogate: Decachlorobiphenyl		85 %	88 %	82 %	82 %	55 * %	55 * %
Aroclor-1016		35 U	NA	35 U	NA	35 U	NA
Aroclor-1221		69 U	NA	69 U	NA	69 U	NA
Aroclor-1232		35 U	NA	35 U	NA	35 U	NA
Aroclor-1242		35 U	NA	35 U	NA	35 U	NA
Aroclor-1248		35 U	NA	35 U	NA	35 U	NA
Aroclor-1254		35 U	NA	89 %	88 %	59 %	59 %
Aroclor-1260		35 U	NA	35 U	NA	35 U	NA

	Cust ID:	B09314	B09314	PBLKJK	PBLKJK	PBLKJK RE	PBLKJK RE
Sample Information	RFW#:	001 MSD	001 MSD	93LE1830-MB1	93LE1830-MB1	93LE1830-MB1	93LE1830-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
			REANCONF		CONFIRM		REANCONF
Surrogate: Tetrachloro-m-xylene		65 %	68 %	72 %	72 %	18 * %	18 * %
Surrogate: Decachlorobiphenyl		72 %	72 %	82 %	85 %	98 %	100 %
Aroclor-1016		35 U	NA	33 U	NA	33 U	NA
Aroclor-1221		69 U	NA	67 U	NA	67 U	NA
Aroclor-1232		35 U	NA	33 U	NA	33 U	NA
Aroclor-1242		35 U	NA	33 U	NA	33 U	NA
Aroclor-1248		35 U	NA	33 U	NA	33 U	NA
Aroclor-1254		72 %	72 %	33 U	NA	33 U	NA
Aroclor-1260		35 U	NA	33 U	NA	33 U	NA

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

JR 10-22-93

9615407.1872

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: 10179311.63

% Moisture: 3.9 decanted: (Y/N) _

Date Received: 08/24/93

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 10/15/93

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 10/19/93

Injection Volume: .5ul (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

Sulfur Cleanup: (Y/N) _

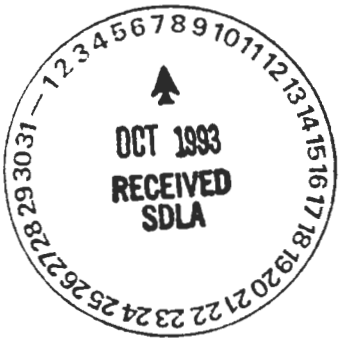
CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	69	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U

DR 10-22-93

FORM 1 PEST 03/90

0030

9615407.1875



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

Client : WESTINGHOUSE HANFORD
RFW# : 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

INORGANIC

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

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

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%.

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

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

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

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

RECORDS CTR

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

9.29.93
Date

pas/i08-675

0001

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/27/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9308L675

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B09314	% Solids	96.1		%	0.10	1.0
		Chloride by IC	1.3		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Cyanide, Total	1.0	u	MG/KG	1.0	1.0
		Sulfate by IC	20.2		MG/KG	1.3	1.0
		Nitrate Nitrite	22.6		MG-N/KG	2.1	20.0
-002	B09322	% Solids	100		%	0.10	1.0

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

CLP METALS

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

2. The sample and associated QC 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.

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:

RFW #	Element	%Recovery
001	Antimony	71.3

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 Ca, Mg, Na, and K in waters and soils. Also, not required for Al and Fe in soils.

WESTON
MANAGERS DESIGNERS CONSULTANTS

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 except for:

RFW #	Element	%RPD
001	Antimony	200.0

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

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

17. 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.

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

9.29.99
Date

mlj/clp-met.nar

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

CLP METALS ADDENDUM

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

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

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

9.29.93
Date

mlj\clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/28/93

CLIENT: WESTINGHOUSE HANFORD WESTON BATCH #: 9308L675

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B09314	Silver, Total	2.1	u	MG/KG	2.1	1.0
		Aluminum, Total	3900		MG/KG	41.6	1.0
		Arsenic, Total	2.1	u	MG/KG	2.1	1.0
		Barium, Total	76.6		MG/KG	41.6	1.0
		Beryllium, Total	1.0	u	MG/KG	1.0	1.0
		Calcium, Total	8450		MG/KG	1040	1.0
		Cadmium, Total	1.0	u	MG/KG	1.0	1.0
		Cobalt, Total	10.4	u	MG/KG	10.4	1.0
		Chromium, Total	5.3		MG/KG	2.1	1.0
		Copper, Total	11.1		MG/KG	5.2	1.0
		Iron, Total	20700		MG/KG	20.8	1.0
		Mercury, Total	0.10	u	MG/KG	0.10	1.0
		Potassium, Total	1040	u	MG/KG	1040	1.0
		Magnesium, Total	4040		MG/KG	1040	1.0
		Manganese, Total	330		MG/KG	3.1	1.0
		Sodium, Total	1040	u	MG/KG	1040	1.0
		Nickel, Total	8.3	u	MG/KG	8.3	1.0
		Lead, Total	3.1		MG/KG	0.62	1.0
		Antimony, Total	13.5		MG/KG	12.5	1.0
		Selenium, Total	1.0	u	MG/KG	1.0	1.0
		Titanium, Total	1480		MG/KG	20.8	1.0
		Thallium, Total	2.1	u	MG/KG	2.1	1.0
		Vanadium, Total	43.9		MG/KG	10.4	1.0
		Zinc, Total	36.5		MG/KG	4.2	1.0

U.S. EPA - CLP

EPA SAMPLE NO.

1
INORGANIC ANALYSIS DATA SHEET

B09314

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

Matrix (soil/water): SOIL Lab Sample ID: 930867501

Level (low/med): LOW Date Received: 8/24/93

% Solids: 96.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3900.00			P
7440-36-0	Antimony	13.50		N*	P
7440-38-2	Arsenic	1.90	B		F
7440-39-3	Barium	76.60			P
7440-41-7	Beryllium	.27	B		P
7440-43-9	Cadmium	1.04	U		P
7440-70-2	Calcium	8450.00			P
7440-47-3	Chromium	5.30			P
7440-48-4	Cobalt	9.80	B		P
7440-50-8	Copper	11.10			P
7439-89-6	Iron	20700.00			P
7439-92-1	Lead	3.10			F
7439-95-4	Magnesium	4040.00			P
7439-96-5	Manganese	330.00			P
7439-97-6	Mercury	.05	U		CV
7440-02-0	Nickel	6.40	B		P
7440-09-7	Potassium	466.00	B		P
7782-49-2	Selenium	.42	U		F
7440-22-4	Silver	1.25	U		P
7440-23-5	Sodium	123.00	B		P
7440-28-0	Thallium	.83	U		F
7440-62-2	Vanadium	43.90			P
7440-66-6	Zinc	36.50			P
	Cyanide	1.04	U		C

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

VALIDATION SUMMARY

9308L675-WES-1241

MEMORANDUM

TO: 200-UP-2 Project QA Record January 17, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: VOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9308L675-WES-1241 (923-E418)

INTRODUCTION

This memo presents the results of data validation on data package 9308L675-WES-1241 consisting of two soil samples analyzed for CLP Target Compound List (TCL) volatile organics. The samples were analyzed by the Weston Analytics laboratory of Lionville, Pennsylvania using the CLP statement of work (SOW) OLM01.0 for TCL volatile organics. A list of samples validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09314 B09322	08/22/93 08/22/93	SOIL SOIL	SEE NOTE 1

Notes:

1. All samples were analyzed for CLP TCL volatile organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (WHC 1992). 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

DATA QUALITY OBJECTIVES

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 method statement of work (CLP SOW 3/90).

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 the 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.

Laboratory Blanks

- Methylene chloride was detected in the laboratory blanks associated with samples B09314 and B09322. Therefore, methylene chloride results have been qualified as undetected (U).

- Acetone was detected in a laboratory blank associated with sample B09314. Therefore, acetone has been qualified as undetected (U).

Tentatively Identified Compounds

- A tentatively identified compound (TIC) at 22.47 minutes was detected in the laboratory blank associated with sample B09322. Therefore, the sample TIC identifeid as siloxane at 22.15 minutes was qualified as undetected (U).

REFERENCES

WHC 1993, 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 1992, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

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.

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.

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 93081675 WES 12/11	REVIEWER: CJ	DATE: 1/17/94	PAGE 1 OF ___
COMMENTS: Volatiles			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Methyl	U	all	VBlk
Acetone	U	B09314	VBlk
unknown	U	~~B09314~~ B09322	in Blank
Acetone	none	B09322	not detected in blank

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

VALIDATED DATA SUMMARY, DATA PACKAGE ID: 9308L675-WES-1241
VOLATILE ORGANIC ANALYSIS RESULTS, UG/KG

HEIS#	B09314		B09322	
DATE	8/22/93		8/22/93	
PARAMETER	RESULT	Q	RESULT	Q
CHLOROMETHANE	10	U	10	U
BROMOMETHANE	10	U	10	U
VINYL CHLORIDE	10	U	10	U
CHLOROETHANE	10	U	10	U
METHYLENE CHLORIDE	10	U	22	U
ACETONE	10	U	33	
CARBON DISULFIDE	10	U	10	U
1,1-DICHLOROETHENE	10	U	10	U
1,1-DICHLOROETHANE	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	10	U	10	U
CHLOROFORM	10	U	10	U
1,2-DICHLOROETHANE	10	U	10	U
2-BUTANONE	10	U	10	U
1,1,1-TRICHLOROETHANE	10	U	10	U
CARBON TETRACHLORIDE	10	U	10	U
VINYL ACETATE	10	U	10	U
BROMODICHLOROMETHANE	10	U	10	U
1,2-DICHLOROPROPANE	10	U	10	U
CIS-1,3-DICHLOROPROPENE	10	U	10	U
TRICHLOROETHENE	10	U	10	U
DIBROMOCHLOROMETHANE	10	U	10	U
1,1,2-TRICHLOROETHANE	10	U	10	U
BENZENE	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	10	U	10	U
BROMOFORM	10	U	10	U
4-METHYL-2-PENTANONE	10	U	10	U
2-HEXANONE	10	U	10	U
TETRACHLOROETHENE	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	10	U	10	U
TOLUENE	10	U	10	U
CHLOROBENZENE	10	U	10	U
ETHYLBENZENE	10	U	10	U
STYRENE	10	U	10	U
XYLENE (TOTAL)	10	U	10	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09322

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-002

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

Lab File ID: AX8R11

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 0

Date Analyzed: 08/27/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.02

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	22	~~B~~
67-64-1	Acetone	33	~~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

Q

U no qualifier

009

FORM 1 VOA 3/90

Verified 9/17/94

0044

9613407.1890

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09322

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-002

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

Lab File ID: AX8R11

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 0

Date Analyzed: 08/27/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.02

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	22.15	100	~~J~~

FORM 1 VOA-TIC 3/90

010

verified 11/2/94 G

0045

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: R082719

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 4

Date Analyzed: 08/28/93

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	10 ~~6~~	~~JB~~
67-64-1	Acetone	10 ~~1~~	~~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

Q

U
U

011

Verified. 1/17/94 S

9613407.1892

IE

CLIENT SAMPLE NO.

B09314

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: R082719

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: not dec. 4

Date Analyzed: 08/28/93

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

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

Verified 1/17/94 G

0038

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

WESTON
MANAGERS DESIGNERS CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

GC/MS VOLATILE

The set of samples consisted of two (2) soil samples collected on 08-22-93.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 08-27,28-93.

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

1. Non-target compounds were 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. All blank spike recoveries were within EPA QC limits.

5. The laboratory blanks contained the common contaminants Methylene Chloride and/or Acetone at levels less than 3x the CRQL.

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

Stewart Broomhead

09.27.93

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

Date

014

sma/voa/08-675v.cn

-0005-

9613407.1895

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 8/22/93

Ice Chest No. _____ — Field Logbook No. EFL-1091

Bill of Lading/Airbill No. _____ — Offsite Property No. _____

Method of Shipment OVERNIGHT AIR SERVICE

Shipped to ~~WESTON TMA~~ Weston

Possible Sample Hazards/Remarks Keep samples at 4C (SOIL) RADIOACTIVE 9308L675-001

Sample Identification

1) B09314 Temp. : 5.6°

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)

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 8/22/93

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)		
Relinquished by: 8/22/93 1151	Received by: Melanie Myers	Date/Time: 8/22/93 1133
Relinquished by: 8/23/93 0915	Received by:	Date/Time:
Relinquished by:	Received by: B. Burnett	Date/Time: 8-24-93 09:00
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

015

~~0016~~

WESTON Analytics Use Only: 930BL 675

pm = J Edwards

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse - Hanford
Est. Final Proj. Sampling Date:
Work Order #: 06168-002-001-9999-00
Project Contact/Phone #:
AD Project Manager: Jessie Edwards
QC: CLP Del: CLP TAT: 35 DAY
Date Rec'd: 8/24/93 Date Due: 9/28/93
Account #: WS-Hanford

	Refrigerator #	1	1			3	3		3	3
#/Type Container	Liquid									
	Solid									
Volume	Liquid									
	Solid									
Preservatives		—	—			—	—	—	—	—
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	Rad			INORG: Metal	CN

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									
001	B09314 (RAD)			S	8/20/93	07:40	X	X	X	X	X	X	X	X
002	B09322 (RAD)			S	8/22/93	11:20	X							
	metals = HSL+Ti													
	SAF# 93-263													

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp. = 5.6°C (samples 001)
7.2°C (sample 002)
SAF # 93-263
Note: Sample 001 WHC COC cross off's were done in field not by lab personnel

DATE/REVISIONS:
8/24/93 1. Sample 001 Rad
9/27/93 2. ORC Bailed to 001 per J.E. @ 9:30pm 11:31
3.
4.
5.
6.

WESTON Analytics Use Only
Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # [illegible]
2) Ambient or Chilled
3) Received in Good Condition Ⓨ or N
4) Labels Indicate Properly Preserved Ⓨ or N
5) Received Within Holding Times Ⓨ or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	B. Burnet	8-24-93	09:00		B.B. 8-24-93		
B.B. 8-24-93							

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

016

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L376 ___ L377 ___ L378 Ref# N/A Cooler# N/A 381-549a

Attachment 5

Data Validation Supporting Documentation

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200 UP2	REVIEWER: CJ	DATE: 11/7/94
LABORATORY: Weston	CASE:	SDG: 93765675-WES-1241
SAMPLES/MATRIX: Soils : B09322, B09314		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

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

CJ 11/7/94

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

NA 1/13/94 g

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

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

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes No (N/A) See comment 1

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes No (N/A)

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

Are all applicable RSD values ≤20.5% (3/90 SOW)?	(Yes)	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RRF values within SOW limits (3/90 SOW)?	(Yes)	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	(Yes)	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	(Yes)	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	(N/A)
Are all %D values ≤25% (2/88 or 3/90 SOW)?	(Yes)	No	N/A
Are all %D values ≤40% (3/90 SOW)?	(Yes)	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	(Yes)	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	(Yes)	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	(Yes)	No	N/A
Are TCL compounds present in the laboratory blanks?	(Yes)	No	N/A

See comment 3.

ACTION: Qualify all sample results ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

020

See comment 2

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks?	(Yes)	No	N/A

ACTION: Qualify all detected sample results ≤5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?	Yes	(No)	N/A
Are any surrogate recoveries <10%?	Yes	(No)	N/A
Are any method blank surrogate recoveries out of specification?	9 11/7/94 (Yes)	(No)	N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but >10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	(Yes)	No	N/A
Are there any calculation errors?	Yes	(No)	N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

021

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are > 5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

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

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes (No) N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes (No) N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

022

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

No compounds detected except contaminants

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	(N/A)
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	(N/A)
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	(N/A)
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	(N/A)
Are molecular ions present in the reference specrum present in the sample spectrum?	Yes	No	(N/A)

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	(Yes)	No	N/A
Are results and quantitation limits calculated properly?	(Yes)	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	(Yes)	No	N/A

5/27/94

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	(Yes)	No	N/A
Has the laboratory properly identified and coded all TIC?	(Yes)	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

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

(Yes) No N/A

Were project specific data quality objectives met for this analysis?

(Yes) (No) N/A See comment 3

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

5/11/94

COMMENTS (attach additional sheets as necessary):

1. The m/z % relative abundance could not be calculated. The raw data was not provided by the laboratory. The criteria was met! no qualification of the data was made.

2. Sample B09322 is a field blank as documented on the sample management record disposition. but not shown on the COC. No qualification will be done based on field blanks.

~~3. The 3/90 Scan for organics under detects~~
cj 11/7/94

3. The laboratory blanks associated with Sample B09322 did not have acetone associated with it. Result changed to reflect positive hit with no "B" associated.

025

HOLDING TIME SUMMARY - FORM B-1

9308L675 WES 1241

SDG:	REVIEWER: C Jenson			DATE: 1/17/94		PAGE 1 OF ___	
COMMENTS: Volatiles							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09322	~~B093~~ VOA	8/22/93	—	8/27/93	—	5	none
B09314	VOA	8/22/93	—	8/28/93	—	6	none

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

PKG 930817075 - WES - 134/

~~SDG:~~	REVIEWER: C. Jusler	DATE: 1/17/94	PAGE 1 OF 1
COMMENTS: Volatiles			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK 8/27	Methylene Chloride	5			ug/kg		50	B04322	U
	Acetone 1/17/94 cj								
VBLK 8/27	unknown	20	J		ug/kg	at 22.47 min			
							100	B04322	U
VBLK 8/28	Methylene Chloride	22			ug/kg		220	B09314	U
	Acetone	23			ug/kg		230	B09314	U

MEMORANDUM

TO: 200-UP-2 Project QA Record January 17, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: SEMIVOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9308L675-WES-1241 (923-E418)

INTRODUCTION

This memo presents the results of data validation on data package 9308L675-WES-1241 consisting of one soil sample analyzed for CLP Target Compound List (TCL) semivolatile organics. The sample was analyzed by the Weston Analytics laboratory of Lionville, Pennsylvania using the CLP statement of work (SOW) OLM01.0 for TCL semivolatile organics. A list of samples validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09314	08/22/93	SOIL	SEE NOTE 1

Notes:

1. All samples were analyzed for CLP TCL semivolatile organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (WHC 1992). 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

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of matrix spike recoveries as noted in "minor deficiencies".

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 method statement of work (CLP SOW 3/90).

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 the normal work plan objectives of 90%.

MAJOR DEFICIENCIES

The following major deficiencies were identified during data validation which required qualification of data as unusable.

Tentatively Identified Compounds

- A Tentatively Identified Compound (TIC) reported as an aldol condensate for sample B09314 was qualified as unusable (R).

MINOR DEFICIENCIES

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

Holding Times

- The extraction holding time of seven days for sample B09314 was exceeded. Therefore, all compounds were qualified as estimated (UJ).

Matrix Spike Recoveries

- The matrix spike percent recoveries (%R) exceeded the control limits for 2,4-dinitrotoluene and pentachlorophenol. Therefore, the class of compounds in which the spikes were exceeded were qualified as estimated (J) for B09314MS and B09314MSD.

Tentatively Identified Compounds

TICs were identified in sample B09314. One TIC detected at 5.73 minutes was associated with the laboratory blank and was therefore qualified as undetected (U). The valid TICs were qualified as JN.

REFERENCES

WHC 1993, 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 1992, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

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.

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.

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

Package 9308L675-WES-1241

SDG:	REVIEWER: CJ	DATE: 1/17/94	PAGE 1 OF 1
COMMENTS: Semivolatiles			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
all	J/UJ	B09314	Holding Time
2,4-Dichlorophenol	UJ	B09314 MS + MSD	Spike recoveries
2,4,6-Trichlorophenol	↓	↓	↓
2,4,5-Trichlorophenol	↓	↓	↓
2,6-Dinitrotoluene	↓	↓	↓
Unknown @ 5.73 min	JN	B09314	Spec. contam.
aldol cond. @ 7.08 min	R	↓	Aldol Condensate
unknown @ 20.18	~~JNJ~~ JN	↓	Valid TIC
organic acid @ 24.82	~~JNJ~~ JN	↓	↓
organic acid @ 26.57	~~JNJ~~ JN	↓	↓
adipate @ 28.22	~~JNJ~~ JN	↓	↓
unknown @ 28.85	~~JNJ~~ JN	↓	↓
	5/18/94		
	1/18/94		

007

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

VALIDATED DATA SUMMARY, DATA PACKAGE ID: 9308L675-WES-1241
SEMIVOLATILE ORGANIC ANALYSIS RESULTS, UG/KG

HEIS#	B09314	
DATE	8/22/93	
PARAMETER	RESULT	Q
PHENOL	340	UJ
BIS(2-CHLOROETHYL)ETHER	340	UJ
2-CHLOROPHENOL	340	UJ
1,3-DICHLOROBENZENE	340	UJ
1,4-DICHLOROBENZENE	340	UJ
BENZYL ALCOHOL	340	UJ
1,2-DICHLOROBENZENE	340	UJ
2-METHYLPHENOL	340	UJ
BIS(2-CHLOROISOPROPYL)ETHER	340	UJ
4-METHYLPHENOL	340	UJ
N-NITROSO-DI-N-PROPYLAMINE	340	UJ
HEXACHLOROETHANE	340	UJ
NITROBENZENE	340	UJ
ISOPHORONE	340	UJ
2-NITROPHENOL	340	UJ
2,4-DIMETHYLPHENOL	340	UJ
BENZOIC ACID	340	UJ
BIS(2-CHLOROETHOXY)METHANE	340	UJ
2,4-DICHLOROPHENOL	340	UJ
1,2,4-TRICHLOROBENZENE	340	UJ
NAPHTHALENE	340	UJ
4-CHLOROANILINE	340	UJ
HEXACHLOROBUTADIENE	340	UJ
4-CHLORO-3-METHYLPHENOL	340	UJ
2-METHYLNAPHTHALENE	340	UJ
HEXACHLOROCYCLOPENTADIENE	340	UJ
2,4,6-TRICHLOROPHENOL	340	UJ
2,4,5-TRICHLOROPHENOL	860	UJ
2-CHLORONAPHTHALENE	340	UJ
2-NITROANILINE	860	UJ
DIMETHYLPHTHALATE	340	UJ
ACENAPHTHYLENE	340	UJ
2,6-DINITROTOLUENE	340	UJ
3-NITROANILINE	860	UJ
ACENAPHTHENE	340	UJ

VALIDATED DATA SUMMARY, DATA PACKAGE ID: 9308L675-WES-1241
SEMIVOLATILE ORGANIC ANALYSIS RESULTS, UG/KG

HEIS#	B09314	
DATE	8/22/93	
PARAMETER	RESULT	Q
2,4-DINITROPHENOL	860	UJ
4-NITROPHENOL	860	UJ
DIBENZOFURAN	340	UJ
2,4-DINITROTOLUENE	340	UJ
DIETHYLPHTHALATE	340	UJ
4-CHLOROPHENYL-PHENYLETHER	340	UJ
FLUORENE	340	UJ
4-NITROANILINE	860	UJ
4,6-DINITRO-2-METHYLPHENOL	860	UJ
N-NITROSODIPHENYLAMINE	340	UJ
4-BROMOPHENYL-PHENYLETHER	340	UJ
HEXACHLOROBENZENE	340	UJ
PENTACHLOROPHENOL	860	UJ
PHENANTHRENE	340	UJ
ANTHRACENE	340	UJ
DI-N-BUTYLPHTHALATE	340	UJ
FLUORANTHENE	340	UJ
PYRENE	340	UJ
BUTYLBENZYLPHTHALATE	340	UJ
3,3'-DICHLOROBENZIDINE	340	UJ
BENZO(A)ANTHRACENE	340	UJ
CHRYSENE	340	UJ
BIS(2-ETHYLHEXYL)PHTHALATE	340	UJ
DI-N-OCTYLPHTHALATE	340	UJ
BENZO(B)FLUORANTHENE	340	UJ
BENZO(K)FLUORANTHENE	340	UJ
BENZO(A)PYRENE	340	UJ
INDENO(1,2,3-CD)PYRENE	340	UJ
DIBENZ(A,H)ANTHRACENE	340	UJ
BENZO(G,H,I)PERYLENE	340	UJ

010

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: S091010

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/10/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	Q
108-95-2	Phenol	340	U	UJ
111-44-4	bis(2-Chloroethyl)ether	340	U	UJ
95-57-8	2-Chlorophenol	340	U	UJ
541-73-1	1,3-Dichlorobenzene	340	U	UJ
106-46-7	1,4-Dichlorobenzene	340	U	UJ
95-50-1	1,2-Dichlorobenzene	340	U	UJ
95-48-7	2-Methylphenol	340	U	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	UJ
106-44-5	4-Methylphenol	340	U	UJ
621-64-7	N-Nitroso-di-n-propylamine	340	U	UJ
67-72-1	Hexachloroethane	340	U	UJ
98-95-3	Nitrobenzene	340	U	UJ
78-59-1	Isophorone	340	U	UJ
88-75-5	2-Nitrophenol	340	U	UJ
105-67-9	2,4-Dimethylphenol	340	U	UJ
111-91-1	bis(2-Chloroethoxy)methane	340	U	UJ
120-83-2	2,4-Dichlorophenol	340	U	UJ
120-82-1	1,2,4-Trichlorobenzene	340	U	UJ
91-20-3	Naphthalene	340	U	UJ
106-47-8	4-Chloroaniline	340	U	UJ
87-68-3	Hexachlorobutadiene	340	U	UJ
59-50-7	4-Chloro-3-methylphenol	340	U	UJ
91-57-6	2-Methylnaphthalene	340	U	UJ
77-47-4	Hexachlorocyclopentadiene	340	U	UJ
88-06-2	2,4,6-Trichlorophenol	340	U	UJ
95-95-4	2,4,5-Trichlorophenol	860	U	UJ
91-58-7	2-Chloronaphthalene	340	U	UJ
88-74-4	2-Nitroaniline	860	U	UJ
131-11-3	Dimethylphthalate	340	U	UJ
208-96-8	Acenaphthylene	340	U	UJ
606-20-2	2,6-Dinitrotoluene	340	U	UJ
99-09-2	3-Nitroaniline	860	U	UJ
83-32-9	Acenaphthene	340	U	UJ

011

CJ 11/7/44

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: S091010

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/10/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	Q
51-28-5	2,4-Dinitrophenol	860	U	UJ
100-02-7	4-Nitrophenol	860	U	UJ
132-64-9	Dibenzofuran	340	U	UJ
121-14-2	2,4-Dinitrotoluene	340	U	UJ
84-66-2	Diethylphthalate	340	U	UJ
7005-72-3	4-Chlorophenyl-phenylether	340	U	UJ
86-73-7	Fluorene	340	U	UJ
100-01-6	4-Nitroaniline	860	U	UJ
534-52-1	4,6-Dinitro-2-methylphenol	860	U	UJ
86-30-6	N-Nitrosodiphenylamine (1)	340	U	UJ
101-55-3	4-Bromophenyl-phenylether	340	U	UJ
118-74-1	Hexachlorobenzene	340	U	UJ
87-86-5	Pentachlorophenol	860	U	UJ
85-01-8	Phenanthrene	340	U	UJ
120-12-7	Anthracene	340	U	UJ
86-74-8	Carbazole	340	U	UJ
84-74-2	Di-n-butylphthalate	340	U	UJ
206-44-0	Fluoranthene	340	U	UJ
129-00-0	Pyrene	340	U	UJ
85-68-7	Butylbenzylphthalate	340	U	UJ
91-94-1	3,3'-Dichlorobenzidine	340	U	UJ
56-55-3	Benzo(a)anthracene	340	U	UJ
218-01-9	Chrysene	340	U	UJ
117-81-7	bis(2-Ethylhexyl)phthalate	340	U	UJ
117-84-0	Di-n-octyl phthalate	340	U	UJ
205-99-2	Benzo(b)fluoranthene	340	U	UJ
207-08-9	Benzo(k)fluoranthene	340	U	UJ
50-32-8	Benzo(a)pyrene	340	U	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	340	U	UJ
53-70-3	Dibenz(a,h)anthracene	340	U	UJ
191-24-2	Benzo(g,h,i)perylene	340	U	UJ

(1) - Cannot be separated from Diphenylamine

GJ 11/17/94

9613407.1920

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: S091010

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/10/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 7.3

Number TICs found: 7

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.		UNKNOWN	5.73	90	~~JB~~	U
2.		ALDOL CONDENSATE	7.08	200	~~JA~~	R
3.		UNKNOWN	20.18	100	~~J~~	JN
4.		ORGANIC ACID	24.82	400	~~J~~	JN
5.		ORGANIC ACID	26.57	80	~~J~~	JN
6.		ADIPATE	28.22	100	~~J~~	JN
7.		UNKNOWN	28.85	600	~~J~~	JN

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

SEMIVOLATILE

One (1) soil sample was collected on 08-22-93.

The sample and its associated QC samples were extracted on 09-02-93 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 09-10,11-93.

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

1. Non-target compounds were detected in these samples.
2. All surrogate recoveries were within EPA QC limits.
3. Four (4) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
4. All blank spike recoveries were within EPA QC limits.
5. All internal standard area and retention time criteria were met.

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

09. 20. 93
Date

sma/bna/08-675b.cn

9613407.1925

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: 8/22/93

Ice Chest No. — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No. — Offsite Property No.

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~WESTON TMA~~ Lwston

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE 93086675-001

Sample Identification

1) B09314 Temp.: 5.6°

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)

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

JCF 8/22/93

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

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
8/22/93 Jeanne Rogers 1151	Melani Meyers Melani Meyers	8/22/93 1133
Relinquished by: 8/23/93 Melani Meyers 0915	Received by:	Date/Time:
Relinquished by: Fed Ex	Received by: B. Burnett	Date/Time: 8-24-93 09:00
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

016

~~0016~~

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Attachment 5

Data Validation Supporting Documentation

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

PROJECT: 200 UP 2	REVIEWER: CJ	DATE: 1/17/94
LABORATORY: WESTON	CASE:	~~SDG:~~
SAMPLES/MATRIX: Soil : B09314		package: 9308L675-WES-1241

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

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

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cj
1/17/94

019

Data Package Item	Present?:	Yes	No	N/A
RIC and quantitation reports for MS/MSD		—	—	—
Additional Data				
Moisture/% solids data sheets		—	—	—
Reduction formulae		—	—	—
Instrument time logs		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

2. HOLDING TIMES

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

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

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

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for nondetects). If all tuning criteria are not met, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

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

Are all applicable RRF values within SOW limits (3/90 SOW)? (Yes) No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? (Yes) No N/A

5/27/94

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? (Yes) No N/A

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

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

Are all %D values ≤40% (3/90 SOW)? Yes No (N/A)

Are all RRF values within SOW limits (3/90 SOW)? (Yes) No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? (Yes) No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? (Yes) No N/A

Are compounds reported in the laboratory blanks? (Yes) No N/A See comment 1

ACTION: Qualify all sample results < 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results < 5 times the blank concentration in similar fashion.

021

4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes No (N/A)

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes (No) N/A

Are any surrogate recoveries < 10%? Yes (No) N/A

Are any method blank surrogate recoveries out of specification? Yes (No) N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for nondetects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated nondetect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? (Yes) No N/A

Are MS/MSD recoveries within specification? Yes (No) N/A See comment 2.

Are there any calculation errors? Yes (No) N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the results for the performance audit samples within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are > 5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

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

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes (No) N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes (No) N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for nondetects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	(N/A)	no compounds detected. 5/17/94
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	(N/A)	
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	(N/A)	
Have all ions >10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	(N/A)	
Are molecular ions in the reference spectrum present in the sample spectrum?	Yes	No	(N/A)	

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation?	Yes	No	(N/A)
Are results and quantitation limits calculated properly?	(Yes)	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	(Yes)	No	N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	(Yes)	No	N/A
Has the laboratory properly identified and coded all TIC?	(Yes)	No	N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

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

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

COMMENTS (attach additional sheets as necessary):

1. A TIC at 5.77 minutes was reported in the lab blank and is also in the sample at 5.73 min. Both concentrations are 90 ug/kg.

			Limits
2. MS out:	2,4 dinitrotoluene	76% R	28-89
	pentachlorophenol	113% R	17-109
INSD out:	Same as above	99	28-89
		118	17-109

Only the spiked samples are effected. Surrogates are all in specification.

Qualified chlorinated phenols and dinitrotoluene compounds as J/UJ.

HOLDING TIME SUMMARY - FORM B-1

pkg 9308L075-WES-7241

~~SDG:~~	REVIEWER: C. Jensen	DATE: 1/17/94	PAGE 1 OF 1
COMMENTS: Semi volatiles			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09314	SVOA	8/22/93	9/2/93	9/10/93	11 ~~10~~ 5/11/94	8	J/UJ

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

Package 93286675-WES-1241

~~SDG:~~	REVIEWER: Cjensen	DATE: 1/17/94	PAGE 1 OF 1
COMMENTS: Semi Volatiles			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK	unknown @ 5.77 min.	90	J		ug/kg	450		B09314	U

028

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314MS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001 MS

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

Lab File ID: S091103

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	
108-95-2	Phenol		SP	
111-44-4	bis(2-Chloroethyl)ether	350	U	
95-57-8	2-Chlorophenol		SP	
541-73-1	1,3-Dichlorobenzene	350	U	
106-46-7	1,4-Dichlorobenzene		SP	
95-50-1	1,2-Dichlorobenzene	350	U	
95-48-7	2-Methylphenol	350	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U	
106-44-5	4-Methylphenol	350	U	
621-64-7	N-Nitroso-di-n-propylamine		SP	
67-72-1	Hexachloroethane	350	U	
98-95-3	Nitrobenzene	350	U	
78-59-1	Isophorone	350	U	
88-75-5	2-Nitrophenol	350	U	
105-67-9	2,4-Dimethylphenol	350	U	
111-91-1	bis(2-Chloroethoxy)methane	350	U	
120-83-2	2,4-Dichlorophenol	350	~~U~~	UJ
120-82-1	1,2,4-Trichlorobenzene		SP	
91-20-3	Naphthalene	350	U	
106-47-8	4-Chloroaniline	350	U	
87-68-3	Hexachlorobutadiene	350	U	
59-50-7	4-Chloro-3-methylphenol		SP	
91-57-6	2-Methylnaphthalene	350	U	
77-47-4	Hexachlorocyclopentadiene	350	U	
88-06-2	2,4,6-Trichlorophenol	350	~~U~~	UJ
95-95-4	2,4,5-Trichlorophenol	860	~~U~~	UJ
91-58-7	2-Chloronaphthalene	350	U	
88-74-4	2-Nitroaniline	860	U	
131-11-3	Dimethylphthalate	350	U	
208-96-8	Acenaphthylene	350	U	
606-20-2	2,6-Dinitrotoluene	350	~~U~~	UJ
99-09-2	3-Nitroaniline	860	U	
83-32-9	Acenaphthene		SP	

SP: SPIKE COMPOUND FORM 1 SV-1 3/90

029

1/17/94 0151

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314MS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001 MS

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

Lab File ID: S091103

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	860	U
100-02-7	4-Nitrophenol		SP
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene		SP
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	860	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol		SP
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-butylphthalate	290	J
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene		SP
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	350	U
117-84-0	Di-n-octyl phthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenz(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

SP: SPIKE COMPOUND

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314MSD

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001 MSD

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

Lab File ID: S091104

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	
108-95-2	Phenol		SP	
111-44-4	bis(2-Chloroethyl)ether	340	U	
95-57-8	2-Chlorophenol		SP	F
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene		SP	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-di-n-propylamine		SP	
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)methane	340	U	
120-83-2	2,4-Dichlorophenol	340	~~U~~	UJ
120-82-1	1,2,4-Trichlorobenzene		SP	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-methylphenol		SP	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	~~U~~	UJ
95-95-4	2,4,5-Trichlorophenol	860	~~U~~	UJ
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	860	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
606-20-2	2,6-Dinitrotoluene	340	~~U~~	UJ
99-09-2	3-Nitroaniline	860	U	
83-32-9	Acenaphthene		SP	

031

SP: SPIKE COMPOUND FORM 1 SV-1 3/90

Collected

~~0159~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314MSD

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001 MSD

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

Lab File ID: S091104

Level: (low/med) LOW

Date Received: 08/24/93

% Moisture: 4 decanted: (Y/N)

Date Extracted: 09/02/93

Concentrated Extract Volume: 500(uL)

Date Analyzed: 09/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	860	U
100-02-7	4-Nitrophenol		SP
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene		SP
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	860	U
534-52-1	4,6-Dinitro-2-methylphenol	860	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol		SP
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene		SP
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	25	J
117-84-0	Di-n-octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

SP: SPIKE COMPOUND

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9308L675-001

MATRIX Spike - Sample No.: B09314 Level (low/med): LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC.
Phenol	2600	0	2070	80	26 - 90
2-Chlorophenol	2600	0	2150	83	25 -102
1,4-Dichlorobenzene	1730	0	1310	75	28 -104
N-Nitroso-di-n-prop.(1)	1730	0	1380	80	41 -126
1,2,4-Trichlorobenzene	1730	0	1430	83	38 -107
4-Chloro-3-methylphenol	2600	0	2330	90	26 -103
Acenaphthene	1730	0	1510	87	31 -137
4-Nitrophenol	2600	0	2790	107	11 -114
2,4-Dinitrotoluene	1730	0	1660	96 *	28 - 89
Pentachlorophenol	2600	0	2940	113 *	17 -109
Pyrene	1730	0	1600	93	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	2580	1980	77	3	35	26 - 90
2-Chlorophenol	2580	2060	80	3	50	25 -102
1,4-Dichlorobenzene	1720	1240	72	4	27	28 -104
N-Nitroso-di-n-prop.(1)	1720	1340	78	2	38	41 -126
1,2,4-Trichlorobenzene	1720	1390	81	2	23	38 -107
4-Chloro-3-methylphenol	2580	2290	89	1	33	26 -103
Acenaphthene	1720	1500	87	0	19	31 -137
4-Nitrophenol	2580	2900	112	4	50	11 -114
2,4-Dinitrotoluene	1720	1700	99 *	3	47	28 - 89
Pentachlorophenol	2580	3050	118 *	4	47	17 -109
Pyrene	1720	1700	99	6	36	35 -142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

CJ 11/7/94

COMMENTS: _____

033

MEMORANDUM

TO: 200-UP-2 Project QA Record January 17, 1994

FR: Kent Angelos, Golder Associates Inc.

RE: PCB DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9308L675-WES-1241 (923-E418, WES1241P.UP2)

INTRODUCTION

This memo presents the results of data validation on data package 9308L675-WES-1241 consisting of one soil sample analyzed for polychlorinated biphenyl (PCB) compounds. The samples were analyzed by the Weston Analytics laboratory of Lionville, Pennsylvania using the CLP protocol (SOW 3/90). The following table provides information regarding the sample identification, sample date, media and analyses performed.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09314*	8/22/93	SOIL	PCB's

Notes:

* Indicates samples which received 100% validation.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (WHC 1992). 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

DATA QUALITY OBJECTIVES

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 method statement of work.

Completeness. The data package was complete for all requested analyses. One sample was 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

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

Holding Times

- The sample was extracted more than 14 days after the date of collection. The qualification requirement for this deficiency is to reject all compounds reported as undetected (U). However, the request for PCB analysis was sent to the laboratory after the holding time limit had expired because the decision to analyze for PCB's was not made until that time. A sample discrepancy report and record of disposition was completed by WHC/HASM and is included in Attachment 4. This deficiency is not considered to be sufficient to warrant rejection of the associated data since PCB's are persistent compounds in the environment and specific holding time limits for soil matrices have not been promulgated by the regulatory authorities.

REFERENCES

WHC 1993, 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 1992, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

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.

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.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9308L675-WES-1246 1241	REVIEWER: K. ANGELOS	DATE: 1/17/94	PAGE 1 OF 1
COMMENTS: PCB's			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
ALL PCB's	UJ	B09314	EXTRACTION HOLDING TIME EXCEEDED

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9308L675-WES-1241

Parameter	Samp# / Date Units	B09314 8-22-93 Result	Q
AROCLOR-1016	UG/KG	35.000	UJ
AROCLOR-1221	UG/KG	69.000	UJ
AROCLOR-1232	UG/KG	35.000	UJ
AROCLOR-1242	UG/KG	35.000	UJ
AROCLOR-1248	UG/KG	35.000	UJ
AROCLOR-1254	UG/KG	35.000	UJ
AROCLOR-1260	UG/KG	35.000	UJ

9613403 ID 1949

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B09314

Lab Name: Roy F. Weston, Inc. Work Order: 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9308L675-001

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

Lab File ID: 10179311.63

% Moisture: 3.9 decanted: (Y/N) _

Date Received: 08/24/93

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 10/15/93

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 10/19/93

Injection Volume: .5ul (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 7.3

Sulfur Cleanup: (Y/N) _

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
12674-11-2	Aroclor-1016	35	~~U~~ UJ
11104-28-2	Aroclor-1221	69	~~U~~
11141-16-5	Aroclor-1232	35	~~U~~
53469-21-9	Aroclor-1242	35	~~U~~
12672-29-6	Aroclor-1248	35	~~U~~
11097-69-1	Aroclor-1254	35	~~U~~
11096-82-5	Aroclor-1260	35	~~U~~

Q

DR 10-22-93

FORM 1 PEST 03/90

Verified
1/17/94

009

~~0030~~

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

WESTON

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

PCB

One (1) soil sample was collected on 08-22-93.

The sample and its associated QC samples were extracted on 10-15-93 and analyzed according to criteria set forth in the Contract Laboratory Program 03/90 SOW for PCB target compounds on 10-19,20-93.

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

1. The sample was extracted outside of holding time per client request. A Sample Discrepancy Report (SDR) has been enclosed.

2. Linearity and breakdown criteria were met for each of the analytical columns.

3. Retention time criteria were met for all compounds on both analytical columns.

4. Resolution of all pesticides in the Resolution Check Standard were within EPA QC limits.

5. The RPDs of the pesticides in the Individual Mixes analyzed for calibration verification were within 25% for both analytical columns.

6. The RPDs of the pesticides in the Performance Evaluation Mixes analyzed for calibration verification were within 25% for both analytical columns.

7. Several surrogate recoveries were outside EPA QC limits. A reanalysis of the before GPC extract B09314 MSD was reported along with associated pre-GPC QC due to low surrogates in the initial extract.

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

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

WESTON

10. Recoveries of pesticides for the Florisil Cartridge Check were within EPA QC limits.

11. Recoveries of pesticides for the GPC Calibration Check were within EPA QC limits.

[illegible]

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

10.28.93
Date

sma/pcb/08-675pp.cn

9613407.1953

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: 8/22/93

Ice Chest No. — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No. — Offsite Property No.

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~WESTON TMA~~ Weston

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE 93086675-001

Sample Identification

1) B09314 Temp.: 5.6°

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)

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

JCK 8/22/93

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

[ ] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
8/22/93 1151	Melanie Myers	8/22/93 1133
Relinquished by: 8/23/93 0915	Received by:	Date/Time:
Relinquished by: Fed Ex	Received by: B. Burnett	Date/Time: 8-24-93 09:00
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

013

0013

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

WESTON Analytics Use Only: 9308L675

pm = J Edwards / SAF / Yellow / Pres Extract

Custody Transfer Record/Lab Work Request

WESTON — Managers Designers/Consultants

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 DAY
Date Rec'd: 8/24/93 Date Due: 9/28/93
Account #: WS-HANFORD

	VOA	BNA	Pest/PCB	Herb	FLUOR CL SO4	NO3/NO2	Reactive Cyan	Metal	CN
Refrigerator #	1	6			3	3	SUS	3	3
#/Type Container — Liquid									
#/Type Container — Solid	1/6L	1/AG			1/6L	1/6L	1/6L	1/PL	1/6L
Volume — Liquid									
Volume — Solid	125ml	500ml			250ml	125ml	125ml	500ml	250ml
Preservatives	—	—			—	—	—	—	—
WESTON Analytics Use Only	0604C	0625C	AR'S		ICFL ICCL IC04	DINO2	ISUB	SULB below	ICN10

ANALYSES REQUESTED: ORGANIC (VOA, BNA, Pest/PCB, Herb); INORG (Metal, CN)

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	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	FLUOR CL SO4	NO3/NO2	Reactive Cyan	Metal	CN
001	B09314 (RAD)			S	8/22/93	07:40	X	X	X		X	X	X	X	X
002	B09322 ~~(RAD)~~ BB 8/24/93			S	8/22/93	11:30	X								
	metals = HSL + Ti														
	SAF # 93-263														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp = 5.6°C (samples 001)
7.2°C (sample 002)
SAF # 93-263
Note: Sample 002 with COC cross off's were done in field not by LAB personnel

DATE/REVISIONS:
1. 8/24/93 Sample 001 Rad
2. 9/27/93 0001 added to col per JE 9/23 pm 1131
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	B. Burnett	8.24.93	09:00		B.B. 8.24.93		
B.B. 8.24.93							

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

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 0062041915
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

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

9413287.0417

93PM1131

SAMPLE DISCREPANCY REPORT (SDR)

SDR IN-PROGRESS ROUTING: (see other side)

Initiator: Deb Haydt
Date: 9/23/93
Client: WH-Hanford
RFW Lot #: 9308L675
Samples: ___

Parameter: ~~Pest~~ PCB
Matrix: ___
Prep Batch: ___
Urgency: ✓ Immediate ___ Other

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

A. Reason for SDR:

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

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

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

A1b.

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

B. PM Instructions For Disposition (signature/date): Deb Haydt 9/24/93

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

___ Other, explain:

Please add PCB only to C.O.C. + in Lims on sample #1.

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

Action Taken:
- ✓ Revision To Chain-of-Custody Completed
- ✓ LIMS Corrections Completed D. Haydt 9/24/93
- ✓ Other, explain

RECEIVED
SEP 30 1993
QA/H&S - L372 Lab
WESTON, Analytics Division

Action By (name/date): Mary Henric 9/27/93
Forward to Pat Feldman, QA for distribution ---

D. Distribution of Completed SDR (include name):

- X Initiator: D Haydt
- X Lab Manager: J.Peter Hershey
- X Project Mgr: C. Kahn
- X Unit Leader: D SKRIAT
- X QA (original) ~~D.S. Therry~~ K. Ryan
- X Log-In: B Shaffer
- X Data Reporting: Som B
- Billing: Karen Olsen
- X Dina Osei-Mensah
- X K Chow

Distributed By: (signature/date)

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

961507.1956

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-93-0204
Record of Disposition No.

DATE: September 22, 1993

LABORATORY: Weston

PROJECT TITLE/NO.: 200-UP-2

NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: B09314, B09322

DESCRIPTION OF EVENT:

After the samples were shipped, it was decided that the analysis of PCBs was needed.

DISPOSITION OF SAMPLES:

Weston was instructed with the customer's concurrence to analyze for PCBs on a priority basis, even though holding times were exceeded.

APPROVAL SIGNATURES:

Jon W. Ball — 9-22-93
OSM Project Coordinator (Print/Sign Name) — Date

Michael Galgoul — 9-22-93
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

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ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

9308L675-WES-1241

PROJECT: 200-UP-2	REVIEWER: CMA	DATE: 1/7/94
LABORATORY: Weston	CASE: WEST	SDG: C4675
SAMPLES/MATRIX: B09314 / Soil		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for resubmittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		—	—	—
Data Summary		—	—	—
Chain-of-Custody		—	—	—
QC Summary				
Surrogate report		—	—	—
MS/MSD report		—	—	—
Blank summary report		—	—	—
Sample Data				
Sample reports		—	—	—
Chromatograms		—	—	—
GC integration reports		—	—	—
Worksheets		—	—	—
UV traces from GPC		—	—	—
GC/MS confirmation spectra		—	—	—
Standards Data				
Pesticides Evaluation Standards Summary		—	—	—
Pesticides/PCB Standards Summary		—	—	—
Pesticides/PCB identification		—	—	—
Pesticides standard chromatograms		—	—	—
Raw QC Data				
Blank analysis report forms and chromatograms		—	—	—
MS/MSD report forms and chromatograms		—	—	—

Verified by WHC

Data Package Item	Present?:	Yes	No	N/A
Additional Data				
Moisture/% solids data sheets		—	—	—
Reduction formulae		—	—	—
Instrument time logs		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

Verified by WHC

2. HOLDING TIMES

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

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

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? (Yes) No (N/A)

ACTION: If DDT retention time is $\leq$12 minutes and resolution is <25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No (N/A)

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No (N/A)

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq$20%? Yes No (N/A)

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq$20%? Yes No (N/A)

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No (N/A)

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC ≤ 10%? Yes No (N/A)

Have all standards been analyzed within 72 h of any sample? Yes No (N/A)

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No (N/A)

Have all standards been analyzed at the start of each 72-h sequence? Yes No (N/A)

Have evaluation standards A, B, and C been analyzed within 72 h of any sample? Yes No (N/A)

Has the confirmation standard mix been analyzed after every five samples? Yes No (N/A)

Has evaluation standard B analyzed every 10 samples? Yes No (N/A)

Are %D values for initial and subsequent standards ≤ 15% for quantitation standards and ≤ 20% for confirmation standards? Yes No (N/A)

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

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3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? (Yes) No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% (Yes) No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? (Yes) No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? (Yes) No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors < 10.0% (< 15.0% for the BHC series, DDT, endrin, and methoxychlor)? (Yes) No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? (Yes) No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? (Yes) No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? (Yes) No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? (Yes) No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? (Yes) No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? (Yes) No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No (N/A)

Has the laboratory analyzed instrument blanks at the required frequency? (Yes) No N/A

Are target compounds present in the blanks? Yes (No) N/A

ACTION: Qualify all associated positive results as nondetects (U) that are <5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

Are target compounds present in the field blanks? Yes No (N/A)

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification?	(Yes)	No	N/A
Do any samples show nondetects for surrogates?	Yes	(No)	N/A
Are any method blank surrogates out of specification?	(Yes)	No	N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	(Yes)	No	N/A
Are there any calculation or transcription errors?	Yes	(No)	N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits?	Yes	No	(N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? (Yes) ~~No~~ N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are >5xCRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

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

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No (N/A)

Were positive results analyzed on disimilar columns? Yes No (N/A)

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No (N/A)

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No (N/A)

Has GC/MS confirmation been conducted on sample extract concentrations > 10 ppm? Yes No (N/A)

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Are results and quantitation limits calculated properly? ~~Yes~~ No N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values? Yes No N/A

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

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

Holding Times

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

DATE RECEIVED: 08/24/93 RFW LOT # :9308L675

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
					Days	Days
B09314	001	S	93LE1830	08/22/93	10/15/93 54	10/19/93 584
B09314	001 X1	S		08/22/93		10/19/93
B09314	001 MS	S	93LE1830	08/22/93	10/15/93	10/19/93
B09314	001 MS X1	S		08/22/93		10/19/93
B09314	001 MSD	S	93LE1830	08/22/93	10/15/93	10/19/93
B09314	001 MSD A1	S		08/22/93		10/20/93
B09314	001 MSD X1	S		08/22/93		10/19/93
B09314	001 MSD Y1	S		08/22/93		10/20/93
LAB QC:						
PBLKJK	MB1	S	93LE1830	N/A	10/15/93	10/19/93
PBLKJK	MB1	S		N/A		10/20/93
PBLKJK	MB1	S		N/A		10/19/93
PBLKJK	MB1	S		N/A		10/20/93
PBLKJK	MB1 BS	S	93LE1830	N/A	10/15/93	10/19/93
PBLKJK	MB1 BS	S		N/A		10/20/93
PBLKJK	MB1 BS	S		N/A		10/19/93
PBLKJK	MB1 BS	S		N/A		10/20/93

DR
10-22-93

Verified

1/17/94

Extraction hold exceeded
Request for PCB analysis
made after hold time exceeded

MEMORANDUM

TO: 200-UP-2 Project QA Record January 19, 1994

FR: Kent Angelos, Golder Associates Inc.

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: 9308L675-WES-1241 (923-E418, WES1241C.UP2)

INTRODUCTION

This memo presents the results of data validation on data package 9308L675-WES-1241 consisting of two soil samples analyzed for general chemistry parameters. The samples were analyzed by the Weston Analytics laboratory of Lionville, Pennsylvania using WHC approved methods. A list of samples validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09314*	8/22/93	SOIL	SEE NOTE 1
B09322	8/22/93	SOIL	PERCENT SOLIDS ONLY

Notes:

* Indicates samples which received 100% validation.
1. The indicated sample was analyzed for percent solids, anions by ion chromatography (fluoride, chloride, and sulfate), nitrate+nitrite (as N).

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (WHC 1992). 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

DATA QUALITY OBJECTIVES

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 methods.

Completeness. The data package was complete for all requested analyses. 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

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

Holding Times

- The holding time for nitrate nitrogen was exceeded therefore the result for sample B09314 has been qualified as estimated (J).

REFERENCES

WHC 1993, 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 1992, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

5/2/94

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.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

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

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9308L675-WES-~~1246~~ 1241 [handwritten initials 1/19/94]	REVIEWER: K. ANGELOS	DATE: 1/17/94	PAGE 1 OF 1
COMMENTS: WET CHEMISTRY			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
~~NO QUALIFICATIONS NECESSARY~~			
Nitrate Nitrite	J	B09314	Holding Time

[handwritten initials] 2/2/94

[handwritten initials] 2/2/94

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9308L675-WES-1241

	Samp# Date Location Type	B09314 8-22-93		B09322 8-22-93	
Parameter	Units	Result	Q	Result	Q
CHLORIDE	MG/KG	1.300		---	
FLUORIDE	MG/KG	2.600	U	---	
CYANIDE	MG/KG	1.000	U	---	
SULFATE	MG/KG	20.200		---	
NITRATE+NITRITE	MG-N/K	22.600	J	---	
PERCENT SOLIDS	%	96.100		100.000	

9413407.1974

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/27/93

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9308L675

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR	
-001	B09314	% Solids	96.1		%	0.10	1.0	
		Chloride by IC	1.3		MG/KG	1.3	1.0	
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0	
		Cyanide, Total	1.0	u	MG/KG	1.0	1.0	
		Sulfate by IC	20.2		MG/KG	1.3	1.0	
		Nitrate Nitrite	22.6		MG-N/KG	2.1	20.0	J
-002	B09322	% Solids	100		%	0.10	1.0	

(P)

S 2/11/94

Verified
MWB
1/17/94

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ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

WESTON
MANAGERS DESIGNERS CONSULTANTS

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

Client : WESTINGHOUSE HANFORD
RFW# : 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

INORGANIC

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

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

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%.

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

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

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

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

9.29.93

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

Date

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pas/i08-675

0001

9613407.1978

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: 8/22/93

Ice Chest No.: _____ — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: _____ — Offsite Property No.: _____

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~WESTON TMA~~ Lexston

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE 9308L675-001

Sample Identification

1) B09314 Temp. = 5.6°

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)

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 8/22/93

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
8/22/93 1131	Melanie Meyers	8/22/93 1133
Relinquished by: 8/23/93 0915	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
	B. Burnett	8-24-93 09:00
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

012

~~0016~~

9613407.1979

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: 8/19/93

Ice Chest No.: — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~WESTON~~ TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) — 9308L675-002

Sample Identification

B093222

1)

~~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)

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

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)		
Relinquished by: 8/20/93 1131	Received by: Melanie Meyers	Date/Time: 8/22/93 1132
Relinquished by: 8/25/93 0915	Received by:	Date/Time:
Relinquished by: Fed Ex	Received by: B. Burnett	Date/Time: 8-24-93 09:00
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

C12A
@ 1/19/94
~~0015~~ 1/19/94

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

9613407.1980

Westinghouse
Hanford Company

SAMPLE ANALYSIS REQUEST

Collector L E ROGERS S.A.F. # 93-263 Date 8/23/93

Company Contact L E ROGERS Telephone (509) 376-7690

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B09322	S	8/22/93	1130	~~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~~
			DR 8/23/93	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
				1,500ml 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 OBSERVED

1/19/94

012B

A-6000-406 (06/91) WEF060

~~0016~~

1/19/94

WESTON Analytics Use Only
9308L675

pm = J Edwards
QA = S. Jellen
RAB Ext(?)

Custody Transfer Record/Lab Work Request

WESTON

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 DAY
Date Rec'd: 8/24/93 Date Due: 9/28/93
Account #: WS-HANFORD

	VOA	BNA	Pest/PCB	Herb	FLUOR CL SO4	NBM2	Radio Chem	Metal	CN
Refrigerator #	1	6			3	3	SUB	3	3
#/Type Container – Liquid									
#/Type Container – Solid	1/6L	1/6L			1/6L	1/6L	1/6L	1/L	1/6L
Volume – Liquid									
Volume – Solid	125ml	500ml			250ml	125ml	1000ml	500ml	250ml
Preservatives	–	–			–	–	–	–	–
ANALYSES REQUESTED	ORGANIC							INORG	
WESTON Analytics Use Only	0604C	0605C	OPCB		ICFL ICCL ICSO4	IN...2	ISUB	see below	ICNTO

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	FLUOR CL SO4	NBM2	Radio Chem	Metal	CN
001	B09314 (RAD)			S	8/22/93	07:40	X	X	X		X	X	X	X	X
002	B09322 ~~RAD~~ (BB 8/24/93)			S	8/22/93	11:32	X								
	metals = HSL+Ti														
	SAF # 93-263														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp. = 5.6°C (samples 001)
7.2°C (sample 002)
SAF # 93-263
Note: Sample 002 WHC COC Cross off's were Done in Field not by LAB personnel

DATE/REVISIONS:
8/24/93 1. Sample 001 Rad
9/27/93 2. OPCB added to 001 per JE 9/3 PM 11:31
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 6062041915
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	B. Burnett	8-24-93	09:00		B.B. 8-24-93		
B.B. 8-24-93							

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

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

1/27/94

11 AUG 1994

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

BO 9308L675-WES-1241

PROJECT: 200-UP-2	REVIEWER: KMA	DATE: 1/17/94
LABORATORY: Weston	CASE: WEST	SDG: CL0675
SAMPLES/MATRIX: B09314, soil		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		—	—	—
Cover Page		—	—	—
Traffic Reports/Chain-of-Custody		—	—	—
Sample Analysis Data Report Forms		—	—	—
Standards Data		—	—	—
QC Summary				
Blanks Summary Report Forms		—	—	—
Spike Sample Recovery Report Forms		—	—	—
Duplicate Sample Analysis Report Forms		—	—	—
Laboratory Control Sample Report Forms		—	—	—
Raw Data				
Ion Chromatograph Chromatograms		—	—	—
TOC and TOX Instrument Printouts		—	—	—
Laboratory Bench Sheets		—	—	—
Additional Data				
Laboratory Sample Preparation Logs		—	—	—
Instrument Run Logs		—	—	—
Internal Laboratory Chain-of-Custory		—	—	—
Percent Solids Analysis Records		—	—	—
Reduction Formulae		—	—	—
Chemist Notebook Pages		—	—	—

Verified by KMA

2. HOLDING TIMES

Were all samples analyzed within holding times? (Yes) No N/A 5/21/94

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	(Yes)	No	N/A
Are the correlation coefficients ≥0.995?	(Yes)	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	(N/A)
Was the titrant normality checked?	Yes	No	(N/A)

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	(Yes)	No	N/A
Are ICV and CCV percent recoveries within control?	(Yes)	No	N/A
Are there calculation errors?	Yes	(No)	N/A

per IC Coplan

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	(No)	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	(N/A)

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	(Yes)	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? ca only (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R < 50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? (Yes) No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No (N/A)

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? (Yes) ~~No~~ N/A

Are instrument detection limits below the CRDL? Yes No (N/A)

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

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) ~~No~~ N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

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

018

Holding Times

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

DATE RECEIVED: 08/24/93 RFW LOT # :9308L675

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B09314							
% SOLIDS	001	S	93LRS042	08/22/93	08/27/93	08/30/93	8
% SOLIDS	001 REP	S	93LRS042	08/22/93	08/27/93	08/30/93	1
CHLORIDE BY IC	001	S	93LCS106	08/22/93	09/10/93	09/10/93	19
CHLORIDE BY IC	001 REP	S	93LCS106	08/22/93	09/10/93	09/10/93	
CHLORIDE BY IC	001 MS	S	93LCS106	08/22/93	09/10/93	09/10/93	
CHLORIDE BY IC	001 MSD	S	93LCS106	08/22/93	09/10/93	09/10/93	
FLUORIDE BY IC	001	S	93LFS106	08/22/93	09/10/93	09/10/93	
FLUORIDE BY IC	001 REP	S	93LFS106	08/22/93	09/10/93	09/10/93	
FLUORIDE BY IC	001 MS	S	93LFS106	08/22/93	09/10/93	09/10/93	
FLUORIDE BY IC	001 MSD	S	93LFS106	08/22/93	09/10/93	09/10/93	1
TOTAL CYANIDE	001	S	93LC206	08/22/93	09/03/93	09/03/93	12
TOTAL CYANIDE	001 REP	S	93LC206	08/22/93	09/03/93	09/03/93	
TOTAL CYANIDE	001 MS	S	93LC206	08/22/93	09/03/93	09/03/93	
TOTAL CYANIDE	001 MSD	S	93LC206	08/22/93	09/03/93	09/03/93	1
SULFATE BY IC	001	S	93L4S106	08/22/93	09/10/93	09/10/93	19
SULFATE BY IC	001 REP	S	93L4S106	08/22/93	09/10/93	09/10/93	
SULFATE BY IC	001 MS	S	93L4S106	08/22/93	09/10/93	09/10/93	
SULFATE BY IC	001 MSD	S	93L4S106	08/22/93	09/10/93	09/10/93	
NITRATE NITRITE	001	S	93LNT173	08/22/93	09/26/93	09/27/93	36 J
NITRATE NITRITE	001 REP	S	93LNT173	08/22/93	09/26/93	09/27/93	
NITRATE NITRITE	001 MS	S	93LNT173	08/22/93	09/26/93	09/27/93	
NITRATE NITRITE	001 MSD	S	93LNT173	08/22/93	09/26/93	09/27/93	
SUB-OUT TEST FOR SUB	001	S		08/22/93			
B09322							
% SOLIDS	002	S	93L%S158	08/22/93	08/27/93	08/30/93	
% SOLIDS	002 REP	S	93L%S158	08/22/93	08/27/93	08/30/93	

~~* Acceptable sample analyzed within 1 day of extraction~~

5/2/94

LAB QC:

Nitrate nitrite prepped outside of holding time. Samples qualified J. 5/2/1994

Verified 1/17/94

CHLORIDE BY IC	LC1	S	93LCS106	N/A	09/10/93	09/10/93
CHLORIDE BY IC	LC1 BS	S	93LCS106	N/A	09/10/93	09/10/93
CHLORIDE BY IC	MB1	S	93LCS106	N/A	09/10/93	09/10/93
CHLORIDE BY IC	MB1 BS	S	93LCS106	N/A	09/10/93	09/10/93

DATA VALIDATION SUPPORTING DOCUMENTATION
DATA PACKAGE ID: 9308L675-WES-1241
ANALYSIS TYPE: WET CHEMISTRY

PROJECT: 200-UP-2
VALIDATOR: K. ANGELOS
DATE: 1/17/94

HOLDING TIMES

SAMPLE ID	ANALYSIS TYPE	SAMPLE DATE	EXTRACT DATE	ANALYSIS DATE	EXTRACT DAYS	ANALYSIS DAYS
B09314	%SOLIDS	8/22/93	8/27/93	8/30/93	5	8
	IC-CL	8/22/93	9/10/93	9/10/93	19	19
	IC-FL	8/22/93	9/10/93	9/10/93	19	19
	CN	8/22/93	9/3/93	9/3/93	12	12
	IC-SO4	8/22/93	9/10/93	9/10/93	19	19
	NO3/NO3	8/22/93	9/26/93	9/27/93	35	36

Sample will be qualified as J estimate
Holding time of 28 days exceeded
SJ 2/2/94

IC SAMPLE RESULT VERIFICATION

SAMPLE: B09314
DILUTION 30 ML
WEIGHT: 6.00 GRAMS
SOLIDS: 96.09% ERCENT

ANALYTE	PPM FROM RAW DATA	REPORTED MG/KG	CALCULATED MG/KG	OKAY?
FLUORID	0	2.6 U	NOT CALC.	YES
CHLORID	0.251	1.3	1.31	YES
SULFATE	3.883	20.2	20.21	YES

PERCENT SOLIDS RESULT VERIFICATION

SAMPLE: B09314	CALC.	RPTD	OKAY?
CONTAINER WT.:	1.31		
INITIAL WT. SAMPLE+CONTAINER:	5.40		
INITIAL WT. SAMPLE:	4.09		
FINAL WT. SAMPLE+CONTAINER:	5.24		
FINAL WT. SAMPLE:	3.93		
PERCENT SOLIDS:	96.09	96.09	YES

CYANIDE RESULT VERIFICATION

SAMPLE: B09314
DILUTION 250 ML
WEIGHT: 5.00 GRAMS
SOLIDS: 96.1% ERCENT

ANALYTE	PPB FROM RAW DATA	REPORTED MG/KG	CALCULATED MG/KG	OKAY?
CN	2.6351	1.04 U	0.1371	YES

NITRATE+NITRITE RESULT VERIFICATION

SAMPLE: B09314
DILUTION 100 ML

DATA VALIDATION SUPPORTING DOCUMENTATION
DATA PACKAGE ID: 9308L675-WES-1241
ANALYSIS TYPE: WET CHEMISTRY

PROJECT: 200-UP-2
VALIDATOR: K. ANGELOS
DATE: 1/17/94

WEIGHT: 20.00 GRAMS
SOLIDS: 96.1% ERCENT
FACTOR: 20 BENCH DILUTION

ANALYTE	PPM FROM RAW DATA	REPORTED MG/KG	CALCULATED MG/KG	OKAY?
NO3/NO2	0.217	22.6	22.58	YES

MEMORANDUM

TO: 200-UP-2 Project QA Record January 17, 1994

FR: Kent Angelos, Golder Associates Inc.

RE: METALS DATA VALIDATION SUMMARY FOR
DATA PACKAGE: 9308L675-WES-1241 (923-E418, WES1241M.UP2)

INTRODUCTION

This memo presents the results of data validation on data package 9308L675-WES-1241 consisting of one soil sample analyzed for CLP Target Analyte List (TAL) metals including titanium. The samples were analyzed by the Weston Analytics laboratory of Lionville, Pennsylvania using the CLP protocol (SOW 3/90) for TAL metals and titanium. The following table provides information regarding the sample identification, date, media and analysis performed.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09314*	8/22/93	SOIL	TAL Metals, Cyanide and Titanium

Notes:

* Indicates samples which received 100% validation.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (WHC 1992). 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

DATA QUALITY OBJECTIVES

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 CLP SOW. The detection limit for titanium is not specified in the method reference however, a nominal detection limit of 0.3 mg/L is specified for the atomic absorption technique (APHA 1992). The detection limit achieved by the method was estimated to be 0.1 mg/L based on the analysis of the preparation blank which is well below the nominal value of 0.3 mg/L.

Completeness. The data package was complete for all requested analyses. One sample was 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

Spike Sample Recovery

- Spike recovery for antimony was less than 75% but greater than 30%, therefore sample B09314 has been qualified as estimated (J) for antimony.

Laboratory Blanks

- Potassium was detected in the associated calibration blank causing qualification of sample B09314 as undetected (U).

REFERENCES

WHC 1993, 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 1992, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

APHA 1992, Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992. American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.

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.

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9308L675-WES-1246	REVIEWER: K. ANGELOS	DATE: 1/17/94	PAGE 1 OF 1
COMMENTS: METALS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	J	B09314	Spike %R <75% but greater than 30%
Potassium	U	B09314	Contaminant present in associated calibration blank

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

VALIDATED DATA SUMMARY, DATA PACKAGE: 9308L675-WES-1241
METALS ANALYSIS RESULTS, MG/KG

	HEIS#	B09314	
	DATE	8/22/93	
PARAMETER		RESULT	Q
ALUMINUM		3900.00	
ANTIMONY		13.50	J
ARSENIC		1.90	B
BARIUM		76.60	
BERYLLIUM		0.27	B
CADMIUM		1.04	U
CALCIUM		8450.00	
CHROMIUM		5.30	
COBALT		9.80	B
COPPER		11.10	
IRON		20700.00	
LEAD		3.10	
MAGNESIUM		4040.00	
MANGANESE		330.00	
MERCURY		0.05	U
NICKEL		6.40	B
POTASSIUM		466.00	U
SELENIUM		0.42	U
SILVER		1.25	U
SODIUM		123.00	B
THALLIUM		0.83	U
VANADIUM		43.90	
ZINC		36.50	
CYANIDE		1.04	U
TITANIUM		1480.00	

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B09314

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

Matrix (soil/water): SOIL Lab Sample ID: 930867501

Level (low/med): LOW Date Received: 8/24/93

% Solids: 96.1

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3900.00			P	
7440-36-0	Antimony	13.50	~~N*~~		P	J
7440-38-2	Arsenic	1.90	B		F	
7440-39-3	Barium	76.60			P	
7440-41-7	Beryllium	.27	B		P	
7440-43-9	Cadmium	1.04	U		P	
7440-70-2	Calcium	8450.00			P	
7440-47-3	Chromium	5.30			P	
7440-48-4	Cobalt	9.80	B		P	
7440-50-8	Copper	11.10			P	
7439-89-6	Iron	20700.00			P	
7439-92-1	Lead	3.10			F	
7439-95-4	Magnesium	4040.00			P	
7439-96-5	Manganese	330.00			P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	6.40	B		P	
7440-09-7	Potassium	466.00	~~B~~		P	U
7782-49-2	Selenium	.42	U		F	
7440-22-4	Silver	1.25	U		P	
7440-23-5	Sodium	123.00	B		P	
7440-28-0	Thallium	.83	U		F	
7440-62-2	Vanadium	43.90			P	
7440-66-6	Zinc	36.50			P	
	Cyanide	1.04	U		C	
	Titanium	1480.00			P	

Q

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Verified
1/17/94

FORM I - IN 03/90

009

~~0028~~

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

WESTON
MANAGERS DESIGNERS CONSULTANTS

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

CLP METALS

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

2. The sample and associated QC 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.

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:

RFW #	Element	%Recovery
001	Antimony	71.3

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 Ca, Mg, Na, and K in waters and soils. Also, not required for Al and Fe in soils.

WESTON
MANAGERS DESIGNERS CONSULTANTS

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 except for:

RFW #	Element	%RPD
001	Antimony	200.0

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

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

17. 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.

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

9.29.99
Date

mlj/clp-met.nar

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L675

W.O. #: 06168-002-001-9999-00
Date Received: 08-24-93

CLP METALS ADDENDUM

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

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

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

9.29.93
Date

mlj\clp-met.nar

9615907.2002

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: 8/22/93

Ice Chest No. — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No. — Offsite Property No.

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: ~~WESTON TMA~~ Weston

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) RADIOACTIVE 93081675-001

Sample Identification

1) B09314 Temp. = 5.6°

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)

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 8/22/93

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)		
Relinquished by: 8/22/93 Jeanne R. Rogers 1131	Received by: Melanie Meyers Melanie Meyers	Date/Time: 8/22/93 1133
Relinquished by: 8/23/93 Melanie Meyers 0915	Received by:	Date/Time:
Relinquished by: Fed Ex	Received by: B. Burnett	Date/Time: 8-24-93 09:00
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

014

~~0005~~

Westinghouse Hanford Company	9615407.2006 **SAMPLE ANALYSIS REQUEST**

Collector L E ROGERS S.A.F. # 93-263 Date 8/22/93

Company Contact L E ROGERS Telephone (509) 376-7690

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Required
B09314	S	8/22/93	0740	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
				1,500ml 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 8/22/93	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 Radioactive

A-6000-406 (06/91) WEF060

015

0006

WESTON Analytics Use Only
9308L675

pm= J Edwards
QA
Yellow
FIAB Extra...

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse - Hanford
Est. Final Proj. Sampling Date:
Work Order #: 06168-002-001-9999-00
Project Contact/Phone #:
AD Project Manager: Josie Edwards
QC: CLP Del: CLP TAT: 35 DAY
Date Rec'd: 8/24/93 Date Due: 9/28/93
Account #: WS-HANFORD

Refrigerator #		1	6			3	3	SUB	3	3
#/Type Container	Liquid									
	Solid	1/6L	1/AG			1/GL	1/GL	1/PL	1/PL	1/GL
Volume	Liquid									
	Solid	125ml	500ml			250ml	125ml	1L	500ml	250ml
Preservatives		—	—			—	—	—	—	—
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb	FLUR CL SO4	NBN2	Radio Chem	INORG: Metal	CN

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	0624C	0625C	ARB		ICFL ICCL IC04	INN2	ISUB	see below	ICWD
001	B09314 (RAD)			S	8/22/93	07:40	X	X	X		X	X	X	X	X
002	B09322 ~~RAD~~ (BB 8/24/93)			S	8/22/93	11:32	X								
	metals = HSL+Ti														
	SAF # 93-263														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp. = 5.6°C (samples 001)
7.2°C (sample 002)
SAF # 93-263
Note: Sample 002 WHC coc cross off's were done in Field not by LAB personnel

DATE/REVISIONS:
8/24/93 1. Sample 001 Rad
9/27/93 2. OPC/B added to 001 per JE 9:3pm 11:31
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 6062041915
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	B. Burnett	8-24-93	09:00		B.B. 8-24-93		
B.B. 8-24-93							

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

016

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

9/27/94

9613107.2001

...Transfer Record/Lab Work Request

WESTON

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 DAY
Date Rec'd: 8/24/93 Date Due: 9/28/93
Account #: WS-HANFORD

	VOA	BNA	Pest/PCB	Herb	FLUR CL SO4	NO3/NO2	Radio Chem	Metal	CN
Refrigerator #	1	6			3	3	SUB	3	3
#/Type Container Liquid									
#/Type Container Solid	1/GL	1/G			1/GL	1/GL	1/PL	1/PL	1/GL
Volume Liquid									
Volume Solid	125ml	500ml			250ml	125ml	1000ml	500ml	250ml
Preservatives	—	—			—	—	—	—	—
WESTON Analytics Use Only	0624C	0625C	AP/B		ICFL ICCL IC04	IN032	ISUB	see below	ICNTO

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	MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb	FLUR CL SO4	NO3/NO2	Radio Chem	Metal	CN
001	B09314 (RAD)			S	8/22/93	07:40	X	X	X		X	X	X	X	X
002	B09322 ~~RAD~~ 8/24/93			S	8/22/93	11:30	X								

metals = HSL + Ti
SAF # 93-263

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp. = 5.6°C (samples 001)
7.2°C (sample 002)
SAF # 93-263
Note: Sample 002 WHC COC Cross off's were Done in Field not by LAB personnel

DATE/REVISIONS:
8/24/93 1. Sample 001 Rad
9/27/93 2. OPCB added to 001 per JE 9/30 m 1131
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 6062041915
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	B. Burnett	8-24-93	09:00		B.B. 8-24-93		
B.B. 8-24-93							

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

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

016

9602.2007

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

93086675-WES-1241

PROJECT: 200-UP-2	REVIEWER: KMA	DATE: 1/17/94
LABORATORY: Weston	CASE:	SDG: CLP675
SAMPLES/MATRIX: B09314, soil		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	—	—	—
Cover Page	—	—	—
Traffic Reports	—	—	—
Sample Data			
Inorganic Analysis Data Sheets	—	—	—
Standards Data			
Initial and Continuing Calibration Verification	—	—	—
CRDL Standard for AA and ICP	—	—	—
QC Summary			
Blanks	—	—	—
ICP Interference Check Summary	—	—	—
Spike Sample Recovery	—	—	—
Post-Digestion Spike Sample Recovery	—	—	—
Duplicate	—	—	—
Laboratory Control Sample	—	—	—
Standard Addition Results	—	—	—
ICP Serial Dilutions	—	—	—
Instrument Detection Limits	—	—	—
ICP Interelement Correction Factors	—	—	—
ICP Linear Ranges	—	—	—
Preparation Log	—	—	—
Analysis Run Log	—	—	—
Raw Data			
ICP Raw Data	—	—	—
Furnace AA Raw Data	—	—	—
Mercury Raw Data	—	—	—
Cyanide Raw Data	—	—	—
Additional Data			
Internal laboratory chain-of-custody	—	—	—
Laboratory Sample Preparation Records	—	—	—

Verified by WHC

Data Package Item	Present?:	Yes	No	N/A
Percent Solids Analysis Records		—	—	—
Reduction Formulae		—	—	—
Instrument Run Logs		—	—	—
Chemist Notebook Pages		—	—	—

verified by WHC

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥ 0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? (Yes) No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No (N/A)

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes (No) N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

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

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? (Yes) No N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No (N/A)

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

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

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

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

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

Are MSA correlation coefficients ≥ 0.995? Yes No (N/A)

If no, was a second MSA analysis performed? Yes No (N/A)

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

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? (Yes) No N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP? (Yes) No N/A

Are all detection limits below the CRQL? (Yes) No N/A

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

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) No N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

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

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

DATE RECEIVED: 08/24/93 RFW LOT # :9308L675

Holding Times 1/2

B09314

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days	Q
SILVER, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93	30	none
SILVER, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
SILVER, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
ALUMINUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
ALUMINUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
ALUMINUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
ARSENIC, TOTAL	001	S	93L6775	08/22/93	09/17/93	09/21/93		
ARSENIC, TOTAL	001 REP	S	93L6775	08/22/93	09/17/93	09/21/93		
ARSENIC, TOTAL	001 MS	S	93L6775	08/22/93	09/17/93	09/21/93		
BARIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
BARIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
BARIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
BERYLLIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
BERYLLIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
BERYLLIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
CALCIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
CALCIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
CALCIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
CADMIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
CADMIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
CADMIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
COBALT, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
COBALT, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
COBALT, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
CHROMIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
CHROMIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
CHROMIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
COPPER, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
COPPER, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
COPPER, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
IRON, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93		
IRON, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93		
IRON, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93		
MERCURY, TOTAL	001	S	93C0263	08/22/93	09/01/93	09/02/93	11	
MERCURY, TOTAL	001 REP	S	93C0263	08/22/93	09/01/93	09/02/93		

Verified
Gbt 1/17/94

9613407.2015

Holiday Times 2/2

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

DATE RECEIVED: 08/24/93 RFW LOT # :9308L675

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 MS	S	93C0263	08/22/93	09/01/93	09/02/93
POTASSIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
POTASSIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
POTASSIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
MAGNESIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
MAGNESIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
MAGNESIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
MANGANESE, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
MANGANESE, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
MANGANESE, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
SODIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
SODIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
SODIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
NICKEL, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
NICKEL, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
NICKEL, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
LEAD, TOTAL	001	S	93L6775	08/22/93	09/17/93	09/21/93
LEAD, TOTAL	001 REP	S	93L6775	08/22/93	09/17/93	09/21/93
LEAD, TOTAL	001 MS	S	93L6775	08/22/93	09/17/93	09/21/93
ANTIMONY, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
ANTIMONY, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
ANTIMONY, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
SELENIUM, TOTAL	001	S	93L6775	08/22/93	09/17/93	09/21/93
SELENIUM, TOTAL	001 REP	S	93L6775	08/22/93	09/17/93	09/21/93
SELENIUM, TOTAL	001 MS	S	93L6775	08/22/93	09/17/93	09/21/93
TITANIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
TITANIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
TITANIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
THALLIUM, TOTAL	001	S	93L6775	08/22/93	09/17/93	09/21/93
THALLIUM, TOTAL	001 REP	S	93L6775	08/22/93	09/17/93	09/21/93
THALLIUM, TOTAL	001 MS	S	93L6775	08/22/93	09/17/93	09/21/93
VANADIUM, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
VANADIUM, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
VANADIUM, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93
ZINC, TOTAL	001	S	93L6776	08/22/93	09/17/93	09/21/93
ZINC, TOTAL	001 REP	S	93L6776	08/22/93	09/17/93	09/21/93
ZINC, TOTAL	001 MS	S	93L6776	08/22/93	09/17/93	09/21/93

Days & 11 30 none

LAB QC:

Verified 1/17/94

SILVER LABORATORY	LC1 BS	S	93L6776	N/A	09/17/93	09/21/93

9613407.2014

ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 09/28/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9308L675

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV		DILUTION FACTOR(SPK)
-001	B09314	Silver, Total	9.7	2.1 u	10.4	93.3		1.0
		Aluminum, Total	4720	3900	416	197 *	#	1.0
		Arsenic, Total	8.6	2.1 u	8.3	104		1.0
		Barium, Total	500	76.6	416	102		1.0
		Beryllium, Total	10.2	1.0 u	10.4	98.1		1.0
		Calcium, Total	13700	8450	5200	101		1.0
		Cadmium, Total	9.3	1.0 u	10.4	89.4		1.0
		Cobalt, Total	114	10.4 u	104	109		1.0
		Chromium, Total	46.7	5.3	41.6	99.5		1.0
		Copper, Total	63.8	11.1	52.0	101		1.0
		Iron, Total	19600	20700	208	-500.	#	1.0
		Mercury, Total	0.51	0.10u	0.52	97.5		1.0
		Potassium, Total	5790	1040 u	5200	111		1.0
		Magnesium, Total	9420	4040	5200	103		1.0
		Manganese, Total	446	330	104	112		1.0
		Sodium, Total	5350	1040 u	5200	103		1.0
		Nickel, Total	116	8.3 u	104	111		1.0
		Lead, Total	6.6	3.1	4.2	83.3		1.0
		Antimony, Total	87.7	13.5	104	71.3	'	1.0
		Selenium, Total	2.2	1.0 u	2.1	105		1.0
		Titanium, Total	1560	1480	208	36.4 *	#	1.0
		Thallium, Total	8.6	2.1 u	10.4	82.7		1.0
		Vanadium, Total	146	43.9	104	97.8		1.0
		Zinc, Total	139	36.5	104	98.8		1.0

Spl result > 4X spike ~~[illegible]~~ amount. No qualification.

Verified
[illegible]
1/17/94

' Qualify antimony as estimated J/UJ

U.S. EPA - CLP

4
ICP INTERFERENCE CHECK SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

ICP ID Number: IC1 ICS Source: IV

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial Found %R	Final Found Sol. A	Final Found Sol. AB	Final Found %R
Aluminum	490800	490900	487656	489614.3	99.7	488432	492802.8	100.4
Antimony			15	22.4		26	46.2	
Arsenic								
Barium		492	1	492.8	100.2	0	498.0	101.2
Beryllium		465	0	462.9	99.5	0	463.3	99.6
Cadmium		982	-3	961.9	98.0	-5	972.9	99.1
Calcium	474000	473600	468587	472264.2	99.7	468824	472953.1	99.9
Chromium		460	4	463.3	100.7	2	465.7	101.2
Cobalt		464	-15	451.3	97.3	-13	450.2	97.0
Copper		487	-12	475.6	97.7	-17	482.0	99.0
Iron	187500	187800	185694	186798.6	99.5	186892	189237.0	100.8
Lead								
Magnesium	509900	509500	507141	509390.1	100.0	503787	508190.4	99.7
Manganese		481	0	471.5	98.0	-2	473.8	98.5
Mercury								
Nickel		920	21	954.4	103.7	-19	943.1	102.5
Potassium			-1100	-1200.0		-1300	-1300.0	
Selenium								
Silver		1011	0	1009.4	99.8	0	1014.3	100.3
Sodium			139	123.8		144	132.1	
Thallium								
Vanadium		461	-3	476.1	103.3	-1	479.2	103.9
Zinc		976	-5	961.3	98.5	-3	969.0	99.3

FORM IV - IN 03/90

negative bias does not affect sample results since interferent concentrations in samples are < A/AB values.

Verified MWT 1/17/94

0034

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B09314S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 96.1

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	87.7000		13.5000		104.10	71.3	N	P
Arsenic	75-125	8.6000		1.9000	B	8.30	80.7		F
Barium	75-125	499.7000		76.6000		416.20	101.7		P
Beryllium	75-125	10.2000		.2700	B	10.40	95.5		P
Cadmium	75-125	9.3000		1.0405	U	10.40	89.4		P
Calcium									NR
Chromium	75-125	46.7000		5.3000		41.60	99.5		P
Cobalt	75-125	113.9000		9.8000	B	104.10	99.5		P
Copper	75-125	63.8000		11.1000		52.00	101.3		P
Iron									NR
Lead	75-125	6.6000		3.1000		4.20	83.3		F
Magnesium									NR
Manganese	75-125	446.0000		329.8000		104.10	111.6		P
Mercury	75-125	.5070		.0520	U	.52	97.5		CV
Nickel	75-125	115.6000		6.4000	B	104.10	104.0		P
Potassium									NR
Selenium	75-125	2.2000		.4162	U	2.10	104.8		F
Silver	75-125	9.7000		1.2486	U	10.40	93.3		P
Sodium									NR
Thallium	75-125	8.6000		.8324	U	10.40	82.7		F
Vanadium	75-125	145.7000		43.9000		104.10	97.8		P
Zinc	75-125	139.3000		36.5000		104.10	98.7		P
Cyanide	75-125	5.0190		1.0400	U	5.20	96.5		C

Comments:

Verified
1/17/94

FORM V (Part 1) - IN 03/90

Quality Antonyan J

027

0035

U.S. EPA - CLP

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B09314A

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

Matrix: Level (low/med):

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony		4925.30		64.70		4700.0	103.4		P
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

Verified MB 1/17/94

FORM V (Part 2) - IN

961340?.2018

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B09314D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

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

% Solids for Sample: 96.1 % Solids for Duplicate: 96.1

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
Aluminum		3905.0000		3885.1000		.5		P
Antimony	12.5	13.5000		9.7807	U	200.0	*	P
Arsenic		1.9000	B	2.0000	B	5.1		F
Barium	41.6	76.6000		69.3000		10.0		P
Beryllium		.2700	B	.2100	B	25.0		P
Cadmium		1.0405	U	1.0405	U			P
Calcium		8452.5000		8688.0000		2.7		P
Chromium	2.1	5.3000		4.9000		8.2		P
Cobalt		9.8000	B	10.1000	B	2.5		P
Copper	5.2	11.1000		9.3000		18.0		P
Iron		20682.0000		20228.2000		2.2		P
Lead	.6	3.1000		3.2000		3.2		F
Magnesium	1040.5	4039.6000		4060.6000		.5		P
Manganese		329.8000		318.0000		3.6		P
Mercury		.0520	U	.0520	U			CV
Nickel		6.4000	B	7.9000	B	22.1		P
Potassium	1040.5	465.6001	B	491.6001	B	5.4		P
Selenium		.4162	U	.4162	U			F
Silver		1.2486	U	1.2486	U			P
Sodium		123.3000	B	128.7000	B	4.3		P
Thallium		.8324	U	.8324	U			F
Vanadium	10.4	43.9000		44.0000		.2		P
Zinc		36.5000		35.1000		3.9		P
Cyanide		1.0400	U	1.0400	U			C

FORM VI - IN 03/90

* RPD acceptable
Reviewed MHS 11/17/94

029

0037

U.S. EPA - CLP

14
ANALYSIS RUN LOG

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

Instrument ID Number: AA7 Method: F

Start Date: 9/21/93 End Date: 9/21/93

EPA Sample No.	D/F	Time	% R	AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1902													X												
S3	1.00	1907													X												
S15	1.00	1911													X												
S30	1.00	1916													X												
S60	1.00	1921													X												
ICV1	1.00	1926													X												
ICB1	1.00	1931													X												
CRA	1.00	1936													X												
CCV1	1.00	1940													X												
CCB1	1.00	1945													X												
PBS175	1.00	1950													X												
PBS175A	1.00	1955	86.5												X												
LCSS175	1.00	2000													X												
LCSS175A	1.00	2005	88.5												X												
LCSS275	1.00	2010													X												
LCSS275A	1.00	2015	88.0												X												
B09314	1.00	2020													X												
B09314A	1.00	2025	85.5												X												
B09314D	1.00	2029													X												
B09314DA	1.00	2034	84.5												X												
CCV2	1.00	2039													X												
CCB2	1.00	2044													X												
B09314S	1.00	2049													X												
ZZZZZZ	1.00	2054																									
CCV3	1.00	2059													X												
CCB3	1.00	2104													X												
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										
	0.00																										

FORM XIV - IN 03/90

Verified
Duplicate < 85% does not affect sample
Duplicate Pb qualified J
[initials] 1/7/94

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP675

Preparation Blank Matrix (soil/water): SOIL

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	27.0	U	27.0	U	27.0	U	27.0	U	5.400	U	P
Antimony	47.0	U	47.0	U	47.0	U	47.0	U	9.400	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	4.0	U	4.0	U	4.0	U	4.0	U	.800	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	.200	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Chromium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Cobalt	8.0	U	8.0	U	8.0	U	8.0	U	1.600	U	P
Copper	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Iron	13.0	U	13.0	U	13.0	U	13.0	U	2.600	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	107.0	U	107.0	U	107.0	U	107.0	U	21.400	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.050	U	CV
Nickel	14.0	U	14.0	U	14.0	U	14.0	U	2.800	U	P
Potassium	648.0	U	-842.0	B	1034.8	B	648.0	U	-135.900	B	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	6.0	U	6.0	U	6.0	U	6.0	U	-1.700	B	P
Sodium	55.0	U	55.0	U	55.0	U	55.0	U	12.200	B	P
Thallium	4.0	U	4.0	U	4.0	U	4.0	U	.800	U	F
Vanadium	9.0	U	9.0	U	9.0	U	9.0	U	1.800	U	P
Zinc	9.0	U	9.0	U	9.0	U	9.0	U	1.800	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	1.000	U	C

FORM III - IN 03/90

1034.8 x 5 = 5170

Affect sample

which exceeds raw sample result! Qualify as U

Verified
[illegible]
1/17/94

Does not exceed >2x IDL

DATA VALIDATION SUPPORTING DOCUMENTATION
DATA PACKAGE ID: 9308L675-WES-1241
ANALYSIS TYPE: METALS

PROJECT: 200-UP-2
VALIDATOR: K. ANGELOS
DATE: 1/17/94

HOLDING TIMES

SAMPLE ID	ANALYSIS TYPE	SAMPLE DATE	EXTRACT DATE	ANALYSIS DATE	EXTRACT DAYS	ANALYSIS DAYS
B09314	ICP/AA	8/22/93	9/17/93	9/21/93	26	30
	HG	8/22/93	9/1/93	9/2/93	10	11

ICP/GFAA SAMPLE RESULT VERIFICATION

SAMPLE: B09314
DILUTION 200 ML
WEIGHT: 1.00 GRAMS
SOLIDS: 96.1% ERCENT

ANALYTE	PPB FROM RAW DATA	REPORTED MG/KG		CALCULATED MG/KG	OKAY?
AG	NEGATIVE	1.25	U	NOT CALC.	NOT CALC.
AL	18770	3900		3906.35	YES
BA	368	76.6		76.59	YES
BE	1.345	0.27	B	0.28	YES
CA	40620	8450		8453.69	YES
CO	47.33	9.8	B	9.85	YES
CR	25.5	5.3		5.31	YES
CU	53.38	11.1		11.11	YES
FE	99380	20700		20682.62	YES
K	2237	466		465.56	YES
MG	19410	4040		4039.54	YES
MN	1585	330		329.86	YES
NA	592.3	123		123.27	YES
NI	30.62	6.4	B	6.37	YES
SB	64.7	13.5		13.47	YES
TI	7122	20	U	1482.21	YES
V	211	43.9		43.91	YES
ZN	175.6	36.5		36.55	YES
CD	NEGATIVE	1.04	U	NOT CALC.	NOT CALC
AS/GFAA	9.1	1.9	B	1.89	YES
PB/GFAA	15.1	3.1		3.14	YES
SE/GFAA	1.1	0.42	U	0.23	YES
TL/GFAA	-0.1	0.83	U	NOT CALC.	NOT CALC.

MERCURY RESULT VERIFICATION

SAMPLE: B09314
DILUTION 50 ML
WEIGHT: 0.10 GRAMS
SOLIDS: 96.1% ERCENT

ANALYTE	PPB FROM RAW DATA	REPORTED MG/KG	CALCULATED MG/KG	OKAY?

DATA VALIDATION SUPPORTING DOCUMENTATION
DATA PACKAGE ID: 9308L675-WES-1241
ANALYSIS TYPE: METALS

PROJECT: 200-UP-2
VALIDATOR: K. ANGELOS
DATE: 1/17/94

HG	0.0013	0.05	U	0.00068	YES

DATA VALIDATION SUPPORTING DOCUMENTATION
DATA PACKAGE ID: 9308L675-WES-1241
ANALYSIS TYPE: METALS

PROJECT: 200-UP-2
VALIDATOR: K. ANGELOS
DATE: 1/17/94

CYANIDE RESULT VERIFICATION

SAMPLE: B09314
DILUTION 250 ML
WEIGHT: 5.00 GRAMS
SOLIDS: 96.1% ERCENT

ANALYTE	PPB FROM RAW DATA	REPORTED MG/KG		CALCULATED MG/KG	OKAY?
CN	2.6351	1.04	U	0.1371	YES