START 9613403.1209 0000021 9210L298-WES-911

0043105

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

Client: WESTINGHOUSE HANFORD
RFW #: 9210L298

W.O. #: 06168-002-001-9999-00
Date Received: 10-14-92

GC/MS VOLATILE

The set of samples consisted of four (4) water samples collected on 10-12-92.

The samples were analyzed according to criteria set forth in CLP 03/90 for TCL Volatile target compounds on 10-23,24-92.

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

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

2. One (1) of twenty-four (24) system monitoring compound (surrogate) recoveries was outside EPA QC limits. The analyses of samples B079F9 and B079F9 MSD fulfilled the re-analysis requirement for sample B079F9 MS.

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

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

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

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

11/16/92
Date

kls/10-298v.cn

WDP-2029 - 200 9613053.1210 9210 8298

Westinghouse Hanford Company	NONCONFORMANCE REPORT	1. Page 1 of 1	2. Preprinted No. 050520 QA Log No. EQA-92-116

3. P. O., W. O., or Job Control No.	4. System/End Use	5. Item/Material	6. Dwg./Spec./Other No.	7. Rev.
N/A	N/A	Environmental Sample	N/A	N/A

8. Program/Project/Other	9. Safety Class	10. ASME Code Items
200-BP-1 O.U.	N/A	☐ Yes ☒ No (If yes, notify authorized inspector)

11. Supplier Name/Address	12. Notification of Potential Occurence Required
Weston Analytical	☐ Yes ☒ No

13. Code: Lot/Heat/Serial	14. Lot Size	15. Sample	16. Qty. Acc.	17. Inspection Criteria
N/A	N/A	N/A ~~B079H8~~ ~~B079H9~~ ~~B079J0~~ JMD 11/25/92	N/A	☐ Dwg. ☐ Spec. ☐ Insp. Plan ☒ Other WHC-CM-7-7, 5.1 Chain of Custody

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
1	Original chain of custody ~~for~~ JMD 11/25/92 samples B079H8, B079H9 and B079J0 found in the 200-BP-1 6th Round (Second Semi-Annual) Shipping Binder. A copy of ~~this~~ JMD 11/25/92 this chain of custody accompanied these samples to the laboratory.	Continue with analysis. Original Chain of Custody was submitted to the Lab.

20. Originator's Signature	Date	23. Design Document Change Required?
Jeffrey A. Lerch	11/25/92	☐ Yes, Doc. No. _____ ☐ No
21. Cognizant QA Manager's Signature	**Date**	**24. Corrective Action Required?**
[signature]	12/28/92	☐ Yes, No. _____ ☐ No

Disp. App.	25. Cognizant Engineer	Date	26. Technical Rep.	Date	Signature/Org.	Date
	MA Buckingham	3/8/93				
	QA Engineer	Date	Signature/Org.	Date	Signature/Org.	Date
	RL Hand	3/8/93				

Close	27.
	Accept ✓ Reject _____ Follow on NCR _____ QA/C Personnel [signature] 3/8/93 Date

A-7310-104 (10/91)

9613403.121 QUALITY ASSURANCE

NONCONFORMANCE REPORT DISTRIBUTION

1. FROM:	2. MSIN:	3. DATE:
Environmental QA	H4-16	12/21/92

4. NCR No.:	5. Initiation, Disposition, or Closure (I, D, C):
050520 EQA-92-116	

6. TO:		MSIN	I	D	C
Cognizant Engineer	MA Buckmaster	H6-03			
Cognizant Quality Engineer	RL Hand	H4-16			
Originator	JA Lerch	T6-08			
Q. A. Manager	N/A				
Cognizant QE Manager	TL Bennington	H4-16			
Facility Manager	N/A				
Engineering Records	N/A				
Safety	N/A				
QSDM		L4-86			
Other: JCS Package	N/A				
Q. C.	N/A				
Buyer (Procurement)	N/A				
P.O. File (Procurement)	N/A				
Vendor File (Procurement)	N/A				
	EQA Files	H4-16			
	JH Kessner	T6-08			

7. QST Codes

Subject:	Cause:	Contr. Factor:	PPG:
PR-02-003	PN-002		

8. Responsible Action Party:	Org Code:
M. Buckmaster	81320

A-6000-816 (09/

WESTON Analytics Use Only

92KCL 278

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

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: 10/14/92 Date Due: 11/18/92

Account #: WS-HANFORD

Refrigerator #		1	(Liquid)			4	4	4	4	4	4						
#/Type Container	Liquid																
	Solid	3oz				1P	1P	1P	1P	1P	1P						
Volume	Liquid																
	Solid	40ml				500	250	1L	1L	1L	1L						
Preservatives		—				—	H2SO4	—	HNO3	NAOH	HNO3						
ANALYSES REQUESTED →		ORGANIC				Anions	NO2 NO3	AIKL TDS	INORG		Sol Metals						
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
WESTON Analytics Use Only		06244				ICP4 ICS4 ICCL ICFL	IN3N2	IAIKL ITDS	MISSLTOW	MS.TO	ICNTO	MISSLSOW	MS.SO				

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	06244				ICP4 ICS4 ICCL ICFL	IN3N2	IAIKL ITDS	MISSLTOW	MS.TO	ICNTO	MISSLSOW	MS.SO				
1	B079F7			W	10/12						✓	✓	✓	✓	✓							
2	B079F8						✓										✓					
3	B079F9										✓	✓	✓	✓	✓							
4	B079H8																✓					
5	B079H9						✓															
6	B079J0										✓	✓	✓	✓	✓							
7	B079P4																✓					
8	B079P5						✓															
9	B079P6										✓	✓	✓	✓	✓							
10	B07989																					

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Anions = ICP04, ICS04, ICCL, ICFL

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) 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'd Y or N

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

Anions out of hold

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Emery	YMPson	10/14	1415		10/14/92		
	10/14/92						

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# 0.7 Cooler# 5 Pk 232 381-596a

9613403.1212

000002

WESTON Analytics Use Only

9210L298

Custody Transfer Record/Lab Work Request

WESTON

Page 2 of 2

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #:
Project Contact/Phone #:
AD Project Manager: [illegible]
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #																		
#/Type Container	Liquid	3gl						1P			1P	2gl	1P			
	Solid															
Volume	Liquid	40ml						1L			1L	250	4L			
	Solid															
Preservatives		—						HNO3			HCL	—	—			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			Sol metab	Metal	CN	TC-99	Tritium	Radchem			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	WESTON Analytics Use Only													
								06/4H						mnssau mB, SC			ISUB				
S - Soil	11	B07990			W	10/12		✓						✓							
SE - Sediment	12	B07991						✓													
SO - Solid	13	B07EL6															✓	✓	✓		
SL - Sludge																					
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

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

WESTON Analytics Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) 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'd Y or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Emery	YMason	10/14	1415				
	PRS 10/15/12			PRS	10/15/12		

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

9613403.1213

000003

9613403.1214

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-BP-1

Ice Chest No. SML-232

Bill of Lading/Airbill No. 2521568808

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Telephone (509)376-5045

Collection Date 10-12-92

Field Logbook No. WHE-V-4461

Offsite Property No. ~~W92-~~ W93-0-0001-2 BW 10-12-92

9210L298

Sample Identification

(1) B074F7
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (UNFILTERED)
- 1, 500ml, G, WATER, ANIONS(PO4,SO4,Cl,F)
- 1, 250ml, P, WATER, NO2/NO3 (H2SO4)
- 1, 1L, P, WATER, ALKALINITY/TDS
- 1, 1L, P, WATER, CLP-CYANIDE(NaOH)

(2) B074F8
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

(3) B074F9
- 3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody

Chain of Possession		(Sign and Print Names)
Relinquished by: B. WHITTEN	Received by: B. WHITTEN	Date/Time: 10-13-92 0800
Relinquished by: B. WHITTEN	Received by:	Date/Time:
Relinquished by: Emery	Received by: Brian E. Shaffer	Date/Time: 10/14/92 1415
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

9213403.1215 0000005

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Cellberti Date Sampled 10-12-92 Time 0900 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B079F7	1; 1L; P;	WATER	TAL METALS + Bi (HNO3); UNFILTERED
	1; 500mL; G	WATER	ANIONS (PO4, SO4, Cl, F)
	1; 250mL; P	WATER	NO2-NO3 (H2SO4)
	1; 1L; P	WATER	ALKALINITY, TDS
	1; 1L; P	WATER	CLP-CYANIDE (NaOH)
B079F8	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
B079F9	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92-0-0001-24
			BOL: 2521568808
			TASK: 92-300

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90

9613403.1216 000006

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 200-BP-1

Collection Date 10-12-92

Ice Chest No. SML-246

Field Logbook No. WHC-N-4461

Bill of Lading/Airbill No. 2521568808

Offsite Property No. W93-0-0001-24

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

G2101278

Sample Identification

(4) B079H8
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (UNFILTERED)
- 1, 500ml, G, WATER, ANIONS(PO4,SO4,Cl,F)
- 1, 250ml, P, WATER, NO2/NO3 (H2SO4)
- 1, 1L, P, WATER, ALKALINITY/TDS
- 1, 1L, P, WATER, CLP-CYANIDE(NaOH)

(5) B079H9
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

(4) B079J0
- 3, 40ml, Gs, WATER, CLP-VOA

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

Relinquished by:	Received by:	Date/Time:
B. WHITEN	B. WHITEN	10-13-92 0800
B. WHITEN		
Emery	Brian E Shaffer	10/14/92 1415

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613403.1217 0000007

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 10-12-92 Time 1037 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B079H8	1; 1L; P;	WATER	TAL METALS + Bi (HNO3); UNFILTERED
	1; 500mL; G	WATER	ANIONS (PO4, SO4, Cl, F)
	1; 250mL; P	WATER	NO2-NO3 (H2SO4)
	1; 1L; P	WATER	ALKALINITY, TDS
	1; 1L; P	WATER	CLP-CYANIDE (NaOH)
B079H9	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
B079J0	3; 40mL; Gs	WATER	CLP-VOA
			OPC: ~~W92-~~ W93-0-0001-24 (AW 10-13-92)
			BOL: 2521568808
			TASK: 92-300

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90

9613403.1218 0000008

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 200-BP-1

Collection Date 10-12-92

Ice Chest No. SML-232

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 2521568808

Offsite Property No. ~~W92-~~ W930-0-000

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

(7) B079F4
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (UNFILTERED)
- 1, 500ml, G, WATER, ANIONS(PO4,SO4,Cl,F)
- 1, 250ml, P, WATER, NO2/NO3 (H2SO4)
- 1, 1L, P, WATER, ALKALINITY/TDS
- 1, 1L, P, WATER, CLP-CYANIDE(NaOH)

(8) B079F5
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

(9) B079F6
- 3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: L.D. Walker	Received by: B. WHITTON	Date/Time: 10-13-92 0800
Relinquished by: B. WHITTON	Received by:	Date/Time:
Relinquished by: Emery	Received by: Brian E Shaffer	Date/Time: 10/14/92 1415
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

9613403.1219 0 0 0 0 0 0 0

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 10-12-92 Time 0830 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B079P4	1; 1L; P;	WATER	TAL METALS + Bi (HNO3); UNFILTERED
	1; 500mL; G	WATER	ANIONS (PO4, SO4, Cl, F)
	1; 250mL; P	WATER	NO2-NO3 (H2SO4)
	1; 1L; P	WATER	ALKALINITY, TDS
	1; 1L; P	WATER	CLP-CYANIDE (NaOH)
B079P5	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
B079P6	3; 40mL; Gs	WATER	CLP-VOA
			OPC: ~~W92-~~ W93-0-0-0001-24
			BOL: 2521568808
			TASK: 92-300

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Title Date

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9613403.1220 000010

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 200-BP-1

Collection Date 10-12-92

Ice Chest No. SAL-246

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 2521568808

Offsite Property No. ~~W92~~ W93-0-0001-0

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

(10) B07997
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (UNFILTERED)
- 1, 500ml, G, WATER, ANIONS(PO4,SO4,Cl,F)
- 1, 250ml, P, WATER, NO2/NO3 (H2SO4)
- 1, 1L, P, WATER, ALKALINITY/TDS
- 1, 1L, P, WATER, CLP-CYANIDE(NaOH)

(11) B07990
- 1, 1L, P, WATER, TAL METALS+Bi(HNO3) (FILTERED)

(12) B07991
- 3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: L.D. Walker	Received by: B. WHITTEN	Date/Time: 10-13-92 0800
Relinquished by: B. WHITTEN	Received by:	Date/Time:
Relinquished by: Emery Brian E. Shaff	Received by: Brian E. Shaff	Date/Time: 10/14/92 1415
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

9613403.1221

Westinghouse
Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 10-12-92 Time 0830 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B07989	1; 1L; P;	WATER	TAL METALS + Bi (HNO3); UNFILTERED
	1; 500mL; G	WATER	ANIONS (PO4, SO4, Cl, F)
	1; 250mL; P	WATER	NO2-NO3 (H2SO4)
	1; 1L; P	WATER	ALKALINITY, TDS
	1; 1L; P	WATER	CLP-CYANIDE (NaOH)
B07990	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
B07991	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92- W93-0-0-0001-24
			BOL: 2521568806
			TASK: 92-300

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90

9613403.1222 000012

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 200-BP-1

Collection Date 10-12-92

Ice Chest No. SML-246

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 2521568819

Offsite Property No. W92-W93-0-0001-2

Method of Shipment EMERY

Shipped to ECOTECK/WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

(13) BO 7FL6

1, 1L, P, WATER, Tc-99(HCl)

2,250ml ~~1, 500ml~~, Gs, WATER, TRITIUM

1, 4L, P, WATER, TOTAL ALPHA, TOTAL BETA, GAMMA SPEC, Sr-90, Pu-238/239/240, TOTAL URANIUM

LW 10-12-92

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: L.D. Walker LD Walker	Received by: Bill Whitten B. WHITTEN	Date/Time: 10-13-92 0800
Relinquished by: Bill Whitten B. WHITTEN	Received by:	Date/Time:
Relinquished by: Emery	Received by: Brian E. Shaffer	Date/Time: 10/15/92 ~~0800~~ 1415
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

9613403.1223 0000013

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 10-12-92 Time 0830 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B07FL6	1; 1L; P	WATER	Tc-99
	2; 250mL; Gs	WATER	TRITIUM
	1; 4L; P	WATER	TOTAL ALPHA, TOTAL BETA, GAMMA SPEC., Sr-90,
			Pu-238/239/240, TOTAL URANIUM (HNO3)
			THESE SAMPLES WILL BE
			SHIPPED TO ECOTECK BY WESTON
			Bill White 10-13-92
			BW 10-13-92
			OPC: ~~W92-~~ W93-0-0001-23
			BOL: 2521568819
			TASK: 92-300

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Title Date

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

NATURE AND TALLY RECORD

REFERENCE NO.: W93-0-0001#2

9613403.1224

0 0 0 0 2 9 7

SHIPPER NAME AND ADDRESS

WESTINGHOUSE SHIPPING DEPT (509) 376-6665
G2-06 U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD COMPANY
2355 STEVENS DRIVE 1163 BUILDING
PO BOX 1970
RICHLAND WA 99352

CONSIGNEE NAME AND ADDRESS

JOSIE KING
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341

Pieces	Weight	Description/Marks	Emery Authorization No.
2	114 LBS	COOLER ID: SML 232 52# SML 246 62# WATER SAMPLES	

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

SPECIAL HANDLING INSTRUCTIONS

CONSIGNEE COPY

FORM OF PAYMENT

Check ☐ GBL ☐ FCCOD ☐

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

Shipper's Account Number: 850281585

EMERY WORLDWIDE — A CF Company

SERVICES

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

INTERNATIONAL: Express ☐ Standard Plus ☐ Preferred ☐ Standard ☐

Date: 10-13-92 Origin: PGC Shipment No.: 25215688

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA 99352 Canada ☐

To:
JOSIE KING
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341 Canada ☐ Hold for Pick Up ☐

Tariff Dest. $

EMERY WOR will accept C check with a being assun Shipper, inc. but not limi non-paymen and misrepre

Customer's Reference Numbers: W81232 PL3EA W93-0-0001#2

Consignee's Account Number: E

Description	Pcs.	L	W	H	Total Pieces	Total Weight
2 COOLER ID: SML232 52# SML246 62# WATER SAMPLES	2	25	16	17	2	114

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

Declared $

25215688 08

Remarks: OVERNIGHT DELIVERY SIGNATURE SECURITY SERVIC

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

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

Shipper's Signature: x

Domestic Shipments: Free Domicile ☐ Commodity Code

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

International Customs Value | International Insurance

Base Charge $

Total Transportation Charges | Other Charges/Advance at Origin $

3PHL A

Terms and Conditions on Back

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

Report Date: 11/06/92 20:34

RFW Batch Number: 9210L298 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1a

	Cust ID:	B079F9		B079F9		B079F9		B079J0		B079P6		B07991	
Sample Information	RFW#:	003		003 MS		003 MSD		006		009		012	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	110	%	115 *	%	103	%	100	%	100	%	104	%
	Bromofluorobenzene	108	%	112	%	99	%	99	%	99	%	101	%
	1,2-Dichloroethane-d4	107	%	109	%	98	%	101	%	102	%	105	%
			fl		fl		fl		fl		fl		fl
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		7	JB	5	JB	4	JB	8	JB	8	JB	8	JB
Acetone		5	JB	2	JB	4	JB	10	U	10	U	10	U
Carbon Disulfide		10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethene		10	U	127	%	119	%	10	U	10	U	10	U
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	109	%	103	%	10	U	10	U	10	U
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	120	%	112	%	10	U	10	U	10	U
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	120	%	110	%	10	U	10	U	10	U

*= Outside of EPA CLP QC limits.

9613403.1225 000016

RFW Batch Number: 9210L298 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1b

Cust ID:	B079F9	B079F9	B079F9	B079J0	B079P6	B07991
RFW#:	003	003 MS	003 MSD	006	009	012
Chlorobenzene	10 U	120 %	110 %	10 U	10 U	10 U
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.

9613404.1226 000017

9613403.1227 000035

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B079F9

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-003

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

Lab File ID: W102310

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/23/92

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	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	7	JB
67-64-1	Acetone	5	JB
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

9613403.1228

1E

0 0 0 0 3 6

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B079F9

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-003

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

Lab File ID: W102310

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/23/92

GC Column: SP1000 ID: 2.00(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/L

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

9613403.1229 1A 000042 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B079J0

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-006

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

Lab File ID: W102406

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

9613403.1230 IE 000043 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B079J0

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-006

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

Lab File ID: W102406

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(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/L

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

9613403.1231 0 0 0 0 4 9 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B079P6

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER Lab Sample ID: 9210L298-009

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W102407

Level: (low/med) LOW Date Received: 10/14/92

% Moisture: not dec. Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(mm) Dilution Factor: 1.00

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

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

9613403.1232

0 0 0 0 5 0 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BO79P6

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-009

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

Lab File ID: W102407

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(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/L

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

9613403.1233 IA 000056 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B07991

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER Lab Sample ID: 9210L298-012

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W102408

Level: (low/med) LOW Date Received: 10/14/92

% Moisture: not dec. Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(mm) Dilution Factor: 1.00

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

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

9613403.1234 0 0 0 0 5 7 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07991

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-012

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

Lab File ID: W102408

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(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/L

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

9613403.1235 0000001

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

Client: WESTINGHOUSE HANFORD
RFW #: 9210L298

W.O. #:06168-002-001-9999-00
Date Received:10-14-92

INORGANIC

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

1. All sample holding times as required by 40CFR136 were met with the exception of Phosphate by IC (received past hold).

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

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

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

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits with the exception of Nitrate Nitrite. 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) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

ORIGINAL COPY

JAN 1993
RECEIVED
OSM DMO

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

11/2/92
Date

kls/i10-298

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/27/92

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B079F7	Alkalinity	100	MG/L	2.0
		Chloride by IC	6.0	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
		Cyanide, Total	20.0 u	UG/L	20.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	36.3	MG/L	2.5
		Nitrate Nitrite	15.9	MG-N/L	2.5
		Total Dissolved Solids	311	MG/L	5.0
-004	B079H8	Alkalinity	100	MG/L	2.0
		Chloride by IC	5.6	MG/L	0.25
		Fluoride by IC	0.60	MG/L	0.50
		Cyanide, Total	13.0	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	40.0	MG/L	2.5
		Nitrate Nitrite	13.7	MG-N/L	2.5
		Total Dissolved Solids	303	MG/L	5.0
-007	B079P4	Alkalinity	105	MG/L	2.0
		Chloride by IC	13.4	MG/L	2.5
		Fluoride by IC	0.55	MG/L	0.50
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	47.4	MG/L	2.5
		Nitrate Nitrite	1.6	MG-N/L	0.10
		Total Dissolved Solids	372	MG/L	5.0
-010	B07989	Alkalinity	105	MG/L	2.0
		Chloride by IC	13.3	MG/L	2.5
		Fluoride by IC	0.54	MG/L	0.50
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	47.8	MG/L	2.5
		Nitrate Nitrite	1.9	MG-N/L	0.20
		Total Dissolved Solids	357	MG/L	5.0

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

Client : WESTINGHOUSE HANFORD
RFW# : 9210L298

W.O. #: 06168-002-001-9999-00
Date Received: 10-14-92

CLP METALS

The set of samples consisted of eight (8) water samples collected on 10-12-92.

The samples were analyzed according to criteria set forth in CLP SOW 3/90.

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

1. Solubles and totals were digested within the same digestion batch; therefore, will have the same flags.

2. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

3. All ICV and CCV values were within control limits.

4. All ICB and CCB values were within control limits.

5. All preparation blank values were within control limits.

6. All LCS results were within the 80-120% control limits.

7. All matrix spike recoveries were within the 75-125% control limits with the exception of lead. All exceptions are flagged with a "N" on the CLP forms.

8. All duplicate analyses were within the 20% RPD control limit.

9. Selenium sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with a "S" according to CLP protocol.

10. For MSA, results reported on Form 8 are calculated from absorbance values. Results reported on other forms are based on concentration. As indicated in the SOWILM01.0, page B-32, differences due to rounding may be found between the MSA values on Form 8 and the results reported on the other forms.

WESTON

11. 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.

12. 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).

13. Quarterly Detection Limits, ICP Interelement Correction Factors and ICP Linear Ranges for IC3 are included in this package, but do not appear on EDD.

14. 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.

15. Batch #92L2620-LC1 for graphite furnace metals was double-spiked.

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

1.8.93
Date

mlj/clp-met.nar

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

Client: WESTINGHOUSE HANFORD
RFW #: 9210L298

W.O. #: 06168-002-001-9999-00
Date Received: 10-14-92

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.

Ray Emry for

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

1.8.93
Date

mlj\clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B079F7	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	150	u	UG/L	150
		Calcium, Total	37400		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	100	u	UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	6080		UG/L	5000
		Magnesium, Total	12200		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	23500		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-002	B079F8	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.7		UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	150	u	UG/L	150
		Calcium, Soluble	38600		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	5550		UG/L	5000
		Magnesium, Soluble	12600		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	24100		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-004	B079H8	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	150	u	UG/L	150
		Calcium, Total	39200		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	186		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	6030		UG/L	5000
		Magnesium, Total	11100		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	23400		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	40.4		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-005	B079H9	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	150	u	UG/L	150
		Calcium, Soluble	38200		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	6530		UG/L	5000
		Magnesium, Soluble	10800		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	22900		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	6.0		UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	31.6		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-007	B079P4	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	150	u	UG/L	150
		Calcium, Total	45100		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	527		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	6790		UG/L	5000
		Magnesium, Total	13100		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	17900		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-008	B079P5	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	150	u	UG/L	150
		Calcium, Soluble	48300		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	6880		UG/L	5000
		Magnesium, Soluble	14000		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	18800		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-010	B07989	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	150	u	UG/L	150
		Calcium, Total	51000		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	478		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	6970		UG/L	5000
		Magnesium, Total	14700		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	19800		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	6.7		UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/04/93

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-011	B07990	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	150	u	UG/L	150
		Calcium, Soluble	50800		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	6290		UG/L	5000
		Magnesium, Soluble	14700		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	19700		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079F7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029801

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	71.90	B		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	9.10	B		F
7440-39-3	Barium	29.00	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	37400.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	65.90	B		P
7439-92-1	Lead	2.00	U	N	F
7439-95-4	Magnesium	12200.00		E	P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6080.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	23500.00		E	P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	22.90	B		P
7440-66-6	Zinc	9.80	B		P
	Cyanide	20.00	U		C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079F8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029802

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	10.70			F
7440-39-3	Barium	30.20	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	38600.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	15.00	U		P
7439-92-1	Lead	2.00	U	N	F
7439-95-4	Magnesium	12600.00		E	P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	5550.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	24100.00		E	P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	15.80	B		P
7440-66-6	Zinc	7.00	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079H8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029804

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	9.00	B		F
7440-39-3	Barium	26.80	B		P
7440-41-7	Beryllium	1.00			P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	39200.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	186.00			P
7439-92-1	Lead	2.00	U	N	F
7439-95-4	Magnesium	11100.00		E	P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6030.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	23400.00		E	P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	21.20	B		P
7440-66-6	Zinc	40.40			P
	Cyanide	13.00			C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079H9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029805

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	9.30	B		F
7440-39-3	Barium	27.40	B		P
7440-41-7	Beryllium	1.10	B		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	38200.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	21.30	B		P
7439-92-1	Lead	6.00		NW	F
7439-95-4	Magnesium	10800.00		E	P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6530.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	22900.00		E	P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	22.90	B		P
7440-66-6	Zinc	31.60			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9613403.1252 0000043

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079P4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029807

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	3.00	B		F
7440-39-3	Barium	47.20	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	45100.00		E	P
7440-47-3	Chromium	9.80	B		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	527.00			P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	13100.00		E	P
7439-96-5	Manganese	4.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6790.00			P
7782-49-2	Selenium	2.40	B	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	17900.00		E	P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	15.40	B		P
7440-66-6	Zinc	7.00			P
	Cyanide	10.00	U		C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079P5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029808

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	57.50	B		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	2.90	B		F
7440-39-3	Barium	49.70	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	48300.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	40.60	B		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	14000.00		E	P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6880.00			P
7782-49-2	Selenium	2.30	B	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	18800.00		E	P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	16.20	B		P
7440-66-6	Zinc	7.00	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07989

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029810

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	3.00	B		F
7440-39-3	Barium	54.10	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	51000.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	478.00			P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	14700.00		E	P
7439-96-5	Manganese	4.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6970.00			P
7782-49-2	Selenium	6.70		S	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	19800.00		E	P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	17.10	B		P
7440-66-6	Zinc	7.00	U		P
	Cyanide	10.00	U		C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07990

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029811

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	3.20	B		F
7440-39-3	Barium	51.30	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	50800.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	45.60	B		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	14700.00		E	P
7439-96-5	Manganese	4.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6290.00			P
7782-49-2	Selenium	2.20	B	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	19700.00		E	P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	12.90	B		P
7440-66-6	Zinc	7.00	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9613403.1256

VALIDATION SUMMARY

9613403.1257 9210L298-WES-911

MEMORANDUM

TO: 200-BP-1 Project QA Record April 15, 1993

FR: Susan Winter, Golder Associates Inc.

RE: VOLATILE ORGANIC ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE 9210L298-WES-911

INTRODUCTION

This memo presents the results of data validation on data package 9210L280-WES-898 consisting of four (4) low level water samples submitted for volatile organic analysis. The samples were analyzed by Weston Analytics according to the CLP protocol for TCL volatile compounds. A list of the samples validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B079F9	10/12/92	WATER
B079J0	10/12/92	WATER
B079P6	10/12/92	WATER
B07991	10/12/93	WATER

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

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 associated compounds.

Completeness. The data package was complete for all requested analyses. Four samples were validated in this data set with a total of 132 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

No deficiencies were identified for the volatile fraction which required rejection of data.

MINOR DEFICIENCIES

Calibration

Initial calibration verification (ICV) and continuing calibration verification (CCV) relative response factors (RRF) for 1,1,2,2-tetrachloroethane were less than the control limit of 0.5. Therefore, the associated sample results have been qualified as estimated (UJ).

Blanks

Methylene chloride and acetone were detected in the laboratory method blank. Therefore, the associated sample results have been qualified as undetected (U).

REFERENCES

WHC, 1991, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision A, November 1991. Westinghouse Hanford Company, Richland, Washington.

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

9613403.1259

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.

U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.

UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.

R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

9613403.1261

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9613403.1262

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9210L298	REVIEWER: [illegible]	DATE: 4/6/93	PAGE 1 OF 1
COMMENTS: Volatiles			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
1,1,2,2-tetra chloroethane	UJ	All	ICV & CCV RRF out of CL (<45)
MeCl2	U	All	present in blank
Acetone	U	B079F9	↓
↓	↓	B079F9MS/MSD	↓

9613403.1263

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9613403.1264

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

000035 CLIENT SAMPLE NO.

B079F9

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER — Lab Sample ID: 9210L298-003

Sample wt/vol: 5.00 (g/mL) ML — Lab File ID: W102310

Level: (low/med) LOW — Date Received: 10/14/92

% Moisture: not dec. — Date Analyzed: 10/23/92

GC Column: SP1000 ID: 2.00(mm) — Dilution Factor: 1.00

Soil Extract Volume: (uL) — Soil Aliquot Volume: (uL)

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

4/6/93

9613403.1265

1A

0 0 0 0 0 4 2 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B079J0

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER — Lab Sample ID: 9210L298-006

Sample wt/vol: 5.00 (g/mL) ML — Lab File ID: W102406

Level: (low/med) LOW — Date Received: 10/14/92

% Moisture: not dec. — Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(mm) — Dilution Factor: 1.00

Soil Extract Volume: (uL) — Soil Aliquot Volume: (uL)

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

4/6/93

9613403.1266

1A

0000049 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B079P6

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER — Lab Sample ID: 9210L298-009

Sample wt/vol: 5.00 (g/mL) ML — Lab File ID: W102407

Level: (low/med) LOW — Date Received: 10/14/92

% Moisture: not dec. — Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(mm) — Dilution Factor: 1.00

Soil Extract Volume: (uL) — Soil Aliquot Volume: (uL)

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

4/6/93

9613403.1267

1A

000056 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B07991

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-012

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

Lab File ID: W102408

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/24/92

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

4/6/93

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9613403.1269

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 4/6/93
LABORATORY: Weston	CASE:	SDG: 9210L298
SAMPLES/MATRIX: Water		
B079F9		
J0		
P6		
91		

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	—	—	✓

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	✓		

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

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

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.

4.2. FIELD BLANKS

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

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

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

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

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

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

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

5.2 MATRIX SPIKE RECOVERY

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

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >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? 4/6/93 Yes No N/A

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Blank - see comments

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 spectrum present in the sample spectrum?	Yes	No	N/A

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

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

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

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

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

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

COMMENTS (attach additional sheets as necessary):

- The compounds, $MeCl_2$ and acetone, were detected in the blank assoc. with samples B079J0, B079P6, and B0799L. However, the retention times for these cmpds. in the blank are out of the ±0.6 min control limit. The assoc. samples were still blank adjusted since the spectra matched the assoc. compound.

- Acetone was detected in samples B079J0, B079P6, and B0799L - but was not reported by the laboratory. These results were not corrected since they would then be corrected again to 10u for the blank adjustment.

4/6/93

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

DATE RECEIVED: 10/14/92 RFW LOT # :9210L298

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B079F9	003	W	92LVW241	10/12/92	N/A	10/23/92 11
B079F9	003 MS	W	92LVW241	10/12/92	N/A	10/23/92 11
B079F9	003 MSD	W	92LVW241	10/12/92	N/A	10/23/92 11
B079J0	006	W	92LVW242	10/12/92	N/A	10/24/92 12
B079P6	009	W	92LVW242	10/12/92	N/A	10/24/92 12
B07991	012	W	92LVW242	10/12/92	N/A	10/24/92 12

LAB QC:

VBLK	MB1	W	92LVW241	N/A	N/A	10/23/92
VBLK	MB1	W	92LVW242	N/A	N/A	10/24/92

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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9210L298

Instrument ID: 1050W Calibration Date(s): 10/22/92 10/22/92

Heated Purge: (Y/N) N Calibration Time(s): 1213 1407

GC Column: SP1000 ID: 2.00(mm)

LAB FILE ID: RRF10 = W102207 RRF20 = W102206
RRF50 = W102203 RRF100= W102208 RRF200= W102204

COMPOUND	RRF10	RRF20	RRF50	RRF100	RRF200	RRF	% RSD	MIN RRF
Chloromethane	0.831	0.887	0.862	0.736	0.816	0.826	7.0	
Bromomethane *	1.097	1.131	1.096	0.957	1.025	1.061	6.6*	0.100
Vinyl Chloride *	0.957	1.041	0.967	0.854	0.990	0.962	7.1*	0.100
Chloroethane	0.720	0.729	0.672	0.615	0.711	0.689	6.8	
Methylene Chloride	1.842	1.701	1.189	1.155	1.141	1.406	24.1	
Acetone	1.373	0.819	0.508	0.448	0.433	0.716	55.7	
Carbon Disulfide	2.051	2.154	2.085	1.994	2.397	2.136	7.3	
1,1-Dichloroethene *	1.081	1.074	1.057	0.960	0.969	1.028	5.7*	0.100
1,1-Dichloroethane *	2.416	2.323	2.332	2.119	2.154	2.269	5.6*	0.200
1,2-Dichloroethene (total)	1.301	1.290	1.258	1.140	1.184	1.235	5.7	
Chloroform *	2.759	2.747	2.809	2.630	2.565	2.702	3.7*	0.200
1,2-Dichloroethane *	2.576	2.647	2.559	2.359	2.285	2.485	6.2*	0.100
2-Butanone	0.098	0.141	0.122	0.111	0.114	0.117	13.5	
1,1,1-Trichloroethane *	0.523	0.517	0.512	0.491	0.539	0.516	3.4*	0.100
Carbon Tetrachloride *	0.473	0.489	0.490	0.472	0.525	0.490	4.4*	0.100
Bromodichloromethane *	0.466	0.493	0.509	0.502	0.567	0.507	7.3*	0.200
1,2-Dichloropropane	0.331	0.336	0.322	0.296	0.300	0.317	5.7	
cis-1,3-Dichloropropene *	0.401	0.420	0.416	0.415	0.459	0.422	5.2*	0.200
Trichloroethene *	0.478	0.487	0.453	0.418	0.432	0.454	6.5*	0.300
Dibromochloromethane *	0.399	0.432	0.457	0.497	0.537	0.464	11.7*	0.100
1,1,2-Trichloroethane *	0.302	0.277	0.288	0.272	0.274	0.283	4.4*	0.100
Benzene *	0.774	0.775	0.768	0.690	0.733	0.748	4.9*	0.500
trans-1,3-Dichloropropene *	0.389	0.425	0.436	0.407	0.457	0.423	6.2*	0.100
Bromoform *	0.281	0.311	0.326	0.402	0.432	0.350	18.2*	0.100
4-Methyl-2-pentanone	0.416	0.447	0.400	0.377	0.373	0.403	7.5	
2-Hexanone	0.348	0.394	0.352	0.267	0.291	0.330	15.4	
Tetrachloroethene *	0.544	0.530	0.512	0.484	0.481	0.510	5.4*	0.200
1,1,2,2-Tetrachloroethane *	0.413	0.449	0.422	0.437	0.425	0.429	3.3*	0.500 X
Toluene *	0.650	0.638	0.635	0.583	0.597	0.621	4.7*	0.400
Chlorobenzene *	0.965	0.957	0.928	0.841	0.845	0.907	6.6*	0.500
Ethylbenzene *	0.465	0.458	0.449	0.410	0.407	0.438	6.2*	0.100
Styrene *	0.885	0.782	0.799	0.751	0.759	0.795	6.7*	0.300
Xylene (total) *	0.531	0.527	0.494	0.461	0.460	0.495	6.9*	0.300
Toluene-d8	0.976	0.953	0.942	0.793	0.904	0.914	7.9	
Bromofluorobenzene *	0.880	0.808	0.775	0.640	0.733	0.767	11.6*	0.200
1,2-Dichloroethane-d4	2.331	2.382	2.351	1.963	2.069	2.219	8.6	

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI VOA 3/90

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4/6/93

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9210L298

Instrument ID: 1050W Calibration Date: 10/23/92 Time: 0923

Lab File ID: W102302 Init. Calib. Date(s): 10/22/92 10/22/92

Heated Purge: (Y/N) N Init. Calib. Times: 1213 1407

GC Column: SP1000 ID: 2.00(mm)

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Chloromethane	0.826	0.929		-12.5	
Bromomethane	1.061	1.136	0.100	-7.1	25.0
Vinyl Chloride	0.962	1.081	0.100	-12.4	25.0
Chloroethane	0.689	0.779		-13.1	
Methylene Chloride	1.406	1.337		4.9	
Acetone	0.716	0.619		13.5	
Carbon Disulfide	2.136	2.264		-6.0	
1,1-Dichloroethene	1.028	1.009	0.100	1.8	25.0
1,1-Dichloroethane	2.269	2.154	0.200	5.1	25.0
1,2-Dichloroethene (total)	1.235	1.192		3.5	
Chloroform	2.702	2.626	0.200	2.8	25.0
1,2-Dichloroethane	2.485	2.356	0.100	5.2	25.0
2-Butanone	0.117	0.109		6.8	
1,1,1-Trichloroethane	0.516	0.510	0.100	1.2	25.0
Carbon Tetrachloride	0.490	0.504	0.100	-2.9	25.0
Bromodichloromethane	0.507	0.484	0.200	4.5	25.0
1,2-Dichloropropane	0.317	0.285		10.1	
cis-1,3-Dichloropropene	0.422	0.413	0.200	2.1	25.0
Trichloroethene	0.454	0.423	0.300	6.8	25.0
Dibromochloromethane	0.464	0.460	0.100	0.9	25.0
1,1,2-Trichloroethane	0.283	0.266	0.100	6.0	25.0
Benzene	0.748	0.706	0.500	5.6	25.0
trans-1,3-Dichloropropene	0.423	0.386	0.100	8.7	25.0
Bromoform	0.350	0.353	0.100	-0.9	25.0
4-Methyl-2-pentanone	0.403	0.363		9.9	
2-Hexanone	0.330	0.284		13.9	
Tetrachloroethene	0.510	0.507	0.200	0.6	25.0
1,1,2,2-Tetrachloroethane	0.429	0.413	0.500	3.7	25.0
Toluene	0.621	0.598	0.400	3.7	25.0
Chlorobenzene	0.907	0.875	0.500	3.5	25.0
Ethylbenzene	0.438	0.417	0.100	4.8	25.0
Styrene	0.795	0.751	0.300	5.5	25.0
Xylene (total)	0.495	0.467	0.300	5.7	25.0
Toluene-d8	0.914	0.878		3.9	
Bromofluorobenzene	0.767	0.670	0.200	12.6	25.0
1,2-Dichloroethane-d4	2.219	2.124		4.3	

All other compounds must meet a minimum RRF of 0.010.

FORM VII VOA 3/90 Rev.

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9210L298

Instrument ID: 1050W Calibration Date: 10/24/92 Time: 1041

Lab File ID: W102402 Init. Calib. Date(s): 10/22/92 10/22/92

Heated Purge: (Y/N) N Init. Calib. Times: 1213 1407

GC Column: SP1000 ID: 2.00(mm)

COMPOUND	RRF	RRF 50	MIN RRF	%D	MAX %D
Chloromethane	0.826	0.792		4.1	
Bromomethane	1.061	1.037	0.100	2.3	25.0
Vinyl Chloride	0.962	0.932	0.100	3.1	25.0
Chloroethane	0.689	0.664		3.6	
Methylene Chloride	1.406	1.206		14.2	
Acetone	0.716	0.423		40.9	
Carbon Disulfide	2.136	1.922		10.0	
1,1-Dichloroethene	1.028	1.028	0.100	0.0	25.0
1,1-Dichloroethane	2.269	2.181	0.200	3.9	25.0
1,2-Dichloroethene (total)	1.235	1.196		3.2	
Chloroform	2.702	2.665	0.200	1.4	25.0
1,2-Dichloroethane	2.485	2.398	0.100	3.5	25.0
2-Butanone	0.117	0.101		13.7	
1,1,1-Trichloroethane	0.516	0.485	0.100	6.0	25.0
Carbon Tetrachloride	0.490	0.469	0.100	4.3	25.0
Bromodichloromethane	0.507	0.463	0.200	8.7	25.0
1,2-Dichloropropane	0.317	0.295		6.9	
cis-1,3-Dichloropropene	0.422	0.391	0.200	7.3	25.0
Trichloroethene	0.454	0.431	0.300	5.1	25.0
Dibromochloromethane	0.464	0.436	0.100	6.0	25.0
1,1,2-Trichloroethane	0.283	0.262	0.100	7.4	25.0
Benzene	0.748	0.731	0.500	2.3	25.0
trans-1,3-Dichloropropene	0.423	0.390	0.100	7.8	25.0
Bromoform	0.350	0.313	0.100	10.6	25.0
4-Methyl-2-pentanone	0.403	0.350		13.2	
2-Hexanone	0.330	0.256		22.4	
Tetrachloroethene	0.510	0.490	0.200	3.9	25.0
1,1,2,2-Tetrachloroethane	0.429	0.371	0.500	13.5	25.0
Toluene	0.621	0.614	0.400	1.1	25.0
Chlorobenzene	0.907	0.892	0.500	1.7	25.0
Ethylbenzene	0.438	0.427	0.100	2.5	25.0
Styrene	0.795	0.763	0.300	4.0	25.0
Xylene (total)	0.495	0.476	0.300	3.8	25.0
Toluene-d8	0.914	0.948		-3.7	
Bromofluorobenzene	0.767	0.707	0.200	7.8	25.0
1,2-Dichloroethane-d4	2.219	2.257		-1.7	

X Low 11.10 ✓

4/6/93

All other compounds must meet a minimum RRF of 0.010.

FORM VII VOA 3/90 Rev.

9613403.1281

1A

0000104 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 92LVW241-MB1

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

Lab File ID: W102303

Level: (low/med) LOW

Date Received: 10/23/92

% Moisture: not dec.

Date Analyzed: 10/23/92

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Assoc w/ B079F9 B079F9MS/MSD

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

CAS NO.	COMPOUND	UG/L	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	3	J
67-64-1	Acetone	8	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

4/6/93

x10=30

x10=80

4/6/93

9613403.1282 1A 0000111 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 92LVW242-MB1

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

Lab File ID: W102403

Level: (low/med) LOW

Date Received: 10/24/92 Assoc w

% Moisture: not dec.

Date Analyzed: 10/24/92 B07950

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00 B079P6

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL) ~~B079991~~ B07991

4/6/93

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

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/L	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	J	MD=60
67-64-1	Acetone	6	J	MD=60
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	

4/6/93

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

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

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9210L298

	CLIENT SAMPLE NO.	SMC1 (TOL)#	SMC2 (BFB)#	SMC3 (DCE)#	OTHER	TOT OUT
01	B079F9	110	108	107		0
02	B079F9MS	115*	112	109		1
03	B079F9MSD	103	99	98		0
04	B079J0	100	99	101		0
05	B079P6	100	99	102		0
06	B07991	104	101	105		0
07	VBLKLVW241-MB1	108	108	108		0
08	VBLKLVW242-MB1	96	96	90		0

	QC LIMITS
SMC1 (TOL) = Toluene-d8	(88-110)
SMC2 (BFB) = Bromofluorobenzene	(86-115)
SMC3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of QC limits

D System Monitoring Compound diluted out

No qualification is required.

4/6/93

9613403.1284 LA 0000120

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B079F9MS

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L298-003 MS

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

Lab File ID: W102314

Level: (low/med) LOW

Date Received: 10/14/92

% Moisture: not dec.

Date Analyzed: 10/23/92

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	~~JB~~ U
67-64-1	Acetone	10 ~~2~~	~~JB~~ U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene		SP
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		SP
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene		SP
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~~ U
108-88-3	Toluene		SP
108-90-7	Chlorobenzene		SP
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

4/6/93

SP: SPIKE COMPOUND

FORM 1 VOA

3/90

9613403.1285 1A 0n00127 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B079F9MSD

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER — Lab Sample ID: 9210L298-003 MSD

Sample wt/vol: 5.00 (g/mL) ML — Lab File ID: W102315

Level: (low/med) LOW — Date Received: 10/14/92

% Moisture: not dec. — Date Analyzed: 10/23/92

GC Column: SP1000 ID: 2.00(mm) — Dilution Factor: 1.00

Soil Extract Volume: (uL) — Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	Q
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	5 ~~JB~~	U	U
67-64-1	Acetone	10 ~~JB~~	U	U
75-15-0	Carbon Disulfide	10	U	
75-35-4	1,1-Dichloroethene		SP	
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		SP	
124-48-1	Dibromochloromethane	10	U	
79-00-5	1,1,2-Trichloroethane	10	U	
71-43-2	Benzene		SP	
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~~	U
108-88-3	Toluene		SP	
108-90-7	Chlorobenzene		SP	
100-41-4	Ethylbenzene	10	U	
100-42-5	Styrene	10	U	
1330-20-7	Xylene (total)	10	U	

4/6/93

SP: SPIKE COMPOUND FORM 1 VOA 3/90

9613403.1286

MEMORANDUM

TO: 200-BP-1 Project QA Record April 15, 1993

FR: Susan Winter, Golder Associates Inc.

RE: GENERAL CHEMISTRY ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE 9210L298-WES-911

INTRODUCTION

This memo presents the results of data validation on data package 9210L298-WES-911 consisting of four (4) water samples submitted for general chemistry analysis. The samples were analyzed by Weston Analytics using standard methods for all associated parameters. A list of the samples validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B079F7	10/12/92	WATER
B079H8	10/12/92	WATER
B079P4	10/12/92	WATER
B07989	10/12/92	WATER

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of nitrate+nitrite-N due to the matrix spike and matrix spike duplicate percent recoveries (MS/MSD %R) which were 64% and 69%, respectively.

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

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. Four (4) samples were validated in this data set with a total of 32 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan objectives of 90%.

Data Package: 9210L298-WES-911 Analysis: General Chemistry

MAJOR DEFICIENCIES

No deficiencies were identified for the general chemistry parameters which required rejection of data.

MINOR DEFICIENCIES

Holding Times

Phosphate and total dissolved solids (TDS) analyses were performed out of the required holding times. Therefore, all associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

Spike Recovery

The MS/MSD %R for nitrate+nitrite-N were 64% and 69%, respectively, which is less than the validation limit of 75%, but greater than 30%. Therefore, the associated sample results have been qualified as estimated (J).

REFERENCES

WHC, 1991, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision A, November 1991. Westinghouse Hanford Company, Richland, Washington.

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

9613403.1288

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.

U - Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the analyte was analyzed for and detected. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.

UR - Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.

R - Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

9613403.1290

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9210L298	REVIEWER: [illegible]	DATE: 4/8/93	PAGE 1 OF 1
COMMENTS: Wet Chemistry			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
NO2/NO3	J	All	MS %R < 75%
Phosphate	UJ	All	Analyzed out of HT
TDS	J	All	☆

9613403.1292

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9613403.1293 0000004

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/27/92

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	Q	REPORTING LIMIT
-001	B079F7	Alkalinity	100	MG/L		2.0
		Chloride by IC	6.0	MG/L		0.25
		Fluoride by IC	0.50 u	MG/L		0.50
		Cyanide, Total	20.0 u	UG/L		20.0
		Phosphate by IC	0.25 ~~u~~	MG/L		0.25
		Sulfate by IC	36.3	MG/L		2.5
		Nitrate Nitrite	15.9	MG-N/L		2.5
		Total Dissolved Solids	311	MG/L		5.0
-004	B079H8	Alkalinity	100	MG/L		2.0
		Chloride by IC	5.6	MG/L		0.25
		Fluoride by IC	0.60	MG/L		0.50
		Cyanide, Total	13.0	UG/L		10.0
		Phosphate by IC	0.25 ~~u~~	MG/L		0.25
		Sulfate by IC	40.0	MG/L		2.5
		Nitrate Nitrite	13.7	MG-N/L		2.5
		Total Dissolved Solids	303	MG/L		5.0
-007	B079P4	Alkalinity	105	MG/L		2.0
		Chloride by IC	13.4	MG/L		2.5
		Fluoride by IC	0.55	MG/L		0.50
		Cyanide, Total	10.0 u	UG/L		10.0
		Phosphate by IC	0.25 ~~u~~	MG/L		0.25
		Sulfate by IC	47.4	MG/L		2.5
		Nitrate Nitrite	1.6	MG-N/L		0.10
		Total Dissolved Solids	372	MG/L		5.0
-010	B07989	Alkalinity	105	MG/L		2.0
		Chloride by IC	13.3	MG/L		2.5
		Fluoride by IC	0.54	MG/L		0.50
		Cyanide, Total	10.0 u	UG/L		10.0
		Phosphate by IC	0.25 ~~u~~	MG/L		0.25
		Sulfate by IC	47.8	MG/L		2.5
		Nitrate Nitrite	1.9	MG-N/L		0.20
		Total Dissolved Solids	357	MG/L		5.0

4/6/93

9613403.1294

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9613403.1295

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 4/6/93
LABORATORY: Weston	CASE:	SDG: 9210L298
SAMPLES/MATRIX: Waters		
B079F7		
HB		
P4		
89		

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	—	—	✓

2. HOLDING TIMES

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

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 ≥0.9957	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

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? 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.

HOLDING TIME SUMMARY - FORM B-1

9210L928

SDG:	REVIEWER: [illegible]	DATE: 4/06/93	PAGE 1 OF 1
COMMENTS: Wet Chemistry			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED 4/6/93	DATE PREPARED	DATE ANALYZED 4/6/93	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B079F7	Alkalinity	10/12/92		10/21/92		9	None
H8	Cl-IC			10/19/92		7	
P4	F-IC						
89	PO4-IC						UJ
	SO4-IC						None
	CN			10/21/92		9	
	NO2/NO3			10/20/92		8	
	TDS			10/21/92		9	J

9613403.1299

9613403.1300 000007

ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 10/27/92

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

WESTON BATCH #: 9210L298

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	B079F7	Chloride by IC	58.2	6.0	50.0	104
		Chloride by IC MSD	58.3	6.0	50.0	104
		Fluoride by IC	11.2	0.50u	10.0	112
		Fluoride by IC MSD	10.9	0.50u	10.0	109
		Cyanide, Total	93.3	20.0 u	100	93.3
		Cyanide, Total MSD	110	20.0 u	100	110
		Phosphate by IC	6.0	0.25u	5.0	119
		Phosphate by IC MSD	5.8	0.25u	5.0	115
		Sulfate by IC	87.9	36.3	50.0	103
		Sulfate by IC MSD	87.9	36.3	50.0	103
-010	B07989	Nitrate Nitrite	3.2	1.9	2.0	64.4
		Nitrate Nitrite MSD	3.3	1.9	2.0	69.0
BLANK10	92LAL051-MB1	Alkalinity	98.0	0.50u	100	98.0
		Alkalinity MSD	97.0	0.50u	100	97.0
BLANK20	92LAL051-MB2	Alkalinity	98.0	0.50u	100	98.0
BLANK10	92LIC143-MB1	Chloride by IC	5.0	0.25u	5.0	101
		Chloride by IC MSD	5.0	0.25u	5.0	100
		Fluoride by IC	10	0.50u	10.0	99.9
		Fluoride by IC MSD	10	0.50u	10.0	99.5
		Phosphate by IC	5.0	0.25u	5.0	99.4
		Phosphate by IC MSD	4.9	0.25u	5.0	98.3
		Sulfate by IC	5.0	0.25u	5.0	101
		Sulfate by IC MSD	5.0	0.25u	5.0	100
BLANK10	92LNT187-MB1	Nitrate Nitrite	0.54	0.10u	0.50	108
		Nitrate Nitrite MSD	0.52	0.10u	0.50	103
BLANK20	92LNT187-MB2	Nitrate Nitrite	0.52	0.10u	0.50	105
BLANK30	92LNT187-MB3	Nitrate Nitrite	0.54	0.10u	0.50	107
BLANK40	92LNT187-MB4	Nitrate Nitrite	0.51	0.10u	0.50	102
BLANK50	92LNT187-MB5	Nitrate Nitrite	0.53	0.10u	0.50	106

4/6/93

9613403.1301

MEMORANDUM

TO: 200-BP-1 Project QA Record April 15, 1993

FR: Susan Winter, Golder Associates Inc.

RE: METALS ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE 9210L298-WES-911

INTRODUCTION

This memo presents the results of data validation on data package 9210L298-WES-911 consisting of eight (8) water samples submitted for metals analysis. The samples were analyzed by Weston Analytics using the CLP protocol for TAL metals/cyanide analytes. A list of the samples validated is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B079F7	10/12/92	WATER
B079F8	10/12/92	WATER
B079H8	10/12/92	WATER
B079H9	10/12/92	WATER
B079P4	10/12/92	WATER
B079P5	10/12/92	WATER
B07989	10/12/92	WATER
B07990	10/12/92	WATER

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met with the exception of the ICP serial dilutions as summarized under "Minor Deficiencies".

Accuracy. Goals for accuracy were met with the exception of matrix spike and GFAA analytical spike recoveries as summarized under "Minor Defiencies".

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

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. Eight (8) samples were validated in this data set with a total of 196 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

No deficiencies were identified for the metals fraction which required rejection of data.

MINOR DEFICIENCIES

Blanks

Aluminum and lead were detected in the laboratory blanks. Therefore, the associated sample results have been qualified as undetected (U).

Spike Recovery

The matrix spike percent recovery for lead was 68%, less than the 75% control limit, but greater than 30%. Therefore, all associated sample results have been qualified as estimated (UJ).

ICP Serial Dilutions

ICP serial dilution percent difference for calcium, magnesium, and sodium were greater than the control limit of 10% for sample concentrations greater than 50 times the instrument detection limit (IDL). Therefore, all associated sample results have been qualified as estimated (J for detects).

GFAA Analytical Spikes

GFAA analytical spikes for lead, samples B079F8, B079H8, B079H9, B079P4, B079P5, B07989, B07990; selenium, all samples in this data set; and thallium, samples B079H8, B079P4, B079P5, B07989, B07990, were below the control limit of 85%. Therefore, the associated sample results have been qualified as estimated (UJ for non-detects, J for detects) with the exception of selenium in sample B07989 which was analyzed by the method of standard additions (MSA).

REFERENCES

WHC, 1991, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision A, November 1991. Westinghouse Hanford Company, Richland, Washington.

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

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.

U - Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.

UJ - Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.

J - Indicates the analyte was analyzed for and detected. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.

UR - Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.

R - Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

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DATA QUALIFICATION SUMMARY - FORM B-7

9210L298

SDG:	REVIEWER:	DATE: 3/31/93	PAGE 1 OF 1
COMMENTS: Metals			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Aluminum	U	B079F7	Present in blank
↓	U	B079P5	↓
Lead	U	B079H9	Present in blank
Lead	UJ	All	MS&R <75%
Calcium	J	All	ICP Serial D.I. in 9D210150
Magnesium	J	↓	↓
Sodium	J	↓	↓
Lead	UJ	B079F8	GFAA Analytical Spikes out of CL
↓	↓	B079H8/H9	↓
		B079P4/P5	
↓	↓	B07989/90	
Selenium	UJ	B079F7/F8	
↓	UJ	B079H8/H9	
	J	B079P4/P5	
	None-analyzed by MSA	B07989	
↓	J	B07990	
Thallium	UJ	B079H8/P4	
↓	↓	B079P5	
↓	↓	B07989/90	↓

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ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079F7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029801

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	71.90	B		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	9.10	B		F	
7440-39-3	Barium	29.00	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	37400.00		E	P	
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	65.90	B		P	
7439-92-1	Lead	2.00	U	N	F	
7439-95-4	Magnesium	12200.00		E	P	
7439-96-5	Manganese	4.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6080.00			P	
7782-49-2	Selenium	2.00	U		F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	23500.00		E	P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	22.90	B		P	
7440-66-6	Zinc	9.80	B		P	
	Cyanide	20.00	U		C	
7440-69-9	Bismuth	150.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

3/31/93

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079F8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029802

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	49.00	U		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	10.70			F	
7440-39-3	Barium	30.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	38600.00		E	P	
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	15.00	U		P	
7439-92-1	Lead	2.00	U	N	F	
7439-95-4	Magnesium	12600.00		E	P	
7439-96-5	Manganese	4.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	5550.00			P	
7782-49-2	Selenium	2.00	U		F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	24100.00		E	P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	15.80	B		P	
7440-66-6	Zinc	7.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	150.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079H8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029804

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	49.00	U		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	9.00	B		F	
7440-39-3	Barium	26.80	B		P	
7440-41-7	Beryllium	1.00			P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	39200.00		E	P	
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	186.00			P	
7439-92-1	Lead	2.00	U	N	F	
7439-95-4	Magnesium	11100.00		E	P	
7439-96-5	Manganese	4.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6030.00			P	
7782-49-2	Selenium	2.00	U		F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	23400.00		E	P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	21.20	B		P	
7440-66-6	Zinc	40.40			P	
	Cyanide	13.00			C	
7440-69-9	Bismuth	150.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079H9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029805

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	49.00	U		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	9.30	B		F	
7440-39-3	Barium	27.40	B		P	
7440-41-7	Beryllium	1.10	B		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	38200.00		E	P	N
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	21.30	B		P	
7439-92-1	Lead	6.00		NW	F	UJ
7439-95-4	Magnesium	10800.00		E	P	N
7439-96-5	Manganese	4.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6530.00			P	
7782-49-2	Selenium	2.00	U		F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	22900.00		E	P	N
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	22.90	B		P	
7440-66-6	Zinc	31.60			P	
	Cyanide				NR	
7440-69-9	Bismuth	150.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079P4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029807

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	49.00	U		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	3.00	B		F	
7440-39-3	Barium	47.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	45100.00		E	P	h
7440-47-3	Chromium	9.80	B		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	527.00			P	
7439-92-1	Lead	2.00	U	NW	F	hh
7439-95-4	Magnesium	13100.00		E	P	h
7439-96-5	Manganese	4.00			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6790.00			P	
7782-49-2	Selenium	2.40	B	W	F	h
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	17900.00		E	P	hh
7440-28-0	Thallium	2.00	U	W	F	hh
7440-62-2	Vanadium	15.40	B		P	
7440-66-6	Zinc	7.00			P	
	Cyanide	10.00	U		C	
7440-69-9	Bismuth	150.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079P5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029808

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	57.50	B		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	2.90	B		F	
7440-39-3	Barium	49.70	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	48300.00		E	P	
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	40.60	B		P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	14000.00		E	P	
7439-96-5	Manganese	4.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6880.00			P	
7782-49-2	Selenium	2.30	B	W	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	18800.00		E	P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	16.20	B		P	
7440-66-6	Zinc	7.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	150.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

3/31/92

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07989

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029810

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	49.00	U		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	3.00	B		F	
7440-39-3	Barium	54.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	51000.00		E	P	
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	478.00			P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	14700.00		E	P	
7439-96-5	Manganese	4.00			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6970.00			P	
7782-49-2	Selenium	6.70		S	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	19800.00		E	P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	17.10	B		P	
7440-66-6	Zinc	7.00	U		P	
	Cyanide	10.00	U		C	
7440-69-9	Bismuth	150.00	U		P	

no qualifier Reqd. 3/31/93 for selenium

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07990

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix (soil/water): WATER Lab Sample ID: 921029811

Level (low/med): LOW Date Received: 10/14/92

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	49.00	U		P	
7440-36-0	Antimony	60.00	U		P	
7440-38-2	Arsenic	3.20	B		F	
7440-39-3	Barium	51.30	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	50800.00		E	P	N
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	45.60	B		P	
7439-92-1	Lead	2.00	U	NW	F	UJ
7439-95-4	Magnesium	14700.00		E	P	N
7439-96-5	Manganese	4.00			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6290.00			P	
7782-49-2	Selenium	2.20	B	W	F	N
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	19700.00		E	P	N
7440-28-0	Thallium	2.00	U	W	F	UJ
7440-62-2	Vanadium	12.90	B		P	
7440-66-6	Zinc	7.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	150.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

3/31/93

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9613403.1317

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 3/31/93
LABORATORY: Weston	CASE:	SDG: 92106298
SAMPLES/MATRIX: B079F7, B079F8, B079H8, B079H9, B079P4, B079P5, B079B9, B079P0 Waters		

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	✓	—	—

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

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 ≥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.

HOLDING TIME SUMMARY - FORM B-I

9210L298-WES-911

SDG:	REVIEWER: [illegible]	DATE: 03/31/93	PAGE 1 OF 1
COMMENTS: Metals			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B079F7	ICP	10/12/92		12/18/92		67	None
B079F8	Bi			12/16/92		65	
B079H8	As			11/19/92		38	
B079H9	Hg			11/06/92		25	
B079P4	Lead			11/19/92		38	
B079P5	Se			11/18/92		37	
B07989	Tl			11/18/92		37	
B07990							

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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.: CLP298

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
	5x						5x		5x		
Aluminum	251.5 50.3	B	49.0	U	49.0	U	350.5 70.1	B	49.000	U	P
Antimony	60.0	U	60.0	U	60.0	U	60.0	U	60.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	14.0	U	14.0	U	14.0	U	14.0	U	14.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	7.0	U	7.0	U	7.0	U	7.0	U	7.000	U	P
Calcium	57.0	U	57.0	U	57.0	U	57.0	U	57.000	U	P
Chromium	9.0	U	9.0	U	9.0	U	9.0	U	9.000	U	P
Cobalt	9.0	U	9.0	U	9.0	U	9.0	U	9.000	U	P
Copper	8.0	U	8.0	U	8.0	U	8.0	U	-11.000	B	P
Iron	15.0	U	15.0	U	15.0	U	15.0	U	15.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	10.5 2.100	B	F
Magnesium	68.0	U	68.0	U	68.0	U	68.0	U	68.000	U	P
Manganese	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.100	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	20.000	U	P
Potassium	1340.0	U	1340.0	U	1340.0	U	1340.0	U	1340.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Sodium	151.0	U	151.0	U	151.0	U	-340.0	B	1483 296.600	B	P
Thallium	2.0	U	-2.0	B	2.0	U	2.0	U	2.000	U	F
Vanadium	8.0	U	8.0	U	8.0	U	8.0	U	8.000	U	P
Zinc	7.0	U	7.0	U	7.0	U	7.0	U	7.000	U	P
Cyanide	10.0	U	10.0	U	10.0	U			10.000	U	C

FORM III - IN 03/90

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B079F7S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic	75-125	47.4000		9.1000	B	40.00	95.7		F
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead	75-125	13.6000		2.0000	U	20.00	68.0	N	F
Magnesium									NR
Manganese									NR
Mercury	75-125	.9250		.1000	U	1.00	92.5		CV
Nickel									NR
Potassium									NR
Selenium	75-125	9.1000		2.0000	U	10.00	91.0		F
Silver									NR
Sodium									NR
Thallium	75-125	42.2000		2.0000	U	50.00	84.4		F
Vanadium									NR
Zinc									NR
Cyanide	75-125	93.3070		20.0000	U	100.00	93.3		C

Comments:

FORM V (Part 1) - IN 03/90

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U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B079F8L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP298

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	49.00	U	245.00	U			P
Antimony	60.00	U	300.00	U			P
Arsenic							
Barium	30.20	B	70.00	U	100.0		P
Beryllium	1.00	U	5.00	U			P
Cadmium	7.00	U	35.00	U			P
Calcium	38617.80		44299.49		14.7	E	P
Chromium	9.00	U	45.00	U			P
Cobalt	9.00	U	45.00	U			P
Copper	8.00	U	40.00	U			P
Iron	15.00	U	75.00	U			P
Lead							
Magnesium	12607.00		14512.50	B	15.1	E	P
Manganese	4.00	U	20.00	U			P
Mercury							
Nickel	20.00	U	100.00	U			P
Potassium	5550.20		6700.00	U	100.0		P
Selenium							
Silver	10.00	U	50.00	U			P
Sodium	24100.70		27415.51		13.8	E	P
Thallium							
Vanadium	15.80	B	40.00	U	100.0		P
Zinc	7.00	U	35.00	U			P

FORM IX - IN

03/90

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ACCURACY DATA SUMMARY - FORM B-4

9210L298

SDG:	REVIEWER:	DATE: 3/31/93	PAGE 1 OF 2
COMMENTS: GFAA Analytical Spikes			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B079F8	Lead	83	B079F8	UJ
B079H8		82.5	H8	UJ
B079H9		79.3	H9	UJ
B079P4		61.8	P4	UJ
B079P5		62.5	P5	UJ
B07989		61.4	89	UJ
B07990		69.1	90	UJ
B079F7	Selenium	72.6	B079F7	UJ
B079F8		81.5	F8	UJ
B079H8		76.1	H8	UJ
B079H9		80.4	H9	UJ
B079P4		55	P4	J
B079P5		60.9	P5	J
B07989		55.1	89	None - analyzed by MSA
B07990		57.1	90	J
B079H8	Thallium	83		UJ
B079P4		76.2		UJ

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ACCURACY DATA SUMMARY - FORM B-4

921-L298

SDG:	REVIEWER:	DATE: 3/31/92	PAGE 2 OF 2	
COMMENTS: GFAA Analytical Spikes				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B079P5	Thallium	83.4	B079P5	UJ
B07989	↓	77.2	↓ 89	UJ
B07990	↓	83.7	↓ 90	UJ