WESTON Analytics Use Only

9210L169

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 6168-P2-01-9999
Project Contact/Phone #:
AD Project Manager: Susie Edwards
QC: Del TAT: 35 day
Date Rec'd: 10-6-92 Date Due: 11/10/92
Account #: WS-HANFORD

Refrigerator #		1							3 4	3	3	3	3			3
#/Type Container	Liquid	36							1P	1P	1P	1P	1P			1P
	Solid															
Volume	Liquid	40							1L	1L	250	1L	500			1L
	Solid															
Preservatives		—							HNO3	HNO3	H2SO4	—	—			HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	NH3-N	Alk TDS	Poly SO4 Cl			Diss Metals

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	WESTON Analytics Use Only: VOA							Metals + Bi	TOTD	NH3-N	Alk TDS	Poly SO4 Cl			Metals + Bi
S - Soil	001	B079D2			W	10-2-92		✓							✓	✓	✓	✓	✓			
SE - Sediment	002	D3																				✓
SO - Solid	003	D4						✓														
SL - Sludge	004	G9													✓	✓	✓	✓	✓			
W - Water	005	H0																				✓
O - Oil	006	H1						✓														
A - Air	007	L0													✓	✓	✓	✓	✓			
DS - Drum Solids	008	L1																				✓
DL - Drum Liquids	009	L2						✓														
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: 000-BP-1
① ms/msD Required
metals = HSL + Bi TOT/SOL.

original Receipts

DATE/REVISIONS:
11/10/92 1. Date Collected for 011-018 - 10-2-92
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # 2521 Lab 291
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)
SO4, PO4 out of Hold

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

Relinquished by	Received by	Date	Time
Emery	[signature]	10-6-92	13:50
	[signature]	10-6-92	

Relinquished by	Received by	Date	Time
	[signature]	10-6-92	

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

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# SNL-203 381-596a

START 0043874 0009002 96 2427 448 9210L169-WES-894

WESTON Analytics Use Only

9210L169

Custody Transfer Record/Lab Work Request

WESTON

Page 2 of 2

Client: Westinghouse Hanford

Est. Final Proj. Sampling Date:

Work Order #: 6168-02-01-9997

Project Contact/Phone #:

AD Project Manager:

QC: Del: TA

Date Rec'd: Date Due:

Account #:

Refrigerator #		1							3	3	3	3	3			3
#/Type Container	Liquid	3G							1P	1P	1P	1P	1P			1P
	Solid															
Volume	Liquid	40							1L	1L	250	1L	500			1L
	Solid															
Preservatives									HNO3	NaOH	H2SO4	—	—			HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	NH3 N2	Alk TDS	Cl F SO4 PO4			Chem Metals

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	WESTON Analytics Use Only: 624/8							MHS+SO4 +Bi	TCND	TN3N2	TALK TDS	TCL TCFL TSO4 TPO4			MHS+SO4 +Bi
010	B079L9			W	10/2/92									✓	✓	✓	✓	✓			
011	D0																				✓
012	D1						✓														
013	B7													✓	✓	✓	✓	✓			
014	B8																				✓
015	B9						✓														
016	B4													✓	✓	✓	✓	✓			
017	B5																				✓
018	B6						✓														

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't Y or N

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

Relinquished by	Received by	Date	Time
Emery	[signature]	10-6-92	13:50
	[signature]	10-6-92	

Relinquished by	Received by	Date	Time
	[signature]	10-6-92	

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

381-596a

00003

9210L169

9613427.1440 0000004

Westinghouse Hanford Company	CHAIN OF CUSTODY	240L109

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-BP-1

Ice Chest No. SML-203

Bill of Lading/Airbill No. 252[illegible]

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Telephone (509)376-5045

Collection Date 10-2-92

Field Logbook No. WHC-N-4461

Offsite Property No. ~~W92-~~ KT 10/5/92 W93-[illegible]-7

Kit # [illegible]

Sample Identification

BO[illegible]

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)

BO[illegible]

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

BO[illegible]

3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: [illegible] / R. Trapp	Date/Time: 10/5/92 [illegible]
Relinquished by: [illegible] R. Trapp	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: [illegible]
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

9613427.1441 0000005

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled [illegible] Time [illegible] hours

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

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
[illegible]	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)
[illegible]	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
[illegible]	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92-[illegible]
			BOL: [illegible]
			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.

9613427.1442 0000006

Westinghouse Hanford Company	CHAIN OF CUSTODY 9761109

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-BP-1

Ice Chest No. SNL-2??

Bill of Lading/Airbill No. 252 956 8291

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Telephone (509)376-5045

Collection Date 10/2/92

Field Logbook No. WHC-N-4461

Offsite Property No. ~~W92~~ KT 10/5/92 W92-0-0001-7

Sample Identification

BO 7969

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)
~~1, 1L, P, WATER, Tc-99(HCl)~~
~~1, 500ml, Gs, WATER, TRITIUM~~
1, 4L, P, WATER, TOTAL ALPHA, TOTAL ~~BETA, GAMMA SPEC~~, Sr-90, Pu-238/239/240, TOTAL URANIUM (HNO3)

KT 10/5/92

BO 7970

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

BO 7971

3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by:	Received by: K. Trapp / K. Trapp	Date/Time: 10/5/92 0900
Relinquished by: K. Trapp / K. Trapp	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613427.1443 000007

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled [illegible] Time [illegible] hours

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

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
[illegible]	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)
[illegible]	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
[illegible]	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92-[illegible]
			BOL: [illegible]
			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.

9613422.1444 0000008

Westinghouse Hanford Company	CHAIN OF CUSTODY 9213[illegible]

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 200-BP-1

Collection Date 10-2-92

Ice Chest No. SHL-230

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 2521562241

Offsite Property No. ~~W92~~ KT [illegible] WAA-0-0001-7

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

BO[illegible]

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)

BO[illegible]

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

BO[illegible]

3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: [illegible] KT [illegible]
Relinquished by: [illegible]	Received by:	Date/Time:
Relinquished by:	Received by: [illegible]	Date/Time: [illegible]
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

9613427.1445 000009

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 10/2/92 Time 1350 hours

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

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0[illegible]	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)
B0[illegible]	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
B0[illegible]	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92-[illegible]-7
			BOL: [illegible]
			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.

9613427.1446 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 10-2-92

Ice Chest No. ~~SML-203~~ SML-230

Field Logbook No. WHC-N-4461

Bill of Lading/Airbill No. 2521565 2-1

Offsite Property No. ~~W92-~~ W93-0-0001-7

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

B0

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)

B0

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

B0

3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613427.1447 0000011

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled [illegible] Time [illegible] hours

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

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
[illegible]	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)
[illegible]	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
[illegible]	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92-[illegible]
			BOL: [illegible]
			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.

9613427.1448 0000312

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 10-2-92

Ice Chest No. SML-230

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 2521[illegible]

Offsite Property No. ~~W92-~~ [illegible]

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

B0[illegible]

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)

B0[illegible]

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

B0[illegible]

3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: K. Trapp / K. Trapp	Date/Time: 10/2/92 1000
Relinquished by: K. Trapp / K. Trapp	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: [illegible]
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

9613427.1449 0000013

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 10/2/92 Time 1230 hours

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

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
607987	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)
607988	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
607989	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92-[illegible]-7
			BOL: [illegible]
			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.

**

9613427.1450 000014

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 10-2-92

Ice Chest No. SML-230

Field Logbook No. EFL-1020

Bill of Lading/Airbill No. 2521505211

Offsite Property No. ~~W92-~~ 10/5/92 W92-0-0001-7

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

B0

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)

B0

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

B0

3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by:	Received by:	Date/Time: 10/5/92 0900
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9613427.1451 0000015

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, L. Walker, G. Hamilton, C. Celiberti Date Sampled 10/2/92 Time 1010 hours

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

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0T0B4	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)
B0T0B5	1; 1L; P	WATER	TAL METALS + Bi (HNO3); FILTERED
B0T0B6	3; 40mL; Gs	WATER	CLP-VOA
			OPC: W92-0-0001-7
			BOL: [illegible]
			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.

SIGNATURE AND TALLY RECORD 92/0L169 Reference No. [redacted] 0000016

50029-46 (8/89) Litho USA

SHIPPER NAME AND ADDRESS	CONSIGNEE NAME AND ADDRESS
WESTINGHOUSE SHIPPING DEPT (509) 376-6665 G2-06 U.S. DEPARTMENT OF ENERGY C/O WESTINGHOUSE HANFORD COMPANY [illegible]5 STEVENS DRIVE 1163 BUILDING BOX 1970 RICHLAND WA 99352	[redacted] PEG BEATY RF WESTON INC 208 WELSH POOL ROAD LIONVILLE PA 19341

Pieces	Weight	Description/Marks	Emery Authorization No.
2	138 LBS	COOLER ID: SML203 62# 230-SML 76#; 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.	[illegible]	[illegible]	[illegible]	09[illegible]/10-[illegible]
8.	Brian E Shoff	Lionville	Brian E Shoff	10/6/92

SPECIAL HANDLING INSTRUCTIONS

FORM OF PAYMENT

BL ☐ FCCOD ☐ 92/0L169

☒ Bill to Consignee ☐ Third Party Billing ☐

850281585

EMERY WORLDWIDE — A CF Company

SERVICES

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

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Date	Origin	
10-05-92	PSC	2521568291 1

	To:	Tariff Dest.	Gateway
ESTINGHOUSE SHIPPING DEPT (509) 376-6665 J.S. DEPARTMENT OF ENERGY C/O STINGHOUSE HANFORD BLDG 1163 5 STEVENS DRIVE CHLAND WA	[redacted] PEG BEATY RF WESTON INC 208 WELSH POOL ROAD LIONVILLE PA 19341	$	

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Customer's Reference Numbers	Consignee's Account Number
L3EA W81231 W93-0-0001-7 97352	E 19341

Description	Pcs	L	W	H	Total Pieces	Total Weight
COOLERS ID: SML-203 2#; SML-230 76# ATER SAMPLES	2		16	17	2	141

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

Declared Value $

2521568291

Payments

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Total Transportation Charges | Other Charges/Advance at Origin OC/AO- $

3-PHL-F

Terms and Conditions on Back

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

Report Date: 11/03/92 10:19

RFW Batch Number: 9210L169 Client: WESTINGHOUSE HANFORD Work Order: ~~6168-02-0~~ 06163 002 CLI 9799-00 Page: 1a

	Cust ID:	BO79D4		BO79H1		BO79L2		BO79D1		BO79B9		BO79B6	
Sample Information	RFW#:	003		006		009		012		015		018	
	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	104	%	107	%	110	%	108	%	104	%	102	%
	Bromofluorobenzene	100	%	104	%	104	%	103	%	100	%	98	%
	1,2-Dichloroethane-d4	100	%	104	%	109	%	106	%	102	%	100	%
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		4	JB	4	JB	6	JB	9	JB	6	JB	3	JB
Acetone		10	U	10	U	10	U	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	10	U	10	U	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	10	U	10	U	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	10	U	10	U	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	10	U	10	U	10	U	10	U	10	U

*= Outside of EPA CLP QC limits.

000018
9613427.1453

RFW Batch Number: 9210L169 Client: WESTINGHOUSE HANFORD Work Order: ~~6168-02-0~~ Page: 1b

Cust ID:	BO79D4	BO79H1	BO79L2	BO79D1	BO79B9	BO79B6
RFW#:	003	006	009	012	015	018
Chlorobenzene	10 U	10 U	10 U	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.

9613427.1484 0000019

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

Report Date: 11/03/92 10:19

RFW Batch Number: 9210L169 Client: WESTINGHOUSE HANFORD Work Order: ~~6168-02-0~~ 06162 002-001 9999-00 Page: 2a

	Cust ID:	BO79B6		BO79B6		VBLK	
Sample Information	RFW#:	018 MS		018 MSD		92LVX186-MB1	
	Matrix:	WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	106	%	107	%	106	%
	Bromofluorobenzene	102	%	102	%	103	%
	1,2-Dichloroethane-d4	105	%	104	%	100	%
Chloromethane		10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U
Methylene Chloride		3	JB	4	JB	4	J
Acetone		10	U	10	U	11	
Carbon Disulfide		10	U	10	U	10	U
1,1-Dichloroethene		105	%	107	%	10	U
1,1-Dichloroethane		10	U	10	U	10	U
1,2-Dichloroethene (total)		10	U	10	U	10	U
Chloroform		10	U	10	U	10	U
1,2-Dichloroethane		10	U	10	U	10	U
2-Butanone		10	U	10	U	10	U
1,1,1-Trichloroethane		10	U	10	U	10	U
Carbon Tetrachloride		10	U	10	U	10	U
Bromodichloromethane		10	U	10	U	10	U
1,2-Dichloropropane		10	U	10	U	10	U
cis-1,3-Dichloropropene		10	U	10	U	10	U
Trichloroethene		99	%	103	%	10	U
Dibromochloromethane		10	U	10	U	10	U
1,1,2-Trichloroethane		10	U	10	U	10	U
Benzene		109	%	115	%	10	U
trans-1,3-Dichloropropene		10	U	10	U	10	U
Bromoform		10	U	10	U	10	U
4-Methyl-2-pentanone		10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U
Tetrachloroethene		10	U	10	U	10	U
1,1,2,2-Tetrachloroethane		10	U	10	U	10	U
Toluene		106	%	110	%	10	U

*= Outside of EPA CLP QC limits.

000020

RFW Batch Number: 9210L169 Client: WESTINGHOUSE HANFORD Work Order: ~~6168-02-0~~ Page: 2b

Cust ID:	BO79B6		BO79B6		VBLK	
RFW#:	018 MS		018 MSD		92LVX186-MB1	
Chlorobenzene	103	%	113	%	10	U
Ethylbenzene	10	U	10	U	10	U
Styrene	10	U	10	U	10	U
Xylene (total)	10	U	10	U	10	U

*= Outside of EPA CLP QC limits.

9613427.1456 0000021

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

Client: WESTINGHOUSE HANFORD
RFW #: 9210L169

W.O. #: 06168-002-001-9999-00
Date Received: 10-06-92

GC/MS VOLATILE

The set of samples consisted of six (6) water samples collected on 10-02-92.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 10-13-92.

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

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

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

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

4. The laboratory blank contained the common contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.

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

Margaret M. Zeaty for

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

11/10/92
Date

sma/voa/10-169v.cn

9613427.1458 0 0 0 0 9 3 4

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/13/92

CLIENT SAMPLE NO.

BO79D4

06168 002-001-9999-00

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-003

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

Lab File ID: AXAD12

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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	4	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

9613427.1459

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

11/10/92

06168-002-001-9999-00

CLIENT SAMPLE NO.

BO79D4

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-003

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

Lab File ID: AXAD12

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

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

9613427.1460 0 0 0 0 4 0 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/10/92

BO79H1

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06168 002-001-9900-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-006

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

Lab File ID: AXAD13

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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	4	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

9613427.1461 0 0 0 0 4 1

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/13/92
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B079H1

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06167.002-001.0000-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-006

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

Lab File ID: AXAD13

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

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

9613427.1462 0 0 0 0 4 6 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/12/92

06168-002.001-9999-00

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

BO79L2

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-009

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

Lab File ID: AXAD14

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

9613427.1463 0 0 0 0 4 7

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/12/92
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BO79L2

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06168002-001-9909-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-009

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

Lab File ID: AXAD14

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

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

9613427.1464 1A 000052

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BO79D1

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06163-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-012

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

Lab File ID: AXAD15

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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	9	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

9613427.1465 0000053

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BO79D1

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06162-002-001-9000-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-012

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

Lab File ID: AXAD15

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

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

9613427.1466 0 0 0 0 9 5 8 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/13/92

06163-002-001-9990-00

BO79B9

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-015

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

Lab File ID: AXAD16

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

9613427.1467 0 0 0 0 5 9 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

06168-002-001-9999-00

B079B9

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-015

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

Lab File ID: AXAD16

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

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

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

9613427.1468 0 0 0 0 6 4 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/13/92

BO79B6

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-018

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

Lab File ID: AXAD17

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

9613427.1469 0 0 0 0 6 5 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET 11/10/92

TENTATIVELY IDENTIFIED COMPOUNDS

06168-002-001-9999-00

B079B6

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-018

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

Lab File ID: AXAD17

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

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

Number TICs found: 0

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

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

Client : WESTINGHOUSE HANFORD
RFW# : 9210L169

W.O. #: 06168-002-001-9999-00
Date Received: 10-06-92

CLP METALS

The set of samples consisted of twelve (12) water samples collected on 10-02-92.

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

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

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

4. All preparation blank values were within control limits.

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

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

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

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

9. 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.

10. 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.

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MANAGERS DESIGNERS/CONSULTANTS

11. 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).

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

13. 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.

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

12.11.92
Date

mlj/clp-met.nar

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

Client: WESTINGHOUSE HANFORD
RFW #: 92101169

W.O. #: 06168-002-001-9999-00
Date Received: 10-06-92

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.

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

12.11.92
Date

mlj\clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BO79D2	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	27300		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	19.2		UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	100		UG/L	100
		Mercury, Total	37.3		UG/L	2.0
		Potassium, Total	5500		UG/L	5000
		Magnesium, Total	8700		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	19600		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	28.6		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-002	BO79D3	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	28600		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	5000	u	UG/L	5000
		Magnesium, Soluble	9130		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	20000		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 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-004	BO79G9	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	37900		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	13.5		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	5270		UG/L	5000
		Magnesium, Total	11900		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	20100		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 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-005	BO79H0	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	40300		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	5150		UG/L	5000
		Magnesium, Soluble	12700		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	22000		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 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-007	BO79L0	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	51300		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	14.0		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	7300		UG/L	5000
		Magnesium, Total	15300		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	28600		UG/L	5000
		Nickel, Total	45.2		UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.9		UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	28.4		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-008	BO79L1	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	50300		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	7330		UG/L	5000
		Magnesium, Soluble	14900		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	28700		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	5.7		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 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-010	BO79L9	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	29000		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	19.6		UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	121		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	5020		UG/L	5000
		Magnesium, Total	8950		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	15700		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	66.2		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	21.4		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-011	B079D0	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	29600		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	5000	u	UG/L	5000
		Magnesium, Soluble	9040		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	16300		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	22.5		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-013	B079B7	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	44800		UG/L	5000
		Cadmium, Total	7.2		UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	28.2		UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	110		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	6840		UG/L	5000
		Magnesium, Total	12800		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	22800		UG/L	5000
		Nickel, Total	41.8		UG/L	40.0
		Lead, Total	4.6		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	22.1		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-014	BO79B8	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	43400		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	6310		UG/L	5000
		Magnesium, Soluble	12400		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	22000		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	8.3		UG/L	5.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.4		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-016	BO79B4	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	45300		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	45.7		UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	1060		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	7750		UG/L	5000
		Magnesium, Total	13200		UG/L	5000
		Manganese, Total	25.0		UG/L	15.0
		Sodium, Total	21700		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	24.0		UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/04/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-017	B079B5	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	43900		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	6600		UG/L	5000
		Magnesium, Soluble	12600		UG/L	5000
		Manganese, Soluble	16.4		UG/L	15.0
		Sodium, Soluble	21400		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	5.5		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.

B079D2

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016901

Level (low/med): LOW Date Received: 10/06/92

% 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	5.70	B		F
7440-39-3	Barium	34.80	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	27300.00		E	P
7440-47-3	Chromium	19.20			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	100.00			P
7439-92-1	Lead	2.70	B	NW	F
7439-95-4	Magnesium	8700.00		E	P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	37.30			CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	5500.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	19600.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	19.90	B		P
7440-66-6	Zinc	28.60			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.

B079D3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016902

Level (low/med): LOW Date Received: 10/06/92

% 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	5.80	B		F
7440-39-3	Barium	34.80	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	28600.00		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	NW	F
7439-95-4	Magnesium	9130.00		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	4410.00	B		P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	20000.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	20.80	B		P
7440-66-6	Zinc	18.90	B		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.

B079G9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016904

Level (low/med): LOW Date Received: 10/06/92

% 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	8.80	B		F
7440-39-3	Barium	31.20	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	37900.00		E	P
7440-47-3	Chromium	13.50			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	71.20	B		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	11900.00		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	5270.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	20100.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	20.80	B		P
7440-66-6	Zinc	15.30	B		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.

B079H0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016905

Level (low/med): LOW Date Received: 10/06/92

% 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	8.50	B		F
7440-39-3	Barium	32.90	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	40300.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00			P
7439-89-6	Iron	15.00	U		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	12700.00		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	5150.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	22000.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	22.10	B		P
7440-66-6	Zinc	18.90	B		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.

B079L0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016907

Level (low/med): LOW Date Received: 10/06/92

% 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	5.20	B		F
7440-39-3	Barium	22.60	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	51300.00		E	P
7440-47-3	Chromium	14.00			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	88.80	B		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	15300.00		E	P
7439-96-5	Manganese	7.80	B		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	45.20			P
7440-09-7	Potassium	7300.00			P
7782-49-2	Selenium	5.90		S	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	28600.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	21.70	B		P
7440-66-6	Zinc	28.40			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.

B079L1

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016908

Level (low/med): LOW Date Received: 10/06/92

% 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	5.00	B	W	F
7440-39-3	Barium	22.90	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	50300.00		E	P
7440-47-3	Chromium	9.00	U		P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	18.90	B		P
7439-89-6	Iron	15.00	U		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	14900.00		E	P
7439-96-5	Manganese	6.90	B		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	30.70	B		P
7440-09-7	Potassium	7330.00			P
7782-49-2	Selenium	5.70		S	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	28700.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	16.80	B		P
7440-66-6	Zinc	18.30	B		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.

B079L9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016910

Level (low/med): LOW Date Received: 10/06/92

% 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	66.80	B		P
7440-36-0	Antimony	66.20			P
7440-38-2	Arsenic	6.50	B		F
7440-39-3	Barium	34.20	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	29000.00		E	P
7440-47-3	Chromium	19.60			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	121.00			P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	8950.00		E	P
7439-96-5	Manganese	4.30	B		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	25.00	B		P
7440-09-7	Potassium	5020.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	15700.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	20.30	B		P
7440-66-6	Zinc	21.40			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

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079D0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016911

Level (low/med): LOW Date Received: 10/06/92

% 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	7.00	B		F
7440-39-3	Barium	31.50	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	29600.00		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	NW	F
7439-95-4	Magnesium	9040.00		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	5000.00	B		P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	16300.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	20.80	B		P
7440-66-6	Zinc	22.50			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.

B079B7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016913

Level (low/med): LOW Date Received: 10/06/92

% 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	5.60	B		F
7440-39-3	Barium	26.20	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.20			P
7440-70-2	Calcium	44800.00		E	P
7440-47-3	Chromium	28.20			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	110.00			P
7439-92-1	Lead	4.60		NW	F
7439-95-4	Magnesium	12800.00		E	P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	41.80			P
7440-09-7	Potassium	6840.00			P
7782-49-2	Selenium	4.40	B	S	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	22800.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	25.60	B		P
7440-66-6	Zinc	22.10			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.

B079B8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016914

Level (low/med): LOW Date Received: 10/06/92

% 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	6.50	B		F
7440-39-3	Barium	26.50	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	43400.00		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	20.00	B		P
7439-92-1	Lead	2.20	B	NW	F
7439-95-4	Magnesium	12400.00		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	6310.00			P
7782-49-2	Selenium	8.30		S	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	22000.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	24.30	B		P
7440-66-6	Zinc	20.40			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.

B079B4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016916

Level (low/med): LOW Date Received: 10/06/92

% 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	2.60	B		F
7440-39-3	Barium	14.60	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	45300.00		E	P
7440-47-3	Chromium	45.70			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	1060.00			P
7439-92-1	Lead	2.70	B	NW	F
7439-95-4	Magnesium	13200.00		E	P
7439-96-5	Manganese	25.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	7750.00			P
7782-49-2	Selenium	2.90	B	S	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	21700.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	18.60	B		P
7440-66-6	Zinc	24.00			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.

B079B5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016917

Level (low/med): LOW Date Received: 10/06/92

% 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	2.10	B	W	F
7440-39-3	Barium	14.00	U		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	43900.00		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	69.70	B		P
7439-92-1	Lead	2.10	B	NW	F
7439-95-4	Magnesium	12600.00		E	P
7439-96-5	Manganese	16.40			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	6600.00			P
7782-49-2	Selenium	5.50		S	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	21400.00			P
7440-28-0	Thallium	2.00	U	N	F
7440-62-2	Vanadium	8.00	U		P
7440-66-6	Zinc	18.50	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9613427.1497 0000001

WESTON MANAGERS DESIGNERS CONSULTANTS

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

Client: WESTINGHOUSE HANFORD **W.O. #:**06168-002-001-9999-00
RFW #: 9210L169 **Date Received:** 10-06-92

RECORD COPY

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 which was received past holding time.

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. Recoveries were within the 75-125% guidance limits with the exception of Nitrate Nitrite and Nitrate Nitrite MSD. 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).

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

10/30/92
Date

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kls/pas/i10-169

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/23/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO79D2	Alkalinity	100	MG/L	2.0
		Chloride by IC	11.9	MG/L	2.5
		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	28.1	MG/L	2.5
		Nitrate Nitrite	1.7	MG-N/L	0.20
		Total Dissolved Solids	233	MG/L	5.0
-004	BO79G9	Alkalinity	110	MG/L	2.0
		Chloride by IC	7.4	MG/L	0.25
		Fluoride by IC	0.50 u	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	39.0	MG/L	2.5
		Nitrate Nitrite	7.3	MG-N/L	2.5
		Total Dissolved Solids	310	MG/L	5.0
-007	BO79L0	Alkalinity	110	MG/L	2.0
		Chloride by IC	22.8	MG/L	5.0
		Fluoride by IC	0.50 u	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	107	MG/L	5.0
		Nitrate Nitrite	2.8	MG-N/L	1.0
		Total Dissolved Solids	390	MG/L	5.0

9613427.1499 0000005

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/23/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-010	BO79L9	Alkalinity	100	MG/L	2.0
		Chloride by IC	12.1	MG/L	2.5
		Fluoride by IC	0.50 u	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	26.3	MG/L	2.5
		Nitrate Nitrite	1.1	MG-N/L	0.10
		Total Dissolved Solids	238	MG/L	5.0
-013	BO79B7	Alkalinity	100	MG/L	2.0
		Chloride by IC	12.0	MG/L	5.0
		Fluoride by IC	0.53	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	89.4	MG/L	5.0
		Nitrate Nitrite	2.3	MG-N/L	0.20
		Total Dissolved Solids	361	MG/L	5.0
-016	BO79B4	Alkalinity	100	MG/L	2.0
		Chloride by IC	14.4	MG/L	5.0
		Fluoride by IC	0.50 u	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	89.6	MG/L	5.0
		Nitrate Nitrite	2.3	MG-N/L	0.20
		Total Dissolved Solids	323	MG/L	5.0

9613427.1500

VALIDATION SUMMARY

9613422.1506 9210L169-WES-894

APR 1993
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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 9210L169-WES-894

INTRODUCTION

This memo presents the results of data validation on data package 9210L280-WES-898 consisting of six (6) 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
B079D4	10/02/92	WATER
B079H1	10/02/92	WATER
B079C2	10/02/92	WATER
B079D1	10/02/92	WATER
B079B9	10/02/92	WATER
B079B6	10/02/92	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.

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. A total of six samples were validated in this data set with a total of 198 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

Blanks

Methylene chloride was 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.

9613427.1503

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9613427.1504

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.

9613427.1505

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9613427.1506

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9210469	REVIEWER: [illegible]	DATE: 4/6/93	PAGE 1 OF 1
COMMENTS: 7 Volatiles			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
$MeCl_2$	u	All	present in blank

9613427.1507

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9613427.1508

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

DATE RECEIVED: 10/06/92 RFW LOT # :9210L169

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO79D4	003	W	92LVX186	10/02/92	N/A	10/13/92
BO79H1	006	W	92LVX186	10/02/92	N/A	10/13/92
BO79L2	009	W	92LVX186	10/02/92	N/A	10/13/92
BO79D1	012	W	92LVX186	10/02/92	N/A	10/13/92
BO79B9	015	W	92LVX186	10/02/92	N/A	10/13/92
BO79B6	018	W	92LVX186	10/02/92	N/A	10/13/92
BO79B6	018 MS	W	92LVX186	10/02/92	N/A	10/13/92
BO79B6	018 MSD	W	92LVX186	10/02/92	N/A	10/13/92

LAB QC:

VBLK	MB1	W	92LVX186	N/A	N/A	10/13/92

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4/6/93

9613427.1509 1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0000103 CLIENT SAMPLE NO.

11/10/92

VBLK

06168 002-001-9999-00

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 92LVX186-MB1

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

Lab File ID: AXAD03

Level: (low/med) LOW

Date Received: 10/13/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53 (mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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	4	J	X10=40
67-64-1	Acetone	11		X10=110
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

9613427.1510

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0 0 0 0 9 3 4 11/12/92

CLIENT SAMPLE NO.

B079D4

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06168 002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-003

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

Lab File ID: AXAD12

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	a
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 ~~4~~	~~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	
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

9613427.1511
1A

0 0 0 0 4 0 CLIENT SAMPLE NO.

11/10/92

VOLATILE ORGANICS ANALYSIS DATA SHEET

B079H1

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06168 002-001-9990-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-006

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

Lab File ID: AXAD13

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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 ~~4~~	~~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	
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

9613427.1512

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0080046 CLIENT SAMPLE NO.

11/10/92

06168-002-001-9999-00

B079L2 CC

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

Client: WESTINGHOUSE HANFORD

4/15/93

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-009

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

Lab File ID: AXAD14

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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	6	~~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	
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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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

0000052 11/13/92

CLIENT SAMPLE NO.

B079D1

06163-002-001-9999-00

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-012

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

Lab File ID: AXAD15

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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	9	~~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

Q

4/6/93

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1A

0 0 0 0 5 8 CLIENT SAMPLE NO.

1/10/92

VOLATILE ORGANICS ANALYSIS DATA SHEET

06163-002-001-9999-00

B079B9

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-015

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

Lab File ID: AXAD16

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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	6	~~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	
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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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

11/13/92

CLIENT SAMPLE NO.

B079B6

Lab Name: Roy F. Weston, Inc. Work Order: ~~6168-02-0~~ 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9210L169-018

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

Lab File ID: AXAD17

Level: (low/med) LOW

Date Received: 10/06/92

% Moisture: not dec.

Date Analyzed: 10/13/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/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 ~~3~~	~~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	
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	

11/16/93

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 4/06/93
LABORATORY: Weston	CASE:	SDG: 9210L169
SAMPLES/MATRIX: Waters		
B07904 B07989		
B07941 B07986		
B07942		
B07901		

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? 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

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? Yes No N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? Yes No N/A

Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No N/A

Are molecular ions present in the reference specrum present in the sample spectrum? Yes No N/A

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

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation? Yes No N/A

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

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

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.

9613427.1524

APR 1993
RECEIVED
OSM DMO

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 9210L169-WES-894

INTRODUCTION

This memo presents the results of data validation on data package 9210L169-WES-894 consisting of twelve (12) 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
B079D2	10/02/92	WATER
B079D3	10/02/92	WATER
B079G9	10/02/92	WATER
B079H0	10/02/92	WATER
B079C0	10/02/92	WATER
B079C1	10/02/92	WATER
B079C9	10/02/92	WATER
B079D0	10/02/92	WATER
B079B7	10/02/92	WATER
B079B8	10/02/92	WATER
B079B4	10/02/92	WATER
B079B5	10/02/92	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 dilution results as summarized under "Minor Deficiencies".

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

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. Twelve (12) samples were validated in this data set with a total of 294 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

Lead and zinc were detected in the laboratory blank, therefore, the associated sample results which are less than five times the respective blank concentration have been qualified as undetected (U).

Spike Recovery

The matrix spike percent recovery for lead, 66%, and selenium, 51%, were 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 (%D) for calcium and magnesium 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 the following samples were below the control limit of 85%.

- Arsenic, samples B079L1 and B079B5
- Lead, all samples in this data set
- Selenium, samples B079G9, B079H0, B079L9, B079L0, B079L1, B079B7, B079B4, B079B5, and B079B8

The associated sample results have been qualified as estimated (UJ for non-detects, BJ for detects less than the CRDL but greater than the IDL) with the exception of selenium in samples B079L0, B079L1, B079B7, B079B4, B079B5, and B079B8 which were 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

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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

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9210L169	REVIEWER: [illegible]	DATE: 4/5/93	PAGE 1 OF 1
COMMENTS: Metals			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Zinc	U	All	Present in blank
Lead	U	B07902	Present in blank
		B07987	
		B07988	
		B07984	
		B07985	
Lead	UJ	All	MS %R < 75%
Thallium	UJ	All	
Calcium	J	All	ICP Serial Dil'n out of CL
Magnesium	J		
Arsenic	BJ	B07941/B5	GFAA Analytical Spike out of CL
Lead	UJ	All	
Selenium	UJ	B07969/40	
	UJ	B07949	
	None-analyzed by MSA	B07940/41	
		B07987/84	
		B07985/88	

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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.

B079D2

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016901

Level (low/med): LOW Date Received: 10/06/92

% 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	5.70	B		F	
7440-39-3	Barium	34.80	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	27300.00		E	P	J
7440-47-3	Chromium	19.20			P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	100.00			P	
7439-92-1	Lead	2.70	B	NW	F	UJ
7439-95-4	Magnesium	8700.00		E	P	J
7439-96-5	Manganese	4.00	U		P	
7439-97-6	Mercury	37.30			CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	5500.00			P	
7782-49-2	Selenium	2.00	U		F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	19600.00			P	
7440-28-0	Thallium	2.00	U	N	F	UJ
7440-62-2	Vanadium	19.90	B		P	
7440-66-6	Zinc	28.60			P	U
	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 4/5/93 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079D3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016902

Level (low/med): LOW Date Received: 10/06/92

% 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	5.80	B		F	
7440-39-3	Barium	34.80	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	28600.00		E	P	J
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	NW	F	UJ
7439-95-4	Magnesium	9130.00		E	P	J
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	4410.00	B		P	
7782-49-2	Selenium	2.00	U		F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	20000.00			P	
7440-28-0	Thallium	2.00	U	N	F	UJ
7440-62-2	Vanadium	20.80	B		P	
7440-66-6	Zinc	18.90	B		P	U
	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:

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FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079G9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016904

Level (low/med): LOW Date Received: 10/06/92

% 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	8.80	B		F	
7440-39-3	Barium	31.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	37900.00		E	P	
7440-47-3	Chromium	13.50			P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	71.20	B		P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	11900.00		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	5270.00			P	
7782-49-2	Selenium	2.00	U	W	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	20100.00			P	
7440-28-0	Thallium	2.00	U	N	F	
7440-62-2	Vanadium	20.80	B		P	
7440-66-6	Zinc	15.30	U		P	
	Cyanide	13.00			C	
7440-69-9	Bismuth	15.00	U		P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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FORM I - IN 03/90

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079H0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016905

Level (low/med): LOW Date Received: 10/06/92

% 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	8.50	B		F	
7440-39-3	Barium	32.90	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	40300.00		E	P	
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00			P	
7439-89-6	Iron	15.00	U		P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	12700.00		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	5150.00			P	
7782-49-2	Selenium	2.00	U	W	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	22000.00			P	
7440-28-0	Thallium	2.00	U	N	F	
7440-62-2	Vanadium	22.10	B		P	
7440-66-6	Zinc	18.90	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:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079L0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016907

Level (low/med): LOW Date Received: 10/06/92

% 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	5.20	B		F	
7440-39-3	Barium	22.60	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	51300.00		E	P	J
7440-47-3	Chromium	14.00			P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	88.80	B		P	
7439-92-1	Lead	2.00	U	NW	F	UJ
7439-95-4	Magnesium	15300.00		E	P	J
7439-96-5	Manganese	7.80	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	45.20			P	
7440-09-7	Potassium	7300.00			P	
7782-49-2	Selenium	5.90		S	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	28600.00			P	
7440-28-0	Thallium	2.00	U	N	F	UJ
7440-62-2	Vanadium	21.70	B		P	
7440-66-6	Zinc	28.40			P	J
	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:

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FORM I - IN 03/90

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079L1

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016908

Level (low/med): LOW Date Received: 10/06/92

% 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	5.00	~~B~~	W	F	BJ
7440-39-3	Barium	22.90	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	50300.00		E	P	J
7440-47-3	Chromium	9.00	U		P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	18.90	B		P	
7439-89-6	Iron	15.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	14900.00		E	P	J
7439-96-5	Manganese	6.90	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	30.70	B		P	
7440-09-7	Potassium	7330.00			P	
7782-49-2	Selenium	5.70		S	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	28700.00			P	
7440-28-0	Thallium	2.00	~~U~~	N	F	UJ
7440-62-2	Vanadium	16.80	B		P	
7440-66-6	Zinc	18.30	~~B~~		P	J
	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:

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FORM I - IN 03/90

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079L9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016910

Level (low/med): LOW Date Received: 10/06/92

% 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	66.80	B		P	
7440-36-0	Antimony	66.20			P	
7440-38-2	Arsenic	6.50	B		F	
7440-39-3	Barium	34.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	29000.00		E	P	
7440-47-3	Chromium	19.60			P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	121.00			P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	8950.00		E	P	
7439-96-5	Manganese	4.30	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	25.00	B		P	
7440-09-7	Potassium	5020.00			P	
7782-49-2	Selenium	2.00	U	W	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	15700.00			P	
7440-28-0	Thallium	2.00	U	N	F	
7440-62-2	Vanadium	20.30	B		P	
7440-66-6	Zinc	21.40			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:

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FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079D0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016911

Level (low/med): LOW Date Received: 10/06/92

% 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	7.00	B		F	
7440-39-3	Barium	31.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	29600.00		E	P	J
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	NW	F	UJ
7439-95-4	Magnesium	9040.00		E	P	J
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	5000.00	B		P	
7782-49-2	Selenium	2.00	U		F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	16300.00			P	
7440-28-0	Thallium	2.00	U	N	F	UJ
7440-62-2	Vanadium	20.80	B		P	
7440-66-6	Zinc	22.50			P	U
	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:

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FORM I - IN 03/90

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079B7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016913

Level (low/med): LOW Date Received: 10/06/92

% 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	5.60	B		F	
7440-39-3	Barium	26.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.20			P	
7440-70-2	Calcium	44800.00		E	P	J
7440-47-3	Chromium	28.20			P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	110.00			P	
7439-92-1	Lead	4.60		NW	F	J UJ
7439-95-4	Magnesium	12800.00		E	P	J
7439-96-5	Manganese	4.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	41.80			P	
7440-09-7	Potassium	6840.00			P	
7782-49-2	Selenium	4.40	B	S	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	22800.00			P	
7440-28-0	Thallium	2.00	U	N	F	UJ
7440-62-2	Vanadium	25.60	B		P	
7440-66-6	Zinc	22.10			P	J
	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:

4/5/93

FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079B8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016914

Level (low/med): LOW Date Received: 10/06/92

% 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	6.50	B		F	
7440-39-3	Barium	26.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	43400.00		E	P	J
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	20.00	B		P	
7439-92-1	Lead	2.20	B	NW	F	UJ UJ
7439-95-4	Magnesium	12400.00		E	P	J
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	6310.00			P	
7782-49-2	Selenium	8.30		S	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	22000.00			P	
7440-28-0	Thallium	2.00	B	N	F	UJ
7440-62-2	Vanadium	24.30	B		P	
7440-66-6	Zinc	20.40			P	U
	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:

4/5/93

FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079B4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016916

Level (low/med): LOW Date Received: 10/06/92

% 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	2.60	B		F	
7440-39-3	Barium	14.60	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	45300.00		E	P	J
7440-47-3	Chromium	45.70			P	
7440-48-4	Cobalt	9.00	U		P	
7440-50-8	Copper	8.00	U		P	
7439-89-6	Iron	1060.00			P	
7439-92-1	Lead	2.70	B	NW	F	UJ
7439-95-4	Magnesium	13200.00		E	P	J
7439-96-5	Manganese	25.00			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	7750.00			P	
7782-49-2	Selenium	2.90	B	S	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	21700.00			P	
7440-28-0	Thallium	2.00	U	N	F	UJ
7440-62-2	Vanadium	18.60	B		P	
7440-66-6	Zinc	24.00			P	J
	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:

4/8/93

FORM I - IN 03/90

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B079B5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

Matrix (soil/water): WATER Lab Sample ID: 921016917

Level (low/med): LOW Date Received: 10/06/92

% 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	2.10	~~B~~	W	F	BJ
7440-39-3	Barium	14.00	U		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.00	U		P	
7440-70-2	Calcium	43900.00	/	E	P	J
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	69.70	B		P	
7439-92-1	Lead	2.10	~~B~~	NW	F	J+ WS
7439-95-4	Magnesium	12600.00	/	E	P	J
7439-96-5	Manganese	16.40			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.00	U		P	
7440-09-7	Potassium	6600.00			P	
7782-49-2	Selenium	5.50		S	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	21400.00			P	
7440-28-0	Thallium	2.00	~~B~~	N	F	WS
7440-62-2	Vanadium	8.00	U		P	
7440-66-6	Zinc	18.50	~~B~~		P	U
	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:

4/5/93

FORM I - IN 03/90

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9613427.1545

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 4/5/93
LABORATORY: Weston	CASE:	SDG: 9210L169
SAMPLES/MATRIX: Water		
B079D2	B079L0	B079R7
B079D3	B079L1	B079R8
B079G9	B079L9	B079R4
B079H0	B079D0	B079R5

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.

9210L169

HOLDING TIME SUMMARY - FORM B-1

SDG:	REVIEWER:	DATE: 04/05/93	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
B07902	ICP	10/02/92		11/13/92 / 11/15/92		42 / 44	None
D3	Bi			11/15/92		44	
G9	As			11/11/92		40	
H0	Pb			11/12/92		41	
L0	Tl			11/19/92		48	
L1	Se			11/12/92		41	
L9	Hg			10/22/92		20	
D0							
B7							
B8							
B4							
B5							

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.: CLP169

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
Aluminum	49.0	U	49.0	U	49.0	U	49.0	U	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	-9.1	B	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	8.000	U	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	2.200	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	151.0	U	151.000	U	P
Thallium	2.0	U	2.0	U	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	89.5 17.900	B	P
Cyanide	10.0	U	10.0	U	10.0	U			10.000	U	C

FORM III - IN 03/90

4/5/93

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B079D2S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

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	75-125	2038.9000		49.0000	U	2000.00	101.9		P
Antimony	75-125	425.1001		60.0000	U	500.00	85.0		P
Arsenic	75-125	39.0000		5.7000	B	40.00	83.3		F
Barium	75-125	2048.8000		34.8000	B	2000.00	100.7		P
Beryllium	75-125	48.9000		1.0000	U	50.00	97.8		P
Cadmium	75-125	46.2000		7.0000	U	50.00	92.4		P
Calcium									NR
Chromium	75-125	225.5000		19.2000		200.00	103.1		P
Cobalt	75-125	512.8000		9.0000	U	500.00	102.6		P
Copper	75-125	249.5000		8.0000	U	250.00	99.8		P
Iron	75-125	1133.4000		100.1000		1000.00	103.3		P
Lead	75-125	15.9000		2.7000	B	20.00	66.0	N	F
Magnesium									NR
Manganese	75-125	517.2000		4.0000	U	500.00	103.4		P
Mercury									NR
Nickel	75-125	527.3999		20.0000	U	500.00	105.5		P
Potassium									NR
Selenium	75-125	10.4000		2.0000	U	10.00	104.0		F
Silver	75-125	44.4000		10.0000	U	50.00	88.8		P
Sodium									NR
Thallium	75-125	25.6000		2.0000	U	50.00	51.2	N	F
Vanadium	75-125	539.1001		19.9000	B	500.00	103.8		P
Zinc	75-125	551.0000		28.6000		500.00	104.5		P
Cyanide	75-125	97.2330		20.0000	U	100.00	97.3		C

Comments:

FORM V (Part 1) - IN 03/90

4/5/93

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B079D2L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

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	34.80	B	70.00	U	100.0		P
Beryllium	1.00	U	5.00	U			P
Cadmium	7.00	U	35.00	U			P
Calcium	27300.20		30418.01		11.4	E	P
Chromium	19.20		45.00	U	50.5		P
Cobalt	9.00	U	45.00	U			P
Copper	8.00	U	49.50	B	100.0		P
Iron	100.10		128.50	B	28.4		P
Lead							
Magnesium	8703.90		9804.50	B	12.6	E	P
Manganese	4.00	U	20.00	U			P
Mercury							
Nickel	20.00	U	100.00	U			P
Potassium	5502.90		6700.00	U	64.0		P
Selenium							
Silver	10.00	U	50.00	U			P
Sodium	19604.10		19352.50	B	1.3		P
Thallium							
Vanadium	19.90	B	40.00	U	100.0		P
Zinc	28.60		141.50		394.8		P

FORM IX - IN

03/90

4/5/93

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9210L169	REVIEWER: [illegible]	DATE: 4/5/93	PAGE 1 OF 2	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B079L1	Arsenic	83.1	B079L1	BJ
↓ B5	↓	82.7	↓ B5	BJ
B079L0	Lead	RSD = 39.3	B079L0	None - reanr
B079B4		RSD = 75.1	B4	None - reanr
B079D2		66.4	D2	UJ
D3		65.5	D3	UJ
G9		66.3	G9	UJ
L1		~~58~~ 64.5 4/5/93	L1	UJ
L9		55.3	L9	UJ
D0		65.0	D0	UJ
B7		65.5	B7	UJ
B8		52.9	B8	UJ
B5		52.7	B5	UJ
L0 Reanr		66.1	L0 Reanr	UJ
B4 Reanr	↓	41.6	B4 Reanr	UJ
↓ A0	Lead	78.1	↓ A0	UJ

9413127.1564

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9210L169	REVIEWER: [illegible]	DATE: 4/5/93	PAGE 2 OF 2	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B079G9	Selenium	65.8	B079G9	UJ
H0		60.5	H0	UJ
L0		50.6	L0	None- analyzed by MSA
L1		53.4	L1	None- analyzed by MSA
L9		70.4	L9	UJ
B7		44.9	B7	None- analyzed by MSA
B4		53.4	B4	None- analyzed by MSA
B5		51.3	B5	None analyzed by MSA
B8		52.3	B8	

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APR 1993
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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 9210L169-WES-894

INTRODUCTION

This memo presents the results of data validation on data package 9210L169-WES-894 consisting of six (6) 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
B079D2	10/02/92	WATER
B079G9	10/02/92	WATER
B079C0	10/02/92	WATER
B079C9	10/02/92	WATER
B079B7	10/02/92	WATER
B079B4	10/02/92	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 54% and 55%, 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. Six (6) samples were validated in this data set with a total of 48 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: 9210L169-WES-894 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 54% and 55%, 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.

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9613427.1559

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

SDG: 9210L169	REVIEWER: [illegible]	DATE: 4/6/93	PAGE 1 OF 1
COMMENTS: Wet Chemistry			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrate+Nitrite	J	All	MS %R <75%
Phosphate	UJ	All	Analyzed out of HT
TOS	J	↓	↓
~~TDS~~	~~R~~	~~B57987~~	4/7/93

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ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9613427.1563 0000004

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/23/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	Q	REPORTING LIMIT
-001	BO79D2	Alkalinity	100	MG/L		2.0
		Chloride by IC	11.9	MG/L		2.5
		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	28.1	MG/L		2.5
		Nitrate Nitrite	1.7	MG-N/L		0.20
		Total Dissolved Solids	233	MG/L		5.0
-004	BO79G9	Alkalinity	110	MG/L		2.0
		Chloride by IC	7.4	MG/L		0.25
		Fluoride by IC	0.50 u	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	39.0	MG/L		2.5
		Nitrate Nitrite	7.3	MG-N/L		2.5
		Total Dissolved Solids	310	MG/L		5.0
-007	BO79L0C0	Alkalinity	110	MG/L		2.0
		Chloride by IC	22.8	MG/L		5.0
		Fluoride by IC	0.50 u	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	107	MG/L		5.0
		Nitrate Nitrite	2.8	MG-N/L		1.0
		Total Dissolved Solids	390	MG/L		5.0

4/6/93

9613427.1564 0000005

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 10/23/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	Q	REPORTING LIMIT
-010	B079~~L~~C9	Alkalinity	100	MG/L		2.0
		Chloride by IC	12.1	MG/L		2.5
		Fluoride by IC	0.50 u	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	26.3	MG/L		2.5
		Nitrate Nitrite	1.1	MG-N/L		0.10
		Total Dissolved Solids	238	MG/L		5.0
-013	B079B7	Alkalinity	100	MG/L		2.0
		Chloride by IC	12.0	MG/L		5.0
		Fluoride by IC	0.53	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	89.4	MG/L		5.0
		Nitrate Nitrite	2.3	MG-N/L		0.20
		Total Dissolved Solids	361	MG/L		5.0
-016	B079B4	Alkalinity	100	MG/L		2.0
		Chloride by IC	14.4	MG/L		5.0
		Fluoride by IC	0.50 u	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	89.6	MG/L		5.0
		Nitrate Nitrite	2.3	MG-N/L		0.20
		Total Dissolved Solids	323	MG/L		5.0

4/6/93

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9613427.1566

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 4/6/93
LABORATORY: Weston	CASE:	SDG: 9210L169
SAMPLES/MATRIX: Waters		
B07902	B079L9	
G9	B7	
LD	B4	

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

TQS-B07987 4/7/93

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

9210L169

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

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07902	Alkalinity	10/02/92		10/08/92		6	None
G9	Cl-IC			10/13/92		11	
L0	F-IC					11	
L9	PO4-IC					11	
B7	SO4-IC					11	None
B4	CN			10/09/92		7	
	NO2/NO3			10/15/92		13	
	TDS			10/12/92		10	J

ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 10/23/92

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

WESTON BATCH #: 9210L169

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	BO79D2	Chloride by IC	62.2	11.9	50.0	101
		Chloride by IC MSD	62.3	11.9	50.0	101
		Fluoride by IC	10.8	0.50u	10.0	108
		Fluoride by IC MSD	10.7	0.50u	10.0	107
		Cyanide, Total	97.2	20.0 u	100	97.2
		Cyanide, Total MSD	108	20.0 u	100	108
		Phosphate by IC	5.8	0.25u	5.0	115
		Phosphate by IC MSD	5.6	0.25u	5.0	113
		Sulfate by IC	79.8	28.1	50.0	103
		Sulfate by IC MSD	79.4	28.1	50.0	103
		Nitrate Nitrite	2.8	1.7	2.0	54.4
		Nitrate Nitrite MSD	2.8	1.7	2.0	54.6
BLANK10	92LAL048-MB1	Alkalinity	98.0	0.50u	100	98.0
		Alkalinity MSD	94.0	0.50u	100	94.0
BLANK20	92LAL048-MB2	Alkalinity	95.0	0.50u	100	95.0
BLANK10	92LIC139-MB1	Chloride by IC	5.0	0.25u	5.0	99.1
		Chloride by IC MSD	4.9	0.25u	5.0	98.3
		Fluoride by IC	9.9	0.50u	10.0	99.3
		Fluoride by IC MSD	10	0.50u	10.0	99.8
		Phosphate by IC	4.8	0.25u	5.0	95.9
		Phosphate by IC MSD	4.8	0.25u	5.0	97.0
		Sulfate by IC	5.0	0.25u	5.0	99.9
		Sulfate by IC MSD	5.0	0.25u	5.0	99.1
BLANK10	92LNT181-MB1	Nitrate Nitrite	0.46	0.10u	0.50	93.0
		Nitrate Nitrite MSD	0.47	0.10u	0.50	93.6
BLANK20	92LNT181-MB2	Nitrate Nitrite	0.48	0.10u	0.50	95.0
BLANK30	92LNT181-MB3	Nitrate Nitrite	0.52	0.10u	0.50	104
BLANK40	92LNT181-MB4	Nitrate Nitrite	0.46	0.10u	0.50	92.4
BLANK50	92LNT181-MB5	Nitrate Nitrite	0.44	0.10u	0.50	89.0

4/6/93

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B079D2S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP169

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	75-125	2038.9000		49.0000	U	2000.00	101.9		P
Antimony	75-125	425.1001		60.0000	U	500.00	85.0		P
Arsenic	75-125	39.0000		5.7000	B	40.00	83.3		F
Barium	75-125	2048.8000		34.8000	B	2000.00	100.7		P
Beryllium	75-125	48.9000		1.0000	U	50.00	97.8		P
Cadmium	75-125	46.2000		7.0000	U	50.00	92.4		P
Calcium									NR
Chromium	75-125	225.5000		19.2000		200.00	103.1		P
Cobalt	75-125	512.8000		9.0000	U	500.00	102.6		P
Copper	75-125	249.5000		8.0000	U	250.00	99.8		P
Iron	75-125	1133.4000		100.1000		1000.00	103.3		P
Lead	75-125	15.9000		2.7000	B	20.00	66.0	N	F
Magnesium									NR
Manganese	75-125	517.2000		4.0000	U	500.00	103.4		P
Mercury									NR
Nickel	75-125	527.3999		20.0000	U	500.00	105.5		P
Potassium									NR
Selenium	75-125	10.4000		2.0000	U	10.00	104.0		F
Silver	75-125	44.4000		10.0000	U	50.00	88.8		P
Sodium									NR
Thallium	75-125	25.6000		2.0000	U	50.00	51.2	N	F
Vanadium	75-125	539.1001		19.9000	B	500.00	103.8		P
Zinc	75-125	551.0000		28.6000		500.00	104.5		P
Cyanide	75-125	97.2330		20.0000	U	100.00	97.3		C

Comments:

FORM V (Part 1) - IN 03/90

4/5/93