START 9613447.1727 0044419 9208L341-WES-753 19 2

000001 RECORD COPY 10/23/9

WESTON

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLE(S) RECEIVED:** 08-07-92
RFW #: 9208L341
W.O. #: 6168-02-01

INORGANIC NARRATIVE

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. Sample holding times as required by 40CFR136 were met with the exception of Total Organic Halides.

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%.

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

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

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% (40% for Total Organic Halides) 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).

Jack R. Tuschall, Ph.D. 09.17.92
Laboratory Manager Date
Lionville Analytical Laboratory

FEB 1996 RECEIVED EDMC

SEP 1992 RECEIVED OSM DMO

ncc/i08-341

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9208L341

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B07380	Total Organic Carbon	0.57	MG/L	0.50
		Total Organic Halides	69.1	UG/L	20.0
-002	B07375	Total Organic Carbon	0.57	MG/L	0.50
		Total Organic Halides	5.0 u	UG/L	5.0

000018

BOL: 250986972-5 OPC: W92-0-0575-9 TASK: 92-243

WESTON Analytics Use Only: 9208L341

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse Hanford Company
Est. Final Proj. Sampling Date:
Work Order #: ~~2228-24-01~~ 6168-02-01
Project Contact/Phone #: PH Butcher (509) 376-4045
AD Project Manager: Josie King
QC: CLP Del: CLP TAT: 35 Days
Date Rec'd: 8/7/92 Date Due: 9/11/92
Account #: WS Hanford

Refrigerator #			
#/Type Container	Liquid	1AG	1AG
	Solid		
Volume	Liquid	125ML	250ML
	Solid		
Preservatives		H2SO4	
ANALYSES REQUESTED		TOC	TOX

ORGANIC: VOA, BNA, Pest/PCB, Herb
INORG: Metal, CN

WESTON Analytics Use Only

MATRIX CODES: B - Soil, BE - 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	TOC 1	TOX 2
001	B07380			W	8-3-92	N/A	✓	✓
002	B07375			W	8-3-92	N/A	✓	✓

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
(1) 1; 125ml; aG; WATER; ~~TOX~~ TOC (H2SO4)
(2) 1; 250ml; aG, WATER; TOX (H2SO4)

Proj. - 100-HR-3

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	Relinquished by	Received by	Date	Time
EMERY D. Fred X	D. Haydt BES 8/7/92	8/7/92	2:30 PM	BES	8/7/92		

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

9613447.1729

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 100-HR-3

Collection Date 8-3-92

Ice Chest No. SML-192

Field Logbook No. EFL-0057

Bill of Lading/Airbill No. 250986972-5

Offsite Property No. W92-0-0575-9

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

BO 7375

1, 125ml, aG, WATER, TOC (H2SO4)
1, 250ml, aG, WATER, TOX (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: L.D. Walker	Received by: B. WHITMEN	Date/Time: 08-06-92 07:00
Relinquished by: B. WHITMEN	Received by:	Date/Time:
Relinquished by: Emery	Received by: D. Hurst	Date/Time: 8/7/92 2:30 P.M
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 100-HR-3

Collection Date 8-3-92

Ice Chest No. SML-192

Field Logbook No. EFL-0057

Bill of Lading/Airbill No. 250986972-5

Offsite Property No. W92-0-0575-9

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

Sample Identification

BO 7380

1, 125ml, aG, WATER, TOC (H2SO4)
1, 250ml, aG, WATER, TOX (H2SO4)

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: D. Walker	Received by: B. WHITTEN	Date/Time: 08-06-92 07:00
Relinquished by: B WHITTEN	Received by:	Date/Time:
Relinquished by: Emery	Received by: D. Haydt	Date/Time: 8/7/92 2:30 P.M.
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

000021

9613447 1737

83

FORM OF PAYMENT

Check ☐ CBL ☐ FCCOD ☐

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

EMERY WORLDWIDE A CF Company

SERVICES

UNITED STATES / CANADA: Same Day ☐ ☒ AM ☐ PM ☐ Second Day ☐ Saturday Delivery

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

Shipper's Account Number: E 850281585

Date: 08-06-92 | Origin: PSC | Shipment Number: 250986972 5

From:
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1162
2355 STEVENS DRIVE
RICHLAND WA

To:
JOSIE KING
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA

D. Hayot 8/7/92

Tariff Dest. | Gateway

Check to Shipper $

Hold for Pick Up ☐ Canada ☐

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

Customer's Reference Numbers: W81231-PB3DA W92-0-0575 #9 | Zip: 99352

E Consignee's Account Number | Zip: 19341

Description	Pcs.	L	W	H	Total Pieces	Total Weight (In Lbs.)
1 COOLER ID SML-192 WATER SAMPLES	1	21	16	17	1	46

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

Declared Value $

2509869725

Remarks: OVERNIGHT DELIVERY SIGNATURE SECURITY SERVICE

Shipper's Signature X [signature] ch 4

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

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

International Shipments: Free Domicile ☐ Commodity Code

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

International Customs Value | International Insurance

Use Charge

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

3-PhL-A

Terms and Conditions on Back

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VALIDATION SUMMARY

9613447.1734

9208L341-WES-753

000004

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9208L341

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B07380	Total Organic Carbon	0.57	MG/L	0.50
		Total Organic Halides	69.1 R	UG/L	20.0
-002	B07375 SDG	Total Organic Carbon	0.57	MG/L	0.50
		Total Organic Halides	5.0 ~~J~~R	UG/L	5.0

1/30/93
JM

BB
6/2/93

X01507
HR-3
3rd.

9613447.1735

000004

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9208L341

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B07380	Total Organic Carbon	0.57	MG/L	0.50
		Total Organic Halides	69.1 R	UG/L	20.0
-002	B07375	Total Organic Carbon	0.57	MG/L	0.50
		Total Organic Halides	5.0 ~~J~~ R	UG/L	5.0

TOX - R = Holding Time grossly exceeded
Insufficient instrument calibration data provided.

- J = Duplicate RPD out side acceptance Limits

1/20/93
JM

TOS1OX

9613447.1736

X01507

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: Westinghouse	REVIEWER: LM	DATE: 1/29/93
LABORATORY: Roy F. Weston	CASE:	SDG: B07375
SAMPLES/MATRIX: B07380, B07375		
2 water samples		

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 ≥0.995?	Yes	(No)	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	(N/A)
Was the titrant normality checked?	Yes	No	(N/A)

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

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

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

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

5. LABORATORY BLANKS

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

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

6. FIELD BLANKS

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

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

7. MATRIX SPIKE SAMPLE ANALYSIS

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

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

8. LABORATORY CONTROL SAMPLE

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

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

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

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

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

9. PERFORMANCE AUDIT ANALYSES

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

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

10. DUPLICATE SAMPLE ANALYSIS

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

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

11. FIELD DUPLICATE SAMPLES

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

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

12. FIELD SPLIT SAMPLES

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

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

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are instrument detection limits below the CRDL?	Yes	No	N/A

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

14. OVERALL ASSESSMENT AND SUMMARY

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

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

COMMENTS (attach additional sheets as necessary):

TOX - Holding Times Grossly Exceeded
- Insufficient Instrument Calibration Data provided.

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RECORD COPY
10/23/9

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLE(S) RECEIVED:** 08-07-92
RFW #: 9208L341
W.O. #: 6168-02-01

INORGANIC NARRATIVE

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. Sample holding times as required by 40CFR136 were met with the exception of Total Organic Halides.

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%.

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

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

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% (40% for Total Organic Halides) 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).

09.17.92
Date

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

ncc/108-341

SEP 1992
RECEIVED
OSM DMO

WESTON

ADDENDUM

I certify that this data package is in compliance with the terms and conditions of this contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: SOM N. BASUTHAKUR

Date: 09.17.92 Title: UNIT - LEADER

pas\4-92\addendum

ROY F. WESTON, INC.
GLOSSARY OF TERMS - INORGANIC REPORTS

DATA QUALIFIERS

U - Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* - Indicates that the original sample result is greater than 4x the spike amount added. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

ABBREVIATIONS

MB - Method or preparation blank.
MS - Matrix Spike.
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R or -S following these codes indicates a replicate or spike analysis respectively.

ANALYTICAL METAL METHODS

As :	EPA 206.2	SE	:	EPA 270.2
Pb :	EPA 239.2	ICP Scan	:	EPA 200.7
Hg :	EPA 245.1	All Others	:	EPA 200.7
Tl :	EPA 279.2	EP Leachates	(except Hg)	200.7

The analytical methods applied by the laboratory for the determination of drinking water are found in 5.2.1.

NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

The range for mercury solid laboratory control standards is 66.9% to 133.8%.

ROY F. WESTON INC.

INORGANIC METHOD BLANK DATA SUMMARY PAGE 09/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9208L341

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
BLANK10	92LTW044-MB1	Total Organic Carbon	0.50 u	MG/L	0.50
BLANK20	92LTW044-MB2	Total Organic Carbon	0.50 u	MG/L	0.50
BLANK30	92LTW044-MB3	Total Organic Carbon	0.50 u	MG/L	0.50
BLANK40	92LTW044-MB4	Total Organic Carbon	0.50 u	MG/L	0.50
BLANK50	92LTW044-MB5	Total Organic Carbon	0.50 u	MG/L	0.50
BLANK60	92LTW044-MB6	Total Organic Carbon	0.50 u	MG/L	0.50
BLANK10	92LTX144-MB1	Total Organic Halides	5.0 u	UG/L	5.0
BLANK20	92LTX144-MB2	Total Organic Halides	5.0 u	UG/L	5.0

ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 09/11/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9208L341

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	B07380	Total Organic Carbon	5.5	0.57	5.0	98.1
		Total Organic Halides	268	69.1	200	99.7
BLANK10	92LTW044-MB1	Total Organic Carbon	4.9	0.50u	5.0	97.8
		Total Organic Carbon	5.1	0.50u	5.0	102
BLANK20	92LTW044-MB2	Total Organic Carbon	4.9	0.50u	5.0	97.8
BLANK30	92LTW044-MB3	Total Organic Carbon	4.8	0.50u	5.0	95.8
BLANK40	92LTW044-MB4	Total Organic Carbon	4.8	0.50u	5.0	95.8
BLANK50	92LTW044-MB5	Total Organic Carbon	4.9	0.50u	5.0	97.8
BLANK60	92LTW044-MB6	Total Organic Carbon	4.8	0.50u	5.0	95.8
BLANK10	92LTX144-MB1	Total Organic Halides	56.3	5.0 u	50.0	113
BLANK20	92LTX144-MB2	Total Organic Halides	47.0	5.0 u	50.0	94.0