START 3507.0753 9308L710-WES-1253

0045880

OCT 1993 RECEIVED SDLA

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

Client : WESTINGHOUSE HANFORD
RFW# : 9308L710

W.O. #: 06168-002-001-9999-00
Date Received: 08-26-93

INORGANIC

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

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

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

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

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

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

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

9.2.93
Date

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

NOV 1996 RECEIVED LIMC

pas/i08-710

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: Ray Siera

Name: Ray Siera

Date: 9.2.92

Title: Section Manager

pas\4-92\addendum

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/02/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9308L710

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B094K6	% Solids	96.2	%	0.10	1.0
		Chromium VI	0.10 u	MG/KG	0.10	1.0

ROY F. WESTON INC.

INORGANIC PRECISION REPORT 09/02/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9308L710

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	%RPD	DILUTION FACTOR(REP)
-001REP	B094K6	% Solids	96.2	96.8	0.63	1.0
		Chromium VI	0.10u	0.10u	NC	1.0

9713507.0757

BURLINGTON AIR EXPRESS

CORPORATE SUPPORT GROUP
18200 VON KARMAN AVE
IRVINE, CA 92715

997 333 131
AIRBILL NUMBER

DEST. SORT CODE

-25-93

SHIPPER'S REFERENCE NO.: 1353-P235H W93-0-0667
SHIPPER'S ACCOUNT NO.:
COMPANY: CA ROWLEY #37
DEPT./FLOOR: C/O
FROM (YOUR NAME): WESTINGHOUSE HANFORD CO
PHONE NO.: (509) 376-6665
WESTINGHOUSE SHIPPING DEPT.
STREET ADDRESS:
CITY:
STATE: WA
ZIP (REQUIRED):

2 CONSIGNEE'S REFERENCE NO.:
CONSIGNEE'S ACCOUNT NO.:
COMPANY: WESTON LAB
DEPT./FLOOR:
TO (CONSIGNEE NAME): WESTON LAB /JOSIE KING
PHONE NO.:
ACCURATE STREET ADDRESS (BURLINGTON CANNOT DELIVER TO A P.O. BOX): 208 WELSH POOL ROAD
CITY: LIONVILLE
STATE: PA
ZIP (REQUIRED): 19341

3 C.O.D.
$
CONSIGNEE'S CHECK O
MARK IF APPLICABLE
DECLARED VALUE
$
LIMIT OF LIABILITY
LIABILITY IS AGREED AND LIMITED TO BE $50.00 OR $.50 PER P WHICHEVER IS GREATER UNLESS HIGHER VALUE IS DECLARED AND CABLE CHARGES PAID. SEE REVERSE SIDE OF AIRBILL PARAGRAPH DECLARED VALUE LIMITATIONS

1-800-CALL-BA
FOR INFORMATION OR
BAX OFFICE NEAREST

BILLING INFORMATION

- [x] PREPAID (SHIPPER) $ _____ CASH RECEIVED (PAID IN ADVANCE)
- [ ] COLLECT (CONSIGNEE)
- [ ] 3RD PARTY (ACCT. NO. OR BILLING ADDRESS REQ'D.)

ACCOUNT NO.:
COMPANY NAME:
STREET ADDRESS:
CITY: STATE: ZIP:

997 333 131
AIRBILL NUMBER

5 SERVICE REQUESTED

- [x] OVERNIGHT (NEXT BUSINESS DAY)
- [ ] SECOND DAY
- [ ] NEXT FLIGHT OUT
- [ ] _____

CHECK BELOW IF PACKAGE IS:
- [ ] LETTER
- [ ] G.O.H. (GARMENT ON HANGER)

6 HANDLING INFORMATION (* SPECIAL RATE MAY APPLY)

- [ ] HOLD AT BAX
- [ ] *DANGEROUS GOODS
- [ ] *SATURDAY DELIVERY
- [ ] *SPECIAL DELIVERY
- [ ] *CONVENTION
- [ ] *GOVERNME SHIPMENT

SPECIAL INSTRUCTIONS / ADDITIONAL REFERENCE INFORMATION:

NO. OF PCS.	WEIGHT	LENGTH	WIDTH	HEIGHT	DESCRIPTION
1	15				COOLER ID # 117 SAMPLES 8094K6
TOTAL PCS. 1	TOTAL WT. 15				

_____ SKID(S) SAID TO CONTAIN _____ NO O

RATE QUOTE NUMBER:

RECEIVED BY BAX AT [x] SHIPPER'S DOOR [ ] BAX TERMINAL

OUTSIDE CARF
CHARGES ADVANCED: $
PRO NUMBER:
CARRIER NAME:

7
SIGNATURE OF SHIPPER: X
RELEASE SIGNATURE (SHIPPER AUTHORIZES BAX TO DELIVER SHIPMENT WITHOUT A DELIVERY SIGNATURE AS PER CONDITIONS ON REVERSE OF THIS PAGE.): X
TIME/DATE OF PICK-UP:
DRIVER NO.:
SIGNED FOR BAX: X

OP 100 (11-92)

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

CONSIGNEE C

0002

9713507.0758

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector C.A. Kruger Date 8-24-93

Company Contact CA Kruger Telephone (509) 372-3293

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested
B094K6	S	8-24-93	11:25	(1) 500 ml plastic jar - Cr^{+6} Method 7197
B094K6	S	8-24-93	11:25	(1) 500 ml plastic jar - ICP Metals Method 60

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

Field Information SAF # 93-279 190-B Building

Special Handling and/or Storage Samples to be Kept cooled to 4°C prior to analysis

Possible Sample Hazards Unknown

0004

A 6000-406 (06/

SAMPLE STATUS REPORT FOR E 1501. E-BLANK B094K6 TIME: 8/25/93 8:18
DISPATCHED: 8/23/93 13:40 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 8/25/93 8: 2

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

9213507.0760

MAY 03 1993

DON'T SAY IT — *Write It!* DATE: April 29, 1993

TO: V. Weil, Transportation

FROM: JE Lindsey S0-05

Telephone: 3-1858

cc: JA Ard S0-05
RH Griffin S4-67 *
DL Hill X7-02 *
JE Hodgson X7-02 *
MC Hughes R2-81 *
SG Marske R2-77 *
BF Weaver T3-11 *
JW Schmidt H6-30 *
PJ Valcich H6-04 *
CD Wade N1-06 *
* w/o attachment

file

Attachment

SUBJECT: FACILITIES EXEMPT FROM UNCONDITIONAL RELEASE SURVEY

Please be advised that the following facilities are exempt from unconditional release survey, per advisement of Health Physics. This memo provides the information as an interim prior to the issuance of the next list.

Facility: 190-B/185-B Pumphouse Complex
Location: Located west of the 105-B Reactor Building in the 100B Area
Approved by: KA Smith, Health Physics Area Manager

Facility: 100-IU-1 Operable Unit and all waste sites contained within. Includes: Riverland Railyard Homestead sites, Munition Cache, Anti-aircraft artillery sites, and Military exercise sites.
Location: South of the Vernita Bridge and west of Highway 240
Approved by: KA Smith, Health Physics Area Manager

ters are attached detailing the above information.

ld you have any questions, please contact Janet Lindsey on 3-1858.

k you.

9213507.0761

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
Westinghouse Hanford Co		W93-0-0667

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Environmental Restoration	Site Remediation Mangt	

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

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
Weston LAB 208 WELSH POOL Road Lionville PA 19341	Josie King Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Polycooler. Samples packed in plastic bags and stored on wet ICE Sample # B074K6 Weight + Cooler # 117	

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

Necessity for the Off-Site Use of this Property

Samples require analysis that are not presently available at this site.

Rad Pass # 9913331131

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

RM Clearance for Public Release	RM Survey No	Date

Location of Property (Area & Bldg.)	Contact	Phone
190-B	C. A. Rowley	372-329:

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
8-25-93	P23BH	N/A

Originated By	Date	Authorized By	Date
C.A. Rowley	8-25-93	HENCKEL	8-25-93

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		Hankel	8/25/9

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

DISTRIBUTION

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

9007

9213507.0762

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: CA Rowley

Company Contact: C.A. Rowley — Telephone: 372-3293

Project Designation/Sampling Locations: 190-B — Collection Date: 8-24-93

SAF # 93-279

Ice Chest No.: 117 — Field Logbook No.: N/A

Bill of Lading/Airbill No.: 997333131 — Offsite Property No.: W93-0-066

Method of Shipment: Sample double-bagged, place on wet ICE, Air Frieght

Shipped to: Wieston

Possible Sample Hazards/Remarks: unknown

See Samples analysis request for individual containers.

Sample Identification

B094K6 (2) 500 ml jars

☐ Field Transfer of Custody

CHAIN OF POSSESSION (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Craig Rowley		
Relinquished by:	Received by:	Date/Time:
[illegible]	B. [illegible]	8/26/93 3:15
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:
Comments:		

0008

9713507.0763

WESTON®

BATCH PROCESSING FORM

CLIENT: Westinghouse Hanford

UNPACKED: BJD

RFW # : 93086 710

NUMBERED BY: 1

PROJECT MANGER: Josie Edwards

	DOCUMENT
Please list all quick turn analyses :	N/A
Please list sample ID or RFW # of broken samples or cracked lids:	
List all samples that were rec'd leaking:	
Record all sample ID's that do not match chain of custody or sample bottles:	
Document all samples that were rec'd in improper sample containers:	
Is pH of sample required ? YES/NO	ALL preservatives correct YES / NO
List any samples received that were not on the chain of custody:	
Was Temperature of cooler taken ?	

PLEASE PROVIDE ANY FURTHER INFORMATION ABOUT THIS BATCH BELOW

ORIG. PAPERWORK TO: Josie Edwards COPY TO:

PROCESSED BY Mary

RFW 21-21-002/E-07/93

9213507.0764

B.19.1

APR 21 1993

DON'T SAY IT — *Write It!*

DATE: March 31, 1993 93-33530-051

TO: S. E. Hulsey SO-05

FROM: K. A. Smith NI-06

Telephone: 6-3323

cc: R. H. Griffin S4-67
R. E. Heineman R3-12
D. L. Hill X7-02
J. E. Hodgson X7-02
M. C. Hughes R2-81
S. G. Marske R2-77
B. F. Weaver T3-11
KAS: File/L3

SUBJECT: FACILITIES/AREAS EXEMPT FROM RADIOLOGICAL RELEASE SURVEY

Add the following facilities to the approved exempt facility/area list:

Facility / Area Names And Locations

190-B/185-B Pumphouse Complex
Located west of the 105-B Reactor Bulding in the 100-B Area.

Basis: The proposed site has no history of radiological work performed within its boundaries. Most of the 190-B tunnel equipment, tanks, pipes, and valving were removed by a salvage contractor in 1984. Radiological contamination was not detected. The pipe tunnel area which leads to 105-B was surveyed on 3/29/93 (survey record # 128139) and no detectable levels of contamination were reported. The only likely source of contamination would be due to windblown material or from deposits of contaminated animal excreta on the property. Performance of a detailed radiological survey of the facility is not deemed to be a reasonable course of action due to considerations for process knowledge and risk of injury to survey personnel. Access to the facility is restricted due to unstable roof conditions. The facility is projected to be dismantled and removed in FY 93-94. Spot checks for indications of radioactive contamination will be performed by Health Physics during component removal and on the structural debris once the building is down. This letter of exemption will remain in effect so long as radioactive contamination is not detected.

Contact: If there are questions or concerns regarding this exemption please contact C. D. Wade (6-3770), or K. A. Smith (6-3323).

Approved:

WESTON Analytics Use Only
9358L710

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

0011

Client: US Warehouse Newport
Est. Final Proj. Sampling Date
Work Order #: 061168-002-001-9999-005
Project Contact/Phone #
AD Project Manager: Jesse Edwards
QC: SC 8246 Del: 5000 TAT: 10 Day
Date Rec'd: 8/26/93 Date Due: 9/6/93
Account #: WS-HANFORD

Refrigerator #								3	3							
#/Type Container	Liquid							1PL	1PL							
	Solid															
Volume	Liquid							500ml	500ml							
	Solid															
Preservatives								1	1							
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			or 6	Metal	CN						
WESTON Analytics Use Only								TCRA	See below							

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TOLP Leachate, WI - Wipe, X - Other, F - Fish	001	B094K6			S	8/24/93								X	X						
					S	8/24/93		mbh 8/26/93													
		Metals = ICP																			
		Priority Turnaround RCRA Protocol																			

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
SAF# 93-279
Temp = 6.2

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

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 4173331-31
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
Ken Sinclair	M. Hanzie	8/26/93	3:15 pm
— mbh 8/26/93			

Relinquished by	Received by	Date	Time
	mbh	8/26/93	

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

9713507.0765

Item/Reason	Relinquished by	Received by	Date	Time
CRL	locked fridge	M. Felen	8/27/93	1700
CRL	M. Felen	locked fridge	8/27/93	2251
% Sol	B. Burnett	M Jason	8-30-93	1350
% Sol	M Jason	[illegible]	8-30-93	1545
Metals	M. [illegible]	Symposiers	9-4-93	2:00
metals	Anna Frolinsky	M. [illegible]	9-7-93	4:00

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L710

W.O. #: 06168-002-001-9999-00
Date Received: 08-26-93

CLP METALS

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

2. The sample and associated QC samples were prepared and analyzed in accordance with the following protocols: SW-846.

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

4. All analyses were performed within the required holding times.

5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.

7. All Preparation/Method Blanks were below Reporting Limits.

8. All ICP Interference Check Samples (ICSA and ICSAB) were within control limits.

9. All Laboratory Control Samples (LCS) were within the 80-120% control limits.

10. All Serial Dilution percent differences were within SW-846 control limits except for:

RFW #	Element	%Difference	RFW #	Element	%Difference
001	Iron	12.7	001	Manganese	12.5

11. All Matrix Spike recoveries were within the 75-125% control limits (exception allowed when sample concentration exceeds the spike added concentration by a factor of 4 or more)
except for:

RFW #	Element	%Recovery	RFW #	Element	%Recovery
001	Cadmium	69.2	001	Manganese	161.7

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

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

WESTON

12. All Matrix Spike Duplicates were within the 20% Relative Percent Difference (RPD) control limits except for:

RFW #	Element	%RPD
001	Aluminum	59.9
	Calcium	46.3
	Manganese	67.2

13. All Duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits for samples values greater than 5X Reporting Limit, or +/- the Reporting Limits for sample values less than 5X Reporting Limit.

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

Raymond A. Sierg
Inorganic Section Manager
Lionville Analytical Laboratory

9.14.93
Date

mlj/clp-met.nar

9713507.0769

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

Client: WESTINGHOUSE HANFORD
RFW #: 9308L710

W.O. #: 06168-002-001-9999-00
Date Received: 08-26-93

CLP METALS ADDENDUM

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

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

Raymond A. Siery
Inorganic Section Manager
Lionville Analytical Laboratory

9.14.93
Date

mlj\clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 09/08/93

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

WESTON BATCH #: 9308L710

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B094K6	Silver, Total	1.0	u	MG/KG	1.0	1.0
		Aluminum, Total	3950		MG/KG	20.8	1.0
		Barium, Total	48.2		MG/KG	20.8	1.0
		Beryllium, Total	0.52	u	MG/KG	0.52	1.0
		Calcium, Total	5890		MG/KG	520	1.0
		Cadmium, Total	0.52	u	MG/KG	0.52	1.0
		Cobalt, Total	7.5		MG/KG	5.2	1.0
		Chromium, Total	13.9		MG/KG	1.0	1.0
		Copper, Total	17.8		MG/KG	2.6	1.0
		Iron, Total	16800		MG/KG	10.4	1.0
		Potassium, Total	968		MG/KG	520	1.0
		Magnesium, Total	2830		MG/KG	520	1.0
		Manganese, Total	173		MG/KG	1.6	1.0
		Sodium, Total	520	u	MG/KG	520	1.0
		Nickel, Total	7.2		MG/KG	4.2	1.0
		Antimony, Total	6.2	u	MG/KG	6.2	1.0
		Vanadium, Total	37.7		MG/KG	5.2	1.0
		Zinc, Total	27.7		MG/KG	2.1	1.0

ROY F. WESTON INC.

INORGANIC ACCURACY REPORT 09/08/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9308L710

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B094K6	Silver, Total	5.0	1.0 u	5.2	96.2	1.0
		Silver, Total MSD	4.8	1.0 u	5.2	92.3	1.0
		Aluminum, Total	4970	3950	208	490 *	1.0
		Aluminum, Total MSD	4500	3950	208	264 *	1.0
		Barium, Total	229	48.2	208	87.0	1.0
		Barium, Total MSD	223	48.2	208	84.0	1.0
		Beryllium, Total	5.0	0.52u	5.2	96.2	1.0
		Beryllium, Total MSD	5.0	0.52u	5.2	96.2	1.0
		Calcium, Total	8700	5890	2600	108	1.0
		Calcium, Total MSD	7640	5890	2600	67.5	1.0
		Cadmium, Total	3.6	0.52u	5.2	69.2	1.0
		Cadmium, Total MSD	3.9	0.52u	5.2	75.0	1.0
		Cobalt, Total	51.6	7.5	52.0	84.8	1.0
		Cobalt, Total MSD	50.8	7.5	52.0	83.3	1.0
		Chromium, Total	31.6	13.9	20.8	85.1	1.0
		Chromium, Total MSD	31.5	13.9	20.8	84.6	1.0
		Copper, Total	40.0	17.8	26.0	85.4	1.0
		Copper, Total MSD	37.9	17.8	26.0	77.3	1.0
		Iron, Total	18900	16800	104	2080 *	1.0
		Iron, Total MSD	17000	16800	104	247 *	1.0
		Potassium, Total	3540	968	2600	98.8	1.0
		Potassium, Total MSD	3420	968	2600	94.2	1.0
		Magnesium, Total	5840	2830	2600	116	1.0
		Magnesium, Total MSD	5650	2830	2600	108	1.0
		Manganese, Total	257	173	52.0	162	1.0
		Manganese, Total MSD	215	173	52.0	80.4	1.0
		Sodium, Total	2860	520 u	2600	110	1.0
		Sodium, Total MSD	2780	520 u	2600	107	1.0
		Nickel, Total	51.1	7.2	52.0	84.4	1.0
		Nickel, Total MSD	50.4	7.2	52.0	83.1	1.0
		Antimony, Total	42.9	6.2 u	52.0	82.5	1.0
		Antimony, Total MSD	42.2	6.2 u	52.0	81.2	1.0
		Vanadium, Total	86.2	37.7	52.0	93.3	1.0
		Vanadium, Total MSD	82.7	37.7	52.0	86.5	1.0
		Zinc, Total	76.4	27.7	52.0	93.7	1.0
		Zinc, Total MSD	73.3	27.7	52.0	87.7	1.0

ROY F. WESTON INC.

INORGANIC DUPLICATE SPIKE REPORT 09/08/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9308L710

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%RPD
-001	B094K6	Silver, Total	96.2	92.3	4.1
		Aluminum, Total	490	264 *	NC
		Barium, Total	87.0	84.0	3.5
		Beryllium, Total	96.2	96.2	0.00
		Calcium, Total	108	67.5	46.3
		Cadmium, Total	69.2	75.0	8.0
		Cobalt, Total	84.8	83.3	1.8
		Chromium, Total	85.1	84.6	0.5
		Copper, Total	85.4	77.3	9.9
		Iron, Total	2080	247 *	NC
		Potassium, Total	98.8	94.2	4.8
		Magnesium, Total	116	108	6.5
		Manganese, Total	162	80.4	67.2
		Sodium, Total	110	107	2.7
		Nickel, Total	84.4	83.1	1.6
		Antimony, Total	82.5	81.2	1.6
		Vanadium, Total	93.3	86.5	7.5
		Zinc, Total	93.7	87.7	6.6
LCS2	93L3496-LC2	Silver, LCS	86.2	86.6	0.4
		Calcium, LCS	91.2	92.1	0.95
		Potassium, LCS	93.3	93.7	0.42
		Magnesium, LCS	94.6	94.8	0.29
		Sodium, LCS	93.8	93.8	0.02
LCS2	93L3495-LC2	Aluminum, LCS	93.4	92.2	1.2
		Barium, LCS	91.6	90.8	0.8
		Beryllium, LCS	95.2	94.4	0.84
		Cadmium, LCS	82.8	81.2	2.0
		Cobalt, LCS	87.7	86.5	1.4
		Chromium, LCS	93.6	91.6	2.2
		Copper, LCS	89.4	88.6	0.8
		Iron, LCS	91.9	90.8	1.2
		Manganese, LCS	90.5	89.6	1.0
		Nickel, LCS	92.0	90.0	2.1
		Antimony, LCS	92.1	90.2	2.1
		Vanadium, LCS	93.2	92.2	1.0
		Zinc, LCS	91.2	89.5	1.9

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

SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	%RPD	FACTOR(R
-001REP	B094K6	Silver, Total	1.0 u	1.0 u	NC	1.0
		Aluminum, Total	3950	4440	11.6	1.0
		Barium, Total	48.2	51.6	6.8	1.0
		Beryllium, Total	0.52u	0.52u	NC	1.0
		Calcium, Total	5890	4880	18.8	1.0
		Cadmium, Total	0.52u	0.52u	NC	1.0
		Cobalt, Total	7.5	8.0	6.5	1.0
		Chromium, Total	13.9	15.2	8.9	1.0
		Copper, Total	17.8	16.9	5.2	1.0
		Iron, Total	16800	17700	5.4	1.0
		Potassium, Total	968	892	8.2	1.0
		Magnesium, Total	2830	2830	0.24	1.0
		Manganese, Total	173	188	8.3	1.0
		Sodium, Total	520 u	520 u	NC	1.0
		Nickel, Total	7.2	6.8	5.7	1.0
		Antimony, Total	6.2 u	6.2 u	NC	1.0
		Vanadium, Total	37.7	40.9	8.1	1.0
		Zinc, Total	27.7	29.5	6.3	1.0

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B094K6

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Matrix (soil/water): SOIL Lab Sample ID: 930871001

Level (low/med): LOW Date Received: 8/26/93

% Solids: 96.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3950.00			P
7440-36-0	Antimony	4.89	U		P
7440-38-2	Arsenic				NR
7440-39-3	Barium	48.20			P
7440-41-7	Beryllium	.45	B		P
7440-43-9	Cadmium	.52	U	N	P
7440-70-2	Calcium	5890.00			P
7440-47-3	Chromium	13.90			P
7440-48-4	Cobalt	7.50			P
7440-50-8	Copper	17.80			P
7439-89-6	Iron	16800.00		E	P
7439-92-1	Lead				NR
7439-95-4	Magnesium	2830.00			P
7439-96-5	Manganese	173.00		NE	P
7439-97-6	Mercury				NR
7440-02-0	Nickel	7.20			P
7440-09-7	Potassium	968.00			P
7782-49-2	Selenium				NR
7440-22-4	Silver	.62	U		P
7440-23-5	Sodium	271.00	B		P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	37.70			P
7440-66-6	Zinc	27.70			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN

INTEROFFICE MEMO RICHLAND 9.15507.0775

To: Sripriya

From: Heidi Schoser

Subject: Data Validation

Date: 10-28-93

ATKEARNEY

Sripriya:

Here is the data package (#X02372) you asked me to validate. I did the best I could with it, but still have a few questions.

I am confused about why they used two different methods to do the analysis. The only times they used data from the UTL method was for Ca,Mg,K,Ag and Na. They also had two IDL's and stated in the case narrative that they were using the higher of the two numbers. I don't think that they can do this, but since each of them were done on the same day, I'm not sure which one to go by. So I didn't change the results that they reported on the forms.

When dealing with Ca,Mg,K,Ag and Na, there were several times that the result from the HSL method was higher than the IDL reported, but since they were using the results from the UTL method they were below the reported IDL.

In the HSL raw data there is a sheet with the lab sample #-001T, I didn't use this data for any of the forms, should I have?

The %D's reported on form 9 are completely different from the ones I calculated.

Still not sure how to validate form 6. As a matter of fact, I have checked all the calculations and everything, so the only thing you really need to check is the qualifiers. There are still a few things that I'm not sure about, but Lori should clear them up for me when she finishes with my sample data packages.

I hope that all of this makes sense to you. Everything was pretty straight forward except for them using two methods. If you have any questions please call me.

Heidi

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B094K6

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Matrix (soil/water): SOIL Lab Sample ID: 930871001

Level (low/med): LOW Date Received: 8/26/93

% Solids: 96.2

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

	CAS No.	Analyte	Concentration	C	Q	M	
	7429-90-5	Aluminum	3950.00			P	
	7440-36-0	Antimony	4.89	U	UJ	P	Spike % R < 75
	7440-38-2	Arsenic				NR	
	7440-39-3	Barium	48.20			P	
	7440-41-7	Beryllium	.45	B	J	P	D, 1 %D
	7440-43-9	Cadmium	.52	U	N UJ	P	Spike % R < 75
UTL	7440-70-2	Calcium	5890.00			P	
	7440-47-3	Chromium	13.90		J	P	D, 1 %D
	7440-48-4	Cobalt	7.50		J J	P	LCS outside limits, D, 1%
	7440-50-8	Copper	17.80			P	
	7439-89-6	Iron	16800.00		EJ	P	D, 1 %D
	7439-92-1	Lead				NR	
	7439-95-4	Magnesium	2830.00			P	
	7439-96-5	Manganese	173.00		NEJ J	P	Spike Recovery > 125%, D
	7439-97-6	Mercury				NR	
	7440-02-0	Nickel	7.20			P	
UTL	7440-09-7	Potassium	968.00			P	
	7782-49-2	Selenium				NR	
UTL	7440-22-4	Silver	.62	U		P	
	7440-23-5	Sodium	271.00	B		P	
	7440-28-0	Thallium				NR	
	7440-62-2	Vanadium	37.70		J	P	D, 1 %D
	7440-66-6	Zinc	27.70		J	P	D, 1 %D
		Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

wt = 1
vol = 100

FORM I - IN

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2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	5000.0	5151.30	103.0	5000.0	5014.30	100.3	5111.80	102.2	P
Antimony	3000.0	3118.20	103.9	3000.0	3056.40	101.9	3147.00	104.9	P
Arsenic									
Barium	5000.0	5008.70	100.2	5000.0	4848.80	97.0	4912.10	98.2	P
Beryllium	250.0	265.20	106.1	250.0	257.20	102.9	264.70	105.9	P
Cadmium	250.0	238.70	95.5	250.0	234.00	93.6	252.80	101.1	P
UTL Calcium	25000.0	25123.90	100.5	25000.0	25230.90	100.9	25137.10	100.5	P
Chromium	500.0	515.80	103.2	500.0	510.60	102.1	520.40	104.1	P
Cobalt	2500.0	2488.30	99.5	2500.0	2433.90	97.4	2510.10	100.4	P
Copper	1250.0	1247.00	99.8	1250.0	1203.30	96.3	1229.80	98.4	P
Iron	5000.0	5126.10	102.5	5000.0	5021.30	100.4	5148.60	103.0	P
Lead									
UTL Magnesium	25000.0	25686.50	102.7	25000.0	25678.90	102.7	25673.80	102.7	P
Manganese	750.0	762.90	101.7	750.0	744.50	99.3	758.60	101.1	P
Mercury									
Nickel	2000.0	2060.80	103.0	2000.0	2031.80	101.6	2096.50	104.8	P
UTL Potassium	25000.0	24809.80	99.2	25000.0	24269.90	97.1	24614.40	98.5	P
Selenium									
UTL Silver	500.0	479.30	95.9	500.0	475.20	95.0	472.70	94.5	P
UTL Sodium	25000.0	24624.60	98.5	25000.0	24578.70	98.3	24725.10	98.9	P
Thallium									
Vanadium	2500.0	2596.70	103.9	2500.0	2525.80	101.0	2608.00	104.3	P
Zinc	1000.0	1047.00	104.7	1000.0	1037.90	103.8	1077.90	107.8	P
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

→ UTL - means they used data from UTL method
if Blank they used data from HSLAA method

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2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum				5000.0	5097.70	102.0			P
Antimony				3000.0	3148.40	104.9			P
Arsenic									
Barium				5000.0	4936.20	98.7			P
Beryllium				250.0	265.20	106.1			P
Cadmium				250.0	250.20	100.1			P
Calcium				25000.0	24885.80	99.5			P
Chromium				500.0	518.20	103.6			P
Cobalt				2500.0	2502.40	100.1			P
Copper				1250.0	1230.50	98.4			P
Iron				5000.0	5145.80	102.9			P
Lead									
Magnesium				25000.0	25644.80	102.6			P
Manganese				750.0	757.40	101.0			P
Mercury									
Nickel				2000.0	2084.20	104.2			P
Potassium				25000.0	24760.70	99.0			P
Selenium									
Silver				500.0	471.10	94.2			P
Sodium				25000.0	24899.80	99.6			P
Thallium									
Vanadium				2500.0	2597.20	103.9			P
Zinc				1000.0	1070.50	107.1			P
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

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2B
CRDL STANDARD FOR AA AND ICP

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

AA CRDL Standard Source: IV

ICP CRDL Standard Source: IV

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
					Initial		Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony				120.0	140.20	116.8	131.90	109.9
Arsenic								
Barium								
Beryllium				10.0	10.40	104.0	11.10	111.0
Cadmium				10.0	9.40	94.0	10.10	101.0
Calcium								
Chromium				20.0	19.00	95.0	24.70	123.5
Cobalt				100.0	98.90	98.9	105.80	105.8
Copper				50.0	48.40	96.8	50.70	101.4
Iron								
Lead								
Magnesium								
Manganese				30.0	30.60	102.0	31.20	104.0
Mercury								
Nickel				80.0	81.00	101.2	84.50	105.6
Potassium								
Selenium								
UTL Silver				20.0	20.40	102.0	18.80	94.0
Sodium								
Thallium								
Vanadium				100.0	115.00	115.0	126.70	126.7
Zinc				40.0	44.30	110.8	46.90	117.2

FORM II (PART 2) - IN

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3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Preparation Blank Matrix (soil/water): SOIL

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

	Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
3	Aluminum	27.0	U	27.0	U	27.0	U	27.0	U	2.700	U	P
3	Antimony	47.0	U	47.0	U	47.0	U	47.0	U	4.700	U	P
3	Arsenic											NR
3	Barium	4.0	U	4.0	U	4.0	U	4.0	U	.400	U	P
	Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	.100	U	P
3	Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	.500	U	P
UTL	Calcium	22.7	B	26.7	B	20.0	U	24.4	B	2.000	U	P
3	Chromium	5.0	U	5.0	U	5.0	U	5.0	U	.500	U	P
.3	Cobalt	8.0	U	8.0	U	8.0	U	8.0	U	.800	U	P
2	Copper	6.0	U	6.0	U	6.0	U	6.0	U	.600	U	P
1	Iron	13.0	U	13.0	U	13.0	U	13.0	U	1.300	U	P
	Lead											NR
UTL 1	Magnesium	107.0	U	107.0	U	107.0	U	107.0	U	10.700	U	P
	Manganese	2.0	U	2.0	U	2.0	U	2.0	U	.200	U	P
	Mercury											NR
3	Nickel	14.0	U	14.0	U	14.0	U	14.0	U	1.400	U	P
UTL 1	Potassium	648.0	U	648.0	U	784.8	B	648.0	U	64.800	U	P
	Selenium											NR
	Silver	6.0	U	6.0	U	6.0	U	6.0	U	.600	U	P
UTL 1	Sodium	55.0	U	55.0	U	55.0	U	55.0	U	10.100	B	P
	Thallium											NR
HSL	Vanadium	12.0	B	16.9	B	20.2	B	21.8	B	.900	U	P
1	Zinc	9.0	U	9.0	U	9.0	U	9.0	U	.900	U	P
	Cyanide											NR

FORM III - IN

3 or 1 - [illegible] IC [illegible] came from
Blank → Both ICI - ICB [illegible] Same

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4

ICP INTERFERENCE CHECK SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

ICP ID Number: IC1 ICS Source: IV

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	%R	Final Found Sol. A	Final Found Sol. AB	%R
Aluminum	498471	494214	516801	516193.1	104.4	527547	526814.8	106.6
Antimony			-6	51.6		17	14.6	
Arsenic								
Barium		503	1	493.0	98.0	2	502.6	99.9
Beryllium		446	0	477.6	107.1	0	498.9	111.9
Cadmium		929	0	998.1	107.4	-1	1040.6	112.0
Calcium	472414	434886						
Chromium		445	-7	463.4	104.1	9	484.6	108.9
Cobalt		451	8	478.3	106.1	10	496.9	110.2
Copper		465	-8	HSL 489.8	105.3	-7	501.4	107.8
Iron	181357	180421	189917	189219.8	104.9	195961	195730.1	108.5
Lead								
Magnesium	508607	504007						
Manganese		460	15	493.2	107.2	17	507.4	110.3
Mercury								
Nickel		884	-14	927.1	104.9	-16	971.1	109.9
Potassium								
Selenium								
Silver		991						
Sodium								
Thallium								
Vanadium		477	33	521.2	109.3	40	543.5	113.9
Zinc		927	-22	973.1	105.0	-24	1016.7	109.7

FORM IV - IN

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4

ICP INTERFERENCE CHECK SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

ICP ID Number: IC1 ICS Source: IV

Concentration Units: ug/L

	Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	%R	Final Found Sol. A	Final Found Sol. AB	%R
	Aluminum	498471	494214						
	Antimony								
	Arsenic								
	Barium		503						
	Beryllium		446						
	Cadmium		929						
UTL	Calcium	472414	434886	511073	511753.5	117.7	503333	504337.9	116.0
	Chromium		445						
	Cobalt		451						
	Copper		465						
	Iron	181357	180421						
	Lead								
UTL	Magnesium	508607	504007	551836	551796.7	109.5	545379	547375.3	108.6
	Manganese		460						
	Mercury								
	Nickel		884						
UTL	Potassium			465	465.7		848	507.8	
	Selenium								
UTL	Silver		991	1	992.2	100.1	0	977.3	98.6
UTL	Sodium			88	73.9		85	83.7	
	Thallium								
	Vanadium		477						
	Zinc		927						

FORM IV - IN

9713507.0783

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B094K6S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 96.2

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	42.9000		4.8880	U	52.00	21 ~~82.6~~		P
Arsenic									NR
Barium	75-125	229.2000		48.2000		208.00	87.0		P
Beryllium	75-125	5.0000		4500	B	5.20	87.5 ~~96.4~~		P
Cadmium	75-125	3.6000		5200	U	5.20	59.2 ~~69.2~~	N	P
Calcium									NR
Chromium	75-125	31.6000		13.9000	U	20.80	85.1		P
Cobalt	75-125	51.6000		7.5000		52.00	84.8		P
Copper	75-125	40.0000		17.8000		26.00	85.4		P
Iron									NR
Lead									NR
Magnesium									NR
Manganese	75-125	257.1001		173.0000		52.00	161.7	N	P
Mercury									NR
Nickel	75-125	51.1000		7.2000		52.00	84.4		P
Potassium									NR
Selenium									NR
Silver	75-125	5.0000		6240	U	5.20	84.2 ~~96.8~~		P
Sodium									NR
Thallium									NR
Vanadium	75-125	86.2000		37.7000		52.00	93.3		P
Zinc	75-125	76.4000		27.7000		52.00	93.7		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN

9713507.0784

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5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B094K6A

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Matrix: Level (low/med):

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum		38602.60		37990.10		2700.0	22.7		P
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium		46.50		5.00	U	50.0	83 88.0		P
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron		154926.10		161411.30		1300.0	-500.0		P
Lead									NR
Magnesium									NR
Manganese		1769.80		1663.40		200.0	53.2		P
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

FORM V (Part 2) - IN

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B094K6D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

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

% Solids for Sample: 96.2 % Solids for Duplicate: 96.2

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

	Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
	Aluminum		3951.0000		4438.5000		11.6		P
	Antimony		4.8880	U	4.8880	U			P
	Arsenic								NR
	Barium	20.8	48.2000		51.6000		6.8		P
	Beryllium		.4500	B	.4500	B	0.0		P
	Cadmium		.5200	U	.5200	U			P
UTL	Calcium		5887.0000		4875.5000		18.8		P
	Chromium		13.9000	U	15.2000	U			P
	Cobalt	5.2	7.5000		8.0000		6.4		P
	Copper		17.8000		16.9000		5.5		P
	Iron		16786.8000		17723.7000		5.4		P
	Lead								NR
UTL	Magnesium		2834.9000		2828.2000		.2		P
	Manganese		173.0000		188.0000		8.3		P
	Mercury								NR
	Nickel	4.2	7.2000		6.8000		6.0		P
UTL	Potassium	520.0	967.8000		891.8000		8.2		P
	Selenium								NR
UTL	Silver		.6240	U	.6240	U			P
UTL	Sodium		271.1001	B	229.0000	B	16.8		P
	Thallium								NR
	Vanadium		37.7000		40.9000		8.0		P
	Zinc		27.7000		29.5000		6.4		P
	Cyanide								NR

FORM VI - IN

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum				500.0	466.9		400.0	600.0	93.4
Antimony				300.0	276.3		240.0	360.0	92.1
Arsenic									
Barium				500.0	457.8		400.0	600.0	91.6
Beryllium				25.0	23.8		20.0	30.0	95.2
Cadmium				25.0	20.7		20.0	30.0	82.8
Calcium				2500.0	2279.8		2000.0	3000.0	91.2
Chromium				50.0	46.8		40.0	60.0	93.6
Cobalt				250.0	219.3		200.0	300.0	87.7
Copper				125.0	111.7		100.0	150.0	89.4
Iron				500.0	459.5		400.0	600.0	91.9
Lead									
Magnesium				2500.0	2363.9		2000.0	3000.0	94.6
Manganese				75.0	67.9		60.0	90.0	90.5
Mercury									
Nickel				200.0	183.9		160.0	240.0	91.9
Potassium				2500.0	2333.6		2000.0	3000.0	93.3
Selenium									
Silver				50.0	43.1		40.0	60.0	86.2
Sodium				2500.0	2345.2		2000.0	3000.0	93.8
Thallium									
Vanadium				250.0	232.9		200.0	300.0	93.2
Zinc				100.0	91.2		80.0	120.0	91.2
Cyanide									

FORM VII - IN

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum				500.0	461.1		400.0	600.0	92.2
Antimony				300.0	270.5		240.0	360.0	90.2
Arsenic									
Barium				500.0	454.0		400.0	600.0	90.8
Beryllium				25.0	23.6		20.0	30.0	94.5
Cadmium				25.0	20.3		20.0	30.0	81.4
Calcium				2500.0	2301.6		2000.0	3000.0	92.1
Chromium				50.0	45.8		40.0	60.0	91.6
Cobalt				250.0	216.2		200.0	300.0	86.5
Copper				125.0	110.8		100.0	150.0	88.6
Iron				500.0	453.8		400.0	600.0	90.8
Lead									
Magnesium				2500.0	2370.8		2000.0	3000.0	94.8
Manganese				75.0	67.2		60.0	90.0	89.6
Mercury									
Nickel				200.0	180.1		160.0	240.0	90.0
Potassium				2500.0	2343.4		2000.0	3000.0	93.7
Selenium									
Silver				50.0	43.3		40.0	60.0	86.5
Sodium				2500.0	2344.6		2000.0	3000.0	93.8
Thallium									
Vanadium				250.0	230.5		200.0	300.0	92.2
Zinc				100.0	89.5		80.0	120.0	89.5
Cyanide									

FORM VII - IN

U.S. EPA - CLP

8

Standard Addition Results

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q

FORM VIII - IN

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B094K6L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP710

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

Concentration Units: ug/L

	Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
	Aluminum	37990.10		41652.50		9.6		P
	Antimony	47.00	U	235.00	U			P
	Arsenic							
	Barium	463.90		498.50	B	7.5		P
	Beryllium	4.30	B	5.50	B	27.9		P
	Cadmium	5.00	U	25.00	U			P
VR	Calcium	56605.40		52780.51		6.8		P
	Chromium	133.80		117.00		12.6		P
	Cobalt	72.40		82.00	B	13.3		P
	Copper	171.40		185.50		8.2		P
	Iron	161411.30		181883.00		12.7	E	P
	Lead							
VR	Magnesium	27258.70		25575.51		6.2		P
	Manganese	1663.40		1871.50		12.5	E	P
	Mercury							
	Nickel	69.10		70.00	U	100.0		P
VR	Potassium	9305.50		9132.00	B	1.9		P
	Selenium							
	Silver	6.00	U	30.00	U			P
VR	Sodium	2606.30	B	2564.50	B	1.6		P
	Thallium							
	Vanadium	362.90		496.00		36.7		P
	Zinc	265.90		312.00		17.3		P

FORM IX - IN

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: [redacted]	REVIEWER: HS	DATE: 10-27-93
LABORATORY: Weston	CASE: X02372	SDG:
SAMPLES/MATRIX: B094K6		

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 non-detects).

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 CN 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 CN 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 <5X the amount in any laboratory blank as non-detected (U). If analyte concentrations in the blank are greater than the CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations less than 10x 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 <5X the amount in any valid field blank as non-detected (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 non-detects as estimated (UJ). If spike recovery is <30%, reject all non-detects (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
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 $\geq$0.995? Yes No N/A
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 non-detects). If the analytical spike recovery is less than 40 percent qualify detects as estimated (J). If the analytical spike recovery is greater than or equal to 10% but less than 40 percent, qualify all non-detects as estimated (UJ) and if the analytical spike recovery is less than 10 percent, reject all non-detects (R). If the sample absorbance is less than 50% of the analytical spike absorbance and the analytical spike recovery is less than 85% or greater than 115%, qualify all results as estimated (J for detects and UJ for non-detects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was less than 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 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

→ Time interval between several Analysis ~~the~~ are less than the interval between CCV + CCB.

→ Used two different methods
UTL Raw data corresponds to Ca, Mg, K, Ag, Na
HSL4PT Raw data corresponds to all other analytes

→ Used the higher IDL from either ICI or ICS
• States in Case Narrative that they are doing this

→ Not consistent about Rounding