START 9613422.2659 0000011 0043686 38 2

9212L005-WES-971

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

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

GC/MS VOLATILE

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 12-17-92.

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

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

2. 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 contaminant Acetone at a level less than the CRQL.

5. Internal standard areas were outside QC limits for sample B07Q13 and B07Q13 MSD. CLP SOW 03/90 re-analysis requirements were met.

FEB 1996
RECEIVED
EDMC

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

01-14-93
Date

sma/voa/12-005v.cn

9613422.2660

Westinghouse Hanford Company

NONCONFORMANCE REPORT

1. Page 1 of 1

2. Preprinted No. 051936

QA Log No.

3. P. O., W. O., or Job Control No.	4. System/End Use	5. Item/Material	6. Dwg./Spec./Other No.	7. Rev.
N/A	RI/FS	SAMPLES	SEE DESCRIPTION	N/A

8. Program/Project/Other	9. Safety Class	10. ASME Code Items
100-IU-5	N/A	☐ Yes ☒ No (If yes, notify authorized inspector)

11. Supplier Name/Address	12. Notification of Potential Occurence Required
ENVIRONMENTAL FIELD SAMPLING SERVICES	☐ Yes ☒ No

13. Code: Lot/Heat/Serial	14. Lot Size	15. Sample	16. Qty. Acc.	17. Inspection Criteria
N/A	1	1	Ø	☐ Dwg. ☐ Spec. ☐ Insp. Plan ☒ Other WHC-CM-7-7, EII 5.1, REV 0, SEC 6.1

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
	AS STATED IN WHC-CM-7-7, EII 5.1, REV.0, SEC.6.1, THERE WILL BE ONLY ONE UNIQUE HEIS NUMBER PER SAMPLE NUMBER. CONTRARY TO THE ABOVE, HEIS SAMPLE NUMBER B07Q13 V CANCEL BMC 1/13/94	

20. Originator's Signature	Date	23. Design Document Change Required? ☐ Yes, Doc. No. _____ ☐ No
21. Cognizant QA Manager's Signature	Date	24. Corrective Action Required? ☐ Yes, No. _____ ☐ No

Disp. App.			
25. Cognizant Engineer / Date	26. Technical Rep. / Date	Signature/Org. / Date	
QA Engineer / Date	Signature/Org. / Date	Signature/Org. / Date	

Close

27. Accept _____ Reject _____ Follow on NCR _____

QA/C Personnel _____ Date

A-7310-104 (10/91)

WESTON Analytics Use Only

9212005

Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Westinghouse-Hanford
Est. Final Proj. Sampling Date:
Work Order #: 0d0108-003-001-9999-00
Project Contact/Phone #:
All Project Manager: Rose Edwards
QC: CLP Del: CLP TAT: 35 DAP
Date Rec'd: 12/12/92 Date Due: 1/16/93
Account #: WS-HANFORD

Refrigerator #		1	6			2	1	6	2		SUB					
# Type Container	Liquid	1QT	1QT			1/GL		2/GL	1P		1/GL					
	Solid															
Volume	Liquid	125	250			250		250	250		500					
	Solid															
Preservatives		—	—			—		—	—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest PCB	Herb	PCB GC	PCB GC/MS	TPH	Metal	CN	Radio Chem	Total Isotopes				
WESTON Analytics Use Only		8260/4H	8270/5H			8082	8270	TPH								

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	8260/4H	8270/5H			8082	8270	TPH		See Below		ISUB	IHard				
001	B07Q13			S	9/7/92		X	X			X	X	X	X			X	X				
	Radio chem = Gamma Spec.																					
	metals = HSL + Zr																					

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

DATE/REVISIONS: ADD ISUB TO TOTALS

Special Instructions:

Run (1) ms/msD

92-400 Temp = 2.8°C

ORIGINAL & WRITTEN

Relinquished by	Received by	Date	Time
Emery	Sherry	12/12/92	430
	EDD 12/12/92		

Relinquished by	Received by	Date	Time
	EDD 12/12/92		

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

WESTON Analytics Use Only

Samples were:
1) Shipped X or Hand Delivered
Airbill # UNKN
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

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

9613422.2661

0000002

9613422.2662

0006303

Westinghouse Hanford Company	CHAIN OF CUSTODY	002305

ustody Form Initiator RZ. Stoffler Ron Arnold

ompany Contact Jim Erwin — Telephone (509) 376-8941

roject Designation/Sampling Locations White Bluffs — Collection Date [illegible]

Locking Acid Leach 100-EH-E [illegible]

ce Chest No. — Field Logbook No. EFL 1060

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

Method of Shipment Emery Air Express Overnight Delivery

Shipped to Weston

Possible Sample Hazards/Remarks Unknown

Sample Identification

[illegible]

[illegible]	[illegible]

☐ 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: Temp [illegible]

A-6000-407 (12/90)

9613422.2663

0000004

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST C of C # 28255

Collector RZ STEFFLER Date 12-7-92

Company Contact JILL FRAIN/RON MITCHELL Telephone (509) 376-8941

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested
B07Q13	S	12-7-92	1005	(1) 250ml. plastic TAL METALS (CLP)
				(1) 250ml. plastic ANIONS,F,CL,SO4,PO4 (EPA 300.0)
				NO2,NO3 (EPA 353.2) AMMONIA (EPA 350.2) pH (9040)
				(1) 250 ml. plastic ICP METALS FOR Zr. (6010)
				(1) 125 ml. amber glass VOA (CLP)
				(1) 250 ml. amber glass SEMI VOA (CLP)
				(1) 250 ml. amber glass TPH diesal range (8015M)
				(1) 250 ml. amber glass TPH heavier than diesal range
				(8015M)
				(1) 250 ml. plastic CALCIUM CARBONATE (EPA 130.2)
				(1) 1000 ml. glass GAMMA SPEC. (RC-30)
	S			(1) 250 ml. plastic TAL METALS (CLP)
				(1) 250 ml. plastic ANIONS F,Cl,SO4 PO4 (EPA 300.0)
				NO2,NO3 (EPA 353.2) AMMONIA (EPA 350.2) pH (9040)
				(1) 250 ml. plastic ICP METALS for Zr. (6010)
				(1) 125 ml. amber glass VOA (CLP)
				(1) 250 ml. amber glass SEMI VOA (CLP)
				(1) 250 ml. amber glass TPH diesal range (8015M)
				(1) 250 ml. amber glass TPH heavier than diesal range
				(8015M)
				(1) 250 ml. plastic CALCIUM CARBONATE (EPA 130.2)
				(1) 1000ml. glass GAMMA SPEC. (RC-30)

*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 # 92-400

Special Handling and/or Storage SAMPLES TO MAINTAIN 4 DEGREES C. PRIOR TO ANALYSIS.

Possible Sample Hazards UNKNOWN NOTHING DETECTABLE WITH FIELD INSTRUMENTS

A-6000-406 (06/91)

9613422.2664 0000005

AIR OVERNIGHT

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WESTINGHOUSE HANFORD		WT3-0-0122 # 27

PART I – TO BE COMPLETED BY ORIGINATOR

Department PROCESSING & ANALYTICAL LAB	Section ANALYTICAL CHEMISTRY	Unit SAMPLING & MOBILE LAB

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

Routing EMERY AIR EXPRESS ☒ 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 IN WET ICE. SAMPLE #B07Q13	
WEIGHT ~~10 lbs~~ 51 lbs	COOLER # ~~[illegible]~~ SML-222	

☐ 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.

SAF #92-400
COC #002805

BILL OF LADING # 2514007513

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
[illegible]		[illegible]

Location of Property (Area & Bldg)	Contact	Phone
200 WEST AREA/202-S	R. Z. Steffler	373-9146

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
12/08/92	PE62R/ORG CODE: 12410	N/A

Originated By	Date	Authorized By	Date
R. Z. Steffler	12/08/92	R. A. Meznarich	12/08/92
Signature and Name of Property Control	Custodian Date	Property Management Approval	Date

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No	Date Issued	Purchase Order No.	Date Issued
Date [illegible]				

DISTRIBUTION

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

54-3000-479 (09/8

FORM OF PAYMENT

Check ☐ GBL ☐ FCOD ☐

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

Shipper's Account Number: E 850281585

EMERY WORLDWIDE — A CF Company

SERVICES **

UNITED STATES / CANADA: Same Day (Extra Charge) ☐ AM ☐ Second Day ☐ PM ☐ Saturday Delivery ☐ Standard Pak ☐ Preferred ☐ Standard ☐

INTERNATIONAL: Express ☐ Documents ☐ Customs Clearance ☐ Delivery ☐

Date: 12-18-92 Origin: PSC Shipment Number: 251900757 9

From:
WESTINGHOUSE SHIPPING DEPT(509)375-6666
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD
BLDG 1163
2355 STEVENS DRIVE
RICHLAND WA Canada ☐

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

Tariff Dest. / Gateway

Check to Shipper

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

Customer's Reference Numbers: 12410 pg3BE W95-0-0122 #33 99352

Consignee's Account Number: E 19341

Description	Dimensions Pcs	L	W	H	Total Pieces	Total Weight (lbs.)
1 POLYCOOLER SAMPLES KT-25	1	27	14	17	1	58#

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

Declared Value $

251900757 9

Remarks: SATURDAY [redacted]T DELIVERY

Shipper's Signature X Mark Bryant

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. Third Party Account Number: E

International Customs Value: International Insurance:

Base Charge: Total Transportation Charges: Other Charges/Advance at Origin: OC/AO- $

3-PhL-54

Terms and Conditions on Back

0100008

96134222665

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

Report Date: 01/11/93 08:11

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1a

	Cust ID:	BO7Q13		BO7Q13		BO7Q13		VBLK							
Sample Information	RFW#:	001		001 MS		001 MSD		92LVR178-MB1							
	Matrix:	SOIL		SOIL		SOIL		SOIL							
	D.F.:	1.00		1.00		1.00		1.00							
	Units:	UG/KG		UG/KG		UG/KG		UG/KG							
Surrogate Recovery	Toluene-d8	107	%	99	%	102	%	106	%						
	Bromofluorobenzene	98	%	89	%	90	%	96	%						
	1,2-Dichloroethane-d4	86	%	94	%	93	%	89	%						
Chloromethane		10	U	10	U	10	U	10	U						
Bromomethane		10	U	10	U	10	U	10	U						
Vinyl Chloride		10	U	10	U	10	U	10	U						
Chloroethane		10	U	10	U	10	U	10	U						
Methylene Chloride		6	J	6	J	6	J	10	U						
Acetone		2	JB	4	JB	4	JB	2	J						
Carbon Disulfide		10	U	10	U	10	U	10	U						
1,1-Dichloroethene		10	U	98	%	97	%	10	U						
1,1-Dichloroethane		10	U	10	U	10	U	10	U						
1,2-Dichloroethene (total)		10	U	10	U	10	U	10	U						
Chloroform		10	U	10	U	10	U	10	U						
1,2-Dichloroethane		10	U	10	U	10	U	10	U						
2-Butanone		10	U	10	U	10	U	10	U						
1,1,1-Trichloroethane		10	U	10	U	10	U	10	U						
Carbon Tetrachloride		10	U	10	U	10	U	10	U						
Bromodichloromethane		10	U	10	U	10	U	10	U						
1,2-Dichloropropane		10	U	10	U	10	U	10	U						
cis-1,3-Dichloropropene		10	U	10	U	10	U	10	U						
Trichloroethene		10	U	100	%	98	%	10	U						
Dibromochloromethane		10	U	10	U	10	U	10	U						
1,1,2-Trichloroethane		10	U	10	U	10	U	10	U						
Benzene		10	U	77	%	71	%	10	U						
trans-1,3-Dichloropropene		10	U	10	U	10	U	10	U						
Bromoform		10	U	10	U	10	U	10	U						
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U						
2-Hexanone		10	U	10	U	10	U	10	U						
Tetrachloroethene		10	U	10	U	10	U	10	U						
1,1,2,2-Tetrachloroethane		10	U	10	U	10	U	10	U						
Toluene		10	U	97	%	93	%	10	U						

*= Outside of EPA CLP QC limits.

9613422.2666

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1b

Cust ID:	B07Q13	B07Q13	B07Q13	VBLK
RFW#:	001	001 MS	001 MSD	92LVR178-MB1
Chlorobenzene	10 U	97 %	96 %	10 U
Ethylbenzene	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

9613422.2667
000009

9613422.2668

1A

000022

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

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/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	J
67-64-1	Acetone	2	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9613422.2669

1E

0000023 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

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/KG

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

Roy F. Weston, Inc. - Lionville Laboratory

GC SCAN

Report Date: 01/20/93 08:04

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-9999 Page: 1

	Cust ID:	B07Q13	B07Q13	B07Q13	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	92LLC314-MB1	92LLC314-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	p-Terphenyl	90 %	91 %	94 %	97 %	104 %
Diesel		4.00 U	66 %	62 %	4.00 U	71 %

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

000008

9613422.2670

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

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

GC SCAN

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC samples were extracted on 12-21-92 and analyzed by a modified Method 8100 for Diesel Range Petroleum Hydrocarbons on 01-01-93.

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

1. The surrogate recoveries of p-Terphenyl were within the range of 90% to 104%.

2. The blank spike recovery of Diesel fuel was 71%.

3. The matrix spike recoveries of Diesel fuel were 66% and 62%.

4. The multi-level Diesel fuel standards provided calibration factors with a Relative Standard Deviation (RSD) of less than 20%.

5. Seven (7) to ten (10) hydrocarbon (HC) peaks were used to quantitate standards, spikes and samples.

6. Continuing calibration criteria (20%) were met for all continuing standards.

7. <u>GC CONDITIONS</u>

Column: SPB-5, 30m x 0.53 mm (ID)

<u>OVEN TEMPERATURE</u>

Injection:	280°C
FID:	300°C
Oven:	40°C for 5 min.
	10°C/min. to 250°C
	Hold 17 minutes
Flow:	30 mL/min Helium

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

02.03.93
Date

sma/misc/12-005.gc

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

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Report Date: 01/19/93 10:12 Page: 1a

	Cust ID:	B07Q13		B07Q13		B07Q13		SBLK		SBLK BS	
Sample Information	RFW#:	001		001 MS		001 MSD		92LE2117-MB1		92LE2117-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	69	%	95	%	93	%	39	%	67	%
	2-Fluorobiphenyl	83	%	103	%	95	%	44	%	84	%
	Terphenyl-d14	82	%	87	%	83	%	48	%	82	%
	Phenol-d5	80	%	108	%	98	%	45	%	76	%
	2-Fluorophenol	77	%	102	%	93	%	53	%	86	%
	2,4,6-Tribromophenol	74	%	77	%	71	%	44	%	70	%
	2-Chlorophenol-d4	75	%	105	%	98	%	44	%	80	%
	1,2-Dichlorobenzene-d4	64	%	94	%	91	%	37	%	75	%
Phenol		340	U	107 *	%	103 *	%	330	U	77	%
bis(2-Chloroethyl)ether		340	U	340	U	340	U	330	U	330	U
2-Chlorophenol		340	U	114 *	%	106 *	%	330	U	84	%
1,3-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
1,4-Dichlorobenzene		340	U	101	%	96	%	330	U	77	%
1,2-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
2-Methylphenol		340	U	340	U	340	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	340	U	330	U	330	U
4-Methylphenol		340	U	340	U	340	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	107	%	103	%	330	U	65	%
Hexachloroethane		340	U	340	U	340	U	330	U	330	U
Nitrobenzene		340	U	340	U	340	U	330	U	330	U
Isophorone		340	U	340	U	340	U	330	U	330	U
2-Nitrophenol		340	U	340	U	340	U	330	U	330	U
2,4-Dimethylphenol		340	U	340	U	340	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	340	U	340	U	330	U	330	U
2,4-Dichlorophenol		340	U	340	U	340	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	110 *	%	106	%	330	U	89	%
Naphthalene		340	U	340	U	340	U	330	U	330	U
4-Chloroaniline		340	U	340	U	340	U	330	U	330	U
Hexachlorobutadiene		340	U	340	U	340	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	99	%	98	%	330	U	77	%
2-Methylnaphthalene		340	U	340	U	340	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	340	U	340	U	330	U	330	U

*= Outside of EPA CLP QC limits.

000008
9613422.2672

RFW Batch Number: 9212L005 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Page: 1b

Cust ID:	BO7Q13		BO7Q13		BO7Q13		SBLK		SBLK BS	
RFW#:	001		001 MS		001 MSD		92LE2117-MB1		92LE2117-MB1	
2,4,6-Trichlorophenol	340	U	340	U	340	U	330	U	330	U
2,4,5-Trichlorophenol	840	U	840	U	840	U	840	U	840	U
2-Chloronaphthalene	340	U	340	U	340	U	330	U	330	U
2-Nitroaniline	840	U	840	U	840	U	840	U	840	U
Dimethylphthalate	340	U	340	U	340	U	330	U	330	U
Acenaphthylene	340	U	340	U	340	U	330	U	330	U
2,6-Dinitrotoluene	340	U	340	U	340	U	330	U	330	U
3-Nitroaniline	840	U	840	U	840	U	840	U	840	U
Acenaphthene	340	U	104	%	99	%	330	U	79	%
2,4-Dinitrophenol	840	U	840	U	840	U	840	U	840	U
4-Nitrophenol	840	U	125 *	%	118 *	%	840	U	74	%
Dibenzofuran	340	U	340	U	340	U	330	U	330	U
2,4-Dinitrotoluene	340	U	123 *	%	121 *	%	330	U	85	%
Diethylphthalate	340	U	340	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Fluorene	340	U	340	U	340	U	330	U	330	U
4-Nitroaniline	840	U	840	U	840	U	840	U	840	U
4,6-Dinitro-2-methylphenol	840	U	840	U	840	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	340	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Hexachlorobenzene	340	U	340	U	340	U	330	U	330	U
Pentachlorophenol	840	U	102	%	102	%	840	U	87	%
Phenanthrene	340	U	340	U	340	U	330	U	330	U
Anthracene	340	U	340	U	340	U	330	U	330	U
Carbazole	340	U	340	U	340	U	330	U	330	U
Di-n-butylphthalate	100	J	97	J	82	J	330	U	26	J
Fluoranthene	340	U	340	U	340	U	330	U	330	U
Pyrene	340	U	99	%	96	%	330	U	82	%
Butylbenzylphthalate	340	U	340	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	340	U	340	U	330	U	330	U
Benzo(a)anthracene	340	U	340	U	340	U	330	U	330	U
Chrysene	340	U	340	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	36	J	30	J	27	J	330	U	330	U
Di-n-octyl phthalate	340	U	340	U	340	U	330	U	330	U
Benzo(b)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(k)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(a)pyrene	340	U	340	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	340	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	340	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	340	U	340	U	330	U	330	U

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

9613422.2673

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

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

SEMIVOLATILE

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC samples were extracted on 12-18-92 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 01-08,11,13-93.

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

1. Non-target compounds were detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. Nine (9) of twenty-two (22) matrix spike recoveries were outside EPA QC limits. They were slightly biased high.

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

   The method blank 92LE2117-MB1 was contaminated with Di-n-butylphthalate from an unknown source. A reserve non-GPC'd portion of the extract was analyzed and reported.

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

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

01. 26. 93
Date

kls/12-005b.cn

9613422.2675

1B

0000028 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BO7Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)__

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	340	U

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1C

0000030

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)__

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	840	U
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-butylphthalate	100	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	36	J
117-84-0	Di-n-octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

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1F

0000031 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)__

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 6.9

Number TICs found: 12

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDNEESATE	6.52	500	JAB
2.	UNKNOWN	6.77	200	J
3.	ALDOL CONDENSATE	7.00	2000	JAB
4.	ALDOL CONDENSATE	7.80	1000	JA
5.	ALDOL CONDENSATE	8.13	900	JA
6.	UNKNOWN	8.62	80	J
7.	ALDOL CONDENSATE	8.68	200	JA
8.	ALDOL CONDENSATE	8.83	300	JA
9.	PHTHALATE	19.82	300	JB
10.	UNKNOWN	26.85	200	J
11.	UNKNOWN	27.93	100	J
12.	UNKNOWN	30.60	80	J

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WESTON

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

Client : WESTINGHOUSE HANFORD
RFW# : 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

INORGANIC

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

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

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. 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).

1.18.93
Date

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

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/15/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9212L005

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO7Q13	% Solids	98.1	%	0.10
		Chloride by IC	27.0	MG/KG	1.3
		Fluoride by IC	3.2	MG/KG	2.5
		Phosphate by IC	4.4	MG/KG	1.3
		Sulfate by IC	23.2	MG/KG	1.3
		Hardness	50.9	MG/KG	17.0
		Nitrate Nitrite	2.7	MG-N/KG	0.51
		Ammonia, as N	6.9	MG/KG	1.3
		pH	6.7	PH UNITS	0.010

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

Client : WESTINGHOUSE HANFORD
RFW# : 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

CLP METALS

One (1) soil sample was collected on 12-07-92.

The sample and its associated QC 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 exception of mercury. All exceptions are flagged with a "N" on the CLP forms.

7. All duplicate analyses were within the 20% RPD control limit with the exception of lead. All exceptions are flagged with a "*" on the CLP forms.

8. 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.

9. 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).

WESTON

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

11. 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

1.13.93
Date

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

Client: WESTINGHOUSE HANFORD
RFW #: 9212L005

W.O. #: 06168-002-001-9999-00
Date Received: 12-12-92

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

1.13.93
Date

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ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/12/93

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

WESTON BATCH #: 9212L005

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B07Q13	Silver, Total	2.0	u	MG/KG	2.0
		Aluminum, Total	5370		MG/KG	40.8
		Arsenic, Total	2.4		MG/KG	2.0
		Barium, Total	52.3		MG/KG	40.8
		Beryllium, Total	1.0	u	MG/KG	1.0
		Calcium, Total	3250		MG/KG	1020
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.2	u	MG/KG	10.2
		Chromium, Total	9.5		MG/KG	2.0
		Copper, Total	13.2		MG/KG	5.1
		Iron, Total	14600		MG/KG	20.4
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	1410		MG/KG	1020
		Magnesium, Total	3670		MG/KG	1020
		Manganese, Total	143		MG/KG	3.1
		Sodium, Total	1020	u	MG/KG	1020
		Nickel, Total	13.6		MG/KG	8.2
		Lead, Total	3.6		MG/KG	0.61
		Antimony, Total	12.2	u	MG/KG	12.2
		Selenium, Total	1.0	u	MG/KG	1.0
		Thallium, Total	2.0	u	MG/KG	2.0
		Vanadium, Total	36.0		MG/KG	10.2
		Zinc, Total	40.4		MG/KG	4.1
		Zirconium, Total	40.8	u	MG/KG	40.8

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP005

Matrix (soil/water): SOIL Lab Sample ID: 921200501

Level (low/med): LOW Date Received: 12/12/92

% Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5370.00			P
7440-36-0	Antimony	12.20	U		P
7440-38-2	Arsenic	2.40			F
7440-39-3	Barium	52.30			P
7440-41-7	Beryllium	.29	B		P
7440-43-9	Cadmium	1.43	U		P
7440-70-2	Calcium	3250.00			P
7440-47-3	Chromium	9.50			P
7440-48-4	Cobalt	8.40	B		P
7440-50-8	Copper	13.20			P
7439-89-6	Iron	14600.00			P
7439-92-1	Lead	3.60		*	F
7439-95-4	Magnesium	3670.00			P
7439-96-5	Manganese	143.00			P
7439-97-6	Mercury	.05	U	N	CV
7440-02-0	Nickel	13.60			P
7440-09-7	Potassium	1410.00			P
7782-49-2	Selenium	.41	U	W	F
7440-22-4	Silver	2.04	U		P
7440-23-5	Sodium	165.00	B		P
7440-28-0	Thallium	.41	U		F
7440-62-2	Vanadium	36.00			P
7440-66-6	Zinc	40.40			P
	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

HCRL-WHC/9316-T-93-C14 9613422.2685 9212 L005-WES-971

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case # 9212L005 (Volatiles)

Document Number: HCRL-WHC/9316-L-93-C13 Date: 4/20/93

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J. Frain (WHC)	X	A. Shen (HCSEA)			

Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports X
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

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HARTCROWSER

Earth and Environmental Technologies

Hart Crowser, Inc
1201 Jadwin Avenue, Suite 204
Richland, WA 99352
FAX 509 946 4203
509 946 4344

J-2978-56

April 20, 1993

Ms. Jill Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Roy F. Weston Case Number 9212L005 - Volatile Organics

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for volatile organics. The sample results were fully validated. In addition, all of the supporting quality control summaries were reviewed.

The samples were analyzed by Roy F. Weston using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including GC/MS tuning, surrogates, matrix spike/matrix spike duplicates, continuing calibrations, and compound identifications), and quantitation limit requirements were met for this case with the exception of the following: a low concentration of acetone was detected in the method blank; methylene chloride was reported below the contract required quantitation limit (CRQL); and the d_5-chlorobenzene internal standard percent recovery was below the 50 to 200 percent control limit.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of the sample data. All qualified data are discussed in Attachments 3 and 5.

Acetone was detected in the method blank. The acetone concentration in the sample was less than 10 times the blank concentration. Therefore, the acetone concentration for the sample was qualified as undetected (U), and the associated quantitation level was raised to the CRQL.

A trace concentration of methylene chloride was detected in the sample. As the methylene chloride concentration was near the instrument detection limit and was below the CRQL, the concentration was qualified as an estimate (J).

The d_5-chlorobenzene internal standard percent recovery was below the 50 to 200 percent control limit. Target compounds associated with this internal standard were not detected in the sample, and were therefore qualified as having estimated quantitation limits (UJ).

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1753.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-013

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

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ATTACHMENT 1

Glossary of Data Qualifiers

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Glossary of Data Qualifiers

U - Indicates the compound or 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.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

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

N - Indicates presumptive evidence of a compound.

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ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9613422.2693 0 0 0 0 0 2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

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/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	J
67-64-1	Acetone	2	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

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IE

0 0 0 0 2 3 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

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/KG

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

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ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
2-hexanone	UJ	B07Q13	Low I.S. area for CBZ
4-methyl-2-pentanone			
tetrachloroethene			
1,1,2,2-tetrachloroethane			
toluene			
chlorobenzene			
ethylbenzene			
styrene			
xylene			
Acetone	U at CRQL	B07Q13	Blank contamination
trans-1,3-dichloropropene	UJ	B07Q13	Low I.S. area for CBZ
cis-1,3-dichloropropene			
1,1,2-trichloroethane			
dibromochloromethane			
bromoform			

✓ 4/14/93

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ATTACHMENT 4

As Qualified Data Summary

0613422.2698 0 0 0 0 0 2

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

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/KG	Q	
74-87-3	Chloromethane	10	U	U
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	6	J	J
67-64-1	Acetone	2	JB	10 U
75-15-0	Carbon Disulfide	10	U	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	2 UJ
79-01-6	Trichloroethene	10	U	U
124-48-1	Dibromochloromethane	10	U	UJ
79-00-5	1,1,2-Trichloroethane	10	U	UJ
71-43-2	Benzene	10	U	U
10061-02-6	trans-1,3-Dichloropropene	10	U	UJ
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	

FORM 1 VOA 3/90

✓ 4/13/93 14

A.S. 4/13/93

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1E

0 0 0 0 2 3 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: R121706

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: not dec. 2

Date Analyzed: 12/17/92

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/KG

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

✓ CW 4/14/93

✓ AS 4/13/93

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ATTACHMENT 5

Data Review Supporting Documentation

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(9)

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

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: White Bluffs Pickling Acid Cribs	REVIEWER: CMK	DATE: 4/2/93
LABORATORY: Weston	CASE: 92121005	SDG:
SAMPLES/MATRIX:		
(Soil) B07Q13		
		Level 2 Validation

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	✓		✓ CMK
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 (in other pkg.)			✓
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) Level 2

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)?	1.5 ~~Yes~~	No	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No Two compounds allowed.	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
None submitted

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
Level 2

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.

9

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

Level 2

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 (UJ) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9

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.

(9)

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: 92121-005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS: Volatiles			Level 2 Validation

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q13	VOA	12/7/92	—	12/17/93	—	10	—

✓ aur 4/14/93

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

9

CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93		PAGE 1 OF 1	
COMMENTS: Volatiles		1990 SOW		Level 2 Validation	
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT: 5100 R → DB624 Column			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
Ical 12/16/92	~~4 erratic compounds had~~				
	~~high % RSD. No qualifiers~~	req'd.	these are not high. all are acceptable.	ok	
	~~Chloroethane - 22.8%~~			—	—
	~~Acetone - 28.2%~~			—	—
	~~2-butanone - 26.0%~~			—	—
	~~2-hexanone - 22.3%~~	ok		—	—
	All RRF acceptable.				
12/17/92	Bromomethane = 28.7%		ok stet.	~~No qualifiers req'd.~~ ~~No qualifiers req'd.~~ ok	
	Chloromethane = 26.3%			2 compounds allowed	— ✓
Tunes 12/16/92 → ICAL			all tuning	criteria	none
12/17/92 → CCAL, VBLK, BOTQ13, ms/msD			met. ok		↓

✓ ok 4/14/93

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BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9212L009	REVIEWER: AS				DATE: 4/13/93				PAGE 1 OF 1
COMMENTS: Volatile Organics								Level 2 Validation	
SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK	Acetone	2	J		µg/kg		20	B07Q13	U at CRQL
There was a methylene chloride peak, but no spectra		1			µg/kg	} no qualifier was assigned, but methylene chloride was prob. not really in the sample.			

✓ UR 4/14/93

9613422.2711

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

9

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
All surrogate recoveries within limits.		86-107% ✓		none
All MS/MSD recoveries within limits (using sample B07Q13)		71-100% ✓		none
IS - Chlorobenzene-d5 slightly low for sample B07Q13			B07Q13	UJ(-)
All RT = acceptable				
	2-hexanone ✓	dibromochloromethane		UJ
	4-methy-2-pentanone ✓	bromoform		
	tetrachloroethene ✓			
	1,1,2,2-tetrachloroethane ✓			
	toluene ✓			
	chlorobenzene ✓			
	ethylbenzene ✓			
	Styrene ✓			
	Xylene ✓			
	trans + cis -1,3-dichloropropene			
	1,1,2-trichloroethane			

✓ ME 4/14/93

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9

PRECISION DATA SUMMARY - FORM B-5

SDG: 9212L005	REVIEWER HS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS: Volatiles			Level 2 Validation

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
MS/MSD All RPD values = 1-8 % ✓	—	—	—	—	—
Field Dup → none in this package					none
Field Split → B07Q13 is a field split of B07Q12 in package 12-049 (TMA). A presentation of split precision is given in the attachments to 12-049, and are acceptable. HK					none

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CALCULATION SUMMARY - FORM B-6

SDG: 92121005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1

COMMENTS:

B07Q13

$$\text{Acetone} = \frac{3993(50)}{67490(1.219)(.98)} = 2.42 = 2.46$$

$$\text{Methylene Chloride} = \frac{17671(50)}{67490(2.35)(.98)} = 5.68$$

HCRL-WHC/9316-T-93-C13 9613422.2715

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case # 92121005 (Semi Vol. Orig.)

Document Number: HCRL-WHC/9316-L-93-C14 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports X
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

9615422.2716

HARTCROWSER

Earth and Environmental Technologies

Hart Crowser
1201 Jadwin Avenue, Suite
Richland, Washington 99352
FAX 509 946
509 946

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Roy F. Weston Case Number 9212L005 - Semivolatile Organics

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for semivolatile organics. The sample results were fully validated. In addition, all of the supporting quality control summaries were reviewed.

The samples were analyzed by Roy F. Weston using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including GC/MS tuning, surrogates, matrix spike/matrix spike duplicates, continuing calibrations, compound identifications, and internal standards), and quantitation limit requirements were met for this case with the exception of the following: tentatively identified compounds (TICs) were detected in the method blank and associated samples, the matrix spike percent recoveries were high for several compounds, and two compounds were detected below the contract required quantitation limit (CRQL).

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following general trends resulted in the qualification of the sample data. All qualified data are discussed in Attachments 3 and 5.

Several matrix spike compound percent recoveries were just above the control limits for both the matrix spike sample and the matrix spike duplicate sample. No qualifiers were assigned as there were no target compounds detected in the sample. The ability to achieve the target compound required detection limits was not affected.

Low level TICs, including aldol condensation products, were detected in the method blank. Several aldol condensation products, and one other TIC were also detected in the sample. Sample TIC concentrations which were less than 5 times the blank concentration were qualified as undetected at estimated concentrations based on presumptive evidence (UJN). In the case of aldol condensation products, the sum of the products was used to determine the qualification, rather than the concentration of individual compounds.

The remaining TIC compounds which were not qualified as undetected were qualified as estimated concentrations based on presumptive evidence (JN).

Trace concentrations of di-n-butyl phthalate and bis(2-ethylhexyl)phthalate were detected in the sample. As the concentrations were near the instrument detection limit, but below the CRQL, the concentrations were qualified as estimates (J).

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No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134.RL1754.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-014

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

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ATTACHMENT 1

Glossary of Data Qualifiers

9613422.2721

Glossary of Data Qualifiers

U - Indicates the compound or 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.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

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

N - Indicates presumptive evidence of a compound.

9613422.2722

ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

9613422.2723 0 0 0 0 2 8 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)__ Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	840	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	840	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	840	U
83-32-9	Acenaphthene	340	U

CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)__

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
51-28-5	2,4-Dinitrophenol	840	U
100-02-7	4-Nitrophenol	840	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	840	U
534-52-1	4,6-Dinitro-2-methylphenol	840	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	840	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-butylphthalate	100	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	36	J
117-84-0	Di-n-octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenz(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

9613422.2725 000003

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)__

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y

pH: 6.9

Number TICs found: 12

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDNEESATE	6.52	500	JAB
2.	UNKNOWN	6.77	200	J
3.	ALDOL CONDENSATE	7.00	2000	JAB
4.	ALDOL CONDENSATE	7.80	1000	JA
5.	ALDOL CONDENSATE	8.13	900	JA
6.	UNKNOWN	8.62	80	J
7.	ALDOL CONDENSATE	8.68	200	JA
8.	ALDOL CONDENSATE	8.83	300	JA
9.	PHTHALATE	19.82	300	JB
10.	UNKNOWN	26.85	200	J
11.	UNKNOWN	27.93	100	J
12.	UNKNOWN	30.60	80	J

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ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS: Semivolatiles		Level 2 Validation	
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Aldol condensate	UJN ✓	B07Q13	TIC vs blank
unknown	JN ✓		
aldol condensate	UJN ✓		
aldol condensate	~~JAK~~ UJN		
aldol condensate	UJN		
unknown	JN		
aldol condensat	UJN		
aldol condensate	~~JAK~~ UJN		
phthalate	UJN		
unknown	JN		
unknown			
unknown			
di-n-butyl phthalate	J	B07Q13	below CRQL
bis (2-Ethylhexyl) phthalate	J	B07Q13	below CRQL

9613422.2728

ATTACHMENT 4

As Qualified Data Summary

9413422.2729 0 0 0 0 2 8 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N) Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	Qual
108-95-2	Phenol	340	U	u
111-44-4	bis(2-Chloroethyl)ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-di-n-propylamine	340	U	
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	840	U	
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	840	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
99-09-2	3-Nitroaniline	840	U	
83-32-9	Acenaphthene	340	U	

FORM 1 SV-1 3/90

MS 4/13/93

✓ CMC 4/14/93

9413422.2730 000030

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL

Lab Sample ID: 9212L005-001

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

Lab File ID: M011106

Level: (low/med) LOW

Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N)__

Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL)

Date Analyzed: 01/11/93

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	
51-28-5	2,4-Dinitrophenol	840	U	U
100-02-7	4-Nitrophenol	840	U	
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	U	
84-66-2	Diethylphthalate	340	U	
7005-72-3	4-Chlorophenyl-phenylether	340	U	
86-73-7	Fluorene	340	U	
100-01-6	4-Nitroaniline	840	U	
534-52-1	4,6-Dinitro-2-methylphenol	840	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	U	
87-86-5	Pentachlorophenol	840	U	
85-01-8	Phenanthrene	340	U	
120-12-7	Anthracene	340	U	
86-74-8	Carbazole	340	U	
84-74-2	Di-n-butylphthalate	100	J	J
206-44-0	Fluoranthene	340	U	U
129-00-0	Pyrene	340	U	
85-68-7	Butylbenzylphthalate	340	U	
91-94-1	3,3'-Dichlorobenzidine	340	U	
56-55-3	Benzo(a)anthracene	340	U	
218-01-9	Chrysene	340	U	
117-81-7	bis(2-Ethylhexyl)phthalate	36	J	J
117-84-0	Di-n-octyl phthalate	340	U	U
205-99-2	Benzo(b)fluoranthene	340	U	
207-08-9	Benzo(k)fluoranthene	340	U	
50-32-8	Benzo(a)pyrene	340	U	
193-39-5	Indeno(1,2,3-cd)pyrene	340	U	
53-70-3	Dibenz(a,h)anthracene	340	U	
191-24-2	Benzo(g,h,i)perylene	340	U	

(1) - Cannot be separated from Diphenylamine

✓ aur 4/14/93

9613422.2731 0 0 0 0 3 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07Q13

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

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) SOIL Lab Sample ID: 9212L005-001

Sample wt/vol: 30.3 (g/mL) G Lab File ID: M011106

Level: (low/med) LOW Date Received: 12/12/92

% Moisture: 2 decanted: (Y/N) Date Extracted: 12/18/92

Concentrated Extract Volume: 500(uL) Date Analyzed: 01/11/93

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) Y pH: 6.9

Number TICs found: 12 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Qual.
1.	ALDOL CONDNEESATE	6.52	500	JAB	UJN
2.	UNKNOWN	6.77	200	J	JN
3.	ALDOL CONDENSATE	7.00	2000	JAB	UJN
4.	ALDOL CONDENSATE	7.80	1000	JA	UJN
5.	ALDOL CONDENSATE	8.13	900	JA	UJN
6.	UNKNOWN	8.62	80	J	JN
7.	ALDOL CONDENSATE	8.68	200	JA	UJN
8.	ALDOL CONDENSATE	8.83	300	JA	
9.	PETEALATE	19.82	300	JB	UJN
10.	UNKNOWN	26.85	200	J	JN
11.	UNKNOWN	27.93	100	J	
12.	UNKNOWN	30.60	80	J	

AS 4/14/93

✓ Unc 4/14/93

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ATTACHMENT 5

Data Review Supporting Documentation

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

PROJECT: White Bluffs Pickling Acid Cribs ERA	REVIEWER: ank	DATE: 4/2/92
LABORATORY: Weston	CASE: 92121005	SDG:
SAMPLES/MATRIX:		
soil B07Q13		
		Level 2
		Validation

1. DATA PACKAGE COMPLETENESS

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

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

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

2. HOLDING TIMES

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

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

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP tune report present for each applicable 12h period?	Yes	No	N/A
Do all tunes on all instruments meet the tuning criteria?	Yes	No	N/A
Do all tunes on all instruments meet the expanded criteria?	Yes	No	N/A
Has the laboratory made any calculation or transciption errors?	Yes	No	N/A level 2
Have the proper significant figures been reported?	Yes	No	N/A

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

3.2 INITIAL CALIBRATION

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

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

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

3.3. CONTINUING CALIBRATION

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

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

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch?	Yes	No	N/A
Are compounds reported in the laboratory blanks?	Yes	No	N/A

TIC compounds detected

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

4.2. FIELD BLANKS

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

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

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

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

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

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

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

5.2 MATRIX SPIKE RECOVERY

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

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

Are there any calculation errors? Yes No ~~N/A~~

Level 2

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.

10

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

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

Are there any calculation errors? Yes No N/A

Level 2

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

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

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

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

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

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

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

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

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

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1
COMMENTS: Semivolatiles			Level 2 validation

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q13	BNA	12/7/93	12/18/93	1/11/93	11	25	—

✓ aur 4/14/93

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CALIBRATION DATA SUMMARY - FORM B-2

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93		PAGE 1 OF 1	
COMMENTS: Semivolatiles		1990 SOW		Level 2 Validation	
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT: 5100 M			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
All GC/MS (1/8/93 + 1/11/93 + 1/13/93)	tuning acceptable				
1/8/93 ICAL	All % RSD & RRF acceptable		—	—	—
1/11/93 CCAL	All %D & RRF acceptable		—	—	—
1/13/93 CCAL	" "		—	—	—

✓ am 4/14/93

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(10)

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: 9212L005 REVIEWER: AS DATE: 4/13/93 PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK	Aldol condensate 6.5	300				all aldol condensation products were UJN, regardless of R.T.		B07Q13	UJN
(92LE2117-MB)	Aldol condensate 6.97	50						B07Q13	d
	Unknown 10.08	80						—	—
	Siloxane 10.60	70						—	—
	phthalate 15.83	70						B07Q13	UJN
	No TCL compounds detected								

The case narrative says that this method blank was contaminated with Di-n-butyl phthalate. A reserve, non-GPC'd portion of the extract was analyzed and reported. This initial data was not included in the data package. Di-n-butyl phthalate was reported in the sample. Should be qual'd "u" but can't be because we don't have the data.

UNC 4/14/93

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

B-3

10

ACCURACY DATA SUMMARY - FORM B-4

SDG: 92126005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF ___	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
All surrogate % recoveries within limits		37-108 %	—	—
All Blank spike recoveries within limits		— 65-~~87~~ 89 %	—	—
	(QA limit)			
B07Q13 MS	Phenol (26-90)	107 %	No qual req'd. ~~since no compounds were detected~~ All surrogate/blank spike were acceptable. Also, these %R are high, and sample is nondetect, so no qual.	
	2-chlorophenol (25-102)	114 %		
	1,2,4-trichlorobenzene (38-107)	110 %		
	4-nitrophenol (11-114%)	125 %		
	2,4-dinitrotoluene (28-89%)	123 %		
B07Q13 MSD	phenol (26-90)	103 %		
	2-chlorophenol (25-102)	106 %		
	4-nitrophenol (11-114%)	118 %		
	2,4-dinitrotoluene (28-89%)	121 %		
All I.S. & RT's acceptable		—	—	—

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(10)

PRECISION DATA SUMMARY - FORM B-5

SDG: 9712L005	REVIEWER AS	DATE: 4/13/93	PAGE 1 OF 1		
COMMENTS: Semivolatiles					Level 2 validation
COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
MS/MSD: All % RPD acceptable	0 - 7 %	—	—	—	—
Field Dup → none in this data package one					none
Field Split	B07Q13	B07Q12			
bis (2-Ethylhexyl) phthalate	36 J	330 U	±CRQL		none
TIC unknown (6.77)	200 JN	170 UJN	NA	These are rough matches and cannot be confirmed, for TICs one	
TIC unknown (8.62)	80 JN	270 UJN			
TIC unknown (26.85)	200 JN	NA			
TIC unknown (27.93)	100 JN	67 JN			
TIC unknown (30.60)	80 JN	130 JN			
di-n-butyl phthalate	100 J	330 U	±CRQL		none

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CALCULATION SUMMARY - FORM B-6

SDG: 9212L005	REVIEWER: AS	DATE: 4/13/93	PAGE 1 OF 1

COMMENTS: Semivolatile (Level 2 validation)

B07Q13 = ✓ Di-n-butylphthalate = $\frac{15918(40)(2)(500)}{77493(2)(1.240)(30.3)(.98)}$

$\frac{636720000}{5936779} = 107.25$

✓ Bis(2-ethylhexyl)phthalate = $\frac{3783(40)(2)(500)}{74790(2)(.867)(30.3)(.98)}$

$\frac{151320000}{3850891} = 39.29$

TIC Unknown (6.77) = $\frac{43214}{173784} \times 40 = 10 \frac{(500)}{(30.3)(0.98)} = 170$ ✓

TIC Unknown (8.62) = $\frac{22672}{173784} \times 40 = 5 \frac{(500)}{(30.3)(0.98)} = 84$ ✓

reported TIC results are rounded to 1 signif. figure

TIC Unknown (26.85) = $\frac{61778}{183776} \times 40 = 13 \frac{(500)}{(30.3)(0.98)} = 219$ ✓

TIC Unknown (27.93) = $\frac{33286}{183776} \times 40 = 7 \frac{(500)}{30.3(0.98)} = 118$ ✓

TIC Unknown (30.60) = $\frac{21648}{183766} \times 40 = 5 \frac{(500)}{30.3(0.98)} = 84$ ✓

HCRL-WHC/9316-T-93-025 9613422.2747

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case #92/2L005 (Anions NO_2 NO_3)

Document Number: HCRL-WHC/9316-L-93-024 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports X
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

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HARTCROWSER

Earth and Environmental Technologies

Hart Crowser Inc
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509 946 4[illegible]

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Weston Case Number 9212L005 - Anions and Nitrate/Nitrite

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for anions (chloride, fluoride, phosphate, and sulfate), and nitrate/nitrite. The sample was fully validated. In addition, a 100 percent validation of the supporting quality control data was performed.

The samples were analyzed by Weston using the U.S. Environmental Protection Agency (EPA) Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), Methods 300.0 and 353.1, modified for soil (leachate) analysis. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

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DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including holding times, instrument and method blanks, matrix spikes, duplicates, laboratory control samples, and initial and continuing calibrations), and quantitation limit requirements were met for this case with the exception of the following: the nitrate/nitrite holding time was exceeded; and interlaboratory precision goals were not met for chloride, fluoride, and phosphate.

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following deficiencies resulted in the qualification of the data.

The sample was analyzed for nitrate/nitrite 9 days past the 28 day holding time. Therefore, the nitrate/nitrite concentration was qualified as an estimate (J).

Sample B07Q13 was a split of sample B07Q12, which was analyzed by TMA. The interlaboratory precision was acceptable for nitrate/nitrite and sulfate, but was unacceptable for chloride, fluoride, and phosphate, based on the computed relative percent deviation (RPD) between concentrations. No qualifiers were assigned at this time. Insufficient data are available to assign qualifiers to the complete data set.

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1764.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-024

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Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

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ATTACHMENT 1

Glossary of Data Qualifiers

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Glossary of Data Qualifiers

U - Indicates the compound or 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.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

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

N - Indicates presumptive evidence of a compound.

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ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/15/93

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

WESTON BATCH #: 9212L005

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BC7Q13	% Solids	98.1	%	0.10
		Chloride by IC	27.0	MG/KG	1.3
		Fluoride by IC	3.2	MG/KG	2.5
		Phosphate by IC	4.4	MG/KG	1.3
		Sulfate by IC	23.2	MG/KG	1.3
		Hardness	50.9	MG/KG	17.0
		Nitrate Nitrite	2.7	MG-N/KG	0.51
		Ammonia, as N	6.9	MG/KG	1.3
		pH	6.7	PH UNITS	0.010

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ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9212L005	REVIEWER: Clark	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS: anions, nitrate/nitrite			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
nitrate/nitrite	J	B07Q13	missed HT

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ATTACHMENT 4

As Qualified Data Summary

9613422.2759

0 0 0 0 9 3

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/15/93

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9212L005

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	Qua
-001	B07Q13	% Solids	98.1	%	0.10	not v.
		Chloride by IC	27.0	MG/KG	1.3	—
		Fluoride by IC	3.2	MG/KG	2.5	—
		Phosphate by IC	4.4	MG/KG	1.3	—
		Sulfate by IC	23.2	MG/KG	1.3	—
		Hardness	50.9	MG/KG	17.0	not va
		Nitrate Nitrite	2.7	MG-N/KG	0.51	J
		Ammonia, as N	6.9	MG/KG	1.3	not va
		pH	6.7	PH UNITS	0.010	not v

✓ mk 4/7/93

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WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: White Bluffs Pickling, Acid Cribs ERA	REVIEWER: CHR	DATE: 4/2/93
LABORATORY:	CASE: 92/2L005	SDG:
SAMPLES/MATRIX:		
Soil	B07Q13	
		Level 4 Validation

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):

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ATTACHMENT 5

Data Review Supporting Documentation

HOLDING TIME SUMMARY - FORM B-1

92/2L005

SDG:	REVIEWER: Clare Russell	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07Q13	anions	12/7/93	12/19/92	12/19/92	12	0	none
↓	nitrate/nitrite	↓	1/13/93	1/13/93	37	0	J

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(11)

CALIBRATION DATA SUMMARY - FORM B-2

92/2L005

SDG:	REVIEWER: Clare Russell	DATE: 4/7/93	PAGE 1 OF 1		
COMMENTS:					
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
ICAL →	all acceptable				none
CCAL →	all acceptable				none

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

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11

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

92121005

SDG:	REVIEWER: Clare Russell	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
All blanks were <DL									none

9613422.2768

(11)

ACCURACY DATA SUMMARY - FORM B-4

92121005

SDG:	REVIEWER: Clare Russell	DATE: 4/7/93	PAGE 1 OF 1	
COMMENTS:				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
matrix spike (B07Q135)	→ all acceptable		B07Q13	none
blank spike	→ all acceptable		B07Q13	none

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

(11)

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PRECISION DATA SUMMARY - FORM B-5

92/2L005

SDG:	REVIEWER Clare Russell	DATE: 4/7/93	PAGE 1 OF 1
COMMENTS:			

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
lab dup → all acceptable					none
(B07Q13)					
field dup → none in this package.					
	B07Q13	B07Q12			
field split chloride	27	11.5 J	80.5% RPD		
fluoride	3.2	1.4 J	78.3% RPD		
phosphate	4.4	1.0 J (<5x PQL)	126% RPD		
sulfate	23.2	23 J	0.9% RPD ✓		
nitrate/nitrite	2.7 (J)	3.52	26.4% RPD ✓		

(11)

HCRL-WHC/9316-T-93-019 9413122.2771

E-93-16/2978-56

WESTINGHOUSE HANFORD COMPANY
PICKLING ACID CRIB ERA DATA VALIDATION
DISTRIBUTION FORM

Document Title Prelim. QA Rpts. Case #9212L005 (Metals)

Document Number: HCRL-WHC/9316-L-93-018 Date: 4/20/93

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Project Files (1=Administrative; 2=Correspondence; 3=Source Data; 4=Technical Data)

1.1	File Index		2.1	Incoming Correspondence		4.1	Task Plan
1.2	Distribution Lists		2.2	Outgoing Correspondence	X	4.2	Data Pkg. Completeness Verif. Checklist
1.3	Project Procedures		2.3	Internal Correspondence		4.3	Data Valid. Calcs./Annotated DP
1.4	Project Modifications					4.4	Prelim. QA Reports X
1.5	Staff		3.1	Task Order		4.5	Data Valid. & Qual. Summary Rpts.
1.5.1	Staff Resumes		3.2	Sample Lists		4.5.1	Internal Drafts/Comments/Resol.
1.5.2	Staff Training		3.3	Data Validation Procedures		4.5.2	WHC Review Draft Comments/Resol.
1.5.3	Auth. Former Site Employee		3.4	Original Chemical Data		4.5.3	Final Report
1.6	QA		3.5	Original Radiochem. Data		4.6	Weekly Status Reports
1.6.1	QA Implement Procedures					4.7	Weekly Management Reports
1.6.2	QA Audits						
1.6.3	QA Training						
1.7	Budget						
1.7.1	Budget Status						
1.7.2	Invoices						
1.8	Requisitions						
1.9	Meeting Minutes						
1.10	Record of Telecon						
1.11	Progress Reports						
1.12	Subcontractor						

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HARTCROWSER

Earth and Environmental Technologies

Hart Crowser
1201 Jadwin Avenue Suite
Richland, Washington
FAX 509 946
509 946

J-2978-56

April 20, 1993

Ms. Jil Frain
Westinghouse Hanford Company
P.O. Box 1970 / MSIN H6-04
Richland, Washington 99352

Subject: WHC Order No. MLW-SSV-037106
Task Order No. E-93-16
Preliminary Quality Assurance Record
White Bluffs Pickling Acid Cribs ERA
Weston Case Number 9212L005 - Metals

Dear Ms. Frain:

Ebasco and Hart Crowser are pleased to provide you with the attached results of our review and validation of the subject data from the White Bluffs Pickling Acid Cribs ERA. The attached results are provided to you in partial fulfillment of Subtask 03 of our task plan dated March 12, 1993. The subject data package consisted of one low level soil sample submitted for analysis for metals. The sample was fully validated. In addition, a 100 percent validation of the supporting quality control data was performed.

The sample was analyzed by Weston using the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) statement of work. All analytical results, together with the data qualifiers which we have assigned as a result of our review, are provided in Attachment 4. Table 1 is an annotated list of the attachments to this letter report.

DATA QUALITY OBJECTIVES SUMMARY

Data quality objectives for accuracy and precision (including holding times, instrument and method blanks, matrix spikes, duplicates, laboratory control samples, initial and continuing calibrations, and instrument-specific quality control measures), and quantitation limit requirements were met for this case with the exception of the following: the mercury matrix spike percent recovery was above the upper control limit; the selenium analytical spike percent recovery was below the lower control limit; there was minor nickel and potassium blank contamination; and sodium blanks had negative values greater than the instrument detection limit (IDL).

MAJOR DEFICIENCIES (REJECTED DATA)

No data were rejected.

MINOR DEFICIENCIES (OTHER QUALIFIED DATA)

The following resulted in the qualification of data. All qualified data are discussed in Attachments 3 and 5.

The mercury matrix spike percent recovery was above the upper control limit. As mercury was not detected in the sample, no data were qualified.

The selenium analytical spike percent recovery was outside the 85 to 115 percent control limits. Selenium was not detected in the sample. The associated quantification limit was qualified as an estimate (UJ).

There was minor nickel and potassium blank contamination which resulted in the qualification of data. All associated nickel and potassium concentrations which were less than 5 times the blank concentration were qualified as undetected (U).

Sodium blanks had negative values which were greater than the IDL. The associated sodium concentration, which was within 5 times the magnitude of the blank, was qualified as an estimate (J).

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Split sample precision was acceptable for all metals except chromium (128 percent RPD). However, no qualifiers were assigned at this time as all other data quality objectives were met.

No other data qualifiers were assigned.

We trust that these preliminary results meet your needs. Our qualifier assignments will be finalized at the time the summary report is published. The final qualifiers may vary from those presented here, reflecting any trends in data quality or laboratory performance observed over the course of the White Bluffs Pickling Acid Cribs ERA data validation effort. Please contact me if you have any questions with regard to our activities.

Sincerely,

HART CROWSER, INC.

D. MARK GERBOTH, P.E.
Project Manager
HC#134:RL1758.DOC

Attachments

cc: Mark Gerboth (w/o attachments)
Jeff Grover (w/o attachments)
Westinghouse EDMC
Project File - HCRL-WHC/9316-L-93-018

Table 1 - Annotated List of Attachments

Attachment 1 - Glossary of Data Qualifiers

This attachment provides a glossary explaining all data qualifiers applied as a result of the validation.

Attachment 2 - As Received Laboratory Sample Concentration Reports

This attachment provides a copy of the as-received sample concentration reports. This may be a tabular summary similar to that provided in Attachment 4, or may be a copy of the laboratory reports (e.g., Form I).

Attachment 3 - Summary of Data Qualifications (Form B-7)

This attachment provides a complete summary of all qualifications applied as a result of the validation.

Attachment 4 - As Qualified Data Summary

This attachment provides a tabular data summary of all data qualified from the validation.

Attachment 5 - Data Review Supporting Documentation

This attachment provides copies of the data validation checklists, data summary forms, telephone contact memoranda and other documentation completed as a result of the data validation.

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ATTACHMENT 1

Glossary of Data Qualifiers

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Glossary of Data Qualifiers

U - Indicates the compound or 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.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to quality control deficiencies identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are useable for decision making processes.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

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

N - Indicates presumptive evidence of a compound.

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ATTACHMENT 2

As Received Laboratory Sample Concentration Reports

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP005

Matrix (soil/water): SOIL Lab Sample ID: 921200501

Level (low/med): LOW Date Received: 12/12/92

% Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5370.00			P
7440-36-0	Antimony	12.20	U		P
7440-38-2	Arsenic	2.40			F
7440-39-3	Barium	52.30			P
7440-41-7	Beryllium	.29	B		P
7440-43-9	Cadmium	1.43	U		P
7440-70-2	Calcium	3250.00			P
7440-47-3	Chromium	9.50			P
7440-48-4	Cobalt	8.40	B		P
7440-50-8	Copper	13.20			P
7439-89-6	Iron	14600.00			P
7439-92-1	Lead	3.60		*	F
7439-95-4	Magnesium	3670.00			P
7439-96-5	Manganese	143.00			P
7439-97-6	Mercury	.05	U	N	CV
7440-02-0	Nickel	13.60			P
7440-09-7	Potassium	1410.00			P
7782-49-2	Selenium	.41	U	W	F
7440-22-4	Silver	2.04	U		P
7440-23-5	Sodium	165.00	B		P
7440-28-0	Thallium	.41	U		F
7440-62-2	Vanadium	36.00			P
7440-66-6	Zinc	40.40			P
	Cyanide				NR
	Zirconium	40.8	U		

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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ATTACHMENT 3

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY - FORM B-7

92121005

SDG:	REVIEWER: CMR	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS: Metals			Lead 4 Valin
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
nickel	U	B07Q13	blank contam
potassium	U	↓	↓
Selenium	UJ	↓	anal spike <85%
sodium	J	↓	neg blank

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ATTACHMENT 4

As Qualified Data Summary

9613422.2783 0000022

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07Q13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP005

Matrix (soil/water): SOIL Lab Sample ID: 921200501

Level (low/med): LOW Date Received: 12/12/92

% Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M	Qual
7429-90-5	Aluminum	5370.00			P	—
7440-36-0	Antimony	12.20	U		P	U
7440-38-2	Arsenic	2.40			F	—
7440-39-3	Barium	52.30			P	—
7440-41-7	Beryllium	.29	B		P	—
7440-43-9	Cadmium	1.43	U		P	U
7440-70-2	Calcium	3250.00			P	—
7440-47-3	Chromium	9.50			P	—
7440-48-4	Cobalt	8.40	B		P	—
7440-50-8	Copper	13.20			P	—
7439-89-6	Iron	14600.00			P	—
7439-92-1	Lead	3.60		*	F	—
7439-95-4	Magnesium	3670.00			P	—
7439-96-5	Manganese	143.00			P	—
7439-97-6	Mercury	.05	U	N	CV	U
7440-02-0	Nickel	13.60			P	U
7440-09-7	Potassium	1410.00			P	U
7782-49-2	Selenium	.41	U	W	F	UJ
7440-22-4	Silver	2.04	U		P	U
7440-23-5	Sodium	165.00	B		P	J
7440-28-0	Thallium	.41	U		F	U
7440-62-2	Vanadium	36.00			P	—
7440-66-6	Zinc	40.40			P	—
	Cyanide				NR	
	Zirconium	40.8	U			U

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

✓ CMR 4/11/93

FORM I - IN 03/90

9613422.2784

ATTACHMENT 5

Data Review Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: White Bluffs Acidling acid Cribs ERA	REVIEWER: CMK	DATE: 4/2/93
LABORATORY: Weston	CASE: 9212L005	SDG:
SAMPLES/MATRIX:		
soil B07Q13		

Level 4 Validation

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	present in other data		✓	
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 $\geq$0.995?	Yes	No	(N/A)
If no, was a second MSA analysis performed?	Yes	No	(N/A)

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is $\geq$10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	(Yes)	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	(Yes)	No	N/A
Are all detection limits below the CRQL?	(Yes)	No	N/A

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

18. OVERALL ASSESSMENT AND SUMMARY

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

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

(12)

COMMENTS (attach additional sheets as necessary):

HOLDING TIME SUMMARY - FORM B-1

SDG:	REVIEWER: Clare Russell			DATE: 4/11/93			PAGE 1 OF 1
COMMENTS:	metals					Level 4 Validation	
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
Case 9212L005							
B07Q13	mercury	12/7/92	12/28/92	12/30/92	21	2	none

B-1

9613422.2791

(12)

9613422.2792

CALIBRATION DATA SUMMARY - FORM B-2

92121005

SDG:	REVIEWER: CM Russell	DATE: 4/11/93	PAGE 1 OF 1		
COMMENTS: metals			(Level 4 Validation)		
CALIB. TYPE:	INITIAL CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
GFAA Calib.	Corr. Coeff.				
	Hg				none
	As				
	Se				
	Tl				
	Pb				
ICV and CCV					
	all are acceptable.			all	none

(12)

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

~~9212~~ 9212L005

SDG:	REVIEWER: Clem Russell	DATE: 4/11/93	PAGE 1 OF 1
COMMENTS: Metals			Level 4 Validation

SAMPLE ID	COMPOUND ug/L	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
PBS	calcium	102.7			mg/kg	513.5		—	—
↓	copper	1.70			↓	8.5		—	—
↓	magnesium	68.7			↓	343.5		—	—
CCB3	nickel 20.2	4.04			↓	20.2		B07Q13	U
ICB	potassium 1727.6	345.5			↓	1727.6		B07Q13	U
CCB1	sodium -180	-36			↓	-180			
CCB2	sodium -210	-42			↓	-210		B07Q13	J

9613422.2793

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9613422.2794

ACCURACY DATA SUMMARY - FORM B-4

Case ~~SDG:~~ 9212L005	REVIEWER: Clare Russell	DATE: 4/11/93	PAGE 1 OF 1	
COMMENTS: Metals			Level 4 Validation	
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
CLDL Std	lead	63%		none
	zinc	140%, 143%		↓
	cadmium	135%		
matrix spike	mercury (sample B07Q135)	129%	B07Q13	none
LCS → acceptable				none
final spike (NOMSA)				
	As - OK ✓			
	Pb - OK ✓			
	Selenium	74%	B07Q13	UJ
	Tl - OK ✓			

(12)

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PRECISION DATA SUMMARY - FORM B-5

9212L005

SDG:	REVIEWER Clare Russell	DATE: 4/11/93	PAGE 1 OF 1			
COMMENTS: Metals					Level 4 Validation	
COMPOUND		SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Anal Dup	lead	B07Q13 (3.6)	B07Q13D (5.5)	41.2	B07Q13	none*
		*no qual. because conc. is <5xCRQL			lead	
		dup is ± 2x CRQL ✓				
			CLR			
All other RPD are acceptable.						
Field Dup → none in this package						
Field Split		B07Q13	B07Q12			none
		see attached calc sheets				
		for RPD info.				
ICP Serial Dil → all are acceptable.						none

(12)

CALCULATION SUMMARY - FORM B-6

9212L005

SDG:	REVIEWER: Clare Russell	DATE: 4/11/93	PAGE 1 OF

COMMENTS: Metals — Level 4 Validation

Field Split Precision

	B07Q13	B07Q12	
Al	5370	7370	31.4 ✓
Sb	12.2 U	3.6 UJ	—
As	2.40	3.6	40 (±2xCRQL) ✓
Ba	52.30	57.9	10.2 ✓
Be	0.29	0.30	
Cd	1.43 U	0.31 U	—
Ca	3250	3460	3.4 ✓
Cr	9.50	43.1	127.8%
Co	840	9.3	10.2 ✓
Cu	13.20	11.4	14.6 ✓
Fe	14600	19200	27.2 ✓
Pb	3.60	3.9	8.0 ✓
Mg	3670	4040	9.6 ✓
Mn	143	177	21.3 ✓
Hg	0.05 U	0.05 U	—
Ni	13.6 U	27.8	—
K	1410 U	1710 J	—
Se	0.41 UJ	0.67 U	—
Ag	2.04 U	0.93	—
Na	165 J	165	0% ✓
Tl	0.41 U	0.56 U	—
V	36.0	51.5	35.4 ✓
Zn	40.4	50.5	22.2 ✓
Zr	40.8 U	17.2 U	—