9111L276-WRS-213

0046380

Golder Associates Inc.

4104-148th Avenue, NE
Redmond, WA USA 98052
Telephone (206) 883-0777
Fax (206) 882-5498

Golder Associates

June 26, 1992

Our ref: 913-1719
S/O/1433

Science Applications International Corporation
1845 Terminal Drive, Suite 202
Richland, Washington 99352

ATTENTION: Mr. P.K. Brockman

RE: 200-BP-1 DATA VALIDATION, TASK ORDER S-92-19, TRANSMITTAL OF REPORT

Dear Mr. Brockman:

Enclosed are four copies of the data validation summary report for data packages 9111L276, 9111L286, 9111L317, 9111L353, 9111L511, 9112L781, and 9112L829 produced under the referenced task order. This report has been reviewed by Mr. Ken Ridgway and his comments have been incorporated. Please distribute this report as follows:

- One copy with the original data package (blue folder) is to be delivered to Mr. Brian Sprouse or Ms. Tami Tonning at the WHC/EDMC offices at 350 Hills Street.
- One copy each to Mark Buckmaster and Becky Bechtold of WHC at 450 Hills Street.

Please call if you have any questions.

Sincerely,

GOLDER ASSOCIATES INC.

Kent Angelos
Task Manager

Donald M. Caldwell
Project Director

Enclosures

KMA/DMC/ah

Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS
Data Packages: 9111L276, 9111L286, 9111L317, 9111L353, 9111L511, 9112L781, 9112L829
Matrix: Water
Analysis Type: Organics/Metals/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

June 26, 1992

913-1719

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LIST OF APPENDICES

1. INTRODUCTION

This report presents the results of data validation on the following sample delivery groups and sample numbers. The HEIS sample numbers and field QC associated with this group by SDG are:

Data Package ID	HEIS Sample Numbers	Matrix
9111L276	B01B27, B01B28, B019N5, B019N6, B019R3, B019R4, B019P7, B019P8, B019Q5, B019Q6, B019Q9, B019R0	Water
9111L286	B019H3, B019H4, B01B11, B01B12, B01B30	Water
9111L317	B019S1, B019S2, B01B13, B01B14, B01B17, B01B18, B019D9, B019F0, B01B31	Water
9111L353	B019J1, B019J2, B019F3, F019F4, F019H7, B019H8, B019G1, B01B34, B01B33, B019G2	Water
9111L511	B01B24	Water
9112L781	B01B35, B019J9, B019K0, B019N9, B019P0	Water
9112L829	B019D1, B019D2	Water

Sample identifications, locations and sample dates are provided in the tabular data summary provided in Appendix A. Data validation was conducted in accordance with the Westinghouse Hanford Company statement of work (WHC 1991) and validation procedures (WHC 1992).

2. DATA QUALITY OBJECTIVES

The data package was complete for all requested analyses and met the data quality objectives of the work plan. Data quality objectives for the project specified the use of CLP methods for the TCL organics and TAL metals/cyanide analytes and the use of standard methods for all other parameters.

Sample quantitation limits were met with the exception of minor differences due to sample volume and dilution factors.

In SDG 9111L286, samples B01B11 and B01B12 were identified as fourth quarter spike duplicate #2. However, the specific sample locations are not currently available, therefore, the recoveries were not calculated.

In SDG 9111L317, samples B01B13 and B01B14 were identified as fourth quarter duplicate #1. Samples B01B17 and B01B18 were identified as fourth quarter duplicate #2. However, the sample locations are not currently available, therefore the relative percent differences were not calculated.

Samples B01B27, B01B28, B01B30, B01B31, B01B34, B01B33, and B01B35 were identified as fourth quarter volatile trip blanks. No valid target compounds were detected in the samples with the exception of methylene chloride at 55 ppb in sample B01B33. The purpose for submittal of these samples is unclear, since they provide no useful field quality control data to compare with the metals and wet chemistry analyses. It is recommended that volatile organic trip blanks only be submitted with samples that are being collected and shipped for volatile organic analyses.

Sample B01B24 was identified as a method trip blank. No target analytes were detected in the sample with the exception of barium, calcium, magnesium, sodium, silicon, chloride, nitrate, and sulfate.

With the exception of the deficiencies identified in Section 3.0, the precision and accuracy goals of the work plan were met.

3. QUALIFIED DATA

This section presents a summary of the qualifications required based on validation of the subject data package.

3.1 Major Deficiencies

The following presents a summary of the rejected data.

Volatile Organics

- 2-Butanone results in sample B01B35 from SDG 9112L781 have been rejected since the initial and continuing calibration RRF values are less than 0.05.

Semivolatile Organics

- No deficiencies were identified requiring rejection of data.

Pesticide/PCBs

- No deficiencies were identified requiring rejection of data.

Metals

- Silver results were rejected in samples B019J1, B019J2, B019F3, B019F4, B019H7, B019G1, B019G2 from SDG 9111L353 and B01B24 from SDG 9111L511 due to spike sample recoveries of less than 30% and results less than the IDL.

- Mercury results were rejected in all associated samples from SDG 9112L829 due to spike sample recoveries of less than 30% and results less than the IDL.

Wet Chemistry

- Cyanide results were rejected in samples B019F3 and B019G1 from SDG 9111L353 due to spike sample recoveries of less than 30% and results less than the IDL.

- Nitrate+nitrite results in SDGs: 9111L276, 9111L286, 9111L317, 9111L353, 9112L781, and 9112L829 have been rejected since they do not compare favorably with the IC data. This may be due to inadequate pH adjustment during analysis. If the samples are not pH adjusted to between 5 and 9 prior to analysis, reduction of nitrate to nitrite during application of the hydrazine reagent may be inhibited, though sodium hydroxide reagent is applied during analysis.

3.2 Minor Deficiencies

The following qualifications were required as a result of the validation. Appendices B through F provide supporting documentation and a summary of the samples affected.

3.2.1 Volatile Organics

Initial Calibrations

The following compounds and their associated SDGs exceeded the initial calibration RSD limits of 30%:

- SDG 9112L781: Acetone.

Sample results for the above compounds in their associated SDGs have been qualified as estimated (J for detects, UJ for non-detects).

Continuing Calibrations

The following compounds and their associated SDGs exceeded the continuing calibration %D limits of 25%:

- SDG 9111L276: Chloroethane.

- SDG 9111L286: Vinyl acetate, 4-methyl-2-pentanone, and 2-hexanone.

- SDG 9111L317: Acetone, vinyl acetate, 4-methyl-2-pentanone, and 2-hexanone.

- SDG 9111L353: Acetone, vinyl acetate, 4-methyl-2-pentanone, and 2-hexanone.

Sample results for the above compounds in their associated SDGs have been qualified as estimated (J for detects, UJ for non-detects).

Blanks

- Methylene chloride and acetone were detected in the laboratory blanks in the following SDGs: 9111L276, 9111L286, 9111L317, 9111L353, 9111L511.

- Methylene chloride and 1,1-dichloroethene were detected in the laboratory blank in SDG 9112L781.

All associated sample results for the above compounds in their respective SDGs have been qualified as undetected (U).

3.2.2 Semivolatile Organics

Blanks

The following compounds were detected in the laboratory blanks.

- SDG 9111L511: Tentatively identified compounds - Hydrocarbon at a relative retention time (RRT) of 19.95 and an unknown at a RRT of 24.90.

Associated sample results for the above compounds have been qualified as non-detects.

3.2.3 Pesticide/PCB Organics

- No deficiencies were identified requiring qualification of data.

3.2.4 Metals

Holding Times

The following metals samples and analyses exceeded holding times.

- SDG 9112L829: All mercury samples were analyzed out of the holding time.

The associated mercury results were qualified as estimated (J for detects, UJ for non-detects).

Blanks

The following analytes were detected in the laboratory blanks.

- SDG 9111L286: Zinc.
- SDG 9111L317: Antimony, potassium, and vanadium.
- SDG 9111L353: Antimony, barium, and iron.
- SDG 9111L511: Copper and zinc.
- SDG 9112L829: Silver.

The associated sample results were qualified as undetected (U).

Spike Sample Recovery

The following spike results exceeded the QC limits of 75% to 125%.

- 9111L276: Arsenic, lead, and selenium.
- 9111L286: Selenium.
- 9111L317: Lead and selenium.
- 9111L353: Selenium, thallium, lead, silver (B019H8 only), and silicon.
- 9112L781: Lead.
- 9112L829: Arsenic and iron.

The associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

Duplicates

The following duplicate results exceeded the RPD limits of 20%:

- SDG 9112L829: Iron.

The associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

ICP Serial Dilutions

The following serial dilution results exceeded the QC limits of 10% for analyte concentrations >50X the IDL:

- SDG 9111L286: Calcium, magnesium, and sodium.
- SDG 9112L781: Calcium, magnesium, and sodium.
- SDG 9112L829: Calcium, magnesium, and sodium.

The associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

Furnace AA Quality Control

The following GFAA analytical spikes exceeded the limits of 85% to 115% recovery:

- SDG 9111L276: Arsenic (B019Q6 only), lead, and selenium (B019N5, B019N6, B019R3, B019R4, B019P7, B019Q6, B019Q9, B019R0; however, sample B019N5 was analyzed by MSA and did not require qualification).
- SDG 9111L286: Lead and selenium, however, sample B019H3 was analyzed by MSA for selenium and did not require qualification.
- SDG 9111L317: Lead, selenium, and thallium (B019S2, B01B17, B019F0); however, sample B019S1 was analyzed by MSA for selenium and therefore did not require qualification.
- SDG 9111L353: Arsenic (B019F4, B019H7), lead (B019F3, B019F4, B019H7, B019H8, B019G1, B019G2, B019J1), thallium (B019H8, B019J1, B019J2), and selenium (B019H7, B019H8, B019F3, B019F4, B019J1). However, samples B019F3, B019G2, and B019J1 were analyzed by MSA for selenium and therefore did not require qualification.
- SDG 9112L781: Arsenic (B019J9 only), lead, selenium, and thallium (B019K0 only).
- SDG 9112L829: Lead, selenium, and thallium (B019D1). However, sample B019D2 was analyzed by MSA for selenium and therefore did not require qualification.

Except where noted above, the associated sample results have been qualified as estimated (UJ).

3.2.5 Wet Chemistry

Holding Times

The following analytes exceeded the holding times:

- SDG 9111L276: Nitrite, nitrate, phosphate, nitrate+nitrite (B019N5, B019R3, B019P7), pH, TDS (B019N5, B019R3, B019P7), and cyanide (B019R3, B019Q9).
- SDG 9111L286: Nitrite, nitrate, phosphate, and pH.
- SDG 9111L317: Nitrite, nitrate, phosphate, and TDS.
- SDG 9111L353: Nitrite, nitrate, phosphate, pH, and TDS.
- SDG 9111L511: Nitrite, nitrate, and phosphate.
- SDG 9112L781: Nitrate, nitrite, phosphate, and TDS.
- SDG 9112L829: Nitrite, nitrate, phosphate, TDS, and pH.

All associated sample results for the above analytes have been qualified as estimated (J for detects, UJ for non-detects).

Continuing Calibrations

The following compounds and their associated SDGs exceeded the continuing calibration %R limits of 90% to 100%:

- SDG 9111L286: Nitrite (B01B11 only).
- SDG 9111L353: Chloride (B019J1 only).

Sample results for the above compounds in their associated SDGs have been qualified as estimated (J for detects, UJ for non-detects).

Spike Recovery

The following spike recoveries were less than 75%:

- SDG 9111L317: Nitrate+nitrite.
- SDG 9111L353: Cyanide (B019J1 and B019H7).

All associated sample results for the above analytes have been qualified as estimated (J for detects, UJ for non-detects) with the exception of the nitrate+nitrite data. Nitrate+nitrate results have already been rejected due to the discrepancy with the IC data.

Laboratory Control Sample

The following laboratory control sample exceeded the limits of 80% to 120% recovery:

- SDG 9111L276: Cyanide.
- SDG 9111L317: Cyanide.
- SDG 9111L353: Cyanide

The associated sample results have been qualified as estimated (J for detects, UJ for non-detects) with the exception of samples B019F3 and B019G1 which have already been rejected due to the matrix spike %R.

4. CONCLUSIONS

Sections 1 through 3 present a summary of the data quality for the subject data package. The results contained in this report are acceptable for use as qualified with the exception of the major deficiencies as reported in Section 3.1.

The appendices provide supporting documentation and tabular summary of the qualified data. The original, as-received data package is enclosed for submittal to the project QA record.

5. REFERENCES

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

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

APPENDIX A

AS QUALIFIED DATA SUMMARY

Project	200-BP-1																			
Case		SDG	9111L276																	
Sample Number			B019N5		B019N6		B019R3		B019R4		B019P7		B019P8		B019Q5		B019Q6		B019Q9	
Location			299-33-4		299-33-4 FILTERED		299-33-13		299-33-13 FILTERED		299-33-24		299-33-24 FILTERED		299-33-15		299-33-15 FILTERED		299-33-18	
Remarks																				
Sample Date			10/29/91		10/29/91		10/29/91		10/29/91		10/29/91		10/29/91		10/30/91		10/30/91		10/30/91	
Inorganic Analytes		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum		200	91	U	91	U	91	U	91	U	91	U	91	U	91	U	91	U	91	U
Antimony		60	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U
Arsenic		10	8.3	J	8.2	J	7.8	J	7.3	J	7.9	J	7.7	J	7.9	J	7.9	J	7.2	J
Barium		200	21.2	B	20.4	B	33.1	B	33.2	B	28	B	26.7	B	33.7	B	36.4	B	30.8	B
Beryllium		5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium		5	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Calcium		5000	34900		35200		38700		39100		31000		29600		34800		37500		33800	
Chromium		10	17.9		10.9		7.3	B	10.6		6	U	6	U	8.2	B	8.4	B	18.3	
Cobalt		50	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Copper		25	10.2	B	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Iron		100	121		46	U	46	U	46	U	46	U	46	U	46	U	46	U	342	
Lead		3	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ
Magnesium		5000	9710		9780		13700		13800		9270		8870		10700		11500		14800	
Manganese		15	3.5	B	2	U	2	U	2	U	2	U	2	U	2	U	2	U	7	B
Mercury		0.2	0.28		0.28		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel		40	11	U	11	U	11	U	11	U	11	U	11	U	11	U	11	U	11	U
Potassium		5000	5390		6200		5460		5430		5390		4900	B	4980	B	5450		5610	
Selenium		5	4.4	J	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ
Silver		10	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Sodium		5000	27600		27400		23300		24100		14800		14200		24700		26500		16600	
Thallium		10	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Vanadium		50	29.8	B	29.3	B	28.1	B	26.9	B	28.4	B	27.1	B	25.9	B	26.6	B	27	B
Zinc		20	6	U	6.9	B	6	U	6	U	7.6	B	14.2	B	6	U	6	U	21.7	
Cyanide		10	30.5	J			15	J			20	UJ			10	UJ			10	UJ
Bismuth		200	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U
Silicon		300																		
Alkalinity, mg/L		0.5	102				106				104				100				102	
Chloride by IC, mg/L		0.5	5.5				7.3				5.9				6.4				6.5	

Project	200-BP-1																	
Case		SDG	9111L276															
Sample Number			B019N5		B019N6		B019R3		B019R4		B019P7		B019P8		B019Q5		B019Q6		B019Q9	
Location			299-33-4		299-33-4 FILTERED		299-33-13		299-33-13 FILTERED		299-33-24		299-33-24 FILTERED		299-33-15		299-33-15 FILTERED		299-33-18	
Remarks																		
Sample Date			10/29/91		10/29/91		10/29/91		10/29/91		10/29/91		10/29/91		10/30/91		10/30/91		10/30/91	
Inorganic Analytes		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fluoride by IC, mg/L		0.5	1				0.5	U			0.5	U			0.5	U			0.5	U
Nitrite by IC, mg/L		0.5	0.25	UJ			0.25	UJ			0.25	UJ			0.25	UJ			0.25	UJ
Nitrate by IC, mg/L		0.5	69	J			75.7	J			14.1	J			71.6	J			58.6	J
Phosphate by IC, mg/L		0.5	0.25	UJ			0.25	UJ			0.25	UJ			0.25	UJ			0.25	UJ
Sulfate by IC, mg/L		0.5	36.5				38				27.7				36.1				34.4	
Nitrate+Nitrite, mg/L		0.5	16	R			16.6	R			3.4	R			16	R			13	R
Total Organic Carbon, mg/L		0.5	0.5	U			0.92				0.52				0.52				0.82	
pH		0.01	7.2	J			7.3	J			7.7	J			7.5	J			7.5	J
Total Dissolved Solids, mg/L		5	273	J			295	J			194	J			282				260	
Specific Conductance, umhos/cm		1																		

Project	200-BP-1																	
Case		SDG			9111L286							9111L317						
Sample Number			B019R0		B019H3		B019H4		B01B11		B01B12		B019S1		B019S2		B01B13	
Location			299-33-18		699-47-60		699-47-60		4TH QTR		4TH QTR		699-48-50		699-48-50		4TH QTR	
			FILTERED				FILTERED		DUPLICATE		DUPLICATE				FILTERED		DUP #1	
									SPIKE #2		SPIKE #2							
Remarks											FILTERED							
Sample Date			10/30/91		11/01/91		11/01/91		11/01/91		11/01/91		11/04/91		11/04/91		11/05/91	
Inorganic Analytes		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum		200	91	U	91	U	91	U	91	U	91	U	91	U	91	U	91	U
Antimony		60	20	U	20	U	20	U	20	U	20	U	20.7	U	20	U	20	U
Arsenic		10	7.5	J	7.2	B	6.6	B	6.8	B	7.1	B	4.5	B	3.6	B	6.4	B
Barium		200	31.6	B	32.2	B	32.3	B	33	B	33.8	B	38.2	B	32.9	B	16	U
Beryllium		5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium		5	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Calcium		5000	34200		35200	J	36000	J	37200	J	37400	J	41100		41400		24700	
Chromium		10	18.2		6	U	6	U	6	U	6	U	26.8		6	U	17.1	
Cobalt		50	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Copper		25	10	U	10	U	10	U	10	U	10	U	10.4	B	10	U	10	U
Iron		100	46	U	46	U	70.3	B	46	U	46	U	212		71	B	119	
Lead		3	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ
Magnesium		5000	14900		11000	J	11200	J	11600	J	11600	J	12900		13000		9110	
Manganese		15	2	U	2	U	2	U	2	U	2	U	7.4	B	3.2	B	2.9	B
Mercury		0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel		40	11	U	11	U	11	U	11	U	11	U	20.9	B	11	U	14.4	B
Potassium		5000	4900	B	5870		5990		6140		6220		6950		7030		6430	
Selenium		5	2	UJ	4.9	J	2.6	J	3.1	J	3	J	4.7	J	2.7	J	2	UJ
Silver		10	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Sodium		5000	16800		23600	J	24000	J	24800	J	24900	J	22600		23100		18100	
Thallium		10	2	U	2	U	2	U	2	U	2	U	2	U	2	UJ	2	U
Vanadium		50	25.9	B	21.2	B	21	B	23.3	B	21.5	B	28.5	U	26.2	U	30.6	U
Zinc		20	6.6	B	13.6	U	6	U	9.4	U	6	U	8.8	B	6.8	B	6	U
Cyanide		10			25	U			20.4				12.5	UJ			10	UJ
Bismuth		200	200	U	200	U	200	U	200	U	200	U	150	U	150	U	150	U
Silicon		300			18500		18900		19560		19710		15800		15800		15400	
Alkalinity, mg/L		0.5			114				118				104				112	
Chloride by IC, mg/L		0.5			10.9				9.4				20.2				6	

Project	200-BP-1															
Case		SDG			9111L286							9111L317				
Sample Number			B019R0		B019H3		B019H4		B01B11		B01B12	B019S1		B019S2		B01B13	
Location			299-33-18		699-47-60		699-47-60		4TH QTR		4TH QTR	699-48-50		699-48-50		4TH QTR	
			FILTERED				FILTERED		DUPLICATE		DUPLICATE			FILTERED		DUP #1	
									SPIKE #2		SPIKE #2						
Remarks											FILTERED						
Sample Date			10/30/91		11/01/91		11/01/91		11/01/91		11/01/91	11/04/91		11/04/91		11/05/91	
Inorganic Analytes	CRQL		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fluoride by IC, mg/L	0.5				0.62				0.53			0.55				0.64	
Nitrite by IC, mg/L	0.5				0.25	UJ			0.1	UJ		0.25	UJ			0.25	UJ
Nitrate by IC, mg/L	0.5				25.1	J			23.3	J		9	J			7.8	J
Phosphate by IC, mg/L	0.5				0.25	UJ			0.1	UJ		0.25	UJ			0.25	UJ
Sulfate by IC, mg/L	0.5				44.6				41.4			72.7				22.6	
Nitrate+Nitrite, mg/L	0.5				5.7	R			5.9	R		1.9	R			1.6	R
Total Organic Carbon, mg/L	0.5				0.5	U			0.5	U		1.1				0.53	
pH	0.01				7.2	J			7.6	J		7.5				7.8	
Total Dissolved Solids, mg/L	5				275				270			271	J			182	J
Specific Conductance, umhos/cm	1																

Project	200-BP-1																	
Case		SDG										9111L353						
Sample Number			B01B14		B01B17		B01B18		B019D9		B019F0	B019J1		B019J2		B019F3		
Location			4TH QTR DUP #1 FILTERED		4TH QTR DUP #2		4TH QTR DUP #2 FILTERED		699-55-55		699-55-55 FILTERED	699-50-53A		699-50-53A FILTERED		699-50-53B		
Remarks																		
Sample Date			11/05/91		11/04/91		11/04/91		11/04/91		11/04/91	11/07/91		11/07/91		11/07/91		
Inorganic Analytes		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum		200	91	U	91	U	91	U	91	U	91	U	127	B	92.2	B	91	U
Antimony		60	26.4	U	20	U	21.7	U	20	U	21.7	U	23	U	20	U	20	U
Arsenic		10	6.5	B	3.8	B	3.6	B	6.4	B	6.4	B	2.8	B	2.8	B	2	U
Barium		200	16	U	35.5	B	35.3	B	16	U	16	U	162	U	151	U	75.3	B
Beryllium		5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium		5	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Calcium		5000	24700		41900		45000		25300		26800		269000		263000		41100	
Chromium		10	6	U	14.2		6	U	19.3		6	U	90.4		6	U	31.1	U
Cobalt		50	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Copper		25	10	U	10	U	10	U	10	U	10	U	10	U	10	U	29.6	
Iron		100	46	U	149		46	U	135		46	U	1370		369		190	U
Lead		3	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ
Magnesium		5000	9080		13100		14100		9290		9800		74000		72000		11200	
Manganese		15	2	U	7.1	B	2.6	B	3	B	2	U	21.2		10	B	18.1	
Mercury		0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel		40	11	U	12.4	B	11	U	12.6	B	11	U	33.2	B	11	U	19	B
Potassium		5000	6310	U	7260		7300		6140	U	6290	U	16300		15400		8360	
Selenium		5	2	UJ	2.4	J	2.7	J	2	UJ	2	UJ	38	J	53.1	J	2.7	J
Silver		10	10	U	10	U	10	U	10	U	10	U	10	R	10	R	10	R
Sodium		5000	18000		22600		24300		18000		19100		66600		63300		12300	
Thallium		10	2	U	2	UJ	2	U	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ
Vanadium		50	30.5	U	29.9	U	29.6	U	31	U	31.3	U	16	B	13.8	B	11	B
Zinc		20	6	U	6.7	B	6	U	6	U	6	U	11.5	B	6	U	60.6	
Cyanide		10			10	UJ			10	UJ			2710	J			10	R
Bismuth		200	150	U	150	U	150	U	150	U	150	U	150	U	150	U	150	U
Silicon		300	15400		16000		17100		15600		16600		19100	J	19300	J	24400	J
Alkalinity, mg/L		0.5			102				104				62				110	
Chloride by IC, mg/L		0.5			20.7				6				42.3	J			9.4	

Project	200-BP-1																	
Case		SDG										9111L353						
Sample Number			B01B14		B01B17		B01B18		B019D9		B019F0	B019J1		B019J2		B019F3		
Location			4TH QTR DUP #1 FILTERED		4TH QTR DUP #2		4TH QTR DUP #2 FILTERED		699-55-55		699-55-55 FILTERED	699-50-53A		699-50-53A FILTERED		699-50-53B		
Remarks																		
Sample Date			11/05/91		11/04/91		11/04/91		11/04/91		11/04/91	11/07/91		11/07/91		11/07/91		
Inorganic Analytes		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fluoride by IC, mg/L		0.5			0.53				0.67				5	U			0.5	U
Nitrite by IC, mg/L		0.5			0.25	UJ			0.25	UJ			2.5	UJ			0.25	UJ
Nitrate by IC, mg/L		0.5			9.3	J			8.1	J			716	J			8.6	J
Phosphate by IC, mg/L		0.5			0.25	UJ			0.25	UJ			2.5	UJ			0.25	UJ
Sulfate by IC, mg/L		0.5			72.8				22.3				512				51.5	
Nitrate+Nitrite, mg/L		0.5			1.8	R			1.6	R			72.4	R			0.89	R
Total Organic Carbon, mg/L		0.5			0.5	U			0.5	U			1	U			1.9	
pH		0.01			7.9				8				7.7	J			7.8	J
Total Dissolved Solids, mg/L		5			303	J			186	J			2310	J			238	J
Specific Conductance, umhos/cm		1																

Project	200-BP-1																	
Case		SDG										9111L511		9112L781				
Sample Number			B019F4		B019H7		B019H8		B019G1		B019G2	B01B24		B019J9		B019K0		
Location			699-50-53B FILTERED		699-49-55A		699-49-55A FILTERED		699-49-55B		699-49-55B FILTERED	4TH QTR TRIP BLANK		699-53-55A		699-53-55A FILTERED		
Remarks																		
Sample Date			11/07/91		11/07/91		11/07/91		11/07/91		11/07/91	11/19/91		12/14/91		12/14/91		
Inorganic Analytes		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum		200	91	U	91	U	91	U	91	U	91	U	91	U	83	U	83	U
Antimony		60	20	U	20	U	20	U	20	U	20	U	20	U	23	U	23	U
Arsenic		10	6.2	J	5.2	J	2	U	2	U	2	U	2	U	2.3	J	2	U
Barium		200	71.7	B	32	B	30.9	B	79.9	B	75.1	B	36.5	B	47.5	B	41.6	B
Beryllium		5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium		5	3	U	3	U	3	U	3	U	3	U	3	U	3.4	B	3	U
Calcium		5000	39900		53300		52400		32000		30500		18600		35200	J	34400	J
Chromium		10	6	U	12.5		6	U	6	U	6	U	6	U	14.4		6	U
Cobalt		50	10	U	10	U	10	U	10	U	10	U	10	U	5	U	5	U
Copper		25	10	U	10	U	10	U	10	U	10	U	20.4	U	13.6	B	6.1	B
Iron		100	46	UJ	231	U	46	U	1070		82.7	U	46	U	360		39	U
Lead		3	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	U	2	UJ	2	UJ
Magnesium		5000	10900		15400		15200		10000		9710		3960		11100	J	10800	J
Manganese		15	12.5	B	17.9		16.4		9.6	B	4	B	2	U	34.5		29.4	
Mercury		0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel		40	11	U	11	U	11	U	11	U	11	U	11	U	25.3	B	18	U
Potassium		5000	7840		8920		9160		6340		5870		862	U	9470		9060	
Selenium		5	4.4	J	3	J	3.3	J	2	UJ	2	UJ	2	U	2	UJ	2	UJ
Silver		10	10	R	10	R	61.3	J	10	R	10	R	10	R	4	U	4	U
Sodium		5000	12100		36300		35900		9970		9760		1770	B	22000	J	21800	J
Thallium		10	2	UJ	2	UJ	2	UJ	2	UJ	2	UJ	2	U	2	U	2	UJ
Vanadium		50	9.2	B	21.2	B	17.8	B	10.4	B	11.7	B	8	U	10.9	B	9.8	B
Zinc		20	6	U	6	U	6	U	23.9		6	U	21.9	U	5.7	B	5.8	B
Cyanide		10			10.2	J			10	R			25	U	20	U		
Bismuth		200	150	U	150	U	150	U	150	U	150	U			200	U	200	U
Silicon		300	25000	J	18700	J	17500	J	27700	J	26800	J			18910		18700	
Alkalinity, mg/L		0.5			106				114						93			
Chloride by IC, mg/L		0.5			12.6				9.6				0.61		14.8			

Project	200-BP-1																	
Case		SDG											9111L511		9112L781			
Sample Number			B019F4		B019H7		B019H8		B019G1		B019G2		B01B24		B019J9		B019K0	
Location			699-50-53B FILTERED		699-49-55A		699-49-55A FILTERED		699-49-55B		699-49-55B FILTERED		4TH QTR TRIP BLANK		699-53-55A		699-53-55A FILTERED	
Remarks																		
Sample Date			11/07/91		11/07/91		11/07/91		11/07/91		11/07/91		11/19/91		12/14/91		12/14/91	
Inorganic Analytes		CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Fluoride by IC, mg/L		0.5			0.5	U			0.5	U			0.5	U	0.5	U		
Nitrite by IC, mg/L		0.5			0.25	UJ			0.25	UJ			0.25	UJ	0.25	UJ		
Nitrate by IC, mg/L		0.5			37.4	J			1970	J			0.49	J	5	J		
Phosphate by IC, mg/L		0.5			0.25	UJ			0.25	UJ			0.25	UJ	0.25	UJ		
Sulfate by IC, mg/L		0.5			108				15				9.4		53.8			
Nitrate+Nitrite, mg/L		0.5			0.78	R			0.2	R					2	R		
Total Organic Carbon, mg/L		0.5			0.5	U			0.5	U					0.5	U		
pH		0.01			7.9	J			7.9	J					7.3			
Total Dissolved Solids, mg/L		5			364	J			211	J					282	J		
Specific Conductance, umhos/cm		1											123					

Project	200-BP-1								
Case		SDG				9112L829			
Sample Number			B019N9		B019P0	B019D1		B019D2	
Location			299-33-5		299-33-5 FILTERED	699-55-57		699-55-57 FILTERED	
Remarks									
Sample Date			12/14/91		12/14/91	12/14/91		12/14/91	
Inorganic Analytes		CRQL	Result	Q	Result	Result	Q	Result	Q
Aluminum		200	83	U	83	83	U	83	U
Antimony		60	23	U	23	23	U	120	
Arsenic		10	7.6	B	7.1	3.6	J	2.6	J
Barium		200	38	U	38	38	U	216	
Beryllium		5	1	U	1	1	U	10.7	
Cadmium		5	3	U	3	3	U	3	U
Calcium		5000	41000	J	41200	73400	J	77300	J
Chromium		10	6	U	6	50.2		20.4	
Cobalt		50	5	U	5	5	U	5	U
Copper		25	10.6	B	7.6	6.8	B	49.9	
Iron		100	52.5	B	39	3410	J	41.6	J
Lead		3	2	UJ	2	2	UJ	2	UJ
Magnesium		5000	12600	J	12700	23000	J	1080	J
Manganese		15	2.7	B	2	67		40.3	
Mercury		0.2	0.1	U	0.1	0.1	R	0.1	R
Nickel		40	18	U	18	18	U	18	U
Potassium		5000	5590		5430	8050		794	B
Selenium		5	2	UJ	2	2.5	J	12.8	
Silver		10	4	U	4	4.3	U	23.5	U
Sodium		5000	19200	J	19100	31500	J	984	J
Thallium		10	2	U	2	2	UJ	2	U
Vanadium		50	21.8	B	23.6	14.6	B	10.8	B
Zinc		20	12.4	B	9.1	13.6	B	48.7	
Cyanide		10	11.8			99.9			
Bismuth		200	200	U	200	150	U	150	U
Silicon		300	17690		18210	7790		8010	
Alkalinity, mg/L		0.5	98			90			
Chloride by IC, mg/L		0.5	7.5			21.7			

Project	200-BP-1								
Case		SDG				9112L829			
Sample Number			B019N9		B019P0	B019D1		B019D2	
Location			299-33-5		299-33-5 FILTERED	699-55-57		699-55-57 FILTERED	
Remarks									
Sample Date			12/14/91		12/14/91	12/14/91		12/14/91	
Inorganic Analytes		CRQL	Result	Q	Result	Result	Q	Result	Q
Fluoride by IC, mg/L		0.5	0.5	U		0.5	U		
Nitrite by IC, mg/L		0.5	0.25	UJ		0.25	UJ		
Nitrate by IC, mg/L		0.5	41.8	J		108	J		
Phosphate by IC, mg/L		0.5	0.25	UJ		0.25	UJ		
Sulfate by IC, mg/L		0.5	39.9			135			
Nitrate+Nitrite, mg/L		0.5	11.4	R		26.7	R		
Total Organic Carbon, mg/L		0.5	0.5	U		0.5	U		
pH		0.01	7.5			7.6	J		
Total Dissolved Solids, mg/L		5	280	J		503	J		
Specific Conductance, umhos/cm		1							

Project	200-BP-1															
Case	SDG	9111L276				9111L286		9111L317		9111L353				9111L511		9112L781	
Sample Number		B01B27		B01B28		B01B30		B01B31		B01B34		B01B33		B01B24		B01B35	
Location		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK	
Remarks																	
Sample Date		10/29/91		10/30/91		11/01/91		11/04/91		11/07/91		11/07/91		11/19/91		12/14/91	
Analysis Date		11/07/91		11/07/91		11/13/91		11/13/91		11/14/91		11/14/91		11/26/91		12/26/91	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane	10	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride	10	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane	10	10	UJ	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride	5	6	U	8	U	5	U	5	U	6	U	55	B	5	U	5	U
Acetone	10	10	U	30	U	10	U	10	UJ	10	UJ	10	UJ	10	U	10	UJ
Carbon Disulfide	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Chloroform	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone	10	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	R
1,1,1-Trichloroethane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl Acetate	10	10	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ	10	U	10	U
Bromodichloromethane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Dibromochloromethane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
trans-1,3-Dichloropropene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Bromoform	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	10	10	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ	10	U	10	U
2-Hexanone	10	10	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ	10	U	10	U
Tetrachloroethene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U

Project	200-BP-1															
Case	SDG	9111L276				9111L286		9111L317		9111L353				9111L511		9112L781	
Sample Number		B01B27		B01B28		B01B30		B01B31		B01B34		B01B33		B01B24		B01B35	
Location		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK		4TH QTR TRIP BLANK	
Remarks																	
Sample Date		10/29/91		10/30/91		11/01/91		11/04/91		11/07/91		11/07/91		11/19/91		12/14/91	
Analysis Date		11/07/91		11/07/91		11/13/91		11/13/91		11/14/91		11/14/91		11/26/91		12/26/91	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,2,2-Tetrachloroethane	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Toluene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Chlorobenzene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Ethylbenzene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Styrene	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Xylene (total)	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U

Project	200-BP-1		
Case	SDG	9111L511	
Sample Number		B01B24	
Location		4TH QTR TRIP BLANK	
Remarks			
Sample Date		11/19/91	
Extraction Date		11/25/91	
Analysis Date		12/11/91	
Semivolatile Compound	CRQL	Result	Q
Phenol	10	10	U
bis(2-Chloroethyl)ether	10	10	U
2-Chlorophenol	10	10	U
1,3-Dichlorobenzene	10	10	U
1,4-Dichlorobenzene	10	10	U
Benzyl Alcohol	10	10	U
1,2-Dichlorobenzene	10	10	U
2-Methylphenol	10	10	U
bis(2-Chloroisopropyl)ether	10	10	U
4-Methylphenol	10	10	U
N-Nitroso-di-n-propylamine	10	10	U
Hexachloroethane	10	10	U
Nitrobenzene	10	10	U
Isophorone	10	10	U
2-Nitrophenol	10	10	U
2,4-Dimethylphenol	10	10	U
Benzoic acid	50	50	U
bis(2-Chloroethoxy)methane	10	10	U
2,4-Dichlorophenol	10	10	U
1,2,4-Trichlorobenzene	10	10	U
Naphthalene	10	10	U
4-Chloroaniline	10	10	U
Hexachlorobutadiene	10	10	U
4-Chloro-3-methylphenol	10	10	U
2-Methylnaphthalene	10	10	U
Hexachlorocyclopentadiene	10	10	U
2,4,6-Trichlorophenol	10	10	U

Project	200-BP-1		
Case		SDG	9111L511
Sample Number			B01B24
Location			4TH QTR TRIP BLANK
Remarks			
Sample Date			11/19/91
Extraction Date			11/25/91
Analysis Date			12/11/91
Semivolatile Compound		CRQL	Result Q
2,4,5-Trichlorophenol		50	50 U
2-Chloronaphthalene		10	10 U
2-Nitroaniline		50	50 U
Dimethylphthalate		10	10 U
Acenaphthylene		10	10 U
2,6-Dinitrotoluene		10	10 U
3-Nitroaniline		50	50 U
Acenaphthene		10	10 U
2,4-Dinitrophenol		50	50 U
4-Nitrophenol		50	50 U
Dibenzofuran		10	10 U
2,4-Dinitrotoluene		10	10 U
Diethylphthalate		10	10 U
4-Chlorophenyl-phenyl ether		10	10 U
Fluorene		10	10 U
4-Nitroaniline		50	50 U
4,6-Dinitro-2-methylphenol		50	50 U
N-Nitrosodiphenylamine		10	10 U
4-Bromophenyl-phenylether		10	10 U
Hexachlorobenzene		10	10 U
Pentachlorophenol		50	50 U
Phenanthrene		10	10 U
Anthracene		10	10 U
Di-n-butylphthalate		10	10 U
Fluoranthene		10	10 U
Pyrene		10	10 U
Butylbenzylphthalate		10	10 U

Project	200-BP-1			
Case		SDG	9111L511	
Sample Number			B01B24	
Location			4TH QTR TRIP BLANK	
Remarks				
Sample Date			11/19/91	
Extraction Date			11/25/91	
Analysis Date			12/11/91	
Semivolatile Compound		CRQL	Result	Q
3,3'-Dichlorobenzidine		20	20	U
Benz(a)anthracene		10	10	U
Chrysene		10	10	U
bis(2-Ethylhexyl)phthalate		10	10	U
Di-n-octylphthalate		10	10	U
Benzo(b)fluoranthene		10	10	U
Benzo(k)fluoranthene		10	10	U
Benzo(a)pyrene		10	10	U
Indeno(1,2,3-cd)pyrene		10	10	U
Dibenz(a,g)anthracene		10	10	U
Benzo(g,h,i)perylene		10	10	U
Hydrocarbon @ 19.95			60	U
Unknown @ 24.90			8	U

Project	200-BP-1		
Laboratory	WESTON		
Case	SDG	9111L511	
Sample Number		B01B24	
Location		4TH QTR TRIP BLANK	
Remarks			
Sample Date		11/19/91	
Extraction Date		11/25/91	
Analysis Date		12/13/91	
Pesticide/PCB	CRQL	Result	Q
alpha-BHC	0.05	0.05	U
beta-BHC	0.05	0.05	U
delta-BHC	0.05	0.05	U
gamma-BHC (Lindane)	0.05	0.05	U
Heptchlor	0.05	0.05	U
Aldrin	0.05	0.05	U
Heptachlor epoxide	0.05	0.05	U
Endosulfan I	0.05	0.05	U
Dieldrin	0.1	0.1	U
4,4'-DDE	0.1	0.1	U
Endrin	0.1	0.1	U
Endosulfan II	0.1	0.1	U
4,4'-DDD	0.1	0.1	U
Endosulfan sulfate	0.1	0.1	U
4,4'-DDT	0.1	0.1	U
Methoxychlor	0.5	0.5	U
Endrin Ketone	0.1	0.1	U
alpha-Chlordane	0.5	0.5	U
gamma-Chlordane	0.5	0.5	U
Toxaphene	1	1	U
Arochlor-1016	0.5	0.5	U
Arochlor-1221	0.5	0.5	U
Arochlor-1232	0.5	0.5	U
Arochlor-1242	0.5	0.5	U
Arochlor-1248	0.5	0.5	U
Arochlor-1254	1	1	U
Arochlor-1260	1	1	U

APPENDIX B

DATA VALIDATION DOCUMENTATION

SDG: 9111L276

SAMPLES: B01B27, B01B28, B019N5, B019N6, B019R3, B019R4, B019P7, B019P8, B019Q5, B019Q6, B019Q9, B019R0

CONTAINS:

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable 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 presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L276	REVIEWER: [illegible]	DATE: 6/16/92	PAGE 1 OF 1
COMMENTS: VOA / Metals / Wet Chem			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Chloroethane	UJ	B01827/28	CCV 20 7256
			6/16/92
MeCl2	U	B01827/28	Present in blank
Acetone	U	"	"
Benzene	J	All	MS & R < 75%
Lead	UJ	"	"
Selenium	J/UJ	"	"
Fluoride	J/UJ	All	LCS & R < 80%
Barium	J	B01901	Failed analytical spike recoveries
Lead	UJ	All	"
Selenium	UJ	All	"
Chloroform	None	B01901	Analyzed by MS
Acetone	UJ	All	Analyzed by GC/MS
Benzene	J	All	"
Diethylphthalate	UJ	All	"
Methylene chloride	J	B019N5, R3, P7	"
Toluene	J	All	"
Trichloroethene	J	B019N5, R3, P7	"
Fluoride	J/UJ	B019R3, B019Q9	"
Fluoride	J/UJ	All	LCS & R < 80%
Nitrate-nitrite	J	All	Analyzed outside holding time

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO19N5
294-33-4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127601

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	8.30	~~B~~	~~N~~	F	J
7440-39-3	Barium	21.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	34900.00			P	
7440-47-3	Chromium	17.90			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.20	B		P	
7439-89-6	Iron	121.00			P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	9710.00			P	
7439-96-5	Manganese	3.50	B		P	
7439-97-6	Mercury	.28			CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5930.00			P	
7782-49-2	Selenium	4.40	~~B~~	NS	F	J
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	27600.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	29.80	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide	30.50	~~U~~	~~S~~ 01/01/92	C	UJ
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/13/95

6/16/95

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019N6
299-33-4
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127602

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	8.20	~~B~~	N	F	J
7440-39-3	Barium	20.40	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	35200.00			P	
7440-47-3	Chromium	10.90			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	9780.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.28			CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	6200.00			P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	27400.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	29.30	B		P	
7440-66-6	Zinc	6.90	B		P	
	Cyanide				NR	
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/13/92

6/16/92

9713523.1217 0000030

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19R3
299-33-13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127604

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.80	~~B~~	N	F	J
7440-39-3	Barium	33.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	38700.00			P	
7440-47-3	Chromium	7.30	B		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	13700.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5460.00			P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	23300.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	28.10	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide	15.00	~~U~~		C	UJ 6/16/92
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

6/16/92

6/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19R4
299-33-13
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127605

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.30	~~B~~	N	F	J
7440-39-3	Barium	33.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	39100.00			P	
7440-47-3	Chromium	10.60			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	13800.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5430.00			P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	24100.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	26.90	B		P	
7440-66-6	Zinc	6.00	U		P	
7440-69-4	Cyanide	200	U		NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

5/6/13/92

6/16/92

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO19P7
299-33-24

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127606

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.90	~~B~~	N	F	J
7440-39-3	Barium	28.00	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	31000.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	9270.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5390.00			P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	14800.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	28.40	B		P	
7440-66-6	Zinc	7.60	B		P	
	Cyanide	20.00	~~U~~		C	UJ
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

8/6/13/92

6/16/93

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19P8
299-33-24
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127607

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.70	~~B~~	N	F	J
7440-39-3	Barium	26.70	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	29600.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	8870.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	4900.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	14200.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	27.10	B		P	
7440-66-6	Zinc	14.20	B		P	
	Cyanide				NR	
7440-69-9	Bismuth	2.00	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/3/97

6/16/97

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19Q5
299-33-15

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127608

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.90	~~B~~	N	F	J
7440-39-3	Barium	33.70	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	34800.00			P	
7440-47-3	Chromium	8.20	B		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	10700.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	4980.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	24700.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	25.90	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide	10.00	~~U~~		C	UJ
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/13/92

6/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO1906
299-33-15
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127609

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.90	~~B~~	NW	F	J
7440-39-3	Barium	36.40	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	37500.00			P	
7440-47-3	Chromium	8.40	B		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	11500.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5450.00			P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	26500.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	26.60	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/13/92

6/16/92

 000003

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO1909
299-33-18

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127611

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.20	~~B~~	N	F	J
7440-39-3	Barium	30.80	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	33800.00			P	
7440-47-3	Chromium	18.30			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	342.00			P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	14800.00			P	
7439-96-5	Manganese	7.00	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5610.00			P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	16600.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	27.00	B		P	
7440-66-6	Zinc	21.70			P	
	Cyanide	10.00	~~U~~		C	UJ
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019R0
299-33-18
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix (soil/water): WATER Lab Sample ID: 911127612

Level (low/med): LOW Date Received: 11/04/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.50	~~B~~	N	F	J
7440-39-3	Barium	31.60	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	34200.00			P	
7440-47-3	Chromium	18.20			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	UJ
7439-95-4	Magnesium	14900.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	4900.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	16800.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	25.90	B		P	
7440-66-6	Zinc	6.60	B		P	
	Cyanide				NR	
7440-69-9	Bismuth	200	U			

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/13/92

6/16/92

9715523.1225

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/05/91

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

WESTON BATCH #: 9111L276

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO19N5	Alkalinity	102	MG/L	2.0
		Chloride by IC	5.5	MG/L	0.25
		Fluoride by IC	1.0	MG/L	0.50
		Nitrate by IC	0.25	MG/L	0.25
		Nitrate by IC	69.0	MG/L	2.5
		Cyanide, Total	30.5	UG/L	25.0
		Phosphate by IC	0.25	MG/L	0.25
		Sulfate by IC	36.5	MG/L	2.5
		~~Nitrate Nitrite~~	~~16.0~~	~~MG-N/L~~	~~1.0~~
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	7.2	PH UNITS	0.010
		Total Dissolved Solids	273	MG/L	5.0
-004	BO19R3	Alkalinity	106	MG/L	2.0
		Chloride by IC	7.3	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
		Nitrite by IC	0.25	MG/L	0.25
		Nitrate by IC	75.7	MG/L	2.5
		Cyanide, Total	15.0	UG/L	10.0
		Phosphate by IC	0.25	MG/L	0.25
		Sulfate by IC	38.0	MG/L	2.5
		~~Nitrate Nitrite~~	~~16.6~~	~~MG-N/L~~	~~1.0~~
		Total Organic Carbon	0.92	MG/L	0.50
		pH	7.3	PH UNITS	0.010
		Total Dissolved Solids	295	MG/L	5.0
-006	BO19P7	Alkalinity	104	MG/L	2.0
		Chloride by IC	5.9	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
		Nitrite by IC	0.25	MG/L	0.25
		Nitrate by IC	14.1	MG/L	0.25
		Cyanide, Total	20.0	UG/L	20.0
		Phosphate by IC	0.25	MG/L	0.25
		Sulfate by IC	27.7	MG/L	2.5
		~~Nitrate Nitrite~~	~~3.4~~	~~MG-N/L~~	~~1.0~~
		Total Organic Carbon	0.52	MG/L	0.50
		pH	7.7	PH UNITS	0.010
		Total Dissolved Solids	194	MG/L	5.0

6/16/92

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/05/91

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

WESTON BATCH #: 9111L276

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-008	B019Q5	Alkalinity	100	MG/L	2.0
		Chloride by IC	6.4	MG/L	0.25
	299-33-15	Fluoride by IC	0.50 u	MG/L	0.50
		Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	71.6	MG/L	2.5
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	36.1	MG/L	2.5
		~~Nitrate Nitrite~~	~~16.0~~	~~MG-N/L~~	~~1.0~~ R
		Total Organic Carbon	0.52	MG/L	0.50
		pH	7.5	PH UNITS	0.010
		Total Dissolved Solids	282	MG/L	5.0
-011	B019Q9	Alkalinity	102	MG/L	2.0
		Chloride by IC	6.5	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
	299-33-15	Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	58.6	MG/L	2.5
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	34.4	MG/L	2.5
		~~Nitrate Nitrite~~	~~13.0~~	~~MG-N/L~~	~~1.0~~ R
		Total Organic Carbon	0.82	MG/L	0.50
		pH	7.5	PH UNITS	0.010
		Total Dissolved Solids	260	MG/L	5.0

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VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B01B27
4th Qt. Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L276-003

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

Lab File ID: W110709

Level: (low/med) LOW

Date Received: 11/04/91

% Moisture: not dec. _____

Date Analyzed: 11/07/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
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~~ UJ
75-09-2	Methylene Chloride	6	~~B~~ U
67-64-1	Acetone	10 ~~8~~	~~JB~~ U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

FORM 1 V-1 12/88 Rev.

6/11/92

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1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BO1B28
4th qt. Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L276-010

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

Lab File ID: W110710

Level: (low/med) LOW

Date Received: 11/04/91

% Moisture: not dec. _____

Date Analyzed: 11/07/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
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~~	UJ
75-09-2	Methylene Chloride	8	~~B~~	U
67-64-1	Acetone	30	~~B~~	U
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

6/16/92

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: CV	DATE: 6/2/92
LABORATORY: Weston	CASE: 9111L276	SDG: 9111L276
SAMPLES/MATRIX: B019N5, B019N6, B019R3, B019R4		
B019P7, B019P8, B019R5, B019R6, B019Q9, B019R0		
All water samples		

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		✓	✓	—

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6/3/92

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

2. HOLDING TIMES

Have all samples been analyzed within holding times? Yes (No) N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) (No) N/A

Was a midrange cyanide standard distilled? (Yes) (No) N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

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

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

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

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

ACTION: Qualify the sample data according to the following requirements:

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? (Yes) No N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required? (Yes) No N/A

Are MSA correlation coefficients ≥0.995? (Yes) No N/A

If no, was a second MSA analysis performed? Yes No (N/A)

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

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? (Yes) No N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP? (Yes) No N/A

Are all detection limits below the CRQL? (Yes) No N/A

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

18. OVERALL ASSESSMENT AND SUMMARY

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

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

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

COMMENTS (attach additional sheets as necessary):

The cyanide results for Samples B019NS and B019R3 were ~~qualified as~~ originally qualified as undetected however the concentrations are above the CRQL. ~~The~~ The qualification has been changed on the Form 1s.

6/16/95

97 13523.1236 Holding Time Summary pg 1 of 9

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
BO19N5							
SILVER, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	48
SILVER, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
SILVER, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
ALUMINUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
ALUMINUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
ALUMINUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
ARSENIC, TOTAL	001	W	91L3251	10/29/91	11/22/91	11/25/91	27
ARSENIC, TOTAL	001 REP	W	91L3251	10/29/91	11/22/91	11/25/91	
ARSENIC, TOTAL	001 MS	W	91L3251	10/29/91	11/22/91	11/25/91	
BARIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	48
BARIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
BARIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
BERYLLIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
BERYLLIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
BERYLLIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
BISMUTH, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/04/91	36
BISMUTH, TOTAL REP	001 REP	W	91L3252	10/29/91	11/22/91	12/04/91	
BISMUTH, TOTAL DUP S	001 MSD	W	91L3252	10/29/91	11/22/91	12/04/91	
CALCIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	49
CALCIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
CALCIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
CADMIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
CADMIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
CADMIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
COBALT, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
COBALT, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
COBALT, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
CHROMIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
CHROMIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
CHROMIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
COPPER, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
COPPER, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
COPPER, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
IRON, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
IRON, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
IRON, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
MERCURY, TOTAL	001	W	91C0335	10/29/91	11/21/91	11/22/91	24
Cyanide				10/29/91	11/6/91	11/8/91	10

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
MERCURY, TOTAL	001 REP	W	91C0335	10/29/91	11/21/91	11/22/91	24
MERCURY, TOTAL	001 MS	W	91C0335	10/29/91	11/21/91	11/22/91	24
POTASSIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	48
POTASSIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
POTASSIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
MAGNESIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
MAGNESIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
MAGNESIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
MANGANESE, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
MANGANESE, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
MANGANESE, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
SODIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
SODIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
SODIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
NICKEL, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
NICKEL, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
NICKEL, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
LEAD, TOTAL	001	W	91L3251	10/29/91	11/22/91	11/25/91	27
LEAD, TOTAL	001 REP	W	91L3251	10/29/91	11/22/91	11/25/91	
LEAD, TOTAL	001 MS	W	91L3251	10/29/91	11/22/91	11/25/91	
ANTIMONY, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	48
ANTIMONY, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
ANTIMONY, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
SELENIUM, TOTAL	001	W	91L3251	10/29/91	11/22/91	11/25/91	27
SELENIUM, TOTAL	001 REP	W	91L3251	10/29/91	11/22/91	11/25/91	
SELENIUM, TOTAL	001 MS	W	91L3251	10/29/91	11/22/91	11/25/91	
SILICON, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	48
SILICON, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
SILICON, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
THALLIUM, TOTAL	001	W	91L3251	10/29/91	11/22/91	11/25/91	27
THALLIUM, TOTAL	001 REP	W	91L3251	10/29/91	11/22/91	11/25/91	
THALLIUM, TOTAL	001 MS	W	91L3251	10/29/91	11/22/91	11/25/91	
VANADIUM, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	48
VANADIUM, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
VANADIUM, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
ZINC, TOTAL	001	W	91L3252	10/29/91	11/22/91	12/16/91	
ZINC, TOTAL	001 REP	W	91L3252	10/29/91	11/22/91	12/16/91	
ZINC, TOTAL	001 MS	W	91L3252	10/29/91	11/22/91	12/16/91	
BO19N6							
SILVER, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48

9213523.1238

Holding Time Summary

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Day.
ALUMINUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
ARSENIC, SOLUBLE	002	W	91L3251	10/29/91	11/22/91	11/25/91	27
BARIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
BERYLLIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
BISMUTH, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/04/91	36
CALCIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
CADMIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
COBALT, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
CHROMIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
COPPER, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
IRON, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
MERCURY, SOLUBLE	002	W	91C0335	10/29/91	11/21/91	11/22/91	24
MERCURY, SOLUBLE	002 REP	W	91C0335	10/29/91	11/21/91	11/22/91	
MERCURY, SOLUBLE	002 MS	W	91C0335	10/29/91	11/21/91	11/22/91	
POTASSIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
MAGNESIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
MANGANESE, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
SODIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
NICKEL, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	
LEAD, SOLUBLE	002	W	91L3251	10/29/91	11/22/91	11/25/91	27
ANTIMONY, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
SELENIUM, SOLUBLE	002	W	91L3251	10/29/91	11/22/91	11/25/91	27
SILICON, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
THALLIUM, SOLUBLE	002	W	91L3251	10/29/91	11/22/91	11/25/91	27
VANADIUM, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
ZINC, SOLUBLE	002	W	91L3252	10/29/91	11/22/91	12/16/91	48
BO19R3							
SILVER, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
ALUMINUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
ARSENIC, TOTAL	004	W	91L3251	10/29/91	11/22/91	11/25/91	27
BARIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
BERYLLIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
BISMUTH, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/04/91	36
CALCIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
CADMIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
COBALT, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
CHROMIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
COPPER, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
3 Spikes				10/29/91	11/13/91	11/14/91	16

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
IRON, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
MERCURY, TOTAL	004	W	91C0335	10/29/91	11/21/91	11/22/91	24
POTASSIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
MAGNESIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
MANGANESE, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
SODIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
NICKEL, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
LEAD, TOTAL	004	W	91L3251	10/29/91	11/22/91	11/25/91	27
ANTIMONY, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
SELENIUM, TOTAL	004	W	91L3251	10/29/91	11/22/91	11/25/91	27
SILICON, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
THALLIUM, TOTAL	004	W	91L3251	10/29/91	11/22/91	11/25/91	27
VANADIUM, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	48
ZINC, TOTAL	004	W	91L3252	10/29/91	11/22/91	12/16/91	
BO19R4							
SILVER, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
ALUMINUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
ARSENIC, SOLUBLE	005	W	91L3251	10/29/91	11/22/91	11/25/91	27
BARIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
BERYLLIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
BISMUTH, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/04/91	36
CALCIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
CADMIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
COBALT, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
CHROMIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
COPPER, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
IRON, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
MERCURY, SOLUBLE	005	W	91C0335	10/29/91	11/21/91	11/22/91	24
POTASSIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
MAGNESIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
MANGANESE, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
SODIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
NICKEL, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	
LEAD, SOLUBLE	005	W	91L3251	10/29/91	11/22/91	11/25/91	27
ANTIMONY, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
SELENIUM, SOLUBLE	005	W	91L3251	10/29/91	11/22/91	11/25/91	27
SILICON, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
THALLIUM, SOLUBLE	005	W	91L3251	10/29/91	11/22/91	11/25/91	27

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
VANADIUM, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	48
ZINC, SOLUBLE	005	W	91L3252	10/29/91	11/22/91	12/16/91	↓
BO19P7							
SILVER, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
ALUMINUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
ARSENIC, TOTAL	006	W	91L3251	10/29/91	11/22/91	11/25/91	27
BARIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
BERYLLIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
BISMUTH, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/04/91	36
CALCIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
CADMIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
COBALT, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
CHROMIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
COPPER, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
IRON, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
MERCURY, TOTAL	006	W	91C0335	10/29/91	11/21/91	11/22/91	24
POTASSIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
MAGNESIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
MANGANESE, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
SODIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	|
NICKEL, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	↓
LEAD, TOTAL	006	W	91L3251	10/29/91	11/22/91	11/25/91	27
ANTIMONY, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
SELENIUM, TOTAL	006	W	91L3251	10/29/91	11/22/91	11/25/91	27
SILICON, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
THALLIUM, TOTAL	006	W	91L3251	10/29/91	11/22/91	11/25/91	27
VANADIUM, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
ZINC, TOTAL	006	W	91L3252	10/29/91	11/22/91	12/16/91	48
Cyanide				10/29/91	11/7/91	11/7/91	9
BO19P8							
SILVER, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
ALUMINUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
ARSENIC, SOLUBLE	007	W	91L3251	10/29/91	11/22/91	11/25/91	27
BARIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
BERYLLIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
BISMUTH, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/04/91	36
CALCIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48

Holding 9213523.1241 Summary Pg 6 of 9

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
CADMIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
COBALT, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	"
CHROMIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	
COPPER, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	
IRON, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	
MERCURY, SOLUBLE	007	W	91C0335	10/29/91	11/21/91	11/22/91	24
POTASSIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
MAGNESIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	
MANGANESE, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	
SODIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	
NICKEL, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	
LEAD, SOLUBLE	007	W	91L3251	10/29/91	11/22/91	11/25/91	27
ANTIMONY, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
SELENIUM, SOLUBLE	007	W	91L3251	10/29/91	11/22/91	11/25/91	27
SILICON, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
THALLIUM, SOLUBLE	007	W	91L3251	10/29/91	11/22/91	11/25/91	27
VANADIUM, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
ZINC, SOLUBLE	007	W	91L3252	10/29/91	11/22/91	12/16/91	48
BO19Q5							
SILVER, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
ALUMINUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
ARSENIC, TOTAL	008	W	91L3251	10/30/91	11/22/91	11/25/91	27
BARIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
BERYLLIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
BISMUTH, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/04/91	36
CALCIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
CADMIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
COBALT, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
CHROMIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
COPPER, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
IRON, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
MERCURY, TOTAL	008	W	91C0335	10/30/91	11/21/91	11/22/91	24
POTASSIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
MAGNESIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
MANGANESE, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
SODIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
NICKEL, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	
LEAD, TOTAL	008	W	91L3251	10/30/91	11/22/91	11/25/91	27
Cyanide				10/30/91	11/7/91	11/7/91	9

9713523 1242

Holding Time Summary

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ANTIMONY, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
SELENIUM, TOTAL	008	W	91L3251	10/30/91	11/22/91	11/25/91	27
SILICON, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
THALLIUM, TOTAL	008	W	91L3251	10/30/91	11/22/91	11/25/91	27
VANADIUM, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	48
ZINC, TOTAL	008	W	91L3252	10/30/91	11/22/91	12/16/91	↓
BO19Q6							
SILVER, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
ALUMINUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
ARSENIC, SOLUBLE	009	W	91L3251	10/30/91	11/22/91	11/25/91	27
BARIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
BERYLLIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
BISMUTH, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/04/91	34
CALCIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
CADMIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
COBALT, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
CHROMIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
COPPER, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
IRON, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
MERCURY, SOLUBLE	009	W	91C0335	10/30/91	11/21/91	11/22/91	24
POTASSIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
MAGNESIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
MANGANESE, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
SODIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	|
NICKEL, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	↓
LEAD, SOLUBLE	009	W	91L3251	10/30/91	11/22/91	11/25/91	27
ANTIMONY, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
SELENIUM, SOLUBLE	009	W	91L3251	10/30/91	11/22/91	11/25/91	27
SILICON, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
THALLIUM, SOLUBLE	009	W	91L3251	10/30/91	11/22/91	11/25/91	27
VANADIUM, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
ZINC, SOLUBLE	009	W	91L3252	10/30/91	11/22/91	12/16/91	48
BO19Q9							
SILVER, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
ALUMINUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
ARSENIC, TOTAL	011	W	91L3251	10/30/91	11/22/91	11/25/91	27

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Holding Time Summary

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
BARIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
BERYLLIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
BISMUTH, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/04/91	36
CALCIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
CADMIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
COBALT, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
CHROMIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
COPPER, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
IRON, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
MERCURY, TOTAL	011	W	91C0335	10/30/91	11/21/91	11/22/91	24
POTASSIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
MAGNESIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
MANGANESE, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
SODIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
NICKEL, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	
LEAD, TOTAL	011	W	91L3251	10/30/91	11/22/91	11/25/91	27
ANTIMONY, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
SELENIUM, TOTAL	011	W	91L3251	10/30/91	11/22/91	11/25/91	27
SILICON, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
THALLIUM, TOTAL	011	W	91L3251	10/30/91	11/22/91	11/25/91	27
VANADIUM, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
ZINC, TOTAL	011	W	91L3252	10/30/91	11/22/91	12/16/91	48
Cyanide BO19R0				10/30/91	11/22/91	11/23/91	24
SILVER, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
ALUMINUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
ARSENIC, SOLUBLE	012	W	91L3251	10/30/91	11/22/91	11/25/91	27
BARIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
BERYLLIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
BISMUTH, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/04/91	36
CALCIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
CADMIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	
COBALT, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	
CHROMIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	
COPPER, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	
IRON, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	
MERCURY, SOLUBLE	012	W	91C0335	10/30/91	11/21/91	11/22/91	24
POTASSIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
MAGNESIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48

6/11/96

Holding Time Summary 9213523.1244 Pg 9 of 9

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
MANGANESE, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
SODIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
NICKEL, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
LEAD, SOLUBLE	012	W	91L3251	10/30/91	11/22/91	11/25/91	27
ANTIMONY, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
SELENIUM, SOLUBLE	012	W	91L3251	10/30/91	11/22/91	11/25/91	27
SILICON, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
THALLIUM, SOLUBLE	012	W	91L3251	10/30/91	11/22/91	11/25/91	27
VANADIUM, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48
ZINC, SOLUBLE	012	W	91L3252	10/30/91	11/22/91	12/16/91	48

LAB QC:

SILVER LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
ALUMINUM LABORTORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
BARIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
BERYLLIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
CALCIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
CADMIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
COBALT LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
CHROMIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
COPPER LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
IRON LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
POTASSIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
MAGNESIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
MANGANESE LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
SODIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
NICKEL LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
ANTIMONY LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
SILICON LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
VANADIUM LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
ZINC LABORATORY	LC1 BS	W	91L3252	N/A	11/22/91	12/16/91
SILVER LABORATORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91
ALUMINUM LABORTORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91
BARIUM LABORATORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91
BERYLLIUM LABORATORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91
CALCIUM LABORATORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91
CADMIUM LABORATORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91
COBALT LABORATORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91
CHROMIUM LABORATORY	LC2 BS	W	91L3252	N/A	11/22/91	12/16/91

6/16/92

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BO19N5S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M	
Aluminum	75-125	1823.9000		91.0000	U	2000.00	91.2		P	
Antimony	75-125	499.1001		20.0000	U	500.00	99.8		P	
Arsenic	75-125	37.9000		8.3000	B	40.00	74.0	N	F	J
Barium	75-125	1850.2000		21.2000	B	2000.00	91.4		P	
Beryllium	75-125	47.1000		1.0000	U	50.00	94.2		P	
Cadmium	75-125	46.5000		3.0000	U	50.00	93.0		P	
Calcium									NR	
Chromium	75-125	194.1000		17.9000		200.00	88.1		P	
Cobalt	75-125	456.5000		10.0000	U	500.00	91.3		P	
Copper	75-125	225.9000		10.2000	B	250.00	86.3		P	
Iron	75-125	1019.8000		120.7000		1000.00	89.9		P	
Lead	75-125	14.2000		2.0000	U	20.00	71.0	N	F	UJ
Magnesium									NR	
Manganese	75-125	456.7000		3.5000	B	500.00	90.6		P	
Mercury	75-125	1.3070		.2800		1.00	102.6		CV	
Nickel	75-125	456.8999		11.0000	U	500.00	91.4		P	
Potassium									NR	
Selenium	75-125	9.3000		4.4000		10.00	49.0	N	F	UJ
Silver	75-125	42.6000		10.0000	U	50.00	85.2		P	
Sodium									NR	
Thallium	75-125	48.7000		2.0000	U	50.00	97.4		F	
Vanadium	75-125	488.3000		29.8000	B	500.00	91.7		P	
Zinc	75-125	471.3999		4.6000	B	500.00	93.4		P	
Cyanide	75-125	131.2310		~~35.5130~~ 30.513		125.00	~~76.6~~ 80.6		C	

Comments:

FORM V (Part 1) - IN 03/90

for spk out
As qualified as J
Pb qual as UJ
Se qual as J

6/14/95

Accuracy 97 3523 1246 000065 Pg 2 of 2

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP276

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide	100.0	76.22	76.2						

FORM VII - IN

03/90

6/13/97

ACCURACY DATA SUMMARY - FORM B-4

9111.276

SDG: 276	REVIEWER:	DATE: 6/11/92	PAGE 1 OF 2
COMMENTS: CLAA Acid soil matrix			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B0191Q6	Arsenic	83.7	B0191Q6	J
B0191N5	Lead	66.4	See Sample Id column	UJ
B0191N6		64.9		
B0191R3		71.9		
B0191R4		74.8		
B0191P7		66.6		
B0191P8		57.1		
B0191Q5		67.8		
B0191Q6		71.6		
B0191Q7		66.6		
B0191R0		65.8		
B0191N5	Selenium	57.6		Analyzed by MSA
B0191N6		81		UJ
B0191R3		75		
B0191R4		80		
B0191P7		78		
B0191Q6		80		

B-4

ACCURACY DATA SUMMARY - FORM B-4

9111L276

SDG: 276	REVIEWER: [illegible]	DATE: 6/16/92	PAGE 2 OF 2	
COMMENTS: CLP like level IV				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B019Q9	Selenium	77.	B019Q9	UJ
B019R0	+	76.	B019R0	UJ

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: C. Johnson Signature	DATE: 6/16/92
LABORATORY: Weston	CASE: 9111L276	SDG: 276
SAMPLES/MATRIX: B019N5, B019R3, B019P7, B019Q5, B019N9 waters		

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	X		S @ 6/16/92
Instrument Run Logs	X		S @ 6/16/92
Internal Laboratory Chain-of-Custory		X	
Percent Solids Analysis Records	6/18/92 S		X
Reduction Formulae			X
Chemist Notebook Pages			X

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? CN only 8/16/92 (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.

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B019N5						
ALKALINITY	001	W	91LAL056	10/29/91	11/06/91	11/06/91 8
ALKALINITY	001 REP	W	91LAL056	10/29/91	11/06/91	11/06/91
CHLORIDE BY IC	001	W	91LIC171	10/29/91	11/15/91	11/15/91 17
CHLORIDE BY IC	001 REP	W	91LIC171	10/29/91	11/15/91	11/15/91
CHLORIDE BY IC	001 MS	W	91LIC171	10/29/91	11/15/91	11/15/91
CHLORIDE BY IC	001 MSD	W	91LIC171	10/29/91	11/15/91	11/15/91
FLUORIDE BY IC	001	W	91LIC171	10/29/91	11/15/91	11/15/91
FLUORIDE BY IC	001 REP	W	91LIC171	10/29/91	11/15/91	11/15/91
FLUORIDE BY IC	001 MS	W	91LIC171	10/29/91	11/15/91	11/15/91
FLUORIDE BY IC	001 MSD	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRITE BY IC	001	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRITE BY IC	001 REP	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRITE BY IC	001 MS	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRITE BY IC	001 MSD	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE BY IC	001	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE BY IC	001 REP	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE BY IC	001 MS	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE BY IC	001 MSD	W	91LIC171	10/29/91	11/15/91	11/15/91
TOTAL CYANIDE	001	W	91LC333	10/29/91	11/08/91	11/08/91 10
TOTAL CYANIDE	001 REP	W	91LC333	10/29/91	11/08/91	11/08/91
TOTAL CYANIDE	001 MS	W	91LC333	10/29/91	11/08/91	11/08/91
PHOSPHATE BY IC	001	W	91LIC171	10/29/91	11/15/91	11/15/91 17
PHOSPHATE BY IC	001 REP	W	91LIC171	10/29/91	11/15/91	11/15/91
PHOSPHATE BY IC	001 MS	W	91LIC171	10/29/91	11/15/91	11/15/91
PHOSPHATE BY IC	001 MSD	W	91LIC171	10/29/91	11/15/91	11/15/91
SULFATE BY IC	001	W	91LIC171	10/29/91	11/15/91	11/15/91
SULFATE BY IC	001 REP	W	91LIC171	10/29/91	11/15/91	11/15/91
SULFATE BY IC	001 MS	W	91LIC171	10/29/91	11/15/91	11/15/91
SULFATE BY IC	001 MSD	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE NITRITE	001	W	91LNO255	10/29/91	11/27/91	11/27/91 29
TOTAL ORGANIC CARBON	001	W	91LTC154	10/29/91	11/23/91	11/23/91 25
TOTAL ORGANIC CARBON	001 REP	W	91LTC154	10/29/91	11/23/91	11/23/91
TOTAL ORGANIC CARBON	001 MS	W	91LTC154	10/29/91	11/23/91	11/23/91
TOTAL ORGANIC CARBON	001 MSD	W	91LTC154	10/29/91	11/23/91	11/23/91
PH	001	W	91LPH184	10/29/91	11/04/91	11/04/91 6
SUB-OUT TEST FOR SUB	001	W		10/29/91		
TOTAL DISSOLVED SOLI	001	W	91LSS153	10/29/91	11/05/91	11/06/91 8

6/14/91

4d971352S.1254e Summary

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B019R3						
ALKALINITY	004	W	91LAL056	10/29/91	11/06/91	11/06/91 8
CHLORIDE BY IC	004	W	91LIC171	10/29/91	11/15/91	11/15/91 17
FLUORIDE BY IC	004	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRITE BY IC	004	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE BY IC	004	W	91LIC171	10/29/91	11/15/91	11/15/91
TOTAL CYANIDE	004	W	91LC341	10/29/91	11/14/91	11/14/91 16
PHOSPHATE BY IC	004	W	91LIC171	10/29/91	11/15/91	11/15/91 17
SULFATE BY IC	004	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE NITRITE	004	W	91LNO255	10/29/91	11/27/91	11/27/91 29
TOTAL ORGANIC CARBON	004	W	91LTC154	10/29/91	11/23/91	11/23/91 23
PH	004	W	91LPH184	10/29/91	11/04/91	11/04/91 6
SUB-OUT TEST FOR SUB	004	W		10/29/91		
TOTAL DISSOLVED SOLI	004	W	91LSS153	10/29/91	11/05/91	11/06/91 8
B019P7						
ALKALINITY	006	W	91LAL056	10/29/91	11/06/91	11/06/91 8
CHLORIDE BY IC	006	W	91LIC171	10/29/91	11/15/91	11/15/91 17
FLUORIDE BY IC	006	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRITE BY IC	006	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE BY IC	006	W	91LIC171	10/29/91	11/15/91	11/15/91
TOTAL CYANIDE	006	W	91LC332	10/29/91	11/07/91	11/07/91 9
TOTAL CYANIDE	006 REP	W	91LC332	10/29/91	11/07/91	11/07/91
TOTAL CYANIDE	006 MS	W	91LC332	10/29/91	11/07/91	11/07/91
PHOSPHATE BY IC	006	W	91LIC171	10/29/91	11/15/91	11/15/91 17
SULFATE BY IC	006	W	91LIC171	10/29/91	11/15/91	11/15/91
NITRATE NITRITE	006	W	91LNO255	10/29/91	11/27/91	11/27/91 29
NITRATE NITRITE	006 REP	W	91LNO255	10/29/91	11/27/91	11/27/91
NITRATE NITRITE	006 MS	W	91LNO255	10/29/91	11/27/91	11/27/91
NITRATE NITRITE	006 MSD	W	91LNO255	10/29/91	11/27/91	11/27/91
TOTAL ORGANIC CARBON	006	W	91LTC154	10/29/91	11/23/91	11/23/91 25
PH	006	W	91LPH184	10/29/91	11/04/91	11/04/91 6
SUB-OUT TEST FOR SUB	006	W		10/29/91		
TOTAL DISSOLVED SOLI	006	W	91LSS153	10/29/91	11/05/91	11/06/91 8
TOTAL DISSOLVED SOLI	006 REP	W	91LSS153	10/29/91	11/05/91	11/06/91
B019Q5						
ALKALINITY	008	W	91LAL056	10/30/91	11/06/91	11/06/91 7

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
CHLORIDE BY IC	008	W	91LIC171	10/30/91	11/15/91	11/15/91	16
FLUORIDE BY IC	008	W	91LIC171	10/30/91	11/15/91	11/15/91	"
NITRITE BY IC	008	W	91LIC171	10/30/91	11/15/91	11/15/91	"
NITRATE BY IC	008	W	91LIC171	10/30/91	11/15/91	11/15/91	"
TOTAL CYANIDE	008	W	91LC332	10/30/91	11/07/91	11/07/91	8
PHOSPHATE BY IC	008	W	91LIC171	10/30/91	11/15/91	11/15/91	16
SULFATE BY IC	008	W	91LIC171	10/30/91	11/15/91	11/15/91	"
NITRATE NITRITE	008	W	91LNO255	10/30/91	11/27/91	11/27/91	28
TOTAL ORGANIC CARBON	008	W	91LTC154	10/30/91	11/23/91	11/23/91	24
PH	008	W	91LPH184	10/30/91	11/04/91	11/04/91	5
SUB-OUT TEST FOR SUB	008	W		10/30/91			
TOTAL DISSOLVED SOLI	008	W	91LSS153	10/30/91	11/05/91	11/06/91	7
BO19Q9							
ALKALINITY	011	W	91LAL056	10/30/91	11/06/91	11/06/91	7
CHLORIDE BY IC	011	W	91LIC171	10/30/91	11/15/91	11/15/91	16
FLUORIDE BY IC	011	W	91LIC171	10/30/91	11/15/91	11/15/91	"
NITRITE BY IC	011	W	91LIC171	10/30/91	11/15/91	11/15/91	"
NITRATE BY IC	011	W	91LIC171	10/30/91	11/15/91	11/15/91	"
TOTAL CYANIDE	011	W	91LC355	10/30/91	11/22/91	11/23/91	24
PHOSPHATE BY IC	011	W	91LIC171	10/30/91	11/15/91	11/15/91	16
SULFATE BY IC	011	W	91LIC171	10/30/91	11/15/91	11/15/91	"
NITRATE NITRITE	011	W	91LNO255	10/30/91	11/27/91	11/27/91	28
TOTAL ORGANIC CARBON	011	W	91LTC154	10/30/91	11/23/91	11/23/91	24
PH	011	W	91LPH184	10/30/91	11/04/91	11/04/91	5
SUB-OUT TEST FOR_SUB	011	W	—	10/30/91			
TOTAL DISSOLVED SOLI	011	W	91LSS153	10/30/91	11/05/91	11/06/91	7

LAB QC:

ALKALINITY	MB1	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB1 BS	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB1 BSD	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB2	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB2 BS	W	91LAL056	N/A	11/06/91	11/06/91
CHLORIDE BY IC	MB1	W	91LIC171	N/A	11/15/91	11/15/91
CHLORIDE BY IC	MB1 BS	W	91LIC171	N/A	11/15/91	11/15/91
FLUORIDE BY IC	MB1	W	91LIC171	N/A	11/15/91	11/15/91
FLUORIDE BY IC	MB1 BS	W	91LIC171	N/A	11/15/91	11/15/91

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A 9713523.1256 Summary

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ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/05/91

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	91LC333-LC1	Cyanide, Total LCS	96.9	100	UG/L	96.9
LCS2	91LC333-LC2	Cyanide, Total LCS	103	100	UG/L	103
LCS1	91LC341-LC1	Cyanide, Total LCS	75.2	100	UG/L	75.2
LCS2	91LC341-LC2	Cyanide, Total LCS	76.2	100	UG/L	76.2
LCS1	91LC332-LC1	Cyanide, Total LCS	102	100	UG/L	102
LCS2	91LC332-LC2	Cyanide, Total LCS	102	100	UG/L	102
LCS1	91LC355-LC1	Cyanide, Total LCS	91.0	100	UG/L	91.0
LCS2	91LC355-LC2	Cyanide, Total LCS	87.8	100	UG/L	87.8

6/16/92

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: CJ	DATE: 6/13/97
LABORATORY: Westan	CASE: —	SDG: 9111L276
SAMPLES/MATRIX:		
B01B27, B01B28		
all water		

1. DATA PACKAGE COMPLETENESS

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

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

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC		/	—	/
MS/MSD report forms		/	—	—
RIC and quantitation reports for MS/MSD		/	—	—
Additional Data				
Moisture/% solids data sheets		—	—	X
Reduction formulae		—	X	—
Instrument time logs		X	—	—
Chemist notebook pages		—	X	/
Sample preparation sheets		/	—	—

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2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

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

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

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? (Yes) No N/A

Are all RRF values ≥0.05 (2/88 SOW)? (Yes) No N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	(N/A)
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	(N/A)

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

3.3. CONTINUING CALIBRATION

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

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

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	(Yes)	No	N/A
Are TCL compounds present in the laboratory blanks?	(Yes)	No	N/A

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

4.2. FIELD BLANKS

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

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

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

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

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

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

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

5.2 MATRIX SPIKE RECOVERY

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

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

Are there any calculation errors? Yes No N/A

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

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

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

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? All results are ND	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? All results are ND	Yes	No	(N/A)
Are results and quantitation limits calculated properly?	(Yes)	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	(Yes)	No	N/A

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

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

Holding Time Summary 9243523.1241 Pg 1 of 1

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

DATE RECEIVED: 11/04/91 RFW LOT # :9111L276

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Dup
BO1B27	003	W	91LVW190	10/29/91	N/A	11/07/91	q
BO1B28	010	W	91LVW190	10/30/91	N/A	11/07/91	q
BO1B28	010 MS	W	91LVW190	10/30/91	N/A	11/07/91	q
BO1B28	010 MSD	W	91LVW190	10/30/91	N/A	11/07/91	q
LAB QC:							
VBLK	MB1	W	91LVW190	N/A	N/A	11/07/91	

All holding times met

6/13/92

6/1/92

Calibrat 9115523.1265 0000060 BJ 1 of 1

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L276

Instrument ID: 1050W Calibration Date: 11/07/91 Time: 1021

Lab File ID: W110703 Init. Calib. Date(s): 10/31/91 10/31/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D
Chloromethane #	0.826	1.006	-21.8 #
Bromomethane	1.164	1.370	-17.7
Vinyl Chloride *	1.102	1.357	-23.1 *
Chloroethane	0.637	0.811	-27.3
Methylene Chloride	1.323	1.453	-9.8
Acetone	0.338	0.334	1.2
Carbon Disulfide	3.160	3.482	-10.2
1,1-Dichloroethene *	1.174	1.236	-5.3 *
1,1-Dichloroethane #	2.171	2.515	-15.8 #
1,2-Dichloroethene (total)	1.268	1.344	-6.0
Chloroform *	2.275	2.421	-6.4 *
1,2-Dichloroethane	1.479	1.553	-5.0
2-Butanone	0.115	0.119	-3.5
1,1,1-Trichloroethane	0.428	0.379	11.4
Carbon Tetrachloride	0.427	0.388	9.1
Vinyl Acetate	0.712	0.817	-14.7
Bromodichloromethane	0.546	0.540	1.1
1,2-Dichloropropane *	0.448	0.543	-21.2 *
cis-1,3-Dichloropropene	0.513	0.535	-4.3
Trichloroethene	0.443	0.405	8.6
Dibromochloromethane	0.540	0.467	13.5
1,1,2-Trichloroethane	0.348	0.336	3.4
Benzene	0.965	1.084	-12.3
Trans-1,3-Dichloropropene	0.435	0.424	2.5
Bromoform #	0.406	0.378	6.9 #
4-Methyl-2-pentanone	0.471	0.498	-5.7
2-Hexanone	0.345	0.356	-3.2
Tetrachloroethene	0.400	0.457	-14.3
1,1,2,2-Tetrachloroethane #	0.536	0.620	-15.7 #
Toluene *	0.682	0.705	-3.4 *
Chlorobenzene #	0.908	0.912	-0.4 #
Ethylbenzene *	0.440	0.443	-0.7 *
Styrene	0.761	0.740	2.8
Xylene (total)	0.448	0.455	-1.6
Toluene-d8	1.203	1.141	5.2
Bromofluorobenzene	0.795	0.799	-0.5
1,2-Dichloroethane-d4	1.453	1.437	1.1

FORM VII VOA 5/88 Rev.

RMW 12/5/91

qualify assoc. results as J or UJ

Blank Summary 9715523.1266 0000080 pg 1 of 1

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LVW190-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W110704

Level: (low/med) LOW Date Received: 11/07/91

% Moisture: not dec. _____ Date Analyzed: 11/07/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) ug/L		
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~~ UJ	CCAL %D >25
75-09-2	Methylene Chloride	3	~~J~~ U	
67-64-1	Acetone	7	~~J~~ U	
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

$MeCl_2$ 3 x 10 = 30
Acetone 7 x 10 = 70
Associated Samples qualified as U

6/16/92

6/16/92

APPENDIX C

DATA VALIDATION DOCUMENTATION

SDG: 9111L286

SAMPLES: B019H3, B019H4, B01B11, B01B12, B01530

CONTAINS:

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable 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 presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111128	REVIEWER: [illegible]	DATE: 6/16/92	PAGE 1 OF 1
COMMENTS: VOA Metals / Wet Chem			
COMPOUND 6/17/92	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Vinyl ~~Chloride~~ Acetate	UJ	B01830	CCV 80 72596
4-Methyl-2-Pentanone	↓	↓	↓
2-Hexanone	↓	↓	↓
Acetone	U	B01830	Present in blank
Benzene	U	↓	↓
6/16/92 Trichloroethene	U	All	Present in blank
Styrene	J	All	MS %R <75%
Xylenes (total)	J	All	ICP Serial Dil'n %D >10%
1,1,2,2-Tetrachloroethane	↓	↓	↓
1,2,3-Trichloropropane	↓	↓	↓
cis-1,4-Dichloro-2-butene	UJ/J (Both = see MS)	All	CCRM Analyte not Certified for VOA
trans-1,4-Dichloro-2-butene	UJ	All	Analyzed out of holding time
Methacrylonitrile	J	↓	↓
Propionitrile	UJ	↓	↓
Iodomethane	J	↓	↓
1,2-Dibromo-3-chloropropane	UJ	B01811	ICV & CCV %R >110%
		6/16/92	
Isobutyl alcohol	J	~~All~~ All	Discrepancy w/ ICP data
6/16/92 Ethanol	J	All	~~Dup %D~~

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19H3
699-47-60

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP286

Matrix (soil/water): WATER Lab Sample ID: 911128601

Level (low/med): LOW Date Received: 11/05/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.20	B		F	
7440-39-3	Barium	32.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	35200.00		E	P	J
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~ W		F	WJ
7439-95-4	Magnesium	11000.00		E	P	J
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5870.00			P	
7782-49-2	Selenium	4.90	~~B~~	NS	F	J
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	23600.00		E	P	J
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	21.20	~~B~~	OK	P	UJ 6/16/92
7440-66-6	Zinc	~~13.60~~ 13.6	~~B~~		P	UJ
	Cyanide	25.00	U		C	
7440-64-9	Bismuth	200	U			
7440-21-3	Silicon	19500				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/5/92

6/16/92

9713523.1273 0000021

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19H4
1099-47-60
1 filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP286

Matrix (soil/water): WATER Lab Sample ID: 911128602

Level (low/med): LOW Date Received: 11/05/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	6.60	B		F	
7440-39-3	Barium	32.30	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	36000.00		E	P	J
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	70.30	B		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	11200.00		E	P	J
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5990.00			P	
7782-49-2	Selenium	2.60	~~B~~	NW	F	J
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	24000.00		E	P	J
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	21.00	~~B~~	OK-S	P	~~K~~ SE:6/16/92
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-64-9	Bismuth	200	U			
7440-21-3	Silicon	14990				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

K-A 6/25/92

FORM I - IN 03/90

ij 6/5/92

6/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B01B11
4TH QTR
SPIKE DUP #2

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP286

Matrix (soil/water): WATER Lab Sample ID: 911128604

Level (low/med): LOW Date Received: 11/05/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	6.80	B		F	
7440-39-3	Barium	33.00	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	37200.00		E	P	J
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	11600.00		E	P	J
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	6140.00			P	
7782-49-2	Selenium	3.10	~~B~~	NW	F	J
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	24800.00		E	P	J
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	23.30	~~B~~	OK	P	OK @ 6/16/92
7440-66-6	Zinc	9.4 6/16/92 @ 20 ~~9.40~~	~~B~~		P	U
	Cyanide	20.40			C	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	19500				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/15/92

6/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO1B12
4th QTR
SPIKE DUP #2

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP286

Matrix (soil/water): WATER Lab Sample ID: 911128605
Filtered

Level (low/med): LOW Date Received: 11/05/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	7.10	B		F	
7440-39-3	Barium	33.80	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	37400.00		E	P	J
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	J
7439-95-4	Magnesium	11600.00		E	P	J
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	6220.00			P	
7782-49-2	Selenium	3.00	~~B~~	NW	F	J
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	24900.00		E	P	J
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	21.50	~~B~~	CK-B	P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	200	U			
7440-21-3	Silicon	14710				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/15/92

6/16/92

9713523.1276

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/05/91

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

WESTON BATCH #: 9111L286

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO19H3	Alkalinity	114	MG/L	2.0
		Chloride by IC	10.9	MG/L	0.25
		Fluoride by IC	0.62	MG/L	0.50
	699-47-10	Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	25.1	MG/L	2.5
		Cyanide, Total	25.0 u	UG/L	25.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	44.6	MG/L	2.5
		~~Nitrate Nitrite~~	~~5.7~~	~~MG-N/L~~	~~0.50~~
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	7.2	PH UNITS	0.010
		Total Dissolved Solids	275	MG/L	5.0
-004	BO1B11	Alkalinity	118	MG/L	2.0
		Chloride by IC	9.4	MG/L	0.10
		Fluoride by IC	0.53	MG/L	0.20
		Nitrite by IC	0.10 u	MG/L	0.10
		Nitrate by IC	23.3	MG/L	0.10
		Cyanide, Total	20.4	UG/L	20.0
		Phosphate by IC	0.10 u	MG/L	0.10
		Sulfate by IC	41.4	MG/L	0.10
		~~Nitrate Nitrite~~	~~5.9~~	~~MG-N/L~~	~~1.0~~
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	7.6	PH UNITS	0.010
		Total Dissolved Solids	270	MG/L	5.0

9213523.1277 0000016

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BO1B30 4th quarter TRIP BLANK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L286-003

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

Lab File ID: W111315

Level: (low/med) LOW

Date Received: 11/05/91

% Moisture: not dec. _____

Date Analyzed: 11/13/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	5 ~~3~~	~~JB~~	u blank u contam.
67-64-1	Acetone	10 ~~3~~	~~JB~~	
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	~~U~~	uJ CCAL
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	%D out
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	~~U~~	uJ CCAL
591-78-6	2-Hexanone	10	~~U~~	uJ %D out
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

6/16/92

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT:	REVIEWER: G	DATE: 6/4/97
LABORATORY: Weston	CASE:	SDG: 9111L286
SAMPLES/MATRIX: B019H3, B019H4, B01B11, B01B12 / water		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		/		
Cover Page		/		
Traffic Reports		/		
Sample Data				
Inorganic Analysis Data Sheets		/		
Standards Data				
Initial and Continuing Calibration Verification		/		
CRDL Standard for AA and ICP		/		
QC Summary				
Blanks		/		
ICP Interference Check Summary		/		
Spike Sample Recovery		/		
Post-Digestion Spike Sample Recovery		/		
Duplicate		/		
Laboratory Control Sample		/		
Standard Addition Results		/		
ICP Serial Dilutions		/		
Instrument Detection Limits		/		
ICP Interelement Correction Factors		/		
ICP Linear Ranges		/		
Preparation Log		/		
Analysis Run Log		/		
Raw Data				
ICP Raw Data		/		
Furnace AA Raw Data		/		
Mercury Raw Data		/		
Cyanide Raw Data		/		
Additional Data				
Internal laboratory chain-of-custody			/	
Laboratory Sample Preparation Records		/		

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

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

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

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

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

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

ACTION: Qualify the sample data according to the following requirements:

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes (No) N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required?	(Yes)	No	N/A
Are MSA correlation coefficients $\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.

9713523-1284 Holding Time Summary 1 of 4

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

DATE RECEIVED: 11/05/91 RFW LOT # :9111L286

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019H3							
SILVER, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	46
SILVER, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
SILVER, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
ALUMINUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
ALUMINUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
ALUMINUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
ARSENIC, TOTAL	001	W	91L3253	11/01/91	11/22/91	11/25/91	24
ARSENIC, TOTAL	001 REP	W	91L3253	11/01/91	11/22/91	11/25/91	
ARSENIC, TOTAL	001 MS	W	91L3253	11/01/91	11/22/91	11/25/91	
BARIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	46
BARIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
BARIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
BERYLLIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
BERYLLIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
BERYLLIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
BISMUTH, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/05/91	34
BISMUTH, TOTAL REP	001 REP	W	91L3254	11/01/91	11/22/91	12/05/91	
BISMUTH, TOTAL DUP S	001 MSD	W	91L3254	11/01/91	11/22/91	12/05/91	
CALCIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	46
CALCIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
CALCIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
CADMIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
CADMIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
CADMIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
COBALT, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
COBALT, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
COBALT, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
CHROMIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
CHROMIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
CHROMIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
COPPER, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
COPPER, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
COPPER, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
IRON, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
IRON, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
IRON, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
MERCURY, TOTAL	001	W	91C0335	11/01/91	11/21/91	11/22/91	21

All Cyanide 11/01/91 11/7+11/9 6+7

All holding times met 6/14/92

6/16/92

9713523.1285

Holding Time Summary

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

DATE RECEIVED: 11/05/91 RFW LOT # :9111L286

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
MERCURY, TOTAL	001 REP	W	91C0335	11/01/91	11/21/91	11/22/91	21
MERCURY, TOTAL	001 MS	W	91C0335	11/01/91	11/21/91	11/22/91	
POTASSIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	46
POTASSIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
POTASSIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
MAGNESIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
MAGNESIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
MAGNESIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
MANGANESE, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
MANGANESE, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
MANGANESE, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
SODIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
SODIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
SODIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
NICKEL, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
NICKEL, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
NICKEL, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
LEAD, TOTAL	001	W	91L3253	11/01/91	11/22/91	11/25/91	24
LEAD, TOTAL	001 REP	W	91L3253	11/01/91	11/22/91	11/25/91	
LEAD, TOTAL	001 MS	W	91L3253	11/01/91	11/22/91	11/25/91	
ANTIMONY, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	46
ANTIMONY, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
ANTIMONY, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
SELENIUM, TOTAL	001	W	91L3253	11/01/91	11/22/91	11/25/91	24
SELENIUM, TOTAL	001 REP	W	91L3253	11/01/91	11/22/91	11/25/91	
SELENIUM, TOTAL	001 MS	W	91L3253	11/01/91	11/22/91	11/25/91	
SILICON, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	46
SILICON, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
SILICON, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
THALLIUM, TOTAL	001	W	91L3253	11/01/91	11/22/91	11/25/91	24
THALLIUM, TOTAL	001 REP	W	91L3253	11/01/91	11/22/91	11/25/91	
THALLIUM, TOTAL	001 MS	W	91L3253	11/01/91	11/22/91	11/25/91	
VANADIUM, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	46
VANADIUM, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
VANADIUM, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
ZINC, TOTAL	001	W	91L3254	11/01/91	11/22/91	12/17/91	
ZINC, TOTAL	001 REP	W	91L3254	11/01/91	11/22/91	12/17/91	
ZINC, TOTAL	001 MS	W	91L3254	11/01/91	11/22/91	12/17/91	
B019H4							
SILVER, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46

10/4/92

6/16/93

Holding 9213523.1286 inc. Summary pg 3 of 4

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

DATE RECEIVED: 11/05/91 RFW LOT # :9111L286

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ALUMINUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
ARSENIC, SOLUBLE	002	W	91L3253	11/01/91	11/22/91	11/25/91	24
BARIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
BERYLLIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	24
BISMUTH, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/05/91	34
CALCIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
CADMIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
COBALT, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
CHROMIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
COPPER, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
IRON, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
MERCURY, SOLUBLE	002	W	91C0335	11/01/91	11/21/91	11/22/91	21
MERCURY, SOLUBLE	002 REP	W	91C0335	11/01/91	11/21/91	11/22/91	
MERCURY, SOLUBLE	002 MS	W	91C0335	11/01/91	11/21/91	11/22/91	
POTASSIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
MAGNESIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
MANGANESE, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
SODIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
NICKEL, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	
LEAD, SOLUBLE	002	W	91L3253	11/01/91	11/22/91	11/25/91	24
ANTIMONY, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
SELENIUM, SOLUBLE	002	W	91L3253	11/01/91	11/22/91	11/25/91	24
SILICON, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
THALLIUM, SOLUBLE	002	W	91L3253	11/01/91	11/22/91	11/25/91	24
VANADIUM, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
ZINC, SOLUBLE	002	W	91L3254	11/01/91	11/22/91	12/17/91	46
B01B11							
SILVER, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
ALUMINUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
ARSENIC, TOTAL	004	W	91L3253	11/01/91	11/22/91	11/25/91	24
BARIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
BERYLLIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
BISMUTH, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/05/91	34
CALCIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
CADMIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
COBALT, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
CHROMIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
COPPER, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	

6/16/92

6/16/92

Holding time Summary 97 3523 1287 Pg 4 of 4

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

DATE RECEIVED: 11/05/91 RFW LOT # :9111L286

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
IRON, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
MERCURY, TOTAL	004	W	91C0335	11/01/91	11/21/91	11/22/91	21
POTASSIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
MAGNESIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
MANGANESE, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
SODIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
NICKEL, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	
LEAD, TOTAL	004	W	91L3253	11/01/91	11/22/91	11/25/91	24
ANTIMONY, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
SELENIUM, TOTAL	004	W	91L3253	11/01/91	11/22/91	11/25/91	24
SILICON, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
THALLIUM, TOTAL	004	W	91L3253	11/01/91	11/22/91	11/25/91	24
VANADIUM, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
ZINC, TOTAL	004	W	91L3254	11/01/91	11/22/91	12/17/91	46
B01B12							
SILVER, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
ALUMINUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
ARSENIC, SOLUBLE	005	W	91L3253	11/01/91	11/22/91	11/25/91	24
BARIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
BERYLLIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
BISMUTH, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/05/91	34
CALCIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
CADMIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
COBALT, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
CHROMIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
COPPER, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
IRON, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
MERCURY, SOLUBLE	005	W	91C0335	11/01/91	11/21/91	11/22/91	21
POTASSIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
MAGNESIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
MANGANESE, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
SODIUM, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
NICKEL, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	
LEAD, SOLUBLE	005	W	91L3253	11/01/91	11/22/91	11/25/91	24
ANTIMONY, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
SELENIUM, SOLUBLE	005	W	91L3253	11/01/91	11/22/91	11/25/91	24
SILICON, SOLUBLE	005	W	91L3254	11/01/91	11/22/91	12/17/91	46
THALLIUM, SOLUBLE	005	W	91L3253	11/01/91	11/22/91	11/25/91	24

ip 6/4/92

6/15/92

Page 1 of 1

Blank Summary

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP286

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	91.0	U	91.0	U	91.0	U	91.0	U	91.000	U	P
Antimony	20.0	U	20.0	U	20.0	U	20.0	U	20.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	16.0	U	16.0	U	16.0	U	16.0	U	16.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P
Calcium	63.0	U	63.0	U	63.0	U	63.0	U	63.000	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Iron	46.0	U	46.0	U	46.0	U	46.0	U	46.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	87.0	U	87.0	U	87.0	U	87.0	U	87.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.100	U	CV
Nickel	11.0	U	11.0	U	11.0	U	11.0	U	11.000	U	P
Potassium	862.0	U	862.0	U	862.0	U	862.0	U	862.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Sodium	110.0	U	110.0	U	110.0	U	110.0	U	110.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Vanadium	8.0	U	8.0	U	8.0	U	8.5	B	8.000	U	P
Zinc	6.0	U	6.0	U	6.0	U	6.0	U	7.000	B	P
Cyanide	20.0	U	20.0	U	20.0	U			10.000	U	C

FORM III - IN 03/90

Not assoc. w/ samples in this SDG. No qualification of V is required.

~~V 8.5 ug/L x5 = 42.5~~

~~Zn 7 ug/L x5 = 35~~ N.A. 6/15/97

Analytes are < CRDL

6/15/97

6/16/97

Accuracy Summary

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BO19H3S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP286

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1927.8000		91.0000	U	2000.00	96.4		P
Antimony	75-125	498.8000		20.0000	U	500.00	99.8		P
Arsenic	75-125	43.0000		7.2000	B	40.00	89.5		F
Barium	75-125	1918.5000		32.2000	B	2000.00	94.3		P
Beryllium	75-125	48.5000		1.0000	U	50.00	97.0		P
Cadmium	75-125	47.6000		3.0000	U	50.00	95.2		P
Calcium									NR
Chromium	75-125	186.1000		6.0000	U	200.00	93.1		P
Cobalt	75-125	478.7000		10.0000	U	500.00	95.7		P
Copper	75-125	234.3000		6.0000	B	250.00	91.3		P
Iron	75-125	970.8999		46.0000	U	1000.00	97.1		P
Lead	75-125	15.5000		2.0000	U	20.00	77.5		F
Magnesium									NR
Manganese	75-125	472.7000		2.0000	U	500.00	94.5		P
Mercury	75-125	1.0160		.1000	U	1.00	101.3		CV
Nickel	75-125	462.1001		11.0000	U	500.00	92.4		P
Potassium									NR
Selenium	75-125	11.4000		4.9000		10.00	65.0	N	F
Silver	75-125	47.5000		10.0000	U	50.00	95.0		P
Sodium									NR
Thallium	75-125	45.2000		2.0000	U	50.00	90.4		F
Vanadium	75-125	512.5000		21.2000	B	500.00	98.3		P
Zinc	75-125	485.6001		13.6000	B	500.00	94.4		P
Cyanide	75-125	121.0010		25.0000	U	125.00	96.8		C

J

Comments:

positive results qual as J
Nondetects qual as UJ

6/16/97

Pg 1 of 1

Precision Summary

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

BO19H3L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP286

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M	
Aluminum	91.00	U	455.00	U			P	
Antimony	20.00	U	100.00	U			P	
Arsenic							NR	
Barium	32.20	B	80.00	U	100.0		P	
Beryllium	1.00	U	5.00	U			P	
Cadmium	3.00	U	15.00	U			P	
Calcium	35238.30		39619.49		12.4 ✓	E	P	J
Chromium	6.00	U	30.00	U			P	
Cobalt	10.00	U	50.00	U			P	
Copper	10.00	U	50.00	U			P	
Iron	46.00	U	230.00	U			P	
Lead							NR	
Magnesium	11008.40		12254.50	B	11.3 ✓	E	P	J
Manganese	2.00	U	10.00	U			P	
Mercury							NR	
Nickel	11.00	U	55.00	U			P	
Potassium	5873.30		9273.50	B	57.9		P	
Selenium							NR	
Silver	10.00	U	50.00	U			P	
Sodium	23597.20		26331.50		11.6 ✓	E	P	J
Thallium							NR	
Vanadium	21.20	B	40.00	U	100.0		P	
Zinc	13.60	B	52.50	B	286.0		P	

FORM IX - IN

03/90

Data qualified as J

6/15/93

6/16/93

ACCURACY DATA SUMMARY - FORM B-4

SDG: [illegible]	REVIEWER: [illegible]	DATE: [illegible]	PAGE 1 OF 1	
COMMENTS: [illegible]				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B0199H3	Lead	[illegible]	[illegible]	
B0199H1		103		
B0199B11		[illegible]		
B0199B12		75.3		
B0199H3	[illegible]	56.0		Analyzed by MSA
B0199H1		71.9		
B0199B11		68.9		
B0199B12		75.0		

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER:	DATE: 10/8/92
LABORATORY: WESTON	CASE: 9111L286	SDG: 9111L286
SAMPLES/MATRIX: ~~B01HH3~~ / Water		
B01HH3, B01H11		

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	Dup. Spike	✓		
Laboratory Control Sample Report Forms	Lab Cntrl	✓		
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	6/16/92 Σ	Σ		X
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? Iso only (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? Prep Spike results (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.

9713523.1296

Holding Time Summary Pg. 1 of 2

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

DATE RECEIVED: 11/05/91 RFW LOT # :9111L286

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019H3							
ALKALINITY	001	W	91LAL056	11/01/91	11/06/91	11/06/91	5
ALKALINITY	001 REP	W	91LAL056	11/01/91	11/06/91	11/06/91	5
CHLORIDE BY IC	001	W	91LIC171	11/01/91	11/15/91	11/15/91	14
CHLORIDE BY IC	001 REP	W	91LIC171	11/01/91	11/15/91	11/15/91	
CHLORIDE BY IC	001 MS	W	91LIC171	11/01/91	11/15/91	11/15/91	
CHLORIDE BY IC	001 MSD	W	91LIC171	11/01/91	11/15/91	11/15/91	
FLUORIDE BY IC	001	W	91LIC171	11/01/91	11/15/91	11/15/91	
FLUORIDE BY IC	001 REP	W	91LIC171	11/01/91	11/15/91	11/15/91	
FLUORIDE BY IC	001 MS	W	91LIC171	11/01/91	11/15/91	11/15/91	
FLUORIDE BY IC	001 MSD	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRITE BY IC	001	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRITE BY IC	001 REP	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRITE BY IC	001 MS	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRITE BY IC	001 MSD	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRATE BY IC	001	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRATE BY IC	001 REP	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRATE BY IC	001 MS	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRATE BY IC	001 MSD	W	91LIC171	11/01/91	11/15/91	11/15/91	
TOTAL CYANIDE	001	W	91LC333	11/01/91	11/08/91	11/08/91	7
TOTAL CYANIDE	001 REP	W	91LC333	11/01/91	11/08/91	11/08/91	
TOTAL CYANIDE	001 MS	W	91LC333	11/01/91	11/08/91	11/08/91	
PHOSPHATE BY IC	001	W	91LIC171	11/01/91	11/15/91	11/15/91	14
PHOSPHATE BY IC	001 REP	W	91LIC171	11/01/91	11/15/91	11/15/91	
PHOSPHATE BY IC	001 MS	W	91LIC171	11/01/91	11/15/91	11/15/91	
PHOSPHATE BY IC	001 MSD	W	91LIC171	11/01/91	11/15/91	11/15/91	
SULFATE BY IC	001	W	91LIC171	11/01/91	11/15/91	11/15/91	
SULFATE BY IC	001 REP	W	91LIC171	11/01/91	11/15/91	11/15/91	
SULFATE BY IC	001 MS	W	91LIC171	11/01/91	11/15/91	11/15/91	
SULFATE BY IC	001 MSD	W	91LIC171	11/01/91	11/15/91	11/15/91	
NITRATE NITRITE	001	W	91LNO255	11/01/91	11/27/91	11/27/91	26
TOTAL ORGANIC CARBON	001	W	91LTC155	11/01/91	11/29/91	11/29/91	28
TOTAL ORGANIC CARBON	001 REP	W	91LTC155	11/01/91	11/29/91	11/29/91	
TOTAL ORGANIC CARBON	001 MS	W	91LTC155	11/01/91	11/29/91	11/29/91	
TOTAL ORGANIC CARBON	001 MSD	W	91LTC155	11/01/91	11/29/91	11/29/91	
PH	001	W	91LPH185	11/01/91	11/05/91	11/05/91	4
SUB-OUT TEST FOR SUB	001	W		11/01/91			
TOTAL DISSOLVED SOLI	001	W	91LSS155	11/01/91	11/07/91	11/08/91	7

pH with 0 holding time for B019H3 and B01B11
Nitrate by IC, Nitrite by IC and P >48 hrs.

Turn Time Summary pg 2 of 2

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

DATE RECEIVED: 11/05/91 RFW LOT # :9111L286

Days

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B01B11							
ALKALINITY	004	W	91LAL056	11/01/91	11/06/91	11/06/91	5
CHLORIDE BY IC	004	W	91LIC173	11/01/91	11/21/91	11/21/91	20
FLUORIDE BY IC	004	W	91LIC173	11/01/91	11/21/91	11/21/91	
NITRITE BY IC	004	W	91LIC173	11/01/91	11/21/91	11/21/91	
NITRATE BY IC	004	W	91LIC173	11/01/91	11/21/91	11/21/91	
TOTAL CYANIDE	004	W	91LC332	11/01/91	11/07/91	11/07/91	6
TOTAL CYANIDE	004 REP	W	91LC332	11/01/91	11/07/91	11/07/91	
TOTAL CYANIDE	004 MS	W	91LC332	11/01/91	11/07/91	11/07/91	
PHOSPHATE BY IC	004	W	91LIC173	11/01/91	11/21/91	11/21/91	20
SULFATE BY IC	004	W	91LIC173	11/01/91	11/21/91	11/21/91	
NITRATE NITRITE	004	W	91LNO255	11/01/91	11/27/91	11/27/91	26
NITRATE NITRITE	004 REP	W	91LNO255	11/01/91	11/27/91	11/27/91	
NITRATE NITRITE	004 MS	W	91LNO255	11/01/91	11/27/91	11/27/91	
NITRATE NITRITE	004 MSD	W	91LNO255	11/01/91	11/27/91	11/27/91	
TOTAL ORGANIC CARBON	004	W	91LTC155	11/01/91	11/29/91	11/29/91	28
PH	004	W	91LPH185	11/01/91	11/05/91	11/05/91	4
SUB-OUT TEST FOR SUB	004	W		11/01/91			
TOTAL DISSOLVED SOLI	004	W	91LSS155	11/01/91	11/07/91	11/08/91	7
TOTAL SUSPENDED SOLI	004 REP	W	91LSS155	11/01/91	11/07/91	11/08/91	7

LAB QC:

ALKALINITY	MB1	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB1 BS	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB1 BSD	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB2	W	91LAL056	N/A	11/06/91	11/06/91
ALKALINITY	MB2 BS	W	91LAL056	N/A	11/06/91	11/06/91
CHLORIDE BY IC	MB1	W	91LIC171	N/A	11/15/91	11/15/91
CHLORIDE BY IC	MB1 BS	W	91LIC171	N/A	11/15/91	11/15/91
FLUORIDE BY IC	MB1	W	91LIC171	N/A	11/15/91	11/15/91
FLUORIDE BY IC	MB1 BS	W	91LIC171	N/A	11/15/91	11/15/91
NITRITE BY IC	MB1	W	91LIC171	N/A	11/15/91	11/15/91
NITRITE BY IC	MB1 BS	W	91LIC171	N/A	11/15/91	11/15/91
NITRATE BY IC	MB1	W	91LIC171	N/A	11/15/91	11/15/91
NITRATE BY IC	MB1 BS	W	91LIC171	N/A	11/15/91	11/15/91
PHOSPHATE BY IC	MB1	W	91LIC171	N/A	11/15/91	11/15/91
PHOSPHATE BY IC	MB1 BS	W	91LIC171	N/A	11/15/91	11/15/91

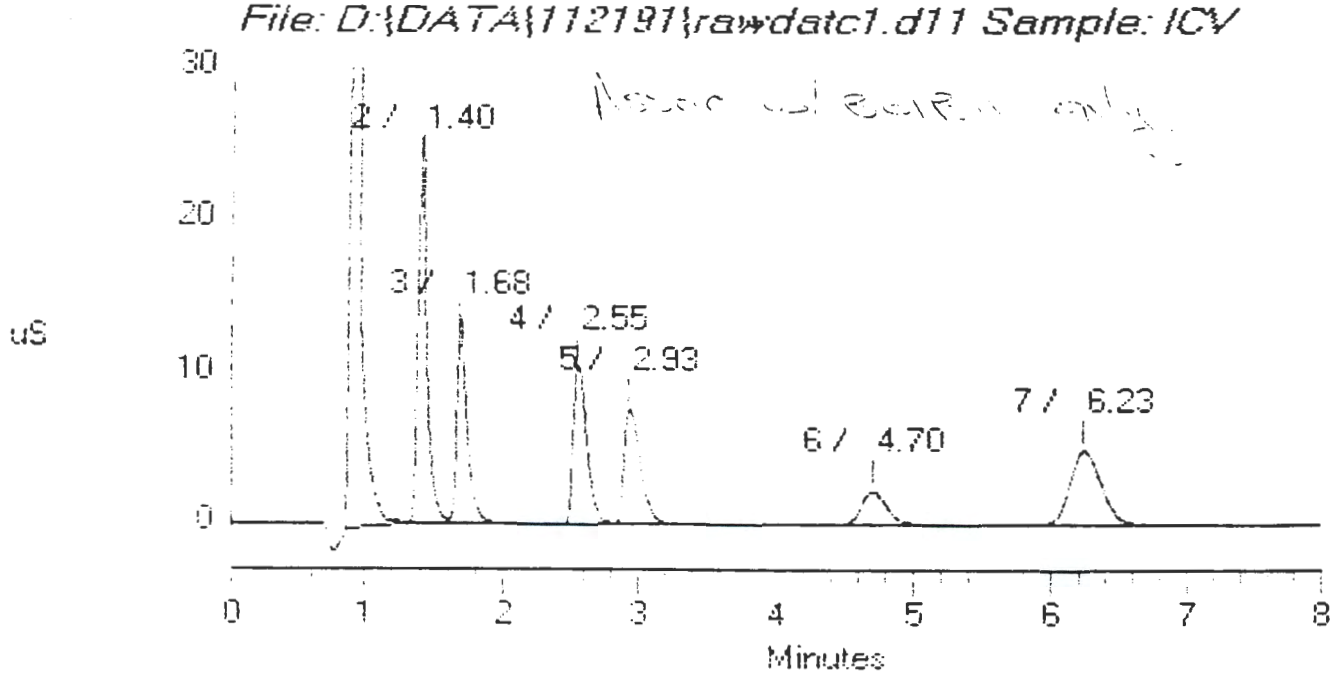
Cal 9213523.J298 Summary Pg 1 of 3

DATA REPROCESSED ON Fri Nov 22 11:42:29 1991

Sample Name: ICV			Date: Thu Nov 21 14:37:13 1991
Data File : D:\DATA\112191\rawdatc1.d11			
Method : C:\DX\METHOD\AS4A7B.met			
ACI Address: 1	System : 1	Inject#: 11	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2400	5Hz	0.00	8.00	300

Pk. Num	Ret Time	Component Name	Concentration ug/mL	Height	Area	Bl. Code	%Delta
1	0.92	FLUORIDE	9.281	73089	309313	1	0.00
2	1.40	CHLORIDE	5.105	23164	111451	2	0.62
3	1.68	NITRITE	5.614	12283	68889	2	0.82
4	2.55	BROMIDE	7.950	10011	71662	2	1.82
5	2.93	NITRATE	4.811	7441	62581	2	2.99
6	4.70	PHOSPHATE	5.034	2168	28504	1	2.55
7	6.23	SULFATE	4.778	4837	76998	1	2.09
		Totals	42.574	132993	729398		



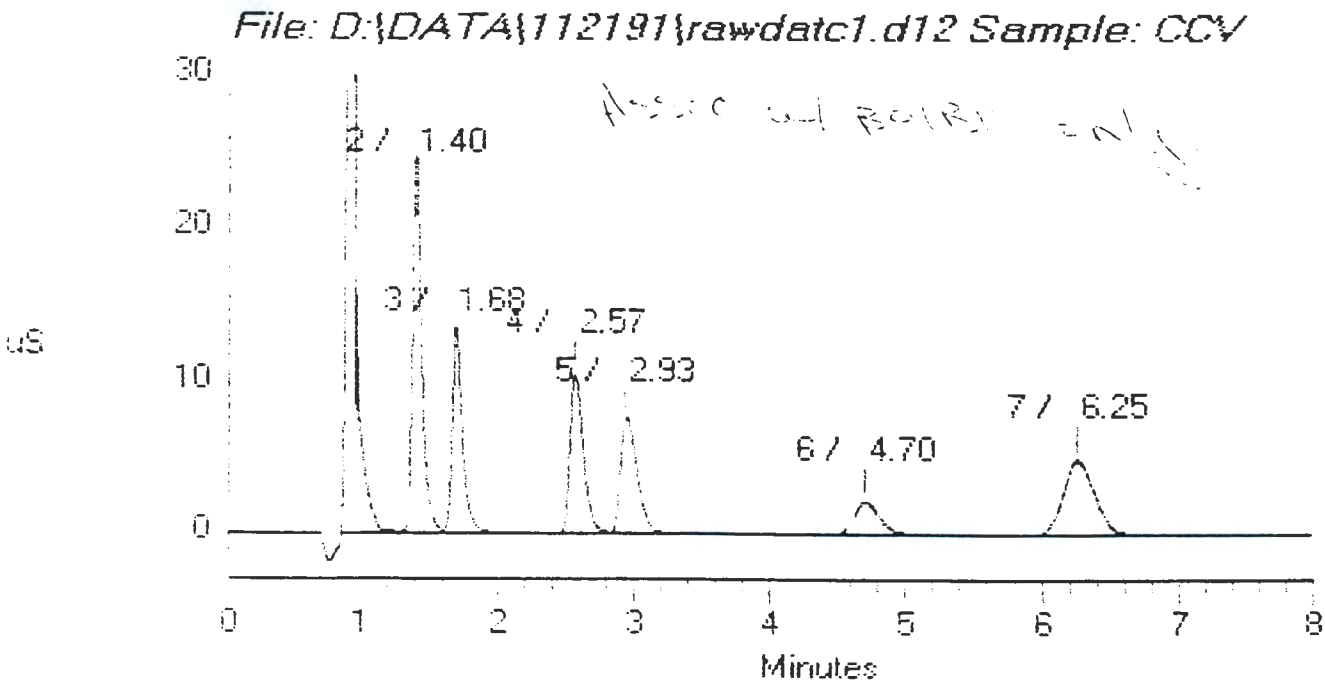
Cal-971583.1299 Summary

DATA REPROCESSED ON Fri Nov 22 11:43:38 1991

Sample Name: CCV			Date: Thu Nov 21 14:46:49 1991
Data File : D:\DATA\112191\rawdatc1.d12			
Method : C:\DX\METHOD\AS4A7B.met			
ACI Address: 1	System : 1	Inject#: 12	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2400	5Hz	0.00	8.00	300

Pk. Num	Ret Time	Component Name	Concentration ug/mL	Height	Area	Bl. Code	%Delta
1	0.92	FLUORIDE	8.916	71094	297124	1	0.00
2	1.40	CHLORIDE	5.096	22164	111221	2	0.62
3	1.68	NITRITE	5.593	11779	68636	2	0.82
4	2.57	BROMIDE	7.807	10411	70244	2	2.48
5	2.93	NITRATE	4.892	7221	63788	2	2.99
6	4.70	PHOSPHATE	4.990	2138	28221	1	2.55
7	6.25	SULFATE	4.763	4857	76733	1	2.36
		Totals	42.057	129663	715967		



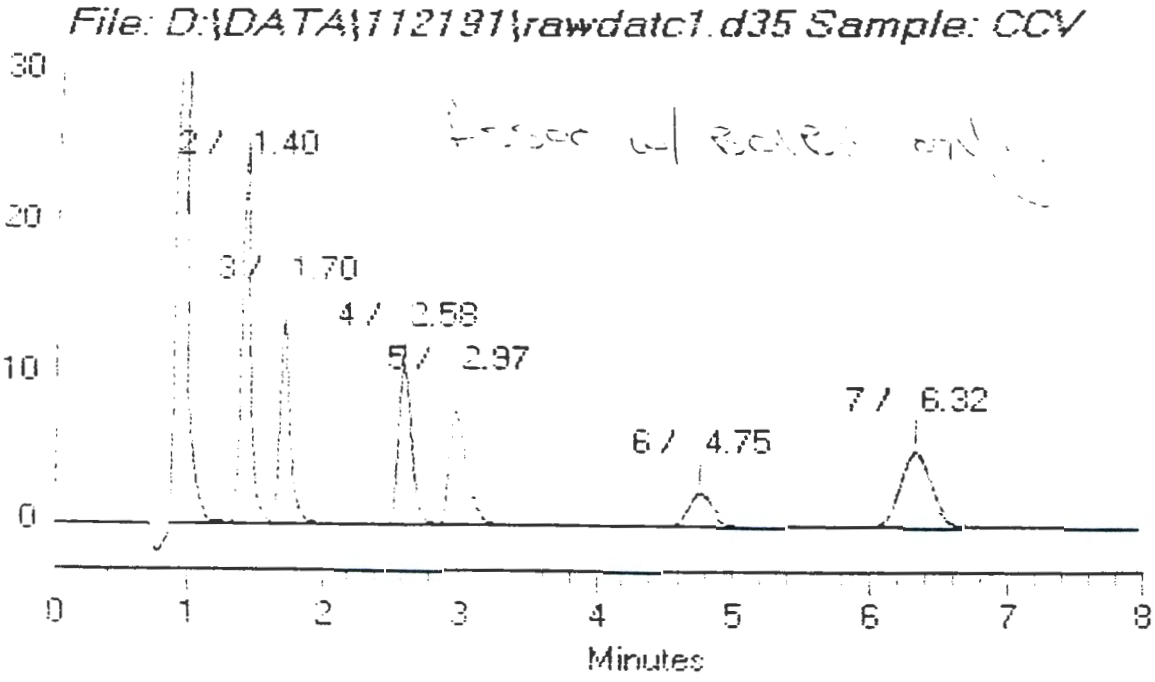
C971523_1308 Summary

DATA REPROCESSED ON Fri Nov 22 12:06:31 1991

Sample Name: CCV			Date: Thu Nov 21 18:28:06 1991
Data File : D:\DATA\112191\rawdatc1.d35			
Method : C:\DX\METHOD\AS4A7B.met			
ACI Address: 1	System : 1	Inject#: 35	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2400	5Hz	0.00	8.00	300

Pk. Num	Ret Time	Component Name	Concentration ug/mL	Height	Area	Bl. Code	%Delta
1	0.92	FLUORIDE	9.323	71273	310702	1	0.00
2	1.40	CHLORIDE	5.172	21754	113064	2	0.62
3	1.70	NITRITE	5.702	13370	69924	2	1.82
4	2.58	BROMIDE	8.058	10411	72731	2	3.15
5	2.97	NITRATE	4.910	7501	64069	2	4.16
6	4.75	PHOSPHATE	5.056	2148	28646	1	3.64
7	6.32	SULFATE	4.867	4896	78646	1	3.46
		Totals	43.089	131352	737783		



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

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: 4	DATE: 6/4/92
LABORATORY: Wilson	CASE: —	SDG: 9111L736
SAMPLES/MATRIX: BC1B30 / water		

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		X	—	—
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		X	—	—
RIC and quantitation reports for cont. calibrations		X	—	—
Internal standard summary report		X	—	—
Raw QC Data				
Tuning report, spectra and mass lists		✓	—	—
Blank analysis reports		✓	—	—
TIC reports for all blanks		✓	—	—
RIC and quantitation reports for blanks		✓	—	—
Raw and corrected spectra for all detected results in blanks		✓	—	—
Raw and corrected library search data for all reported TIC		—	—	✓

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC		—	—	✓
MS/MSD report forms		✓	—	—
RIC and quantitation reports for MS/MSD		✓	—	—
Additional Data				
Moisture/% solids data sheets		—	—	✓
Reduction formulae		—	—	✓
Instrument time logs		X	—	✓ 06/16/92
Chemist notebook pages		—	—	✓
Sample preparation sheets		✓	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

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

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

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? Yes No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? (Yes) No N/A

Are all RRF values ≥0.05 (2/88 SOW)? (Yes) No N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	(N/A)
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	(N/A)

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

3.3. CONTINUING CALIBRATION

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

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

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	(Yes)	No	N/A
Are TCL compounds present in the laboratory blanks?	(Yes)	No	N/A

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

4.2. FIELD BLANKS

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

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

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?	Yes	(No)	N/A
Are any surrogate recoveries <10%?	Yes	(No)	N/A
Are any method blank surrogate recoveries out of specification?	Yes	(No)	N/A

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

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	(Yes)	No	N/A
Are there any calculation errors?	Yes	(No)	N/A

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

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

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

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? No detects in samples	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? no detects in samples	Yes	No	(N/A)
Are results and quantitation limits calculated properly?	(Yes)	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	(Yes)	No	N/A

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

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

9713523.1308

Holding Time Summary

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

DATE RECEIVED: 11/05/91

RFW LOT # :9111L286

Days

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
BO1B30	003	W	91LVW197	11/01/91	N/A	11/13/91	12
BO1B30	003 MS	W	91LVW197	11/01/91	N/A	11/13/91	12
BO1B30	003 MSD	W	91LVW197	11/01/91	N/A	11/13/91	12
LAB QC:							
VBLK	MB1	W	91LVW197	N/A	N/A	11/13/91	

All holding times met

Calibration 9713523.1309 0000053 Pg 1 of 1

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L286

Instrument ID: 1050W Calibration Date: 11/13/91 Time: 0928

Lab File ID: W111302 Init. Calib. Date(s): 11/11/91 11/11/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D
Chloromethane #	0.943	0.744	21.1 #
Bromomethane	1.443	1.290	10.6
Vinyl Chloride *	1.396	1.179	15.5 *
Chloroethane	0.826	0.742	10.2
Methylene Chloride	1.445	1.380	4.5
Acetone	0.468	0.383	18.2
Carbon Disulfide	3.846	3.627	5.7
1,1-Dichloroethene *	1.286	1.288	-0.2 *
1,1-Dichloroethane #	2.241	2.135	4.7 #
1,2-Dichloroethene (total)	1.216	1.364	-12.2
Chloroform *	2.120	2.261	-6.7 *
1,2-Dichloroethane	1.325	1.360	-2.6
2-Butanone	0.129	0.140	-8.5
1,1,1-Trichloroethane	0.351	0.356	-1.4
Carbon Tetrachloride	0.383	0.366	4.4
Vinyl Acetate	0.780	0.483	38.1
Bromodichloromethane	0.518	0.472	8.9
1,2-Dichloropropane *	0.507	0.428	15.6 *
cis-1,3-Dichloropropene	0.535	0.470	12.1
Trichloroethene	0.426	0.431	-1.2
Dibromochloromethane	0.511	0.481	5.9
1,1,2-Trichloroethane	0.334	0.313	6.3
Benzene	1.079	0.989	8.3
Trans-1,3-Dichloropropene	0.440	0.368	16.4
Bromoform #	0.421	0.381	9.5 #
4-Methyl-2-pentanone	0.517	0.367	29.0
2-Hexanone	0.408	0.292	28.4
Tetrachloroethene	0.449	0.475	-5.8
1,1,2,2-Tetrachloroethane #	0.628	0.593	5.6 #
Toluene *	0.701	0.697	0.6 *
Chlorobenzene #	0.921	0.937	-1.7 #
Ethylbenzene *	0.448	0.449	-0.2 *
Styrene	0.772	0.767	0.6
Xylene (total)	0.467	0.463	0.9
Toluene-d8	1.191	1.177	1.2
Bromofluorobenzene	0.814	0.771	5.3
1,2-Dichloroethane-d4	1.283	1.302	-1.5

Quantitation 25% results qual a J: detect UT: un: delet

12/5/91

FORM VII VOA 5/88 Rev.

6/6/92

6/6/92

Blank 9713523-1310 0000065 Pg 1 of 1

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LVW197-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W111303

Level: (low/med) LOW Date Received: 11/13/91

% Moisture: not dec. _____ Date Analyzed: 11/13/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	5	U	X10=50
67-64-1	Acetone	10	U	X10=100
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	~~U~~	UJ
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	~~U~~	UJ
591-78-6	2-Hexanone	10	~~U~~	UJ
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

Acetone 10 x 10 = 100
Methylene Chloride 5 x 10 = 50
} Samples with results less than [illegible] value qual. as U

cg 6/4/92

APPENDIX D

DATA VALIDATION DOCUMENTATION

SDG: 9111L317

SAMPLES: B019S1, B019S2, B01B13, B01B14, B01B17, B01B18, B019D9, B019F0, B01B31

CONTAINS:

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable 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 presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 911L317	REVIEWER: [illegible]	DATE: 06/15/92	PAGE 1 OF 2
COMMENTS: VOA / Metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Acetone	J	B01831	CCV 807252
Vinyl Acetate	UJ	↓	↓
Methyl-Pentanone	UJ	↓	↓
2-Hexanone	UJ	↓	↓
Methene	U	B01831	Present in blank
Acetone	UJ	↓	↓
[illegible]	U	B01951	Present in blanks
	↓	B01814	↓
		B01818	
		B01F10	
Trichloroethene		B01814	
		B01909	
	↓	B01F10	↓
[illegible]	U	B01951	Present in blanks
	↓	B01952	↓
		B01813	
		B01814	
		B01817	
		B01818	
		B01909	
	↓	B01F10	↓
	↓ as listed		

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91L317	REVIEWER: [illegible]	DATE: 6/15/97	PAGE 2 OF 2
COMMENTS: Metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Lead	J/UJ	All	MS %R out of control limits
Selenium	J/UJ	"	"
CN	~~J/UJ~~ 6/15/97 UJ	All	LCS %R out of control limits
Lead	UJ	All	GFAA Analytical Spike out of control limits
Silver	UJ/J	All except	"
"	UJ	R0195 1	Analyzed by MSA
Thallium	UJ	R0195 2/B01B17 B019F0	GFAA Analytical Spike out of control limits
Antimony	UJ	All	Analyzed out of holding time
Molybdenum	J	"	"
Phosphate	UJ	"	"
TOC	J	"	"
Nitrate-nitrite	R	All	Discrepancy with IC results
Nitrate-nitrite	Non-detected rejected	All	MS %R C752
Cyanide	UJ	All	LCS %R out of control limits

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO19S1
699-48-50

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131701

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.7 ~~20.70~~	B		P	L
7440-38-2	Arsenic	4.50	B		F	
7440-39-3	Barium	38.20	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	41100.00			P	
7440-47-3	Chromium	26.80			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.40	B		P	
7439-89-6	Iron	212.00			P	
7439-92-1	Lead	2.00	U	NW	F	W
7439-95-4	Magnesium	12900.00			P	
7439-96-5	Manganese	7.40	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	20.90	B		P	
7440-09-7	Potassium	6950.00			P	
7782-49-2	Selenium	4.70	B	NS	F	S
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	22600.00			P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	28.5 ~~28.50~~	B		P	L
7440-66-6	Zinc	8.80	B		P	
	Cyanide	12.50	U		C	W
7440-69-9	Bismuth	150	U		P	
7440-21-3	Silicon	15800			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/15/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019S2
699-48-50
F: Heard

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131702

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	91.00	U		P
7440-36-0	Antimony	20.00	U		P
7440-38-2	Arsenic	3.60	B		F
7440-39-3	Barium	32.90	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	41400.00			P
7440-47-3	Chromium	6.00	U		P
7440-48-4	Cobalt	10.00	U		P
7440-50-8	Copper	10.00	U		P
7439-89-6	Iron	71.00	B		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	13000.00			P
7439-96-5	Manganese	3.20	B		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	11.00	U		P
7440-09-7	Potassium	7030.00			P
7782-49-2	Selenium	2.70	B	NW	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	23100.00			P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	26.2 ~~26.20~~	B		P
7440-66-6	Zinc	6.80	B		P
	Cyanide				NR
7440-69-9	Beryllium	150	U		P
7440-21-3	Silicon	15800			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B01B13 4th Qtr Dup #1

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131703

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	6.40	B		F	
7440-39-3	Barium	16.00	U		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	24700.00			P	
7440-47-3	Chromium	17.10			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	119.00			P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	9110.00			P	
7439-96-5	Manganese	2.90	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	14.40	B		P	
7440-09-7	Potassium	6430.00			P	
7782-49-2	Selenium	2.00	U	NW	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	18100.00			P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	~~30.60~~	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide	10.00	U		C	
7440-69-9	Bismuth	150	U		P	
7440-21-3	Silicon	15400			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9713523.1320 0000028

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO1B14
4th Qtr Dup + 1
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131704

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	26.4 ~~26.40~~	B		P	2
7440-38-2	Arsenic	6.50	B		F	
7440-39-3	Barium	16.00	U		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	24700.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	U	NW	F	4
7439-95-4	Magnesium	9080.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	6310.00			P	
7782-49-2	Selenium	2.00	U	NW	F	4
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	18000.00			P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	30.5 ~~30.50~~	B		P	2
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	15	U		P	
7440-21-3	Silicon	15400			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9713523.1321 0000029

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO1B17 4th Gtc Dup #2

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131705

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	3.80	B		F	
7440-39-3	Barium	35.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	41900.00			P	
7440-47-3	Chromium	14.20			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	149.00			P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	13100.00			P	
7439-96-5	Manganese	7.10	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	12.40	B		P	
7440-09-7	Potassium	7260.00			P	
7782-49-2	Selenium	2.40	B	NW	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	22600.00			P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	24.90 ~~29.90~~	B		P	
7440-66-6	Zinc	6.70	B		P	
	Cyanide	~~10.00~~	U		C	
7440-69-9	Bismuth	150	U		P	
7440-21-3	Silicon	16000			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/15/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B01B18
4th Qtr Dup #2
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131706

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	21.7 ~~21.70~~	~~B~~		P	5
7440-38-2	Arsenic	3.60	B		F	
7440-39-3	Barium	35.30	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	45000.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	4
7439-95-4	Magnesium	14100.00			P	
7439-96-5	Manganese	2.60	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	7300.00			P	
7782-49-2	Selenium	2.70	~~B~~	NW	F	4
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	24300.00			P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	29.6 ~~29.60~~	~~B~~		P	5
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
~~7440-69-9~~	~~Bismuth~~	15C	U		P	
7440-21-3	Silicon	17100			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/15/92

9715523.1323 0000031

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19D9
699-55-55

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131707

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	6.40	B		F	
7440-39-3	Barium	16.00	U		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	25300.00			P	
7440-47-3	Chromium	19.30			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	135.00			P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	9290.00			P	
7439-96-5	Manganese	3.00	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	12.60	B		P	
7440-09-7	Potassium	6140.00			P	
7782-49-2	Selenium	2.00	U	NW	F	
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	18000.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	31.00	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide	10.00	U		CO	
7440-69-9	Barium	150			P	
7440-21-3	Silicon	15600			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19F0
699-55-55
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix (soil/water): WATER Lab Sample ID: 911131708

Level (low/med): LOW Date Received: 11/07/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	21.7 ~~60~~ ~~21.70~~	~~B~~		P	L
7440-38-2	Arsenic	6.40	B		F	
7440-39-3	Barium	16.00	U		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	26800.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	~~U~~	NW	F	L
7439-95-4	Magnesium	9800.00			P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	6290.00	/		P	L
7782-49-2	Selenium	2.00	~~U~~	NW	F	L
7440-22-4	Silver	10.00	U		P	
7440-23-5	Sodium	19100.00			P	
7440-28-0	Thallium	2.00	~~U~~	W	F	L
7440-62-2	Vanadium	31.3 ~~31.30~~	~~B~~		P	L
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	15C	U		P	
7440-21-3	Silicon	16600			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/5/92

9713523.1325

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/05/91

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

WESTON BATCH #: 9111L317

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	
-001	BO19S1	Alkalinity	104	MG/L	2.0	
		Chloride by IC	20.2	MG/L	2.5	
		Fluoride by IC	0.55	MG/L	0.50	
	699-48-50	Nitrite by IC	0.25 µ	MG/L	0.25	H
		Nitrate by IC	9.0	MG/L	0.25	H
		Cyanide, Total	12.5 µ	UG/L	12.5	H
		Phosphate by IC	0.25 µ	MG/L	0.25	H
		Sulfate by IC	72.7	MG/L	2.5	
		~~Nitrate Nitrite~~	1.9	MG-N/L	0.20	R
		Total Organic Carbon	1.1	MG/L	0.50	
		pH	7.5	PH UNITS	0.010	
		Total Dissolved Solids	271	MG/L	5.0	H
-003	BO1B13	Alkalinity	112	MG/L	2.0	
		Chloride by IC	6.0	MG/L	0.25	
		Fluoride by IC	0.64	MG/L	0.50	
		Nitrite by IC	0.25 µ	MG/L	0.25	H
		Nitrate by IC	7.8	MG/L	0.25	H
		Cyanide, Total	10.0 µ	UG/L	10.0	H
		Phosphate by IC	0.25 µ	MG/L	0.25	H
		Sulfate by IC	22.6	MG/L	2.5	
		~~Nitrate Nitrite~~	1.6	MG-N/L	0.10	R
		Total Organic Carbon	0.53	MG/L	0.50	
		pH	7.8	PH UNITS	0.010	
		Total Dissolved Solids	182	MG/L	5.0	H

6/15/92

9713523.1326

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/05/91

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

WESTON BATCH #: 9111L317

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-005	B01B17	Alkalinity	102	MG/L	2.0
		Chloride by IC	20.7	MG/L	2.5
		Fluoride by IC	0.53	MG/L	0.50
		Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	9.3	MG/L	0.25
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	72.8	MG/L	2.5
		~~Nitrate-Nitrite~~	~~1.8~~	~~MG-N/L~~	~~0.10~~
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	7.9	PH UNITS	0.010
		Total Dissolved Solids	303	MG/L	5.0
-007	B019D9	Alkalinity	104	MG/L	2.0
		Chloride by IC	6.0	MG/L	0.25
		Fluoride by IC	0.67	MG/L	0.50
		Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	8.1	MG/L	0.25
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	22.3	MG/L	2.5
		~~Nitrate-Nitrite~~	~~1.6~~	~~MG-N/L~~	~~0.10~~
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	8.0	PH UNITS	0.010
		Total Dissolved Solids	186	MG/L	5.0

6/15/92

9713523.1327 00000017

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B01B31
4th Quarter Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L317-009

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

Lab File ID: W111323

Level: (low/med) LOW

Date Received: 11/07/91

% Moisture: not dec. _____

Date Analyzed: 11/13/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	5	JB	
67-64-1	Acetone	10	JB	
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

6/15/92

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT:	REVIEWER: G	DATE: 6/10/97
LABORATORY: Western	CASE:	SDG: 9111317
SAMPLES/MATRIX: B019S1, B019S2, B01B13, B01B14, B01B17		
B01B18, B019D9, B019F0 / WATER		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓		
Cover Page		✓		
Traffic Reports		✓		
Sample Data		✓		
Inorganic Analysis Data Sheets		✓		
Standards Data		✓		
Initial and Continuing Calibration Verification		✓		
CRDL Standard for AA and ICP		✓		
QC Summary		✓		
Blanks		✓		
ICP Interference Check Summary		✓		
Spike Sample Recovery		✓		
Post-Digestion Spike Sample Recovery		✓	?	
Duplicate		✓		
Laboratory Control Sample		✓		
Standard Addition Results		✓		
ICP Serial Dilutions		✓		
Instrument Detection Limits		✓		
ICP Interelement Correction Factors		✓		
ICP Linear Ranges		✓		
Preparation Log		✓		
Analysis Run Log		✓		
Raw Data		✓		
ICP Raw Data		✓		
Furnace AA Raw Data		✓		
Mercury Raw Data		✓		
Cyanide Raw Data		✓		
Additional Data				
Internal laboratory chain-of-custody				✓
Laboratory Sample Preparation Records		✓		

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

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is <0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6/25/92

6. LABORATORY BLANKS

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

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

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

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

ACTION: Qualify the sample data according to the following requirements:

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? (Yes) No N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required?	(Yes)	No	N/A
Are MSA correlation coefficients ≥0.995?	Yes	(No)	N/A
If no, was a second MSA analysis performed?	(Yes)	No	N/A

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

17. ANALYTE QUANTITATION AND DETECTION LIMITS

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

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

18. OVERALL ASSESSMENT AND SUMMARY

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

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

Holding Time Summary

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019S1							
SILVER, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	56
SILVER, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
SILVER, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
ALUMINUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
ALUMINUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
ALUMINUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
ARSENIC, TOTAL	001	W	91L3255	11/04/91	11/23/91	11/25/91	2
ARSENIC, TOTAL	001 REP	W	91L3255	11/04/91	11/23/91	11/25/91	
ARSENIC, TOTAL	001 MS	W	91L3255	11/04/91	11/23/91	11/25/91	
BARIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	56
BARIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
BARIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
BERYLLIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
BERYLLIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
BERYLLIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
BISMUTH, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/05/91	31
BISMUTH, TOTAL REP	001 REP	W	91L3256	11/04/91	11/23/91	12/05/91	
BISMUTH, TOTAL DUP S	001 MSD	W	91L3256	11/04/91	11/23/91	12/05/91	
CALCIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	54
CALCIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
CALCIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
CADMIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
CADMIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
CADMIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
COBALT, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
COBALT, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
COBALT, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
MERCURY, TOTAL	001	W	91C0336	11/04/91	11/21/91	11/22/91	18
Expedite Analysis				11/4/91	11/14/91		10
				11/5/91	11/14/91		9

All holding times have been met
C. Winters

01

holding 9115231355 Summary pg 2 of 7

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
MERCURY, TOTAL	001 REP	W	91C0336	11/04/91	11/21/91	11/22/91	18
MERCURY, TOTAL	001 MS	W	91C0336	11/04/91	11/21/91	11/22/91	18
POTASSIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	56
POTASSIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
POTASSIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
MAGNESIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
MAGNESIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
MAGNESIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
LEAD, TOTAL	001	W	91L3255	11/04/91	11/23/91	11/25/91	21
LEAD, TOTAL	001 REP	W	91L3255	11/04/91	11/23/91	11/25/91	
LEAD, TOTAL	001 MS	W	91L3255	11/04/91	11/23/91	11/25/91	
ANTIMONY, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	56
ANTIMONY, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
ANTIMONY, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
SELENIUM, TOTAL	001	W	91L3255	11/04/91	11/23/91	11/25/91	21
SELENIUM, TOTAL	001 REP	W	91L3255	11/04/91	11/23/91	11/25/91	
SELENIUM, TOTAL	001 MS	W	91L3255	11/04/91	11/23/91	11/25/91	
SILICON, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	56
SILICON, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
SILICON, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
THALLIUM, TOTAL	001	W	91L3255	11/04/91	11/23/91	11/25/91	21
THALLIUM, TOTAL	001 REP	W	91L3255	11/04/91	11/23/91	11/25/91	
THALLIUM, TOTAL	001 MS	W	91L3255	11/04/91	11/23/91	11/25/91	
VANADIUM, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	56
VANADIUM, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
VANADIUM, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
ZINC, TOTAL	001	W	91L3256	11/04/91	11/23/91	12/30/91	
ZINC, TOTAL	001 REP	W	91L3256	11/04/91	11/23/91	12/30/91	
ZINC, TOTAL	001 MS	W	91L3256	11/04/91	11/23/91	12/30/91	
B019S2							
SILVER, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56

Analytical Summary Pg 3 of 7

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ALUMINUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
ARSENIC, SOLUBLE	002	W	91L3255	11/04/91	11/23/91	11/25/91	21
BARIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
BERYLLIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
BISMUTH, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/05/91	31
CALCIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
CADMIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
COBALT, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
MERCURY, SOLUBLE	002	W	91C0336	11/04/91	11/21/91	11/22/91	18
MERCURY, SOLUBLE	002 REP	W	91C0336	11/04/91	11/21/91	11/22/91	18
MERCURY, SOLUBLE	002 MS	W	91C0336	11/04/91	11/21/91	11/22/91	18
POTASSIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
MAGNESIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	
LEAD, SOLUBLE	002	W	91L3255	11/04/91	11/23/91	11/25/91	21
ANTIMONY, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
SELENIUM, SOLUBLE	002	W	91L3255	11/04/91	11/23/91	11/25/91	21
SILICON, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
THALLIUM, SOLUBLE	002	W	91L3255	11/04/91	11/23/91	11/25/91	21
VANADIUM, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
ZINC, SOLUBLE	002	W	91L3256	11/04/91	11/23/91	12/30/91	56
B01B13							
SILVER, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	55
ALUMINUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
ARSENIC, TOTAL	003	W	91L3255	11/05/91	11/23/91	11/25/91	20
BARIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	55
BERYLLIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	55
BISMUTH, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/05/91	30
CALCIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	55
CADMIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
COBALT, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
CHROMIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
COPPER, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	

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Holding Time Summary Pg 4 of 7

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
IRON, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	55
MERCURY, TOTAL	003	W	91C0336	11/05/91	11/21/91	11/22/91	17
POTASSIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	55
MAGNESIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
MANGANESE, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
SODIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
NICKEL, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
LEAD, TOTAL	003	W	91L3255	11/05/91	11/23/91	11/25/91	20
ANTIMONY, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	56
SELENIUM, TOTAL	003	W	91L3255	11/05/91	11/23/91	11/25/91	20
SILICON, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	56
THALLIUM, TOTAL	003	W	91L3255	11/05/91	11/23/91	11/25/91	20
VANADIUM, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	56
ZINC, TOTAL	003	W	91L3256	11/05/91	11/23/91	12/30/91	
B01B14							
SILVER, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	56
ALUMINUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
ARSENIC, SOLUBLE	004	W	91L3255	11/05/91	11/23/91	11/25/91	20
BARIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	56
BERYLLIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
BISMUTH, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/05/91	30
CALCIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	56
CADMIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
COBALT, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
CHROMIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
COPPER, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
IRON, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
MERCURY, SOLUBLE	004	W	91C0336	11/05/91	11/21/91	11/22/91	17
POTASSIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	56
MAGNESIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
MANGANESE, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
SODIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
NICKEL, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
LEAD, SOLUBLE	004	W	91L3255	11/05/91	11/23/91	11/25/91	20
ANTIMONY, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	56
SELENIUM, SOLUBLE	004	W	91L3255	11/05/91	11/23/91	11/25/91	20
SILICON, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	56
THALLIUM, SOLUBLE	004	W	91L3255	11/05/91	11/23/91	11/25/91	20

Holding Time Summary pg 5 of 7

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
VANADIUM, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	56
ZINC, SOLUBLE	004	W	91L3256	11/05/91	11/23/91	12/30/91	
B01B17							
SILVER, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
ALUMINUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
ARSENIC, TOTAL	005	W	91L3255	11/04/91	11/23/91	11/25/91	21
BARIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
BERYLLIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
BISMUTH, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/05/91	31
CALCIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
CADMIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
COBALT, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
MERCURY, TOTAL	005	W	91C0336	11/04/91	11/21/91	11/22/91	18
POTASSIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
MAGNESIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	
LEAD, TOTAL	005	W	91L3255	11/04/91	11/23/91	11/25/91	21
ANTIMONY, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
SELENIUM, TOTAL	005	W	91L3255	11/04/91	11/23/91	11/25/91	21
SILICON, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
THALLIUM, TOTAL	005	W	91L3255	11/04/91	11/23/91	11/25/91	21
VANADIUM, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
ZINC, TOTAL	005	W	91L3256	11/04/91	11/23/91	12/30/91	56
B01B18							
SILVER, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
ALUMINUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
ARSENIC, SOLUBLE	006	W	91L3255	11/04/91	11/23/91	11/25/91	21
BARIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
BERYLLIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
BISMUTH, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/05/91	31
CALCIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56

Holding Time Summary 9213523.1339 Pg 6 of 7

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
CADMIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
COBALT, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
MERCURY, SOLUBLE	006	W	91C0336	11/04/91	11/21/91	11/22/91	18
POTASSIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
MAGNESIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	
LEAD, SOLUBLE	006	W	91L3255	11/04/91	11/23/91	11/25/91	21
ANTIMONY, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
SELENIUM, SOLUBLE	006	W	91L3255	11/04/91	11/23/91	11/25/91	21
SILICON, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
THALLIUM, SOLUBLE	006	W	91L3255	11/04/91	11/23/91	11/25/91	21
VANADIUM, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
ZINC, SOLUBLE	006	W	91L3256	11/04/91	11/23/91	12/30/91	56
BO19D9							
SILVER, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
ALUMINUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
ARSENIC, TOTAL	007	W	91L3255	11/04/91	11/23/91	11/25/91	21
BARIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
BERYLLIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
BISMUTH, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/05/91	31
CALCIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
CADMIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
COBALT, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
MERCURY, TOTAL	007	W	91C0336	11/04/91	11/21/91	11/22/91	18
POTASSIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
MAGNESIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	
LEAD, TOTAL	007	W	91L3255	11/04/91	11/23/91	11/25/91	21

6/15

9213523.1340 Holding Time Summary pg 7 of 27

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ANTIMONY, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
SELENIUM, TOTAL	007	W	91L3255	11/04/91	11/23/91	11/25/91	21
SILICON, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
THALLIUM, TOTAL	007	W	91L3255	11/04/91	11/23/91	11/25/91	21
VANADIUM, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
ZINC, TOTAL	007	W	91L3256	11/04/91	11/23/91	12/30/91	56
B019F0							
SILVER, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	56
ALUMINUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	56
ARSENIC, SOLUBLE	008	W	91L3255	11/04/91	11/23/91	11/25/91	21
BARIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	56
BERYLLIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
BISMUTH, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/05/91	31
CALCIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	56
CADMIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
COBALT, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
CHROMIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
COPPER, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
IRON, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
MERCURY, SOLUBLE	008	W	91C0336	11/04/91	11/21/91	11/22/91	18
POTASSIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	56
MAGNESIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
MANGANESE, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
SODIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
NICKEL, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
LEAD, SOLUBLE	008	W	91L3255	11/04/91	11/23/91	11/25/91	21
ANTIMONY, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	
SELENIUM, SOLUBLE	008	W	91L3255	11/04/91	11/23/91	11/25/91	21
SILICON, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	56
THALLIUM, SOLUBLE	008	W	91L3255	11/04/91	11/23/91	11/25/91	21
VANADIUM, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	56
ZINC, SOLUBLE	008	W	91L3256	11/04/91	11/23/91	12/30/91	

LAB QC:

SILVER LABORATORY	LC1 BS	W	91L3256	N/A	11/23/91	12/30/91
ALUMINUM LABORTORY	LC1 BS	W	91L3256	N/A	11/23/91	12/30/91
BARIUM LABORATORY	LC1 BS	W	91L3256	N/A	11/23/91	12/30/91

9713523.1341 0000037

Blank Summary

pg 1 of 1

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep-aration Blank	C	M
	SX		SX		SX		SX		SX		
Aluminum	91.0	U	91.0	U	91.0	U	91.0	U	91.000	U	P
Antimony	20.0	U	24.3	B	20.0	U	20.0	U	20.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	16.0	U	16.0	U	16.0	U	16.0	U	16.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P
Calcium	63.0	U	63.0	U	63.0	U	63.0	U	63.000	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Iron	46.0	U	46.0	U	46.0	U	46.0	U	46.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	87.0	U	102.7	B	94.6	B	122.4	B	87.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.100	U	CV
Nickel	11.0	U	11.0	U	11.0	U	11.0	U	11.000	U	P
Potassium	1313.7	B	869.0	B	1212.6	B	862.0	U	1131.800	B	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Sodium	110.0	U	110.0	U	124.5	B	130.5	B	110.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Vanadium	8.0	U	10.3	B	12.4	B	14.3	B	9.100	B	P
Zinc	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Cyanide	20.0	U	20.0	U	20.0	U	20.0	U	10.000	U	C

FORM III - IN 03/90

Sample grad

Ca 24.3 x 5 = 121.5

Mg 122.4 x 5 = 612

K 1313.7 x 5 = 6568.5

Na 130.5 x 5 = 652.5

V 14.3 x 5 = 71.5

6/15/92

9713523.1342 0000040

Accuracy Summary

pg 1 of 2

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BO19S1S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1805.8000		91.0000	U	2000.00	90.3		P
Antimony	75-125	491.7000		20.7000	B	500.00	94.2		P
Arsenic	75-125	35.9000		4.5000	B	40.00	78.5		F
Barium	75-125	1865.4000		38.2000	B	2000.00	91.4		P
Beryllium	75-125	46.0000		1.0000	U	50.00	92.0		P
Cadmium	75-125	43.3000		3.0000	U	50.00	86.6		P
Calcium									NR
Chromium	75-125	201.3000		26.8000		200.00	87.3		P
Cobalt	75-125	447.3000		10.0000	U	500.00	89.5		P
Copper	75-125	222.4000		10.4000	B	250.00	84.8		P
Iron	75-125	1185.5000		212.4000		1000.00	97.3		P
Lead	75-125	14.3000		2.0000	U	20.00	71.5	N	F
Magnesium									NR
Manganese	75-125	452.8999		7.4000	B	500.00	89.1		P
Mercury	75-125	.9590		.1000	U	1.00	95.9		CV
Nickel	75-125	472.8999		20.9000	B	500.00	90.4		P
Potassium									NR
Selenium	75-125	9.2000		~~4.7000~~		10.00	45.0	N	F
Silver	75-125	42.8000		10.0000	U	50.00	85.6		P
Sodium									NR
Thallium	75-125	42.2000		2.0000	U	50.00	84.4		F
Vanadium	75-125	470.5000		28.5000	B	500.00	88.4		P
Zinc	75-125	470.3000		8.8000	B	500.00	92.3		P
Cyanide	75-125	55.7370		12.5000	U	62.50	89.2		C

Comments:

directs qual as J
ND qual as UJ
5 0/10/97

6/15/97

9713523.1343 00000045

Accuracy Summary

Pg 2 of 2

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP317

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	5000.0	4815.30	96.3						
Antimony	3000.0	2976.00	99.2						
Arsenic	30.0	26.90	89.7						
Barium	5000.0	4742.50	94.8						
Beryllium	250.0	239.90	96.0						
Cadmium	250.0	232.70	93.1						
Calcium	25000.0	24276.30	97.1						
Chromium	500.0	472.00	94.4						
Cobalt	2500.0	2357.00	94.3						
Copper	1250.0	1138.10	91.0						
Iron	5000.0	4770.90	95.4						
Lead	30.0	27.40	91.3						
Magnesium	25000.0	24149.90	96.6						
Manganese	750.0	704.90	94.0						
Mercury	5.0	4.87	97.4						
Nickel	2000.0	1935.20	96.8						
Potassium	25000.0	24171.40	96.7						
Selenium	30.0	25.50	85.0						
Silver	500.0	450.40	90.1						
Sodium	25000.0	24036.40	96.1						
Thallium	30.0	27.00	90.0						
Vanadium	2500.0	2310.90	92.4						
Zinc	1000.0	976.50	97.6						
Cyanide	100.0	76.22	76.2						

FORM VII - IN

03/90

Ca outside limits

6/15/95

ACCURACY DATA SUMMARY - FORM B-4

SDG: 7,11-	REVIEWER:	DATE: 6/6/12	PAGE 1 OF 2	
COMMENTS: Cs (1g)				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B0·1951	Lead	64.6		
B0·1952		67.3		
B0·1B13 B01B13		68.4		
B01B14		70.5		
B01B17		67.3		
B01B18		64.3		
B01909		71.4		
B01910		71.9		
B01951	Selenium	BR: 54.8 RSD= 22.51		None - Analyzed by MSA
B01952		60.2		
B01B13		71.5		
B01B14		77.9		
B01B17		60.8		
B01B18		57.6		
B01909		71.1		
B01910		70.1		
B01952	Thallium	79.2		

B-4

ACCURACY DATA SUMMARY - FORM B-4

SDG:	REVIEWER:	DATE:	PAGE 2 OF 2	
COMMENTS:				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: CD	DATE: 10/10/92
LABORATORY: INEL ON	CASE: 9111L317	SDG: 9111L317
SAMPLES/MATRIX:		
B01951, B01B13, B01B17, B019D9 / Water		

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		X	—	—	
Standards Data		X	—	—	
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		X	—	✓	@ 6/15/92
Internal Laboratory Chain-of-Custory		—	X	X	
Percent Solids Analysis Records		—	—	X	
Reduction Formulae		—	X	X	@ 6/15/92
Chemist Notebook Pages		—	X	X	

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

6/15/92

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

6/15/92

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? Cu only 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? ~~Cu only~~ 6/15/92 (Yes) No (N/A)

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

11. FIELD DUPLICATE SAMPLES

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

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

12. FIELD SPLIT SAMPLES

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

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

13. ANALYTE QUANTITATION AND DETECTION LIMITS

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

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

14. OVERALL ASSESSMENT AND SUMMARY

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

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

Holding Time Summary

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019S1							
ALKALINITY	001	W	91LAL057	11/04/91	11/13/91	11/13/91	9
CHLORIDE BY IC	001	W	91LIC167	11/04/91	11/09/91	11/09/91	5
CHLORIDE BY IC	001 REP	W	91LIC167	11/04/91	11/09/91	11/09/91	
CHLORIDE BY IC	001 MS	W	91LIC167	11/04/91	11/09/91	11/09/91	
CHLORIDE BY IC	001 MSD	W	91LIC167	11/04/91	11/09/91	11/09/91	
FLUORIDE BY IC	001	W	91LIC167	11/04/91	11/09/91	11/09/91	
FLUORIDE BY IC	001 REP	W	91LIC167	11/04/91	11/09/91	11/09/91	
FLUORIDE BY IC	001 MS	W	91LIC167	11/04/91	11/09/91	11/09/91	
FLUORIDE BY IC	001 MSD	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRITE BY IC	001	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRITE BY IC	001 REP	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRITE BY IC	001 MS	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRITE BY IC	001 MSD	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE BY IC	001	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE BY IC	001 REP	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE BY IC	001 MS	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE BY IC	001 MSD	W	91LIC167	11/04/91	11/09/91	11/09/91	
TOTAL CYANIDE	001	W	91LC341	11/04/91	11/14/91	11/14/91	10
TOTAL CYANIDE	001 REP	W	91LC341	11/04/91	11/14/91	11/14/91	
TOTAL CYANIDE	001 MS	W	91LC341	11/04/91	11/14/91	11/14/91	
PHOSPHATE BY IC	001	W	91LIC167	11/04/91	11/09/91	11/09/91	5
PHOSPHATE BY IC	001 REP	W	91LIC167	11/04/91	11/09/91	11/09/91	
PHOSPHATE BY IC	001 MS	W	91LIC167	11/04/91	11/09/91	11/09/91	
PHOSPHATE BY IC	001 MSD	W	91LIC167	11/04/91	11/09/91	11/09/91	
SULFATE BY IC	001	W	91LIC167	11/04/91	11/09/91	11/09/91	
SULFATE BY IC	001 REP	W	91LIC167	11/04/91	11/09/91	11/09/91	
SULFATE BY IC	001 MS	W	91LIC167	11/04/91	11/09/91	11/09/91	
SULFATE BY IC	001 MSD	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE NITRITE	001	W	91LNA256	11/04/91	11/30/91	11/30/91	26
NITRATE NITRITE	001 REP	W	91LNA256	11/04/91	11/30/91	11/30/91	OK
NITRATE NITRITE	001 MS	W	91LNA256	11/04/91	11/30/91	11/30/91	
NITRATE NITRITE	001 MSD	W	91LNA256	11/04/91	11/30/91	11/30/91	
TOTAL ORGANIC CARBON	001	W	91LTC155	11/04/91	11/29/91	11/29/91	25
TOTAL ORGANIC CARBON	001 REP	W	91LTC155	11/04/91	11/29/91	11/29/91	
TOTAL ORGANIC CARBON	001 MS	W	91LTC155	11/04/91	11/29/91	11/29/91	
TOTAL ORGANIC CARBON	001 MSD	W	91LTC155	11/04/91	11/29/91	11/29/91	
PH	001	W	91LPH187	11/04/91	11/07/91	11/07/91	3

7 Days @ 6/15/92

All samples: TDS outside ~~7 day~~ holding time.

All samples: phenol outside 2 day holding time.

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Holding Time Summary Pg 2 of 3

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
SUB-OUT TEST FOR SUB	001	W		11/04/91			
TOTAL DISSOLVED SOLI	001	W	91LSS159	11/04/91	11/11/91	11/13/91	9
B01B13							
ALKALINITY	003	W	91LAL057	11/05/91	11/13/91	11/13/91	8
CHLORIDE BY IC	003	W	91LIC167	11/05/91	11/09/91	11/09/91	4
FLUORIDE BY IC	003	W	91LIC167	11/05/91	11/09/91	11/09/91	
NITRITE BY IC	003	W	91LIC167	11/05/91	11/09/91	11/09/91	
NITRATE BY IC	003	W	91LIC167	11/05/91	11/09/91	11/09/91	
TOTAL CYANIDE	003	W	91LC341	11/05/91	11/14/91	11/14/91	
PHOSPHATE BY IC	003	W	91LIC167	11/05/91	11/09/91	11/09/91	
SULFATE BY IC	003	W	91LIC167	11/05/91	11/09/91	11/09/91	
NITRATE NITRITE	003	W	91LNA256	11/05/91	11/30/91	11/30/91	25
TOTAL ORGANIC CARBON	003	W	91LTC155	11/05/91	11/29/91	11/29/91	24
PH	003	W	91LPH187	11/05/91	11/07/91	11/07/91	2
SUB-OUT TEST FOR SUB	003	W		11/05/91			
TOTAL DISSOLVED SOLI	003	W	91LSS159	11/05/91	11/11/91	11/13/91	8
B01B17							
ALKALINITY	005	W	91LAL057	11/04/91	11/13/91	11/13/91	9
CHLORIDE BY IC	005	W	91LIC167	11/04/91	11/09/91	11/09/91	5
FLUORIDE BY IC	005	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRITE BY IC	005	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE BY IC	005	W	91LIC167	11/04/91	11/09/91	11/09/91	
TOTAL CYANIDE	005	W	91LC341	11/04/91	11/14/91	11/14/91	10
PHOSPHATE BY IC	005	W	91LIC167	11/04/91	11/09/91	11/09/91	5
SULFATE BY IC	005	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE NITRITE	005	W	91LNA256	11/04/91	11/30/91	11/30/91	26
TOTAL ORGANIC CARBON	005	W	91LTC155	11/04/91	11/29/91	11/29/91	25
PH	005	W	91LPH187	11/04/91	11/07/91	11/07/91	3
SUB-OUT TEST FOR SUB	005	W		11/04/91			
TOTAL DISSOLVED SOLI	005	W	91LSS159	11/04/91	11/11/91	11/13/91	9
B019D9							
ALKALINITY	007	W	91LAL057	11/04/91	11/13/91	11/13/91	8
ALKALINITY	007 REP	W	91LAL057	11/04/91	11/13/91	11/13/91	8
CHLORIDE BY IC	007	W	91LIC167	11/04/91	11/09/91	11/09/91	5

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Holding Time Summary pg 3 of 3

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
FLUORIDE BY IC	007	W	91LIC167	11/04/91	11/09/91	11/09/91	5
NITRITE BY IC	007	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE BY IC	007	W	91LIC167	11/04/91	11/09/91	11/09/91	
TOTAL CYANIDE	007	W	91LC341	11/04/91	11/14/91	11/14/91	10
PHOSPHATE BY IC	007	W	91LIC167	11/04/91	11/09/91	11/09/91	5
SULFATE BY IC	007	W	91LIC167	11/04/91	11/09/91	11/09/91	
NITRATE NITRITE	007	W	91LNA256	11/04/91	11/30/91	11/30/91	26
TOTAL ORGANIC CARBON	007	W	91LTC155	11/04/91	11/29/91	11/29/91	25
PH	007	W	91LPH187	11/04/91	11/07/91	11/07/91	3
SUB-OUT TEST FOR SUB	007	W		11/04/91			
TOTAL DISSOLVED SOLI	007	W	91LSS159	11/04/91	11/11/91	11/13/91	9
TOTAL DISSOLVED SOLI	007 REP	W	91LSS159	11/04/91	11/11/91	11/13/91	9

LAB QC:

ALKALINITY	MB1	W	91LAL057	N/A	11/13/91	11/13/91
ALKALINITY	MB1 BS	W	91LAL057	N/A	11/13/91	11/13/91
ALKALINITY	MB1 BSD	W	91LAL057	N/A	11/13/91	11/13/91
ALKALINITY	MB2	W	91LAL057	N/A	11/13/91	11/13/91
ALKALINITY	MB2 BS	W	91LAL057	N/A	11/13/91	11/13/91
BROMIDE BY IC	MB1	W	91LIC167	N/A	11/09/91	11/09/91
BROMIDE BY IC	MB1 BS	W	91LIC167	N/A	11/09/91	11/09/91
CHLORIDE BY IC	MB1	W	91LIC167	N/A	11/09/91	11/09/91
CHLORIDE BY IC	MB1 BS	W	91LIC167	N/A	11/09/91	11/09/91
FLUORIDE BY IC	MB1	W	91LIC167	N/A	11/09/91	11/09/91
FLUORIDE BY IC	MB1 BS	W	91LIC167	N/A	11/09/91	11/09/91
NITRITE BY IC	MB1	W	91LIC167	N/A	11/09/91	11/09/91
NITRITE BY IC	MB1 BS	W	91LIC167	N/A	11/09/91	11/09/91
NITRATE BY IC	MB1	W	91LIC167	N/A	11/09/91	11/09/91
NITRATE BY IC	MB1 BS	W	91LIC167	N/A	11/09/91	11/09/91
PHOSPHATE BY IC	MB1	W	91LIC167	N/A	11/09/91	11/09/91
PHOSPHATE BY IC	MB1 BS	W	91LIC167	N/A	11/09/91	11/09/91
SULFATE BY IC	MB1	W	91LIC167	N/A	11/09/91	11/09/91
SULFATE BY IC	MB1 BS	W	91LIC167	N/A	11/09/91	11/09/91
TOTAL CYANIDE	LC1 L	W	91LC341	N/A	11/14/91	11/14/91
TOTAL CYANIDE	LC2 L	W	91LC341	N/A	11/14/91	11/14/91
TOTAL CYANIDE	MB1	W	91LC341	N/A	11/14/91	11/14/91
NITRATE NITRITE	MB1	W	91LNA256	N/A	11/30/91	11/30/91
NITRATE NITRITE	MB1 BS	W	91LNA256	N/A	11/30/91	11/30/91
NITRATE NITRITE	MB1 BSD	W	91LNA256	N/A	11/30/91	11/30/91

6/15/92

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Accuracy Summary

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ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 12/05/91

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

WESTON BATCH #: 9111L317

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	BO19S1	Chloride by IC	30.4	20.2	10.0	101
		Chloride by IC MSD	31.3	20.2	10.0	111
		Fluoride by IC	21.7	0.55	20.0	106
		Fluoride by IC MSD	21.1	0.55	20.0	103
		Nitrite by IC	10.4	0.25u	10.0	104
		Nitrite by IC MSD	10.5	0.25u	10.0	105
		Nitrate by IC	19.8	9.0	10.0	108
		Nitrate by IC MSD	19.4	9.0	10.0	104
		Cyanide, Total	55.7	12.5 u	62.5	89.2
		Phosphate by IC	10.0	0.25u	10.0	100
		Phosphate by IC MSD	10	0.25u	10.0	99.8
		Sulfate by IC	82.0	72.7	10.0	92.6 *
		Sulfate by IC MSD	82.5	72.7	10.0	97.2 *
		Nitrate Nitrite	3.3	1.9	2.0	69.4
		Nitrate Nitrite MSD	3.4	1.9	2.0	73.2
		Total Organic Carbon	5.8	1.1	5.0	94.6
		Total Organic Carbon	5.8	1.1	5.0	94.6
BLANK10	91LAL057-MB1	Alkalinity	94.0	0.50u	100	94.0
		Alkalinity MSD	96.0	0.50u	100	96.0
BLANK20	91LAL057-MB2	Alkalinity	94.0	0.50u	100	94.0
BLANK10	91LIC167-MB1	Chloride by IC	10.3	0.25u	10.0	103
		Fluoride by IC	20.6	0.50u	20.0	103
		Nitrite by IC	10.4	0.25u	10.0	104
		Nitrate by IC	10.3	0.25u	10.0	103
		Phosphate by IC	10.2	0.25u	10.0	102
		Sulfate by IC	10.2	0.25u	10.0	102
BLANK10	91LNA256-MB1	Nitrate Nitrite	0.39	0.10u	0.40	97.5
		Nitrate Nitrite MSD	0.40	0.10u	0.40	99.8
BLANK20	91LNA256-MB2	Nitrate Nitrite	0.42	0.10u	0.40	104
BLANK10	91LTC155-MB1	Total Organic Carbon	4.8	0.50u	5.0	95.6
		Total Organic Carbon	5.0	0.50u	5.0	99.4
BLANK20	91LTC155-MB2	Total Organic Carbon	4.9	0.50u	5.0	97.5
BLANK30	91LTC155-MB3	Total Organic Carbon	4.9	0.50u	5.0	97.5
BLANK40	91LTC155-MB4	Total Organic Carbon	4.9	0.50u	5.0	97.5

Nitrate + nitrite Data has already been rejected - No further qualification is required.

6/5/92

9713523.1354

Accuracy Summary

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ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/05/91

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	91LC341-LC1	Cyanide, Total LCS	75.2	100	UG/L	75.2
LCS2	91LC341-LC2	Cyanide, Total LCS	76.2	100	UG/L	76.2

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: 4	DATE: 6/4/92
LABORATORY: Weiton	CASE: 9111L317	SDG: 9111L317
SAMPLES/MATRIX: B01B31 /WATER		

1. DATA PACKAGE COMPLETENESS

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

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

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC		✓	—	✓
MS/MSD report forms		✓	—	—
RIC and quantitation reports for MS/MSD		✓	—	—
Additional Data				
Moisture/% solids data sheets		—	—	✓
Reduction formulae		—	—	✓
Instrument time logs		—	—	✓
Chemist notebook pages		—	—	—
Sample preparation sheets		✓	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

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

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

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? (Yes) No N/A

Are all RRF values ≥0.05 (2/88 SOW)? (Yes) No N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

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

3.3. CONTINUING CALIBRATION

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

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

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

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

4.2. FIELD BLANKS

@6/15/92

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

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

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?	(Yes)	No	N/A
Are any surrogate recoveries < 10%?	Yes	(No)	N/A
Are any method blank surrogate recoveries out of specification?	Yes	(No)	N/A

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

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	(Yes)	No	N/A
Are there any calculation errors?	Yes	(No)	N/A

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

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

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

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

9213523.1362
Holding Time Summary

Pg 1 of 1

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

DATE RECEIVED: 11/07/91 RFW LOT # :9111L317

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
BO1B31	009	W	91LVW198	11/04/91	N/A	11/13/91	9
BO1B31	009 MS	W	91LVW198	11/04/91	N/A	11/14/91	10
BO1B31	009 MSD	W	91LVW198	11/04/91	N/A	11/14/91	10
LAB QC:							
VBLK	MB1	W	91LVW198	N/A	N/A	11/13/91	

All holding times have been met

SGH 11/12/91

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L317

Instrument ID: 1050W Calibration Date: 11/13/91 Time: 2131

Lab File ID: W111320 Init. Calib. Date(s): 11/11/91 11/11/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

COMPOUND		RRF	RRF50	%D	
Chloromethane	#	0.943	0.734	22.2	#
Bromomethane		1.443	1.283	11.1	
Vinyl Chloride	*	1.396	1.105	20.8	*
Chloroethane		0.826	0.698	15.5	
Methylene Chloride		1.445	1.304	9.8	
Acetone		0.468	0.305	34.8	
Carbon Disulfide		3.846	3.254	15.4	
1,1-Dichloroethene	*	1.286	1.202	6.5	*
1,1-Dichloroethane	#	2.241	1.938	13.5	#
1,2-Dichloroethene (total)		1.216	1.229	-1.1	
Chloroform	*	2.120	2.158	-1.8	*
1,2-Dichloroethane		1.325	1.349	-1.8	
2-Butanone		0.129	0.120	7.0	
1,1,1-Trichloroethane		0.351	0.331	5.7	
Carbon Tetrachloride		0.383	0.358	6.5	
Vinyl Acetate		0.780	0.464	40.5	
Bromodichloromethane		0.518	0.459	11.4	
1,2-Dichloropropane	*	0.507	0.412	18.7	*
cis-1,3-Dichloropropene		0.535	0.446	16.6	
Trichloroethene		0.426	0.424	0.5	
Dibromochloromethane		0.511	0.469	8.2	
1,1,2-Trichloroethane		0.334	0.312	6.6	
Benzene		1.079	0.989	8.3	
Trans-1,3-Dichloropropene		0.440	0.355	19.3	
Bromoform	#	0.421	0.386	8.3	#
4-Methyl-2-pentanone		0.517	0.323	37.5	
2-Hexanone		0.408	0.246	39.7	
Tetrachloroethene		0.449	0.445	0.9	
1,1,2,2-Tetrachloroethane	#	0.628	0.558	11.1	#
Toluene	*	0.701	0.671	4.3	*
Chlorobenzene	#	0.921	0.895	2.8	#
Ethylbenzene	*	0.448	0.440	1.8	*
Styrene		0.772	0.739	4.3	
Xylene (total)		0.467	0.460	1.5	
Toluene-d8		1.191	1.113	6.5	
Bromofluorobenzene		0.814	0.764	6.1	
1,2-Dichloroethane-d4		1.283	1.272	0.9	

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9111L317

No qualification is required.

	CLIENT SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	BO1B31	112 *	108	102		1
02	BO1B31MS	~~103~~	98	96		0
03	BO1B31MSD	104	100	98		0
04	VBLKLVW198-MB1	104	101	96		0

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogates diluted out

~~data qualified for Tol-d8 out~~ @ 6/15/92

6/15/92

Blank 9110523.1365 000006 Pg 1 of 1

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LVW198-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W111322

Level: (low/med) LOW Date Received: 11/13/91

% Moisture: not dec. _____ Date Analyzed: 11/13/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
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	2	J	x10=20
67-64-1	Acetone	4	J	x10=40
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

6/15/92

APPENDIX E

DATA VALIDATION DOCUMENTATION

SDG: 9111L353

SAMPLES: B019J1, B019J2, B019F3, B019F4,
B019H7, B019H8, B019G1, B01B34, B01B33, B019G2

CONTAINS:

ATTACHMENT 1 - GLOSSARY OF DATA REPORTING QUALIFIERS
ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS
ATTACHMENT 3 - AS QUALIFIED LABORATORY DATA
ATTACHMENT 4 - DATA VALIDATION SUPPORTING DOCUMENTATION

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable 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 presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

9111L353

SDG: 353	REVIEWER: [illegible]	DATE: 6/16/92	PAGE 1 OF 2
COMMENTS: V.O.A / Metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Acetone	J	All	CCV %D > 25%
Methyl Acetate	UJ	↓	↓
4-Methyl-2-pentanone	UJ	↓	↓
2-Hexanone	UJ	↓	↓
Mercury	UJ	B0IB34	present in blank
Acetone	UJ (already qual J-)	All	↓
[illegible]	UJ	B0I9J1	Present in blank
[illegible]	UJ	B0I9J1/B0I9J2	↓
Iron	UJ	B0I9F3/H7/G2	Present in blank
Selenium	J/UJ	All	MS %R < 75%
[illegible]	UJ	↓	↓
[illegible]	R	All except B0I9H8	MS %R = 0 and result < IDL
Lead	UJ	All	MS %R < 75%
Cadmium	~~blank~~ ~~J/UJ~~ J	~~blank~~ ~~All~~ B0I9J1 B0I9H7	MS %R = 26.6 and result > IDL
Silver	J	B0I9H8	MS %R = 0 and result > IDL
Cadmium	R	B0I9F3 B0I9C1	MS %R = 26.6 and result < IDL
Cyanide	already qualified	All	LCS %R < 80%
Silicon	J	All	MS %R out of control limits

DATA QUALIFICATION SUMMARY - FORM B-7

9111L353

SDG: 353	REVIEWER: [illegible]	DATE: 6/17/92	PAGE 2 OF 2
COMMENTS: Metals/Wet Chem			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Arsenic	J	B019F4/B019H7	GFAA Analytical Spikes out of C.L.
Lead	UJ	B019F3, F4, H7, H8 G1, G2, J1	"
Cadmium	J	B019H7, H8	"
Thallium	UJ	B019H8, J1, J2	"
Selenium	None - Analyzed by GFAA	B019F3, F4, J1	GFAA Analytical Spikes out of control limits
Mercury	UJ	All	Analyzed out of hold for ICV/CCV
Nickel	J	"	"
Thallium	UJ	"	"
Zinc	J	"	"
Cyanide	J	"	"
Chromium	J	B019F3, F4, J1	CCV out of control limits
Aluminum	R	All	Unusable result in data

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713523.1372 000031

U.S. EPA - CLP

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

B019J1
699-50-53A

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135301

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	127.00	B		P	
7440-36-0	Antimony	~~23.00~~	~~B~~	23.0 W	P	W
7440-38-2	Arsenic	2.80	B		F	
7440-39-3	Barium	~~162.00~~	~~B~~	162 W	P	W
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	269000.00			P	
7440-47-3	Chromium	90.40			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	1370.00			P	
7439-92-1	Lead	2.00	~~U~~	NW	F	W
7439-95-4	Magnesium	74000.00			P	
7439-96-5	Manganese	21.20			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	33.20	B		P	
7440-09-7	Potassium	16300.00			P	
7782-49-2	Selenium	38.00		NS	F	
~~7440-22-4~~	~~Silver~~	~~10.00~~	U	N	P	
7440-23-5	Sodium	66600.00			P	
7440-28-0	Thallium	2.00	~~U~~	NW	F	W
7440-62-2	Vanadium	16.00	B		P	
7440-66-6	Zinc	11.50	B		P	
	Cyanide	2710.00	~~U~~		C	
7440-69-9	Bismuth	150	U		P	
7440-21-3	Silicon	19100			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019J2

699-SC-53A

F. Hessd

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135302

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	92.20	B		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	2.80	B		F	
7440-39-3	Barium	151.00	B	151 E	P	E
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	263000.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	369.00			P	
7439-92-1	Lead	2.00	U	N	F	W
7439-95-4	Magnesium	72000.00			P	
7439-96-5	Manganese	10.00	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	15400.00			P	
7782-49-2	Selenium	53.10		N	F	R
7440-22-4	Silver	10.00	U	N	P	R
7440-23-5	Sodium	63300.00			P	
7440-28-0	Thallium	2.00	U	NW	F	W
7440-62-2	Vanadium	13.80	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	150	U		P	J
7440-21-3	Silicon	19300			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1-16-92

9713523.1374 000033

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019F3
199-5C-53E

Lab Name: ROY F. WESTON, INC - L372 Contract: 6158-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135304

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	2.00	U		F	
7440-39-3	Barium	75.30	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	41100.00			P	
7440-47-3	Chromium	31.10			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	29.60			P	
7439-89-6	Iron	190.00			P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	11200.00			P	
7439-96-5	Manganese	18.10			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	19.00	B		P	
7440-09-7	Potassium	8360.00			P	
7782-49-2	Selenium	2.70	B	NS	F	
~~7440-22-4~~	~~Silver~~	~~10.00~~	U	N	P	
7440-23-5	Sodium	12300.00			P	
7440-28-0	Thallium	2.00	U	N	F	
7440-62-2	Vanadium	11.00	B		P	
7440-66-6	Zinc	60.60			P	
	~~Cyanide~~	~~10.00~~	U		C	
7440-69-9	Beryllium	150	U		P	
7440-21-3	Silicon	24400			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9713523.1375 0000034

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019F4
699-50-53B
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135305

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	6.20	B	W	F	N
7440-39-3	Barium	71.70	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	39900.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	U	NW	F	N
7439-95-4	Magnesium	10900.00			P	
7439-96-5	Manganese	12.50	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	7840.00			P	
7782-49-2	Selenium	4.40	B	NS	F	N
~~7440-22-4~~	~~Silver~~	~~10.00~~	~~U~~	~~N~~	P	
7440-23-5	Sodium	12100.00			P	
7440-28-0	Thallium	2.00	U	N	F	N
7440-62-2	Vanadium	9.20	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	150	U		P	N
7440-21-3	Silicon	25000			P	N

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/16/92

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B019H7
699-49-55A

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135307

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	5.20	B	W	F	4
7440-39-3	Barium	32.00	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	53300.00			P	
7440-47-3	Chromium	12.50			P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	231.00			P	
7439-92-1	Lead	2.00	U	NW	F	3,5
7439-95-4	Magnesium	15400.00			P	
7439-96-5	Manganese	17.90			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	8920.00			P	
7782-49-2	Selenium	3.00	B	NW	F	4,5
~~7440-22-4~~	~~Silver~~	~~10.00~~	~~U~~	~~N~~	~~P~~	
7440-23-5	Sodium	36300.00			P	
7440-28-0	Thallium	2.00	U	N	F	4,5
7440-62-2	Vanadium	21.20	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide	10.20			C	4
7440-69-9	Bismuth	150	U		P	
7440-21-3	Silicon	18700			P	4

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

1/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019H8
699-49-55A
F. filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135308

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	2.00	U		F	
7440-39-3	Barium	30.90	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	52400.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	15200.00			P	
7439-96-5	Manganese	16.40			P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	9160.00			P	
7782-49-2	Selenium	3.30	B	NW	F	
7440-22-4	Silver	61.30		N	P	
7440-23-5	Sodium	35900.00			P	
7440-28-0	Thallium	2.00	U	NW	F	
7440-62-2	Vanadium	17.80	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-69-9	Bismuth	150	U		P	
7440-31-5	Tin	17500			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/16/92

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B019G1
699-49-55B

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135309

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	2.00	U		F	
7440-39-3	Barium	79.90	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	32000.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	1070.00			P	
7439-92-1	Lead	2.00	U	NW	F	
7439-95-4	Magnesium	10000.00			P	
7439-96-5	Manganese	9.60	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	6340.00			P	
7782-49-2	Selenium	2.00	U	N	F	
~~7440-22-4~~	Silver	10.00	U	N	P	
7440-23-5	Sodium	9970.00			P	
7440-28-0	Thallium	2.00	U	N	F	
7440-62-2	Vanadium	10.40	B		P	
7440-66-6	Zinc	23.90			P	
	Cyanide	10.00	U		C	
7440-69-9	Bismuth	150	U		P	
7440-21-3	Silicon	27700			P	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9713523.1379 000038

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO19G2
69-49-55B
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix (soil/water): WATER Lab Sample ID: 911135310

Level (low/med): LOW Date Received: 11/09/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	2.00	U		F	
7440-39-3	Barium	75.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	30500.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	10.00	U		P	
7439-89-6	Iron	82.70	B		P	
7439-92-1	Lead	2.00	U	NW	F	4.5
7439-95-4	Magnesium	9710.00			P	
7439-96-5	Manganese	4.00	B		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	5870.00			P	
7782-49-2	Selenium	2.00	U	N	F	4.5
7440-22-4	Silver	10.00	U	N	P	4.5
7440-23-5	Sodium	9760.00			P	
7440-28-0	Thallium	2.00	U	N	F	4.5
7440-62-2	Vanadium	11.70	B		P	
7440-66-6	Zinc	6.00	U		P	
	Cyanide				NR	
7440-43-9	Cadmium	5C	U		P	

7440-23-5 Sodium 26800 P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

Cd/6/9

9713523.1380

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/16/91

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

WESTON BATCH #: 9111L353

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B019J1	Alkalinity	62.0	MG/L	2.0
		Chloride by IC	42.3	MG/L	2.5
		Fluoride by IC	5.0 u	MG/L	5.0
	699-50-53A	Nitrite by IC	2.5	MG/L	2.5
		Nitrate by IC	716	MG/L	25.0
		Cyanide, Total	2710	UG/L	400
		Phosphate by IC	2.5	MG/L	2.5
		Sulfate by IC	512	MG/L	25.0
		~~Nitrate Nitrite~~	~~72.4~~	~~MG-N/L~~	~~10.0~~
		Total Organic Carbon	1.0 u	MG/L	1.0
		pH	7.7	PH UNITS	0.010
		Total Dissolved Solids	2310	MG/L	5.0
-004	B019F3	Alkalinity	110	MG/L	2.0
		Chloride by IC	9.4	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
	699-50-57B	Nitrite by IC	0.25	MG/L	0.25
		Nitrate by IC	8.6	MG/L	0.25
		~~Cyanide, Total~~	~~10.0 u~~	~~UG/L~~	~~10.0~~
		Phosphate by IC	0.25	MG/L	0.25
		Sulfate by IC	51.5	MG/L	2.5
		~~Nitrate Nitrite~~	~~0.89~~	~~MG-N/L~~	~~0.10~~
		Total Organic Carbon	1.9	MG/L	0.50
		pH	7.8	PH UNITS	0.010
		Total Dissolved Solids	238	MG/L	5.0
-007	B019H7	Alkalinity	106	MG/L	2.0
		Chloride by IC	12.6	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
	699-49-55A	Nitrite by IC	0.25	MG/L	0.25
		Nitrate by IC	37.4	MG/L	25.0
		Cyanide, Total	10.2	UG/L	10.0
		Phosphate by IC	0.25	MG/L	0.25
		Sulfate by IC	108	MG/L	2.5
		~~Nitrate Nitrite~~	~~0.78~~	~~MG-N/L~~	~~0.10~~
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	7.9	PH UNITS	0.010
		Total Dissolved Solids	364	MG/L	5.0
-009	B019G1	Alkalinity	114	MG/L	2.0
	699-49-55B				

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/16/91

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

WESTON BATCH #: 9111L353

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	
-009	B019G1	Chloride by IC	9.6	MG/L	0.25	
		Fluoride by IC	0.50 u	MG/L	0.50	
	699-49-55B	Nitrite by IC	0.25 u	MG/L	0.25	H
		Nitrate by IC	1970	MG/L	0.25	H
		~~Cyanide, Total~~	~~10.0 u~~	~~UG/L~~	~~10.0~~	R
		Phosphate by IC	0.25 u	MG/L	0.25	H
		Sulfate by IC	15.0	MG/L	0.25	
		~~Nitrate-Nitrite~~	~~0.20~~	~~MG-N/L~~	~~0.10~~	R
		Total Organic Carbon	0.50 u	MG/L	0.50	
		pH	7.9	PH UNITS	0.010	H
		Total Dissolved Solids	211	MG/L	5.0	H

12/17/91

9213523.1382

1A

VOLATILE ORGANICS ANALYSIS SHEET

0000020

CLIENT SAMPLE NO.

B01B34
4th Qtr Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L353-003

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

Lab File ID: W111329

Level: (low/med) LOW

Date Received: 11/09/91

% Moisture: not dec. _____

Date Analyzed: 11/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
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	~~B~~	LJ
67-64-1	Acetone	10 ~~8~~	~~JB~~	~~J~~ LJ @6/16/92
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	~~U~~	LJ
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	~~U~~	LJ
591-78-6	2-Hexanone	10	~~U~~	LJ
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

6/16/92

9213523.1383 0000629

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B01B33
4th Qtr Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L353-006

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

Lab File ID: W111330

Level: (low/med) LOW

Date Received: 11/09/91

% Moisture: not dec. _____

Date Analyzed: 11/14/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
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	55	B
67-64-1	Acetone	10 ~~2~~	~~JB~~
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	~~U~~
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	~~U~~
591-78-6	2-Hexanone	10	~~U~~
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

X 45 @ 6/16/92

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FORM 1 V-1 12/88 Rev.

6/16/92

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: G	DATE: 6/11/92
LABORATORY: Weston	CASE: 9111L353	SDG: 9111L353
SAMPLES/MATRIX: B019J1, B019J2, B019F3, B019F4, B019H7, B019H8, B019G1, B019G2 / waters		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓	—	—
Cover Page		✓	—	—
Traffic Reports		✓	—	—
Sample Data				
Inorganic Analysis Data Sheets		—	—	—
Standards Data				
Initial and Continuing Calibration Verification		✓	—	—
CRDL Standard for AA and ICP		✓	—	—
QC Summary				
Blanks		✓	—	—
ICP Interference Check Summary		✓	—	—
Spike Sample Recovery		✓	—	—
Post-Digestion Spike Sample Recovery		✓	✓	—
Duplicate		✓	—	—
Laboratory Control Sample		✓	—	—
Standard Addition Results		✓	—	—
ICP Serial Dilutions		✓	—	—
Instrument Detection Limits		✓	—	—
ICP Interelement Correction Factors		✓	—	—
ICP Linear Ranges		✓	—	—
Preparation Log		✓	—	—
Analysis Run Log		✓	—	—
Raw Data				
ICP Raw Data		✓	—	—
Furnace AA Raw Data		✓	—	—
Mercury Raw Data		✓	—	—
Cyanide Raw Data		✓	—	—
Additional Data				
Internal laboratory chain-of-custody		—	✓	—
Laboratory Sample Preparation Records		✓	—	—

Data Package Item	Present?:	Yes	No	N/A
Percent Solids Analysis Records		—	—	/
Reduction Formulae		—	—	/
Instrument Run Logs		X	—	~~/~~ 6/16/92
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? Does not affect data. (Yes) No N/A

ACTION: Qualify the sample data according to the following requirements:

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? (Yes) No N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required? (Yes) No N/A

Are MSA correlation coefficients ≥ 0.995? (Yes) No N/A

If no, was a second MSA analysis performed? Yes No (N/A)

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is $<40\%$ qualify detects as estimated (J). If the analytical spike recovery is $\geq 10\%$ 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

SD 6/16/92 6-16-92

Have results been reported and calculated correctly? ~~(in transcription of calculation error)~~ 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.

9713523.1390

Holding Time Summary Pg 1 of 9

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019J1							
SILVER, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	33
SILVER, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
SILVER, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
ALUMINUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
ALUMINUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
ALUMINUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
ARSENIC, TOTAL	001	W	91L3355	11/07/91	12/04/91	12/10/91	
ARSENIC, TOTAL	001 REP	W	91L3355	11/07/91	12/04/91	12/10/91	
ARSENIC, TOTAL	001 MS	W	91L3355	11/07/91	12/04/91	12/10/91	
BARIUM, TOTAL	001						
BARIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	33
BARIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
BARIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
BERYLLIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
BERYLLIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
BERYLLIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
BISMUTH, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/31/91	54
BISMUTH, TOTAL REP	001 REP	W	91L3356	11/07/91	12/04/91	12/31/91	
BISMUTH, TOTAL SPIKE	001 MS	W	91L3356	11/07/91	12/04/91	12/31/91	
CALCIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	33
CALCIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
CALCIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
CADMIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
CADMIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
CADMIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
COBALT, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
COBALT, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
COBALT, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
CHROMIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/17/91	40
CHROMIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/17/91	
CHROMIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/17/91	
COPPER, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	33
COPPER, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
COPPER, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
IRON, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
IRON, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
IRON, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
MERCURY, TOTAL	001	W	91C0345	11/07/91	12/04/91	12/04/91	27

Cyanide 11/7/91 91C0345 7 & 12

All target analytes analyzed within holding times

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
MERCURY, TOTAL	001 REP	W	91C0345	11/07/91	12/04/91	12/04/91	27
MERCURY, TOTAL	001 MS	W	91C0345	11/07/91	12/04/91	12/04/91	27
POTASSIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	33
POTASSIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
POTASSIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
MAGNESIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
MAGNESIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
MAGNESIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
MANGANESE, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
MANGANESE, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
MANGANESE, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
SODIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
SODIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
SODIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
NICKEL, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
NICKEL, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
NICKEL, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
LEAD, TOTAL	001	W	91L3355	11/07/91	12/04/91	12/12/91	35
LEAD, TOTAL	001 REP	W	91L3355	11/07/91	12/04/91	12/12/91	
LEAD, TOTAL	001 MS	W	91L3355	11/07/91	12/04/91	12/12/91	
ANTIMONY, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	33
ANTIMONY, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	33
ANTIMONY, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	33
SELENIUM, TOTAL	001	W	91L3355	11/07/91	12/04/91	12/18/91	41
SELENIUM, TOTAL	001 REP	W	91L3355	11/07/91	12/04/91	12/26/91	49
SELENIUM, TOTAL	001 MS	W	91L3355	11/07/91	12/04/91	12/26/91	49
SILICON, TOTAL	001	W	91L3356	11/07/91	12/04/91	01/03/92	57
SILICON, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	01/03/92	
SILICON, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	01/03/92	
THALLIUM, TOTAL	001	W	91L3355	11/07/91	12/04/91	12/11/91	34
THALLIUM, TOTAL	001 REP	W	91L3355	11/07/91	12/04/91	12/11/91	
THALLIUM, TOTAL	001 MS	W	91L3355	11/07/91	12/04/91	12/11/91	
VANADIUM, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	33
VANADIUM, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
VANADIUM, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
ZINC, TOTAL	001	W	91L3356	11/07/91	12/04/91	12/10/91	
ZINC, TOTAL	001 REP	W	91L3356	11/07/91	12/04/91	12/10/91	
ZINC, TOTAL	001 MS	W	91L3356	11/07/91	12/04/91	12/10/91	
B019J2							
SILVER, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33

1/16/92

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ALUMINUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
ARSENIC, SOLUBLE	002	W	91L3355	11/07/91	12/04/91	12/10/91	
BARIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
BERYLLIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
BISMUTH, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/31/91	54
CALCIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
CADMIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
COBALT, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
CHROMIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/17/91	40
COPPER, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
IRON, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
MERCURY, SOLUBLE	002	W	91C0345	11/07/91	12/04/91	12/04/91	27
MERCURY, SOLUBLE	002 REP	W	91C0345	11/07/91	12/04/91	12/04/91	
MERCURY, SOLUBLE	002 MS	W	91C0345	11/07/91	12/04/91	12/04/91	
POTASSIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
MAGNESIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
MANGANESE, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
SODIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
NICKEL, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	
LEAD, SOLUBLE	002	W	91L3355	11/07/91	12/04/91	12/12/91	35
ANTIMONY, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
SELENIUM, SOLUBLE	002	W	91L3355	11/07/91	12/04/91	12/12/91	35
SILICON, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	01/03/92	57
THALLIUM, SOLUBLE	002	W	91L3355	11/07/91	12/04/91	12/11/91	34
VANADIUM, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
ZINC, SOLUBLE	002	W	91L3356	11/07/91	12/04/91	12/10/91	33
B019F3							
SILVER, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	53
SILVER, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
SILVER, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
ALUMINUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
ALUMINUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
ALUMINUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
ARSENIC, TOTAL	004	W	91L3380	11/07/91	12/06/91	12/10/91	33
ARSENIC, TOTAL	004 REP	W	91L3380	11/07/91	12/06/91	12/10/91	33
ARSENIC, TOTAL	004 MS	W	91L3380	11/07/91	12/06/91	12/10/91	33
BARIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	53
BARIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	53

6/16/92

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
BARIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	53
BERYLLIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
BERYLLIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
BERYLLIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, TOTAL REP	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, TOTAL SPIKE	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
CADMIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
CADMIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
CADMIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
COBALT, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
COBALT, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
COBALT, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
MERCURY, TOTAL	004	W	91C342	11/07/91	11/28/91	11/28/91	21
MERCURY, TOTAL	004 REP	W	91C342	11/07/91	11/28/91	11/28/91	
MERCURY, TOTAL	004 MS	W	91C342	11/07/91	11/28/91	11/28/91	
POTASSIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	53
POTASSIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
POTASSIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
MAGNESIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
MAGNESIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
MAGNESIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	

Holding Time Summary pg 5 of 9

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
NICKEL, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	53
NICKEL, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
NICKEL, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
LEAD, TOTAL	004	W	91L3380	11/07/91	12/06/91	12/10/91	33
LEAD, TOTAL	004 REP	W	91L3380	11/07/91	12/06/91	12/10/91	
LEAD, TOTAL	004 MS	W	91L3380	11/07/91	12/06/91	12/10/91	
ANTIMONY, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	53
ANTIMONY, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
ANTIMONY, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
SELENIUM, TOTAL	004	W	91L3380	11/07/91	12/06/91	12/09/91	32
SELENIUM, TOTAL	004 REP	W	91L3380	11/07/91	12/06/91	12/09/91	
SELENIUM, TOTAL	004 MS	W	91L3380	11/07/91	12/06/91	12/09/91	
SILICON, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	53
SILICON, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
SILICON, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
THALLIUM, TOTAL	004	W	91L3380	11/07/91	12/06/91	12/09/91	32
THALLIUM, TOTAL	004 REP	W	91L3380	11/07/91	12/06/91	12/09/91	
THALLIUM, TOTAL	004 MS	W	91L3380	11/07/91	12/06/91	12/09/91	
VANADIUM, TOTAL	004	W	91L3381	11/07/91	12/06/91	12/30/91	53
VANADIUM, TOTAL	004 REP	W	91L3381	11/07/91	12/06/91	12/30/91	
VANADIUM, TOTAL	004 MS	W	91L3381	11/07/91	12/06/91	12/30/91	
ZINC, TOTAL	004	W	92L0142	11/07/91	01/14/92	01/14/92	48
ZINC, TOTAL	004 REP	W	92L0142	11/07/91	01/14/92	01/14/92	
ZINC, TOTAL	004 MS	W	92L0142	11/07/91	01/14/92	01/14/92	
B019F4							
SILVER, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	53
ALUMINUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	53
ARSENIC, SOLUBLE	005	W	91L3380	11/07/91	12/06/91	12/10/91	53
BARIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
BERYLLIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
CADMIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
COBALT, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
MERCURY, SOLUBLE	005	W	91C342	11/07/91	11/28/91	11/28/91	21

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Hard Time Summary pg 6 of 9

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
MERCURY, SOLUBLE	005 REP	W	91C342	11/07/91	11/28/91	11/28/91	21
MERCURY, SOLUBLE	005 MS	W	91C342	11/07/91	11/28/91	11/28/91	21
POTASSIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	53
MAGNESIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
NICKEL, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	
LEAD, SOLUBLE	005	W	91L3380	11/07/91	12/06/91	12/10/91	33
ANTIMONY, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	53
SELENIUM, SOLUBLE	005	W	91L3380	11/07/91	12/06/91	12/09/91	32
SILICON, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	53
THALLIUM, SOLUBLE	005	W	91L3380	11/07/91	12/06/91	12/09/91	32
VANADIUM, SOLUBLE	005	W	91L3381	11/07/91	12/06/91	12/30/91	53
ZINC, SOLUBLE	005	W	92L0142	11/07/91	01/14/92	01/14/92	68
B019H7							
SILVER, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	53
ALUMINUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
ARSENIC, TOTAL	007	W	91L3380	11/07/91	12/06/91	12/10/91	33
BARIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	53
BERYLLIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
CADMIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
COBALT, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
MERCURY, TOTAL	007	W	91C342	11/07/91	11/28/91	11/28/91	21
POTASSIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	53
MAGNESIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
NICKEL, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	
LEAD, TOTAL	007	W	91L3380	11/07/91	12/06/91	12/10/91	33
ANTIMONY, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	53
SELENIUM, TOTAL	007	W	91L3380	11/07/91	12/06/91	12/09/91	32
SILICON, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	53
THALLIUM, TOTAL	007	W	91L3380	11/07/91	12/06/91	12/09/91	32

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
VANADIUM, TOTAL	007	W	91L3381	11/07/91	12/06/91	12/30/91	53
ZINC, TOTAL	007	W	92L0142	11/07/91	01/14/92	01/14/92	68
B019H8							
SILVER, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	53
ALUMINUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
ARSENIC, SOLUBLE	008	W	91L3380	11/07/91	12/06/91	12/10/91	33
BARIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	53
BERYLLIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
CADMIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
COBALT, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
MERCURY, SOLUBLE	008	W	91C342	11/07/91	11/28/91	11/28/91	21
POTASSIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	53
MAGNESIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
NICKEL, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	
LEAD, SOLUBLE	008	W	91L3380	11/07/91	12/06/91	12/10/91	33
ANTIMONY, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	53
SELENIUM, SOLUBLE	008	W	91L3380	11/07/91	12/06/91	12/09/91	32
SILICON, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	53
THALLIUM, SOLUBLE	008	W	91L3380	11/07/91	12/06/91	12/09/91	32
VANADIUM, SOLUBLE	008	W	91L3381	11/07/91	12/06/91	12/30/91	53
ZINC, SOLUBLE	008	W	92L0142	11/07/91	01/14/92	01/14/92	68
B019G1							
SILVER, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	53
ALUMINUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
ARSENIC, TOTAL	009	W	91L3380	11/07/91	12/06/91	12/10/91	33
BARIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	53
BERYLLIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	

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Hdl: 9213523.1397 Fine Summary pg 8 & 9

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
CADMIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	53
COBALT, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
MERCURY, TOTAL	009	W	91C342	11/07/91	11/28/91	11/28/91	21
POTASSIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	53
MAGNESIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
NICKEL, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	
LEAD, TOTAL	009	W	91L3380	11/07/91	12/06/91	12/10/91	33
ANTIMONY, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	53
SELENIUM, TOTAL	009	W	91L3380	11/07/91	12/06/91	12/09/91	32
SILICON, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	53
THALLIUM, TOTAL	009	W	91L3380	11/07/91	12/06/91	12/09/91	32
VANADIUM, TOTAL	009	W	91L3381	11/07/91	12/06/91	12/30/91	53
ZINC, TOTAL	009	W	92L0142	11/07/91	01/14/92	01/14/92	68
BO19G2							
SILVER, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	53
ALUMINUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
ARSENIC, SOLUBLE	010	W	91L3380	11/07/91	12/06/91	12/10/91	33
BARIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	53
BERYLLIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
BISMUTH, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
CALCIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
CADMIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
COBALT, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
CHROMIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
COPPER, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
IRON, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
MERCURY, SOLUBLE	010	W	91C342	11/07/91	11/28/91	11/28/91	21
POTASSIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	53
MAGNESIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
MANGANESE, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
SODIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
NICKEL, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	
LEAD, SOLUBLE	010	W	91L3380	11/07/91	12/06/91	12/10/91	33

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ANTIMONY, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	53
SELENIUM, SOLUBLE	010	W	91L3380	11/07/91	12/06/91	12/09/91	32
SILICON, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	53
THALLIUM, SOLUBLE	010	W	91L3380	11/07/91	12/06/91	12/09/91	32
VANADIUM, SOLUBLE	010	W	91L3381	11/07/91	12/06/91	12/30/91	53
ZINC, SOLUBLE	010	W	92L0142	11/07/91	01/14/92	01/14/92	64

LAB QC:

SILVER LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
ALUMINUM LABORTORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
BARIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
BERYLLIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
BISMUTH, LCS	LC1 BS	W	91L3356	N/A	12/04/91	12/31/91
CALCIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
CADMIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
COBALT LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
CHROMIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/17/91
COPPER LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
IRON LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
POTASSIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
MAGNESIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
MANGANESE LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
SODIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
NICKEL LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
ANTIMONY LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
SILICON LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	01/03/92
VANADIUM LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
ZINC LABORATORY	LC1 BS	W	91L3356	N/A	12/04/91	12/10/91
SILVER LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
ALUMINUM LABORTORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
BARIUM LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
BERYLLIUM LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
BISMUTH, LCS	LC2 BS	W	91L3356	N/A	12/04/91	12/31/91
CALCIUM LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
CADMIUM LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
COBALT LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
CHROMIUM LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/17/91
COPPER LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91
IRON LABORATORY	LC2 BS	W	91L3356	N/A	12/04/91	12/10/91

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9713523.1399

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U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Preparation Blank Matrix (soil/water): WATER

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

Analysis Date: 12/11-12 6/16/92

Assoc w/ B019T1 & B019T2

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	91.0	U	91.0	U	91.0	U	91.0	U	91.000	U	P
Antimony	~~24.3~~	B	20.0	U	20.0	U	20.0	U	20.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	16.0	U	16.0	U	16.0	U	16.0	U	70.400	B	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	-3.400	B	P
Calcium	63.0	U	63.0	U	63.0	U	63.0	U	167.900	B	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Iron	46.0	U	46.0	U	46.0	U	46.0	U	46.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	87.0	U	87.0	U	87.0	U	87.0	U	87.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.100	U	CV
Nickel	11.0	U	11.0	U	11.0	U	11.0	U	11.000	U	P
Potassium	862.0	U	862.0	U	862.0	U	862.0	U	862.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Sodium	110.0	U	110.0	U	110.0	U	110.0	U	1848.500	B	P
Thallium	2.0	U	2.0	U	2.0	U			2.000	U	F
Vanadium	8.0	U	8.0	U	8.0	U	8.0	U	8.000	U	P
Zinc	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	C

FORM III - IN 03/90

Sample Qual

Sb 24.3 x 5 = 121.5
Ba 70.4 x 5 = 352
Cd 3.4 x 5 = 17
Ca 167.9 x 5 = 839.5

Na = 1848.5 x 5 = 9242.5
Tl = 2.8 x 5 = 14.

6/16/11/92

Blank Sum 8713523.1400 00000057 pg 2 of 2

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Preparation Blank Matrix (soil/water): WATER

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

Date Analyzed 12/30/91 @ 6/16/92

Assoc w/ B019F3/B019F4/B019H7/B019H8/B019G1/B019G2

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prep. Blank	C	M
Aluminum	91.0	U	91.0	U	91.0	U	91.0	U	91.000	U	P
Antimony	24.3	B	20.0	U	20.0	U	20.0	U	20.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	16.0	U	16.0	U	16.0	U	16.0	U	16.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P
Calcium	63.0	U	63.0	U	63.0	U	63.0	U	63.000	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Iron	46.0	U	46.0	U	46.0	U	46.0	U	50.500	B	P
Lead			2.0	U					2.000	U	F
Magnesium	87.0	U	87.0	U	87.0	U	87.0	U	87.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury			.1	U	.1	U	.1	U	.100	U	CV
Nickel	11.0	U	11.0	U	11.0	U	11.0	U	11.000	U	P
Potassium	862.0	U	862.0	U	862.0	U	862.0	U	862.000	U	P
Selenium			2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Sodium	110.0	U	110.0	U	110.0	U	110.0	U	110.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	-2.800	B	F
Vanadium	8.0	U	8.0	U	8.0	U	8.0	U	8.000	U	P
Zinc									6.000	U	P
Cyanide			10.0	U	10.0	U	10.0	U	10.000	U	C

FORM III - IN 03/90

6/16/92

6/16/92

Accuracy 9713523.1401 0000068 pg 1 of 6

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B019J1S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1812.2000		127.1000	B	2000.00	84.3		P
Antimony	75-125	480.1001		23.0000	B	500.00	91.4		P
Arsenic	75-125	36.7000		2.8000	B	40.00	84.7		F
Barium	75-125	1968.7000		162.0000	B	2000.00	90.3		P
Beryllium	75-125	42.0000		1.0000	U	50.00	84.0		P
Cadmium	75-125	41.1000		3.0000	U	50.00	82.2		P
Calcium									NR
Chromium	75-125	287 ~~291.8000~~		110 ~~90.4000~~		200.00	88.5 ~~100.7~~		P
Cobalt	75-125	433.6001		3.1000	B	500.00	86.1		P
Copper	75-125	222.6000		10.0000	U	250.00	89.0		P
Iron	75-125	2362.5000		1367.4000		1000.00	99.5		P
Lead	75-125	23.6000		2.0000	U	20.00	118.0		F
Magnesium									NR
Manganese	75-125	455.8999		21.2000		500.00	86.9		P
Mercury	75-125	1.0110		.1000	U	1.00	101.1		CV
Nickel	75-125	461.8000		33.2000	B	500.00	85.7		P
Potassium									NR
Selenium	75-125	43.5000		38.0000		10.00	55.0	N	F
Silver	75-125	10.0000	U	10.0000	U	50.00	0.0		P
Sodium									NR
Thallium	75-125	35.5000		2.0000	U	50.00	71.0	N	F
Vanadium	75-125	453.8000		16.0000	B	500.00	87.6		P
Zinc	75-125	448.3000		11.5000	B	500.00	87.4		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN Data Qual: 03/90

Selenium + Thallium results qual. as J or UJ

Silver results qual. as R

Ej 6/12/92

Accuracy Summary 87135231402 0000070 pg. 2 of 6

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B019F3S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1909.5000		91.0000	U	2000.00	95.5		P
Antimony	75-125	498.8999		20.0000	U	500.00	99.8		P
Arsenic	75-125	32.8000		2.0000	U	40.00	82.0		F
Barium	75-125	2015.2000		75.3000	B	2000.00	97.0		P
Beryllium	75-125	48.4000		1.0000	U	50.00	96.8		P
Cadmium	75-125	45.1000		3.0000	U	50.00	90.2		P
Calcium									NR
Chromium	75-125	245.5000		31.1000		200.00	107.2		P
Cobalt	75-125	475.2000		3.8000	B	500.00	94.3		P
Copper	75-125	254.9000		29.6000		250.00	90.1		P
Iron	75-125	1249.3000		190.3000		1000.00	105.9		P
Lead	75-125	14.4000		2.0000	U	20.00	72.0	N	F
Magnesium									NR
Manganese	75-125	489.5000		18.1000		500.00	94.3		P
Mercury	75-125	.9550		.1000	U	1.00	95.5		CV
Nickel	75-125	504.3999		19.0000	B	500.00	97.1		P
Potassium									NR
Selenium	75-125	11.2000		2.7000		10.00	85.0	N	F
Silver	75-125	45.4000		10.0000	U	50.00	90.8		P
Sodium									NR
Thallium	75-125	46.8000		2.0000	U	50.00	93.6		F
Vanadium	75-125	485.1001		11.0000	B	500.00	94.8		P
Zinc	75-125	~~544.5~~ ~~492.3999~~	~~J~~	~~77.51~~ 60.6000		~~71.54~~ J 500.00	86.4		P
Cyanide	75-125	13.3030		10.0000	U	50.00	26.6		C

Comments:

FORM V (Part 1) - IN 03/90

Cu data ~~rejected~~ qualified <IDL as R >IDL J

Pb qual. as J or UJ

Cyanide

6/16/94

Accuracy Summary 9213523.1403 0000018 Pg 3 of 6

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 01/15/92

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

WESTON BATCH #: 9111L353

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-004	B019F3	Silver, Total	45.4	10.0 u	50.0	90.8
		Aluminum, Total	1910	200 u	2000	95.5
		Arsenic, Total	32.8	10.0 u	40.0	82.0
		Barium, Total	2020	200 u	2000	101
		Beryllium, Total	48.4	5.0 u	50.0	96.8
		Bismuth, Total	5180	150 u	5000	104
		Calcium, Total	65300	41100	25000	96.8
		Cadmium, Total	45.1	5.0 u	50.0	90.2
		Cobalt, Total	475	50.0 u	500	95.0
		Chromium, Total	246	31.1	200	107
		Copper, Total	255	29.6	250	90.1
		Iron, Total	1250	190	1000	106
		Mercury, Total	0.96	0.20u	1.0	95.5
		Potassium, Total	32300	8360	25000	95.6
		Magnesium, Total	35700	11200	25000	98.0
		Manganese, Total	490	18.1	500	94.3
		Sodium, Total	37100	12300	25000	99.1
		Nickel, Total	504	40.0 u	500	101
		Lead, Total	14.4	3.0 u	20.0	72.0
		Antimony, Total	499	60.0 u	500	99.8
		Selenium, Total	11.2	5.0 u	10.0	112
		Silicon, Total	26300	24400	1000	184
		Thallium, Total	46.8	10.0 u	50.0	93.6
		Vanadium, Total	485	50.0 u	500	97.0
		Zinc, Total	492	60.6	500	86.4

6/16/92

Accuracy Summary 9213523.1404 0000016 Pg 4 of 6

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 01/15/92

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

WESTON BATCH #: 9111L353

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	B019J1	Silver, Total	-2.4	10.0 u	50.0	-4.8
		Aluminum, Total	1810	200 u	2000	90.6
		Arsenic, Total	36.7	10.0 u	40.0	91.8
		Barium, Total	1970	200 u	2000	98.4
		Beryllium, Total	42.0	5.0 u	50.0	84.0
		Bismuth, Total	5010	150 u	5000	100
		Calcium, Total	287000	269000	25000	74.8 *
		Cadmium, Total	41.1	5.0 u	50.0	82.2
		Cobalt, Total	434	50.0 u	500	86.7
		Chromium, Total	292	90.4	200	101
		Copper, Total	223	25.0 u	250	89.0
		Iron, Total	2360	1370	1000	99.5
		Mercury, Total	1.0	0.20u	1.0	101
		Potassium, Total	39200	16300	25000	91.6
		Magnesium, Total	95500	74000	25000	86.0
		Manganese, Total	456	21.2	500	86.9
		Sodium, Total	87500	66600	25000	83.4
		Nickel, Total	462	40.0 u	500	92.4
		Lead, Total	23.6	3.0 u	20.0	118
		Antimony, Total	480	60.0 u	500	96.0
		Selenium, Total	43.5	0.00	10.0	435
		Silicon, Total	19300	19100	1000	21.0 *
		Thallium, Total	35.5	10.0 u	50.0	71.0
		Vanadium, Total	454	50.0 u	500	90.8
		Zinc, Total	448	20.0 u	500	89.7

6/16/95

Accuracy Summary 9213523.1405 0000077 Pg 5 of 6

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	5000.0	5200.50	104.0						
Antimony	3000.0	2950.70	98.4						
Arsenic	30.0	30.80	102.7						
Barium	5000.0	5104.70	102.1						
Beryllium	250.0	242.40	97.0						
Cadmium	250.0	249.10	99.6						
Calcium	25000.0	24860.90	99.4						
Chromium	500.0	515.70	103.1						
Cobalt	2500.0	2466.80	98.7						
Copper	1250.0	1243.70	99.5						
Iron	5000.0	4891.50	97.8						
Lead	30.0	31.80	106.0						
Magnesium	25000.0	24653.30	98.6						
Manganese	750.0	729.60	97.3						
Mercury	5.0	5.20	103.9						
Nickel	2000.0	1967.30	98.4						
Potassium	25000.0	24771.70	99.1						
Selenium	30.0	33.00	110.0						
Silver	500.0	435.30	87.1						
Sodium	25000.0	26634.10	106.5						
Thallium	30.0	31.10	103.7						
Vanadium	2500.0	2448.30	97.9						
Zinc	1000.0	981.40	98.1						
Cyanide	100.0	76.22	76.2						

FORM VII - IN

03/90

Cu outside limits. data qual J or UJ if not rejected.

5/6/92

Accuracy Summary

U.S. EPA - CLP

7

LABORATORY CONTROL SAMPLE

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP353

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	5000.0	5099.90	102.0						
Antimony	3000.0	2912.60	97.1						
Arsenic	30.0	31.10	103.7						
Barium	5000.0	4991.30	99.8						
Beryllium	250.0	239.10	95.6						
Cadmium	250.0	239.50	95.8						
Calcium	25000.0	24508.80	98.0						
Chromium	500.0	~~515.20~~ 967.3	~~103.0~~	102					
Cobalt	2500.0	2432.90	97.3						
Copper	1250.0	1219.80	97.6						
Iron	5000.0	4857.60	97.2						
Lead	30.0	32.40	108.0						
Magnesium	25000.0	24238.60	97.0						
Manganese	750.0	719.90	96.0						
Mercury	5.0	4.90	97.9						
Nickel	2000.0	1942.70	97.1						
Potassium	25000.0	23731.80	94.9						
Selenium	30.0	31.90	106.3						
Silver	500.0	434.30	86.9						
Sodium	25000.0	26045.80	104.2						
Thallium	30.0	31.60	105.3						
Vanadium	2500.0	2404.10	96.2						
Zinc	1000.0	969.60	97.0						
Cyanide	100.0	75.20	75.2						

FORM VII - IN

03/90

Cu outside limits, data qual >IDL as J
< IDL as UJ

CG 6/11/92

ACCURACY DATA SUMMARY - FORM B-4

9111553

SDG: 3553	REVIEWER:	DATE: 6/2/92	PAGE 1 OF 1	
COMMENTS: All Aqueous				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B0191F4	Arsenic	76.1	See sample IDs column	J
B0191H7	↓	78.8	|	J
B0191F3	Gross Alpha Lead	66.6	|	UJ
B0191F4	Lead	60.0	|	UJ
B0191H7	|	66.4	|	UJ
B0191H8	|	74.4	|	UJ
B0191G1	|	73.0	|	UJ
B0191G2	|	69.6	|	UJ
B0191I1	↓	59.5	|	UJ
B0191F3	Selenium	49.7	|	none - Analyzed by MSA
B0191F4	|	60.9	|	none - Analyzed by MSA
B0191H7	|	64.4	|	J
B0191H8	↓	74.3	|	J
B0191I1	Selenium	60.6	|	none Analyzed by MSA
B0191H8	Thallium	83.9	|	UJ
B0191I1	|	48.0	|	UJ
B0191I2	↓	53.5	↓	UJ

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: G	DATE: 10/12/92
LABORATORY: Wmnw	CASE: 9111L353	SDG: 9111L353
SAMPLES/MATRIX: B019J1, B019F3, B019H7, B019G1		

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		✓	✓ 6/16/93	
Instrument Run Logs		✓	✓	
Internal Laboratory Chain-of-Custory		✓	✓	✓ 6/17/93
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

(E 6/17/92

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? Cu only Yes No N/A @6/17/92

Are there calculation errors? Cu data not used Yes No N/A @6/17/92

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.

9713523.1412

Holding Time Summary

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019J1							
ALKALINITY	001	W	91LAL058	11/07/91	11/20/91	11/20/91	13
ALKALINITY	001 REP	W	91LAL058	11/07/91	11/20/91	11/20/91	
CHLORIDE BY IC	001	W	91LIC169	11/07/91	11/13/91	11/13/91	6
FLUORIDE BY IC	001	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRITE BY IC	001	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRATE BY IC	001	W	91LIC169	11/07/91	11/13/91	11/13/91	
TOTAL CYANIDE	001	W	91LC349	11/07/91	11/19/91	11/19/91	12
PHOSPHATE BY IC	001	W	91LIC169	11/07/91	11/13/91	11/13/91	6
SULFATE BY IC	001	W	91LIC169	11/07/91	11/13/91	11/13/91	6
NITRATE NITRITE	001	W	91LNB258	11/07/91	12/02/91	12/02/91	25
NITRATE NITRITE	001 REP	W	91LNB258	11/07/91	12/02/91	12/02/91	
NITRATE NITRITE	001 MS	W	91LNB258	11/07/91	12/02/91	12/02/91	
NITRATE NITRITE	001 MSD	W	91LNB258	11/07/91	12/02/91	12/02/91	
TOTAL ORGANIC CARBON	001	W	91LTC155	11/07/91	11/29/91	11/29/91	22
PH	001	W	91LPH191	11/07/91	11/11/91	11/11/91	4
SUB-OUT TEST FOR SUB	001	W		11/07/91			
TOTAL DISSOLVED SOLI	001	W	91LSS161	11/07/91	11/14/91	11/15/91	8
TOTAL DISSOLVED SOLI	001 REP	W	91LSS161	11/07/91	11/14/91	11/15/91	8
B019F3							
ALKALINITY	004	W	91LAL057	11/07/91	11/13/91	11/13/91	6
CHLORIDE BY IC	004	W	91LIC169	11/07/91	11/13/91	11/13/91	
CHLORIDE BY IC	004 REP	W	91LIC169	11/07/91	11/13/91	11/13/91	
CHLORIDE BY IC	004 MS	W	91LIC169	11/07/91	11/13/91	11/13/91	
CHLORIDE BY IC	004 MSD	W	91LIC169	11/07/91	11/13/91	11/13/91	
FLUORIDE BY IC	004	W	91LIC169	11/07/91	11/13/91	11/13/91	
FLUORIDE BY IC	004 REP	W	91LIC169	11/07/91	11/13/91	11/13/91	
FLUORIDE BY IC	004 MS	W	91LIC169	11/07/91	11/13/91	11/13/91	
FLUORIDE BY IC	004 MSD	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRITE BY IC	004	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRITE BY IC	004 REP	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRITE BY IC	004 MS	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRITE BY IC	004 MSD	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRATE BY IC	004	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRATE BY IC	004 REP	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRATE BY IC	004 MS	W	91LIC169	11/07/91	11/13/91	11/13/91	

pH for all samples analyzed out of holding time, qual. with a J

9713523.1413

Holding Time Summary Pg 2 of 3

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
NITRATE BY IC	004 MSD	W	91LIC169	11/07/91	11/13/91	11/13/91	6
TOTAL CYANIDE	004	W	91LC341	11/07/91	11/14/91	11/14/91	7
TOTAL CYANIDE	004 REP	W	91LC341	11/07/91	11/14/91	11/14/91	
TOTAL CYANIDE	004 MS	W	91LC341	11/07/91	11/14/91	11/14/91	
PHOSPHATE BY IC	004	W	91LIC169	11/07/91	11/13/91	11/13/91	6
PHOSPHATE BY IC	004 REP	W	91LIC169	11/07/91	11/13/91	11/13/91	
PHOSPHATE BY IC	004 MS	W	91LIC169	11/07/91	11/13/91	11/13/91	
PHOSPHATE BY IC	004 MSD	W	91LIC169	11/07/91	11/13/91	11/13/91	
SULFATE BY IC	004	W	91LIC169	11/07/91	11/13/91	11/13/91	
SULFATE BY IC	004 REP	W	91LIC169	11/07/91	11/13/91	11/13/91	
SULFATE BY IC	004 MS	W	91LIC169	11/07/91	11/13/91	11/13/91	
SULFATE BY IC	004 MSD	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRATE NITRITE	004	W	91LNB258	11/07/91	12/02/91	12/02/91	25
TOTAL ORGANIC CARBON	004	W	91LTC155	11/07/91	11/29/91	11/29/91	22
TOTAL ORGANIC CARBON	004 REP	W	91LTC155	11/07/91	11/29/91	11/29/91	
TOTAL ORGANIC CARBON	004 MS	W	91LTC155	11/07/91	11/29/91	11/29/91	
TOTAL ORGANIC CARBON	004 MSD	W	91LTC155	11/07/91	11/29/91	11/29/91	
PH	004	W	91LPH191	11/07/91	11/11/91	11/11/91	4
PH	004 REP	W	91LPH191	11/07/91	11/11/91	11/11/91	4
SUB-OUT TEST FOR SUB	004	W		11/07/91			
TOTAL DISSOLVED SOLI	004	W	91LSS161	11/07/91	11/14/91	11/15/91	8
B019H7							
ALKALINITY	007	W	91LAL057	11/07/91	11/13/91	11/13/91	6
CHLORIDE BY IC	007	W	91LIC169	11/07/91	11/13/91	11/13/91	
FLUORIDE BY IC	007	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRITE BY IC	007	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRATE BY IC	007	W	91LIC169	11/07/91	11/13/91	11/13/91	
TOTAL CYANIDE	007	W	91LC341	11/07/91	11/14/91	11/14/91	7
PHOSPHATE BY IC	007	W	91LIC169	11/07/91	11/13/91	11/13/91	6
SULFATE BY IC	007	W	91LIC169	11/07/91	11/13/91	11/13/91	6
NITRATE NITRITE	007	W	91LNB258	11/07/91	12/02/91	12/02/91	25
TOTAL ORGANIC CARBON	007	W	91LTC155	11/07/91	11/29/91	11/29/91	22
PH	007	W	91LPH191	11/07/91	11/11/91	11/11/91	4
SUB-OUT TEST FOR SUB	007	W		11/07/91			
TOTAL DISSOLVED SOLI	007	W	91LSS161	11/07/91	11/14/91	11/15/91	8
B019G1							
ALKALINITY	009	W	91LAL057	11/07/91	11/13/91	11/13/91	6

9713523.1414

Holding Time Summary

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ALKALINITY	009 REP	W	91LAL057	11/07/91	11/13/91	11/13/91	6
CHLORIDE BY IC	009	W	91LIC169	11/07/91	11/13/91	11/13/91	
FLUORIDE BY IC	009	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRITE BY IC	009	W	91LIC169	11/07/91	11/13/91	11/13/91	
NITRATE BY IC	009	W	91LIC169	11/07/91	11/13/91	11/13/91	
TOTAL CYANIDE	009	W	91LC341	11/07/91	11/14/91	11/14/91	7
PHOSPHATE BY IC	009	W	91LIC169	11/07/91	11/13/91	11/13/91	6
SULFATE BY IC	009	W	91LIC169	11/07/91	11/13/91	11/13/91	6
NITRATE NITRITE	009	W	91LNB258	11/07/91	12/02/91	12/02/91	25
TOTAL ORGANIC CARBON	009	W	91LTC155	11/07/91	11/29/91	11/29/91	22
PH	009	W	91LPH191	11/07/91	11/11/91	11/11/91	4
SUB-OUT TEST FOR SUB	009	W		11/07/91			
TOTAL DISSOLVED SOLI	009	W	91LSS161	11/07/91	11/14/91	11/15/91	8
TOTAL DISSOLVED SOLI	009 REP	W	91LSS161	11/07/91	11/14/91	11/15/91	8

LAB QC:

ALKALINITY	MB1	W	91LAL058	N/A	11/20/91	11/20/91
ALKALINITY	MB1 BS	W	91LAL058	N/A	11/20/91	11/20/91
ALKALINITY	MB1 BSD	W	91LAL058	N/A	11/20/91	11/20/91
BICARBONATE	MB1	W	91LAL058	N/A	11/20/91	11/20/91
BICARBONATE	MB1 BS	W	91LAL058	N/A	11/20/91	11/20/91
BICARBONATE	MB1 BSD	W	91LAL058	N/A	11/20/91	11/20/91
ALKALINITY	MB2	W	91LAL058	N/A	11/20/91	11/20/91
ALKALINITY	MB2 BS	W	91LAL058	N/A	11/20/91	11/20/91
BICARBONATE	MB2	W	91LAL058	N/A	11/20/91	11/20/91
BICARBONATE	MB2 BS	W	91LAL058	N/A	11/20/91	11/20/91
BROMIDE BY IC	MB1	W	91LIC169	N/A	11/13/91	11/13/91
BROMIDE BY IC	MB1 BS	W	91LIC169	N/A	11/13/91	11/13/91
CHLORIDE BY IC	MB1	W	91LIC169	N/A	11/13/91	11/13/91
CHLORIDE BY IC	MB1 BS	W	91LIC169	N/A	11/13/91	11/13/91
FLUORIDE BY IC	MB1	W	91LIC169	N/A	11/13/91	11/13/91
FLUORIDE BY IC	MB1 BS	W	91LIC169	N/A	11/13/91	11/13/91
NITRITE BY IC	MB1	W	91LIC169	N/A	11/13/91	11/13/91
NITRITE BY IC	MB1 BS	W	91LIC169	N/A	11/13/91	11/13/91
NITRATE BY IC	MB1	W	91LIC169	N/A	11/13/91	11/13/91
NITRATE BY IC	MB1 BS	W	91LIC169	N/A	11/13/91	11/13/91
PHOSPHATE BY IC	MB1	W	91LIC169	N/A	11/13/91	11/13/91
PHOSPHATE BY IC	MB1 BS	W	91LIC169	N/A	11/13/91	11/13/91
SULFATE BY IC	MB1	W	91LIC169	N/A	11/13/91	11/13/91

9713523.1415

Accuracy Summary

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 12/16/91

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

WESTON BATCH #: 9111L353

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	B019J1	Nitrate Nitrite	162	72.4	100	89.8
		Nitrate Nitrite MSD	161	72.4	100	89.0
-004	B019F3	Chloride by IC	20.5	9.4	10.0	111
		Chloride by IC MSD	20.5	9.4	10.0	111
		Fluoride by IC	19.2	0.50u	20.0	95.8
		Fluoride by IC MSD	20.2	0.50u	20.0	101
		Nitrite by IC	10.1 J	0.25u J	10.0	101
		Nitrite by IC MSD	10.2 J	0.25u J	10.0	102
		Nitrate by IC	19.7 J	8.8 J	10.0	111
		Nitrate by IC MSD	19.6 J	8.6 J	10.0	110
	-	Cyanide, Total	13.3	10.0 u	50.0	26.6
		Phosphate by IC	9.7 J	0.25u J	10.0	97.4
		Phosphate by IC MSD	9.7 J	0.25u J	10.0	97.4
		Sulfate by IC	60.5	51.5	10.0	89.5
		Sulfate by IC MSD	60.9	51.5	10.0	93.6
		Total Organic Carbon	6.6	1.9	5.0	94.6
		Total Organic Carbon	6.4	1.8	5.0	90.7
BLANK10	91LAL058-MB1	Alkalinity	102	0.50u	100	102
		Alkalinity MSD	100	0.50u	100	100
BLANK20	91LAL058-MB2	Alkalinity	104	0.50u	100	104
BLANK10	91LIC169-MB1	Chloride by IC	10.0	0.25u	10.0	100
		Fluoride by IC	19.9	0.50u	20.0	99.5
		Nitrite by IC	10.2	0.25u	10.0	102
		Nitrate by IC	10.1	0.25u	10.0	101
		Phosphate by IC	10.2	0.25u	10.0	102
		Sulfate by IC	10.0	0.25u	10.0	100
BLANK10	91LNB258-MB1	Nitrate Nitrite	0.41	0.10u	0.40	103
		Nitrate Nitrite MSD	0.42	0.10u	0.40	105
BLANK20	91LNB258-MB2	Nitrate Nitrite	0.37	0.10u	0.40	93.5
BLANK10	91LTC155-MB1	Total Organic Carbon	4.8	0.50u	5.0	95.6
		Total Organic Carbon	5.0	0.50u	5.0	99.4
BLANK20	91LTC155-MB2	Total Organic Carbon	4.9	0.50u	5.0	97.5
BLANK30	91LTC155-MB3	Total Organic Carbon	4.9	0.50u	5.0	97.5

cj 6/12/92

9713523.1416

Accuracy Summary

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/16/91

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	91LC349-LC1	Cyanide, Total LCS	90.3	100	UG/L	90.3
LCS2	91LC349-LC2	Cyanide, Total LCS	87.7	100	UG/L	87.7
LCS1	91LC341-LC1	Cyanide, Total LCS	75.2	100	UG/L	75.2
LCS2	91LC341-LC2	Cyanide, Total LCS	76.2	100	UG/L	76.2

9713523.1447

Cal. Verification Summary

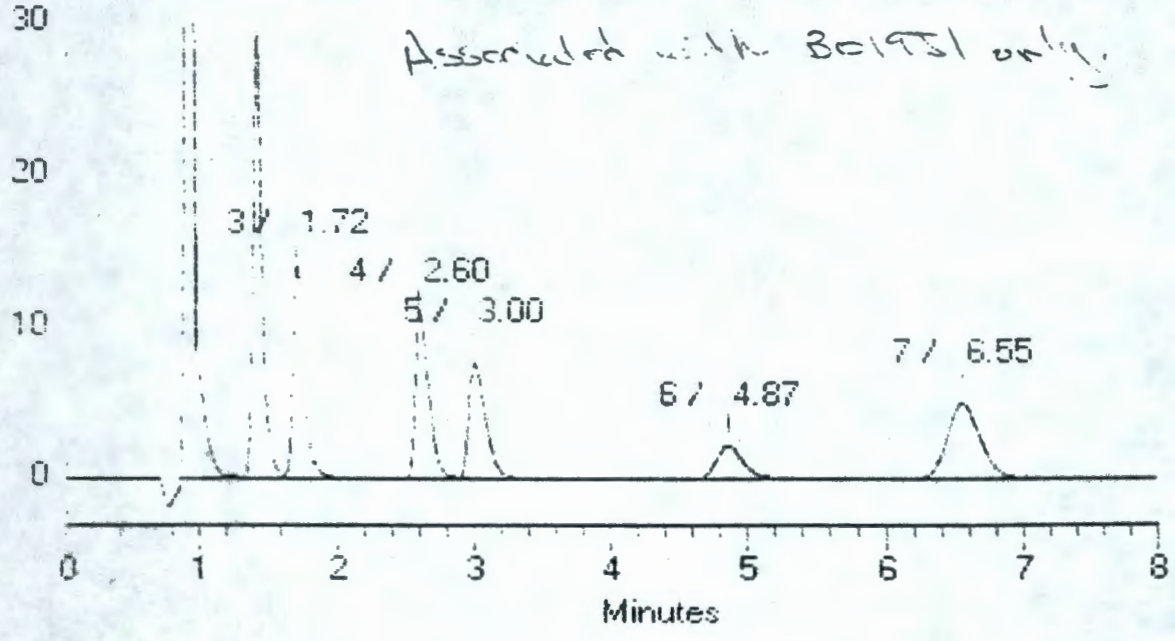

```
================================================================================
! Sample Name: CCV                                  Date: Wed Nov 13 16:08:15 1991!
! Data File  : D:\DATA\111391\RAWDATC1.D37                                       !
! Method     : C:\DX\METHOD\AS4A7B.met                                           !
! ACI Address: 1       System : 1       Inject#:  37  Detector: CDM-1          !
================================================================================
```

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	2400	5Hz	0.00	8.00	300

Pk. Num	Ret Time	Component Name	Concentration ug/mL	%	Height	Area	Bl. Code	%Delta
1	0.92	FLUORIDE	9.672		68581	313569	1	0.00
2	1.43	CHLORIDE	5.666	113	29338	129740	2	-0.50
3	1.72	NITRITE	5.068		13362	72794	2	-0.12
4	2.60	BROMIDE	7.953		10207	73882	2	1.82
5	3.00	NITRATE	5.186		7499	65063	2	3.54
6	4.87	PHOSPHATE	5.222		2153	29216	1	2.88
7	6.55	SULFATE	5.221		4926	81739	1	2.34
		Totals	43.987		136064	766003		

5.666 / 5 = 113%

new = 113%



Data effects sample B01951, qual as J

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: CJ	DATE: 6/12/97
LABORATORY: Weston	CASE: 9111L353	SDG: 9111L353
SAMPLES/MATRIX: B01B33, B01B34 / water		

1. DATA PACKAGE COMPLETENESS

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

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

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC		✓ 6/16/92	—	X
MS/MSD report forms		✓	—	—
RIC and quantitation reports for MS/MSD		✓	—	—
Additional Data				
Moisture/% solids data sheets		—	—	✓
Reduction formulae		X	—	✓
Instrument time logs		X	—	✓ 6/16/92
Chemist notebook pages		—	—	✓
Sample preparation sheets		✓	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

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

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

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

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

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

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

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	(N/A)
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	(N/A)

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

3.3. CONTINUING CALIBRATION

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

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

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	(Yes)	No	N/A
Are TCL compounds present in the laboratory blanks?	(Yes)	No	N/A

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

4.2. FIELD BLANKS

6/16/92

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

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

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?	Yes	(No)	N/A
Are any surrogate recoveries <10%?	Yes	(No)	N/A
Are any method blank surrogate recoveries out of specification?	Yes	(No)	N/A

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

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	(Yes)	No	N/A
Are there any calculation errors?	Yes	(No)	N/A

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

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

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

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

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

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

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

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

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

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

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

COMMENTS (attach additional sheets as necessary):

Both of these samples are identified as Trip Blanks. Sample B01B33 contains MeCl$_2$ at 55 ppb. All other results are N.D.

6/16/97

9713523.1426

Holding Time Summary

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L353

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B01B34	003	W	91LVW198	11/07/91	N/A	11/14/91	7
B01B33	006	W	91LVW198	11/07/91	N/A	11/14/91	7
B01B33	006 MS	W	91LVW200	11/07/91	N/A	11/16/91	9
B01B33	006 MSD	W	91LVW200	11/07/91	N/A	11/16/91	9
LAB QC:							
VBLK	MB1	W	91LVW198	N/A	N/A	11/13/91	
VBLK	MB1	W	91LVW200	N/A	N/A	11/16/91	

All samples analyzed within holding times

5/6/12/92

6/16/92

9713523.1427

Calibration Summary

0000063

Pg 1 of 1

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L353

Instrument ID: 1050W Calibration Date: 11/13/91 Time: 2131

Lab File ID: W111320 Init. Calib. Date(s): 11/11/91 11/11/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D	
Chloromethane #	0.943	0.734	22.2	# ✓
Bromomethane	1.443	1.283	11.1	
Vinyl Chloride *	1.396	1.105	20.8	* ✓
Chloroethane	0.826	0.698	15.5	
Methylene Chloride	1.445	1.304	9.8	
Acetone	0.468	0.305	34.8	
Carbon Disulfide	3.846	3.254	15.4	
1,1-Dichloroethene *	1.286	1.202	6.5	* ✓
1,1-Dichloroethane #	2.241	1.938	13.5	# ✓
1,2-Dichloroethene (total)	1.216	1.229	-1.1	
Chloroform *	2.120	2.158	-1.8	* ✓
1,2-Dichloroethane	1.325	1.349	-1.8	
2-Butanone	0.129	0.120	7.0	
1,1,1-Trichloroethane	0.351	0.331	5.7	
Carbon Tetrachloride	0.383	0.358	6.5	
Vinyl Acetate	0.780	0.464	40.5	
Bromodichloromethane	0.518	0.459	11.4	
1,2-Dichloropropane *	0.507	0.412	18.7	* ✓
cis-1,3-Dichloropropene	0.535	0.446	16.6	
Trichloroethene	0.426	0.424	0.5	
Dibromochloromethane	0.511	0.469	8.2	
1,1,2-Trichloroethane	0.334	0.312	6.6	
Benzene	1.079	0.989	8.3	
Trans-1,3-Dichloropropene	0.440	0.355	19.3	
Bromoform #	0.421	0.386	8.3	# ✓
4-Methyl-2-pentanone	0.517	0.323	37.5	
2-Hexanone	0.408	0.246	39.7	
Tetrachloroethene	0.449	0.445	0.9	
1,1,2,2-Tetrachloroethane #	0.628	0.558	11.1	# ✓
Toluene *	0.701	0.671	4.3	* ✓
Chlorobenzene #	0.921	0.895	2.8	# ✓
Ethylbenzene *	0.448	0.440	1.8	* ✓
Styrene	0.772	0.739	4.3	
Xylene (total)	0.467	0.460	1.5	
Toluene-d8	1.191	1.113	6.5	
Bromofluorobenzene	0.814	0.764	6.1	
1,2-Dichloroethane-d4	1.283	1.272	0.9	

FORM VII VOA 5/88 Rev.

associated results ~~detects~~ qualified with a T on it

6/16/92

Blank 9135231.W28 000017 1 of 2

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 91LVW198-MB1

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

Lab File ID: W111322

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. _____

Date Analyzed: 11/13/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

Acetone w/ samples in this SDG

CAS NO.	COMPOUND			
74-87-3	Chloromethane	10	U	Blank Qual.
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	2	J	x 10 = 20
67-64-1	Acetone	4	J	x 10 = 40
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	~~U~~	UJ
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	~~U~~	UJ
591-78-6	2-Hexanone	10	~~U~~	UJ
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

6/16/92

Blank 9713623.1429 Pg 2 of 2

1A 000012 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LVW200-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W111604

Level: (low/med) LOW Date Received: 11/16/91

% Moisture: not dec. _____ Date Analyzed: 11/16/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
	Reissue w/ MS/MSD only. No qualification required		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	4	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

APPENDIX F

DATA VALIDATION DOCUMENTATION

SDG: 9111L511

SAMPLE: B01B24

CONTAINS:

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable 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 presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111_511	REVIEWER: [illegible]	DATE: 6/12/92	PAGE 1 OF 1
COMMENTS: VOA/Semivol/Wet Chem/Metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Acetone	U	B01B24	Present in blank
Methylene Chloride	U	"	"
TIC Unknown Hydrocarbon @ 1995	U	All	Present in blank
TIC Unknown @ 2490	U	"	"
Copper	U	All	Present in blank
Zinc	U	"	"
Silver	R	All	MS %R = 0 (<30%)
Antimony	UJ	All	Analyzed out of holding time
Arsenic	J	"	"
Thallium	UJ	"	"

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

801824 B6/19/92
~~B01824~~
4th Qtr Trip Blank

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP511

Matrix (soil/water): WATER Lab Sample ID: 911151101

Level (low/med): LOW Date Received: 11/22/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	91.00	U		P	
7440-36-0	Antimony	20.00	U		P	
7440-38-2	Arsenic	2.00	U		F	
7440-39-3	Barium	36.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U		P	
7440-70-2	Calcium	18600.00			P	
7440-47-3	Chromium	6.00	U		P	
7440-48-4	Cobalt	10.00	U		P	
7440-50-8	Copper	~~20.40~~ 25 (CRDL)	~~B~~ U	20.4 u	P	u
7439-89-6	Iron	46.00	U		P	
7439-92-1	Lead	2.00	U	W	F	
7439-95-4	Magnesium	3960.00	B		P	
7439-96-5	Manganese	2.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	11.00	U		P	
7440-09-7	Potassium	862.00	U		P	
7782-49-2	Selenium	2.00	U		F	
~~7440-22-4~~	~~Silver~~	~~10.00~~	~~U~~	~~N~~	~~P~~	~~R~~
7440-23-5	Sodium	1770.00	B		P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	8.00	U		P	
7440-66-6	Zinc	21.90			P	u
	Cyanide	25.00	U		C	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/15/93

9713523.1436

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/16/91

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

WESTON BATCH #: 9111L511

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	~~B01824~~ B01824 6/19/92	Chloride by IC	0.61	MG/L	0.25
		Fluoride by IC	0.50 u	MG/L	0.50
		Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	0.49	MG/L	0.25
		Cyanide, Total	25.0 u	UG/L	25.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	9.4	MG/L	0.25
		Specific Conductance	123	UMHOS/CM	1.0

4th Qtr
Trip Blank

6/15/92

9713523.1437 0000015

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B01824 6/19/92
~~B01824~~
4± C Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L511-001

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

Lab File ID: Y112607

Level: (low/med) LOW

Date Received: 11/22/91

% Moisture: not dec. _____

Date Analyzed: 11/26/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	~~B~~ U
67-64-1	Acetone	10 ~~6~~	~~B~~ U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

6/24/92

9713523.1438 0000016

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B01824 6/19/92
~~B01824~~
4th Qtr Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9111L511-001

Sample wt/vol: 990 (g/mL) ML Lab File ID: M121112

Level: (low/med) LOW Date Received: 11/22/91

% Moisture: not dec. _____ dec. Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	50	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

6/2/92

9713523.1439 17A

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

B01824 @6/19/92
~~B01824~~
4th Qtr Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9111L511-001

Sample wt/vol: 990 (g/mL) ML Lab File ID: M121112

Level: (low/med) LOW Date Received: 11/22/91

% Moisture: not dec. _____ dec. Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) ug/L		
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-Octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

6/17/92

9713523.1440 0000017 1F

CLIENT SAMPLE NO.

B01824 CD6/18/92
~~B01824~~
4th Gtc Trip Blank

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9111L511-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: M121112

Level: (low/med) LOW

Date Received: 11/22/91

% Moisture: not dec. _____ dec.

Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 12/11/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 2

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		HYDROCARBON	19.95	60	~~JB~~
2.		UNKNOWN	24.90	8	~~JB~~

FORM 1 SV-TIC 12/88 Rev.

6/12/91

9213523.1441 ID 0000015 CLIENT SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS SHEET

B01824 @6/19/92
~~B01824~~
4th Qtr Trip Blank

Lab Name: Rov F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9111L511-001

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 12129127.28

Level: (low/med) LOW Date Received: 11/22/91

% Moisture: not dec. _____ dec. Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/13/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
319-84-6	Alpha-BHC	0.050	U
319-85-7	Beta-BHC	0.050	U
319-86-8	Delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

12/7/91

FORM 1 PEST 12/88 Rev.

6/12/92

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/15/92
LABORATORY: Weston	CASE: 9111L511	SDG: 511
SAMPLES/MATRIX: B01B24 / water		

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		X	—	—
Cover Page		X	—	—
Traffic Reports		X	—	—
Sample Data				
Inorganic Analysis Data Sheets		X	—	—
Standards Data				
Initial and Continuing Calibration Verification		X	—	—
CRDL Standard for AA and ICP		X	—	—
QC Summary				
Blanks		X	—	—
ICP Interference Check Summary		X	—	—
Spike Sample Recovery		X	—	—
Post-Digestion Spike Sample Recovery		X	—	—
Duplicate		X	—	—
Laboratory Control Sample		X	—	—
Standard Addition Results		X	—	—
ICP Serial Dilutions		X	—	—
Instrument Detection Limits		X	—	—
ICP Interelement Correction Factors		X	—	—
ICP Linear Ranges		X	—	—
Preparation Log		X	—	—
Analysis Run Log		X	—	—
Raw Data				
ICP Raw Data		X	—	—
Furnace AA Raw Data		X	—	—
Mercury Raw Data		X	—	—
Cyanide Raw Data		X	—	—
Additional Data				
Internal laboratory chain-of-custody		—	X	—
Laboratory Sample Preparation Records		X	—	—

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

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥ 0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

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

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

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

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

ACTION: Qualify the sample data according to the following requirements:

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? (Yes) No N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? (Yes) No N/A

If no, were MSA analyses performed when required? Yes No (N/A)

Are MSA correlation coefficients ≥ 0.995? Yes No (N/A)

If no, was a second MSA analysis performed? Yes No (N/A)

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is $<40\%$ qualify detects as estimated (J). If the analytical spike recovery is $\geq 10\%$ 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.

COMMENTS (attach additional sheets as necessary):

Bismuth analysis was not performed on this sample.

This sample was identified as a Trip Blank, and contained low levels of barium, magnesium, sodium and a high level of calcium.

The sample ID recorded on the COC and Validation Data is B01B24. However, the sampling Kit supplied by WHC contains a typo in each B01B24. This sample ID was used in validation report B01B24

6/15/92

9214523.4419

Holding Time Summary

Page 1 of 2

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L511

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B01824						
SILVER, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92 50
SILVER, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
SILVER, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
ALUMINUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
ALUMINUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
ALUMINUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
ARSENIC, TOTAL	001	W	91L3454	11/19/91	12/13/91	12/21/91 32
ARSENIC, TOTAL	001 REP	W	91L3454	11/19/91	12/13/91	12/21/91
ARSENIC, TOTAL	001 MS	W	91L3454	11/19/91	12/13/91	12/21/91
BARIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92 50
BARIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
BARIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
BERYLLIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
BERYLLIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
BERYLLIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
CALCIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
CALCIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
CALCIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
CADMIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
CADMIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
CADMIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
COBALT, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
COBALT, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
COBALT, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
CHROMIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
CHROMIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
CHROMIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
COPPER, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
COPPER, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
COPPER, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
IRON, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92
IRON, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92
IRON, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92
MERCURY, TOTAL	001	W	91C0357	11/19/91	12/11/91	12/12/91 23 ok
MERCURY, TOTAL	001 REP	W	91C0357	11/19/91	12/11/91	12/12/91
MERCURY, TOTAL	001 MS	W	91C0357	11/19/91	12/11/91	12/12/91
POTASSIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92 50

6/15/9

9213523.1450

Holding Time Summary Page 2 of 2

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L511

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
POTASSIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	50
POTASSIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	
MAGNESIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92	
MAGNESIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	
MAGNESIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	
MANGANESE, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92	
MANGANESE, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	
MANGANESE, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	
SODIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92	
SODIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	
SODIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	
NICKEL, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92	
NICKEL, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	
NICKEL, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	
LEAD, TOTAL	001	W	91L3454	11/19/91	12/13/91	12/20/91	31
LEAD, TOTAL	001 REP	W	91L3454	11/19/91	12/13/91	12/20/91	
LEAD, TOTAL	001 MS	W	91L3454	11/19/91	12/13/91	12/20/91	
ANTIMONY, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92	50
ANTIMONY, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	
ANTIMONY, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	
SELENIUM, TOTAL	001	W	91L3454	11/19/91	12/13/91	12/20/91	31
SELENIUM, TOTAL	001 REP	W	91L3454	11/19/91	12/13/91	12/20/91	
SELENIUM, TOTAL	001 MS	W	91L3454	11/19/91	12/13/91	12/20/91	
THALLIUM, TOTAL	001	W	91L3454	11/19/91	12/13/91	12/20/91	
THALLIUM, TOTAL	001 REP	W	91L3454	11/19/91	12/13/91	12/20/91	
THALLIUM, TOTAL	001 MS	W	91L3454	11/19/91	12/13/91	12/21/91	32
VANADIUM, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92	50
VANADIUM, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	
VANADIUM, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	
ZINC, TOTAL	001	W	91L3455	11/19/91	12/13/91	01/08/92	
ZINC, TOTAL	001 REP	W	91L3455	11/19/91	12/13/91	01/08/92	
ZINC, TOTAL	001 MS	W	91L3455	11/19/91	12/13/91	01/08/92	

LAB QC:

SILVER LABORATORY	LC1 BS	W	91L3455	N/A	12/13/91	01/08/92
ALUMINUM LABORTORY	LC1 BS	W	91L3455	N/A	12/13/91	01/08/92
BARIUM LABORATORY	LC1 BS	W	91L3455	N/A	12/13/91	01/08/92
BERYLLIUM LABORATORY	LC1 BS	W	91L3455	N/A	12/13/91	01/08/92
CALCIUM LABORATORY	LC1 BS	W	91L3455	N/A	12/13/91	01/08/92

Blank Summary

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP511

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	91.0	U	91.0	U	91.0	U			91.000	U	P
Antimony	20.0	U	24.4	B	20.0	U			20.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	16.0	U	16.0	U	16.0	U			16.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U			1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U			3.000	U	P
Calcium	63.0	U	63.0	U	63.0	U			262.700	B	P
Chromium	6.0	U	6.0	U	6.0	U			6.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U			10.000	U	P
Copper	10.0	U	10.0	U	10.0	U			13.700	B	P
Iron	46.0	U	46.0	U	46.0	U			46.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	87.0	U	87.0	U	87.0	U			114.400	B	P
Manganese	2.0	U	2.0	U	2.0	U			2.000	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.100	U	CV
Nickel	11.0	U	11.0	U	11.0	U			11.000	U	P
Potassium	862.0	U	862.0	U	862.0	U			862.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	10.0	U	10.0	U	10.0	U			10.000	U	P
Sodium	110.0	U	110.0	U	110.0	U			110.000	U	P
Thallium	2.0	U	2.0	U	2.0	U			-2.700	B	F
Vanadium	8.0	U	8.0	U	8.0	U			8.000	U	P
Zinc	6.0	U	6.0	U	6.0	U			15.000	B	P
Cyanide	10.0	U	10.0	U	10.0	U			10.000	U	C

6/15/95

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B01824S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP511

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1870.4000		91.0000	U	2000.00	93.5		P
Antimony	75-125	491.2000		20.0000	U	500.00	98.2		P
Arsenic	75-125	35.3000		2.0000	U	40.00	88.2		F
Barium	75-125	1902.4000		36.5000	B	2000.00	93.3		P
Beryllium	75-125	47.3000		1.0000	U	50.00	94.6		P
Cadmium	75-125	46.3000		3.0000	U	50.00	92.6		P
Calcium									NR
Chromium	75-125	185.9000		6.0000	U	200.00	92.9		P
Cobalt	75-125	476.0000		3.9000	B	500.00	94.4		P
Copper	75-125	249.6000		20.4000	B	250.00	91.7		P
Iron	75-125	969.5000		39.5000	B	1000.00	93.0		P
Lead	75-125	19.9000		2.0000	U	20.00	99.5		F
Magnesium									NR
Manganese	75-125	472.7000		1.5000	B	500.00	94.2		P
Mercury	75-125	.9610		.1000	U	1.00	96.1		CV
Nickel	75-125	461.5000		11.0000	U	500.00	92.3		P
Potassium									NR
Selenium	75-125	9.7000		2.0000	U	10.00	97.0		F
Silver	75-125	10.0000	U	10.0000	U	50.00	0.0		P R
Sodium									NR
Thallium	75-125	46.6000		2.0000	U	50.00	93.2		F
Vanadium	75-125	491.2000		8.0000	U	500.00	98.2		P
Zinc	75-125	485.2000		21.9000		500.00	92.7		P
Cyanide	75-125	94.5420		25.0000	U	125.00	76.8		C

Comments:

6/15/97

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/15/92
LABORATORY: Weston	CASE: 9111L511	SDG: 511
SAMPLES/MATRIX: B01B24 / water		

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	X	—	—
Cover Page	X	—	—
Traffic Reports/Chain-of-Custody	X	—	—
Sample Analysis Data Report Forms	X	—	—
Standards Data	X	—	—
QC Summary			
Blanks Summary Report Forms	X	—	—
Spike Sample Recovery Report Forms	X	—	—
Duplicate Sample Analysis Report Forms	X	—	—
Laboratory Control Sample Report Forms	X	—	—
Raw Data			
Ion Chromatograph Chromatograms	X	—	—
TOC and TOX Instrument Printouts	—	—	X
Laboratory Bench Sheets	—	—	X
Additional Data			
Laboratory Sample Preparation Logs	—	—	X
Instrument Run Logs	X	—	—
Internal Laboratory Chain-of-Custory	—	X	—
Percent Solids Analysis Records	—	—	X
Reduction Formulae	—	X	—
Chemist Notebook Pages	—	X	—

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):

The raw data for cyanide submitted in this package did not include the analysis of this sample (9111L511-001). Therefore, the raw data (CN) from the metals package was used for validation.

This sample was identified as a trip blank - it contains low levels of chloride, nitrate, and sulfate.

The sample ID recorded on the COC and laboratory data is P0184. However, the sampling personnel supplied the LIMS records P0184 to read P0184. The sample ID used in the validation report is P0184.

6/15/9

Holding Time Summary

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L511

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B01824						
CHLORIDE BY IC	001	W	91LIC175	11/19/91	11/23/91	11/23/91 4
CHLORIDE BY IC	001 REP	W	91LIC175	11/19/91	11/23/91	11/23/91
CHLORIDE BY IC	001 MS	W	91LIC175	11/19/91	11/23/91	11/23/91
CHLORIDE BY IC	001 MSD	W	91LIC175	11/19/91	11/23/91	11/23/91
FLUORIDE BY IC	001	W	91LIC175	11/19/91	11/23/91	11/23/91
FLUORIDE BY IC	001 REP	W	91LIC175	11/19/91	11/23/91	11/23/91
FLUORIDE BY IC	001 MS	W	91LIC175	11/19/91	11/23/91	11/23/91
FLUORIDE BY IC	001 MSD	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRITE BY IC	001	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRITE BY IC	001 REP	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRITE BY IC	001 MS	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRITE BY IC	001 MSD	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRATE BY IC	001	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRATE BY IC	001 REP	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRATE BY IC	001 MS	W	91LIC175	11/19/91	11/23/91	11/23/91
NITRATE BY IC	001 MSD	W	91LIC175	11/19/91	11/23/91	11/23/91
TOTAL CYANIDE	001	W	91LC361	11/19/91	11/27/91	12/02/91 13
TOTAL CYANIDE	001 REP	W	91LC361	11/19/91	11/27/91	12/02/91
TOTAL CYANIDE	001 MS	W	91LC361	11/19/91	11/27/91	12/02/91
PHOSPHATE BY IC	001	W	91LIC175	11/19/91	11/23/91	11/23/91 4
PHOSPHATE BY IC	001 REP	W	91LIC175	11/19/91	11/23/91	11/23/91
PHOSPHATE BY IC	001 MS	W	91LIC175	11/19/91	11/23/91	11/23/91
PHOSPHATE BY IC	001 MSD	W	91LIC175	11/19/91	11/23/91	11/23/91
SULFATE BY IC	001	W	91LIC175	11/19/91	11/23/91	11/23/91
SULFATE BY IC	001 REP	W	91LIC175	11/19/91	11/23/91	11/23/91
SULFATE BY IC	001 MS	W	91LIC175	11/19/91	11/23/91	11/23/91
SULFATE BY IC	001 MSD	W	91LIC175	11/19/91	11/23/91	11/23/91
SPECIFIC CONDUCTANCE	001	W	91LSP069	11/19/91	11/23/91	11/23/91
SUB-OUT TEST FOR SUB	001	W		11/19/91		
LAB QC:						
BROMIDE BY IC	MB1	W	91LIC175	N/A	11/23/91	11/23/91
BROMIDE BY IC	MB1 BS	W	91LIC175	N/A	11/23/91	11/23/91
CHLORIDE BY IC	MB1	W	91LIC175	N/A	11/23/91	11/23/91
CHLORIDE BY IC	MB1 BS	W	91LIC175	N/A	11/23/91	11/23/91
FLUORIDE BY IC	MB1	W	91LIC175	N/A	11/23/91	11/23/91

6/15/95

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/12/92
LABORATORY: Weston	CASE: 9111 L 511	SDG: 51
SAMPLES/MATRIX: B01824 / water		

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		X	—	—
Data Summary		X	—	—
Chain-of-Custody		X	—	—
QC Summary				
Surrogate report		X	—	—
MS/MSD report		X	—	—
Blank summary report		X	—	—
GC/MS tuning report		X	—	—
Internal standard summary report		X	—	—
Sample Data				
Sample reports		X	—	—
TIC reports for each sample		X	—	—
RIC reports for all samples		X	—	—
Raw and corrected spectra for all detected results		X	—	—
Raw and corrected library search data for all reported TIC		—	—	X
Quantitation and calculation data for all TIC		—	—	X
Standards Data				
Initial calibration report		X	—	—
RIC and quantitation reports for initial calibration		X	—	—
Continuing calibration reports		X	—	—
RIC and quantitation reports for cont. calibrations		X	—	—
Internal standard summary report		X	—	—
Raw QC Data				
Tuning report, spectra and mass lists		X	—	—
Blank analysis reports		X	—	—
TIC reports for all blanks		X	—	—
RIC and quantitation reports for blanks		X	—	—
Raw and corrected spectra for all detected results in blanks		X	—	—
Raw and corrected library search data for all reported TIC		—	—	X

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC		—	—	X
MS/MSD report forms		X	—	—
RIC and quantitation reports for MS/MSD		X	—	—
Additional Data				
Moisture/% solids data sheets		—	—	X
Reduction formulae		—	X	—
Instrument time logs		X	—	—
Chemist notebook pages		—	X	—
Sample preparation sheets		X	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

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

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

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? (Yes) No N/A

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? (Yes) No N/A

Are all RRF values ≥0.05 (2/88 SOW)? (Yes) No N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	(N/A)
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	(N/A)

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

3.3. CONTINUING CALIBRATION

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

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

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	(Yes)	No	N/A
Are TCL compounds present in the laboratory blanks?	(Yes)	No	N/A

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

4.2. FIELD BLANKS

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

Not after blank adjustment

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

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

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

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

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

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

5.2 MATRIX SPIKE RECOVERY

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

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

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

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

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

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

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

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

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

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

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

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

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

COMMENTS (attach additional sheets as necessary):

This sample was identified as a trip Blank. All results are undetected.

The Sample ID on the C-O-C and Form 1 is B01B24. However, the sampling list from the contractor, B01B24 to Tab B01B24. The Sample ID used in the validation report is B01B24.

9213523.1467 Holding Time Summary pg 1 of 1

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L511

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B01824	001	W	91LVY208	11/19/91	N/A	11/26/91 7 Days
B01824	001 MS	W	91LVY208	11/19/91	N/A	11/26/91
B01824	001 MSD	W	91LVY208	11/19/91	N/A	11/26/91
LAB QC:						
VBLK	MB1	W	91LVY208	N/A	N/A	11/26/91

11/26/91

9713523.1468 0000067 Pg 1 of 1

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Blank Summary

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LVY208-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: Y112603

Level: (low/med) LOW Date Received: 11/26/91

% Moisture: not dec. _____ Date Analyzed: 11/26/91

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	3	J	X10 = 30
67-64-1	Acetone	3	J	X10 = 30
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5	U	
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

6/2/92

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

PROJECT: 200-BP-1	REVIEWER:	DATE: 6/12/92
LABORATORY: Weston	CASE: 9111L511	SDG: 511
SAMPLES/MATRIX: B01B24 / water		

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		X		
Data Summary		X		
Chain-of-Custody		X		
QC Summary				
Surrogate report		X		
MS/MSD report		X		
Blank summary report		X		
GC/MS tuning report		X		
Internal standard summary report		X		
Sample Data				
Sample reports		X		
TIC reports for each sample		X		
RIC reports for all samples		X		
Raw and corrected spectra for all detected results				X
Raw and corrected library search data for all reported TIC		X		
Quantitation and calculation data for all TIC		X		
Standards Data				
Initial calibration report		X		
RIC and quantitation reports for initial calibration		X		
Continuing calibration reports		X		
RIC and quantitation reports for cont. calibrations		X		
Internal standard summary report		X		
Raw QC Data				
Tuning report, spectra and mass lists		X		
Blank analysis reports		X		
TIC reports for all blanks		X		
RIC and quantitation reports for blanks		X		
Raw and corrected spectra for all detected results in blanks		X		
Raw and corrected library search data for all reported TIC		X		
Quantitation and calculation data for all TIC		X		
MS/MSD report forms		X		

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

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
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

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

not after blank adjustment

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

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

5.3 PERFORMANCE AUDIT SAMPLES

Are the 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

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):

This sample was identified as a Trip Blank. All results are non-detects.

The sample ID on the COC and Form I is R0IB24. However, the sampling list supplied by WHC corrects R0IB24 to read R0IB24. The sample ID used in the validation report is R0IB24.

6/12/96

9713523.1477

Pg 1 of 1

Holding Time Summary

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L511

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	Days	ANALYSIS	Days
B01824	001	W	91LE1578	11/19/91	11/25/91	6	12/11/91	16
B01824	001 MS	W	91LE1578	11/19/91	11/25/91	6	12/11/91	16
B01824	001 MSD	W	91LE1578	11/19/91	11/25/91	6	12/11/91	16
LAB QC:								
SBLK	MB1	W	91LE1578	N/A	11/25/91		12/11/91	
SBLK	MB1 BS	W	91LE1578	N/A	11/25/91		12/11/91	

Holding Times are met.

6/1/92

JAN 1992
RECEIVED
OSM DMO

6/1/92

Blank Summary 9743523.1478 0000086 Pg 1 of 3

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LE1578-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M121110

Level: (low/med) LOW Date Received: 11/25/91

% Moisture: not dec. _____ dec. Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
108-95-2	Phenol	10	U	
111-44-4	bis(2-Chloroethyl)ether	10	U	
95-57-8	2-Chlorophenol	1	J	x5=5
541-73-1	1,3-Dichlorobenzene	10	U	
106-46-7	1,4-Dichlorobenzene	10	U	
100-51-6	Benzyl alcohol	10	U	
95-50-1	1,2-Dichlorobenzene	10	U	
95-48-7	2-Methylphenol	10	U	
108-60-1	bis(2-Chloroisopropyl)ether	10	U	
106-44-5	4-Methylphenol	10	U	
621-64-7	N-Nitroso-Di-n-propylamine	10	U	
67-72-1	Hexachloroethane	10	U	
98-95-3	Nitrobenzene	10	U	
78-59-1	Isophorone	10	U	
88-75-5	2-Nitrophenol	10	U	
105-67-9	2,4-Dimethylphenol	10	U	
65-85-0	Benzoic acid	50	U	
111-91-1	bis(2-Chloroethoxy)methane	10	U	
120-83-2	2,4-Dichlorophenol	10	U	
120-82-1	1,2,4-Trichlorobenzene	10	U	
91-20-3	Naphthalene	10	U	
106-47-8	4-Chloroaniline	10	U	
87-68-3	Hexachlorobutadiene	10	U	
59-50-7	4-Chloro-3-methylphenol	10	U	
91-57-6	2-Methylnaphthalene	10	U	
77-47-4	Hexachlorocyclopentadiene	10	U	
88-06-2	2,4,6-Trichlorophenol	10	U	
95-95-4	2,4,5-Trichlorophenol	50	U	
91-58-7	2-Chloronaphthalene	10	U	
88-74-4	2-Nitroaniline	50	U	
131-11-3	Dimethylphthalate	10	U	
208-96-8	Acenaphthylene	10	U	
606-20-2	2,6-Dinitrotoluene	10	U	

Blank Sample 9135234479 0000087 Pg 2 of 3

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LE1578-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M121110

Level: (low/med) LOW Date Received: 11/25/91

% Moisture: not dec. _____ dec. Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-Octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

6/2/92

Blank Sample 7/1355234420 Pg 3 of 3

1F 0000088 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LE1578-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: MI21110

Level: (low/med) LOW Date Received: 11/25/91

% Moisture: not dec. _____ dec. Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	4.90	5	J
2.	HYDROCARBON	19.98	200	J
3.	HYDROCARBON	20.12	8	J
4.	HYDROCARBON	21.33	10	J
5.	UNKNOWN	21.85	7	J
6.	UNKNOWN	23.82	4	J
7.	UNKNOWN	24.93	10	J

FORM 1 SV-TIC 12/88 Rev.

6/12/92

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/12/92
LABORATORY: Weston	CASE: 9111L511	SDG: 511
SAMPLES/MATRIX: BG1B24 / Water		

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 resubmittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		X	—	—
Data Summary		X	—	—
Chain-of-Custody		X	—	—
QC Summary				
Surrogate report		X	—	—
MS/MSD report		X	—	—
Blank summary report		X	—	—
Sample Data				
Sample reports		X	—	—
Chromatograms		X	—	—
GC integration reports		X	—	—
Worksheets		X	—	—
UV traces from GPC		—	—	X
GC/MS confirmation spectra		—	—	X
Standards Data				
Pesticides Evaluation Standards Summary		X	—	—
Pesticides/PCB Standards Summary		X	—	—
Pesticides/PCB identification		X	—	—
Pesticides standard chromatograms		X	—	—
Raw QC Data				
Blank analysis report forms and chromatograms		X	—	—
MS/MSD report forms and chromatograms		X	—	—

Data Package Item	Present?:	Yes	No	N/A
Additional Data				
Moisture/% solids data sheets		—	—	X
Reduction formulae		—	X	—
Instrument time logs		X	—	—
Chemist notebook pages		—	X	—
Sample preparation sheets		X	—	—

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 PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? (Yes) No N/A

ACTION: If DDT retention time is $\leq$12 minutes and resolution is <25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? (Yes) No N/A

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes (No) N/A

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq$20%? (Yes) No N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq$20%? (Yes) No N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? (Yes) No N/A

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC ≤10%? (Yes) No N/A

Have all standards been analyzed within 72 h of any sample? (Yes) No N/A

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No (N/A)

Have all standards been analyzed at the start of each 72-h sequence? (Yes) No N/A

Have evaluation standards A, B, and C been analyzed within 72 h of any sample? (Yes) No N/A

Has the confirmation standard mix been analyzed after every five samples? (Yes) No N/A

Has evaluation standard B analyzed every 10 samples? (Yes) No N/A

Are %D values for initial and subsequent standards ≤15% for quantitation standards and ≤20% for confirmation standards? Yes (No) N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No (N/A)

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% Yes No (N/A)

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No (N/A)

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No (N/A)

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors < 10.0% (< 15.0% for the BHC series, DDT, endrin, and methoxychlor)? Yes No (N/A)

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No (N/A)

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No (N/A)

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No (N/A)

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? Yes No (N/A)

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? Yes No (N/A)

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? (Yes) No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No (N/A)

Has the laboratory analyzed instrument blanks at the required frequency? Yes No (N/A)

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

ACTION: Qualify all associated positive results as nondetects (U) that are <5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

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

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification?	Yes	(No)	N/A
Do any samples show nondetects for surrogates?	Yes	(No)	N/A
Are any method blank surrogates out of specification?	Yes	(No)	N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	Yes	(No)	N/A
Are there any calculation or transcription errors?	Yes	(No)	N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. 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 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 the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are 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.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

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

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are >5xCRQL qualify positive results 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. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No (N/A)

Were positive results analyzed on disimilar columns? (Yes) No N/A

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No (N/A)

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No (N/A)

Has GC/MS confirmation been conducted on sample extract concentrations > 10 ppm? Yes No (N/A)

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

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

8. 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):

This Sample was identified as a Trip Blank. All results are non-detect.

The Sample ID on the COC and laboratory data is B01B24. However, the Sampling list supplied by WHC corrects B01B24 to read B01RJ4. The Sample ID used in the validation report is B01RJ4

6/12/97

9713524.1490

Holding Time Summary

Pg 1 of 1

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 11/22/91 RFW LOT # :9111L511

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	Days	ANALYSIS	Days
B01824	001	W	91LE1579	11/19/91	11/25/91	6	12/13/91	18
B01824	001 MS	W	91LE1579	11/19/91	11/25/91	↓	12/13/91	↓
B01824	001 MSD	W	91LE1579	11/19/91	11/25/91	↓	12/13/91	↓
LAB QC:								
PBLK	MB1	W	91LE1579	N/A	11/25/91		12/13/91	
PBLK	MB1 BS	W	91LE1579	N/A	11/25/91		12/13/91	

6/2/92

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9111L511-001

MATRIX Spike - Sample No.: B01824

No qualification required.

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
gamma-BHC (Lindane)	0.200	0	0.120	60	56-123
Heptachlor	0.200	0	0.130	65	40-131
Aldrin	0.200	0	0.140	70	40-120
Dieldrin	0.500	0	0.360	72	52-126
Endrin	0.500	0	0.520	104	56-121
4,4'-DDT	0.500	0	0.350	70	38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
gamma-BHC (Lindane)	0.200	0.110	55 *	8	15	56-123
Heptachlor	0.200	0.130	65	0	20	40-131
Aldrin	0.200	0.130	65	7	22	40-120
Dieldrin	0.500	0.350	70	2	18	52-126
Endrin	0.500	0.520	104	0	21	56-121
4,4'-DDT	0.500	0.340	68	2	27	38-127

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 1 out of 12 outside limits

COMMENTS:

9213523 1192 Section Summary

0000025

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4/24/92

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12129127.26

RFW Lot No.: 9111L511

Instrument ID: 27 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 12/12/91 TO: 12/12/91
TIME(S) OF ANALYSIS FROM: 1527 TO: 2029

DATE OF ANALYSIS 12/13/91
TIME OF ANALYSIS 0514
EPA SAMPLE NO. (STANDARD) INDA 19-67

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.75	1.73	1.77	1793581	1.75	1784651	Y	0.5
Beta-BHC	2.49	2.47	2.51	653139				
Delta-BHC	2.89	2.87	2.91	1095759				
gamma-BHC (Lindane)	2.19	2.17	2.21	1521807	2.20	1512067	Y	0.6
Heptachlor	2.67	2.65	2.69	1234953	2.68	1257983	Y	1.9
Aldrin	3.22	3.18	3.24	875106				
Heptachlor epoxide	4.80	4.76	4.84	669780				
Endosulfan I	6.03	5.98	6.08	504919	6.05	510583	Y	1.1
Dieldrin	7.35	7.29	7.41	406525	7.37	409125	Y	0.6
4,4'-DDE	6.88	6.83	6.93	382027				
Endrin	8.90	8.86	8.94	146621	8.92	181417	Y	23.7
Endosulfan II	10.80	10.73	10.87	228037				
4,4'-DDD	10.50	10.43	10.57	198510	10.53	199042	Y	0.3
Endosulfan sulfate	17.16	17.09	17.23	51074				
4,4'-DDT	12.61	12.51	12.71	176728	12.64	179150	Y	1.4
Methoxychlor	23.96	23.81	24.11	55222	24.03	57338	Y	3.8
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.79	5.75	5.83	531074	No qualification required			
gamma-Chlordane	5.31	5.27	5.35	532129				
Toxaphene	10.95	10.88	11.02	39082				
Aroclor-1016	2.63	2.61	2.65	295752				
Aroclor-1221	1.60	1.59	1.61	94744				
Aroclor-1232	2.63	2.62	2.64	163893				
Aroclor-1242	2.63	2.62	2.64	256168				
Aroclor-1248	2.63	2.62	2.64	251965				
Aroclor-1254	5.57	5.55	5.59	189361				
Aroclor-1260	9.68	9.62	9.74	134868				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

9713523.1493

Calibration Summary

Pg 2 of 4/2

0000023

PESTICIDE/PCB STANDARD SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12129127.40

RFW Lot No.: 9111L511

Instrument ID: 27 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 12/12/91 TO: 12/12/91
TIME(S) OF ANALYSIS FROM: 1527 TO: 2029

DATE OF ANALYSIS 12/13/91
TIME OF ANALYSIS 1528
EPA SAMPLE NO. (STANDARD) INDB 19-68

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.75	1.73	1.77	1793581				
Beta-BHC	2.49	2.47	2.51	653139	2.49	630633	Y	3.4
Delta-BHC	2.89	2.87	2.91	1095759	2.90	1066933	Y	2.6
gamma-BHC (Lindane)	2.19	2.17	2.21	1521807				
Heptachlor	2.67	2.65	2.69	1234953				
Aldrin	3.22	3.18	3.24	875106	3.22	843883	Y	3.6
Heptachlor epoxide	4.80	4.76	4.84	669780	4.82	653917	Y	2.4
Endosulfan I	6.03	5.98	6.08	504919				
Dieldrin	7.35	7.29	7.41	406525				
4,4'-DDE	6.88	6.83	6.93	382027	6.90	371658	Y	2.7
Endrin	8.90	8.86	8.94	146621				
Endosulfan II	10.80	10.73	10.87	228037	10.83	224642	Y	1.5
4,4'-DDD	10.50	10.43	10.57	198510				
Endosulfan sulfate	17.16	17.09	17.23	51074	17.20	59408	Y	16.3
4,4'-DDT	12.61	12.51	12.71	176728				
Methoxychlor	23.96	23.81	24.11	55222				
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.79	5.75	5.83	531074	5.80	517150	Y	2.6
gamma-Chlordane	5.31	5.27	5.35	532129	5.32	513333	Y	3.5
Toxaphene	10.95	10.88	11.02	39082				
Aroclor-1016	2.63	2.61	2.65	295752				
Aroclor-1221	1.60	1.59	1.61	94744				
Aroclor-1232	2.63	2.62	2.64	163893				
Aroclor-1242	2.63	2.62	2.64	256168				
Aroclor-1248	2.63	2.62	2.64	251965				
Aroclor-1254	5.57	5.55	5.59	189361				
Aroclor-1260	9.68	9.62	9.74	134868				

No quantitation required

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

APPENDIX G

DATA VALIDATION DOCUMENTATION

SDG: 9112L781

SAMPLES: B01B35, B019J9, B019K0, B019N9, B019P0

CONTAINS:

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable 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 presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91121-781	REVIEWER: [illegible]	DATE: 6/16/97	PAGE 1 OF 1
COMMENTS: IOA/Metals/Wet Chem			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
2-Butanone	R	B01B35	ICV & CCV RRT < 0.05
Acetone	UJ	↓	ICV RSD 7302
MeCl2	U	↓	Present in blank
1,1-DCE	U	↓	↓
Lead	UJ	All	MS %R < 75%
Calcium	J	All	ICP serial Dilin > 10%
Magnesium	↓	↓	↓
Sodium	↓	↓	↓
Arsenic	J	B-1979	GFAA Analytical Spike < 85%
Lead	UJ	All	↓
Selenium	UJ	All	↓
Thallium	UJ	B01915C	↓
Nitrate	J	All	Analyzed out of holding time
Nitrite	UJ	↓	↓
Phosphate	UJ	↓	↓
TOS	J	↓	↓
Nitrate+Nitrite	R	All	Discrepancy with IC results

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713523.1499 0000024

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19J9
699-53-55A

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP781

Matrix (soil/water): WATER Lab Sample ID: 911278101

Level (low/med): LOW Date Received: 12/17/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	23.00	U		P
7440-38-2	Arsenic	2.30	B	W	F
7440-39-3	Barium	47.50	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.40	B		P
7440-70-2	Calcium	35200.00			P
7440-47-3	Chromium	14.40			P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	13.60	B		P
7439-89-6	Iron	360.00			P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	11100.00			P
7439-96-5	Manganese	34.50			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	25.30	B		P
7440-09-7	Potassium	9470.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	4.00	U		P
7440-23-5	Sodium	22000.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	10.90	B		P
7440-66-6	Zinc	5.70	B		P
	Cyanide	20.00	U		C
7440-62-9	Reanalyte	see	U		P

7440-23-5 Sodium 18910

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/16/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BO19KO
699-53-55A
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP781

Matrix (soil/water): WATER Lab Sample ID: 911278102

Level (low/med): LOW Date Received: 12/17/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	23.00	U		P
7440-38-2	Arsenic	2.00	U	OK	F
7440-39-3	Barium	41.60	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	34400.00			P
7440-47-3	Chromium	6.00	U		P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	6.10	B		P
7439-89-6	Iron	39.00	U		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	10800.00			P
7439-96-5	Manganese	29.40			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	9060.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	4.00	U		P
7440-23-5	Sodium	21800.00			P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	9.80	B		P
7440-66-6	Zinc	5.80	B		P
	Cyanide				NR

6/16/92

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9713523.1501 000026

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO19N9
299-33-5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP781

Matrix (soil/water): WATER Lab Sample ID: 911278103

Level (low/med): LOW Date Received: 12/17/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	23.00	U		P
7440-38-2	Arsenic	7.60	B		F
7440-39-3	Barium	38.00	U		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	41000.00			P
7440-47-3	Chromium	6.00	U		P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	10.60	B		P
7439-89-6	Iron	52.50	B		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	12600.00			P
7439-96-5	Manganese	2.70	B		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	5590.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	4.00	U		P
7440-23-5	Sodium	19200.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	21.80	B		P
7440-66-6	Zinc	12.40	B		P
	Cyanide	11.80	U		C
					P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

BO19PO
299-33-5
Filtered

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP781

Matrix (soil/water): WATER Lab Sample ID: 911278104

Level (low/med): LOW Date Received: 12/17/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	23.00	U		P
7440-38-2	Arsenic	7.10	B		F
7440-39-3	Barium	38.00	U		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	41200.00			P
7440-47-3	Chromium	6.00	U		P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	7.60	B		P
7439-89-6	Iron	39.00	U		P
7439-92-1	Lead	2.00	U	NW	F
7439-95-4	Magnesium	12700.00			P
7439-96-5	Manganese	2.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	5430.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	4.00	U		P
7440-23-5	Sodium	19100.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	23.60	B		P
7440-66-6	Zinc	9.10	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/16/92

9713523.1503

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/14/92

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

WESTON BATCH #: 9112L781

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	
-001	B019J9	Alkalinity	93.0	MG/L	2.0	
		Chloride by IC	14.8	MG/L	0.25	
		Fluoride by IC	0.50 u	MG/L	0.50	
		Nitrite by IC	0.25 u	MG/L	0.25	H
	699-53-55A	Nitrate by IC	5.0	MG/L	0.25	H
		Cyanide, Total	20.0 u	UG/L	20.0	
		Phosphate by IC	0.25 u	MG/L	0.25	H
		Sulfate by IC	53.8	MG/L	2.5	
		~~Nitrate Nitrite~~	~~2.0~~	~~MG-N/L~~	~~0.20~~	R
		Total Organic Carbon	0.50 u	MG/L	0.50	
		pH	7.3	PH UNITS	0.010	
		Total Dissolved Solids	282	MG/L	5.0	H
-003	B019N9	Alkalinity	98.0	MG/L	2.0	
		Chloride by IC	7.5	MG/L	0.25	
		Fluoride by IC	0.50 u	MG/L	0.50	
		Nitrite by IC	0.25 u	MG/L	0.25	H
	699-31-5	Nitrate by IC	41.8	MG/L	2.5	H
		Cyanide, Total	11.8	UG/L	10.0	
		Phosphate by IC	0.25 u	MG/L	0.25	H
		Sulfate by IC	39.9	MG/L	2.5	
		~~Nitrate Nitrite~~	~~11.4~~	~~MG-N/L~~	~~1.0~~	R
		Total Organic Carbon	0.50 u	MG/L	0.50	
		pH	7.5	PH UNITS	0.010	
		Total Dissolved Solids	280	MG/L	5.0	H

6/16/92

9213523.1504 0000019

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BO1B35
4th Qt trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9112L781-005

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

Lab File ID: AKC009

Level: (low/med) LOW

Date Received: 12/17/91

% Moisture: not dec. _____

Date Analyzed: 12/26/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L		
74-87-3	Chloromethane	10	U	
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	5	~~B~~	U
67-64-1	Acetone	10	~~U~~	U5
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	5 ~~2~~	~~JB~~	U
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
~~78-93-3~~	~~2-Butanone~~	~~10~~	~~U~~	R
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

6/4/92

6/4/92

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: G	DATE: 10/4/93
LABORATORY: Wilson	CASE: 9112L781	SDG: 911379 1
SAMPLES/MATRIX: B01959, B019K0, B019N9, B019T0 / waters		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		✓	—	—
Cover Page		✓	—	—
Traffic Reports		✓	—	—
Sample Data				
Inorganic Analysis Data Sheets		✓	—	—
Standards Data				
Initial and Continuing Calibration Verification		✓	—	—
CRDL Standard for AA and ICP		✓	—	—
QC Summary				
Blanks		✓	—	—
ICP Interference Check Summary		✓	—	—
Spike Sample Recovery		✓	—	—
Post-Digestion Spike Sample Recovery		—	✓	—
Duplicate		✓	✓ 4 pairs	
Laboratory Control Sample		✓	—	—
Standard Addition Results		✓	—	—
ICP Serial Dilutions		✓	—	—
Instrument Detection Limits		✓	—	—
ICP Interelement Correction Factors		✓	—	—
ICP Linear Ranges		✓	—	—
Preparation Log		✓	—	—
Analysis Run Log		✓	—	—
Raw Data				
ICP Raw Data		✓	—	—
Furnace AA Raw Data		✓	—	—
Mercury Raw Data		✓	—	—
Cyanide Raw Data		✓	—	—
Additional Data				
Internal laboratory chain-of-custody		✓	—	—
Laboratory Sample Preparation Records		✓	—	—

Data Package Item	Present?:	Yes	No	N/A
Percent Solids Analysis Records		—	—	/
Reduction Formulae		—	—	—
Instrument Run Logs		X	—	X 08/16/92
Chemist Notebook Pages		—	—	—

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

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

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

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

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

ACTION: Qualify the sample data according to the following requirements:

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes (No) N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required?	Yes	No	(N/A)
Are MSA correlation coefficients ≥0.995?	Yes	No	(N/A)
If no, was a second MSA analysis performed?	Yes	No	(N/A)

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

17. ANALYTE QUANTITATION AND DETECTION LIMITS

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

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

18. OVERALL ASSESSMENT AND SUMMARY

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

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

9213523-1511 Hold Time Summary

pg 1 of 4

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

DATE RECEIVED: 12/17/91 RFW LOT # :9112L781

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019J9							
SILVER, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	44
SILVER, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	44
SILVER, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	44
ALUMINUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	02/03/92	51
ALUMINUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	02/03/92	
ALUMINUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	02/03/92	
ARSENIC, TOTAL	001	W	92L0187	12/14/91	01/17/92	01/22/92	39
ARSENIC, TOTAL	001 REP	W	92L0187	12/14/91	01/17/92	01/22/92	
ARSENIC, TOTAL	001 MS	W	92L0187	12/14/91	01/17/92	01/22/92	
BARIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	49
BARIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
BARIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
BERYLLIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	
BERYLLIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
BERYLLIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
BISMUTH, TOTAL	001	W	92L0188	12/14/91	01/17/92	02/03/92	51
BISMUTH, TOTAL REP	001 REP	W	92L0188	12/14/91	01/17/92	02/03/92	
BISMUTH, TOTAL SPIKE	001 MS	W	92L0188	12/14/91	01/17/92	02/03/92	
CALCIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	48
CALCIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
CALCIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
CADMIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	02/03/92	51
CADMIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	02/03/92	
CADMIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	02/03/92	
COBALT, TOTAL	001	W	92L0188	12/14/91	01/17/92	02/03/92	
COBALT, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	02/03/92	
COBALT, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	02/03/92	
CHROMIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	02/03/92	
CHROMIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	02/03/92	
CHROMIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	02/03/92	
COPPER, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	48
COPPER, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
COPPER, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
IRON, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	
IRON, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
IRON, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
MERCURY, TOTAL	001	W	92C0013	12/14/91	01/09/92	01/10/92	27

Cyanide 12/14/91 12/23/91 9

HW holding times have been met

6/16/93

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

DATE RECEIVED: 12/17/91 RFW LOT # :9112L781

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
POTASSIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	48
POTASSIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
POTASSIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
MAGNESIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	
MAGNESIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
MAGNESIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
MANGANESE, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	
MANGANESE, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
MANGANESE, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
SODIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	
SODIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
SODIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
NICKEL, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	
NICKEL, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
NICKEL, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
LEAD, TOTAL	001	W	92L0187	12/14/91	01/17/92	01/22/92	39
LEAD, TOTAL	001 REP	W	92L0187	12/14/91	01/17/92	01/22/92	
LEAD, TOTAL	001 MS	W	92L0187	12/14/91	01/17/92	01/22/92	
ANTIMONY, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	48
ANTIMONY, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
ANTIMONY, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
SELENIUM, TOTAL	001	W	92L0187	12/14/91	01/17/92	01/21/92	39
SELENIUM, TOTAL	001 REP	W	92L0187	12/14/91	01/17/92	01/21/92	
SELENIUM, TOTAL	001 MS	W	92L0187	12/14/91	01/17/92	01/21/92	
SILICON, TOTAL	001	W	92L0188	12/14/91	01/17/92	02/07/92	55
SILICON, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	02/07/92	
SILICON, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	02/07/92	
THALLIUM, TOTAL	001	W	92L0187	12/14/91	01/17/92	01/21/92	38
THALLIUM, TOTAL	001 REP	W	92L0187	12/14/91	01/17/92	01/21/92	
THALLIUM, TOTAL	001 MS	W	92L0187	12/14/91	01/17/92	01/21/92	
VANADIUM, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	48
VANADIUM, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
VANADIUM, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
ZINC, TOTAL	001	W	92L0188	12/14/91	01/17/92	01/31/92	
ZINC, TOTAL	001 REP	W	92L0188	12/14/91	01/17/92	01/31/92	
ZINC, TOTAL	001 MS	W	92L0188	12/14/91	01/17/92	01/31/92	
B019K0							
SILVER, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	48

Hdd 9713523.1513 Summary pg 3 & 4

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

DATE RECEIVED: 12/17/91 RFW LOT # :9112L781

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
ALUMINUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	02/03/92	51
ARSENIC, SOLUBLE	002	W	92L0187	12/14/91	01/17/92	01/22/92	39
BARIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
BERYLLIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
BISMUTH, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	02/03/92	51
CALCIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
CADMIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	02/03/92	51
COBALT, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	02/03/92	
CHROMIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	02/03/92	
COPPER, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
IRON, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
MERCURY, SOLUBLE	002	W	92C0013	12/14/91	01/09/92	01/10/92	27
MERCURY, SOLUBLE	002 REP	W	92C0013	12/14/91	01/09/92	01/10/92	
MERCURY, SOLUBLE	002 MS	W	92C0013	12/14/91	01/09/92	01/10/92	
POTASSIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
MAGNESIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	
MANGANESE, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	
SODIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	
NICKEL, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	
LEAD, SOLUBLE	002	W	92L0187	12/14/91	01/17/92	01/22/92	39
ANTIMONY, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
SELENIUM, SOLUBLE	002	W	92L0187	12/14/91	01/17/92	01/21/92	38
SILICON, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	02/07/92	55
THALLIUM, SOLUBLE	002	W	92L0187	12/14/91	01/17/92	01/21/92	37
VANADIUM, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
ZINC, SOLUBLE	002	W	92L0188	12/14/91	01/17/92	01/31/92	46
B019N9							
SILVER, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	46
ALUMINUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	02/03/92	51
ARSENIC, TOTAL	003	W	92L0187	12/14/91	01/17/92	01/22/92	39
BARIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	46
BERYLLIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	46
BISMUTH, TOTAL	003	W	92L0188	12/14/91	01/17/92	02/03/92	51
CALCIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	46
CADMIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	02/03/92	51
COBALT, TOTAL	003	W	92L0188	12/14/91	01/17/92	02/03/92	51
CHROMIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	02/03/92	51
COPPER, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	46

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

DATE RECEIVED: 12/17/91 RFW LOT # :9112L781

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Dup
IRON, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	48
MERCURY, TOTAL	003	W	92C0013	12/14/91	01/09/92	01/10/92	27
POTASSIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	48
MAGNESIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	
MANGANESE, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	
SODIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	
NICKEL, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	
LEAD, TOTAL	003	W	92L0187	12/14/91	01/17/92	01/22/92	39
ANTIMONY, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	48
SELENIUM, TOTAL	003	W	92L0187	12/14/91	01/17/92	01/21/92	38
SILICON, TOTAL	003	W	92L0188	12/14/91	01/17/92	02/07/92	55
THALLIUM, TOTAL	003	W	92L0187	12/14/91	01/17/92	01/21/92	38
VANADIUM, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	48
ZINC, TOTAL	003	W	92L0188	12/14/91	01/17/92	01/31/92	48
B019P0							
SILVER, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	48
ALUMINUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	02/03/92	51
ARSENIC, SOLUBLE	004	W	92L0187	12/14/91	01/17/92	01/22/92	39
BARIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	44
BERYLLIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	46
BISMUTH, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	02/03/92	51
CALCIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	48
CADMIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	02/03/92	51
COBALT, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	02/03/92	
CHROMIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	02/03/92	
COPPER, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	44
IRON, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	44
MERCURY, SOLUBLE	004	W	92C0013	12/14/91	01/09/92	01/10/92	27
POTASSIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	48
MAGNESIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	
MANGANESE, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	
SODIUM, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	
NICKEL, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	
LEAD, SOLUBLE	004	W	92L0187	12/14/91	01/17/92	01/22/92	39
ANTIMONY, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	01/31/92	46
SELENIUM, SOLUBLE	004	W	92L0187	12/14/91	01/17/92	01/21/92	34
SILICON, SOLUBLE	004	W	92L0188	12/14/91	01/17/92	02/07/92	55
THALLIUM, SOLUBLE	004	W	92L0187	12/14/91	01/17/92	01/21/92	38

2/16/9

9713523.1515 0000034

Pg 1 of 1

Blank Summary

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP781

Preparation Blank Matrix (soil/water): WATER

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

Not associated w/ samples in this SDG.

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	83.0	U	83.0	U	83.0	U	83.0	U	83.000	U	P
Antimony	23.0	U	23.0	U	23.0	U	23.0	U	23.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	38.0	U	38.0	U	38.0	U	38.0	U	38.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.1	B	3.000	U	P
Calcium	88.0	U	88.0	U	88.0	U	88.0	U	88.000	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	-6.800	B	P
Cobalt	5.0	U	5.0	U	5.0	U	5.0	U	-10.000	B	P
Copper	6.0	U	6.0	U	6.0	U	6.8	B	6.000	U	P
Iron	39.0	U	39.0	U	39.0	U	39.0	U	39.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	78.0	U	78.0	U	78.0	U	78.0	U	78.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.100	U	CV
Nickel	18.0	U	18.0	U	18.0	U	18.0	U	18.000	U	P
Potassium	734.0	U	734.0	U	734.0	U	734.0	U	734.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
Sodium	638.0	U	638.0	U	638.0	U	638.0	U	638.000	U	P
Thallium	2.0	U	2.0	U	2.0	U			2.000	U	F
Vanadium	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
Zinc	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
Cyanide	20.0	U	20.0	U	20.0	U			10.000	U	C

FORM III - IN 03/90

No qualification is required

6/16/92

Accuracy Summary 9713523.1516 0000040 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BO19J9S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP781

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1823.4000		83.0000	U	2000.00	91.2		P
Antimony	75-125	516.7000		23.0000	U	500.00	103.3		P
Arsenic	75-125	36.0000		2.3000	B	40.00	84.2		F
Barium	75-125	2086.4000		47.5000	B	2000.00	101.9		P
Beryllium	75-125	49.9000		1.0000	U	50.00	99.8		P
Cadmium	75-125	45.6 51.5000		5.0 U ~~3.4000~~	B	50.00	91. ~~96.2~~		P
Calcium									NR
Chromium	75-125	205.7000		~~20.~~ ~~14.4000~~		200.00	95.6		P
Cobalt	75-125	476.0000		5.0000	U	500.00	95.2		P
Copper	75-125	261.5000		13.6000	B	250.00	99.2		P
Iron	75-125	1380.5000		360.2000		1000.00	102.0		P
Lead	75-125	10.0000		2.0000	U	20.00	50.0	N	F
Magnesium									NR
Manganese	75-125	546.5000		34.5000		500.00	102.4		P
Mercury									NR
Nickel	75-125	511.7000		25.3000	B	500.00	97.3		P
Potassium									NR
Selenium	75-125	8.0000		2.0000	U	10.00	80.0		F
Silver	75-125	46.2000		4.0000	U	50.00	92.4		P
Sodium									NR
Thallium	75-125	51.2000		2.0000	U	50.00	102.4		F
Vanadium	75-125	523.2000		10.9000	B	500.00	102.5		P
Zinc	75-125	515.3999		5.7000	B	500.00	101.9		P
Cyanide	75-125	104.9680		20.0000	U	100.00	101.4		C

Comments:

FORM V (Part 1) - IN 03/90

Explain.

Precision Summary 9713523.1517 0000049 Pg 1 of 1

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B019J9L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP781

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	83.00	U	415.00	U			P
Antimony	23.00	U	115.00	U			P
Arsenic							NR
Barium	47.50	B	190.00	U	100.0		P
Beryllium	1.00	U	5.00	U			P
Cadmium	3.40	B	15.00	U	100.0		P
Calcium	35156.20		43995.00		25.1	E	P
Chromium	14.40		30.00	U	100.0		P
Cobalt	5.00	U	25.00	U			P
Copper	13.60	B	45.50	B	234.6		P
Iron	360.20		411.00	B	14.1		P
Lead							NR
Magnesium	11075.50		13790.50	B	24.5	E	P
Manganese	34.50		45.50	B	31.9		P
Mercury							NR
Nickel	25.30	B	90.00	U	100.0		P
Potassium	9466.70		13064.50	B	38.0		P
Selenium							NR
Silver	4.00	U	20.00	U			P
Sodium	22030.50		26376.50		19.7		P
Thallium							NR
Vanadium	10.90	B	27.00	B	147.7		P
Zinc	5.70	B	20.00	U	100.0		P

FORM IX - IN

03/90

Na, Mg, Ca outside 20% limits

associated data qual with a J

6/16/95

ACCURACY DATA SUMMARY - FORM B-4

9112L781

SDG: 781	REVIEWER:	DATE: 6/15/92	PAGE 1 OF 1
COMMENTS: EPA Validation			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B0197J9	Arsenic	82.7	B0197J9	J
B0197J9	Lead	40.7	J9	UJ
B0197K0	↓	40.2	K0	↓
B0197N9		53.5	N9	
B0197P0		54.6	P0	
B0197J9	Selenium	45.6	J9	
B0197K0	↓	51.8	K0	
B0197N9		47.9	N9	
B0197P0		56.0	P0	
B0197K0	Thallium	80.2	K0	

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT:	REVIEWER: CJ	DATE: 10/6/97
LABORATORY: Wilton	CASE: —	SDG: 9712L781
SAMPLES/MATRIX: B0167G, B0169G // Water		

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? Cu only (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.

9713523.1523

Holding Time Summary Pg 1 of 2

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

DATE RECEIVED: 12/17/91 RFW LOT # :9112L781

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B019J9							
ALKALINITY	001	W	91LAL062	12/14/91	12/19/91	12/19/91	5
ALKALINITY	001 REP	W	91LAL062	12/14/91	12/19/91	12/19/91	5
CHLORIDE BY IC	001	W	91LIC186	12/14/91	12/18/91	12/18/91	4
CHLORIDE BY IC	001 REP	W	91LIC186	12/14/91	12/18/91	12/18/91	
CHLORIDE BY IC	001 MS	W	91LIC186	12/14/91	12/18/91	12/18/91	
CHLORIDE BY IC	001 MSD	W	91LIC186	12/14/91	12/18/91	12/18/91	
FLUORIDE BY IC	001	W	91LIC186	12/14/91	12/18/91	12/18/91	
FLUORIDE BY IC	001 REP	W	91LIC186	12/14/91	12/18/91	12/18/91	
FLUORIDE BY IC	001 MS	W	91LIC186	12/14/91	12/18/91	12/18/91	
FLUORIDE BY IC	001 MSD	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRITE BY IC	001	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRITE BY IC	001 REP	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRITE BY IC	001 MS	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRITE BY IC	001 MSD	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRATE BY IC	001	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRATE BY IC	001 REP	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRATE BY IC	001 MS	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRATE BY IC	001 MSD	W	91LIC186	12/14/91	12/18/91	12/18/91	1
TOTAL CYANIDE	001	W	91LC382	12/14/91	12/23/91	12/23/91	9
TOTAL CYANIDE	001 REP	W	91LC382	12/14/91	12/23/91	12/23/91	
TOTAL CYANIDE	001 MS	W	91LC382	12/14/91	12/23/91	12/23/91	
TOTAL CYANIDE	001 MSD	W	91LC382	12/14/91	12/23/91	12/23/91	
PHOSPHATE BY IC	001	W	91LIC186	12/14/91	12/18/91	12/18/91	4
PHOSPHATE BY IC	001 REP	W	91LIC186	12/14/91	12/18/91	12/18/91	
PHOSPHATE BY IC	001 MS	W	91LIC186	12/14/91	12/18/91	12/18/91	
PHOSPHATE BY IC	001 MSD	W	91LIC186	12/14/91	12/18/91	12/18/91	
SULFATE BY IC	001	W	91LIC186	12/14/91	12/18/91	12/18/91	
SULFATE BY IC	001 REP	W	91LIC186	12/14/91	12/18/91	12/18/91	
SULFATE BY IC	001 MS	W	91LIC186	12/14/91	12/18/91	12/18/91	
SULFATE BY IC	001 MSD	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRATE NITRITE	001	W	91LNO270	12/14/91	12/30/91	12/30/91	16
NITRATE NITRITE	001 REP	W	91LNO270	12/14/91	12/30/91	12/30/91	
NITRATE NITRITE	001 MS	W	91LNO270	12/14/91	12/30/91	12/30/91	
NITRATE NITRITE	001 MSD	W	91LNO270	12/14/91	12/30/91	12/30/91	
TOTAL ORGANIC CARBON	001	W	92LTC003	12/14/91	01/10/92	01/10/92	27
TOTAL ORGANIC CARBON	001 REP	W	92LTC003	12/14/91	01/10/92	01/10/92	
TOTAL ORGANIC CARBON	001 MS	W	92LTC003	12/14/91	01/10/92	01/10/92	

TDS exceeded 7 day holding time
NO2, NO3, & phosphate exceeded 2 day hold

9713523.1524

Holding Time Summary

Pg 2 of 2

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

DATE RECEIVED: 12/17/91 RFW LOT # :9112L781

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
TOTAL ORGANIC CARBON	001 MSD	W	92LTC003	12/14/91	01/10/92	01/10/92	27
PH	001	W	91LPH211	12/14/91	12/17/91	12/17/91	3
SUB-OUT TEST FOR SUB	001	W		12/14/91			
TOTAL DISSOLVED SOLI	001	W	91LSS182	12/14/91	12/20/91	12/23/91	9
B019N9							
ALKALINITY	003	W	91LAL062	12/14/91	12/19/91	12/19/91	5
CHLORIDE BY IC	003	W	91LIC186	12/14/91	12/18/91	12/18/91	4
FLUORIDE BY IC	003	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRITE BY IC	003	W	91LIC186	12/14/91	12/18/91	12/18/91	
NITRATE BY IC	003	W	91LIC186	12/14/91	12/18/91	12/18/91	
TOTAL CYANIDE	003	W	91LC382	12/14/91	12/23/91	12/23/91	9
PHOSPHATE BY IC	003	W	91LIC186	12/14/91	12/18/91	12/18/91	4
SULFATE BY IC	003	W	91LIC186	12/14/91	12/18/91	12/18/91	4
NITRATE NITRITE	003	W	91LNO270	12/14/91	12/30/91	12/30/91	14
TOTAL ORGANIC CARBON	003	W	92LTC003	12/14/91	01/10/92	01/10/92	27
PH	003	W	91LPH211	12/14/91	12/17/91	12/17/91	3
PH	003 REP	W	91LPH211	12/14/91	12/17/91	12/17/91	3
SUB-OUT TEST FOR SUB	003	W		12/14/91			
TOTAL DISSOLVED SOLI	003	W	91LSS182	12/14/91	12/20/91	12/23/91	9
TOTAL DISSOLVED SOLI	003 REP	W	91LSS182	12/14/91	12/20/91	12/23/91	9

LAB QC:

ALKALINITY	MB1	W	91LAL062	N/A	12/19/91	12/19/91
ALKALINITY	MB1 BS	W	91LAL062	N/A	12/19/91	12/19/91
ALKALINITY	MB1 BSD	W	91LAL062	N/A	12/19/91	12/19/91
ALKALINITY	MB2	W	91LAL062	N/A	12/19/91	12/19/91
ALKALINITY	MB2 BS	W	91LAL062	N/A	12/19/91	12/19/91
CHLORIDE BY IC	MB1	W	91LIC186	N/A	12/18/91	12/18/91
CHLORIDE BY IC	MB1 BS	W	91LIC186	N/A	12/18/91	12/18/91
FLUORIDE BY IC	MB1	W	91LIC186	N/A	12/18/91	12/18/91
FLUORIDE BY IC	MB1 BS	W	91LIC186	N/A	12/18/91	12/18/91
NITRITE BY IC	MB1	W	91LIC186	N/A	12/18/91	12/18/91
NITRITE BY IC	MB1 BS	W	91LIC186	N/A	12/18/91	12/18/91
NITRATE BY IC	MB1	W	91LIC186	N/A	12/18/91	12/18/91
NITRATE BY IC	MB1 BS	W	91LIC186	N/A	12/18/91	12/18/91
PHOSPHATE BY IC	MB1	W	91LIC186	N/A	12/18/91	12/18/91
PHOSPHATE BY IC	MB1 BS	W	91LIC186	N/A	12/18/91	12/18/91

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT:	REVIEWER: cj	DATE: 6/8/92
LABORATORY: WESTON	CASE: —	SDG: 9112-L781
SAMPLES/MATRIX: BG1B35 / WATER		

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		—	—	X

6/16/92

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		X	—	✓ @6/16/92
Additional Data				
Moisture/% solids data sheets		—	—	✓
Reduction formulae		—	—	✓
Instrument time logs		X	—	✓ @6/16/92
Chemist notebook pages		—	—	✓
Sample preparation sheets		✓	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

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

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

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? (Yes) No N/A

Are all RSD values ≤30% (2/88 SOW)? Yes (No) N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes (No) N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

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

3.3. CONTINUING CALIBRATION

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

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

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

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

4.2. FIELD BLANKS

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

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

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?	Yes	(No)	N/A
Are any surrogate recoveries < 10%?	Yes	(No)	N/A
Are any method blank surrogate recoveries out of specification?	Yes	(No)	N/A

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

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	(Yes)	No	N/A
Are there any calculation errors?	Yes	(No)	N/A

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

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

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

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

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

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

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

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

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? no TCL detected	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)

6/16/92
6/18/92 See narrative

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

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

9. OVERALL ASSESSMENT AND SUMMARY

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

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

9213523-1532
Holding Time Summary

pg 1 of 1

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

DATE RECEIVED: 12/17/91 RFW LOT # :9112L781

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO1B35	005	W	91LVK221	12/14/91	N/A	12/26/91
BO1B35	005 MS	W	91LVK221	12/14/91	N/A	12/26/91
BO1B35	005 MSD	W	91LVK221	12/14/91	N/A	12/26/91
LAB QC:						
VBLK	MB1	W	91LVK221	N/A	N/A	12/26/91

Days 12

All holding times met

6/6/92

Calibration 9713523.1533 0000027 pg 1 of 2

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L781

Instrument ID: HP-MSD K Calibration Date(s): 12/26/91 12/26/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = AKC007 RRF50 = AKC002
RRF100= AKC006 RRF150= AKC005 RRF200= AKC004

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	0.560	0.611	0.478	0.509	0.494	0.530	10.3#
Bromomethane	1.234	1.348	1.153	1.147	1.101	1.197	8.1
Vinyl Chloride *	0.780	0.896	0.744	0.759	0.705	0.777	9.3*
Chloroethane	0.513	0.570	0.477	0.459	0.472	0.498	9.0
Methylene Chloride	0.985	1.087	0.900	0.905	0.851	0.946	9.8
Acetone	0.299	0.214	0.152	0.148	0.145	0.192	34.7
Carbon Disulfide	2.608	2.947	2.540	2.602	2.501	2.640	6.7
1,1-Dichloroethene *	1.041	1.049	0.947	0.926	0.890	0.971	7.3*
1,1-Dichloroethane #	1.949	2.162	1.974	1.975	1.866	1.985	5.5#
1,2-Dichloroethene (total)	0.983	1.089	0.996	1.001	0.945	1.003	5.3
Chloroform *	2.798	2.870	2.620	2.609	2.486	2.677	5.8*
1,2-Dichloroethane	0.500	0.469	0.458	0.462	0.421	0.462	6.1
2-Butanone	0.027	0.042	0.041	0.039	0.039	0.038	16.3 R
1,1,1-Trichloroethane	2.667	2.660	2.470	2.447	2.355	2.520	5.5
Carbon Tetrachloride	2.707	2.790	2.608	2.530	2.446	2.616	5.2
Vinyl Acetate	1.431	1.622	1.284	1.532	1.229	1.420	11.6
Bromodichloromethane	0.741	0.762	0.721	0.711	0.675	0.722	4.5
1,2-Dichloropropane *	0.288	0.316	0.290	0.288	0.272	0.291	5.5*
cis-1,3-Dichloropropene	0.542	0.572	0.535	0.525	0.503	0.535	4.7
Trichloroethene	0.439	0.438	0.469	0.415	0.413	0.435	5.2
Dibromochloromethane	0.849	0.849	0.833	0.818	0.770	0.824	4.0
1,1,2-Trichloroethane	0.330	0.336	0.318	0.313	0.284	0.316	6.3
Benzene	0.592	0.637	0.579	0.577	0.552	0.587	5.3
Trans-1,3-Dichloropropene	0.481	0.506	0.489	0.480	0.451	0.481	4.2
Bromoform #	0.700	0.721	0.696	0.702	0.636	0.691	4.7#
4-Methyl-2-pentanone	0.236	0.235	0.227	0.224	0.203	0.225	5.9
2-Hexanone	0.181	0.152	0.150	0.141	0.131	0.151	12.3
Tetrachloroethene	0.536	0.541	0.506	0.489	0.458	0.506	6.8
1,1,2,2-Tetrachloroethane #	0.453	0.476	0.298	0.422	0.326	0.395	19.9#
Toluene *	0.512	0.533	0.493	0.487	0.463	0.497	5.3*
Chlorobenzene #	0.786	0.817	0.762	0.752	0.712	0.766	5.1#
Ethylbenzene *	0.329	0.337	0.316	0.311	0.298	0.318	4.9*
Styrene	0.691	0.713	0.676	0.671	0.635	0.677	4.2
Xylene (total)	0.403	0.414	0.384	0.381	0.362	0.389	5.3
Toluene-d8	1.296	1.210	1.142	1.114	1.048	1.162	8.1
Bromofluorobenzene	1.297	1.176	1.106	1.087	1.000	1.133	9.8
1,2-Dichloroethane-d4	0.654	0.575	0.581	0.558	0.508	0.575	9.1

Acetone - detects qual as J
2 Butanone - all detects qual as J
all ND as R

12/16/92

Calibration 9[illegible] 1534 00000028 Pg 2 of 2

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Roy F. Weston, Inc. Contract: 6168-02-01-0000

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L781

Instrument ID: HP-MSD K Calibration Date: 12/26/91 Time: 0949

Lab File ID: AKCQ02 Init. Calib. Date(s): 12/26/91 12/26/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D	
Chloromethane #	0.530	0.611	-15.3	# ✓
Bromomethane	1.197	1.348	-12.6	
Vinyl Chloride *	0.777	0.896	-15.4	* ✓
Chloroethane	0.498	0.570	-14.4	
Methylene Chloride	0.946	1.087	-14.9	
Acetone	0.192	0.214	-11.5	
Carbon Disulfide	2.640	2.947	-11.6	
1,1-Dichloroethene *	0.971	1.049	-8.0	* ✓
1,1-Dichloroethane #	1.985	2.162	-8.9	# ✓
1,2-Dichloroethene (total)	1.003	1.089	-8.6	
Chloroform *	2.677	2.870	-7.2	* ✓
1,2-Dichloroethane	0.462	0.469	-1.5	
2-Butanone	0.038	0.042	-10.8	R
1,1,1-Trichloroethane	2.520	2.660	-5.6	
Carbon Tetrachloride	2.616	2.790	-6.6	
Vinyl Acetate	1.420	1.622	-14.2	
Bromodichloromethane	0.722	0.762	-5.5	
1,2-Dichloropropane *	0.291	0.316	-8.7	* ✓
cis-1,3-Dichloropropene	0.535	0.572	-6.8	
Trichloroethene	0.435	0.438	-0.6	
Dibromochloromethane	0.824	0.849	-3.0	
1,1,2-Trichloroethane	0.316	0.336	-6.2	
Benzene	0.587	0.637	-8.6	
Trans-1,3-Dichloropropene	0.481	0.506	-5.2	
Bromoform #	0.691	0.721	-4.3	# ✓
4-Methyl-2-pentanone	0.225	0.235	-4.6	
2-Hexanone	0.151	0.152	-0.9	
Tetrachloroethene	0.506	0.541	-6.8	
1,1,2,2-Tetrachloroethane #	0.395	0.476	-20.6	# ✓
Toluene *	0.497	0.533	-7.2	* ✓
Chlorobenzene #	0.766	0.817	-6.6	# ✓
Ethylbenzene *	0.318	0.337	-6.1	* ✓
Styrene	0.677	0.713	-5.3	
Xylene (total)	0.389	0.414	-6.5	
Toluene-d8	1.162	1.211	-4.2	
Bromofluorobenzene	1.133	1.176	-3.8	
1,2-Dichloroethane-d4	0.575	0.575	-0.1	

FORM VII VOA 5/88 Rev.

2 Butanone - all results qual. as R or J

6/16/94

Blank- Sum 9713524.1535 0000053 Pg 1 of 1

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 91LVK221-MB1

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: AKC008

Level: (low/med) LOW Date Received: 12/26/91

% Moisture: not dec. _____ Date Analyzed: 12/26/91

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) ug/L		
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	1	J	x10=10 u
67-64-1	Acetone	8	J	x10=80
75-15-0	Carbon Disulfide	5	U	
75-35-4	1,1-Dichloroethene	2	J	x5=10 u
75-34-3	1,1-Dichloroethane	5	U	
540-59-0	1,2-Dichloroethene (total)	5	U	
67-66-3	Chloroform	5	U	
107-06-2	1,2-Dichloroethane	5	U	
78-93-3	2-Butanone	10	~~U~~	R
71-55-6	1,1,1-Trichloroethane	5	U	
56-23-5	Carbon Tetrachloride	5	U	
108-05-4	Vinyl Acetate	10	U	
75-27-4	Bromodichloromethane	5	U	
78-87-5	1,2-Dichloropropane	5	U	
10061-01-5	cis-1,3-Dichloropropene	5	U	
79-01-6	Trichloroethene	5	U	
124-48-1	Dibromochloromethane	5	U	
79-00-5	1,1,2-Trichloroethane	5	U	
71-43-2	Benzene	5	U	
10061-02-6	Trans-1,3-Dichloropropene	5	U	
75-25-2	Bromoform	5	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	5	U	
79-34-5	1,1,2,2-Tetrachloroethane	5	U	
108-88-3	Toluene	5	U	
108-90-7	Chlorobenzene	5	U	
100-41-4	Ethylbenzene	5	U	
100-42-5	Styrene	5	U	
1330-20-7	Xylene (total)	5	U	

FORM 1 V-1 12/88 Rev.

Bromoform qualified to R

MeCl2 = 1 x 10 = 10

Acetone = 8 x 10 = 80

1,1-DCE = 2 x 5 = 10

6/16/92

APPENDIX H

DATA VALIDATION DOCUMENTATION

SDG: 9112L829

SAMPLES: B019D1, B019D2

CONTAINS:

ATTACHMENT 1 - GLOSSARY OF DATA REPORTING QUALIFIERS
ATTACHMENT 2 - SUMMARY OF DATA QUALIFICATIONS
ATTACHMENT 3 - AS QUALIFIED LABORATORY DATA
ATTACHMENT 4 - DATA VALIDATION SUPPORTING DOCUMENTATION

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable 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 presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 41121-829	REVIEWER: [illegible]	DATE: 6/15/92	PAGE 1 OF 1
COMMENTS: Rist Chem/Metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Nitrite	UJ	B01901	Analyzed past holding time
Nitrate	J	↓	↓
Phosphate	UJ	↓	↓
TDS	J	↓	↓
pH	J	B01901	Analyzed past holding time
Mercury	UJ	All	Analyzed past holding time
Arsenic	J	All	MS&R out of control limits
Iron	J	↓	↓
Mercury	R	↓	MS&R = 0
Iron	J	All	Dup RPD out of control limits
Calcium	J	All	ICP serial diln %D > 10%
Magnesium	J	↓	↓
Sodium	J	↓	↓
Lead	UJ	All	GFAA Analytical Spikes out of control limits
Selenium	J	B01901	↓
Thallium	UJ	301901	↓
Silver	U	All	Present in Blank
Vanadium	J	All	Dilute & re-analyze

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
699-55-57
B019D1
Total

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP829

Matrix (soil/water): WATER Lab Sample ID: 911282901

Level (low/med): LOW Date Received: 12/19/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	23.00	U		P
7440-38-2	Arsenic	3.60	B	N	F
7440-39-3	Barium	38.00	U		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	73400.00			P
7440-47-3	Chromium	50.20			P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	6.80	B		P
7439-89-6	Iron	3410.00		N*	P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	23000.00			P
7439-96-5	Manganese	67.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	8050.00			P
7782-49-2	Selenium	2.50	B	W	F
7440-22-4	Silver	~~4.30~~ 10 6/24/92	B	4.3	P
7440-23-5	Sodium	31500.00			P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	14.60	B		P
7440-66-6	Zinc	13.60	B		P
	Cyanide	99.90	U	@ 6/19/92	C
7440-69-9	Bismuth	150	U		P
7440-21-3	Silicon	7790			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6/15/92

9713523.1542

0000021

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
699-55-57LF. Hex
B019D2
Dissolved

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP829

Matrix (soil/water): WATER Lab Sample ID: 911282902

Level (low/med): LOW Date Received: 12/19/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	120.00			P
7440-38-2	Arsenic	2.60	B	N	F
7440-39-3	Barium	216.00			P
7440-41-7	Beryllium	10.70			P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	77300.00			P
7440-47-3	Chromium	20.40			P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	49.90			P
7439-89-6	Iron	41.60	B	*N	P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	1080.00	B		P
7439-96-5	Manganese	40.30			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	794.00	B		P
7782-49-2	Selenium	12.80 ~~13.30~~		S	F
7440-22-4	Silver	23.50			P
7440-23-5	Sodium	984.00	B		P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	10.80	B		P
7440-66-6	Zinc	48.70			P
	Cyanide				NR
7440-69-9	Bismuth	150	U		P
7440-21-3	Silicon	8010			P

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

6/15/92

9713523.1543

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/10/92

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

WESTON BATCH #: 9112L829

699-55-57

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B019D1	Alkalinity	90.0	MG/L	2.0
		Chloride by IC	21.7	MG/L	2.5
		Fluoride by IC	0.50 u	MG/L	0.50
		Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	108	MG/L	2.5
		Cyanide, Total	99.9	UG/L	20.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	135	MG/L	2.5
		~~Nitrate Nitrite~~	~~26.7~~	~~MG-N/L~~	~~2.5~~ R
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	7.6	PH UNITS	0.010
		Total Dissolved Solids	503	MG/L	5.0

6/15/9

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/15/92
LABORATORY: Weston	CASE: 9112L829	SDG: 829
SAMPLES/MATRIX: B0190L B0190Z / waters		

1. COMPLETENESS AND CONTRACT COMPLIANCE

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

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		X	—	—
Cover Page		X	—	—
Traffic Reports		X	—	—
Sample Data				
Inorganic Analysis Data Sheets		X	—	—
Standards Data				
Initial and Continuing Calibration Verification		X	—	—
CRDL Standard for AA and ICP		X	—	—
QC Summary				
Blanks		X	—	—
ICP Interference Check Summary		X	—	—
Spike Sample Recovery		X	—	—
Post-Digestion Spike Sample Recovery		X	—	—
Duplicate		X	—	—
Laboratory Control Sample		X	—	—
Standard Addition Results		X	—	—
ICP Serial Dilutions		X	—	—
Instrument Detection Limits		X	—	—
ICP Interelement Correction Factors		X	—	—
ICP Linear Ranges		X	—	—
Preparation Log		X	—	—
Analysis Run Log		X	—	—
Raw Data				
ICP Raw Data		X	—	—
Furnace AA Raw Data		X	—	—
Mercury Raw Data		X	—	—
Cyanide Raw Data		X	—	—
Additional Data				
Internal laboratory chain-of-custody		X	—	—
Laboratory Sample Preparation Records		X	—	—

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

2. HOLDING TIMES

Have all samples been analyzed within holding times? Yes (No) N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) No N/A

Was a midrange cyanide standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

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

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

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

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

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

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

8. MATRIX SPIKE SAMPLE ANALYSIS

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

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

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

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

ACTION: Qualify the sample data according to the following requirements:

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

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

10. PERFORMANCE AUDIT ANALYSES

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

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

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes (No) N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes (No) N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

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

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

14. FIELD SPLIT SAMPLES

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

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

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? (Yes) No N/A

If no, were samples rerun once as required? Yes No (N/A)

Does the RSD for the rerun fall within the control limits? Yes No (N/A)

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required? (Yes) No N/A

Are MSA correlation coefficients ≥0.995? (Yes) No N/A

If no, was a second MSA analysis performed? Yes No (N/A)

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

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes (No) N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP? (Yes) No N/A

Are all detection limits below the CRQL? (Yes) No N/A

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

18. OVERALL ASSESSMENT AND SUMMARY

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

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

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

H-9213523.1550 Inve Summary

Pg 1 of 3

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

DATE RECEIVED: 12/19/91 RFW LOT # :9112L829

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B019D1							
SILVER, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92	48
SILVER, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92	
SILVER, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92	
ALUMINUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92	62
ALUMINUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92	
ALUMINUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92	
ARSENIC, TOTAL	001	W	92L0205	12/14/91	01/18/92	01/23/92	40
ARSENIC, TOTAL	001 REP	W	92L0205	12/14/91	01/18/92	01/23/92	
ARSENIC, TOTAL	001 MS	W	92L0205	12/14/91	01/18/92	01/23/92	
BARIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92	48
BARIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92	
BARIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92	
BERYLLIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92	
BERYLLIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92	
BERYLLIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92	
BISMUTH, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92	62
BISMUTH, TOTAL REP	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92	
BISMUTH, TOTAL SPIKE	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92	
CALCIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92	
CALCIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92	
CALCIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92	
CADMIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92	
CADMIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92	
CADMIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92	
COBALT, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92	
COBALT, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92	
COBALT, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92	
CHROMIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92	48
CHROMIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92	
CHROMIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92	
COPPER, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92	
COPPER, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92	
COPPER, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92	
IRON, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92	62
IRON, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92	
IRON, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92	
MERCURY, TOTAL	001	W	92CC018	12/14/91	01/13/92	01/14/92	31

6/2/92

Hold 9713523.7551e Summary Pg 2 of 3

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

DATE RECEIVED: 12/19/91 RFW LOT # :9112L829

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92 48
POTASSIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92
POTASSIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92
MAGNESIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92
MAGNESIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92
MAGNESIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92
MANGANESE, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92 62
MANGANESE, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92
MANGANESE, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92
SODIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92 48
SODIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92
SODIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92
NICKEL, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92 62
NICKEL, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92
NICKEL, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92
LEAD, TOTAL	001	W	92L0205	12/14/91	01/18/92	01/23/92 40
LEAD, TOTAL	001 REP	W	92L0205	12/14/91	01/18/92	01/23/92
LEAD, TOTAL	001 MS	W	92L0205	12/14/91	01/18/92	01/23/92
ANTIMONY, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92 48
ANTIMONY, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92
ANTIMONY, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92
SELENIUM, TOTAL	001	W	92L0205	12/14/91	01/18/92	01/23/92 40
SELENIUM, TOTAL	001 REP	W	92L0205	12/14/91	01/18/92	01/23/92
SELENIUM, TOTAL	001 MS	W	92L0205	12/14/91	01/18/92	01/23/92
SILICON, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/07/92 55
SILICON, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/07/92
SILICON, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/07/92
THALLIUM, TOTAL	001	W	92L0205	12/14/91	01/18/92	01/22/92 39
THALLIUM, TOTAL	001 REP	W	92L0205	12/14/91	01/18/92	01/22/92
THALLIUM, TOTAL	001 MS	W	92L0205	12/14/91	01/18/92	01/22/92
VANADIUM, TOTAL	001	W	92L0206	12/14/91	01/18/92	02/14/92 62
VANADIUM, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	02/14/92
VANADIUM, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	02/14/92
ZINC, TOTAL	001	W	92L0206	12/14/91	01/18/92	01/31/92 48
ZINC, TOTAL	001 REP	W	92L0206	12/14/91	01/18/92	01/31/92
ZINC, TOTAL	001 MS	W	92L0206	12/14/91	01/18/92	01/31/92
B019D2						
SILVER, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 48

6/15/a

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

DATE RECEIVED: 12/19/91 RFW LOT # :9112L829

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 62
ARSENIC, SOLUBLE	002	W	92L0205	12/14/91	01/18/92	01/23/92 40
BARIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 48
BERYLLIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 ↓
BISMUTH, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 62
CALCIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 ↓
CADMIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 ↓
COBALT, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 62
CHROMIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 48
COPPER, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 ↓
IRON, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 62
MERCURY, SOLUBLE	002	W	92C0018	12/14/91	01/13/92	01/14/92 31
MERCURY, SOLUBLE	002 REP	W	92C0018	12/14/91	01/13/92	01/14/92 ↓
MERCURY, SOLUBLE	002 MS	W	92C0018	12/14/91	01/13/92	01/14/92 ↓
POTASSIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 48
MAGNESIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 ↓
MANGANESE, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 62
SODIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 48
NICKEL, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 62
LEAD, SOLUBLE	002	W	92L0205	12/14/91	01/18/92	01/23/92 40
ANTIMONY, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 48
SELENIUM, SOLUBLE	002	W	92L0205	12/14/91	01/18/92	01/23/92 40
SILICON, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/07/92 55
THALLIUM, SOLUBLE	002	W	92L0205	12/14/91	01/18/92	01/22/92 39
VANADIUM, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	02/14/92 62
ZINC, SOLUBLE	002	W	92L0206	12/14/91	01/18/92	01/31/92 48

LAB QC:

SILVER LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	01/31/92
ALUMINUM LABORTORY	LC1 BS	W	92L0206	N/A	01/18/92	02/14/92
BARIUM LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	01/31/92
BERYLLIUM LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	01/31/92
BISMUTH, LCS	LC1 BS	W	92L0206	N/A	01/18/92	02/14/92
CALCIUM LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	02/14/92
CADMIUM LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	02/14/92
COBALT LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	02/14/92
CHROMIUM LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	01/31/92
COPPER LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	01/31/92
IRON LABORATORY	LC1 BS	W	92L0206	N/A	01/18/92	02/14/92

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Blank Summary

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U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP829

Preparation Blank Matrix (soil/water): WATER

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
	5X		5X		5X						
Aluminum	83.0	U	83.0	U	83.0	U	83.0	U	83.000	U	P
Antimony	23.0	U	23.0	U	23.0	U	23.0	U	23.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	38.0	U	38.0	U	38.0	U	38.0	U	38.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	-3.400	B	P
Calcium	88.0	U	88.0	U	88.0	U	88.0	U	88.000	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Cobalt	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
Copper	6.0	U	6.0	U	6.0	U	6.0	U	6.000	U	P
Iron	39.0	U	39.0	U	39.0	U	39.0	U	39.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	78.0	U	78.0	U	78.0	U	78.0	U	78.000	U	P
Manganese	12.5 (2.5	B	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.100	U	CV
Nickel	18.0	U	18.0	U	18.0	U	18.0	U	18.000	U	P
Potassium	734.0	U	734.0	U	734.0	U	734.0	U	734.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	27 (5.4	B	24 (4.8	B	37.5 (7.5	B	4.0	U	4.000	U	P
Sodium	638.0	U	638.0	U	638.0	U	638.0	U	638.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Vanadium	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
Zinc	4.0	U	4.0	U	4.0	U	4.0	U	4.000	U	P
Cyanide	20.0	U	20.0	U					10.000	U	C

FORM III - IN 03/90

6/15/92

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B019D1S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP829

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1802.7000		83.0000	U	2000.00	90.1		P
Antimony	75-125	489.8999		23.0000	U	500.00	98.0		P
Arsenic	75-125	31.2000		3.6000	B	40.00	69.0	N	F
Barium	75-125	2027.7000		38.0000	U	2000.00	101.4		P
Beryllium	75-125	47.5000		1.0000	U	50.00	95.0		P
Cadmium	75-125	42.0000		3.0000	U	50.00	84.0		P
Calcium									NR
Chromium	75-125	249.0000		50.2000		200.00	99.4		P
Cobalt	75-125	446.0000		5.0000	U	500.00	89.2		P
Copper	75-125	249.5000		6.8000	B	250.00	97.1		P
Iron	75-125	4010.9000		3411.6000		1000.00	59.9	N	P
Lead	75-125	18.1000		2.0000	U	20.00	90.5		F
Magnesium									NR
Manganese	75-125	508.5000		67.0000		500.00	88.3		P
Mercury									NR
Nickel	75-125	455.0000		18.0000	U	500.00	91.0		P
Potassium									NR
Selenium	75-125	12.9000		2.5000	B	10.00	104.0		F
Silver	75-125	53.5000		4.3000	B	50.00	98.4		P
Sodium									NR
Thallium	75-125	41.6000		2.0000	U	50.00	83.2		F
Vanadium	75-125	454.3999		14.6000	B	500.00	88.0		P
Zinc	75-125	508.2000		13.6000	B	500.00	98.9		P
Cyanide	75-125	190.2860		99.9000	U	100.00	90.3		C

6/15/92

Comments:

FORM V (Part 1) - IN 03/90

6/15/92

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U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B019D2S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP829

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury	75-125	.1000	U	.1000	U	1.00	0.0		CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

FORM V (Part 1) - IN 03/90

6/15/92

Precision Summary

U.S. EPA - CLP

EPA SAMPLE NO.

6
DUPLICATES

B019D1D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP829

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

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
Aluminum		83.0000	U	83.0000	U			P
Antimony		23.0000	U	23.0000	U			P
Arsenic		3.6000	B	2.9000	B	21.5		F
Barium		38.0000	U	38.0000	U			P
Beryllium		1.0000	U	1.0000	U			P
Cadmium		3.0000	U	3.0000	U			P
Calcium		73368.0000		71859.6900		2.1		P
Chromium	10.0	50.2000		47.2000		6.2		P
Cobalt		5.0000	U	5.0000	U			P
Copper		6.8000	B	6.0000	B	12.5		P
Iron		3411.6000		2607.3000		26.7	*	P
Lead		2.0000	U	2.0000	U			F
Magnesium	5000.0	22970.6000		21997.7000		4.3		P
Manganese	15.0	67.0000		58.0000		14.4		P
Mercury								NR
Nickel		18.0000	U	20.5000	B	200.0		P
Potassium	5000.0	8054.3980		7990.3980		.8		P
Selenium		2.5000	B	2.0000	U	200.0		F
Silver	10.0	4.3000	B	12.3000		96.4		P
Sodium		31549.8000		30287.7000		4.1		P
Thallium		2.0000	U	2.0000	U			F
Vanadium		14.6000	B	9.2000	B	45.4		P
Zinc		13.6000	B	13.1000	B	3.7		P
Cyanide	20.0	99.9430	U	104.6670		4.7		C

FORM VI - IN

03/90

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Precision 07/3523/1557 41, 42 + 43 PD 2 of 2

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B019D1L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP829

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	83.00	U	415.00	U			P
Antimony	23.00	U	115.00	U			P
Arsenic							NR
Barium	38.00	U	190.00	U			P
Beryllium	1.00	U	5.00	U			P
Cadmium	3.00	U	15.00	U			P
Calcium	73368.00		91149.00		24.2	E	P
Chromium	50.20		83.00		65.3		P
Cobalt	5.00	U	25.00	U			P
Copper	6.80	B	49.00	B	620.6		P
Iron	3411.60		3272.50		4.1	E	P
Lead							NR
Magnesium	22970.60		34381.99		49.7	E	P
Manganese	67.00		83.00		23.9		P
Mercury							NR
Nickel	18.00	U	90.00	U			P
Potassium	8054.40		11032.00	B	37.0		P
Selenium							NR
Silver	4.30	B	37.50	B	772.1		P
Sodium	31549.80		45698.01		44.8		P
Thallium							NR
Vanadium	14.60	B	25.00	U	100.0		P
Zinc	13.60	B	29.50	B	116.9		P

FORM IX - IN

03/90

6/15/92

ACCURACY DATA SUMMARY - FORM B-4

7/12L 8:29

SDG: 8:29	REVIEWER: [illegible]	DATE: 6/5/97	PAGE 1 OF 1
COMMENTS: GTAA Analytical Services			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B0191	Lead	67.7	B0191	UJ
B0192	Lead	79.3	02	UJ
B0191	Selenium	71.5	01	J
B0192	Selenium	52.0	02	X Analyzed by MSA 6/5/97
B0191	Thallium	83.0	01	UJ

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER:	DATE: 6/15/92
LABORATORY: Weston	CASE: 9112L829	SDG: 829
SAMPLES/MATRIX: B01901 / Waters		

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		X	—	—
Cover Page		X	—	—
Traffic Reports/Chain-of-Custody		X	—	—
Sample Analysis Data Report Forms		X	—	—
Standards Data		X	—	—
QC Summary				
Blanks Summary Report Forms		X	—	—
Spike Sample Recovery Report Forms		X	—	—
Duplicate Sample Analysis Report Forms		X	—	—
Laboratory Control Sample Report Forms		X	—	—
Raw Data				
Ion Chromatograph Chromatograms		X	—	—
TOC and TOX Instrument Printouts		—	TOC	TOX
Laboratory Bench Sheets		X	—	—
Additional Data				
Laboratory Sample Preparation Logs		X	—	—
Instrument Run Logs		X	—	—
Internal Laboratory Chain-of-Custory	6/15/92	—	X	—
Percent Solids Analysis Records		—	—	X
Reduction Formulae		—	X	—
Chemist Notebook Pages		—	X	—

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):

The sample results for nitrates and sulfate exceed the spike concentration by a factor greater than 4. ~~and~~ The MS & recoveries were still within the limits of 75 to 125%

6/15/97

Holding Time Summary

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

DATE RECEIVED: 12/19/91 RFW LOT # :9112L829

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B019D1							
ALKALINITY	001	W	91LAL063	12/14/91	12/28/91	12/28/91	14
ALKALINITY	001 REP	W	91LAL063	12/14/91	12/28/91	12/28/91	
CHLORIDE BY IC	001	W	91LIC187	12/14/91	12/19/91	12/19/91	5
CHLORIDE BY IC	001 REP	W	91LIC187	12/14/91	12/19/91	12/19/91	
CHLORIDE BY IC	001 MS	W	91LIC187	12/14/91	12/19/91	12/19/91	
CHLORIDE BY IC	001 MSD	W	91LIC187	12/14/91	12/19/91	12/19/91	
FLUORIDE BY IC	001	W	91LIC187	12/14/91	12/19/91	12/19/91	
FLUORIDE BY IC	001 REP	W	91LIC187	12/14/91	12/19/91	12/19/91	
FLUORIDE BY IC	001 MS	W	91LIC187	12/14/91	12/19/91	12/19/91	
FLUORIDE BY IC	001 MSD	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRITE BY IC	001	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRITE BY IC	001 REP	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRITE BY IC	001 MS	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRITE BY IC	001 MSD	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRATE BY IC	001	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRATE BY IC	001 REP	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRATE BY IC	001 MS	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRATE BY IC	001 MSD	W	91LIC187	12/14/91	12/19/91	12/19/91	
TOTAL CYANIDE	001	W	91LC385	12/14/91	12/27/91	12/27/91	13
TOTAL CYANIDE	001 REP	W	91LC385	12/14/91	12/27/91	12/27/91	
TOTAL CYANIDE	001 MS	W	91LC385	12/14/91	12/27/91	12/27/91	
TOTAL CYANIDE	001 MSD	W	91LC385	12/14/91	12/27/91	12/27/91	
PHOSPHATE BY IC	001	W	91LIC187	12/14/91	12/19/91	12/19/91	5
PHOSPHATE BY IC	001 REP	W	91LIC187	12/14/91	12/19/91	12/19/91	
PHOSPHATE BY IC	001 MS	W	91LIC187	12/14/91	12/19/91	12/19/91	
PHOSPHATE BY IC	001 MSD	W	91LIC187	12/14/91	12/19/91	12/19/91	
SULFATE BY IC	001	W	91LIC187	12/14/91	12/19/91	12/19/91	
SULFATE BY IC	001 REP	W	91LIC187	12/14/91	12/19/91	12/19/91	
SULFATE BY IC	001 MS	W	91LIC187	12/14/91	12/19/91	12/19/91	
SULFATE BY IC	001 MSD	W	91LIC187	12/14/91	12/19/91	12/19/91	
NITRATE NITRITE	001	W	91LNO270	12/14/91	12/30/91	12/30/91	16
NITRATE NITRITE	001 REP	W	91LNO270	12/14/91	12/30/91	12/30/91	
NITRATE NITRITE	001 MS	W	91LNO270	12/14/91	12/30/91	12/30/91	
NITRATE NITRITE	001 MSD	W	91LNO270	12/14/91	12/30/91	12/30/91	
TOTAL ORGANIC CARBON	001	W	92LTC002	12/14/91	01/08/92	01/08/92	25
TOTAL ORGANIC CARBON	001 REP	W	92LTC002	12/14/91	01/08/92	01/08/92	
TOTAL ORGANIC CARBON	001 MS	W	92LTC002	12/14/91	01/08/92	01/08/92	

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Holding Time Summary

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

DATE RECEIVED: 12/19/91 RFW LOT # :9112L829

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL ORGANIC CARBON	001 MSD	W	92LTC002	12/14/91	01/08/92	01/08/92 25
PH	001	W	91LPH212	12/14/91	12/19/91	12/19/91 5
SUB-OUT TEST FOR SUB	001	W		12/14/91		
TOTAL DISSOLVED SOLI	001	W	91LSS183	12/14/91	12/23/91	12/26/91 12
TOTAL DISSOLVED SOLI	001 REP	W	91LSS183	12/14/91	12/23/91	12/26/91 "

LAB QC:

ALKALINITY	MB1	W	91LAL063	N/A	12/28/91	12/28/91
ALKALINITY	MB1 BS	W	91LAL063	N/A	12/28/91	12/28/91
ALKALINITY	MB1 BSD	W	91LAL063	N/A	12/28/91	12/28/91
ALKALINITY	MB2	W	91LAL063	N/A	12/28/91	12/28/91
ALKALINITY	MB2 BS	W	91LAL063	N/A	12/28/91	12/28/91
CHLORIDE BY IC	MB1	W	91LIC187	N/A	12/19/91	12/19/91
CHLORIDE BY IC	MB1 BS	W	91LIC187	N/A	12/19/91	12/19/91
FLUORIDE BY IC	MB1	W	91LIC187	N/A	12/19/91	12/19/91
FLUORIDE BY IC	MB1 BS	W	91LIC187	N/A	12/19/91	12/19/91
NITRITE BY IC	MB1	W	91LIC187	N/A	12/19/91	12/19/91
NITRITE BY IC	MB1 BS	W	91LIC187	N/A	12/19/91	12/19/91
NITRATE BY IC	MB1	W	91LIC187	N/A	12/19/91	12/19/91
NITRATE BY IC	MB1 BS	W	91LIC187	N/A	12/19/91	12/19/91
PHOSPHATE BY IC	MB1	W	91LIC187	N/A	12/19/91	12/19/91
PHOSPHATE BY IC	MB1 BS	W	91LIC187	N/A	12/19/91	12/19/91
SULFATE BY IC	MB1	W	91LIC187	N/A	12/19/91	12/19/91
SULFATE BY IC	MB1 BS	W	91LIC187	N/A	12/19/91	12/19/91
TOTAL CYANIDE	LC1 L	W	91LC385	N/A	12/27/91	12/27/91
TOTAL CYANIDE	LC2 L	W	91LC385	N/A	12/27/91	12/27/91
TOTAL CYANIDE	MB1	W	91LC385	N/A	12/27/91	12/27/91
NITRATE NITRITE	MB1	W	91LNO270	N/A	12/30/91	12/30/91
NITRATE NITRITE	MB1 BS	W	91LNO270	N/A	12/30/91	12/30/91
NITRATE NITRITE	MB1 BSD	W	91LNO270	N/A	12/30/91	12/30/91
NITRATE NITRITE	MB2	W	91LNO270	N/A	12/30/91	12/30/91
NITRATE NITRITE	MB2 BS	W	91LNO270	N/A	12/30/91	12/30/91
TOTAL ORGANIC CARBON	MB1	W	92LTC002	N/A	01/08/92	01/08/92
TOTAL ORGANIC CARBON	MB1 BS	W	92LTC002	N/A	01/08/92	01/08/92
TOTAL ORGANIC CARBON	MB1 BSD	W	92LTC002	N/A	01/08/92	01/08/92
TOTAL ORGANIC CARBON	MB2	W	92LTC002	N/A	01/08/92	01/08/92
TOTAL ORGANIC CARBON	MB2 BS	W	92LTC002	N/A	01/08/92	01/08/92
TOTAL ORGANIC CARBON	MB3	W	92LTC002	N/A	01/08/92	01/08/92
TOTAL ORGANIC CARBON	MB3 BS	W	92LTC002	N/A	01/08/92	01/08/92