9111L354-WES-240

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July 6, 1992

Our ref: 913-1719
S/O/1463

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

JAN 1997 RECEIVED EDMC

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 91111354, 91111389, 91111404, 91111514, 91121619, 91121661, AND 91121747 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.

for Kent Angelos
Task Manager

Donald M. Caldwell
Project Director

Enclosures

KMA/DMC/ah

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Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS
Data Packages: 9111L354, 9111L389, 9111L404, 9111L514, 9112L619, 9112L661, 9112L747
Matrix: Soil
Analysis Type: Organics/Metals/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

July 2, 1992

913-1719

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F Data Validation Documentation, SDG 9112L619
G Data Validation Documentation, SDG 9112L661
H Data Validation Documentation, SDG 9112L747

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
9111L354	B015L7	Soil
9111L389	B015L9, B015M1	Soil
9111L404	B015M5, B015M3	Soil
9111L514	B015M7	Soil
9112L619	B015N1, B015N3, B015N5, B015N7	Soil
9112L661	B015N9	Soil
9112L747	B015P3, B015P7	Soil

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 9112L619, samples B015N1 and B015N3 were identified as field duplicates. The results for the volatile and pesticide/PCB parameters were all non-detects; therefore, the relative percent differences (RPD) were not calculated. The RPD range for semivolatiles was 11% to 200%, for metals the range was 1% to 200%, and for wet chemistry 0% to 188%.

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

- The 2-butanone result in sample B015N9 from SDG 9112L661 has been rejected since the initial and continuing calibration relative response factors (RRF) values are less than 0.05.

Semivolatile Organics

- Aldol condensation products detected in samples from SDGs: 9111L354, 9111L389, 9111L404, 9111L514, 9112L661, and 9112L747 have been rejected since they are suspected laboratory contaminants.

- 2,4-Dinitrophenol and 4,6-dinitro-2-methylphenol results in sample B015P7 from SDG 9112L747 have been rejected since the initial calibration RRF values are less than 0.05.

Pesticide/PCBs

- Gamma-BHC, heptachlor, 4,4'-DDT, and Arochlor 1254 (sample B015N1 only), alpha-chlordane (sample B015N3 only), and heptachlor (sample B015N5 only) were rejected since these compounds were detected on the quantitation column, however, they could not be confirmed since the data from the confirmation column was not included in the package.

Metals

- Silver results were rejected in samples B015L9 and B015M1 from SDG 9111L389 since the matrix spike sample recovery was zero percent and the sample results were less than the IDL.

Wet Chemistry

- Nitrate+nitrite results in SDGs: 9111L354, 9111L389, 9111L404, 9111L514, 9112L619, 9112L661, and 9112L747 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 H 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 9111L404: Methylene chloride, acetone, and 2-butanone.
- SDG 9111L514: Bromomethane, acetone, vinyl acetate.
- SDG 9112L747: Chloromethane and chloroethane.

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 9111L354: Bromoform.
- SDG 9111L389: Acetone, 2-butanone, vinyl acetate, 4-methyl-2-pentanone, 2-hexanone (sample B015L9) and 2-butanone, 4-methyl-2-pentanone, and 2-hexanone (sample B015M1 only).
- SDG 9111L514: 2-Butanone, 4-methyl-2-pentanone, and 2-hexanone.
- SDG 9112L619: Chloromethane and 2-butanone.
- SDG 9112L747: Bromomethane, chloroethane, acetone and 2-butanone (sample B015P3) and chloromethane, acetone, 2-butanone, 2-hexanone (sample B015P7).

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

Blanks

The following compounds were detected in the laboratory blanks.

- SDG 9111L354: Methylene chloride and acetone.
- SDG 9111L514: Methylene chloride.
- SDG 9112L619: Methylene chloride and acetone.
- SDG 9112L661: Acetone.
- SDG 9112L747: Methylene chloride and acetone.

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

Internal Standards

- SDG 9112L747: All three internal standard area counts were outside the control limits for samples B015P3, B015P7, and B015P7 Rerun; therefore, all associated results have been qualified as estimated (UJ).

3.2.2 Semivolatile Organics

Initial Calibrations

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

- SDG 9111L404: 2,4-Dinitrophenol.

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 9111L354: Hexachlorocyclopentadiene.
- SDG 9111L389: Benzoic acid, hexachlorocyclopentadiene, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, and 4,6-dinitro-2-methylphenol.
- SDG 9111L404: Benzyl alcohol, 2-methylphenol, bis(2-chloroisopropyl)ether, 4-methylphenol, N-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 3-nitroaniline, and 4-nitroaniline.

- SDG 9111L514: 3,3'-Dichlorobenzidine, benzo(b)fluoranthene, and benzo(k)fluoranthene.
- SDG 9112L661: 2,4-Dimethylphenol and 3-nitroaniline.
- SDG 9112L747: 4-chlorophenyl-phenylether, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene, and the surrogate 2,4,6-tribromophenol.

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

Blanks

The following compounds were detected in the laboratory blanks.

- SDG 9111L354: Bis(2-Ethylhexyl)phthalate.
- SDG 9111L389: Di-n-butylphthalate.
- SDG 9111L404: Bis(2-Ethylhexyl)phthalate.
- SDG 9111L514: Tentatively identified compound - Adipate at a relative retention time (RRT) of 22.40.

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

Internal Standards

- SDG 9112L661: Two of the six internal standard area counts were outside the control limits for sample B015N9. Therefore, the sample results associated with chrysene-d12 and perylene-d12 have been qualified as estimated (UJ).

Tentatively Identified Compounds (TICs)

- SDG 9112L619: Unknown TICs were detected in samples B015N1, B015N3, B015N5, and B015N7 and have been qualified as NJ.
- SDG 9112L747: Adipate (sample B015P3 and B015P7) and unknown (B015P7 only) were detected as TICs and have been qualified as NJ.

3.2.3 Pesticide/PCB Organics

Holding Times

The following samples were extracted out of holding time.

- Samples B015L9, B015M1, B015N9, B015P3, B015N1, B015N3, B015N5, and B015N7.

Sample results and quantitation limits for samples associated with the above SDGs have been qualified as estimated (J for detects, UJ for non-detects)

Quantitation Limits

Quantitation limits were reported incorrectly for the following samples. Since the samples were prepared by GPC, the CRQL must be multiplied by a factor of 2 in accordance with the SOW.

- Samples B015L7, B015L9, B015M1, B015M5, B015M3, B015M7, B015N1, B015N3, B015N5, B015N7, and B015N9.

Dilution factors were reported incorrectly for the following samples. The reported dilution factor was 2.50 as opposed to the correct factor of 5.0. The sample quantitation limits have been corrected by multiplying by a factor of two.

- Samples B015P3 and B015P7.

Quantitation limits for the above samples have been corrected on the report forms.

3.2.4 Metals

Holding Times

The following samples were analyzed for mercury out of holding time.

- Samples B015L7, B015N1, B015N3, and B015N5.

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 9112L747: Antimony, cadmium, cobalt, and zinc.

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

Spike Sample Recovery

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

- SDG 9111L354: Lead.

- SDG 9111L389: Antimony, cadmium, manganese, selenium, and thallium.
- SDG 9111L404: Arsenic and silver.
- SDG 9111L514: Antimony, arsenic, lead, selenium, and thallium.
- SDG 9112L619: Antimony, manganese, and selenium.
- SDG 9112L661: Antimony, lead, and nickel.
- SDG 9112L747: Antimony and arsenic.

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 9111L404: Calcium.
- SDG 9112L619: Barium.

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 9111L389: Aluminum, calcium, iron, magnesium, and manganese.
- SDG 9112L661: Aluminum, calcium, iron, magnesium, manganese, and sodium.
- SDG 9112L747: Aluminum, calcium, iron, magnesium, and manganese.

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 9111L354: Lead and selenium; however, lead was analyzed by MSA and did not require qualification.

- SDG 9111L389: Selenium and thallium.
- SDG 9111L514: Lead, selenium, and thallium. However, lead was analyzed by MSA and therefore did not require qualification.
- SDG 9112L619: Selenium and thallium (sample B015N3 only for thallium).
- SDG 9112L661: Lead which was analyzed by MSA and therefore did not require qualification.
- SDG 9112L747: Lead and selenium (sample B015P7 only). Samples B015P3 and B015P7 were analyzed for lead by MSA 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 9111L354: Nitrate, cyanide, and phosphate.
- SDG 9111L389: Nitrite, nitrate, cyanide, and phosphate.
- SDG 9111L404: Nitrite, nitrate, and phosphate.
- SDG 9111L514: Nitrite, nitrate, and phosphate.
- SDG 9112L619: Nitrite, nitrate, phosphate, and TOC (sample B015N7 only).
- SDG 9112L661: Nitrate, phosphate, and nitrate+nitrite. However, since nitrate+nitrite has already been rejected, no further qualification was required.
- SDG 9112L747: Nitrate and phosphate.

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

Spike Recovery

The following spike recoveries were less than 75%:

- SDG 9111L404: Total organic carbon (TOC).

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- SDG 9112L661: Cyanide.
- SDG 9112L747: Cyanide.

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

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.

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APPENDIX A

AS QUALIFIED DATA SUMMARY

Project 200-BP-1																	
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619			
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3	
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A	
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0	
Remarks														DUPLICATE		DUPLICATE	
Sample Date		11/07/91		11/08/91		11/08/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91	
Analysis Date		11/13/91		11/18/91		11/20/91		11/15/91		11/15/91		11/25/91		12/10/91		12/10/91	
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	11	U	10	U	10	UJ	10	UJ
Bromomethane	10	10	U	10	U	10	U	10	U	11	U	10	UJ	10	U	10	U
Vinyl Chloride	10	10	U	10	U	10	U	10	U	11	U	10	U	10	U	10	U
Chloroethane	10	10	U	10	U	10	U	10	U	11	U	10	U	10	U	10	U
Methylene Chloride	5	16	U	26	B	23	B	32	J	31	J	9	U	7	U	11	U
Acetone	10	23	U	59	J	18		87	J	82	J	49	J	14	U	26	U
Carbon Disulfide	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
1,1-Dichloroethane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Chloroform	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
2-Butanone	10	10	U	10	UJ	10	UJ	10	UJ	11	UJ	10	UJ	10	UJ	10	UJ
1,1,1-Trichloroethane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Vinyl Acetate	10	10	U	10	UJ	10	U	10	U	11	U	10	UJ	10	U	10	U
Bromodichloromethane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Trichloroethene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Dibromochloromethane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Benzene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
trans-1,3-Dichloropropene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Bromoform	5	5	UJ	5	U	5	U	5	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone	10	10	U	10	UJ	10	UJ	10	U	11	U	10	UJ	10	U	10	U

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Project 200-BP-1																	
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619			
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3	
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A	
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0	
Remarks														DUPLICATE		DUPLICATE	
Sample Date		11/07/91		11/08/91		11/08/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91	
Analysis Date		11/13/91		11/18/91		11/20/91		11/15/91		11/15/91		11/25/91		12/10/91		12/10/91	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2-Hexanone	10	10	U	10	UJ	10	UJ	10	U	11	U	10	UJ	10	U	10	U
Tetrachloroethene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Toluene	5	1	J	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Chlorobenzene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Ethylbenzene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Styrene	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U
Xylene (total)	5	5	U	5	U	5	U	5	U	6	U	5	U	5	U	5	U

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Project 200-BP-1													
Case West	SDG					9112L661		9112L747					
Sample Number		B015N5		B015N7		B015N9		B015P3		B015P7		B015P7RE	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0		8.5-11.0	
Remarks													
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91		12/11/91	
Analysis Date		12/10/91		12/10/91		12/11/91		12/18/91		12/20/91		12/21/91	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	UJ	10	UJ	11	U	10	UJ	10	UJ	10	UJ
Bromomethane	10	10	U	10	U	11	U	10	UJ	10	UJ	10	UJ
Vinyl Chloride	10	10	U	10	U	11	U	10	UJ	10	UJ	10	UJ
Chloroethane	10	10	U	10	U	11	U	10	UJ	10	UJ	10	UJ
Methylene Chloride	5	13	U	6	U	6	U	15	UJ	9	UJ	5	UJ
Acetone	10	31	U	15	U	29	U	20	UJ	43	UJ	15	UJ
Carbon Disulfide	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
1,1-Dichloroethene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
1,1-Dichloroethane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
1,2-Dichloroethene (total)	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Chloroform	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
1,2-Dichloroethane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
2-Butanone	10	10	UJ	10	UJ	11	R	10	UJ	10	UJ	10	UJ
1,1,1-Trichloroethane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Carbon Tetrachloride	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Vinyl Acetate	10	10	U	10	U	11	U	10	UJ	10	UJ	10	UJ
Bromodichloromethane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
1,2-Dichloropropane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
cis-1,3-Dichloropropene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Trichloroethene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Dibromochloromethane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
1,1,2-Trichloroethane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Benzene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
trans-1,3-Dichloropropene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Bromoform	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
4-Methyl-2-pentanone	10	10	U	10	U	11	U	10	UJ	10	UJ	10	UJ

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Project 200-BP-1													
Case West	SDG					9112L661		9112L747					
Sample Number		B015N5		B015N7		B015N9		B015P3		B015P7		B015P7RE	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0		8.5-11.0	
Remarks													
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91		12/11/91	
Analysis Date		12/10/91		12/10/91		12/11/91		12/18/91		12/20/91		12/21/91	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2-Hexanone	10	10	U	10	U	11	U	10	UJ	10	UJ	10	UJ
Tetrachloroethene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
1,1,2,2-Tetrachloroethane	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Toluene	5	5	U	5	U	6	U	1	J	5	UJ	5	UJ
Chlorobenzene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Ethylbenzene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Styrene	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ
Xylene (total)	5	5	U	5	U	6	U	5	UJ	5	UJ	5	UJ

9713516.1335

Project 200-BP-1																	
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619			
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3	
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A	
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0	
Remarks														DUPLICATE		DUPLICATE	
Sample Date		11/07/91		11/08/91		11/08/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91	
Extraction Date		11/12/91		11/14/91		11/14/91		11/19/91		11/19/91		11/25/92		12/06/91		12/06/91	
Analysis Date		11/22/91		11/23/91		11/23/91		11/27/91		11/27/91		12/12/91		01/02/92		01/02/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
bis(2-Chloroethyl)ether	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2-Chlorophenol	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
1,3-Dichlorobenzene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
1,4-Dichlorobenzene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Benzyl Alcohol	330	340	U	340	U	340	U	350	UJ	350	UJ	340	U	350	U	350	U
1,2-Dichlorobenzene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2-Methylphenol	330	340	U	340	U	340	U	350	UJ	350	UJ	340	U	350	U	350	U
bis(2-Chloroisopropyl)ether	330	340	U	340	U	340	U	350	UJ	350	UJ	340	U	350	U	350	U
4-Methylphenol	330	340	U	340	U	340	U	350	UJ	350	UJ	340	U	350	U	350	U
N-Nitroso-di-n-propylamine	330	340	U	340	U	340	U	350	UJ	350	UJ	340	U	350	U	350	U
Hexachloroethane	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Nitrobenzene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Isophorone	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2-Nitrophenol	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2,4-Dimethylphenol	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Benzoic acid	1600	1700	U	1700	UJ	1700	UJ	1700	U	1800	U	1700	U	41	J	1800	U
bis(2-Chloroethoxy)methane	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2,4-Dichlorophenol	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
1,2,4-Trichlorobenzene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Naphthalene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
4-Chloroaniline	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Hexachlorobutadiene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
4-Chloro-3-methylphenol	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2-Methylnaphthalene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Hexachlorocyclopentadiene	330	340	UJ	340	UJ	340	UJ	350	UJ	350	UJ	340	U	350	U	350	U
2,4,6-Trichlorophenol	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U

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Project 200-BP-1																	
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619			
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3	
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A	
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0	
Remarks														DUPLICATE		DUPLICATE	
Sample Date		11/07/91		11/08/91		11/08/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91	
Extraction Date		11/12/91		11/14/91		11/14/91		11/19/91		11/19/91		11/25/92		12/06/91		12/06/91	
Analysis Date		11/22/91		11/23/91		11/23/91		11/27/91		11/27/91		12/12/91		01/02/92		01/02/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4,5-Trichlorophenol	1600	1700	U	1700	U	1700	U	1700	U	1800	U	1700	U	1800	U	1800	U
2-Chloronaphthalene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2-Nitroaniline	1600	1700	U	1700	U	1700	U	1700	U	1800	U	1700	U	1800	U	1800	U
Dimethylphthalate	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Acenaphthylene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2,6-Dinitrotoluene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
3-Nitroaniline	1600	1700	U	1700	U	1700	U	1700	UJ	1800	UJ	1700	U	1800	U	1800	U
Acenaphthene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2,4-Dinitrophenol	1600	1700	U	1700	UJ	1700	UJ	1700	UJ	1800	UJ	1700	U	1800	U	1800	U
4-Nitrophenol	1600	1700	U	1700	UJ	1700	UJ	1700	U	1800	U	1700	U	1800	U	1800	U
Dibenzofuran	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
2,4-Dinitrotoluene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Diethylphthalate	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
4-Chlorophenyl-phenyl ether	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Fluorene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
4-Nitroaniline	1600	1700	U	1700	UJ	1700	UJ	1700	UJ	1800	UJ	1700	U	1800	U	1800	U
4,6-Dinitro-2-methylphenol	1600	1700	U	1700	UJ	1700	UJ	1700	U	1800	U	1700	U	1800	U	1800	U
N-Nitrosodiphenylamine	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
4-Bromophenyl-phenylether	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Hexachlorobenzene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Pentachlorophenol	1600	1700	U	1700	U	1700	U	1700	U	1800	U	1700	U	1800	U	1800	U
Phenanthrene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Anthracene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Di-n-butylphthalate	330	55	J	340	U	340	U	350	U	350	U	340	U	96	J	140	J
Fluoranthene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Pyrene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Butylbenzylphthalate	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U

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Project 200-BP-1																
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619		
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0
Remarks														DUPLICATE		DUPLICATE
Sample Date		11/07/91		11/08/91		11/08/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91
Extraction Date		11/12/91		11/14/91		11/14/91		11/19/91		11/19/91		11/25/92		12/06/91		12/06/91
Analysis Date		11/22/91		11/23/91		11/23/91		11/27/91		11/27/91		12/12/91		01/02/92		01/02/92
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3,3'-Dichlorobenzidine	660	690	U	680	U	680	U	700	U	710	U	680	UJ	700	U	700	U
Benz(a)anthracene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Chrysene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
bis(2-Ethylhexyl)phthalate	330	340	U	340	U	340	U	350	U	350	U	340	U	49	J	44	J
Di-n-octylphthalate	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Benzo(b)fluoranthene	330	340	U	340	U	340	U	350	U	350	U	340	UJ	350	U	350	U
Benzo(k)fluoranthene	330	340	U	340	U	340	U	350	U	350	U	340	UJ	350	U	350	U
Benzo(a)pyrene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Dibenz(a,h)anthracene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Benzo(g,h,i)perylene	330	340	U	340	U	340	U	350	U	350	U	340	U	350	U	350	U
Aldol Condensate @ 4.8		100	R	200	R	300	R										
Aldol Condensate @ 6.3		200	R														
Aldol Condensate @ 5.72								200	R	100	R						
Aldol Condensate @ 5.52												100	R				
Adipate @ 22.23												3000	U				
Unknown @ 25.10														300	NJ		
Adipate @ 27.57														50000	NJ		
Pthalate @ 22.02																100	NJ
Unknown @ 22.90																300	NJ
Alkane @ 25.13																100	NJ
Adipate @ 27.57																1000	NJ
Unknown @ 31.15																200	NJ
Unknown @ 22.90																	
Adipate @ 27.55																	
Unknown @ 31.13																	
Tributylphosphate @ 19.13																	

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Project 200-BP-1																	
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619			
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3	
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A	
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0	
Remarks														DUPLICATE		DUPLICATE	
Sample Date		11/07/91		11/08/91		11/08/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91	
Extraction Date		11/12/91		11/14/91		11/14/91		11/19/91		11/19/91		11/25/92		12/06/91		12/06/91	
Analysis Date		11/22/91		11/23/91		11/23/91		11/27/91		11/27/91		12/12/91		01/02/92		01/02/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Adipate @ 27.55																	
Unknown @ 31.15																	
Aldol Condensate @ 5.83																	
Aldol Condensate @ 6.21																	
Adipate @ 23.18																	
Aldol Condensate @ 6.32																	
Aldol Condensate @ 7.92																	
Adipate @ 23.28																	
Unknown @ 24.10																	

9713516.1339

Project 200-BP-1											
Case West	SDG					9112L661		9112L747			
Sample Number		B015N5		B015N7		B015N9		B015P3		B015P7	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0	
Remarks											
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91	
Extraction Date		12/06/91		12/06/91		12/13/91		12/13/91		12/13/91	
Analysis Date		01/02/92		01/02/92		01/03/92		01/10/92		01/21/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	350	U	330	U	340	U	330	U	350	U
bis(2-Chloroethyl)ether	330	350	U	330	U	340	U	330	U	350	U
2-Chlorophenol	330	350	U	330	U	340	U	330	U	350	U
1,3-Dichlorobenzene	330	350	U	330	U	340	U	330	U	350	U
1,4-Dichlorobenzene	330	350	U	330	U	340	U	330	U	350	U
Benzyl Alcohol	330	350	U	330	U	340	U	330	U	350	U
1,2-Dichlorobenzene	330	350	U	330	U	340	U	330	U	350	U
2-Methylphenol	330	350	U	330	U	340	U	330	U	350	U
bis(2-Chloroisopropyl)ether	330	350	U	330	U	340	U	330	U	350	U
4-Methylphenol	330	350	U	330	U	340	U	330	U	350	U
N-Nitroso-di-n-propylamine	330	350	U	330	U	340	U	330	U	350	U
Hexachloroethane	330	350	U	330	U	340	U	330	U	350	U
Nitrobenzene	330	350	U	330	U	340	U	330	U	350	U
Isophorone	330	350	U	330	U	340	U	330	U	350	U
2-Nitrophenol	330	350	U	330	U	340	U	330	U	350	U
2,4-Dimethylphenol	330	350	U	330	U	340	UJ	330	U	350	U
Benzoic acid	1600	1700	U	1700	U	1700	U	1600	U	1700	U
bis(2-Chloroethoxy)methane	330	350	U	330	U	340	U	330	U	350	U
2,4-Dichlorophenol	330	350	U	330	U	340	U	330	U	350	U
1,2,4-Trichlorobenzene	330	350	U	330	U	340	U	330	U	350	U
Naphthalene	330	350	U	330	U	340	U	330	U	350	U
4-Chloroaniline	330	350	U	330	U	340	U	330	U	350	U
Hexachlorobutadiene	330	350	U	330	U	340	U	330	U	350	U
4-Chloro-3-methylphenol	330	350	U	330	U	340	U	330	U	350	U
2-Methylnaphthalene	330	350	U	330	U	340	U	330	U	350	U
Hexachlorocyclopentadiene	330	350	U	330	U	340	U	330	U	350	U
2,4,6-Trichlorophenol	330	350	U	330	U	340	U	330	U	350	U

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Project 200-BP-1											
Case West	SDG					9112L661		9112L747			
Sample Number		B015N5		B015N7		B015N9		B015P3		B015P7	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0	
Remarks											
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91	
Extraction Date		12/06/91		12/06/91		12/13/91		12/13/91		12/13/91	
Analysis Date		01/02/92		01/02/92		01/03/92		01/10/92		01/21/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,4,5-Trichlorophenol	1600	1700	U	1700	U	1700	U	1600	U	1700	U
2-Chloronaphthalene	330	350	U	330	U	340	U	330	U	350	U
2-Nitroaniline	1600	1700	U	1700	U	1700	U	1600	U	1700	U
Dimethylphthalate	330	350	U	330	U	340	U	330	U	350	U
Acenaphthylene	330	350	U	330	U	340	U	330	U	350	U
2,6-Dinitrotoluene	330	350	U	330	U	340	U	330	U	350	U
3-Nitroaniline	1600	1700	U	1700	U	1700	UJ	1600	U	1700	U
Acenaphthene	330	350	U	330	U	340	U	330	U	350	U
2,4-Dinitrophenol	1600	1700	U	1700	U	1700	U	1600	U	1700	R
4-Nitrophenol	1600	1700	U	1700	U	1700	U	1600	U	1700	U
Dibenzofuran	330	350	U	330	U	340	U	330	U	350	U
2,4-Dinitrotoluene	330	350	U	330	U	340	U	330	U	350	U
Diethylphthalate	330	350	U	330	U	340	U	330	U	350	U
4-Chlorophenyl-phenyl ether	330	350	U	330	U	340	U	330	UJ	350	U
Fluorene	330	350	U	330	U	340	U	330	U	350	U
4-Nitroaniline	1600	1700	U	1700	U	1700	U	1600	U	1700	U
4,6-Dinitro-2-methylphenol	1600	1700	U	1700	U	1700	U	1600	U	1700	R
N-Nitrosodiphenylamine	330	350	U	330	U	340	U	330	U	350	U
4-Bromophenyl-phenylether	330	350	U	330	U	340	U	330	U	350	U
Hexachlorobenzene	330	350	U	330	U	340	U	330	U	350	U
Pentachlorophenol	1600	1700	U	1700	U	1700	U	1600	U	1700	U
Phenanthrene	330	350	U	330	U	340	U	330	U	350	U
Anthracene	330	350	U	330	U	340	U	330	U	350	U
Di-n-butylphthalate	330	96	J	84	J	51	J	330	U	40	J
Fluoranthene	330	350	U	330	U	340	U	330	U	350	U
Pyrene	330	350	U	330	U	340	UJ	330	U	350	U
Butylbenzylphthalate	330	350	U	330	U	340	UJ	330	U	350	U

9713516.1341

Project 200-BP-1											
Case West	SDG					9112L661		9112L747			
Sample Number		B015N5		B015N7		B015N9		B015P3		B015P7	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0	
Remarks											
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91	
Extraction Date		12/06/91		12/06/91		12/13/91		12/13/91		12/13/91	
Analysis Date		01/02/92		01/02/92		01/03/92		01/10/92		01/21/92	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3,3'-Dichlorobenzidine	660	700	U	670	U	680	UJ	660	U	690	U
Benz(a)anthracene	330	350	U	330	U	340	UJ	330	U	350	U
Chrysene	330	350	U	330	U	340	UJ	330	U	350	U
bis(2-Ethylhexyl)phthalate	330	42	J	99	J	340	UJ	67	J	170	J
Di-n-octylphthalate	330	350	U	330	U	340	UJ	330	U	350	U
Benzo(b)fluoranthene	330	350	U	330	U	340	UJ	330	U	350	U
Benzo(k)fluoranthene	330	350	U	330	U	340	UJ	330	U	350	U
Benzo(a)pyrene	330	350	U	330	U	340	UJ	330	U	350	U
Indeno(1,2,3-cd)pyrene	330	350	U	330	U	340	UJ	330	UJ	350	U
Dibenz(a,h)anthracene	330	350	U	330	U	340	UJ	330	UJ	350	U
Benzo(g,h,i)perylene	330	350	U	330	U	340	UJ	330	UJ	350	U
Aldol Condensate @ 4.8											
Aldol Condensate @ 6.3											
Aldol Condensate @ 5.72											
Aldol Condensate @ 5.52											
Adipate @ 22.23											
Unknown @ 25.10											
Adipate @ 27.57											
Pthalate @ 22.02											
Unknown @ 22.90											
Alkane @ 25.13											
Adipate @ 27.57											
Unknown @ 31.15											
Unknown @ 22.90		200	NJ	300	NJ						
Adipate @ 27.55		200	NJ								
Unknown @ 31.13		200	NJ								
Tributylphosphate @ 19.13				300	NJ						

9713516.1342

Project 200-BP-1											
Case West	SDG					9112L661		9112L747			
Sample Number		B015N5		B015N7		B015N9		B015P3		B015P7	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0	
Remarks											
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91	
Extraction Date		12/10/91		12/10/91		12/16/91		12/18/91		12/18/91	
Analysis Date		12/23/91		12/23/91		01/09/92		01/27/92		01/27/92	
Pesticide/PCB Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	8.0	16	UJ	16	UJ	18	UJ	42	UJ	42	U
beta-BHC	8.0	16	UJ	16	UJ	18	UJ	42	UJ	42	U
delta-BHC	8.0	16	UJ	16	UJ	18	UJ	42	UJ	42	U
gamma-BHC (Lindane)	8.0	16	UJ	16	UJ	18	UJ	42	UJ	42	U
Heptchlor	8.0	16	R	16	UJ	18	UJ	42	UJ	42	U
Aldrin	8.0	16	UJ	16	UJ	18	UJ	42	UJ	42	U
Heptachlor epoxide	8.0	16	UJ	16	UJ	18	UJ	42	UJ	42	U
Endosulfan I	8.0	16	UJ	16	UJ	18	UJ	42	UJ	42	U
Dieldrin	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
4,4'-DDE	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
Endrin	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
Endosulfan II	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
4,4'-DDD	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
Endosulfan sulfate	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
4,4'-DDT	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
Methoxychlor	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
Endrin Ketone	16.0	32	UJ	32	UJ	36	UJ	84	UJ	84	U
alpha-Chlordane	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
gamma-Chlordane	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
Toxaphene	160.0	320	UJ	320	UJ	360	UJ	840	UJ	840	U
Arochlor-1016	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
Arochlor-1221	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
Arochlor-1232	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
Arochlor-1242	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
Arochlor-1248	80.0	160	UJ	160	UJ	180	UJ	420	UJ	420	U
Arochlor-1254	160.0	320	UJ	320	UJ	360	UJ	840	UJ	840	U
Arochlor-1260	160.0	320	UJ	320	UJ	360	UJ	840	UJ	840	U

9713516.1343

Project 200-BP-1																	
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619			
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3	
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A	
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0	
Remarks														DUPLICATE		DUPLICATE	
Sample Date		11/07/91		11/08/91		11/11/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91	
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	40	5520		3130	J	3090	J	2140		3790		2640		4720		4070	
Antimony	12	4.18	U	3.95	UJ	4.07	UJ	3.91	U	4.07	U	3.88	UJ	4.01	UJ	3.87	UJ
Arsenic	2	2	B	1.2	B	1.7	B	0.82	J	1.8	J	3	J	1.3	B	1.4	B
Barium	40	68.8		49		51.3		40		53.1		40.2		70.7	J	60.1	J
Beryllium	1	0.42	B	0.26	B	0.26	B	0.27	B	0.35	B	0.19	U	0.44	B	0.43	B
Cadmium	1	0.63	U	0.59	UJ	0.61	UJ	0.59	U	0.61	U	0.58	U	0.6	U	2	
Calcium	1000	7010		7130	J	5890	J	6100	J	7870	J	6510		7030		7090	
Chromium	2	6.7		4.5		3.8		3.4		5.8		3.3		6.7		5.3	
Cobalt	10	8.8	B	5.4	B	5.2	B	4.8	B	6.2	B	3.6	B	8.2	B	6.7	B
Copper	5	11.9		10.3		8.3		9.9		10.5		6.8		10.9		10.1	
Iron	20	15900		8820	J	9900	J	6130		10300		7400		14000		12300	
Lead	0.6	4.9	J	2		2.7		2.1		4.6		3.1	J	3.2		3.6	
Magnesium	1000	3800		2410	J	2370	J	1780		2950		2200		3400		3060	
Manganese	3	264		185	J	206	J	146		219		154		267	J	234	J
Mercury	0.04	0.05	UJ	0.05	U	0.05	U	0.1	B	0.05	U	0.22		0.05	UJ	0.05	UJ
Nickel	8	7.3	B	6.3	B	5.7	B	5.7	B	6.8	B	5.7	B	7.5	B	6.4	B
Potassium	1000	1200		1030		732	B	450	B	952	B	657	B	1070		852	B
Selenium	1	0.4	UJ	0.39	UJ	0.39	UJ	0.39	UJ	0.39	UJ	0.39	UJ	0.39	UJ	0.41	UJ
Silver	2	2.1	U	1.98	R	2.04	R	1.38	J	2.5	J	1.94	U	2	U	1.94	U
Sodium	1000	215	B	137	B	230	B	836	B	350	B	1340		186	B	171	B
Thallium	2	0.4	U	0.39	UJ	0.39	UJ	0.39	U	0.39	U	0.39	UJ	0.39	U	0.41	UJ
Vanadium	10	29.4		14.2		16.4		9.5	B	17.5		11		26.4		21.9	
Zinc	4	31.9		19.5		19.5		14.5		23.1		21.2		30.7		30.1	
Cyanide	2	1.05	UJ	1.03	UJ	1.04	UJ	1.03	U	1.05	U	1.02	U	1.05	U	1.05	U
Bismuth	12	32		39.5	U	40.7	U	39.1	U	40.7	U	38.8	U	30	U	29.1	U
% Solids	0.1	95.4		97.2		96.5		97.5		94.9		97.6		95.6		95	
Chloride by IC	4			7.6		4.2		1.3		18.2		7.9		2.4		2.3	
Fluoride by IC	4			2.6	U	1.7	J	2.6	U	2.6	U	2.6	U	1.7		1.6	
Nitrite by IC	4			1.3	UJ	1.3	UJ	1.3	UJ	1.3	UJ	2.4	J	1.3	UJ	1.2	UJ

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Project 200-BP-1																
Case West	SDG	9111L354		9111L389				9111L404				9111L514		9112L619		
Sample Number		B015L7		B015L9		B015M1		B015M5		B015M3		B015M7		B015N1		B015N3
Location		216-B-43A		216-B-49B		216-B-49B		216-B-50A		216-B-43A		216-B-49B		216-B-46A		216-B-46A
		2.5-4.5		2.5-5.0		10.0-12.5		26.5-29.0		10.4-12.9		24.0-29.5		3.0-6.0		3.0-6.0
Remarks														DUPLICATE		DUPLICATE
Sample Date		11/07/91		11/08/91		11/11/91		11/12/91		11/12/91		11/20/91		12/02/91		12/02/91
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Nitrate by IC	4	73.7	J	61.9	J	24.9	J	13.6	J	36.5	J	339	J	42.1	J	42.2	J
Phosphate by IC	4	1.6	J	1.9	J	1.3	UJ	18	J	1.3	UJ	154	J	1.6	J	1.6	J
Sulfate by IC	4	28.5		30.1		233		3.3		517		45.6		19.8		20.2	
Nitrate Nitrite	4	17.8	R	15.4	R	6.9	R	7.5	R	10	R	91.4	R	12.8	R	13.4	R
Total Organic Carbon	0.05	0.57												17.3		0.53	
Total Organic Carbon	50			2250		2450		1280	J	1580	J	1410					

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Project 200-BP-1											
Case West	SDG					9112L661		9112L747			
Sample Number		BO15N5		B015N7		B015N9		B015P3		B015P7	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0	
Remarks											
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91	
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	40	3220		3770		4040	J	4240	J	3270	J
Antimony	12	4	UJ	3.95	UJ	5.09	UJ	7	UJ	8.9	UJ
Arsenic	2	1	B	1.2	B	1.5	B	2.2	J	2	J
Barium	40	44.1	J	68.1	J	53.7		70		65.8	
Beryllium	1	0.3	B	0.38	B	0.22	U	0.31	B	0.24	B
Cadmium	1	.60	U	0.59	U	0.66	U	1.3	U	1.3	U
Calcium	1000	5880		5630		5680	J	7750	J	6000	J
Chromium	2	4		8.5		6.5		5.7		4.2	
Cobalt	10	5.5	B	9.4	B	5.9	B	8.7	U	7.1	U
Copper	5	8.7		17.8		8.8		12.4		11	
Iron	20	10500		16500		11100	J	12100	J	9530	J
Lead	0.6	2.7		2.5		3.4	J	4.9		4	
Magnesium	1000	2480		2930		3420	J	3170	J	2530	J
Manganese	3	174	J	241	J	205	J	266	J	218	J
Mercury	0.04	0.05	UJ	0.05	U	0.18		0.05	U	0.05	U
Nickel	8	4.5	B	10.8		17.5	J	8.9		6.7	B
Potassium	1000	720	B	558	B	690	B	1250		845	B
Selenium	1	0.41	UJ	0.38	UJ	0.44	U	0.42	U	0.42	UJ
Silver	2	2	U	1.98	U	0.88	U	0.83	U	0.81	U
Sodium	1000	248	B	450	B	1590	J	132	U	263	B
Thallium	2	0.41	U	0.38	U	0.44	U	0.42	U	0.42	U
Vanadium	10	19.4		30.3		16		22.5		18.7	
Zinc	4	21.3		39.1		24.5		20.1	U	21.9	U
Cyanide	2	1.04	U	1.02	U	5.24	J	1.04	UJ	1.04	UJ
Bismuth	12	30	U	29.6	U	33.2	U	31.1	U	30.5	U
% Solids	0.1	96.4		98		90.4		96.4		95.8	
Chloride by IC	4	79.2		43							
Fluoride by IC	4	1.6		1.7							
Nitrite by IC	4	1.3	UJ	1.3	UJ	24.9	J				

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Project 200-BP-1											
Case West	SDG					9112L661		9112L747			
Sample Number		BO15N5		B015N7		B015N9		B015P3		B015P7	
Location		216-B-46A		216-B-46A		216-B-46A		216-B-46B		216-B-46B	
		8.0-10.5		15.0-17.5		27.0-29.5		3.0-6.0		8.5-11.0	
Remarks											
Sample Date		12/02/91		12/03/91		12/04/91		12/10/91		12/11/91	
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Nitrate by IC	4	60.5	J	39.5	J	86.7	J	60.6	J	135	J
Phosphate by IC	4	1.3	UJ	1.3	UJ	15.9		2.8	J	1.3	J
Sulfate by IC	4	268		104		8.6	R	31.5		477	
Nitrate Nitrite	4	15.7	R	10.8	R			19.5	R	46.9	R
Total Organic Carbon	0.05	6.4						0.49		0.52	
Total Organic Carbon	50			283	UJ	267	U				

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APPENDIX B

DATA VALIDATION DOCUMENTATION

SDG: 9111L354

SAMPLE: B015L7

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

9713516.1349

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.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9713516.1351

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L354	REVIEWER: [illegible]	DATE: 6/22/92	PAGE 1 OF 4
COMMENTS: LCA			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bromoform	UJ	B015L7	CCV 200 >25%
MeCl2	U	B015L7	Present in blank
Acetone	U	↓	↓

9713516.1352

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L354	REVIEWER: [illegible]	DATE: 6/24/92	PAGE 2 OF 4
COMMENTS: Semi-VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Hexachlorocyclo-pentadiene	UJ	B015L7	CCV 80>25%
bis(2-ethyl hexyl) phthalate	u	B015L7	present in blank
Aldol condensate	R	B015L7	lab contaminant

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L354	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 3 OF 4
COMMENTS: Metals			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Mercury	UJ	B015L7	Analyzed out of holding time.
Lead	J	B015L7	MS %R < 75%
Lead	none- Analyzed by MSA	B015L7	GFAA Analytical Spike out of control limit
Selenium	UJ	↓	↓

9713516.1354

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L354	REVIEWER: [illegible]	DATE: 6/29/92	PAGE 4 OF 4
COMMENTS: Wet Chemistry			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Nitrate	J	B01SL7	Analyzed out of holding time
Cyanide	UJ	↓	↓
Phosphate	J	↓	↓
Nitrate + Nitrite	R	B01SL7	Disparity with NO2 IC data

9713516.1355

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.1356 0000018

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A 2.5-4.5

BO15L7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9111L354-001

Sample wt/vol: 5.10 (g/mL) G Lab File ID: Y111312

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

% Moisture: not dec. 5 Date Analyzed: 11/13/91

Column: (pack/cap) PACK Dilution Factor: 0.980

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

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	16	~~B~~
67-64-1	Acetone	23	~~B~~
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	1	J
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.

9713516.1357

1B 0000019

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A 2.5-4.5

B015L7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9111L354-001

Sample wt/vol: 30.4 (g/mL) G Lab File ID: S112205

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

% Moisture: not dec. 5 dec. Date Extracted: 11/12/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/22/91

GPC Cleanup: (Y/N) N pH: 7.4 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
100-51-6	Benzyl alcohol	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	bis(2-Chloroisopropyl)ether	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U

FORM 1 SV-1 12/88 Rev.

9713516.1358

1C 0000020

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A 2.5-4.5

B015L7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L354-001

Sample wt/vol: 30.4 (g/mL) G

Lab File ID: S112205

Level: (low/med) LOW

Date Received: 11/09/91

% Moisture: not dec. 5 dec.

Date Extracted: 11/12/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/22/91

GPC Cleanup: (Y/N) N pH: 7.4

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
84-74-2	Di-n-Butylphthalate	55	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	690	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	340 ~~80~~	~~JB~~ U
117-84-0	Di-n-Octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenzo(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

6/24/93

9713516.1359

1F

0000021

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-43A 2.5-4.5

B015L7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L354-001

Sample wt/vol: 30.4 (g/mL) G

Lab File ID: S112205

Level: (low/med) LOW

Date Received: 11/09/91

% Moisture: not dec. 5 dec.

Date Extracted: 11/12/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/22/91

GPC Cleanup: (Y/N) N pH: 7.4

Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
~~1.~~	~~ALDOL CONDENSATE~~	~~4.80~~	~~100~~	~~JAB~~	R
~~2.~~	~~ALDOL CONDENSATE~~	~~6.30~~	~~200~~	~~JAB~~	R

FORM 1 SV-TIC 12/88 Rev.

9713516.1360

1D

0000013

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A 2.5-4.5

BO15L7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L354-001

Sample wt/vol: 31.1 (g/mL) G

Lab File ID: 12069127.43

Level: (low/med) LOW

Date Received: 11/09/91

% Moisture: not dec. 5 dec.

Date Extracted: 11/13/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/07/91

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

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	16 ~~8.1~~	U
319-85-7	Beta-BHC	~~8.1~~	U
319-86-8	Delta-BHC	~~8.1~~	U
58-89-9	gamma-BHC (Lindane)	~~8.1~~	U
76-44-8	Heptachlor	~~8.1~~	U
309-00-2	Aldrin	~~8.1~~	U
1024-57-3	Heptachlor epoxide	~~8.1~~	U
959-98-8	Endosulfan I	~~8.1~~	U
60-57-1	Dieldrin	32 ~~16~~	U
72-55-9	4,4'-DDE	~~16~~	U
72-20-8	Endrin	~~16~~	U
33213-65-9	Endosulfan II	~~16~~	U
72-54-8	4,4'-DDD	~~16~~	U
1031-07-8	Endosulfan sulfate	~~16~~	U
50-29-3	4,4'-DDT	~~16~~	U
72-43-5	Methoxychlor	160 ~~81~~	U
53494-70-5	Endrin ketone	32 ~~16~~	U
5103-71-9	alpha-Chlordane	160 ~~81~~	U
5103-74-2	gamma-Chlordane	160 ~~81~~	U
8001-35-2	Toxaphene	320 ~~160~~	U
12674-11-2	Aroclor-1016	160 ~~81~~	U
11104-28-2	Aroclor-1221	160 ~~81~~	U
11141-16-5	Aroclor-1232	160 ~~81~~	U
53469-21-9	Aroclor-1242	160 ~~81~~	U
12672-29-6	Aroclor-1248	160 ~~81~~	U
11097-69-1	Aroclor-1254	320 ~~160~~	U
11096-82-5	Aroclor-1260	320 ~~160~~	U

12/16/91

FORM 1 PEST

6/25/92 12/88 Rev.

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-43A
B015L7
2.5-4.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP354

Matrix (soil/water): SOIL Lab Sample ID: 911135401

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

% Solids: 95.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	5520.00			P	
7440-36-0	Antimony	4.18	U		P	
7440-38-2	Arsenic	2.00	B		F	
7440-39-3	Barium	68.80			P	
7440-41-7	Beryllium	.42	B		P	
7440-43-9	Cadmium	.63	U		P	
7440-70-2	Calcium	7010.00		*	P	
7440-47-3	Chromium	6.70			P	
7440-48-4	Cobalt	8.80	B		P	
7440-50-8	Copper	11.90			P	
7439-89-6	Iron	15900.00			P	
7439-92-1	Lead	4.90		SN	F	J
7439-95-4	Magnesium	3800.00			P	
7439-96-5	Manganese	264.00			P	
7439-97-6	Mercury	.05	U		CV	UJ
7440-02-0	Nickel	7.30	B		P	
7440-09-7	Potassium	1200.00			P	
7782-49-2	Selenium	.40	U	W	F	UJ
7440-22-4	Silver	2.10	U		P	
7440-23-5	Sodium	215.00	B		P	
7440-28-0	Thallium	.40	U	W	F	
7440-62-2	Vanadium	29.40			P	
7440-66-6	Zinc	31.90			P	
	Cyanide	1.05	U		C	UJ
7440-69-9	Bismuth	32.00			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

6/26/91

9713516.1362

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/05/91

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

WESTON BATCH #: 9111L354

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B015L7	% Solids	95.4	%	0.10
		Nitrate by IC	73.7	MG/KG	1.3
	216-B-43A	Cyanide, Total	1.0	MG/KG	1.0
	2.5.4.5	Phosphate by IC	1.6	MG/KG	1.3
		Sulfate by IC	28.5	MG/KG	1.3
		~~Nitrate Nitrite~~	~~17.8~~	~~MG-N/KG~~	~~5.2~~
		Total Organic Carbon	0.57	%	0.10

9713516.1363

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9713516.1364

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/22/92
LABORATORY: Weston	CASE: 9111L354	SDG: 354
SAMPLES/MATRIX: B015L7/Soil		

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

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.

9713516.1371

Holding Time Summary pg 1 of 1

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L354

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L7	001	S	91LVY198	11/07/91	N/A	11/13/91
B015L7	001 MS	S	91LVY198	11/07/91	N/A	11/13/91
B015L7	001 MSD	S	91LVY198	11/07/91	N/A	11/13/91

LAB QC:

VBLK	MB1	S	91LVY198	N/A	N/A	11/13/91

Holding Times were met.
6/22/92

JAN 1992
RECEIVED
OSM DMO

Calibration Summary 0000054 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: 9111L354

Instrument ID: 5100Y Calibration Date: 11/13/91 Time: 0945

Lab File ID: Y111302 Init. Calib. Date(s): 10/28/91 10/28/91

Matrix:(soil/water) SOIL 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 #	0.606	0.684	-12.9 #
Bromomethane	0.881	0.804	8.7
Vinyl Chloride *	0.870	0.755	13.2 *
Chloroethane	0.438	0.426	2.7
Methylene Chloride	1.182	1.066	9.8
Acetone	0.521	0.562	-7.9
Carbon Disulfide	3.187	2.571	19.3
1,1-Dichloroethene *	1.109	0.980	11.6 *
1,1-Dichloroethane #	2.111	2.408	-14.1 #
1,2-Dichloroethene (total)	1.262	1.173	7.1
Chloroform *	2.489	2.789	-12.1 *
1,2-Dichloroethane	1.763	2.252	-27.7
2-Butanone	0.173	0.160	7.5
1,1,1-Trichloroethane	0.526	0.593	-12.7
Carbon Tetrachloride	0.516	0.566	-9.7
Vinyl Acetate	0.722	0.737	-2.1
Bromodichloromethane	0.551	0.606	-10.0
1,2-Dichloropropane *	0.354	0.361	-2.0 *
cis-1,3-Dichloropropene	0.500	0.508	-1.6
Trichloroethene	0.470	0.435	7.4
Dibromochloromethane	0.607	0.549	9.6
1,1,2-Trichloroethane	0.321	0.304	5.3
Benzene	0.837	0.845	-1.0
Trans-1,3-Dichloropropene	0.476	0.506	-6.3
Bromoform #	0.470	0.346	26.4 #
4-Methyl-2-pentanone	0.448	0.427	4.7
2-Hexanone	0.382	0.390	-2.1
Tetrachloroethene	0.458	0.445	2.8
1,1,2,2-Tetrachloroethane #	0.509	0.425	16.5 #
Toluene *	0.608	0.602	1.0 *
Chlorobenzene #	0.880	0.836	5.0 #
Ethylbenzene *	0.392	0.365	6.9 *
Styrene	0.648	0.607	6.3
Xylene (total)	0.407	0.376	7.6
Toluene-d8	1.051	1.066	-1.4
Bromofluorobenzene	0.647	0.645	0.3
1,2-Dichloroethane-d4	1.786	2.260	-26.5

12/10/91

FORM VII VOA 5/88 Rev.

Blank Subtracting 9213516 1373 0000075 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: SOIL Lab Sample ID: 91LVY198-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: Y111303

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

% Moisture: not dec. 0 Date Analyzed: 11/13/91

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

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

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	3	J
67-64-1	Acetone	6	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

x10=30

x10=60

FORM 1 V-1 12/88 Rev.

6/2/91

9713516.1374

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/24/92
LABORATORY: Weston	CASE: 9111L354	SDG: 354
SAMPLES/MATRIX: B015L7 / Soil		

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

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.

9713516.1381

Holding Time Summary

JAN 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L354

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L7	001	S	91LE1508	11/07/91	11/12/91 5	11/22/91 10
B015L7	001 MS	S	91LE1508	11/07/91	11/12/91 ↓	11/22/91 ↓
B015L7	001 MSD	S	91LE1508	11/07/91	11/12/91 ↓	11/22/91 ↓

LAB QC:

SBLK	MB1	S	91LE1508	N/A	11/12/91	11/22/91
SBLK	MB1 BS	S	91LE1508	N/A	11/12/91	11/22/91

Holding Times were met.

6/24/92

6/24/

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L354

Instrument ID: 5100SP Calibration Date: 11/22/91 Time: 0856

Lab File ID: S112202 Init. Calib. Date(s): 11/21/91 11/21/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	2.249	2.243	0.3	*
bis(2-Chloroethyl)ether		1.978	2.006	-1.4	
2-Chlorophenol		1.467	1.443	1.6	
1,3-Dichlorobenzene		1.570	1.611	-2.6	
1,4-Dichlorobenzene	*	1.650	1.655	-0.3	*
Benzyl alcohol		0.804	0.814	-1.2	
1,2-Dichlorobenzene		1.517	1.478	2.6	
2-Methylphenol		1.293	1.238	4.3	
bis(2-Chloroisopropyl)ether		2.348	2.236	4.8	
4-Methylphenol		1.319	1.247	5.5	
N-Nitroso-Di-n-propylamine	#	1.174	1.118	4.8	#
Hexachloroethane		0.700	0.661	5.6	
Nitrobenzene		0.502	0.501	0.2	
Isophorone		1.017	1.001	1.6	
2-Nitrophenol	*	0.229	0.243	-6.1	*
2,4-Dimethylphenol		0.351	0.332	5.4	
Benzoic acid		0.195	0.174	10.8	
bis(2-Chloroethoxy)methane		0.576	0.548	4.9	
2,4-Dichlorophenol	*	0.270	0.264	2.2	*
1,2,4-Trichlorobenzene		0.302	0.302	0.0	
Naphthalene		1.221	1.214	0.6	
4-Chloroaniline		0.381	0.324	15.0	
Hexachlorobutadiene	*	0.134	0.135	-0.7	*
4-Chloro-3-methylphenol	*	0.297	0.286	3.7	*
2-Methylnaphthalene		0.596	0.585	1.8	
Hexachlorocyclopentadiene	#	0.198	0.145	26.8	#
2,4,6-Trichlorophenol	*	0.317	0.315	0.6	*
2,4,5-Trichlorophenol		0.352	0.346	1.7	
2-Chloronaphthalene		1.149	1.135	1.2	
2-Nitroaniline		0.411	0.400	2.7	
Dimethylphthalate		1.153	1.147	0.5	
Acenaphthylene		2.084	1.850	11.2	
2,6-Dinitrotoluene		0.323	0.328	-1.5	
3-Nitroaniline		0.206	0.156	24.3	
Acenaphthene	*	1.012	0.995	1.7	*
2,4-Dinitrophenol	#	0.154	0.123	20.1	#
4-Nitrophenol	#	0.079	0.073	7.6	#

Sm. 11/22/91

Blank Summary . . . . Pg 1 of 2

1C 0000092 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LE1508-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S112203

Level: (low/med) LOW Date Received: 11/12/91

% Moisture: not dec. 0 dec. Date Extracted: 11/12/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/22/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	670	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	83	J
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

MQL=830

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

6/24/9

9213546 1384 Blank Summary 0000093 Pg 2 of 2

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LE1508-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S112203

Level: (low/med) LOW Date Received: 11/12/91

% Moisture: not dec. 0 dec. Date Extracted: 11/12/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/22/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	ALDOL CONDENSATE	4.82	100	JA	R
2.	ALDOL CONDENSATE	6.30	200	JA	R
3.	HYDROCARBON	21.60	200	J	

6/24/

9713516.1385

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

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 4/25/92
LABORATORY: Weston	CASE: 9111L354	SDG: 354
SAMPLES/MATRIX: B015L7/soil		

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
They had interference.

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
06/25/92

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

Only an MS was performed.

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? GRC. 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):

GPC cleanup was performed on these sample extracts. Therefore the CRQL was multiplied by a factor of two.

One standard run had DBC out of the RT window. AR1242 12/06/91 @ 22:25, DBC RT was 22.97, the RT window was 22.057 to 22.957. Since this is the only run w/DBC out, no qualification was ~~necessary~~ 06/25/92 necessary.

9713516.1394

Holding Time Summary

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Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 11/09/91 RFW LOT # :9111L354

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L7	001	S	91LE1512	11/07/91	11/13/91 6	12/07/91 24
B015L7	001 MS	S	91LE1512	11/07/91	11/13/91 ↓	12/07/91 ↓
LAB QC:						
PBLK	MB1	S	91LE1512	N/A	11/13/91	12/07/91
PBLK	MB1 BS	S	91LE1512	N/A	11/13/91	12/08/91

Holding times were met.
6/25/92

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: ~~9111L354~~ 200-BP-1	REVIEWER:	DATE: 6/24/92
LABORATORY: Lineton	CASE: 9111L354	SDG: 354
SAMPLES/MATRIX: 8015L7/Soil		

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 $\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.

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Holding Time Summary

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L354

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L7						
SILVER, TOTAL	001	S	91L3563	11/07/91	12/31/91	01/06/92 60
SILVER, TOTAL	001 REP	S	91L3563	11/07/91	12/31/91	01/06/92
SILVER, TOTAL	001 MS	S	91L3563	11/07/91	12/31/91	01/06/92
ALUMINUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91 53
ALUMINUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
ALUMINUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
ARSENIC, TOTAL	001	S	91L3402	11/07/91	12/10/91	12/13/91 36
ARSENIC, TOTAL	001 REP	S	91L3402	11/07/91	12/10/91	12/13/91
ARSENIC, TOTAL	001 MS	S	91L3402	11/07/91	12/10/91	12/13/91
BARIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91 53
BARIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
BARIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
BERYLLIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
BERYLLIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
BERYLLIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
BISMUTH, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
BISMUTH, TOTAL REP	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
BISMUTH, TOTAL SPIKE	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
CALCIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
CALCIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
CALCIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
CADMIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
CADMIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
CADMIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
COBALT, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
COBALT, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
COBALT, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
CHROMIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
CHROMIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
CHROMIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
COPPER, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
COPPER, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
COPPER, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
IRON, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
IRON, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
IRON, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
MERCURY, TOTAL	001	S	91C0353	11/07/91	12/09/91	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 # :9111L354

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 REP	S	91C0353	11/07/91	12/09/91	12/09/91 32
MERCURY, TOTAL	001 MS	S	91C0353	11/07/91	12/09/91	12/09/91
POTASSIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91 53
POTASSIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
POTASSIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
MAGNESIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
MAGNESIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
MAGNESIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
MANGANESE, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
MANGANESE, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
MANGANESE, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
SODIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
SODIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
SODIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
NICKEL, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
NICKEL, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
NICKEL, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
LEAD, TOTAL	001	S	91L3402	11/07/91	12/10/91	12/10/91 33
LEAD, TOTAL	001 REP	S	91L3402	11/07/91	12/10/91	12/10/91
LEAD, TOTAL	001 MS	S	91L3402	11/07/91	12/10/91	12/10/91
ANTIMONY, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91 53
ANTIMONY, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
ANTIMONY, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
SELENIUM, TOTAL	001	S	91L3402	11/07/91	12/10/91	12/12/91 35
SELENIUM, TOTAL	001 REP	S	91L3402	11/07/91	12/10/91	12/12/91
SELENIUM, TOTAL	001 MS	S	91L3402	11/07/91	12/10/91	12/12/91
THALLIUM, TOTAL	001	S	91L3402	11/07/91	12/10/91	12/10/91 33
THALLIUM, TOTAL	001 REP	S	91L3402	11/07/91	12/10/91	12/10/91
THALLIUM, TOTAL	001 MS	S	91L3402	11/07/91	12/10/91	12/10/91
VANADIUM, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91 53
VANADIUM, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
VANADIUM, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91
ZINC, TOTAL	001	S	91L3403	11/07/91	12/10/91	12/30/91
ZINC, TOTAL	001 REP	S	91L3403	11/07/91	12/10/91	12/30/91
ZINC, TOTAL	001 MS	S	91L3403	11/07/91	12/10/91	12/30/91

LAB QC:

SILVER LABORATORY	LC1 BS	S	91L3563	N/A	12/31/91	01/06/92
SILVER LABORATORY	LC2 BS	S	91L3563	N/A	12/31/91	01/06/92

Blank Summary 9713516.1402 0000022 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.: CLP354

Preparation Blank Matrix (soil/water): SOIL

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
									5X		
Aluminum	91.0	U	91.0	U	91.0	U			18.200	U	P
Antimony	20.0	U	20.0	U	20.0	U			4.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	16.0	U	16.0	U	16.0	U			3.200	U	P
Beryllium	1.0	U	1.0	U	1.0	U			.200	U	P
Cadmium	3.0	U	3.0	U	3.0	U			.600	U	P
Calcium	63.0	U	63.0	U	63.0	U			67.5 13.500	B	P
Chromium	6.0	U	6.0	U	6.0	U			1.200	U	P
Cobalt	10.0	U	10.0	U	10.0	U			2.000	U	P
Copper	10.0	U	10.0	U	10.0	U			2.000	U	P
Iron	46.0	U	46.0	U	46.0	U			9.200	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	87.0	U	87.0	U	87.0	U			92 18.400	B	P
Manganese	2.0	U	2.0	U	2.0	U			.400	U	P
Mercury	.1	U	.1	U	.1	U			.050	U	CV
Nickel	11.0	U	11.0	U	11.0	U			2.200	U	P
Potassium	862.0	U	862.0	U	862.0	U			172.400	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	10.0	U	10.0	U	10.0	U			2.000	U	P
Sodium	110.0	U	110.0	U	110.0	U			22.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Vanadium	8.0	U	8.0	U	8.0	U			1.600	U	P
Zinc	6.0	U	6.0	U	6.0	U			1.200	U	P
Cyanide	20.0	U	20.0	U					1.000	U	C

FORM III - IN 03/90

Sample results for Ca & Mg are higher than 5x the blank concentrations. Therefore, no qualification was required.

Accuracy Summary 9713546.1403 0000026 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015L7S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP354

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 95.4

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	76.6000		4.1800	U	102.10	75.0	ok	P
Arsenic	75-125	9.0000		2.0000		8.40	83.7		F
Barium	75-125	463.7000		68.8000		408.60	96.6		P
Beryllium	75-125	9.5000		.4200	B	10.20	89.0		P
Cadmium	75-125	8.3000		.6270	U	10.20	81.3		P
Calcium									NR
Chromium	75-125	44.8000		6.7000		40.90	93.3		P
Cobalt	75-125	99.0000		8.8000	B	102.10	88.3		P
Copper	75-125	54.0000		11.9000		51.10	82.4		P
Iron									NR
Lead	75-125	7.8000		4.9000		4.20	69.0	N	F
Magnesium									NR
Manganese	75-125	351.2000		263.6001		102.10	85.8		P
Mercury	75-125	.5470		.0524	U	.52	105.2		CV
Nickel	75-125	100.1000		7.3000	B	102.10	90.9		P
Potassium									NR
Selenium	75-125	1.7000		.4026	U	2.10	81.0		F
Silver	75-125	9.1000		1.2000	U	10.50	86.7		P
Sodium									NR
Thallium	75-125	8.1000		.4026	U	10.50	77.0		F
Vanadium	75-125	113.2000		29.4000		102.10	82.1		P
Zinc	75-125	120.6000		31.9000		102.10	86.8		P
Cyanide	75-125	4.7830		1.0480	U	5.24	91.3		C

Comments:

6/21

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9111L354	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike.				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B015L7	Lead	82.3	B015L7	none - analyzed by MSA
B015L7	Selenium	68.1	↓	UJ

9713516.1404

9713516.1405

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/29/92
LABORATORY: Weston	CASE: 9111L354	SDG: 354
SAMPLES/MATRIX: B015L7 / Soil		

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		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.

9213516.1409 Holding Time Summary

Pg 1 of 1

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

DATE RECEIVED: 11/09/91 RFW LOT # :9111L354

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L7						
% SOLIDS	001	S	91L%S242	11/07/91	11/19/91	11/20/91 13
% SOLIDS	001 REP	S	91L%S242	11/07/91	11/19/91	11/20/91
NITRATE BY IC	001	S	91LICA76	11/07/91	11/26/91	11/26/91 19
NITRATE BY IC	001 REP	S	91LICA76	11/07/91	11/26/91	11/26/91
NITRATE BY IC	001 MS	S	91LICA76	11/07/91	11/26/91	11/26/91
NITRATE BY IC	001 MSD	S	91LICA76	11/07/91	11/26/91	11/26/91
TOTAL CYANIDE	001	S	91LC354	11/07/91	11/22/91	11/23/91 16
TOTAL CYANIDE	001 REP	S	91LC354	11/07/91	11/22/91	11/23/91
TOTAL CYANIDE	001 MS	S	91LC354	11/07/91	11/22/91	11/23/91
PHOSPHATE BY IC	001	S	91LICA76	11/07/91	11/26/91	11/26/91 19
PHOSPHATE BY IC	001 REP	S	91LICA76	11/07/91	11/26/91	11/26/91
PHOSPHATE BY IC	001 MS	S	91LICA76	11/07/91	11/26/91	11/26/91
PHOSPHATE BY IC	001 MSD	S	91LICA76	11/07/91	11/26/91	11/26/91
SULFATE BY IC	001	S	91LICA76	11/07/91	11/26/91	11/26/91
SULFATE BY IC	001 REP	S	91LICA76	11/07/91	11/26/91	11/26/91
SULFATE BY IC	001 MS	S	91LICA76	11/07/91	11/26/91	11/26/91
SULFATE BY IC	001 MSD	S	91LICA76	11/07/91	11/26/91	11/26/91
NITRATE NITRITE	001	S	91LNC258	11/07/91	12/02/91	12/02/91 25
NITRATE NITRITE	001 REP	S	91LNC258	11/07/91	12/02/91	12/02/91
NITRATE NITRITE	001 MS	S	91LNC258	11/07/91	12/02/91	12/02/91
NITRATE NITRITE	001 MSD	S	91LNC258	11/07/91	12/02/91	12/02/91
TOTAL ORGANIC CARBON	001	S	91LOM068	11/07/91	11/18/91	11/25/91 18
TOTAL ORGANIC CARBON	001 REP	S	91LOM068	11/07/91	11/18/91	11/25/91
SUB-OUT TEST FOR SUB	001	S		11/07/91		

LAB QC:

CHLORIDE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
CHLORIDE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
FLUORIDE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
FLUORIDE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
NITRITE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
NITRITE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
NITRATE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
NITRATE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
PHOSPHATE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
PHOSPHATE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91

9713516.1410

APPENDIX C

DATA VALIDATION DOCUMENTATION

SDG: 9111L389

SAMPLES: B015L9, B015M1

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

9713516.1411

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.

9713516.1412

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9713516.1413

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L389	REVIEWER: [illegible]	DATE: 6/22/97	PAGE 1 OF 5
COMMENTS: VOA			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Acetone	J	B015L9	CCV 20 7256
2-Butanone	UJ	↓	↓
Vinyl Acetate	UJ	↓	↓
4-Me-2-pentanone	UJ	↓	↓
2-Hexanone	UJ	↓	↓
2-Butanone	UJ	B015M1	CCV 20 7256
4-Me-2-pentanone	UJ	↓	↓
2-Hexanone	UJ	↓	↓

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L389	REVIEWER: [illegible]	DATE: 6/24/92	PAGE 2 OF 5
COMMENTS: Semi-VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Benzoic Acid	UJ	8015L9 & 8015M1	CCV %D > 25%
Hexachlorocyclopentadiene	UJ	↓	↓
2,4-Dinitrophenol	UJ	↓	↓
4-Nitrophenol	UJ	↓	↓
4-Nitroaniline	UJ	↓	↓
4,6-Dinitro-2-Methanol	UJ	↓	↓
Di-n-butylphthalate	U	All	present in blank
Aldol condensate	R	All	lab contaminant

9713516.1415

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L389	REVIEWER: [illegible]	DATE: 6/24/92	PAGE 3 OF 5
COMMENTS: Pest/PCB			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
All Pest/PCB TCL compounds	UJ	B015L9 and B015M1	Extracted out of holding time

9713516.1416

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L389	REVIEWER: [illegible]	DATE: 6/28/92	PAGE 4 OF 5
COMMENTS: Metals			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	UJ	B015L9 & B015M1	MS %R out of control limits
Cadmium	UJ	↓	↓
Manganese	J	↓	↓
Selenium	UJ	↓	↓
Thallium	UJ	↓	↓
Silver	R	B015L9/B015M1	MS %R = 0 and sample results are ND.
Aluminum	J	B015L9/B015M1	ICP Serial Dil'n >10%
Calcium	J	↓	↓
Iron	J	↓	↓
Magnesium	J	↓	↓
Manganese	J	↓	↓
Selenium	UJ	B015L9 & B015M1	GFAA analytical spike out of C.L.
Thallium	UJ	↓	↓

9713516.1417

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L389	REVIEWER: [illegible]	DATE: 6/29/92	PAGE 5 OF 5
COMMENTS: Wet Chem			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrite	UJ	B01SL9 & B01SM1	Analyzed out of holding time
Nitrate	J	↓	↓
Cyanide	UJ	↓	↓
Phosphate	UJ/J	↓	↓
Nitrate+Nitrite	P	B01SL9 & B01SM1	Disparity with NO3-IC data
Fluoride	J	B01SM1	Estimated value below the CRQL

9713516.1418

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.1419

1A 0000019

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 2.5-5.0

B015L9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-001

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

Lab File ID: B111814

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 3

Date Analyzed: 11/18/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	26	B
67-64-1	Acetone	59	
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~~ UJ
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.

6/22/92

9713516.1420

1A 0000025

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 10.0-12.5

B015M1

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-002

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

Lab File ID: B112006

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 4

Date Analyzed: 11/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	23	B
67-64-1	Acetone	18	
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~~ UJ
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~~ 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.

6/27/93

9713516.1421

0000018

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 2.5-5.0

B015L9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: S112309

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
100-51-6	Benzyl alcohol	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	bis(2-Chloroisopropyl)ether	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U

6/24/92

9713516.1422

0000019

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. 5.0
216-B-49B 2.5-~~5.0~~ 6/24/
B015L9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9111L389-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S112309

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

% Moisture: not dec. 2 dec. Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	1700	~~U~~
100-02-7	4-Nitrophenol	1700	~~U~~
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	1700	~~U~~
534-52-1	4,6-Dinitro-2-methylphenol	1700	~~U~~
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
84-74-2	Di-n-Butylphthalate	340 ~~48~~	~~JB~~
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	680	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	340	U
117-84-0	Di-n-Octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenzo(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

6/24/

9713516.1423

0000020

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-49B 2.5-5.0

B015L9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: S112309

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	~~4.80~~	200	JAB R

FORM 1 SV-TIC

12/88 Rev.

6/29/92

9713516.1424

1B

0000030

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 10.0-12.5

B015M1

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-002

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

Lab File ID: S112312

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
100-51-6	Benzyl alcohol	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	bis(2-Chloroisopropyl)ether	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
65-85-0	Benzoic acid	1700	~~U~~
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	~~U~~
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U

6/24/92

9713516.1425

0000031

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-R-49B 10.0-12.5

B015M1

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-002

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

Lab File ID: S112312

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	1700	~~U~~ UJ
100-02-7	4-Nitrophenol	1700	~~U~~ UJ
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	1700	~~U~~ UJ
534-52-1	4,6-Dinitro-2-methylphenol	1700	~~U~~ UJ
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
84-74-2	Di-n-Butylphthalate	340 ~~56~~	~~JB~~ J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	680	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	340	U
117-84-0	Di-n-Octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenzo(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

6/24/98

9713516.1426

0000032

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-49B 10.0-12.5

B015M1

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-002

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

Lab File ID: S112312

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 6.8

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	~~4.80~~	~~300~~	~~JAB~~ R

FORM 1 SV-TIC

12/88 Rev.

6/24/92

9713516.1427

1D 0000013

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 2.5-5.0

B015L9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L389-001

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

Lab File ID: 12069127.56

Level: (low/med) LOW

Date Received: 11/13/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/08/91

GPC Cleanup: (Y/N) Y pH: 8.0

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
319-84-6	Alpha-BHC	16 ~~8.1~~	U	45
319-85-7	Beta-BHC	~~8.1~~	U	
319-86-8	Delta-BHC	~~8.1~~	U	
58-89-9	gamma-BHC (Lindane)	~~8.1~~	U	
76-44-8	Heptachlor	~~8.1~~	U	
309-00-2	Aldrin	~~8.1~~	U	
1024-57-3	Heptachlor epoxide	~~8.1~~	U	
959-98-8	Endosulfan I	~~8.1~~	U	
60-57-1	Dieldrin	32 ~~16~~	U	
72-55-9	4,4'-DDE	~~16~~	U	
72-20-8	Endrin	~~16~~	U	
33213-65-9	Endosulfan II	~~16~~	U	
72-54-8	4,4'-DDD	~~16~~	U	
1031-07-8	Endosulfan sulfate	~~16~~	U	
50-29-3	4,4'-DDT	~~16~~	U	
72-43-5	Methoxychlor	160 ~~81~~	U	
53494-70-5	Endrin ketone	32 ~~16~~	U	
5103-71-9	alpha-Chlordane	160 ~~81~~	U	
5103-74-2	gamma-Chlordane	160 ~~81~~	U	
8001-35-2	Toxaphene	320 ~~160~~	U	
12674-11-2	Aroclor-1016	160 ~~81~~	U	
11104-28-2	Aroclor-1221	160 ~~81~~	U	
11141-16-5	Aroclor-1232	160 ~~81~~	U	
53469-21-9	Aroclor-1242	160 ~~81~~	U	
12672-29-6	Aroclor-1248	160 ~~81~~	U	
11097-69-1	Aroclor-1254	320 ~~160~~	U	
11096-82-5	Aroclor-1260	320 ~~160~~	U	

12/16/91

FORM 1 PEST 6/24/92 12/88 Rev.

6/25/92

9713516.1428

1D 0000011

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49R 10.0-12.5

B015M1

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9111L389-002

Sample wt/vol: 29.8 (g/mL) G Lab File ID: 12069127.59

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

% Moisture: not dec. 2 dec. Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/08/91

GPC Cleanup: (Y/N) Y pH: 7.8 Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
		@6/24/92		
319-84-6	Alpha-BHC	16 ~~8.2~~	U	
319-85-7	Beta-BHC	16 ~~8.2~~	U	
319-86-8	Delta-BHC	16 ~~8.2~~	U	
58-89-9	gamma-BHC (Lindane)	16 ~~8.2~~	U	
76-44-8	Heptachlor	16 ~~8.2~~	U	
309-00-2	Aldrin	16 ~~8.2~~	U	
1024-57-3	Heptachlor epoxide	16 ~~8.2~~	U	
959-98-8	Endosulfan I	16 ~~8.2~~	U	
60-57-1	Dieldrin	32 ~~16~~	U	
72-55-9	4,4'-DDE	32 ~~16~~	U	
72-20-8	Endrin	32 ~~16~~	U	
33213-65-9	Endosulfan II	32 ~~16~~	U	
72-54-8	4,4'-DDD	32 ~~16~~	U	
1031-07-8	Endosulfan sulfate	32 ~~16~~	U	
50-29-3	4,4'-DDT	32 ~~16~~	U	
72-43-5	Methoxychlor	160 ~~82~~	U	
53494-70-5	Endrin ketone	32 ~~16~~	U	
5103-71-9	alpha-Chlordane	160 ~~82~~	U	
5103-74-2	gamma-Chlordane	160 ~~82~~	U	
8001-35-2	Toxaphene	320 ~~160~~	U	
12674-11-2	Aroclor-1016	160 ~~82~~	U	
11104-28-2	Aroclor-1221	160 ~~82~~	U	
11141-16-5	Aroclor-1232	160 ~~82~~	U	
53469-21-9	Aroclor-1242	160 ~~82~~	U	
12672-29-6	Aroclor-1248	160 ~~82~~	U	
11097-69-1	Aroclor-1254	320 ~~160~~	U	
11096-82-5	Aroclor-1260	320 ~~160~~	U	

12/16/94

FORM 1 PEST @6/24/92 12/88 Rev.

9713516.1429 000018

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-49B
B015L9
2.5-5.0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP389

Matrix (soil/water): SOIL Lab Sample ID: 911138901

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

% Solids: 97.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3130.00		E	P	
7440-36-0	Antimony	3.95	U	N	P	
7440-38-2	Arsenic	1.20	B		F	
7440-39-3	Barium	49.00			P	
7440-41-7	Beryllium	.26	B		P	
7440-43-9	Cadmium	.59	U	N	P	
7440-70-2	Calcium	7130.00		E	P	
7440-47-3	Chromium	4.50		*	P	
7440-48-4	Cobalt	5.40	B		P	
7440-50-8	Copper	10.30			P	
7439-89-6	Iron	8820.00		E	P	
7439-92-1	Lead	2.00		*	F	
7439-95-4	Magnesium	2410.00		E	P	
7439-96-5	Manganese	185.00		NE	P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	6.30	B		P	
7440-09-7	Potassium	1030.00			P	
7782-49-2	Selenium	.39	U	NW	F	
~~7440-22-4~~	~~Silver~~	~~1.98~~	~~U~~	~~N~~	~~P~~	
7440-23-5	Sodium	137.00	B		P	
7440-28-0	Thallium	.39	U	NW	F	
7440-62-2	Vanadium	14.20			P	
7440-66-6	Zinc	19.50			P	
	Cyanide	1.03	U		C	
7440-69-9	Bismuth	39.5	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

6/28/9

9713516.1430 000019

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-49B
B015M1
10.0-12.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP389

Matrix (soil/water): SOIL Lab Sample ID: 911138902

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

% Solids: 96.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3090.00		E	P	
7440-36-0	Antimony	4.07	U	N	P	
7440-38-2	Arsenic	1.70	B		F	
7440-39-3	Barium	51.30			P	
7440-41-7	Beryllium	.26	B		P	
7440-43-9	Cadmium	.61	U	N	P	
7440-70-2	Calcium	5890.00		E	P	
7440-47-3	Chromium	3.80		*	P	
7440-48-4	Cobalt	5.20	B		P	
7440-50-8	Copper	8.30			P	
7439-89-6	Iron	9900.00		E	P	
7439-92-1	Lead	2.70		*	F	
7439-95-4	Magnesium	2370.00		E	P	
7439-96-5	Manganese	206.00		NE	P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	5.70	B		P	
7440-09-7	Potassium	732.00	B		P	
7782-49-2	Selenium	.39	U	NW	F	
~~7440-22-4~~	~~Silver~~	~~2.04~~	~~U~~	~~N~~	~~P~~	R
7440-23-5	Sodium	230.00	B		P	
7440-28-0	Thallium	.39	U	NW	F	
7440-62-2	Vanadium	16.40			P	
7440-66-6	Zinc	19.50			P	
	Cyanide	1.04	U		C	
7440-69-9	Bismuth	40.7	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

6/28/92

9713516.1431

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/13/91

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

WESTON BATCH #: 9111L389

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B015L9	% Solids	97.2	%	0.10
		Chloride by IC	7.6	MG/KG	1.3
	216-B-49B	Fluoride by IC	2.6 u	MG/KG	2.6
		Nitrite by IC	1.3 ~~u~~	MG/KG	1.3 UJ
	2.5-5.0	Nitrate by IC	61.9	MG/KG	1.3 J
		Cyanide, Total	1.0 ~~u~~	MG/KG	1.0 UJ
		Phosphate by IC	1.9	MG/KG	1.3 J
		Sulfate by IC	30.1	MG/KG	1.3
		~~Nitrate Nitrite~~	~~15.4~~	~~MG-N/KG~~	~~2.6~~ R
		Total Organic Carbon	2250	MG/KG	173
-002	B015M1	% Solids	96.5	%	0.10
		Chloride by IC	4.2	MG/KG	1.3
	216-B-49B	Fluoride by IC	1.7 J ~~2.6~~ u	MG/KG	2.6 J
		Nitrite by IC	1.3 ~~u~~	MG/KG	1.3 UJ
	10.0-12.5	Nitrate by IC	24.9	MG/KG	1.3 J
		Cyanide, Total	1.0 ~~u~~	MG/KG	1.0 UJ
		Phosphate by IC	1.3 ~~u~~	MG/KG	1.3 UJ
		Sulfate by IC	233	MG/KG	1.3
		~~Nitrate Nitrite~~	~~6.9~~	~~MG-N/KG~~	~~0.52~~ R
		Total Organic Carbon	2450	MG/KG	156

6/29/92

9713516.1432

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9713516.1433

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-RP-1	REVIEWER: [illegible]	DATE: 6/22/92
LABORATORY: Weston	CASE: 91111L389	SDG: 389
SAMPLES/MATRIX: A015L9, A015M1 / Soil		

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

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.

Holding Time Summary

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

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L9	001	S	91LVB435	11/08/91	N/A	11/18/91 10
B015M1	002	S	91LVB437	11/11/91	N/A	11/20/91 9
B015M1	002 MS	S	91LVB437	11/11/91	N/A	11/20/91
B015M1	002 MSD	S	91LVB437	11/11/91	N/A	11/20/91

LAB QC:

VBLK	MB1	S	91LVB435	N/A	N/A	11/18/91
VBLK	MB1	S	91LVB437	N/A	N/A	11/20/91

Holding times were met.
6/22/92

JAN 1992
RECEIVED
OSM DMO

6/22/92

Calibration 971351611441 Summary 0000005 Pg 1 of 2

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L389

Instrument ID: 5100B Calibration Date: 11/18/91 Time: 1251

Lab File ID: B111804 Init. Calib. Date(s): 11/14/91 11/14/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

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

Assoc. w/ sample B015L9 only

COMPOUND		RRF	RRF50	%D	
Chloromethane	#	0.892	0.934	-4.7	#
Bromomethane		0.628	0.707	-12.6	
Vinyl Chloride	*	0.742	0.840	-13.2	*
Chloroethane		0.337	0.358	-6.2	
Methylene Chloride		1.448	1.399	3.4	
Acetone		0.406	0.273	32.8	
Carbon Disulfide		3.562	3.781	-6.1	
1,1-Dichloroethene	*	0.976	1.063	-8.9	*
1,1-Dichloroethane	#	1.974	1.960	0.7	#
1,2-Dichloroethene (total)		1.257	1.259	-0.2	
Chloroform	*	2.248	2.336	-3.9	*
1,2-Dichloroethane		0.256	0.245	4.3	
2-Butanone		0.134	0.097	27.6	
1,1,1-Trichloroethane		1.783	1.883	-5.6	
Carbon Tetrachloride		1.798	1.893	-5.3	
Vinyl Acetate		2.233	1.526	31.7	
Bromodichloromethane		0.338	0.333	1.5	
1,2-Dichloropropane	*	0.258	0.258	0.0	*
cis-1,3-Dichloropropene		0.451	0.451	0.0	
Trichloroethene		0.332	0.335	-0.9	
Dibromochloromethane		0.435	0.427	1.8	
1,1,2-Trichloroethane		0.285	0.270	5.3	
Benzene		0.902	0.906	-0.4	
Trans-1,3-Dichloropropene		0.393	0.377	4.1	
Bromoform	#	0.383	0.352	8.1	#
4-Methyl-2-pentanone		0.235	0.152	35.3	
2-Hexanone		0.290	0.213	26.6	
Tetrachloroethene		0.322	0.329	-2.2	
1,1,2,2-Tetrachloroethane	#	0.430	0.358	16.7	#
Toluene	*	0.682	0.690	-1.2	*
Chlorobenzene	#	0.832	0.840	-1.0	#
Ethylbenzene	*	0.422	0.426	-0.9	*
Styrene		0.908	0.913	-0.6	
Xylene (total)		0.551	0.553	-0.4	
Toluene-d8		1.075	1.114	-3.6	
Bromofluorobenzene		0.503	0.500	0.6	
1,2-Dichloroethane-d4		0.242	0.232	4.1	

Test 7/2/92

FORM VII VOA

5/88 Rev.

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L389

Instrument ID: 5100B Calibration Date: 11/20/91 Time: 1046

Lab File ID: B112002 Init. Calib. Date(s): 11/14/91 11/14/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

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

Assoc w/ sample 8015ml only

COMPOUND	RRF	RRF50	%D
Chloromethane #	0.892	0.897	-0.6 #
Bromomethane	0.628	0.708	-12.7
Vinyl Chloride *	0.742	0.832	-12.1 *
Chloroethane	0.337	0.355	-5.3
Methylene Chloride	1.448	1.386	4.3
Acetone	0.406	0.315	22.4
Carbon Disulfide	3.562	3.715	-4.3
1,1-Dichloroethene *	0.976	1.063	-8.9 *
1,1-Dichloroethane #	1.974	2.065	-4.6 #
1,2-Dichloroethene (total)	1.257	1.322	-5.2
Chloroform *	2.248	2.329	-3.6 *
1,2-Dichloroethane	0.256	0.241	5.9
2-Butanone	0.134	0.081	39.6
1,1,1-Trichloroethane	1.783	1.854	-4.0
Carbon Tetrachloride	1.798	1.790	0.4
Vinyl Acetate	2.233	1.691	24.3
Bromodichloromethane	0.338	0.328	3.0
1,2-Dichloropropane *	0.258	0.253	1.9 *
cis-1,3-Dichloropropene	0.451	0.448	0.7
Trichloroethene	0.332	0.322	3.0
Dibromochloromethane	0.435	0.408	6.2
1,1,2-Trichloroethane	0.285	0.260	8.8
Benzene	0.902	0.897	0.6
Trans-1,3-Dichloropropene	0.393	0.366	6.9
Bromoform #	0.383	0.334	12.8 #
4-Methyl-2-pentanone	0.235	0.147	37.4
2-Hexanone	0.290	0.202	30.3
Tetrachloroethene	0.322	0.311	3.4
1,1,2,2-Tetrachloroethane #	0.430	0.345	19.8 #
Toluene *	0.682	0.677	0.7 *
Chlorobenzene #	0.832	0.823	1.1 #
Ethylbenzene *	0.422	0.410	2.8 *
Styrene	0.908	0.894	1.5
Xylene (total)	0.551	0.539	2.2
Toluene-d8	1.075	1.059	1.5
Bromofluorobenzene	0.503	0.470	6.6
1,2-Dichloroethane-d4	0.242	0.225	7.0

2/2/92

Blank 91351.1443 IA 0000087 Pg 1 of 2

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LVB435-MB1

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

Lab File ID: B111805

Level: (low/med) LOW

Date Received: 11/18/91

% Moisture: not dec. 0

Date Analyzed: 11/18/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

Assoc. w/ B01SL9 only B Sample conc. is greater than 10x blank conc.

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	1	J
67-64-1	Acetone	10	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

1x10 = 10

6/23/93

Blank 9135116.4444 0000095 pg 2 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: SOIL

Lab Sample ID: 91LVB437-MB1

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

Lab File ID: B112004

Level: (low/med) LOW

Date Received: 11/20/91

% Moisture: not dec. 0

Date Analyzed: 11/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

Assoc. w/ B015M1 only - Sample conc. is more than 10X blank conc.

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	2	J
67-64-1	Acetone	10	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

10=20

6/2/92

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2B

SOIL VOLATILE SURROGATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD

RFW Lot No.: 9111L389

	CLIENT SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	B015L9	96	94	106		0
02	B015M1	105	99	113		0
03	B015M1MS	116	114	131 *		1
04	B015M1MSD	111	103	120		0
05	VBLKLVB435-MB1	94	90	95		0
06	VBLKLVB437-MB1	107	100	103		0

	QC LIMITS
S1 (TOL) = Toluene-d8	(81-117)
S2 (BFB) = Bromofluorobenzene	(74-121)
S3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

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

QC sample is out. This Does not directly effect the samples No qualification is required.

6/2/1

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8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L389

Lab File ID (Standard): B112002 Date Analyzed: 11/20/91

Instrument ID: 5100B Time Analyzed: 1046

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	30634	12.42	160691	14.80	145221	20.63
	UPPER LIMIT	61268	12.92	321382	15.30	290442	21.13
	LOWER LIMIT	15317	11.92	80346	14.30	72611	20.13
	CLIENT SAMPLE NO.						
01	B015M1	23456	12.45	117444	14.82	101041	20.65
02	B015M1MS	19987	12.42	97598	14.80	86575	20.63
03	B015M1MSD	13016*	12.45	65755*	14.82	56543*	20.65
04	VBLKLVB437-MB1	29279	12.42	151738	14.80	128188	20.65

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

No qualification is required. This does not affect the assoc samples in this SDG.

9713516.1447

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/24/92
LABORATORY: Weston	CASE: 9111L389	SDG: 389
SAMPLES/MATRIX: B015L9, B015M1 / Soils		

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

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.

9713516.1454

Holding Time Summary

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

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L9	001	S	91LE1528	11/08/91	11/14/91 6	11/23/91 9
B015L9	001 MS	S	91LE1528	11/08/91	11/14/91	11/23/91
B015L9	001 MSD	S	91LE1528	11/08/91	11/14/91	11/23/91
B015M1	002	S	91LE1528	11/11/91	11/14/91	11/23/91

LAB QC:

SBLK	MB1	S	91LE1528	N/A	11/14/91	11/23/91
SBLK	MB1 BS	S	91LE1528	N/A	11/14/91	11/23/91

JAN 1992
RECEIVED
OSM DMO

6/24/92

Calibration Summary 9213516.1455 0000080 Pg 1 of 2

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L389

Instrument ID: 5100SP Calibration Date: 11/23/91 Time: 1508

Lab File ID: S112302 Init. Calib. Date(s): 11/21/91 11/21/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

	COMPOUND		$\overline{RRF}$	RRF50	%D
15	Phenol	*	2.249	2.072	7.9 *
16	bis(2-Chloroethyl)ether		1.978	1.936	2.1
	2-Chlorophenol		1.467	1.338	8.8
	1,3-Dichlorobenzene		1.570	1.440	8.3
	1,4-Dichlorobenzene	*	1.650	1.554	5.8 *
	Benzyl alcohol		0.804	0.650	19.2
	1,2-Dichlorobenzene		1.517	1.370	9.7
	2-Methylphenol		1.293	1.162	10.1
	bis(2-Chloroisopropyl)ether		2.348	2.158	8.1
	4-Methylphenol		1.319	1.107	16.1
	N-Nitroso-Di-n-propylamine	#	1.174	1.031	12.2 #
	Hexachloroethane		0.700	0.589	15.9
	Nitrobenzene		0.502	0.476	5.2
	Isophorone		1.017	0.973	4.3
	2-Nitrophenol	*	0.229	0.218	4.8 *
	2,4-Dimethylphenol		0.351	0.313	10.8
	Benzoic acid		0.195	0.131	32.8
	bis(2-Chloroethoxy)methane		0.576	0.531	7.8
	2,4-Dichlorophenol	*	0.270	0.240	11.1 *
	1,2,4-Trichlorobenzene		0.302	0.279	7.6
	Naphthalene		1.221	1.144	6.3
	4-Chloroaniline		0.381	0.314	17.6
	Hexachlorobutadiene	*	0.134	0.123	8.2 *
	4-Chloro-3-methylphenol	*	0.297	0.258	13.1 *
	2-Methylnaphthalene		0.596	0.527	11.6
	Hexachlorocyclopentadiene	#	0.198	0.145	26.8 #
	2,4,6-Trichlorophenol	*	0.317	0.279	12.0 *
	2,4,5-Trichlorophenol		0.352	0.314	10.8
	2-Chloronaphthalene		1.149	1.079	6.1
	2-Nitroaniline		0.411	0.360	12.4
	Dimethylphthalate		1.153	1.061	8.0
	Acenaphthylene		2.084	1.635	21.5
	2,6-Dinitrotoluene		0.323	0.295	8.7
	3-Nitroaniline		0.206	0.178	13.6
	Acenaphthene	*	1.012	0.933	7.8 *
	2,4-Dinitrophenol	#	0.154	0.088	42.9 #
	4-Nitrophenol	#	0.079	0.055	30.4 #

SMC 11/27/91

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6/24/

Calibration Summary 9213516.1456 0000081 pg 2 of 2

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L389

Instrument ID: 5100SP Calibration Date: 11/23/91 Time: 1508

Lab File ID: S112302 Init. Calib. Date(s): 11/21/91 11/21/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D
Dibenzofuran	1.399	1.267	9.4
2,4-Dinitrotoluene	0.347	0.319	8.1
Diethylphthalate	1.095	0.968	11.6
4-Chlorophenyl-phenylether	0.537	0.470	12.5
Fluorene	1.096	0.958	12.6
4-Nitroaniline	0.148	0.086	41.9
4,6-Dinitro-2-methylphenol	0.165	0.114	30.9
N-Nitrosodiphenylamine (1) *	0.532	0.481	9.6
4-Bromophenyl-phenylether	0.206	0.193	6.3
Hexachlorobenzene	0.216	0.203	6.0
Pentachlorophenol *	0.124	0.094	24.2
Phenanthrene	1.250	1.159	7.3
Anthracene	1.259	1.146	9.0
Di-n-Butylphthalate	1.512	1.402	7.3
Fluoranthene *	1.103	0.980	11.2
Pyrene	2.120	2.056	3.0
Butylbenzylphthalate	1.023	0.917	10.4
3,3'-Dichlorobenzidine	0.276	0.224	18.8
Benzo(a)anthracene	1.425	1.318	7.5
Chrysene	1.493	1.425	4.6
bis(2-Ethylhexyl)phthalate	1.604	1.447	9.8
Di-n-Octyl phthalate *	2.569	2.558	0.4
Benzo(b)fluoranthene	1.455	1.236	15.1
Benzo(k)fluoranthene	1.234	1.272	-3.1
Benzo(a)pyrene *	1.181	1.083	8.3
Indeno(1,2,3-cd)pyrene	1.010	0.931	7.8
Dibenzo(a,h)anthracene	0.782	0.714	8.7
Benzo(g,h,i)perylene	0.922	0.876	5.0
Nitrobenzene-d5	0.484	0.460	5.0
2-Fluorobiphenyl	1.156	1.077	6.8
p-Terphenyl-d14	1.427	1.397	2.1
Phenol-d5	2.156	1.980	8.2
2-Fluorophenol	1.630	1.543	5.3
2,4,6-Tribromophenol	0.102	0.083	18.6

(1) Cannot be separated from Diphenylamine

6/24/92

Blank 97 ~~1354.1457~~ 0000097 Pg 1 of 2

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: SOIL Lab Sample ID: 91LE1528-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S112307

Level: (low/med) LOW Date Received: 11/14/91

% Moisture: not dec. 0 dec. Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	61	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	670	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	330	U
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

x1.0=610

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

6/24/92

Blank 9715514.1458 0000098 Pg 2 of 2

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LE1528-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: S112307

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 0 dec.

Date Extracted: 11/14/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/23/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	4.80	300	JA

R

FORM 1 SV-TIC 12/88 Rev.

6/23/92

Accuracy ~~Summary~~ 9713516.1459 0000012 Pg 1 of 1

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9111L389-001

MATRIX Spike - Sample No.: B015L9 Level:(low/med) LOW

No qualification is required.

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
Phenol	3400	0	2860	84	26- 90
2-Chlorophenol	3400	0	2920	86	25-102
1,4-Dichlorobenzene	1700	0	1330	78	28-104
N-Nitroso-Di-n-propylamine	1700	0	1420	84	41-126
1,2,4-Trichlorobenzene	1700	0	1400	83	38-107
4-Chloro-3-methylphenol	3400	0	3190	94	26-103
Acenaphthene	1700	0	1410	83	31-137
4-Nitrophenol	3400	0	3410	100	11-114
2,4-Dinitrotoluene	1700	0	1520	89	28- 89
Pentachlorophenol	3400	0	3550	104	17-109
Pyrene	1700	0	1490	88	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	3360	3170	94 *	11	35	26- 90
2-Chlorophenol	3360	3210	96	10	50	25-102
1,4-Dichlorobenzene	1680	1450	86	9	27	28-104
N-Nitroso-Di-n-propylamine	1680	1570	94	11	38	41-126
1,2,4-Trichlorobenzene	1680	1590	95	13	23	38-107
4-Chloro-3-methylphenol	3360	3380	101	7	33	26-103
Acenaphthene	1680	1650	98	16	19	31-137
4-Nitrophenol	3360	3980	118 *	16	50	11-114
2,4-Dinitrotoluene	1680	1730	103 *	14	47	28- 89
Pentachlorophenol	3360	3680	110 *	5	47	17-109
Pyrene	1680	1510	90	2	36	35-142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS:

FORM III SV-2 5/88 Rev.

6/24/93

9713516.1460

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

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/24/92
LABORATORY: Weston	CASE: 91111L389	SDG: 389
SAMPLES/MATRIX: B015L9, B015M1 / Soils		

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		

@06/25/92

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.

9713516.1465

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

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

only an MS was performed.

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? GRC — 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):

GPC cleanup was performed on these sample extracts.

DBC RT is out of the RT window for the ~~3~~ 2 listed runs:

AR1242 12/06/91 22:25 (2250/2401)

91111 389-001S 12/08/91 05:41 (2250/2401)

In All other runs the DBC RTs were within the window. For the 91111L389-001S run, the confirmation column (SP2/CD) was used for quantitation for this one run only. Since all sample results were ND, no qualification was required for the AR1242 run.

6/24/92

Holding Time Summary 9213516.1468

pg 1 of 1

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L9	001	S	91LE1546	11/08/91	11/19/91 11	12/08/91 19
B015L9	001 MS	S	91LE1546	11/08/91	11/19/91	12/08/91
B015M1	002	S	91LE1546	11/11/91	11/19/91	12/08/91

LAB QC:

PBLK	MB1	S	91LE1546	N/A	11/19/91	12/08/91
PBLK	MB1 BS	S	91LE1546	N/A	11/19/91	12/08/91

Samples were extracted out of holding time. Qualify all results as estimated (J for detects, UJ for non-detects)

6/24/92

JAN 1992 RECEIVED OSM DMO

6/24/

Calibration Summary 9213516.1469 0000035 Pg 1 of 1

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12069128.54

RFW Lot No.: 9111L389

Instrument ID: 28 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 12/06/91 TO: 12/07/91
TIME(S) OF ANALYSIS FROM: 1916 TO: 0018

DATE OF ANALYSIS 12/08/91
TIME OF ANALYSIS 0426
EPA SAMPLE NO. (STANDARD) INDA 18-67

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.95	1.86	2.04	2407643	1.95	2456901	N	2.0
Beta-BHC	2.08	2.07	2.09	1180009				
Delta-BHC	2.34	2.33	2.35	1638227				
gamma-BHC (Lindane)	2.27	2.25	2.29	2194355	2.27	2242101	N	2.2
Heptachlor	3.58	3.56	3.60	1794749	3.58	1806151	N	0.6
Aldrin	4.40	4.37	4.43	1033482				
Heptachlor epoxide	5.32	5.29	5.35	1083325				
Endosulfan I	6.58	6.55	6.61	743699	6.57	745850	N	0.3
Dieldrin	7.65	7.61	7.69	675863	7.64	662167	N	2.0
4,4'-DDE	7.56	7.54	7.58	629382				
Endrin	8.52	8.49	8.55	419611	8.51	375292	N	10.6
Endosulfan II	8.69	8.64	8.74	495377				
4,4'-DDD	9.47	9.43	9.51	343205	9.46	347933	N	1.4
Endosulfan sulfate	11.09	11.04	11.14	188379				
4,4'-DDT	12.31	12.27	12.35	312622	12.27	404875	N	29.5
Methoxychlor	18.06	17.96	18.14	217569	18.03	221090	N	1.6
Endrin ketone	14.18	14.10	14.24	390650				
alpha-Chlordane	6.70	6.68	6.72	951440				
gamma-Chlordane	6.07	6.05	6.09	999611				
Toxaphene	9.31	9.26	9.37	78776				
Aroclor-1016	3.13	3.12	3.15	481840				
Aroclor-1221	1.97	1.97	1.97	159887				
Aroclor-1232	1.97	1.96	1.98	282792				
Aroclor-1242	3.13	3.13	3.13	437446				
Aroclor-1248	5.41	5.39	5.42	420781				
Aroclor-1254	6.41	6.40	6.42	385244				
Aroclor-1260	10.90	10.85	10.94	284863				

Assoc. w/ B91SL9 and B91SM1.
All results are ND, No qual is req'd.

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.

9713516.1470

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/25/92
LABORATORY: Weston	CASE: 9111L389	SDG: 389
SAMPLES/MATRIX: B015L9 B015M1 / Soil @ 6/30/92		

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

Two LCS samples were distilled.

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.

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JAN 1992 RECEIVED OSM DMO

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

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B015L9							
SILVER, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	53
SILVER, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
SILVER, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
ALUMINUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	
ALUMINUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
ALUMINUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
ARSENIC, TOTAL	001	S	91L3426	11/08/91	12/11/91	12/16/91	38
ARSENIC, TOTAL	001 REP	S	91L3426	11/08/91	12/11/91	12/16/91	
ARSENIC, TOTAL	001 MS	S	91L3426	11/08/91	12/11/91	12/16/91	
BARIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	53
BARIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
BARIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
BERYLLIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	
BERYLLIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
BERYLLIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
BISMUTH, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/30/91	52
BISMUTH, TOTAL REP	001 REP	S	91L3427	11/08/91	12/11/91	12/30/91	
BISMUTH, TOTAL SPIKE	001 MS	S	91L3427	11/08/91	12/11/91	12/30/91	
CALCIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	53
CALCIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
CALCIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
CADMIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	
CADMIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
CADMIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
COBALT, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	
COBALT, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
COBALT, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
CHROMIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	
CHROMIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
CHROMIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
COPPER, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	
COPPER, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
COPPER, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
IRON, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91	
IRON, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91	
IRON, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91	
MERCURY, TOTAL	001	S	91C0348	11/08/91	12/03/91	12/05/91	27

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

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 REP	S	91C0348	11/08/91	12/03/91	12/05/91 27
MERCURY, TOTAL	001 MS	S	91C0348	11/08/91	12/03/91	12/05/91
POTASSIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91 53
POTASSIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
POTASSIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
MAGNESIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91
MAGNESIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
MAGNESIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
MANGANESE, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91
MANGANESE, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
MANGANESE, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
SODIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91
SODIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
SODIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
NICKEL, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91
NICKEL, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
NICKEL, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
LEAD, TOTAL	001	S	91L3426	11/08/91	12/11/91	12/16/91 38
LEAD, TOTAL	001 REP	S	91L3426	11/08/91	12/11/91	12/16/91
LEAD, TOTAL	001 MS	S	91L3426	11/08/91	12/11/91	12/16/91
ANTIMONY, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91 53
ANTIMONY, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
ANTIMONY, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
SELENIUM, TOTAL	001	S	91L3426	11/08/91	12/11/91	12/16/91 38
SELENIUM, TOTAL	001 REP	S	91L3426	11/08/91	12/11/91	12/16/91
SELENIUM, TOTAL	001 MS	S	91L3426	11/08/91	12/11/91	12/16/91
THALLIUM, TOTAL	001	S	91L3426	11/08/91	12/11/91	12/16/91
THALLIUM, TOTAL	001 REP	S	91L3426	11/08/91	12/11/91	12/16/91
THALLIUM, TOTAL	001 MS	S	91L3426	11/08/91	12/11/91	12/16/91
VANADIUM, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91 53
VANADIUM, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
VANADIUM, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
ZINC, TOTAL	001	S	91L3427	11/08/91	12/11/91	12/31/91
ZINC, TOTAL	001 REP	S	91L3427	11/08/91	12/11/91	12/31/91
ZINC, TOTAL	001 MS	S	91L3427	11/08/91	12/11/91	12/31/91
B015M1						
SILVER, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91 50
ALUMINUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91

9213516.1477 Holding time Summary

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

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	002	S	91L3426	11/11/91	12/11/91	12/16/91 35
BARIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91 50
BERYLLIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
BISMUTH, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/30/91 49
CALCIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91 50
CADMIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
COBALT, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
CHROMIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
COPPER, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
IRON, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
MERCURY, TOTAL	002	S	91C0348	11/11/91	12/03/91	12/05/91 24
POTASSIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91 50
MAGNESIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
MANGANESE, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
SODIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
NICKEL, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91
LEAD, TOTAL	002	S	91L3426	11/11/91	12/11/91	12/16/91 35
ANTIMONY, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91 50
SELENIUM, TOTAL	002	S	91L3426	11/11/91	12/11/91	12/16/91 35
THALLIUM, TOTAL	002	S	91L3426	11/11/91	12/11/91	12/16/91
VANADIUM, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91 50
ZINC, TOTAL	002	S	91L3427	11/11/91	12/11/91	12/31/91

LAB QC:

SILVER LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
ALUMINUM LABORTORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
BARIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
BERYLLIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
BISMUTH, LCS	LC1 BS	S	91L3427	N/A	12/11/91	12/30/91
CALCIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
CADMIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
COBALT LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
CHROMIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
COPPER LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
IRON LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
POTASSIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
MAGNESIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
MANGANESE LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91
SODIUM LABORATORY	LC1 BS	S	91L3427	N/A	12/11/91	12/31/91

Accuracy Summary 9713516.1428 00000031 pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015L9S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP389

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 97.2

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	64.5000		3.9500	U	98.10	65.8	N	P
Arsenic	75-125	7.1000		1.2000	B	7.80	75.6		F
Barium	75-125	429.8000		49.0000		392.40	97.0		P
Beryllium	75-125	9.0000		.2600	B	9.80	89.1		P
Cadmium	75-125	7.2000		.5925	U	9.80	73.4	N	P
Calcium									NR
Chromium	75-125	39.6000		4.5000		39.20	89.5		P
Cobalt	75-125	94.4000		5.4000	B	98.10	90.7		P
Copper	75-125	53.4000		10.3000		49.10	87.9		P
Iron									NR
Lead	75-125	6.0000		2.0000		3.90	102.6		F
Magnesium									NR
Manganese	75-125	344.2000		185.0000		98.10	162.3	N	P
Mercury	75-125	.5370		.0515	U	.51	105.3		CV
Nickel	75-125	93.3000		6.3000	B	98.10	88.6		P
Potassium									NR
Selenium	75-125	1.3000		.3946	U	2.00	65.0	N	F
Silver	75-125	1.9620	U	1.9750	U	9.80	0.0		P
Sodium									NR
Thallium	75-125	6.2000		.3946	U	9.80	63.2	N	F
Vanadium	75-125	105.5000		14.2000		98.10	93.1		P
Zinc	75-125	108.8000		19.5000		98.10	91.1		P
Cyanide	75-125	4.1990		1.0300	U	5.14	81.7		C

Comments:

Sb, Cd, Mn, Se, Tl qualified as J/UJ.
MLS 2/2/92

FORM V (Part 1) - IN 03/90

Precision Summary 9213516.1479 0000036

Pg 1 of 1

U.S. EPA - CLP

9
ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B015L9L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP389

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	15842.30		10163.00		35.8	E	P
Antimony	20.00	U	100.00	U			P
Arsenic							NR
Barium	248.10		160.00	B	35.5		P
Beryllium	1.30	B	5.00	U	100.0		P
Cadmium	3.00	U	15.00	U			P
Calcium	36090.30		23629.00	B	34.5	E	P
Chromium	22.70		30.00	U	44.9		P
Cobalt	27.10	B	50.00	U	100.0		P
Copper	52.00		61.50	B	18.3		P
Iron	44661.60		29382.50		34.2	E	P
Lead							NR
Magnesium	12204.70		7929.00	B	35.0	E	P
Manganese	936.60		617.00		34.1	E	P
Mercury							NR
Nickel	32.10	B	55.00	U	100.0		P
Potassium	5230.10		4310.00	U	40.0		P
Selenium							NR
Silver	10.00	U	50.00	U			P
Sodium	691.90	B	550.00	U	100.0		P
Thallium							NR
Vanadium	71.90		40.00	U	51.3		P
Zinc	98.50		127.50		29.4		P

FORM IX - IN

03/90

6/28/9

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9111L389	REVIEWER: [illegible]	DATE: 6/28/92	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B015L9	Selenium	71.2	B015L9	UJ
B015M1	Selenium	70.6	B015M1	UJ
B015L9	Thallium	80.5	B015L9	UJ
B015M1	Thallium	80.5	B015M1	UJ

9713516.1480

9713516.1481

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 1/29/92
LABORATORY: Weston	CASE: 91111L389	SDG: 389
SAMPLES/MATRIX: B015L9, B015M1/Soil		

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		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

Fluoride

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.

9713516.1485

Holding Time Summary

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

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015L9						
% SOLIDS	001	S	91L%S243	11/08/91	11/20/91	11/21/91 13
CHLORIDE BY IC	001	S	91LICA76	11/08/91	11/26/91	11/26/91 18
CHLORIDE BY IC	001 REP	S	91LICA76	11/08/91	11/26/91	11/26/91
CHLORIDE BY IC	001 MS	S	91LICA76	11/08/91	11/26/91	11/26/91
CHLORIDE BY IC	001 MSD	S	91LICA76	11/08/91	11/26/91	11/26/91
FLUORIDE BY IC	001	S	91LICA76	11/08/91	11/26/91	11/26/91
FLUORIDE BY IC	001 REP	S	91LICA76	11/08/91	11/26/91	11/26/91
FLUORIDE BY IC	001 MS	S	91LICA76	11/08/91	11/26/91	11/26/91
FLUORIDE BY IC	001 MSD	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRITE BY IC	001	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRITE BY IC	001 REP	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRITE BY IC	001 MS	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRITE BY IC	001 MSD	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRATE BY IC	001	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRATE BY IC	001 REP	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRATE BY IC	001 MS	S	91LICA76	11/08/91	11/26/91	11/26/91
NITRATE BY IC	001 MSD	S	91LICA76	11/08/91	11/26/91	11/26/91
TOTAL CYANIDE	001	S	91LC359	11/08/91	11/26/91	11/26/91
TOTAL CYANIDE	001 REP	S	91LC359	11/08/91	11/26/91	11/26/91
TOTAL CYANIDE	001 MS	S	91LC359	11/08/91	11/26/91	11/26/91
PHOSPHATE BY IC	001	S	91LICA76	11/08/91	11/26/91	11/26/91
PHOSPHATE BY IC	001 REP	S	91LICA76	11/08/91	11/26/91	11/26/91
PHOSPHATE BY IC	001 MS	S	91LICA76	11/08/91	11/26/91	11/26/91
PHOSPHATE BY IC	001 MSD	S	91LICA76	11/08/91	11/26/91	11/26/91
SULFATE BY IC	001	S	91LICA76	11/08/91	11/26/91	11/26/91
SULFATE BY IC	001 REP	S	91LICA76	11/08/91	11/26/91	11/26/91
SULFATE BY IC	001 MS	S	91LICA76	11/08/91	11/26/91	11/26/91
SULFATE BY IC	001 MSD	S	91LICA76	11/08/91	11/26/91	11/26/91 -1
NITRATE NITRITE	001	S	91LNB259	11/08/91	12/04/91	12/04/91 26
NITRATE NITRITE	001 REP	S	91LNB259	11/08/91	12/04/91	12/04/91
NITRATE NITRITE	001 MS	S	91LNB259	11/08/91	12/04/91	12/04/91
NITRATE NITRITE	001 MSD	S	91LNB259	11/08/91	12/04/91	12/04/91
TOTAL ORGANIC CARBON	001	S	91LTZ027	11/08/91	11/27/91	11/27/91 19
SUB-OUT TEST FOR SUB	001	S		11/08/91		
B015M1						
% SOLIDS	002	S	91L%S243	11/11/91	11/20/91	11/21/91 10

9713514.1486 Holding Time Summary Pg 2 of 2

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

DATE RECEIVED: 11/13/91 RFW LOT # :9111L389

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	91LICA76	11/11/91	11/26/91	11/26/91 15
FLUORIDE BY IC	002	S	91LICA76	11/11/91	11/26/91	11/26/91
NITRITE BY IC	002	S	91LICA76	11/11/91	11/26/91	11/26/91
NITRATE BY IC	002	S	91LICA76	11/11/91	11/26/91	11/26/91
TOTAL CYANIDE	002	S	91LC359	11/11/91	11/26/91	11/26/91
PHOSPHATE BY IC	002	S	91LICA76	11/11/91	11/26/91	11/26/91
SULFATE BY IC	002	S	91LICA76	11/11/91	11/26/91	11/26/91
NITRATE NITRITE	002	S	91LNB259	11/11/91	12/04/91	12/04/91 23
TOTAL ORGANIC CARBON	002	S	91LTZ027	11/11/91	11/27/91	11/27/91 16
TOTAL ORGANIC CARBON	002 REP	S	91LTZ027	11/11/91	11/27/91	11/27/91
TOTAL ORGANIC CARBON	002 MS	S	91LTZ027	11/11/91	11/27/91	11/27/91
SUB-OUT TEST FOR SUB	002	S		11/11/91		

LAB QC:

CHLORIDE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
CHLORIDE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
FLUORIDE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
FLUORIDE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
NITRITE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
NITRITE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
NITRATE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
NITRATE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
PHOSPHATE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
PHOSPHATE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
SULFATE BY IC	MB1	S	91LICA76	N/A	11/26/91	11/26/91
SULFATE BY IC	MB1 BS	S	91LICA76	N/A	11/26/91	11/26/91
TOTAL CYANIDE	LC1 L	S	91LC359	N/A	11/26/91	11/26/91
TOTAL CYANIDE	LC2 L	S	91LC359	N/A	11/26/91	11/26/91
TOTAL CYANIDE	MB1	S	91LC359	N/A	11/26/91	11/26/91
NITRATE NITRITE	MB1	S	91LNB259	N/A	12/04/91	12/04/91
NITRATE NITRITE	MB1 BS	S	91LNB259	N/A	12/04/91	12/04/91
NITRATE NITRITE	MB1 BSD	S	91LNB259	N/A	12/04/91	12/04/91
NITRATE NITRITE	MB2	S	91LNB259	N/A	12/04/91	12/04/91
NITRATE NITRITE	MB2 BS	S	91LNB259	N/A	12/04/91	12/04/91
TOTAL ORGANIC CARBON	MB1	S	91LTZ027	N/A	11/27/91	11/27/91
TOTAL ORGANIC CARBON	MB1 BS	S	91LTZ027	N/A	11/27/91	11/27/91
TOTAL ORGANIC CARBON	MB2	S	91LTZ027	N/A	11/27/91	11/27/91
TOTAL ORGANIC CARBON	MB2 BS	S	91LTZ027	N/A	11/27/91	11/27/91

6/29/

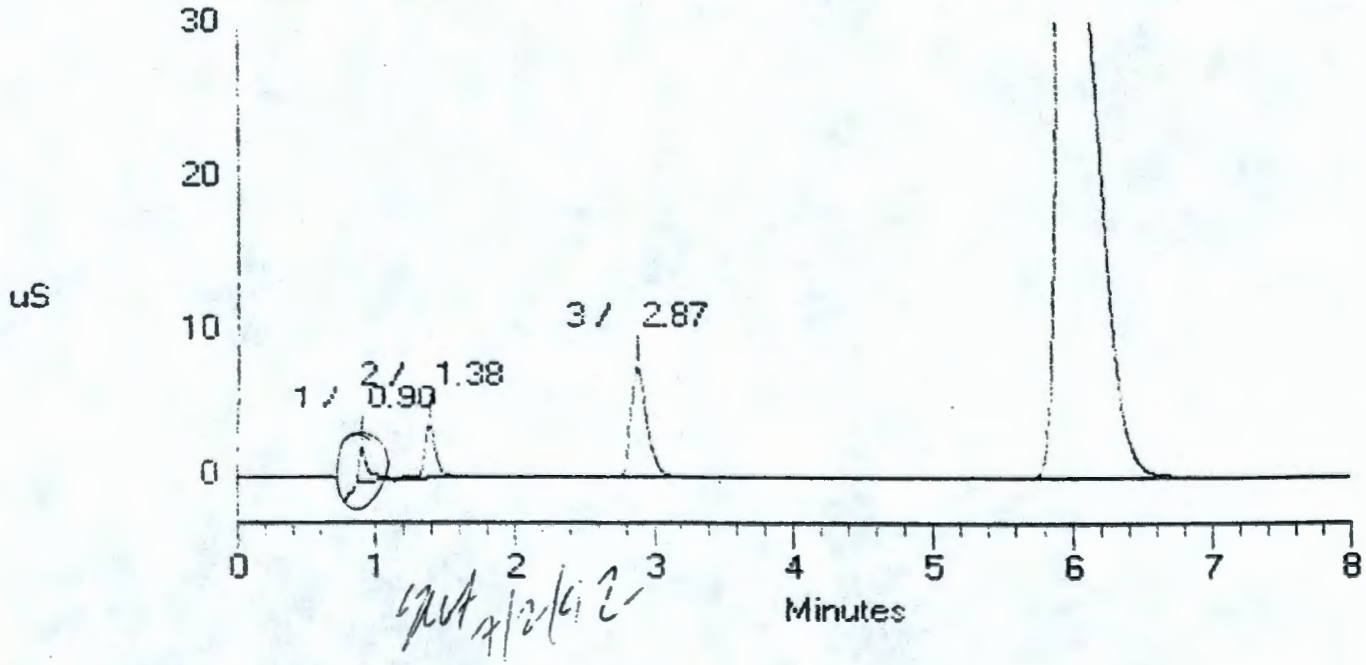
Calculation Summary 9135161487 Pg 1 of 1

Sample Name: 9111L389-002	Date: Tue Nov 26 17:20:17 1991
Data File : D:\DATA\112691\RAWDATC1.D46	
Method : C:\DX\METHOD\AS4A7B.met	
ACI Address: 1 System : 1 Inject#: 46 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	0.90	FLUORIDE	0.324	2256	11218	1	0.00
2	1.38	CHLORIDE	0.806	3590	19644	1	1.26
3	2.87	NITRATE	4.812	7360	60168	1	6.17
4	5.97	SULFATE	81.420	52502	925369	1	1.99
		Totals	87.362	65708	1016399		

File: D:\DATA\112691\RAWDATC1.D46 Sample: 9111L389-002



$$mg/kg = \frac{C \times V}{W \times D}$$

$$mg/kg\ Fluoride = \frac{(0.324)(30)}{(6)(.9652)} = 1.678 \approx 1.7\ mg/kg$$

9713516.1488

APPENDIX D

DATA VALIDATION DOCUMENTATION

SDG: 9111L404

SAMPLES: B015M5, B015M3

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.

9713516.1490

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9713516.1491

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91116404	REVIEWER: [illegible]	DATE: 6/22/92	PAGE 1 OF 4
COMMENTS: VOA			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
MeCl2	J	B015m3, m5	FCV RSD 7302
Acetone	J	↓	↓
2 Butanone	UJ	↓	↓

9713516.1492

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L404	REVIEWER: [illegible]	DATE: 6/23/92	PAGE 2 OF 4
COMMENTS: Semi-VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
2,4-Dinitrophenol	UJ	B015M5 ~~B015M5~~ / B015M3	ICV RSD 73%
Benzyl Alcohol	UJ	B015M5 ~~B015M5~~ / B015M3	CCV %D >25%
2-Methylphenol	UJ	↓	↓
Bis(2-chloroisopropyl)ether	UJ	↓	↓
4-Methylphenol	UJ	↓	↓
N-Nitroso-Di-n-propylamine	UJ	↓	↓
Hexachlorocyclopentadiene	UJ	↓	↓
3-Nitroaniline	UJ	↓	↓
4-Nitroaniline	UJ	↓	↓
bis(2-Ethylhexyl) phthalate	U	All	Present in Blank
Acid contaminate	R	All	lab contaminant
~~Phenol & 4-Chloro-3-methylphenol~~	~~J~~	All	Estimated values below the CRQL.

6/24/92

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L404	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 3 OF 4
COMMENTS: Metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Arsenic	J	B0:5MS/B0:5MS3	MS %R<75%
Silver	J	B0:5MS/B0:5MS3	MS %R=0 and sample results >IDL.
Calcium	J	B0:5MS/B0:5MS3	Dup RPD is out of control limit
Selenium	UJ	B0:5MS/B0:5MS3	~~MS %R~~ ~~GFAA~~ Analytical Spike out of control limits

9713516.1494

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L404	REVIEWER: [illegible]	DATE: 6/29/92	PAGE 4 OF 4
COMMENTS: Wet Chemistry			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Nitrite	UJ	B015M5 & B015M3	Analyzed out of holding time
Nitrate	J	↓	↓
Phosphate	UJ/J	↓	↓
TOC	J	B015M5 & B015M3	MS %R > 125%
Nitrate+Nitrite	R	B015M5+B015M3	Disparity with NO2 IC data

9713516.1495

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.1496

1A 0000018

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-50A 26.5-29.0

B015M5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-001

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

Lab File ID: AXBF10

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 3

Date Analyzed: 11/15/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	32	
67-64-1	Acetone	87	
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.

9713516.1497

1A
VOLATILE ORGANICS ANALYSIS SHEET 000002C

CLIENT SAMPLE NO.
216-B-43 A 10.4-12.9

B015M3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-002

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

Lab File ID: AXBF11

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 5

Date Analyzed: 11/15/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	31	
67-64-1	Acetone	82	
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	~~U~~
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

6/21

9713516.1498

0000018

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

216-B-50A 26.5-29.0

BO15M5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M112709

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 5 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 7.1

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
108-95-2	Phenol	350	U	
111-44-4	bis(2-Chloroethyl)ether	350	U	
95-57-8	2-Chlorophenol	350	U	
541-73-1	1,3-Dichlorobenzene	350	U	
106-46-7	1,4-Dichlorobenzene	350	U	
100-51-6	Benzyl alcohol	350	~~U~~	EJ
95-50-1	1,2-Dichlorobenzene	350	U	
95-48-7	2-Methylphenol	350	~~U~~	EJ
108-60-1	bis(2-Chloroisopropyl)ether	350	~~U~~	EJ
106-44-5	4-Methylphenol	350	~~U~~	EJ
621-64-7	N-Nitroso-Di-n-propylamine	350	~~U~~	EJ
67-72-1	Hexachloroethane	350	U	
98-95-3	Nitrobenzene	350	U	
78-59-1	Isophorone	350	U	
88-75-5	2-Nitrophenol	350	U	
105-67-9	2,4-Dimethylphenol	350	U	
65-85-0	Benzoic acid	1700	U	
111-91-1	bis(2-Chloroethoxy)methane	350	U	
120-83-2	2,4-Dichlorophenol	350	U	
120-82-1	1,2,4-Trichlorobenzene	350	U	
91-20-3	Naphthalene	350	U	
106-47-8	4-Chloroaniline	350	U	
87-68-3	Hexachlorobutadiene	350	U	
59-50-7	4-Chloro-3-methylphenol	350	U	
91-57-6	2-Methylnaphthalene	350	U	
77-47-4	Hexachlorocyclopentadiene	350	~~U~~	EJ
88-06-2	2,4,6-Trichlorophenol	350	U	
95-95-4	2,4,5-Trichlorophenol	1700	U	
91-58-7	2-Chloronaphthalene	350	U	
88-74-4	2-Nitroaniline	1700	U	
131-11-3	Dimethylphthalate	350	U	
208-96-8	Acenaphthylene	350	U	
606-20-2	2,6-Dinitrotoluene	350	U	

9713516.1499

0000019

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-50A 26.5-29.0

B015M5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M112709

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 5 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 7.1

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
99-09-2	3-Nitroaniline	1700	~~U~~	UJ
83-32-9	Acenaphthene	350	U	
51-28-5	2,4-Dinitrophenol	1700	~~U~~	UJ
100-02-7	4-Nitrophenol	1700	U	
132-64-9	Dibenzofuran	350	U	
121-14-2	2,4-Dinitrotoluene	350	U	
84-66-2	Diethylphthalate	350	U	
7005-72-3	4-Chlorophenyl-phenylether	350	U	
86-73-7	Fluorene	350	U	
100-01-6	4-Nitroaniline	1700	~~U~~	UJ
534-52-1	4,6-Dinitro-2-methylphenol	1700	U	
86-30-6	N-Nitrosodiphenylamine (1)	350	U	
101-55-3	4-Bromophenyl-phenylether	350	U	
118-74-1	Hexachlorobenzene	350	U	
87-86-5	Pentachlorophenol	1700	U	
85-01-8	Phenanthrene	350	U	
120-12-7	Anthracene	350	U	
84-74-2	Di-n-Butylphthalate	350	U	
206-44-0	Fluoranthene	350	U	
129-00-0	Pyrene	350	U	
85-68-7	Butylbenzylphthalate	350	U	
91-94-1	3,3'-Dichlorobenzidine	700	U	
56-55-3	Benzo(a)anthracene	350	U	
218-01-9	Chrysene	350	U	
117-81-7	bis(2-Ethylhexyl)phthalate	350 ~~110~~	~~JB~~	u
117-84-0	Di-n-Octyl phthalate	350	U	
205-99-2	Benzo(b)fluoranthene	350	U	
207-08-9	Benzo(k)fluoranthene	350	U	
50-32-8	Benzo(a)pyrene	350	U	
193-39-5	Indeno(1,2,3-cd)pyrene	350	U	
53-70-3	Dibenzo(a,h)anthracene	350	U	
191-24-2	Benzo(g,h,i)perylene	350	U	

(1) - Cannot be separated from Diphenylamine

9713516.1500

0000020

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-50A 26.5-29.0

B015M5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M112709

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 5 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 7.1

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	~~5.72~~	~~200~~	~~JAB~~

R

FORM 1 SV-TIC 12/88 Rev.

9713516.1501 0000030

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A 10.4-12.9

BO15M3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M112712

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 6 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 6.4

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
108-95-2	Phenol	350	U	
111-44-4	bis(2-Chloroethyl)ether	350	U	
95-57-8	2-Chlorophenol	350	U	
541-73-1	1,3-Dichlorobenzene	350	U	
106-46-7	1,4-Dichlorobenzene	350	U	
100-51-6	Benzyl alcohol	350	~~U~~	35
95-50-1	1,2-Dichlorobenzene	350	U	
95-48-7	2-Methylphenol	350	~~U~~	35
108-60-1	bis(2-Chloroisopropyl)ether	350	~~U~~	35
106-44-5	4-Methylphenol	350	~~U~~	35
621-64-7	N-Nitroso-Di-n-propylamine	350	~~U~~	35
67-72-1	Hexachloroethane	350	U	
98-95-3	Nitrobenzene	350	U	
78-59-1	Isophorone	350	U	
88-75-5	2-Nitrophenol	350	U	
105-67-9	2,4-Dimethylphenol	350	U	
65-85-0	Benzoic acid	1800	U	
111-91-1	bis(2-Chloroethoxy)methane	350	U	
120-83-2	2,4-Dichlorophenol	350	U	
120-82-1	1,2,4-Trichlorobenzene	350	U	
91-20-3	Naphthalene	350	U	
106-47-8	4-Chloroaniline	350	U	
87-68-3	Hexachlorobutadiene	350	U	
59-50-7	4-Chloro-3-methylphenol	350	U	
91-57-6	2-Methylnaphthalene	350	U	
77-47-4	Hexachlorocyclopentadiene	350	~~U~~	35
88-06-2	2,4,6-Trichlorophenol	350	U	
95-95-4	2,4,5-Trichlorophenol	1800	U	
91-58-7	2-Chloronaphthalene	350	U	
88-74-4	2-Nitroaniline	1800	U	
131-11-3	Dimethylphthalate	350	U	
208-96-8	Acenaphthylene	350	U	
606-20-2	2,6-Dinitrotoluene	350	U	

9713516.1502 0000031

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A 10.4-12.9

BO15M3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M112712

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 6 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 6.4

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1800	~~U~~ UJ
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1800	~~U~~ UJ
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1800	~~U~~ UJ
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	710	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	350 ~~100~~	~~JB~~ U
117-84-0	Di-n-Octyl phthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenzo(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

6/2/92

9713516.1503

0000032

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-43F 10.4-12.9

BO15M3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: M112712

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 6 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 6.4

Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	5.72	100	JAB

R

FORM 1 SV-TIC

12/88 Rev.

6/24/92

9713516.1504

1D 0000013

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-50A 26.5-29.0

BO15M5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-001

Sample wt/vol: 29.2 (g/mL) G

Lab File ID: 12069127.62

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 5 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/08/91

GPC Cleanup: (Y/N) Y pH: 9.8

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
319-84-6	Alpha-BHC	17	~~8.6~~	U
319-85-7	Beta-BHC		~~8.6~~	U
319-86-8	Delta-BHC		~~8.6~~	U
58-89-9	gamma-BHC (Lindane)		~~8.6~~	U
76-44-8	Heptachlor		~~8.6~~	U
309-00-2	Aldrin		~~8.6~~	U
1024-57-3	Heptachlor epoxide		~~8.6~~	U
959-98-8	Endosulfan I		~~8.6~~	U
60-57-1	Dieldrin	34	~~17~~	U
72-55-9	4,4'-DDE		~~17~~	U
72-20-8	Endrin		17	U
33213-65-9	Endosulfan II		~~17~~	U
72-54-8	4,4'-DDD		~~17~~	U
1031-07-8	Endosulfan sulfate		~~17~~	U
50-29-3	4,4'-DDT		17	U
72-43-5	Methoxychlor	170	~~86~~	U
53494-70-5	Endrin ketone	34	~~17~~	U
5103-71-9	alpha-Chlordane	170	~~86~~	U
5103-74-2	gamma-Chlordane	170	~~86~~	U
8001-35-2	Toxaphene	340	~~170~~	U
12674-11-2	Aroclor-1016	170	~~86~~	U
11104-28-2	Aroclor-1221	170	~~86~~	U
11141-16-5	Aroclor-1232	170	~~86~~	U
53469-21-9	Aroclor-1242	170	~~86~~	U
12672-29-6	Aroclor-1248	170	~~86~~	U
11097-69-1	Aroclor-1254	340	~~170~~	U
11096-82-5	Aroclor-1260	340	~~170~~	U

12/16/91

FORM 1 PEST 12/88 Rev.

6/25/9

9713516.1505

000001C

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-43A 10.4-12.9

BO15M3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L404-002

Sample wt/vol: 29.6 (g/mL) G

Lab File ID: 12069127.65

Level: (low/med) LOW

Date Received: 11/14/91

% Moisture: not dec. 6 dec.

Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/08/91

GPC Cleanup: (Y/N) Y pH: 7.8

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
319-84-6	Alpha-BHC	17	~~8.6~~	U
319-85-7	Beta-BHC		~~8.6~~	U
319-86-8	Delta-BHC		~~8.6~~	U
58-89-9	gamma-BHC (Lindane)		~~8.6~~	U
76-44-8	Heptachlor		~~8.6~~	U
309-00-2	Aldrin		~~8.6~~	U
1024-57-3	Heptachlor epoxide		~~8.6~~	U
959-98-8	Endosulfan I		~~8.6~~	U
60-57-1	Dieldrin	34	17	U
72-55-9	4,4'-DDE		17	U
72-20-8	Endrin		17	U
33213-65-9	Endosulfan II		17	U
72-54-8	4,4'-DDD		17	U
1031-07-8	Endosulfan sulfate		17	U
50-29-3	4,4'-DDT		17	U
72-43-5	Methoxychlor	170	86	U
53494-70-5	Endrin ketone	34	17	U
5103-71-9	alpha-Chlordane	170	86	U
5103-74-2	gamma-Chlordane	170	86	U
8001-35-2	Toxaphene	340	170	U
12674-11-2	Aroclor-1016	170	86	U
11104-28-2	Aroclor-1221	170	86	U
11141-16-5	Aroclor-1232	170	86	U
53469-21-9	Aroclor-1242	170	86	U
12672-29-6	Aroclor-1248	170	86	U
11097-69-1	Aroclor-1254	340	170	U
11096-82-5	Aroclor-1260	340	170	U

12/16/91

FORM 1 PEST 12/88 Rev.

6/25/92

9713516.1506

0000016

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

216-B-50A

B015M5

26.5-29.0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP404

Matrix (soil/water): SOIL Lab Sample ID: 911140401

Level (low/med): LOW Date Received: 11/14/91

% Solids: 97.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2140.00			P	
7440-36-0	Antimony	3.91	U		P	
7440-38-2	Arsenic	.82	B	N	F	
7440-39-3	Barium	40.00			P	
7440-41-7	Beryllium	.27	B		P	
7440-43-9	Cadmium	.59	U		P	
7440-70-2	Calcium	6100.00		*	P	
7440-47-3	Chromium	3.40			P	
7440-48-4	Cobalt	4.80	B		P	
7440-50-8	Copper	9.90			P	
7439-89-6	Iron	6130.00			P	
7439-92-1	Lead	2.10			F	
7439-95-4	Magnesium	1780.00			P	
7439-96-5	Manganese	146.00			P	
7439-97-6	Mercury	.10	B		CV	
7440-02-0	Nickel	5.70	B		P	
7440-09-7	Potassium	450.00	B		P	
7782-49-2	Selenium	.39	U	W	F	
7440-22-4	Silver	1.38 ~~1.96~~	U	N	P	
7440-23-5	Sodium	836.00	B		P	
7440-28-0	Thallium	.39	U		F	
7440-62-2	Vanadium	9.50	B		P	
7440-66-6	Zinc	14.50			P	
	Cyanide	1.03	U		C	
7440-69-9	Bismuth	39.1	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

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9713516.1507

0000017

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-43A

BO15M3
10.4 - 12.9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP404

Matrix (soil/water): SOIL Lab Sample ID: 911140402

Level (low/med): LOW Date Received: 11/14/91

% Solids: 94.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3790.00			P	
7440-36-0	Antimony	4.07	U		P	
7440-38-2	Arsenic	1.80	~~B~~	N	F	J
7440-39-3	Barium	53.10			P	
7440-41-7	Beryllium	.35	B		P	
7440-43-9	Cadmium	.61	U		P	
7440-70-2	Calcium	7870.00		*	P	J
7440-47-3	Chromium	5.80			P	
7440-48-4	Cobalt	6.20	B		P	
7440-50-8	Copper	10.50			P	
7439-89-6	Iron	10300.00			P	
7439-92-1	Lead	4.60		S	F	
7439-95-4	Magnesium	2950.00			P	
7439-96-5	Manganese	219.00			P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	6.80	B		P	
7440-09-7	Potassium	952.00	B		P	
7782-49-2	Selenium	.39	~~U~~	W	F	UJ
7440-22-4	Silver	2.50		N	P	J
7440-23-5	Sodium	350.00	B		P	
7440-28-0	Thallium	.39	U		F	
7440-62-2	Vanadium	17.50			P	
7440-66-6	Zinc	23.10			P	
	Cyanide	1.05	U		C	
7440-69-9	Bismuth	40.7	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

6/26/6

9713516.1508

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/13/91

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

WESTON BATCH #: 9111L404

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO15M5	% Solids	97.5	%	0.10
		Chloride by IC	1.3	MG/KG	1.3
	216-B-50A	Fluoride by IC	2.6 u	MG/KG	2.6
		Nitrite by IC	1.3 u	MG/KG	1.3
	26.5-29.0	Nitrate by IC	13.6	MG/KG	1.3
		Cyanide, Total	1.0 u	MG/KG	1.0
		Phosphate by IC	18.0	MG/KG	1.3
		Sulfate by IC	3.3	MG/KG	1.3
		~~Nitrate Nitrite~~	~~7.5~~	~~MG-N/KG~~	~~0.51~~
		Total Organic Carbon	1280	MG/KG	124
-002	BO15M3	% Solids	94.9	%	0.10
		Chloride by IC	18.2	MG/KG	1.3
	216-B-43A	Fluoride by IC	2.6 u	MG/KG	2.6
		Nitrite by IC	1.3 u	MG/KG	1.3
	10.4-12.9	Nitrate by IC	36.5	MG/KG	1.3
		Cyanide, Total	1.1 u	MG/KG	1.1
		Phosphate by IC	1.3 u	MG/KG	1.3
		Sulfate by IC	517	MG/KG	13.2
		~~Nitrate Nitrite~~	~~10.0~~	~~MG-N/KG~~	~~1.1~~ R
		Total Organic Carbon	1580	MG/KG	139

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

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

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.

9713516.1516

Holding Time Summary

Pg 1 of 1

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

DATE RECEIVED: 11/14/91

RFW LOT # :9111L404

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015M5	001	S	91LVX195	11/12/91	N/A	11/15/91 3
B015M3	002	S	91LVX195	11/12/91	N/A	11/15/91
B015M3	002 MS	S	91LVX195	11/12/91	N/A	11/15/91
B015M3	002 MSD	S	91LVX197	11/12/91	N/A	11/20/91 8

LAB QC:

VBLK	MB1	S	91LVX195	N/A	N/A	11/15/91
VBLK	MB2	S	91LVX197	N/A	N/A	11/20/91

holding times were met.
6/22/92

JAN 1992
RECEIVED
OSM DMO

Calibration Summary 9213516.517

Pg 1 of 1

0000059

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L404

Instrument ID: HP-MSD X Calibration Date(s): 11/11/91 11/11/91

Matrix:(soil/water) SOIL 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%

Assoc w/MSD only. No calibration required 6/22/92

LAB FILE ID: RRF20 = AXBB15 RRF50 = AXBB16
RRF100= AXBB17 RRF150= AXBB18 RRF200= AXBB19

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	0.683	0.651	0.661	0.673	0.628	0.659	3.2#
Bromomethane	0.956	0.881	0.900	0.853	0.821	0.882	5.8
Vinyl Chloride *	0.800	0.806	0.820	0.817	0.801	0.809	1.2*
Chloroethane	0.547	0.462	0.464	0.447	0.447	0.473	8.8
Methylene Chloride	1.378	1.112	0.691	0.698	0.665	0.909	35.4
Acetone	0.700	0.360	0.348	0.270	0.266	0.389	46.2
Carbon Disulfide	2.404	1.730	1.787	1.769	1.726	1.883	15.5
1,1-Dichloroethene *	0.789	0.616	0.636	0.630	0.617	0.657	11.2*
1,1-Dichloroethane #	0.593	0.607	0.617	0.624	0.599	0.608	2.1#
1,2-Dichloroethene (total)	1.124	1.026	1.033	0.643	0.621	0.889	26.8
Chloroform *	2.625	2.413	2.355	2.383	2.324	2.420	4.9*
1,2-Dichloroethane	0.417	0.441	0.430	0.420	0.417	0.425	2.5
2-Butanone	0.207	0.063	0.163	0.153	0.151	0.147	35.6
1,1,1-Trichloroethane	2.412	2.309	2.288	2.324	2.285	2.324	2.2
Carbon Tetrachloride	2.566	2.431	2.370	2.420	2.313	2.420	3.9
Vinyl Acetate	1.476	2.210	2.740	2.535	2.289	2.250	21.4
Bromodichloromethane	0.653	0.672	0.670	0.608	0.664	0.654	4.0
1,2-Dichloropropane *	0.270	0.295	0.290	0.277	0.292	0.285	3.7*
cis-1,3-Dichloropropene	0.508	0.473	0.470	0.459	0.442	0.470	5.1
Trichloroethene	0.451	0.415	0.417	0.388	0.401	0.414	5.7
Dibromochloromethane	0.732	0.706	0.726	0.696	0.675	0.707	3.2
1,1,2-Trichloroethane	0.373	0.352	0.347	0.344	0.340	0.351	3.7
Benzene	0.745	0.735	0.684	0.667	0.662	0.698	5.6
Trans-1,3-Dichloropropene	0.498	0.476	0.503	0.513	0.505	0.499	2.8
Bromoform #	0.889	0.818	0.794	0.791	0.764	0.811	5.9#
4-Methyl-2-pentanone	0.557	0.438	0.453	0.428	0.417	0.459	12.3
2-Hexanone	0.464	0.352	0.388	0.359	0.340	0.381	13.1
Tetrachloroethene	0.545	0.486	0.472	0.472	0.449	0.485	7.4
1,1,2,2-Tetrachloroethane #	0.624	0.628	0.647	0.624	0.610	0.627	2.1#
Toluene *	0.577	0.524	0.529	0.502	0.508	0.528	5.6*
Chlorobenzene #	0.800	0.776	0.798	0.797	0.790	0.792	1.3#
Ethylbenzene *	0.363	0.346	0.351	0.349	0.348	0.351	1.9*
Styrene	0.769	0.725	0.739	0.702	0.710	0.729	3.6
Xylene (total)	0.424	0.408	0.400	0.388	0.378	0.399	4.5
Toluene-d8	1.038	0.960	0.978	0.963	0.940	0.976	3.8
Bromofluorobenzene	0.913	0.815	0.834	0.823	0.768	0.830	6.3
1,2-Dichloroethane-d4	0.426	0.443	0.413	0.412	0.405	0.420	3.6

11/12/91

9713516.1518

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/23/92
LABORATORY: Weston	CASE: 9111L404	SDG: 404
SAMPLES/MATRIX: 8015M5, 8015M3 /Soil		

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.

9713516.1521

Holding Time Summary

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

DATE RECEIVED: 11/14/91 RFW LOT # :9111L404

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO15M5	001	S	91LE1549	11/12/91	11/19/91 7	11/27/91 8
BO15M5	001 MS	S	91LE1549	11/12/91	11/19/91	11/27/91
BO15M5	001 MSD	S	91LE1549	11/12/91	11/19/91	11/27/91
BO15M3	002	S	91LE1549	11/12/91	11/19/91	11/27/91

LAB QC:

SBLK	MB1	S	91LE1549	N/A	11/19/91	11/27/91
SBLK	MB1 BS	S	91LE1549	N/A	11/19/91	11/27/91

Holding times acceptable
7/2/92

JAN 1992
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OSM DMO

Calibration Summary 9713516.1522 0000044 Pg 1 of 3

6B

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L404

Instrument ID: 5100M Calibration Date(s): 11/26/91 11/26/91

Min RRF for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = M112609 RRF50 = M112605
RRF80 = M112606 RRF120= M112607 RRF160= M112608

	COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	RRF	% RSD
15	Phenol *	1.809	1.719	1.889	1.856	1.859	1.826	3.6*
16	bis(2-Chloroethyl)ether	1.879	1.625	1.740	1.664	1.766	1.735	5.7
	2-Chlorophenol	1.386	1.269	1.387	1.330	1.435	1.361	4.7
	1,3-Dichlorobenzene	1.394	1.321	1.399	1.314	1.283	1.342	3.8
	1,4-Dichlorobenzene *	1.757	1.497	1.605	1.537	1.614	1.602	6.2*
	Benzyl alcohol	0.760	0.723	0.798	0.731	0.874	0.777	7.9
	1,2-Dichlorobenzene	1.532	1.400	1.472	1.386	1.452	1.448	4.1
	2-Methylphenol	1.133	1.042	1.156	1.102	1.182	1.123	4.8
	bis(2-Chloroisopropyl)ether	1.826	1.674	1.760	1.723	1.837	1.764	3.9
	4-Methylphenol	1.183	1.115	1.247	1.181	1.281	1.201	5.4
	N-Nitroso-Di-n-propylamine #	1.156	1.065	1.188	1.132	1.224	1.153	5.2#
	Hexachloroethane	0.756	0.677	0.737	0.692	0.721	0.717	4.5
	Nitrobenzene	0.478	0.431	0.462	0.436	0.474	0.456	4.7
	Isophorone	0.953	0.864	0.939	0.866	0.924	0.909	4.6
	2-Nitrophenol *	0.205	0.199	0.226	0.210	0.208	0.210	4.8*
	2,4-Dimethylphenol	0.334	0.330	0.359	0.360	0.382	0.353	6.0
	Benzoic acid		0.121	0.174	0.174	0.217	0.172	22.9
	bis(2-Chloroethoxy)methane	0.549	0.491	0.531	0.495	0.522	0.518	4.7
	2,4-Dichlorophenol *	0.278	0.267	0.292	0.274	0.291	0.280	3.9*
	1,2,4-Trichlorobenzene	0.344	0.308	0.321	0.293	0.303	0.314	6.3
	Naphthalene	1.233	1.119	1.178	1.079	1.106	1.143	5.4
	4-Chloroaniline	0.429	0.416	0.447	0.407	0.448	0.429	4.3
	Hexachlorobutadiene *	0.191	0.169	0.176	0.158	0.159	0.171	8.0*
	4-Chloro-3-methylphenol *	0.317	0.334	0.365	0.327	0.346	0.338	5.5*
	2-Methylnaphthalene	0.607	0.578	0.625	0.558	0.585	0.591	4.4
	Hexachlorocyclopentadiene #	0.177	0.191	0.230	0.218	0.257	0.215	14.8#
	2,4,6-Trichlorophenol *	0.288	0.282	0.300	0.287	0.302	0.292	3.0*
	2,4,5-Trichlorophenol		0.287	0.308	0.295	0.310	0.300	3.6
	2-Chloronaphthalene	0.971	0.940	0.928	0.905	0.924	0.934	2.6
	2-Nitroaniline		0.401	0.415	0.375	0.416	0.402	4.8
	Dimethylphthalate	1.126	1.121	1.063	1.003	1.062	1.075	4.7
	Acenaphthylene	1.804	1.747	1.775	1.639	1.627	1.718	4.7
	2,6-Dinitrotoluene	0.288	0.291	0.291	0.269	0.286	0.285	3.2
	3-Nitroaniline		0.233	0.209	0.140	0.245	0.207	22.7
	Acenaphthene *	1.034	0.946	0.965	0.879	0.878	0.940	6.9*
	2,4-Dinitrophenol #		0.066	0.104	0.095	0.146	0.103	32.2#
	4-Nitrophenol #		0.118	0.134	0.111	0.153	0.129	14.5#

Calibration Summary 9213516.1523 0000080 pg 2 of 3

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L404

Instrument ID: 5100M Calibration Date: 11/27/91 Time: 1329

Lab File ID: M112704 Init. Calib. Date(s): 11/26/91 11/26/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D
Phenol *	1.826	2.104	-15.2 *
bis(2-Chloroethyl)ether	1.735	1.923	-10.8
2-Chlorophenol	1.361	1.470	-8.0
1,3-Dichlorobenzene	1.342	1.531	-14.1
1,4-Dichlorobenzene *	1.602	1.590	0.7 *
Benzyl alcohol	0.777	1.027	-32.2
1,2-Dichlorobenzene	1.448	1.521	-5.0
2-Methylphenol	1.123	1.470	-30.9
bis(2-Chloroisopropyl)ether	1.764	2.436	-38.1
4-Methylphenol	1.201	1.527	-27.1
N-Nitroso-Di-n-propylamine #	1.153	1.443	-25.2 #
Hexachloroethane	0.717	0.745	-3.9
Nitrobenzene	0.456	0.453	0.7
Isophorone	0.909	0.935	-2.9
2-Nitrophenol *	0.210	0.207	1.4 *
2,4-Dimethylphenol	0.353	0.308	12.7
Benzoic acid	0.172	0.166	3.5
bis(2-Chloroethoxy)methane	0.518	0.569	-9.8
2,4-Dichlorophenol *	0.280	0.278	0.7 *
1,2,4-Trichlorobenzene	0.314	0.294	6.4
Naphthalene	1.143	1.012	11.5
4-Chloroaniline	0.429	0.440	-2.6
Hexachlorobutadiene *	0.171	0.142	17.0 *
4-Chloro-3-methylphenol *	0.338	0.340	-0.6 *
2-Methylnaphthalene	0.591	0.612	-3.6
Hexachlorocyclopentadiene #	0.215	0.160	25.6 #
2,4,6-Trichlorophenol *	0.292	0.333	-14.0 *
2,4,5-Trichlorophenol	0.300	0.330	-10.0
2-Chloronaphthalene	0.934	1.055	-13.0
2-Nitroaniline	0.402	0.432	-7.5
Dimethylphthalate	1.075	1.162	-8.1
Acenaphthylene	1.718	1.640	4.5
2,6-Dinitrotoluene	0.285	0.309	-8.4
3-Nitroaniline	0.207	0.274	-32.4
Acenaphthene *	0.940	0.972	-3.4 *
2,4-Dinitrophenol #	0.103	0.113	-9.7 #
4-Nitrophenol #	0.129	0.100	22.5 #

Calibration Summary 9713546.1524 0000081 Pg 3 of 3

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L404

Instrument ID: 5100M Calibration Date: 11/27/91 Time: 1329

Lab File ID: M112704 Init. Calib. Date(s): 11/26/91 11/26/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D
Dibenzofuran	1.241	1.396	-12.5
2,4-Dinitrotoluene	0.313	0.352	-12.5
Diethylphthalate	1.109	1.092	1.5
4-Chlorophenyl-phenylether	0.522	0.559	-7.1
Fluorene	0.930	1.101	-18.4
4-Nitroaniline	0.158	0.236	-49.4
4,6-Dinitro-2-methylphenol	0.123	0.123	0.0
N-Nitrosodiphenylamine (1) *	0.492	0.537	-9.1 *
4-Bromophenyl-phenylether	0.223	0.222	0.4
Hexachlorobenzene	0.251	0.241	4.0
Pentachlorophenol *	0.132	0.138	-4.5 *
Phenanthrene	1.041	1.079	-3.7
Anthracene	1.027	1.052	-2.4
Di-n-Butylphthalate	1.438	1.392	3.2
Fluoranthene *	1.059	1.005	5.1 *
Pyrene	2.119	1.797	15.2
Butylbenzylphthalate	1.123	0.974	13.3
3,3'-Dichlorobenzidine	0.293	0.256	12.6
Benzo(a)anthracene	1.342	1.254	6.6
Chrysene	1.266	1.175	7.2
bis(2-Ethylhexyl)phthalate	1.472	1.284	12.8
Di-n-Octyl phthalate *	3.039	2.677	11.9 *
Benzo(b)fluoranthene	1.568	1.453	7.3
Benzo(k)fluoranthene	1.085	1.063	2.0
Benzo(a)pyrene *	1.103	1.028	6.8 *
Indeno(1,2,3-cd)pyrene	0.848	0.849	-0.1
Dibenzo(a,h)anthracene	0.656	0.642	2.1
Benzo(g,h,i)perylene	0.795	0.830	-4.4
Nitrobenzene-d5	0.431	0.421	2.3
2-Fluorobiphenyl	1.102	1.061	3.7
p-Terphenyl-d14	1.364	1.215	10.9
Phenol-d5	1.812	2.065	-14.0
2-Fluorophenol	1.364	1.395	-2.3
2,4,6-Tribromophenol	0.113	0.109	3.5

(1) Cannot be separated from Diphenylamine

Blank Summary 9213516.1525 0000101 Pg 1 of 2

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: SOIL Lab Sample ID: 91LE1549-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M112707

Level: (low/med) LOW Date Received: 11/19/91

% Moisture: not dec. 0 dec. Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	670	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	78	J
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

xLO = 780

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

Blank. Sum 9213516.1526 0000102 Pg 2 of 2

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LE1549-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M112707

Level: (low/med) LOW Date Received: 11/19/91

% Moisture: not dec. 0 dec. Date Extracted: 11/19/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/27/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	~~5.77~~	~~200~~	~~JA~~ R

FORM 1 SV-TIC 12/88 Rev.

6/24

9713516.1527

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/25/92
LABORATORY: Weston	CASE: 9111L404	SDG: 404
SAMPLES/MATRIX: B015M5, B015M3 / Soil		

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

See comments

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? GPC — 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.

9713516.1535

COMMENTS (attach additional sheets as necessary):

These sample extracts were prepared by the GPC. Therefore, the "CFOL" was multiplied ~~by~~ by a factor of two.

One standard run on the ~~confirmation column~~ quantitation column (AR1248 12/06 @ 23:[illegible] 6/25/92 had DBC out of the RT window. This is the only run w/DBC out of the window. Therefore, no qualification was necessary.

9213516.1536 Holding Time Summary

Pg 1 of 1

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 11/14/91 RFW LOT # :9111L404

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO15M5	001	S	91LE1546	11/12/91	11/19/91 7	12/08/91 19
BO15M5	001 MS	S	91LE1546	11/12/91	11/19/91	12/08/91
BO15M5	001 MSD	S	91LE1546	11/12/91	11/19/91	12/08/91
BO15M3	002	S	91LE1546	11/12/91	11/19/91	12/08/91

LAB QC:

PBLK	MB1	S	91LE1546	N/A	11/19/91	12/08/91
PBLK	MB1 BS	S	91LE1546	N/A	11/19/91	12/08/91

Holding times were met.

[signature] 6/25/92

JAN 1992 RECEIVED OSM DMO

[signature] 6/

Calibration Summary 9213516.1537 0000036 Pg 1 of 1

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 12069128.54

RFW Lot No.: 9111L404

Instrument ID: 28 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 12/06/91 TO: 12/07/91
TIME(S) OF ANALYSIS FROM: 1916 TO: 0018

DATE OF ANALYSIS 12/08/91
TIME OF ANALYSIS 0426
EPA SAMPLE NO. (STANDARD) INDA 18-67

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.95	1.86	2.04	2407643	1.95	2456901	N	2.0
Beta-BHC	2.08	2.07	2.09	1180009				
Delta-BHC	2.34	2.33	2.35	1638227				
gamma-BHC (Lindane)	2.27	2.25	2.29	2194355	2.27	2242101	N	2.2
Heptachlor	3.58	3.56	3.60	1794749	3.58	1806151	N	0.6
Aldrin	4.40	4.37	4.43	1033482				
Heptachlor epoxide	5.32	5.29	5.35	1083325				
Endosulfan I	6.58	6.55	6.61	743699	6.57	745850	N	0.3
Dieldrin	7.65	7.61	7.69	675863	7.64	662167	N	2.0
4,4'-DDE	7.56	7.54	7.58	629382				
Endrin	8.52	8.49	8.55	419611	8.51	375292	N	10.6
Endosulfan II	8.69	8.64	8.74	495377				
4,4'-DDD	9.47	9.43	9.51	343205	9.46	347933	N	1.4
Endosulfan sulfate	11.09	11.04	11.14	188379				
4,4'-DDT	12.31	12.27	12.35	312622	12.27	404875	N	29.5
Methoxychlor	18.06	17.96	18.14	217569	18.03	221090	N	1.6
Endrin ketone	14.18	14.10	14.24	390650				
alpha-Chlordane	6.70	6.68	6.72	951440				
gamma-Chlordane	6.07	6.05	6.09	999611				
Toxaphene	9.31	9.26	9.37	78776				
Aroclor-1016	3.13	3.12	3.15	481840				
Aroclor-1221	1.97	1.97	1.97	159887				
Aroclor-1232	1.97	1.96	1.98	282792				
Aroclor-1242	3.13	3.13	3.13	437446				
Aroclor-1248	5.41	5.39	5.42	420781				
Aroclor-1254	6.41	6.40	6.42	385244				
Aroclor-1260	10.90	10.85	10.94	284863				

All sample results are ND - no qualification is 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.

6/25/9

9713516.1538

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/26/92
LABORATORY: Weston	CASE: 9111L404	SDG: 404
SAMPLES/MATRIX: R015M5, M015M3 / Soils		

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? 6/26/92 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.

9713516.1543 Holding Time Summary

Pg 1 of 3

JAN 1992 RECEIVED OSM DMO

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

DATE RECEIVED: 11/14/91 RFW LOT # :9111L404

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B015M5							
SILVER, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	53
SILVER, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
SILVER, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
ALUMINUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
ALUMINUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
ALUMINUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
ARSENIC, TOTAL	001	S	91L3440	11/12/91	12/12/91	12/19/91	37
ARSENIC, TOTAL	001 REP	S	91L3440	11/12/91	12/12/91	12/19/91	
ARSENIC, TOTAL	001 MS	S	91L3440	11/12/91	12/12/91	12/19/91	
BARIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	53
BARIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
BARIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
BERYLLIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
BERYLLIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
BERYLLIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
BISMUTH, TOTAL	001	S	91L3441	11/12/91	12/12/91	12/30/91	48
BISMUTH, TOTAL REP	001 REP	S	91L3441	11/12/91	12/12/91	12/30/91	
BISMUTH, TOTAL SPIKE	001 MS	S	91L3441	11/12/91	12/12/91	12/30/91	
CALCIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	53
CALCIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
CALCIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
CADMIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
CADMIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
CADMIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
COBALT, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
COBALT, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
COBALT, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
CHROMIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
CHROMIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
CHROMIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
COPPER, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
COPPER, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
COPPER, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
IRON, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
IRON, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
IRON, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
MERCURY, TOTAL	001	S	91C0353	11/12/91	12/09/91	12/09/91	27

9713516.1544
Holding Time Summary pg 2 of 3

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

DATE RECEIVED: 11/14/91 RFW LOT # :9111L404

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
MERCURY, TOTAL	001 REP	S	91C0353	11/12/91	12/09/91	12/09/91	27
MERCURY, TOTAL	001 MS	S	91C0353	11/12/91	12/09/91	12/09/91	
POTASSIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	53
POTASSIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
POTASSIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
MAGNESIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
MAGNESIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
MAGNESIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
MANGANESE, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
MANGANESE, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
MANGANESE, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
SODIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
SODIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
SODIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
NICKEL, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
NICKEL, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
NICKEL, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
LEAD, TOTAL	001	S	91L3440	11/12/91	12/12/91	12/19/91	37
LEAD, TOTAL	001 REP	S	91L3440	11/12/91	12/12/91	12/19/91	
LEAD, TOTAL	001 MS	S	91L3440	11/12/91	12/12/91	12/19/91	
ANTIMONY, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	53
ANTIMONY, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
ANTIMONY, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
SELENIUM, TOTAL	001	S	91L3440	11/12/91	12/12/91	12/20/91	38
SELENIUM, TOTAL	001 REP	S	91L3440	11/12/91	12/12/91	12/20/91	
SELENIUM, TOTAL	001 MS	S	91L3440	11/12/91	12/12/91	12/20/91	
THALLIUM, TOTAL	001	S	91L3440	11/12/91	12/12/91	12/19/91	37
THALLIUM, TOTAL	001 REP	S	91L3440	11/12/91	12/12/91	12/19/91	
THALLIUM, TOTAL	001 MS	S	91L3440	11/12/91	12/12/91	12/19/91	
VANADIUM, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	53
VANADIUM, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
VANADIUM, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
ZINC, TOTAL	001	S	91L3441	11/12/91	12/12/91	01/04/92	
ZINC, TOTAL	001 REP	S	91L3441	11/12/91	12/12/91	01/04/92	
ZINC, TOTAL	001 MS	S	91L3441	11/12/91	12/12/91	01/04/92	
B015M3							
SILVER, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92	53
ALUMINUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92	

9713516.1545
Holding Time Summary pg 3 of 3

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

DATE RECEIVED: 11/14/91 RFW LOT # :9111L404

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	002	S	91L3440	11/12/91	12/12/91	12/19/91 37
BARIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92 53
BERYLLIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
BISMUTH, TOTAL	002	S	91L3441	11/12/91	12/12/91	12/30/91 48
CALCIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92 53
CADMIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
COBALT, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
CHROMIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
COPPER, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
IRON, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
MERCURY, TOTAL	002	S	91C0353	11/12/91	12/09/91	12/09/91 27
POTASSIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92 53
MAGNESIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
MANGANESE, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
SODIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
NICKEL, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92
LEAD, TOTAL	002	S	91L3440	11/12/91	12/12/91	12/20/91 38
ANTIMONY, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92 53
SELENIUM, TOTAL	002	S	91L3440	11/12/91	12/12/91	12/20/91 38
THALLIUM, TOTAL	002	S	91L3440	11/12/91	12/12/91	12/19/91 37
VANADIUM, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92 53
ZINC, TOTAL	002	S	91L3441	11/12/91	12/12/91	01/04/92

LAB QC:

SILVER LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
ALUMINUM LABORTORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
BARIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
BERYLLIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
BISMUTH, LCS	LC1 BS	S	91L3441	N/A	12/12/91	12/30/91
CALCIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
CADMIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
COBALT LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
CHROMIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
COPPER LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
IRON LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
POTASSIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
MAGNESIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
MANGANESE LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92
SODIUM LABORATORY	LC1 BS	S	91L3441	N/A	12/12/91	01/04/92

9713516.1546

Accuracy Summary 0000027 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015M5S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP404

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 97.5

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	86.4000		3.9120	U	97.10	88.9		P
Arsenic	75-125	6.4000		.8200	B	8.00	69.8	N	F
Barium	75-125	386.8999		40.0000		388.60	89.3		P
Beryllium	75-125	9.0000		.2700	B	9.70	90.0		P
Cadmium	75-125	9.0000		.5868	U	9.70	92.8		P
Calcium									NR
Chromium	75-125	37.3000		3.4000		38.90	87.2		P
Cobalt	75-125	92.0000		4.8000	B	97.10	89.8		P
Copper	75-125	50.2000		9.9000		48.60	82.9		P
Iron									NR
Lead	75-125	5.8000		2.1000		4.00	92.5		F
Magnesium									NR
Manganese	75-125	219.9000		146.3000		97.10	75.8		P
Mercury	75-125	.6250		.0513	U	.51	122.5		CV
Nickel	75-125	90.9000		5.7000	B	97.10	87.7		P
Potassium									NR
Selenium	75-125	1.7000		.3904	U	2.00	85.0		F
Silver	75-125	1.3000	B	1.4000	B	9.70	~~13.4~~	N	P
Sodium									NR
Thallium	75-125	8.1000		.3904	U	10.00	81.0		F
Vanadium	75-125	99.6000		9.5000	B	97.10	92.7		P
Zinc	75-125	100.4000		14.5000		97.10	88.5		P
Cyanide	75-125	4.6010		1.0260	U	5.13	89.7		C

Comments:

9713516.1547

Precision Summary

0000028

pg 1 of 1

U.S. EPA - CLP

EPA SAMPLE NO.

6
DUPLICATES

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP404

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

% Solids for Sample: % Solids for Duplicate:

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
Aluminum		2137.6000		2234.9000		4.4		P
Antimony		3.9120	U	4.0080	U			P
Arsenic	2.0	.8200	B	.7500	B	8.9		F
Barium	39.1	40.0000		34.6000	B	14.4		P
Beryllium	1.0	.2700	B	.2004	U	200.0		P
Cadmium		.5868	U	.6012	U			P
Calcium		6100.6020		8945.1020		37.8	*	P
Chromium	2.0	3.4000		3.1000		9.2		P
Cobalt	9.8	4.8000	B	3.3000	B	37.0		P
Copper	4.9	9.9000		8.1000		20.0		P
Iron		6125.3010		6249.6990		2.0		P
Lead	.6	2.1000		2.1000		0.0		F
Magnesium	978.0	1782.5000		1943.5000		8.6		P
Manganese		146.3000		160.5000		9.2		P
Mercury	.1	.0980	B	.0870	B	11.8		CV
Nickel	7.8	5.7000	B	4.1000	B	32.7		P
Potassium	978.0	450.2000	B	487.2000	B	7.9		P
Selenium		.3904	U	.3860	U			F
Silver		1.9560	U	2.0040	U			P
Sodium	978.0	836.0000	B	801.0000	B	4.3		P
Thallium		.3904	U	.3860	U			F
Vanadium	9.8	9.5000	B	9.6000	B	1.0		P
Zinc	3.9	14.5000		14.9000		2.7		P
Cyanide		1.0260	U	1.0260	U			C

FORM VI - IN

03/90

6/21

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9111L404	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike.				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B015M3	Lead	83.4	B015M3	none - analyzed by MSA
B015M5	Selenium	73.8	B015M5	UJ
B015M3	Selenium	75.4	B015M3	UJ

9713516.1548

CALCULATION SUMMARY - FORM B-6

9111L404

SDG: 404	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 1 OF 1

COMMENTS:

Sample concentration

$$mg/kg = \frac{(C \times D)}{(W \times S)}$$

B015M5

Silver $mg/kg = \frac{(7.070)(.200)}{(1.049)(0.9747)} = 1.38\ mg/kg$

$$MS\ \%R = \frac{SSR - SR}{SA} \times 100$$

Silver $MS\ \%R = \frac{1.3 - 1.4}{9.7} \times 100 = \cancel{0.01}\ -1.0\% \approx 0\%$

9713516.1550

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/29/92
LABORATORY: Weston	CASE: 9111L404	SDG: 404
SAMPLES/MATRIX: B015M5, M015M3 / Soil		

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		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.

9713516.1554
Accuracy Report

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 12/13/91

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

WESTON BATCH #: 9111L404

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	BO15M5	Chloride by IC	47.1	1.3	51.3	89.2
		Chloride by IC MSD	46.9	1.3	51.3	88.9
		Fluoride by IC	93.1	2.6 u	103	90.7
		Fluoride by IC MSD	93.6	2.6 u	103	91.3
		Nitrite by IC	44.2	1.3 u	51.3	86.1
		Nitrite by IC MSD	43.2	1.3 u	51.3	84.1
		Nitrate by IC	60.2	13.6	51.3	90.9
		Nitrate by IC MSD	60.9	13.6	51.3	92.2
		Cyanide, Total	4.6	1.0 u	5.1	89.7
		Phosphate by IC	62.8	18.0	51.3	87.4
		Phosphate by IC MSD	62.4	18.0	51.3	86.7
		Sulfate by IC	49.2	3.3	51.3	89.4
		Sulfate by IC MSD	49.0	3.3	51.3	89.1
-002	BO15M3	Nitrate Nitrite	19.9	10.0	10.5	94.1
		Nitrate Nitrite MSD	20.2	10.0	10.5	96.7
		Total Organic Carbon	3170	1580	986	161
BLANK10	91LICA76-MB1	Chloride by IC	48.4	1.2 u	50.0	96.9
		Fluoride by IC	99.6	2.5 u	100	99.6
		Nitrite by IC	48.8	1.2 u	50.0	97.6
		Nitrate by IC	50.8	1.2 u	50.0	102
		Phosphate by IC	50.1	1.2 u	50.0	100
		Sulfate by IC	50.1	1.2 u	50.0	100
BLANK10	91LNB259-MB1	Nitrate Nitrite	1.9	0.50u	2.0	92.7
		Nitrate Nitrite MSD	1.9	0.50u	2.0	96.6
BLANK20	91LNB259-MB2	Nitrate Nitrite	1.9	0.50u	2.0	96.6
BLANK10	91LTZ027-MB1	Total Organic Carbon	416	20.0 u	400	104
BLANK20	91LTZ027-MB2	Total Organic Carbon	438	20.0 u	400	110

9713516.1555

APPENDIX E

DATA VALIDATION DOCUMENTATION

SDG: 9111L514

SAMPLE: B015M7

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

9713516.1556

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L514	REVIEWER: [illegible]	DATE: 6/23/92	PAGE 1 OF 4
COMMENTS: VOA			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bromomethane	UJ	B015M7	ICV RSD 7308
Acetone	J	↓	↓
Vinyl Acetate	UJ	↓	↓
2-Butanone	UJ	B015M7	CCV RSD 7258
4-Me-2-pentanone	UJ	↓	↓
2-Hexanone	UJ	↓	↓
MeCl2	"	B015M7	present in blank

9713516.1558

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L514	REVIEWER: [illegible]	DATE: 6/24/92	PAGE 2 OF 4
COMMENTS: Semi-VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
3,3'-Dichlorobenzidine	UJ	~~#4~~ ~~#~~ 8015M7	CCV %D 72.5%
Benzo(b)fluoranthene	UJ	↓	↓
Benzo(k)fluoranthene	UJ	↓	↓
Aldol condensate	R	BD15M7	lab contaminant
Adipate	U	↓	present in blank

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9WL514	REVIEWER: [illegible]	DATE: 4/24/92	PAGE 3 OF 4
COMMENTS: Metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Antimony	UJ	B015M7	MS & R out of control limits
Arsenic	J	↓	↓
Lead	J	↓	↓
Selenium	UJ	↓	↓
Thallium	UJ	↓	↓
Lead	none- analyzed by MSA	B015M7	GFAA analytical spikes out of control limits
Selenium	UJ	↓	↓
Thallium	↓	↓	↓

9713516.1560

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9111L514	REVIEWER: [illegible]	DATE: 6/29/92	PAGE 4 OF 4
COMMENTS: Wet Chemistry			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Nitrite	J	B015M7	Analyzed out of hold time
Nitrate	J	↓	↓
Phosphate	J	↓	↓
Nitrate + Nitrite	E	B015M7	Disparity with NO3 IC data.

9713516.1561

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.1562 0000018

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 24.0-29.5

B015M7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L514-001

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

Lab File ID: B112507

Level: (low/med) LOW

Date Received: 11/22/91

% Moisture: not dec. 2

Date Analyzed: 11/25/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	9	
67-64-1	Acetone	49	B
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

9713516.1563

0000018

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 24.0-29.5

BO15M7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L514-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: S121211

Level: (low/med) LOW

Date Received: 11/22/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/12/91

GPC Cleanup: (Y/N) N pH: 9.7

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
100-51-6	Benzyl alcohol	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	bis(2-Chloroisopropyl)ether	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U

9713516.1564

0000019

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

216-B-49B 24.0-29.5

BO15M7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L514-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: S121211

Level: (low/med) LOW

Date Received: 11/22/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/12/91

GPC Cleanup: (Y/N) N pH: 9.7

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	680	~~U~~ UJ
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	340	U
117-84-0	Di-n-Octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	~~U~~ UJ
207-08-9	Benzo(k)fluoranthene	340	~~U~~ UJ
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenzo(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2

12/88 Rev.

9713516.1565

0000020

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-49B 24.0-29.

BO15M7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L514-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: S121211

Level: (low/med) LOW

Date Received: 11/22/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/12/91

GPC Cleanup: (Y/N) N pH: 9.7

Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	~~5.52~~	~~100~~	~~JAB~~
2.	ADIPATE	22.23	3000	~~JB~~

R
4

FORM 1 SV-TIC

12/88 Rev.

6/24/6

9713516.1566

0000015

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-49B 24.0-29.5

B015M7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9111L514-001

Sample wt/vol: 30.9 (g/mL) G

Lab File ID: 12129127.49

Level: (low/med) LOW

Date Received: 11/22/91

% Moisture: not dec. 2 dec.

Date Extracted: 11/26/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/13/91

GPC Cleanup: (Y/N) Y pH: 9.5

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	16 ~~7.9~~	U
319-85-7	Beta-BHC	~~7.9~~	U
319-86-8	Delta-BHC	~~7.9~~	U
58-89-9	gamma-BHC (Lindane)	~~7.9~~	U
76-44-8	Heptachlor	~~7.9~~	U
309-00-2	Aldrin	~~7.9~~	U
1024-57-3	Heptachlor epoxide	~~7.9~~	U
959-98-8	Endosulfan I	~~7.9~~	U
60-57-1	Dieldrin	32 ~~16~~	U
72-55-9	4,4'-DDE	~~16~~	U
72-20-8	Endrin	~~16~~	U
33213-65-9	Endosulfan II	~~16~~	U
72-54-8	4,4'-DDD	~~16~~	U
1031-07-8	Endosulfan sulfate	~~16~~	U
50-29-3	4,4'-DDT	~~16~~	U
72-43-5	Methoxychlor	160 ~~79~~	U
53494-70-5	Endrin ketone	32 ~~16~~	U
5103-71-9	alpha-Chlordane	160 ~~79~~	U
5103-74-2	gamma-Chlordane	160 ~~79~~	U
8001-35-2	Toxaphene	320 ~~160~~	U
12674-11-2	Aroclor-1016	160 ~~79~~	U
11104-28-2	Aroclor-1221	160 ~~79~~	U
11141-16-5	Aroclor-1232	160 ~~79~~	U
53469-21-9	Aroclor-1242	160 ~~79~~	U
12672-29-6	Aroclor-1248	160 ~~79~~	U
11097-69-1	Aroclor-1254	320 ~~160~~	U
11096-82-5	Aroclor-1260	320 ~~160~~	U

12/19/91

FORM 1 PEST

6/24/92 12/88 Rev.

9713516.1567 0000017

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-49B

B015M7
24.0-29.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP514

Matrix (soil/water): SOIL Lab Sample ID: 911151401

Level (low/med): LOW Date Received: 11/22/91

% Solids: 97.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	2640.00			P	
7440-36-0	Antimony	3.88	~~U~~	N	P	UJ
7440-38-2	Arsenic	3.00		N	F	J
7440-39-3	Barium	40.20			P	
7440-41-7	Beryllium	.19	U		P	
7440-43-9	Cadmium	.58	U		P	
7440-70-2	Calcium	6510.00		*	P	
7440-47-3	Chromium	3.30			P	
7440-48-4	Cobalt	3.60	B		P	
7440-50-8	Copper	6.80			P	
7439-89-6	Iron	7400.00			P	
7439-92-1	Lead	3.10		NS	F	J
7439-95-4	Magnesium	2200.00			P	
7439-96-5	Manganese	154.00			P	
7439-97-6	Mercury	.22			CV	
7440-02-0	Nickel	5.70	B		P	
7440-09-7	Potassium	657.00	B		P	
7782-49-2	Selenium	.39	~~U~~	W	F	UJ
7440-22-4	Silver	1.94	U		P	
7440-23-5	Sodium	1340.00			P	
7440-28-0	Thallium	.39	~~U~~		F	UJ
7440-62-2	Vanadium	11.00			P	
7440-66-6	Zinc	21.20			P	
	Cyanide	1.02	U		C	
7440-69-9	Bismuth	38.8	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

6/28/92

9713516.1568

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/23/91

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

WESTON BATCH #: 9111L514

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B015M7	% Solids	97.6	%	0.10
		Chloride by IC	7.9	MG/KG	1.3
	216-B-49B	Fluoride by IC	2.6 u	MG/KG	2.6
		Nitrite by IC	2.4	MG/KG	1.3
	24.0-29.5	Nitrate by IC	339	MG/KG	12.8
		Cyanide, Total	1.0 u	MG/KG	1.0
		Phosphate by IC	154	MG/KG	12.8
		Sulfate by IC	45.6	MG/KG	1.3
		~~Nitrate Nitrite~~	~~91.4~~	~~MG-N/KG~~	~~12.8~~
		Total Organic Carbon	1410	MG/KG	244

9713516.1569

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9713516.1570

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

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/23/92
LABORATORY: Weston	CASE: 91116514	SDG: 514
SAMPLES/MATRIX: B015M7/Soil		

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

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.

9213516.1577 Holding Time Summary

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L514

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015M7	001	S	91LVB439	11/20/91	N/A	11/25/91 5
B015M7	001 MS	S	91LVB440	11/20/91	N/A	11/26/91 6
B015M7	001 MSD	S	91LVB440	11/20/91	N/A	11/26/91 6

LAB QC:

VBLK	MB1	S	91LVB439	N/A	N/A	11/25/91
VBLK	MB1	S	91LVB440	N/A	N/A	11/26/91

Holding times were met. 6/23/92

JAN 1992
RECEIVED
OSM DMO

Calibration Summary 9213516.1578 0000028 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: 9111L514

Instrument ID: 5100B Calibration Date(s): 11/21/91 11/21/91

Matrix:(soil/water) SOIL 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 = B112105 RRF50 = B112106
RRF100= B112107 RRF150= B112110 RRF200= B112111

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
7 Chloromethane #	1.099	0.801	0.744	1.052	0.818	0.903	17.8#
Bromomethane	0.824	0.545	0.441	0.881	0.489	0.636	31.8
8 Vinyl Chloride *	0.817	0.745	0.614	1.000	0.702	0.776	18.7*
Chloroethane	0.501	0.309	0.293	0.464	0.307	0.375	26.5
Methylene Chloride	1.918	1.735	1.416	1.605	1.410	1.617	13.4
Acetone	0.696	0.553	0.453	0.285	0.351	0.468	34.9
Carbon Disulfide	3.864	3.492	2.940	4.084	3.236	3.523	13.1
1,1-Dichloroethene *	1.210	1.003	0.919	1.196	0.507	0.967	29.6*
1,1-Dichloroethane #	2.104	2.084	2.030	2.263	2.262	2.149	5.0#
1,2-Dichloroethene (total)	1.375	1.308	1.222	1.443	1.343	1.338	6.1
Chloroform *	2.422	2.329	2.299	2.524	2.520	2.419	4.3*
1,2-Dichloroethane	0.275	0.283	0.290	0.267	0.288	0.281	3.4
2-Butanone	0.170	0.191	0.223	0.126	0.194	0.181	19.9
1,1,1-Trichloroethane	1.838	1.832	1.712	2.022	1.905	1.862	6.1
Carbon Tetrachloride	1.828	1.769	1.817	1.968	1.890	1.854	4.1
Vinyl Acetate	2.168	2.273	1.127	2.399	3.003	2.194	30.9
Bromodichloromethane	0.356	0.358	0.368	0.362	0.375	0.364	2.1
1,2-Dichloropropane *	0.272	0.277	0.294	0.289	0.301	0.287	4.2*
cis-1,3-Dichloropropene	0.447	0.459	0.468	0.478	0.474	0.465	2.7
Trichloroethene	0.337	0.341	0.345	0.355	0.352	0.346	2.2
Dibromochloromethane	0.466	0.457	0.479	0.422	0.458	0.456	4.6
1,1,2-Trichloroethane	0.300	0.306	0.320	0.279	0.314	0.304	5.2
Benzene	0.941	0.965	0.968	1.022	0.983	0.976	3.1
Trans-1,3-Dichloropropene	0.364	0.402	0.418	0.411	0.433	0.406	6.4
Bromoform #	0.421	0.426	0.445	0.344	0.410	0.409	9.4#
4-Methyl-2-pentanone	0.268	0.324	0.389	0.212	0.307	0.300	21.9
2-Hexanone	0.355	0.407	0.479	0.241	0.380	0.372	23.3
Tetrachloroethene	0.321	0.313	0.319	0.340	0.317	0.322	3.3
1,1,2,2-Tetrachloroethane #	0.481	0.498	0.566	0.403	0.510	0.492	12.0#
Toluene *	0.685	0.693	0.712	0.758	0.722	0.714	4.0*
Chlorobenzene #	0.858	0.850	0.891	0.906	0.833	0.868	3.5#
Ethylbenzene *	0.414	0.422	0.448	0.472	0.462	0.444	5.6*
Styrene	0.893	0.942	1.014	1.002	0.874	0.945	6.6
Xylene (total)	0.531	0.543	0.581	0.614	0.577	0.569	5.8
Toluene-d8	1.033	1.033	1.059	1.072	0.993	1.038	2.9
Bromofluorobenzene	0.475	0.485	0.525	0.525	0.519	0.506	4.7
1,2-Dichloroethane-d4	0.255	0.255	0.262	0.230	0.253	0.251	4.9

12/3/91

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L514

Instrument ID: 5100B Calibration Date: 11/25/91 Time: 1411

Lab File ID: B112503 Init. Calib. Date(s): 11/21/91 11/21/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

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

Assoc. w/Sample B015M7.

COMPOUND	RRF	RRF50	%D
Chloromethane #	0.903	0.866	4.1 #
Bromomethane	0.636	0.771	-21.2
Vinyl Chloride *	0.776	0.832	-7.2 *
Chloroethane	0.375	0.357	4.8
Methylene Chloride	1.617	1.602	0.9
Acetone	0.468	0.351	25.0
Carbon Disulfide	3.523	3.840	-9.0
1,1-Dichloroethene *	0.967	1.158	-19.8 *
1,1-Dichloroethane #	2.149	2.222	-3.4 #
1,2-Dichloroethene (total)	1.338	1.395	-4.3
Chloroform *	2.419	2.477	-2.4 *
1,2-Dichloroethane	0.281	0.267	5.0
2-Butanone	0.181	0.112	38.1
1,1,1-Trichloroethane	1.862	1.914	-2.8
Carbon Tetrachloride	1.854	1.938	-4.5
Vinyl Acetate	2.194	2.037	7.2
Bromodichloromethane	0.364	0.367	-0.8
1,2-Dichloropropane *	0.287	0.292	-1.7 *
cis-1,3-Dichloropropene	0.465	0.464	0.2
Trichloroethene	0.346	0.351	-1.4
Dibromochloromethane	0.456	0.449	1.5
1,1,2-Trichloroethane	0.304	0.294	3.3
Benzene	0.976	0.985	-0.9
Trans-1,3-Dichloropropene	0.406	0.391	3.7
Bromoform #	0.409	0.381	6.8 #
4-Methyl-2-pentanone	0.300	0.195	35.0
2-Hexanone	0.372	0.253	32.0
Tetrachloroethene	0.322	0.328	-1.9
1,1,2,2-Tetrachloroethane #	0.492	0.441	10.4 #
Toluene *	0.714	0.719	-0.7 *
Chlorobenzene #	0.868	0.893	-2.9 #
Ethylbenzene *	0.444	0.462	-4.1 *
Styrene	0.945	1.000	-5.8
Xylene (total)	0.569	0.593	-4.2
Toluene-d8	1.038	1.043	-0.5
Bromofluorobenzene	0.506	0.521	-3.0
1,2-Dichloroethane-d4	0.251	0.240	4.4

12/23/91

Blank 97 3516 1580 Summary

0000075

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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: SOIL

Lab Sample ID: 91LVB439-MB1

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

Lab File ID: B112504

Level: (low/med) LOW

Date Received: 11/25/91

% Moisture: not dec. 0

Date Analyzed: 11/25/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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	1.5	U 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

6/23/92
X10=10
X10=40
Acet
Sample conc: 49ppb, no qualification is req'd.

FORM 1 V-1 12/88 Rev.

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/24/92
LABORATORY: Weston	CASE: 9111L514	SDG: 514
SAMPLES/MATRIX: 8015M7/soil		

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	6/24/92	X		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

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.

9213516.1588 Holding Time Summary

Pg 1 of 1

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L514

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO15M7	001	S	91LE1582	11/20/91	11/25/91 5	12/12/91 17
BO15M7	001 MS	S	91LE1582	11/20/91	11/25/91	12/12/91
BO15M7	001 MSD	S	91LE1582	11/20/91	11/25/91	12/12/91

LAB QC:

SBLK	MB1	S	91LE1582	N/A	11/25/91	12/12/91
SBLK	MB1 BS	S	91LE1582	N/A	11/25/91	12/12/91

holding times were met. [illegible] 6/24/92

JAN 1992 RECEIVED OSM DMO

[illegible] 6/24

9713516.1589

Calibration Summary 0000069

Pg 1 of 1

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9111L514

Instrument ID: 5100SP Calibration Date: 12/12/91 Time: 1414

Lab File ID: S121202 Init. Calib. Date(s): 12/10/91 12/10/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		RRF	RRF50	%D	
Dibenzofuran		1.225	1.332	-8.7	
2,4-Dinitrotoluene		0.334	0.351	-5.1	
Diethylphthalate		1.088	1.171	-7.6	
4-Chlorophenyl-phenylether		0.464	0.555	-19.6	
Fluorene		0.923	1.077	-16.7	
4-Nitroaniline		0.130	0.134	-3.1	
4,6-Dinitro-2-methylphenol		0.134	0.143	-6.7	
N-Nitrosodiphenylamine (1)	*	0.437	0.438	-0.2	*
4-Bromophenyl-phenylether		0.202	0.226	-11.9	
Hexachlorobenzene		0.208	0.246	-18.3	
Pentachlorophenol	*	0.107	0.114	-6.5	*
Phenanthrene		1.014	1.162	-14.6	
Anthracene		1.000	1.172	-17.2	
Di-n-Butylphthalate		1.328	1.463	-10.2	
Fluoranthene	*	0.940	1.101	-17.1	*
Pyrene		1.367	1.557	-13.9	
Butylbenzylphthalate		0.794	0.832	-4.8	
3,3'-Dichlorobenzidine		0.156	0.199	-27.6	
Benzo(a)anthracene		1.054	1.250	-18.6	
Chrysene		1.149	1.268	-10.4	
bis(2-Ethylhexyl)phthalate		1.100	1.099	0.1	
Di-n-Octyl phthalate	*	2.183	2.307	-5.7	*
Benzo(b)fluoranthene		1.062	1.344	-26.6	
Benzo(k)fluoranthene		1.048	1.494	-42.6	
Benzo(a)pyrene	*	0.864	1.045	-20.9	*
Indeno(1,2,3-cd)pyrene		0.649	0.678	-4.5	
Dibenzo(a,h)anthracene		0.553	0.533	3.6	
Benzo(g,h,i)perylene		0.646	0.682	-5.6	
Nitrobenzene-d5		0.453	0.489	-7.9	
2-Fluorobiphenyl		0.986	1.107	-12.3	
p-Terphenyl-d14		1.010	1.199	-18.7	
Phenol-d5		1.549	1.659	-7.1	
2-Fluorophenol		1.135	1.303	-14.8	
2,4,6-Tribromophenol		0.103	0.118	-14.6	

(1) Cannot be separated from Diphenylamine

FORM VII SV-2 5/88 Rev.

12/13/91

6/24/9

Blank Summary 9213516-1590

0000085

Pg 1 of 2

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: SOIL Lab Sample ID: 91LE1582-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: S121209

Level: (low/med) LOW Date Received: 11/25/91

% Moisture: not dec. 0 dec. Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/12/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	40	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	670	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	68	J
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

All samples results are ND, no qualification required 6/24/92

x10=400

x10=680

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

6/24/92

Blank Summary 9213516.1591

0000086

Pg 2 of 2

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LE1582-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: S121209

Level: (low/med) LOW

Date Received: 11/25/91

% Moisture: not dec. 0 dec.

Date Extracted: 11/25/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/12/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	ALDOL CONDENSATE	5.52	100	JA	R
2.	ADIPATE	22.40	20000	J	u

sample RT is 22.23, however the blank and sample spectra ~~match~~ are an almost direct match.

6/24/92

FORM 1 SV-TIC 12/88 Rev.

9713516.1592

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/24/92
LABORATORY: Weston	CASE: 9111L 514	SDG: 514
SAMPLES/MATRIX: B015M7 / Soil		

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? In the quant column - Yes (Yes) No N/A
Conf. column - No.

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~~ 8/6/24/1

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? GPC — 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.

9713516.1600

COMMENTS (attach additional sheets as necessary):

GPC cleanup was performed on the sample extract. SQL's are mult. by 2 in accordance with the SOW.

9713516.1601

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 # :9111L514

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015M7	001	S	91LE1586	11/20/91	11/26/91 6	12/13/91 17
B015M7	001 MS	S	91LE1586	11/20/91	11/26/91	12/13/91
B015M7	001 MSD	S	91LE1586	11/20/91	11/26/91	12/13/91

LAB QC:

PBLK	MB1	S	91LE1586	N/A	11/26/91	12/13/91
PBLK	MB1 BS	S	91LE1586	N/A	11/26/91	12/13/91

Holding times were met.
[illegible] 6/24/92

JAN 1992
RECEIVED
OSM DMO

[illegible] 6/24/92

Calibration 9/13514.1602 Summary

0000028

Pg 1 of 1

9

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.: 9111L514

Instrument ID: 27 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS	FROM: 12/12/91 TO: 12/12/91	DATE OF ANALYSIS	12/13/91
TIME(S) OF ANALYSIS	FROM: 1527 TO: 2029	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				

All results are ND - no qualification is 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.

9713516.1603

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/28/92
LABORATORY: Weston	CASE: 9111L514	SDG: 514
SAMPLES/MATRIX: B015M7 / Soil		

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 $\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.

9713516.1608

Holding Time Summary

JAN 1992
RECEIVED
OSM DMO

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L514

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
B015M7							
SILVER, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	59
SILVER, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
SILVER, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
ALUMINUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
ALUMINUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
ALUMINUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
ARSENIC, TOTAL	001	S	91L3502	11/20/91	12/18/91	12/25/91	35
ARSENIC, TOTAL	001 REP	S	91L3502	11/20/91	12/18/91	12/25/91	
ARSENIC, TOTAL	001 MS	S	91L3502	11/20/91	12/18/91	12/25/91	
BARIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	59
BARIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
BARIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
BERYLLIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
BERYLLIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
BERYLLIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
BISMUTH, TOTAL	001	S	91L3503	11/20/91	12/18/91	12/30/91	40
BISMUTH, TOTAL REP	001 REP	S	91L3503	11/20/91	12/18/91	12/30/91	
BISMUTH, TOTAL SPIKE	001 MS	S	91L3503	11/20/91	12/18/91	12/30/91	
CALCIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	59
CALCIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
CALCIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
CADMIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
CADMIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
CADMIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
COBALT, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
COBALT, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
COBALT, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
CHROMIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
CHROMIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
CHROMIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
COPPER, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
COPPER, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
COPPER, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
IRON, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
IRON, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
IRON, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
MERCURY, TOTAL	001	S	91C0359	11/20/91	12/12/91	12/13/91	23

All analyses performed within holding time requirements no qualification required

5/2/92

Holding Time Summary 9213516.1609 Pg 2 of 2

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L514

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	Days
MERCURY, TOTAL	001 REP	S	91C0359	11/20/91	12/12/91	12/13/91	23
MERCURY, TOTAL	001 MS	S	91C0359	11/20/91	12/12/91	12/13/91	
POTASSIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	59
POTASSIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
POTASSIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
MAGNESIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
MAGNESIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
MAGNESIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
MANGANESE, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
MANGANESE, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
MANGANESE, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
SODIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
SODIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
SODIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
NICKEL, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
NICKEL, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
NICKEL, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
LEAD, TOTAL	001	S	91L3502	11/20/91	12/18/91	12/25/91	35
LEAD, TOTAL	001 REP	S	91L3502	11/20/91	12/18/91	12/25/91	
LEAD, TOTAL	001 MS	S	91L3502	11/20/91	12/18/91	12/25/91	
ANTIMONY, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	59
ANTIMONY, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
ANTIMONY, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
SELENIUM, TOTAL	001	S	91L3502	11/20/91	12/18/91	12/25/91	35
SELENIUM, TOTAL	001 REP	S	91L3502	11/20/91	12/18/91	12/25/91	
SELENIUM, TOTAL	001 MS	S	91L3502	11/20/91	12/18/91	12/25/91	
THALLIUM, TOTAL	001	S	91L3502	11/20/91	12/18/91	12/25/91	
THALLIUM, TOTAL	001 REP	S	91L3502	11/20/91	12/18/91	12/25/91	
THALLIUM, TOTAL	001 MS	S	91L3502	11/20/91	12/18/91	12/25/91	
VANADIUM, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	59
VANADIUM, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
VANADIUM, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	
ZINC, TOTAL	001	S	91L3503	11/20/91	12/18/91	01/08/92	
ZINC, TOTAL	001 REP	S	91L3503	11/20/91	12/18/91	01/08/92	
ZINC, TOTAL	001 MS	S	91L3503	11/20/91	12/18/91	01/08/92	

LAB QC:

SILVER LABORATORY	LC1 BS	S	91L3503	N/A	12/18/91	01/08/92
ALUMINUM LABORTORY	LC1 BS	S	91L3503	N/A	12/18/91	01/08/92

Accuracy Summary 9713516.1610 0000027 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015M7S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP514

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 97.6

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	75.5000		3.8760	U	101.90	74.1	N	P
Arsenic	75-125	7.2000		3.0000		7.60	56.0	N	F
Barium	75-125	384.3000		40.2000		407.60	84.4		P
Beryllium	75-125	8.4000		.1938	U	10.20	82.4		P
Cadmium	75-125	8.4000		.5814	U	10.20	82.4		P
Calcium									NR
Chromium	75-125	36.9000		3.3000		40.80	82.3		P
Cobalt	75-125	88.6000		3.6000	B	101.90	83.4		P
Copper	75-125	48.7000		6.8000		51.00	82.3		P
Iron									NR
Lead	75-125	13.5000		3.1000		3.80	273.7	N	F
Magnesium									NR
Manganese	75-125	252.3000		153.5000		101.90	96.9		P
Mercury	75-125	.6650		.2210		.51	86.7		CV
Nickel	75-125	88.8000		5.7000	B	101.90	81.6		P
Potassium									NR
Selenium	75-125	1.4000		.3902	U	1.90	73.7		F
Silver	75-125	10.8000		1.9380	U	10.20	105.6		P
Sodium									NR
Thallium	75-125	7.5000		.3900		9.50	74.8		F
Vanadium	75-125	98.7000		11.0000		101.90	86.1		P
Zinc	75-125	104.4000		21.2000		101.90	81.7		P
Cyanide	75-125	4.5760		1.0240	U	5.12	89.4		C

Comments:

Al, Sb, Pb, Se, Tl Results qualified as J/UJ.

7/2/92

FORM V (Part 1) - IN 03/90

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9111L514	REVIEWER: [illegible]	DATE: 6/28/92	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B015M7	Lead	83.7	B015M7	none - analyzed w/ MSA
↓	Selenium	80.8	↓	UJ
↓	Thallium	84.7	↓	UJ

9713516.1611

9713516.1612

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/29/92
LABORATORY: Weston	CASE: 9111L514	SDG: 514
SAMPLES/MATRIX: B015M7/Soil		

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		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.

9713516.1616

APPENDIX F

DATA VALIDATION DOCUMENTATION

SDG: 9112L619

SAMPLES: B015N1, B015N3, B015N5, B015N7

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

9713516.1617

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.

9713516.1618

Holding Time Summary

Pg 1 of 1

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L514

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B015M7							
% SOLIDS	001	S	91L%S247	11/20/91	11/26/91	11/27/91	7
% SOLIDS	001 REP	S	91L%S247	11/20/91	11/26/91	11/27/91	
CHLORIDE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	6
CHLORIDE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
CHLORIDE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
CHLORIDE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
TOTAL CYANIDE	001	S	91LC364	11/20/91	12/03/91	12/03/91	13
TOTAL CYANIDE	001 REP	S	91LC364	11/20/91	12/03/91	12/03/91	
TOTAL CYANIDE	001 MS	S	91LC364	11/20/91	12/03/91	12/03/91	
PHOSPHATE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	6
PHOSPHATE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
PHOSPHATE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
PHOSPHATE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE NITRITE	001	S	91LNC264	11/20/91	12/17/91	12/18/91	28
NITRATE NITRITE	001 REP	S	91LNC264	11/20/91	12/17/91	12/18/91	
NITRATE NITRITE	001 MS	S	91LNC264	11/20/91	12/17/91	12/18/91	
NITRATE NITRITE	001 MSD	S	91LNC264	11/20/91	12/17/91	12/18/91	
TOTAL ORGANIC CARBON	001	S	91LTZ028	11/20/91	12/04/91	12/05/91	15
TOTAL ORGANIC CARBON	001 REP	S	91LTZ028	11/20/91	12/04/91	12/05/91	
TOTAL ORGANIC CARBON	001 MS	S	91LTZ028	11/20/91	12/04/91	12/05/91	
SUB-OUT TEST FOR SUB	001	S		11/20/91			

LAB QC:

6/91

9713516.1619

Holding Time Summary

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

DATE RECEIVED: 11/22/91 RFW LOT # :9111L514

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B015M7							
% SOLIDS	001	S	91L%S247	11/20/91	11/26/91	11/27/91	7
% SOLIDS	001 REP	S	91L%S247	11/20/91	11/26/91	11/27/91	
CHLORIDE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	6
CHLORIDE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
CHLORIDE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
CHLORIDE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
FLUORIDE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRITE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
TOTAL CYANIDE	001	S	91LC364	11/20/91	12/03/91	12/03/91	13
TOTAL CYANIDE	001 REP	S	91LC364	11/20/91	12/03/91	12/03/91	
TOTAL CYANIDE	001 MS	S	91LC364	11/20/91	12/03/91	12/03/91	
PHOSPHATE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	6
PHOSPHATE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
PHOSPHATE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
PHOSPHATE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001 REP	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001 MS	S	91LICA76	11/20/91	11/26/91	11/26/91	
SULFATE BY IC	001 MSD	S	91LICA76	11/20/91	11/26/91	11/26/91	
NITRATE NITRITE	001	S	91LNC264	11/20/91	12/17/91	12/18/91	28
NITRATE NITRITE	001 REP	S	91LNC264	11/20/91	12/17/91	12/18/91	
NITRATE NITRITE	001 MS	S	91LNC264	11/20/91	12/17/91	12/18/91	
NITRATE NITRITE	001 MSD	S	91LNC264	11/20/91	12/17/91	12/18/91	
TOTAL ORGANIC CARBON	001	S	91LTZ028	11/20/91	12/04/91	12/05/91	15
TOTAL ORGANIC CARBON	001 REP	S	91LTZ028	11/20/91	12/04/91	12/05/91	
TOTAL ORGANIC CARBON	001 MS	S	91LTZ028	11/20/91	12/04/91	12/05/91	
SUB-OUT TEST FOR SUB	001	S		11/20/91			

LAB QC:

9713516.1620

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9713516.1621

DATA QUALIFICATION SUMMARY - FORM B-7

9112L619

SDG: 619	REVIEWER: [illegible]	DATE: 5/8/92	PAGE 1 OF 1
COMMENTS: Volatiles/Semi-VOA			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chloromethane	UJ	All	CCV %D > 30%
2-Butanone	UJ	All	
MeCl2	U	All	Present in blank
Acetone	U	"	"
All Semi-volatile TIC compounds	UJ	All	Derived using an estimated [illegible]

9713516.1622

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L619	REVIEWER: [illegible]	DATE: 1/29/92	PAGE 2 OF 4
COMMENTS: Pest/PCB			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
All Pest/PCB TCL emds	UJ	B01SN N3, N5, N7	Extracted past hold-ing time
gamma-BHC	R	B01SN1	Detected on quant column, but not conf. column, was not included in pkg. (Cannot be confirmed)
Heptachlor	R		
4,4'-DDT	R		
Aroclor 1254	R		
alpha-chlordane	R	B01SN3	
Heptachlor	R	B01SN5	

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L619	REVIEWER: [illegible]	DATE: 6/28/92	PAGE 3 OF 4
COMMENTS: Metals			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Mercury	UJ	B01SN1, N3, N5	Analyzed out of holding time
Antimony	UJ	B01SN1, N3, N5, N7	MS %R < 75%
Manganese	J	↓	↓
Selenium	UJ	↓	↓
Barium	J	B01SN1, N3, N5, N7	Dup %RPD out of control limits
Selenium	J	B01SN1, N3, N5, N7	GFAA analytical spikes out of control limits
Thallium	UJ	B01SN3	↓

9713516.1624

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91121619	REVIEWER: [illegible]	DATE: 6/29/92	PAGE 4 OF 4
COMMENTS: Ion Chromatography			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrite	UJ	B015N1, N3, N5, N7	Analyzed out of holding time
Nitrate	J	B015N1, N3, N5, N7	
Phosphate	UJ/J	B015N1, N3, N5, N7	
TOC	UJ	B015N7	
Nitrate-Nitrite	R	All	Discrepancy with Nitrite-Nitrate data.

9713516.1625

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.1626

0000019

1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 3.0-6.0
B015N1
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-001

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

Lab File ID: Y121004

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 4

Date Analyzed: 12/10/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	~~U~~ UJ
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	~~B~~ U
67-64-1	Acetone	14	~~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~~ UJ
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

9713516.1627 0000028

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
215-B-46A 3.0-6.0

BO15N3
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L619-002

Sample wt/vol: 5.10 (g/mL) G Lab File ID: Y121011

Level: (low/med) LOW Date Received: 12/05/91

% Moisture: not dec. 5 Date Analyzed: 12/10/91

Column: (pack/cap) PACK Dilution Factor: 0.980

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	~~U~~ UJ
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	11	~~B~~ U
67-64-1	Acetone	26	~~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~~ UJ
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

9713516.1628 0000037

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 8.0-10.5

BO15N5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-003

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

Lab File ID: Y121006

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 4

Date Analyzed: 12/10/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

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	13	B
67-64-1	Acetone	31	B
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

9713516.1629

0000046

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

216-B-46A 15.0-17.5

BO15N7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-004

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

Lab File ID: Y121007

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 2

Date Analyzed: 12/10/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
74-87-3	Chloromethane	10	~~U~~	UJ
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~~	U
67-64-1	Acetone	16	~~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~~	UJ
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.

9713516.1630 0000018

IB

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 3.0-6.0

B015N1
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L619-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: V010210

Level: (low/med) LOW Date Received: 12/05/91

% Moisture: not dec. 5 dec. Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.4 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic acid	41	J
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

FORM 1 SV-1 12/88 Rev.

5/11/92

9713516.1631 0000019

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 3.0-6.0

B015N1
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L619-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: V010210

Level: (low/med) LOW Date Received: 12/05/91

% Moisture: not dec. 5 dec. Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.4 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	96	J
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	49	J
117-84-0	Di-n-Octyl phthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenzo(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

5/11/92

9713516.1632 0000020

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-46E 3.0-6.0

B015N1
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V010210

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 5 dec.

Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.4

Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	UNKNOWN	25.10	300	~~J~~	NJ
2.	ADIPATE	27.57	50000	~~J~~	NJ

FORM 1 SV-TIC 12/88 Rev.

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-R-46A 3.0-6.0
B015N3
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L619-002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: V010213

Level: (low/med) LOW Date Received: 12/05/91

% Moisture: not dec. 6 dec. Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.8 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic acid	1800	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

9713516.1634

1C

0000034

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 3.0-6.0

B015N3
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L619-002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: V010213

Level: (low/med) LOW Date Received: 12/05/91

% Moisture: not dec. 6 dec. Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.8 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	140	J
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	44	J
117-84-0	Di-n-Octyl phthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenzo(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

5/11/92

9713516.1635

0000035

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-4-A 3.0-6.0
BO15N3
Soil - Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-002

Sample wt/vol: 30.2 (g/mL) G

Lab File ID: V010213

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 6 dec.

Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.8

Dilution Factor: 1.00

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	PHTHALATE	22.02	100	ø	NJ
2.	UNKNOWN	22.90	300	ø	NJ
3.	~~UNKNOWN~~ Alkane	25.13	100	ø	NJ
4.	ADIPATE	27.57	1000	ø	NJ
5.	UNKNOWN	31.15	200	ø	NJ

9713516.1636

0000052

1B
SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 8.0-10.5

B015N5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-003

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V010214

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 5 dec.

Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.6

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

FORM 1 SV-1 12/88 Rev.

5/11/92

9713516.1637

0000053

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 8.0-10.5

B015N5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-003

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V010214

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 5 dec.

Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.6

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	96	J
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	700	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	42	J
117-84-0	Di-n-Octyl phthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenzo(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2

12/88 Rev.

5/11/92

9713516.1638

0000054

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-46A 8.0-10.5

B015N5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-003

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V010214

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 5 dec.

Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.6

Dilution Factor: 1.00

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	22.90	200	~~J~~ NJ
2.	ADIPATE	27.55	200	~~J~~ NJ
3.	UNKNOWN	31.13	200	~~J~~ NJ

FORM 1 SV-TIC

12/88 Rev.

5/11/92

9713516.1639

1B

0000066

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 15.0-17.5

B015N7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-004

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: V010215

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 2 dec.

Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.8

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

5/11/92

9713516.1640

IC 0000067

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 15.0-17.5

B015N7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L619-004

Sample wt/vol: 30.6 (g/mL) G Lab File ID: V010215

Level: (low/med) LOW Date Received: 12/05/91

% Moisture: not dec. 2 dec. Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.8 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	84	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	670	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	99	J
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

9713516.1641

0000068

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-46A 15.0-17.5

B015N7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-004

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: V010215

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 2 dec.

Date Extracted: 12/06/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/02/92

GPC Cleanup: (Y/N) N pH: 7.8

Dilution Factor: 1.00

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	TRIBUTYLPHOSPHATE	19.13	300	~~J~~	NJ
2.	UNKNOWN	22.90	300	~~J~~	NJ
3.	ADIPATE	27.55	200	~~J~~	NJ
4.	UNKNOWN	31.15	400	~~J~~	NJ

FORM 1 SV-TIC 12/88 Rev.

3/11/92

9713516.1642
ID

0000016

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 3.0-6.0

BO15N1
Soil Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L619-001

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 12239103.13

Level: (low/med) LOW Date Received: 12/05/91

% Moisture: not dec. 4 dec. Date Extracted: 12/10/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/23/91

GPC Cleanup: (Y/N) Y pH: 7.1 Dilution Factor: 1.00

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

CAS NO.	COMPOUND				
319-84-6	Alpha-BHC	17	~~8.3~~	U	
319-85-7	Beta-BHC	17	~~8.3~~	U	
319-86-8	Delta-BHC	17	~~8.3~~	U	
~~58-89-9~~	~~gamma-BHC (Lindane)~~	~~17~~	~~8.3~~	~~U~~	R
~~76-44-8~~	~~Heptachlor~~	~~17~~	~~8.3~~	~~U~~	R
309-00-2	Aldrin	17	~~8.3~~	U	
1024-57-3	Heptachlor epoxide	17	~~8.3~~	U	
959-98-8	Endosulfan I	17	~~8.3~~	U	
60-57-1	Dieldrin	34	~~17~~	U	
72-55-9	4,4'-DDE	34	~~17~~	U	
72-20-8	Endrin	34	~~17~~	U	
33213-65-9	Endosulfan II	34	~~17~~	U	
72-54-8	4,4'-DDD	34	~~17~~	U	
1031-07-8	Endosulfan sulfate	34	~~17~~	U	
~~50-29-3~~	~~4,4'-DDT~~	~~34~~	~~17~~	~~U~~	R
72-43-5	Methoxychlor	170	~~83~~	U	
53494-70-5	Endrin ketone	34	~~17~~	U	
5103-71-9	alpha-Chlordane	170	~~83~~	U	
5103-74-2	gamma-Chlordane	170	~~83~~	U	
8001-35-2	Toxaphene	340	~~170~~	U	
12674-11-2	Aroclor-1016	170	~~83~~	U	
11104-28-2	Aroclor-1221	170	~~83~~	U	
11141-16-5	Aroclor-1232	170	~~83~~	U	
53469-21-9	Aroclor-1242	170	~~83~~	U	
12672-29-6	Aroclor-1248	170	~~83~~	U	
~~11097-69-1~~	~~Aroclor-1254~~	~~340~~	~~170~~	~~U~~	R
11096-82-5	Aroclor-1260	340	170	U	

12-30-91

FORM 1 PEST 12/88 Rev.

6/29/92

9713516.1643

0000019

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 3.0-6.5

BO15N3
Duplicate

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-002

Sample wt/vol: 30.9 (g/mL) G

Lab File ID: 12239103.14

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 5 dec.

Date Extracted: 12/10/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/23/91

GPC Cleanup: (Y/N) Y pH: 7.4

Dilution Factor: 1.00

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

CAS NO.	COMPOUND				
319-84-6	Alpha-BHC	16 ~~8.2~~	U		US
319-85-7	Beta-BHC	16 ~~8.2~~	U		
319-86-8	Delta-BHC	16 ~~8.2~~	U		
58-89-9	gamma-BHC (Lindane)	16 ~~8.2~~	U		
76-44-8	Heptachlor	16 ~~8.2~~	U		
309-00-2	Aldrin	16 ~~8.2~~	U		
1024-57-3	Heptachlor epoxide	16 ~~8.2~~	U		
959-98-8	Endosulfan I	16 ~~8.2~~	U		
60-57-1	Dieldrin	32 ~~16~~	U		
72-55-9	4,4'-DDE	32 ~~16~~	U		
72-20-8	Endrin	32 ~~16~~	U		12-30-91
33213-65-9	Endosulfan II	32 ~~16~~	U		
72-54-8	4,4'-DDD	32 ~~16~~	U		
1031-07-8	Endosulfan sulfate	32 ~~16~~	U		
50-29-3	4,4'-DDT	32 ~~16~~	U		
72-43-5	Methoxychlor	160 ~~82~~	U		
53494-70-5	Endrin ketone	32 ~~16~~	U		
~~5103-71-9~~	~~alpha-Chlordane~~	~~160 82~~	~~U~~		R
5103-74-2	gamma-Chlordane	160 ~~82~~	U		
8001-35-2	Toxaphene	320 ~~160~~	U		
12674-11-2	Aroclor-1016	160 ~~82~~	U		
11104-28-2	Aroclor-1221	160 ~~82~~	U		
11141-16-5	Aroclor-1232	160 ~~82~~	U		
53469-21-9	Aroclor-1242	160 ~~82~~	U		
12672-29-6	Aroclor-1248	160 ~~82~~	U		
11097-69-1	Aroclor-1254	320 ~~160~~	U		
11096-82-5	Aroclor-1260	320 ~~160~~	U		

6/29/92

FORM 1 PEST

12/88 Rev.

9713516.1644

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PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-R-46A 8.0-10.5

BO15N5

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-003

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: 12239103.15

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 4 dec.

Date Extracted: 12/10/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/23/91

GPC Cleanup: (Y/N) Y pH: 7.4

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
319-84-6	Alpha-BHC	16 ~~8.1~~	U	US
319-85-7	Beta-BHC	16 ~~8.1~~	U	
319-86-8	Delta-BHC	16 ~~8.1~~	U	
58-89-9	gamma-BHC (Lindane)	16 ~~8.1~~	U	
~~76-44-8~~	~~Heptachlor~~	~~16 8.1~~	U	R
309-00-2	Aldrin	16 ~~8.1~~	U	
1024-57-3	Heptachlor epoxide	16 ~~8.1~~	U	
959-98-8	Endosulfan I	16 ~~8.1~~	U	
60-57-1	Dieldrin	32 ~~16~~	U	
72-55-9	4,4'-DDE	32 ~~16~~	U	1.5
72-20-8	Endrin	32 ~~16~~	U	
33213-65-9	Endosulfan II	32 ~~16~~	U	
72-54-8	4,4'-DDD	32 ~~16~~	U	12-30-91
1031-07-8	Endosulfan sulfate	32 ~~16~~	U	
50-29-3	4,4'-DDT	32 ~~16~~	U	
72-43-5	Methoxychlor	160 ~~81~~	U	
53494-70-5	Endrin ketone	32 ~~16~~	U	
5103-71-9	alpha-Chlordane	160 ~~81~~	U	
5103-74-2	gamma-Chlordane	160 ~~81~~	U	
8001-35-2	Toxaphene	320 ~~160~~	U	
12674-11-2	Aroclor-1016	160 ~~81~~	U	
11104-28-2	Aroclor-1221	160 ~~81~~	U	
11141-16-5	Aroclor-1232	160 ~~81~~	U	
53469-21-9	Aroclor-1242	160 ~~81~~	U	
12672-29-6	Aroclor-1248	160 ~~81~~	U	
11097-69-1	Aroclor-1254	320 ~~160~~	U	
11096-82-5	Aroclor-1260	320 ~~160~~	U	

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FORM 1 PEST

12/88 Rev.

9713516.1645 0000025

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PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 15.0-17.5

BO15N7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L619-004

Sample wt/vol: 31.3 (g/mL) G

Lab File ID: 12239103.20

Level: (low/med) LOW

Date Received: 12/05/91

% Moisture: not dec. 2 dec.

Date Extracted: 12/10/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/23/91

GPC Cleanup: (Y/N) Y pH: 8.2

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
319-84-6	Alpha-BHC	16 ~~7.8~~	U	US
319-85-7	Beta-BHC	16 ~~7.8~~	U	
319-86-8	Delta-BHC	16 ~~7.8~~	U	
58-89-9	gamma-BHC (Lindane)	16 ~~7.8~~	U	
76-44-8	Heptachlor	16 ~~7.8~~	U	
309-00-2	Aldrin	16 ~~7.8~~	U	
1024-57-3	Heptachlor epoxide	16 ~~7.8~~	U	
959-98-8	Endosulfan I	16 ~~7.8~~	U	
60-57-1	Dieldrin	32 ~~16~~	U	
72-55-9	4,4'-DDE	32 ~~16~~	U	
72-20-8	Endrin	32 ~~16~~	U	DG
33213-65-9	Endosulfan II	32 ~~16~~	U	
72-54-8	4,4'-DDD	32 ~~16~~	U	12-30-91
1031-07-8	Endosulfan sulfate	32 ~~16~~	U	
50-29-3	4,4'-DDT	32 ~~16~~	U	
72-43-5	Methoxychlor	160 ~~78~~	U	
53494-70-5	Endrin ketone	32 ~~16~~	U	
5103-71-9	alpha-Chlordane	160 ~~78~~	U	
5103-74-2	gamma-Chlordane	160 ~~78~~	U	
8001-35-2	Toxaphene	320 ~~160~~	U	
12674-11-2	Aroclor-1016	160 ~~78~~	U	
11104-28-2	Aroclor-1221	160 ~~78~~	U	
11141-16-5	Aroclor-1232	160 ~~78~~	U	
53469-21-9	Aroclor-1242	160 ~~78~~	U	
12672-29-6	Aroclor-1248	160 ~~78~~	U	
11097-69-1	Aroclor-1254	320 ~~160~~	U	
11096-82-5	Aroclor-1260	320 ~~160~~	U	

6/29/92

FORM 1 PEST 12/88 Rev.

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U.S. EPA - CLP 000022

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

216-3-46A

B015N1

3.0-6.0 Duplicate

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP619

Matrix (soil/water): SOIL Lab Sample ID: 911261901

Level (low/med): LOW Date Received: 12/05/91

% Solids: 95.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4720.00			P	
7440-36-0	Antimony	4.01	U	N	P	
7440-38-2	Arsenic	1.30	B		F	
7440-39-3	Barium	70.70		*	P	
7440-41-7	Beryllium	.44	B		P	
7440-43-9	Cadmium	.60	U		P	
7440-70-2	Calcium	7030.00			P	
7440-47-3	Chromium	6.70			P	
7440-48-4	Cobalt	8.20	B		P	
7440-50-8	Copper	10.90			P	
7439-89-6	Iron	14000.00			P	
7439-92-1	Lead	3.20			F	
7439-95-4	Magnesium	3400.00			P	
7439-96-5	Manganese	267.00		N	P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	7.50	B		P	
7440-09-7	Potassium	1070.00			P	
7782-49-2	Selenium	.39	U	NW	F	
7440-22-4	Silver	2.00	U		P	
7440-23-5	Sodium	186.00	B		P	
7440-28-0	Thallium	.39	U		F	
7440-62-2	Vanadium	26.40			P	
7440-66-6	Zinc	30.70			P	
	Cyanide	1.05	U		C	
7440-69-9	Bismuth	30.0	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713516.1647

000023

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

21L-R-46A

B015N3

3.0-6.0 Duplicate

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP619

Matrix (soil/water): SOIL Lab Sample ID: 911261902

Level (low/med): LOW Date Received: 12/05/91

% Solids: 95.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4070.00			P	
7440-36-0	Antimony	3.87	U	N	P	
7440-38-2	Arsenic	1.40	B		F	
7440-39-3	Barium	60.10		*	P	
7440-41-7	Beryllium	.43	B		P	
7440-43-9	Cadmium	2.00			P	
7440-70-2	Calcium	7090.00			P	
7440-47-3	Chromium	5.30			P	
7440-48-4	Cobalt	6.70	B		P	
7440-50-8	Copper	10.10			P	
7439-89-6	Iron	12300.00			P	
7439-92-1	Lead	3.60			F	
7439-95-4	Magnesium	3060.00			P	
7439-96-5	Manganese	234.00		N	P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	6.40	B		P	
7440-09-7	Potassium	852.00	B		P	
7782-49-2	Selenium	.41	U	NW	F	
7440-22-4	Silver	1.94	U		P	
7440-23-5	Sodium	171.00	B		P	
7440-28-0	Thallium	.41	U		F	
7440-62-2	Vanadium	21.90			P	
7440-66-6	Zinc	30.10			P	
	Cyanide	1.05	U		C	
7440-69-9	Bismuth	29	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

9713516.1648

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

216-R-46A

B015N5

8.0-10.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP619

Matrix (soil/water): SOIL Lab Sample ID: 911261903

Level (low/med): LOW Date Received: 12/05/91

% Solids: 96.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3220.00			P	
7440-36-0	Antimony	4.00	~~U~~	N	P	UJ
7440-38-2	Arsenic	1.00	B		F	
7440-39-3	Barium	44.10		*	P	J
7440-41-7	Beryllium	.30	B		P	
7440-43-9	Cadmium	.60	U		P	
7440-70-2	Calcium	5880.00			P	
7440-47-3	Chromium	4.00			P	
7440-48-4	Cobalt	5.50	B		P	
7440-50-8	Copper	8.70			P	
7439-89-6	Iron	10500.00			P	
7439-92-1	Lead	2.70			F	
7439-95-4	Magnesium	2480.00			P	
7439-96-5	Manganese	174.00		N	P	J
7439-97-6	Mercury	.05	~~U~~		CV	UJ
7440-02-0	Nickel	4.50	B		P	
7440-09-7	Potassium	720.00	B		P	
7782-49-2	Selenium	.41	~~U~~	NW	F	UJ
7440-22-4	Silver	2.00	U		P	
7440-23-5	Sodium	248.00	B		P	
7440-28-0	Thallium	.41	U		F	
7440-62-2	Vanadium	19.40			P	
7440-66-6	Zinc	21.30			P	
	Cyanide	1.04	U		C	
7440-69-9	Bismuth	30.0	U		Q	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9713516.1649

0000025

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

SB-46A

B015N7

5.0-17.5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP619

Matrix (soil/water): SOIL Lab Sample ID: 911261904

Level (low/med): LOW Date Received: 12/05/91

% Solids: 98.1

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3770.00			P	
7440-36-0	Antimony	3.95	~~U~~	N	P	
7440-38-2	Arsenic	1.20	B		F	
7440-39-3	Barium	68.10		*	P	
7440-41-7	Beryllium	.38	B		P	
7440-43-9	Cadmium	.59	U		P	
7440-70-2	Calcium	5630.00			P	
7440-47-3	Chromium	8.50			P	
7440-48-4	Cobalt	9.40	B		P	
7440-50-8	Copper	17.80			P	
7439-89-6	Iron	16500.00			P	
7439-92-1	Lead	2.50			F	
7439-95-4	Magnesium	2930.00			P	
7439-96-5	Manganese	241.00		N	P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	10.80			P	
7440-09-7	Potassium	558.00	B		P	
7782-49-2	Selenium	.38	~~U~~	NW	F	
7440-22-4	Silver	1.98	U		P	
7440-23-5	Sodium	450.00	B		P	
7440-28-0	Thallium	.38	U		F	
7440-62-2	Vanadium	30.30			P	
7440-66-6	Zinc	39.10			P	
	Cyanide	1.02	U		C	
7440-69-9	Bismuth	29.6 ~~30.0~~ (6/29/92)	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

9713516.1650

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/13/92

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

WESTON BATCH #: 9112L619

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B015N1	% Solids	95.6	%	0.10
		Chloride by IC	2.4	MG/KG	1.3
	216-B-46A	Fluoride by IC	1.7	MG/KG	0.50
		Nitrite by IC	1.3 u	MG/KG	1.3
	3.0-6.0	Nitrate by IC	42.1	MG/KG	1.3
		Cyanide, Total	1.0 u	MG/KG	1.0
	Duplicate	Phosphate by IC	1.6	MG/KG	1.3
		Sulfate by IC	19.8	MG/KG	1.3
		~~Nitrate Nitrite~~	~~12.8~~	~~MG-N/KG~~	~~2.6~~
		Total Organic Carbon	17.3	%	0.10
-002	B015N3	% Solids	95.0	%	0.10
		Chloride by IC	2.3	MG/KG	1.3
	216-B-46A	Fluoride by IC	1.6	MG/KG	0.50
		Nitrite by IC	1.3 u	MG/KG	1.3
	3.0-6.0	Nitrate by IC	42.2	MG/KG	1.3
		Cyanide, Total	1.1 u	MG/KG	1.1
	Duplicate	Phosphate by IC	1.6	MG/KG	1.3
		Sulfate by IC	20.2	MG/KG	1.3
		~~Nitrate Nitrite~~	~~13.4~~	~~MG-N/KG~~	~~2.6~~
		Total Organic Carbon	0.53	%	0.10

9713516.1651

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/13/92

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

WESTON BATCH #: 9112L619

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-003	B015N5	% Solids	96.4	%	0.10
		Chloride by IC	79.2	MG/KG	1.3
	216-B-46A	Fluoride by IC	1.6	MG/KG	0.50
		Nitrite by IC	1.3	MG/KG	1.3
	8.0-10.5	Nitrate by IC	60.5	MG/KG	1.3
		Cyanide, Total	1.0 u	MG/KG	1.0
		Phosphate by IC	1.3	MG/KG	1.3
		Sulfate by IC	268	MG/KG	13.2
		~~Nitrate Nitrite~~	~~15.7~~	~~MG-N/KG~~	~~2.6~~
		Total Organic Carbon	6.4	%	0.10
-004	B015N7	% Solids	98.0	%	0.10
		Chloride by IC	43.0	MG/KG	1.3
	216 B-46A	Fluoride by IC	1.7	MG/KG	0.50
		Nitrite by IC	1.3	MG/KG	1.3
	15.0-17.5	Nitrate by IC	39.5	MG/KG	1.3
		Cyanide, Total	1.0 u	MG/KG	1.0
		Phosphate by IC	1.3	MG/KG	1.3
		Sulfate by IC	104	MG/KG	12.8
		~~Nitrate Nitrite~~	~~10.8~~	~~MG-N/KG~~	~~1.0~~
		Total Organic Carbon	283	MG/KG	283

9713516.1652

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9713516.1653

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

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 05/08/92
LABORATORY: Weston	CASE: 9112L619	SDG: 619
SAMPLES/MATRIX: B015N1, B015N3, B015N5, B015N7		
Soils		

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		~~X~~ Rostska
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

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.

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~~ 5/8/92

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? 5/8/92 ~~Yes~~ No ~~N/A~~

Has the laboratory properly identified and coded all TIC? 5/8/92 ~~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.

9713516.1659

COMMENTS (attach additional sheets as necessary):

The package did not include the sample prep sheet.

The package is missing the quant reports for the MSD. ~~The~~ Also the package appears to be incomplete - the last four pages are missing

i.e. MSD quant report
sample prep sheet
"End of Package" sheet

The absence of these pages does not affect the data and therefore no qualification is necessary.

Samples B01SN1 and B01SN3 were identified as field duplicates. All volatile results for both samples were non-detected. Therefore, the RPDs were not calculated.

6/26/97

9213516.1660
Holding Time Summary

pg 1 of 1

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	# Days
B015N1	001	S	91LVY217	12/02/91	N/A	12/10/91	8
B015N3	002	S	91LVY217	12/02/91	N/A	12/10/91	
B015N5	003	S	91LVY217	12/02/91	N/A	12/10/91	
B015N5	003 MS	S	91LVY217	12/02/91	N/A	12/10/91	
B015N5	003 MSD	S	91LVY217	12/02/91	N/A	12/10/91	
B015N7	004	S	91LVY217	12/03/91	N/A	12/10/91	7

LAB QC:

VBLK	MB1	S	91LVY217	N/A	N/A	12/10/91

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OSM DMO

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Calibration Summary 0000081 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: 9112L619

Instrument ID: 5100Y Calibration Date: 12/10/91 Time: 1030

Lab File ID: Y121002 Init. Calib. Date(s): 12/06/91 12/06/91

Matrix:(soil/water) SOIL 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
3	Chloromethane #	0.534	0.711	-33.1 # ✓ US
4	Bromomethane	0.748	0.838	-12.0
	Vinyl Chloride *	0.729	0.824	-13.0 * ✓
	Chloroethane	0.370	0.451	-21.9
	Methylene Chloride	0.974	1.068	-9.7
	Acetone	0.398	0.475	-19.3
	Carbon Disulfide	2.259	2.378	-5.3
	1,1-Dichloroethene *	0.976	1.061	-8.7 * ✓
	1,1-Dichloroethane #	1.766	1.979	-12.1 # ✓
	1,2-Dichloroethene (total)	1.161	1.263	-8.8
	Chloroform *	2.187	2.370	-8.4 * ✓
	1,2-Dichloroethane	1.633	1.747	-7.0
	2-Butanone	0.121	0.160	-32.2 US
	1,1,1-Trichloroethane	0.475	0.475	0.0
	Carbon Tetrachloride	0.469	0.438	6.6
	Vinyl Acetate	0.544	0.637	-17.1
	Bromodichloromethane	0.465	0.482	-3.7
	1,2-Dichloropropane *	0.283	0.321	-13.4 * ✓
	cis-1,3-Dichloropropene	0.406	0.424	-4.4
	Trichloroethene	0.405	0.415	-2.5
	Dibromochloromethane	0.480	0.439	8.5
	1,1,2-Trichloroethane	0.256	0.271	-5.9
	Benzene	0.710	0.800	-12.7
	Trans-1,3-Dichloropropene	0.410	0.430	-4.9
	Bromoform #	0.293	0.250	14.7 # ✓
	4-Methyl-2-pentanone	0.361	0.400	-10.8
	2-Hexanone	0.291	0.333	-14.4
	Tetrachloroethene	0.427	0.422	1.2
	1,1,2,2-Tetrachloroethane #	0.372	0.393	-5.6 # ✓
	Toluene *	0.527	0.548	-4.0 * ✓
	Chlorobenzene #	0.760	0.770	-1.3 # ✓
	Ethylbenzene *	0.332	0.327	1.5 * ✓
	Styrene	0.519	0.538	-3.7
	Xylene (total)	0.324	0.337	-4.0
	Toluene-d8	1.041	1.041	0.0
	Bromofluorobenzene	0.585	0.577	1.4
	1,2-Dichloroethane-d4	1.791	1.909	-6.6

5/8/92

Blank Summary 9713516.1662 0000093 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: SOIL Lab Sample ID: 91LVY217-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: Y121003

Level: (low/med) LOW Date Received: 12/10/91

% Moisture: not dec. 0 Date Analyzed: 12/10/91

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

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

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	3	J
67-64-1	Acetone	5	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

x10 = 30 ug/kg
x10 = 50 ug/kg

9713516.1663

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 05/08/92
LABORATORY: Weston	CASE: 9112L619	SDG: 619
SAMPLES/MATRIX: B015N1, B015N3, B015N5, B015N7/Soils		

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 yes 5/11/92	~~X~~ X		~~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		

9713516.1664

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)? except for Benzidine which is not on TCL list.	(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)

4.2. FIELD BLANKS

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

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

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

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

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

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

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

5.2 MATRIX SPIKE RECOVERY

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

Are MS/MSD recoveries within specification? see comments 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.

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.

9713516.1668

Holding Time Summary

pg 1 of 1

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	# of Days	ANALYSIS	# of Days
BO15N1	001	S	91LE1638	12/02/91	12/06/91	4	01/02/92	27
BO15N1	001 MS	S	91LE1638	12/02/91	12/06/91	4	01/02/92	27
BO15N1	001 MSD	S	91LE1638	12/02/91	12/06/91	4	01/02/92	27
BO15N3	002	S	91LE1638	12/02/91	12/06/91	4	01/02/92	27
BO15N5	003	S	91LE1638	12/02/91	12/06/91	4	01/02/92	27
BO15N7	004	S	91LE1638	12/03/91	12/06/91	3	01/02/92	27

LAB QC:

SBLK	MB1	S	91LE1638	N/A	12/06/91	01/02/92
SBLK	MB1 BS	S	91LE1638	N/A	12/06/91	01/02/92

Holding times were met.

4 FEB 1992 RECEIVED OSM DMC

Calibration Summary 9713546.1669 0000085 Pg 1 of 1

6C

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L619

Instrument ID: 4500V Calibration Date(s): 12/13/91 12/13/91

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = V121306 RRF50 = V121302
RRF80 = V121303 RRF120= V121304 RRF160= V121305

BH 1/14/92

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.440	1.541	1.470	1.520	1.484	1.491	2.7
2,4-Dinitrotoluene	0.361	0.394	0.380	0.394	0.357	0.377	4.7
Diethylphthalate	1.150	1.259	1.191	1.228	1.181	1.202	3.5
4-Chlorophenyl-phenylether	0.521	0.548	0.524	0.541	0.533	0.533	2.1
Fluorene	1.163	1.266	1.196	1.252	1.226	1.221	3.4
4-Nitroaniline		0.288	0.279	0.266	0.260	0.273	4.6
4,6-Dinitro-2-methylphenol		0.107	0.111	0.121	0.130	0.117	8.8
N-Nitrosodiphenylamine (1) *	0.577	0.595	0.569	0.603	0.636	0.596	4.4*
4-Bromophenyl-phenylether	0.189	0.195	0.185	0.199	0.210	0.196	5.0
Hexachlorobenzene	0.192	0.201	0.188	0.199	0.205	0.197	3.5
Pentachlorophenol *		0.092	0.097	0.107	0.122	0.104	12.7*
Phenanthrene	1.027	1.098	1.045	1.069	1.062	1.060	2.5
Anthracene	1.051	1.128	1.060	1.106	1.098	1.089	3.0
Di-n-Butylphthalate	1.306	1.356	1.256	1.341	1.328	1.317	3.0
Fluoranthene *	0.893	0.948	0.886	0.915	0.940	0.916	3.0*
Pyrene	1.537	1.750	1.726	1.876	1.745	1.727	7.0
Butylbenzylphthalate	0.755	0.847	0.826	0.884	0.828	0.828	5.7
3,3'-Dichlorobenzidine	0.381	0.362	0.336	0.315	0.334	0.346	7.5
Benzo(a)anthracene	1.167	1.241	1.190	1.220	1.204	1.204	2.3
Chrysene	1.064	1.140	1.070	1.137	1.109	1.104	3.3
bis(2-Ethylhexyl)phthalate	1.034	1.199	1.123	1.211	1.170	1.147	6.3
Di-n-Octyl phthalate *	1.987	2.217	2.170	2.242	2.070	2.137	5.0*
Benzo(b)fluoranthene	1.104	1.180	1.223	1.183	1.165	1.171	3.7
Benzo(k)fluoranthene	1.074	1.139	0.990	1.102	1.033	1.068	5.4
Benzo(a)pyrene *	0.988	1.033	0.983	1.026	0.998	1.006	2.2*
Indeno(1,2,3-cd)pyrene	0.929	1.009	0.988	1.133	1.049	1.022	7.4
Dibenzo(a,h)anthracene	0.768	0.822	0.816	0.938	0.885	0.846	7.8
Benzo(g,h,i)perylene	0.823	0.885	0.870	1.014	0.917	0.902	7.9
N-Nitrosodimethylamine	0.991	1.031	1.022	1.061	1.037	1.028	2.5
28 Benzidine	0.290	0.074	0.081	0.045	0.055	0.109	93.8
1,2-Diphenylhydrazine	0.884	0.976	0.990	1.053	1.147	1.010	9.7
Nitrobenzene-d5	0.348	0.366	0.355	0.370	0.366	0.361	2.5
2-Fluorobiphenyl	1.154	1.218	1.156	1.208	1.177	1.183	2.5
p-Terphenyl-d14	1.028	1.179	1.156	1.263	1.177	1.161	7.3
Phenol-d5	1.782	1.781	1.716	1.735	1.803	1.763	2.1
2-Fluorophenol	1.324	1.258	1.259	1.224	1.253	1.264	2.9
2,4,6-Tribromophenol	0.112	0.114	0.113	0.115	0.118	0.114	2.0

(1) Cannot be separated from Diphenylamine

FORM VI SV-2 01/89 Rev.

Benzidine is not on the TCL list, it is not reported with the samples and therefore no qualification is necessary. 5/11/92

9713516.1670 0000014 pg 1 of

Accuracy summary

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9112L619-001

MATRIX Spike - Sample No.: B015N1 Level:(low/med) LOW

No qualification necessary

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
Phenol	3490	0	2940	84	26- 9
2-Chlorophenol	3490	0	3150	90	25-10
1,4-Dichlorobenzene	1740	0	1440	83	28-10
N-Nitroso-Di-n-propylamine	1740	0	1470	84	41-12
1,2,4-Trichlorobenzene	1740	0	1540	88	38-10
4-Chloro-3-methylphenol	3490	0	3100	89	26-10
Acenaphthene	1740	0	1620	93	31-13
4-Nitrophenol	3490	0	2920	84	11-11
2,4-Dinitrotoluene	1740	0	1570	90 *	28- 8
Pentachlorophenol	3490	0	3620	104	17-10
Pyrene	1740	0	1540	88	35-14

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	3520	2850	81	3	35	26- 9
2-Chlorophenol	3520	3080	87	3	50	25-10
1,4-Dichlorobenzene	1760	1390	79	4	27	28-10
N-Nitroso-Di-n-propylamine	1760	1420	81	3	38	41-12
1,2,4-Trichlorobenzene	1760	1510	86	2	23	38-10
4-Chloro-3-methylphenol	3520	3030	86	3	33	26-10
Acenaphthene	1760	1560	89	4	19	31-13
4-Nitrophenol	3520	3000	85	1	50	11-11
2,4-Dinitrotoluene	1760	1510	86	4	47	28- 8
Pentachlorophenol	3520	3550	101	2	47	17-10
Pyrene	1760	1490	84	4	36	35-14

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 1 out of 22 outside limits

COMMENTS:

5/8/92

PRECISION DATA SUMMARY - FORM B-5

9112L619

SDG: 619	REVIEWER [illegible]	DATE: 6/26/91	PAGE 1 OF 1
COMMENTS: [illegible]			

COMPOUND	SAMPLE ID: 8015N1	SAMPLE ID: 8015N3	RPD	SAMPLES AFFECTED	QUALIFIER
Benzoic Acid	41 J	1800 u	200		
Di-n-butylphthalate	96 J	140 J	37		
bis(2-Ethylhexyl)phthalate	49 J	44 J	11.		

9713516.1672

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

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/19/97
LABORATORY: Lockton	CASE: 9112L619	SDG: 6.19
SAMPLES/MATRIX: B015N1, B015N3, B015N5, B015N7/B015S		

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

COMMENTS (attach additional sheets as necessary):

The surrogate (NBC) recovery for B0I5N2, B0I5N5 as well as the method blanks were not quantitated due to interference. Further cleanup should have been performed on these 4 extracts. The ~~contaminant~~ interference appears to be a laboratory contaminant since it is present in the method blanks as well.

These sample extracts were analyzed on one column only (quantitation column). Raw data for the confirmation column was not included in the data package. The samples in which compounds were detected could not be confirmed. Therefore, the respective compounds were rejected.

GPC cleanup was performed on these sample extracts. Therefore, the CRQLs have been multiplied by two.

Samples B0I9N1 and B0I9N3 were identified as field duplicates. Since the sample results were either ND or rejected, the RPDs were not calculated.

9213516.1680

Holding Time Summary

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Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015N1	001	S	91LE1652	12/02/91	12/10/91 8	12/23/91 13
B015N3	002	S	91LE1652	12/02/91	12/10/91	12/23/91
B015N5	003	S	91LE1652	12/02/91	12/10/91	12/23/91
B015N5	003 MS	S	91LE1652	12/02/91	12/10/91	12/23/91
B015N5	003 MSD	S	91LE1652	12/02/91	12/10/91	12/23/91
B015N7	004	S	91LE1652	12/03/91	12/10/91	12/23/91

LAB QC:

PBLK	MB1	S	91LE1652	N/A	12/10/91	12/24/91
PBLK	MB1 BS	S	91LE1652	N/A	12/10/91	12/23/91

All samples were extracted out of holding time. The sample results were qualified as estimated (UJ).

FEB 1992
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DMO

6/29/92

9213516.1681 Calibration Summary

0000018

Pg 1 of 4

Roy F. Weston, Inc. - Lionville Laboratory 12/26/91 11:38:13

EXTERNAL STANDARD

B015N1

SAMPLE: 12239103 .13 INST:03 VIAL: 0 SEQ NUMBER:013
TEST : 0608H DATE-TIME INJECTED : 12/23/91 17:13:39
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 12/26/91 11:38:13
METHOD: 03 / 03 REV #: 00102 ANALYST: MINDLINB SAMP RATE: 0.78
CLIENT ID: B015N1 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: 2250/2401
LAB ID: 9112L619-001 * : CONFIRMED ON COLUMN
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 1.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL		
				1.885	1	ALPHA-BHC			
001	115257	14877	V	2.353	1	GAMMA-BHC	0.001	in RTW	R
				2.607	1	BETA-BHC			
002	175265	14237	V	2.853	1	HEPTACHLOR	0.001	in RTW	R
				3.027	1	DELTA-BHC			
				3.407	1	ALDRIN			
003	1157377	90451	V	3.848					
004	307585	23942	V	4.643					
				4.916	1	HEPT. EPOXIDE			
005	116006	10578	V	5.130					
				5.435	1	G. CHLORDANE			
				5.902	1	A. CHLORDANE			
006	6714723	216558	V	6.001	1	ENDOSULFAN I	0.024	out RTW	
				6.899	1	4,4'-DDE			
				7.342	1	DIELDRIN			
007	60874	4016	V	7.535					
008	186326	9505	V	8.559					
				8.852	1	ENDRIN			
009	248172	9958	V	9.555					
				10.222	1	4,4'-DDD			
010	135820	5119	V	10.782	1	ENDOSULFAN II	0.001	out RTW	
011	270706	9420	V	12.160	1	4,4'-DDT	0.003	in RTW	R
012	67020	1897	V	12.996					
				13.551	1	ENDRIN ALDEHYDE			
013	184179	6080	V	14.528					
014	357140	9831	V	15.535					
				16.228	1	ENDO. SULFATE			
015	538874	11347	V	18.710					
016	16680141	302438	V	20.871	1	DBC	0.150	* ✓	
				22.588	1	METHOXYCHLOR			
017	222441	2840	V	24.011					
018	28442	375		28.172					
	33405			8.559		AROCHLOR-1254	0.017	* ✓ in RTW (✓)	R

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Calibration Summary

Roy F. Weston, Inc. - Lionville Laboratory 12/26/91 11:38:56

EXTERNAL STANDARD

SAMPLE: 12239103 .14 INST:03 VIAL: 0 SEQ NUMBER:014
TEST : 0608H DATE-TIME INJECTED : 12/23/91 17:46:39
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 12/26/91 11:38:56
METHOD: 03 / 03 REV #: 00102 ANALYST: MINDLINB SAMP RATE: 0.78
CLIENT ID: B015N3 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: 2250/2401
LAB ID: 9112L619-002 * : CONFIRMED ON COLUMN
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 1.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL
001	71586	17979	V	1.480			
				1.885	1	ALPHA-BHC	
002	561574	85854	V	2.152			
003	34459	5984	V	2.337	1	GAMMA-BHC	0.000 —
				2.607	1	BETA-BHC	
				2.831	1	HEPTACHLOR	
004	292090	16569	V	2.882			
				3.027	1	DELTA-BHC	
				3.407	1	ALDRIN	
005	538441	29944	V	3.842			
006	147252	8364	V	4.632			
				4.916	1	HEPT. EPOXIDE	
007	253715	19222	V	5.114			
				5.435	1	G. CHLORDANE	
008	10783371	349351	V	5.951	1	A. CHLORDANE	0.040 — in RTL R
				6.088	1	ENDOSULFAN I	
				6.899	1	4,4'-DDE	
				7.342	1	DIELDRIN	
009	521766	3330	V	8.153			
				8.852	1	ENDRIN	
				10.222	1	4,4'-DDD	
				10.627	1	ENDOSULFAN II	
010	102609	2464	V	11.536			
011	28751	585	V	12.261	1	4,4'-DDT	0.000 —
				13.551	1	ENDRIN ALDEHYDE	
012	471078	10327	V	15.518			
				16.228	1	ENDO. SULFATE	
013	444524	9449	V	18.779			
014	19374816	351581	V	20.865	1	DBC RT shift	0.175 *✓ I
				22.588	1	METHOXYCHLOR	
015	65062	656		28.229			

6/29/0

9713516.1683 0000024

Calibration Summary

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Roy F. Weston, Inc. - Lionville Laboratory 12/26/91 11:39:54

EXTERNAL STANDARD

SAMPLE: 12239103 .15 INST:03 VIAL: 0 SEQ NUMBER:015
TEST : 0608HT DATE-TIME INJECTED : 12/23/91 18:19:12
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 12/26/91 11:39:54
METHOD: 03 / 03 REV #: 00102 ANALYST: MINDLINB SAMP RATE: 0.78
CLIENT ID: B015N5 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: 2250/2401
LAB ID: 9112L619-003 * : CONFIRMED ON COLUMN
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 1.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL
001	109820	23443	V	1.493			
				1.885	1	ALPHA-BHC	
002	891190	125875	V	2.146			
				2.329	1	GAMMA-BHC	
				2.607	1	BETA-BHC	
003	183351	14780	V	2.838	1	HEPTACHLOR	0.001 – in RW ✓ R
				3.027	1	DELTA-BHC	
				3.407	1	ALDRIN	<DL
004	2074887	144991	V	3.833			
005	203906	10476	V	4.627			
				4.916	1	HEPT. EPOXIDE	
006	81562	6759	V	5.080			
				5.435	1	G. CHLORDANE	
				5.902	1	A. CHLORDANE	
007	3455237	80539	V	6.008	1	ENDOSULFAN I	0.009 out RW out RW
				6.899	1	4,4'-DDE	
				7.342	1	DIELDRIN	
008	54280	3688	V	8.117			
				8.852	1	ENDRIN	
009	696153	7268	V	10.092	1	4,4'-DDD	0.002 out out RW
				10.627	1	ENDOSULFAN II	
010	334488	8298	V	12.040			
				12.253	1	4,4'-DDT	
				13.551	1	ENDRIN ALDEHYDE	
011	111019	3808	V	14.537			
012	302907	8684	V	15.456			
				16.228	1	ENDO. SULFATE	
013	326723	7446	V	18.754			
014	21192400	386260	V	20.808	1	DBC	0.192 * ✓
				22.588	1	METHOXYCHLOR	
015	2047835	29846		25.732			

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Calibration Chromatogram

Roy F. Weston, Inc. - Lionville Laboratory 12/26/91 11:44:28

EXTERNAL STANDARD

SAMPLE: 12239103 .20 INST:03 VIAL: 0 SEQ NUMBER:020
TEST : 0608H DATE-TIME INJECTED : 12/23/91 21:30:46
COLLECTION TIME : 29.98 DATE-TIME PROCESSED : 12/26/91 11:44:28
METHOD: 03 / 03 REV #: 00102 ANALYST: MINDLINB SAMP RATE: 0.78
CLIENT ID: B015N7 SAMPLE VOL: 3.0 ul
CLIENT: WESTINGHOUSE HANFORD COLUMN TYPE: 2250/2401
LAB ID: 9112L619-004 * : CONFIRMED ON COLUMN
SAMPLE WT : % MOISTURE : DILUTION FACTOR : 1.0000

PK NO	PEAK AREA	PEAK HEIGHT	BL	RT MINUTES	GR #	COMPONENT NAME	HEIGHT CONC NG/UL	
001	992330	83131	V	1.769				
				1.885	1	ALPHA-BHC		
002	4383207	593181	V	2.151				
				2.329	1	GAMMA-BHC		
				2.607	1	BETA-BHC		
				2.831	1	HEPTACHLOR		
				3.027	1	DELTA-BHC		
003	54449	8133	V	3.454	1	ALDRIN	0.001 —	out RTW
004	4165685	258144	V	3.835				
005	333178	16609	V	4.621				
				4.916	1	HEPT. EPOXIDE		
006	33503	2497	V	5.368	1	G. CHLORDANE	0.000 —	
007	59950	5380	V	5.755				
				5.902	1	A. CHLORDANE		
				6.088	1	ENDOSULFAN I		
008	678466	40506	V	6.307				
009	388486	4161	V	6.868	1	4,4'-DDE	0.000 —	
				7.342	1	DIELDRIN		
010	1123035	8914	V	8.530				
				8.852	1	ENDRIN		
				10.222	1	4,4'-DDD		
				10.627	1	ENDOSULFAN II		
011	923827	20233	V	12.074	1	4,4'-DDT	0.006 —	out RTW
				13.551	1	ENDRIN ALDEHYDE		
012	169091	5786	V	14.538				
013	420558	12667	V	15.496				
				16.228	1	ENDO. SULFATE		
014	126272	3178	V	18.857				
015	15455117	275436	V	20.856	1	DBC	0.137	* ✓
				22.588	1	METHOXYCHLOR		
016	2481677	34350		25.827				

9713516.1685

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/29/92
LABORATORY: Weston	CASE: 91121619	SDG: 6-9
SAMPLES/MATRIX: B015N1, B015N3, B015N5, B015N7/Soils		

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 $\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.

9713516.1690

COMMENTS (attach additional sheets as necessary):

Samples B015N1 and B015N2 were identified as field duplicates. The range of the RPDs are ~~were~~ 1 to 200%.

Holding 9713516.1691 Summary

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FEB 1992 RECEIVED OSM DMO

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015N1						
SILVER, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92 50
SILVER, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
SILVER, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
ALUMINUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
ALUMINUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
ALUMINUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
ARSENIC, TOTAL	001	S	92L0026	12/02/91	01/03/92	01/06/92 35
ARSENIC, TOTAL	001 REP	S	92L0026	12/02/91	01/03/92	01/06/92
ARSENIC, TOTAL	001 MS	S	92L0026	12/02/91	01/03/92	01/06/92
BARIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92 50
BARIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
BARIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
BERYLLIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
BERYLLIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
BERYLLIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
BISMUTH, TOTAL	001	S	92L0027	12/02/91	01/03/92	02/08/92 68
BISMUTH, TOTAL REP	001 REP	S	92L0027	12/02/91	01/03/92	02/08/92
BISMUTH, TOTAL SPIKE	001 MS	S	92L0027	12/02/91	01/03/92	02/08/92
CALCIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92 50
CALCIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
CALCIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
CADMIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
CADMIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
CADMIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
COBALT, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
COBALT, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
COBALT, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
CHROMIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
CHROMIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
CHROMIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
COPPER, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
COPPER, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
COPPER, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
IRON, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
IRON, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
IRON, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
MERCURY, TOTAL	001	S	91C0368	12/02/91	12/30/91	12/31/91 2

6/26/9

9213516.1692

Holding Time Summary

pg 2 of 4

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 REP	S	91C0368	12/02/91	12/30/91	12/31/91 29
MERCURY, TOTAL	001 MS	S	91C0368	12/02/91	12/30/91	12/31/91
POTASSIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92 50
POTASSIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
POTASSIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
MAGNESIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
MAGNESIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
MAGNESIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
MANGANESE, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
MANGANESE, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
MANGANESE, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
SODIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
SODIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
SODIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
NICKEL, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
NICKEL, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
NICKEL, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
LEAD, TOTAL	001	S	92L0026	12/02/91	01/03/92	01/06/92 35
LEAD, TOTAL	001 REP	S	92L0026	12/02/91	01/03/92	01/06/92
LEAD, TOTAL	001 MS	S	92L0026	12/02/91	01/03/92	01/06/92
ANTIMONY, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92 50
ANTIMONY, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
ANTIMONY, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
SELENIUM, TOTAL	001	S	92L0026	12/02/91	01/03/92	01/06/92 35
SELENIUM, TOTAL	001 REP	S	92L0026	12/02/91	01/03/92	01/06/92
SELENIUM, TOTAL	001 MS	S	92L0026	12/02/91	01/03/92	01/06/92
THALLIUM, TOTAL	001	S	92L0026	12/02/91	01/03/92	01/05/92 34
THALLIUM, TOTAL	001 REP	S	92L0026	12/02/91	01/03/92	01/05/92
THALLIUM, TOTAL	001 MS	S	92L0026	12/02/91	01/03/92	01/05/92
VANADIUM, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92 50
VANADIUM, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
VANADIUM, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
ZINC, TOTAL	001	S	92L0027	12/02/91	01/03/92	01/21/92
ZINC, TOTAL	001 REP	S	92L0027	12/02/91	01/03/92	01/21/92
ZINC, TOTAL	001 MS	S	92L0027	12/02/91	01/03/92	01/21/92
B015N3						
SILVER, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92 50
ALUMINUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92

9713516.1693 Holding Time Summary pg 2 of 4

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	002	S	92L0026	12/02/91	01/03/92	01/06/92 35
BARIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92 50
BERYLLIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
BISMUTH, TOTAL	002	S	92L0027	12/02/91	01/03/92	02/08/92 68
CALCIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92 50
CADMIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
COBALT, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
CHROMIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
COPPER, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
IRON, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
MERCURY, TOTAL	002	S	91C0368	12/02/91	12/30/91	12/31/91 29
POTASSIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92 50
MAGNESIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
MANGANESE, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
SODIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
NICKEL, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
LEAD, TOTAL	002	S	92L0026	12/02/91	01/03/92	01/06/92 35
ANTIMONY, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92 50
SELENIUM, TOTAL	002	S	92L0026	12/02/91	01/03/92	01/06/92 35
THALLIUM, TOTAL	002	S	92L0026	12/02/91	01/03/92	01/05/92 34
VANADIUM, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92 50
ZINC, TOTAL	002	S	92L0027	12/02/91	01/03/92	01/21/92
B015N5						
SILVER, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92 50
ALUMINUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
ARSENIC, TOTAL	003	S	92L0026	12/02/91	01/03/92	01/06/92 35
BARIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92 50
BERYLLIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
BISMUTH, TOTAL	003	S	92L0027	12/02/91	01/03/92	02/08/92 68
CALCIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92 50
CADMIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
COBALT, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
CHROMIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
COPPER, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
IRON, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
MERCURY, TOTAL	003	S	91C0368	12/02/91	12/30/91	12/31/91 29
POTASSIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92 50
MAGNESIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92

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Holding Time Summary pg 4 of 4

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MANGANESE, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92 50
SODIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
NICKEL, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
LEAD, TOTAL	003	S	92L0026	12/02/91	01/03/92	01/06/92 35
ANTIMONY, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92 50
SELENIUM, TOTAL	003	S	92L0026	12/02/91	01/03/92	01/06/92 35
THALLIUM, TOTAL	003	S	92L0026	12/02/91	01/03/92	01/05/92 34
VANADIUM, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92 50
ZINC, TOTAL	003	S	92L0027	12/02/91	01/03/92	01/21/92
B015N7						
SILVER, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92 49
ALUMINUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
ARSENIC, TOTAL	004	S	92L0026	12/03/91	01/03/92	01/06/92 34
BARIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92 49
BERYLLIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
BISMUTH, TOTAL	004	S	92L0027	12/03/91	01/03/92	02/08/92 67
CALCIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92 49
CADMIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
COBALT, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
CHROMIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
COPPER, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
IRON, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
MERCURY, TOTAL	004	S	91CC368	12/03/91	12/30/91	12/31/91 28
POTASSIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92 49
MAGNESIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
MANGANESE, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
SODIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
NICKEL, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92
LEAD, TOTAL	004	S	92L0026	12/03/91	01/03/92	01/06/92 34
ANTIMONY, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92 49
SELENIUM, TOTAL	004	S	92L0026	12/03/91	01/03/92	01/06/92 34
THALLIUM, TOTAL	004	S	92L0026	12/03/91	01/03/92	01/05/92 33
VANADIUM, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92 49
ZINC, TOTAL	004	S	92L0027	12/03/91	01/03/92	01/21/92

LAB QC:

SILVER LABORATORY	LC1 BS	S	92L0027	N/A	01/03/92	01/21/92

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Blank Summary 0000037 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.: CLP619

Preparation Blank Matrix (soil/water): SOIL

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
			5x		5x				5x		
Aluminum	91.0	U	91.0	U	91.0	U	91.0	U	18.200	U	P
Antimony	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	16.0	U	16.0	U	16.0	U	16.0	U	3.200	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	.200	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	.600	U	P
Calcium	63.0	U	335.5 67.1	B	406 81.2	B	159.4	B	207 41.400	B	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	46.0	U	46.0	U	46.0	U	46.0	U	92 18.400	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	87.0	U	87.0	U	87.0	U	91.4	B	17.400	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.050	U	CV
Nickel	11.0	U	11.0	U	11.0	U	11.0	U	2.200	U	P
Potassium	862.0	U	862.0	U	862.0	U	862.0	U	172.400	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Sodium	110.0	U	110.0	U	719.5 143.9	B	110.0	U	22.000	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Vanadium	8.0	U	42.5 8.5	B	56.0 11.2	B	10.4	B	1.600	U	P
Zinc	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Cyanide	20.0	U	20.0	U	20.0	U			1.000	U	C

FORM III - IN 03/90

Assoc. w/ B015 1 and B015 3

Assoc. w/ B015M5 & B015M7

Sample concentrations are higher than 5x the prep. Blank concentration Therefore, no qual is required.

All sample concentrations are higher than 5x the respective ccB concentration. Therefore,

6/27/

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Accuracy Summary 0000034 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015N1S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP619

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 95.6

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	73.7000		4.0060	U	102.50	71.9	N	P
Arsenic	75-125	7.9000		1.3000	B	8.00	82.5		F
Barium	75-125	408.8000		70.7000		410.00	82.5		P
Beryllium	75-125	8.7000		.4400	B	10.20	81.0		P
Cadmium	75-125	8.4000		.4600	B	10.20	77.8		P
Calcium									NR
Chromium	75-125	39.6000		6.7000		41.00	80.4		P
Cobalt	75-125	93.0000		8.2000	B	102.50	82.7		P
Copper	75-125	51.5000		10.9000		51.30	79.2		P
Iron									NR
Lead	75-125	7.4000		3.2000		4.00	104.6		F
Magnesium									NR
Manganese	75-125	329.3999		266.8000		102.50	61.0	N	P
Mercury	75-125	.5430		.0523	U	.52	104.4		CV
Nickel	75-125	91.3000		7.5000	B	102.50	81.8		P
Potassium									NR
Selenium	75-125	1.0000		.3942	U	2.00	50.0	N	F
Silver	75-125	9.4000		1.7000	B	10.20	75.4		P
Sodium									NR
Thallium	75-125	8.9000		.3942	U	10.10	88.4		F
Vanadium	75-125	111.4000		26.4000		102.50	82.9		P
Zinc	75-125	113.1000		30.7000		102.50	80.4		P
Cyanide	75-125	5.5940		1.0460	U	5.23	~~102.0~~ 107		C

Comments: MS %R = $\frac{SSR - SR}{SA} \times 100$

MS %R CN = $\frac{5.5940 - 0}{5.23} \times 100 = 107\%$

FORM V (Part 1) - IN 03/90

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Precision Summary 0000036 Pg 1 of 1

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B015N1D

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP619

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

% Solids for Sample: 95.6 % Solids for Duplicate: 95.6

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
Aluminum		4720.6020		4714.3010		.1		P
Antimony		4.0060	U	3.9980	U			P
Arsenic		1.3000	B	1.7000	B	26.7		F
Barium	40.1	70.7000		181.7000		88.0	*	P
Beryllium		.4400	B	.3600	B	20.2		P
Cadmium		.6009	U	.5997	U			P
Calcium		7032.8010		7187.3980		2.2		P
Chromium	2.0	6.7000		6.0000		11.3		P
Cobalt		8.2000	B	7.4000	B	10.2		P
Copper	5.0	10.9000		10.5000		3.0		P
Iron		13974.8000		13542.1000		3.1		P
Lead		3.2000		4.2000		27.0		F
Magnesium	1001.5	3404.8000		3522.3000		3.4		P
Manganese		266.8000		256.3000		4.0		P
Mercury		.0523	U	.0523	U			CV
Nickel	8.0	7.5000	B	8.0000		6.3		P
Potassium	1001.5	1074.7000		1147.0000		6.5		P
Selenium		.3942	U	.4088	U			F
Silver		2.0030	U	1.9990	U			P
Sodium		186.4000	B	266.8999	B	35.5		P
Thallium		.3942	U	.4088	U			F
Vanadium	10.0	26.4000		25.7000		2.5		P
Zinc		30.7000		28.7000		6.8		P
Cyanide		5.4560	U	1.0460	U			C

FORM VI - IN

03/90

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9112L619	REVIEWER: [illegible]	DATE: 6/19/91	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spikes				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B015N1	Selenium	69.2	B015N1	UJ
B015N3	↓	65.0	B015N3	UJ
B015N5		[illegible]	[illegible]	[illegible]
B015N7	↓	72.0	B015N7	UJ
B015N3	Thallium	84.5	B015N3	UJ

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PRECISION DATA SUMMARY - FORM B-5

SDG: 9112L419	REVIEWER [illegible]	DATE: 6/29/92	PAGE 1 OF 2

COMMENTS: Field Duplicate RPDs

COMPOUND	SAMPLE ID: B015N1	SAMPLE ID: B015N3	RPD	SAMPLES AFFECTED	QUALIFIER
Aluminum	4720	4070	15		
Antimony	4.01 UJ	3.87 UJ	NC		
Arsenic	1.30B	1.40B	7		
Barium	70.70 J	60.10 J	16		
Beryllium	0.44 B	0.43B	2		
Cadmium	0.60U	2.00	200		
Calcium	7030	7090	1		
Chromium	6.70	5.30	23		
Cobalt	8.20B	6.70B	20		
Copper	10.90	10.10	8		
Iron	14000	12300	13		
Lead	3.20	3.60	12		
Magnesium	3400	3060	11		
Manganese	26.1 J	23.1 J	13		
Mercury	0.05 UJ	0.05 UJ	NC		
Nickel	7.50B	6.40B	16		
Potassium	1070	852 B	23		

NC=Not Calculated

PRECISION DATA SUMMARY - FORM B-5

SDG: 9113119	REVIEWER [illegible]	DATE: 6/29/97	PAGE 2 OF 2

COMMENTS: Field Duplicate RPDs

COMPOUND	SAMPLE ID: B015M1	SAMPLE ID: B015M3	RPD	SAMPLES AFFECTED	QUALIFIER
Selenium	0.39 UJ	0.41 UJ	NC		
Silver	2.00 U	1.94 U	NC		
Cadmium	186 B	171 B	8		
Thallium	0.39 U	0.41 U	NC		
Vanadium	26.4	21.9	19		
Zinc	30.7	30.1	2		
Beryllium	1.15 U	1.15 U	NC		
Bismuth	30.0 U	29.1 U	NC		

NC - Not Calculated

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-ZP-1	REVIEWER: [illegible]	DATE: 6/29/92
LABORATORY: Weston	CASE: 91126619	SDG: 619
SAMPLES/MATRIX: B015N1, B015N3, B015N5, B015N7/ Soils		

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		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.

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COMMENTS (attach additional sheets as necessary):

Samples B015N1 and B015N3 were identified as field duplicates. The RPDs range from 0 to 188%.

PRECISION DATA SUMMARY - FORM B-5

9112L619

SDG: 619	REVIEWER [illegible]	DATE: 6/29/92	PAGE 1 OF 1
COMMENTS: Field Duplicate RPDs			

COMPOUND	SAMPLE ID: B0151L1	SAMPLE ID: B0151L5	RPD	SAMPLES AFFECTED	QUALIFIER
Percent Solids	95.6	~~95.0~~ 95.0	1		
Chloride by IC	2.4	2.3	4		
Fluoride by IC	1.7	1.6	6		
Nitrite by IC	1.3 uJ	1.3 uJ	NC		
Nitrate by IC	11.1 J	11.2 J	Ø		
Cyanide	1.0 u	1.1 u	NC		
Phosphate by IC	1.6 J	1.6 J	Ø		
Sulfate by IC	19.8	20.2	2		
Nitrate+Nitrite	12.8 R	13.4 R	5		
TOC	17.32	0.5326	188		

9713516.1707

Holding Time Summary pg 1 of 2

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B015N1							
% SOLIDS	001	S	91L%S253	12/02/91	12/10/91	12/11/91	9
% SOLIDS	001 REP	S	91L%S253	12/02/91	12/10/91	12/11/91	
CHLORIDE BY IC	001	S	91LICA82	12/02/91	12/12/91	12/12/91	10
CHLORIDE BY IC	001 REP	S	91LICA82	12/02/91	12/12/91	12/12/91	
CHLORIDE BY IC	001 MS	S	91LICA82	12/02/91	12/12/91	12/12/91	
CHLORIDE BY IC	001 MSD	S	91LICA82	12/02/91	12/12/91	12/12/91	
FLUORIDE BY IC	001	S	91LICA82	12/02/91	12/12/91	12/12/91	
FLUORIDE BY IC	001 REP	S	91LICA82	12/02/91	12/12/91	12/12/91	
FLUORIDE BY IC	001 MS	S	91LICA82	12/02/91	12/12/91	12/12/91	
FLUORIDE BY IC	001 MSD	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRITE BY IC	001	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRITE BY IC	001 REP	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRITE BY IC	001 MS	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRITE BY IC	001 MSD	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRATE BY IC	001	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRATE BY IC	001 REP	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRATE BY IC	001 MS	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRATE BY IC	001 MSD	S	91LICA82	12/02/91	12/12/91	12/12/91	
TOTAL CYANIDE	001	S	91LC371	12/02/91	12/13/91	12/13/91	11
TOTAL CYANIDE	001 REP	S	91LC371	12/02/91	12/13/91	12/13/91	
TOTAL CYANIDE	001 MS	S	91LC371	12/02/91	12/13/91	12/13/91	
TOTAL CYANIDE	001 MSD	S	91LC371	12/02/91	12/13/91	12/13/91	
PHOSPHATE BY IC	001	S	91LICA82	12/02/91	12/12/91	12/12/91	10
PHOSPHATE BY IC	001 REP	S	91LICA82	12/02/91	12/12/91	12/12/91	
PHOSPHATE BY IC	001 MS	S	91LICA82	12/02/91	12/12/91	12/12/91	
PHOSPHATE BY IC	001 MSD	S	91LICA82	12/02/91	12/12/91	12/12/91	
SULFATE BY IC	001	S	91LICA82	12/02/91	12/12/91	12/12/91	
SULFATE BY IC	001 REP	S	91LICA82	12/02/91	12/12/91	12/12/91	
SULFATE BY IC	001 MS	S	91LICA82	12/02/91	12/12/91	12/12/91	
SULFATE BY IC	001 MSD	S	91LICA82	12/02/91	12/12/91	12/12/91	
NITRATE NITRITE	001	S	91LNC264	12/02/91	12/17/91	12/18/91	16
NITRATE NITRITE	001 REP	S	91LNC264	12/02/91	12/17/91	12/18/91	
NITRATE NITRITE	001 MS	S	91LNC264	12/02/91	12/17/91	12/18/91	
NITRATE NITRITE	001 MSD	S	91LNC264	12/02/91	12/17/91	12/18/91	
TOTAL ORGANIC CARBON	001	S	91LOM069	12/02/91	12/19/91	12/27/91	25
SUB-OUT TEST FOR SUB	001	S		12/02/91			
B015N3							
% SOLIDS	002	S	91L%S253	12/02/91	12/10/91	12/11/91	9

9713516.1708
Holding Time Summary

Pg 2 of 2

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

DATE RECEIVED: 12/05/91 RFW LOT # :9112L619

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	91LICA82	12/02/91	12/12/91	12/12/91 10
FLUORIDE BY IC	002	S	91LICA82	12/02/91	12/12/91	12/12/91
NITRITE BY IC	002	S	91LICA82	12/02/91	12/12/91	12/12/91
NITRATE BY IC	002	S	91LICA82	12/02/91	12/12/91	12/12/91
TOTAL CYANIDE	002	S	91LC371	12/02/91	12/13/91	12/13/91 11
PHOSPHATE BY IC	002	S	91LICA82	12/02/91	12/12/91	12/12/91 10
SULFATE BY IC	002	S	91LICA82	12/02/91	12/12/91	12/12/91
NITRATE NITRITE	002	S	91LNC264	12/02/91	12/17/91	12/18/91 16
TOTAL ORGANIC CARBON	002	S	91LOM069	12/02/91	12/19/91	12/27/91 25
SUB-OUT TEST FOR SUB	002	S		12/02/91		
B015N5						
% SOLIDS	003	S	91L%S253	12/02/91	12/10/91	12/11/91 9
CHLORIDE BY IC	003	S	91LICA82	12/02/91	12/12/91	12/12/91 10
FLUORIDE BY IC	003	S	91LICA82	12/02/91	12/12/91	12/12/91
NITRITE BY IC	003	S	91LICA82	12/02/91	12/12/91	12/12/91
NITRATE BY IC	003	S	91LICA82	12/02/91	12/12/91	12/12/91
TOTAL CYANIDE	003	S	91LC371	12/02/91	12/13/91	12/13/91 11
PHOSPHATE BY IC	003	S	91LICA82	12/02/91	12/12/91	12/12/91 10
SULFATE BY IC	003	S	91LICA82	12/02/91	12/12/91	12/12/91
NITRATE NITRITE	003	S	91LNC264	12/02/91	12/17/91	12/18/91 16
TOTAL ORGANIC CARBON	003	S	91LOM069	12/02/91	12/19/91	12/27/91 25
SUB-OUT TEST FOR SUB	003	S		12/02/91		
B015N7						
% SOLIDS	004	S	91L%S253	12/03/91	12/10/91	12/11/91 8
CHLORIDE BY IC	004	S	91LICA82	12/03/91	12/12/91	12/12/91 9
FLUORIDE BY IC	004	S	91LICA82	12/03/91	12/12/91	12/12/91
NITRITE BY IC	004	S	91LICA82	12/03/91	12/12/91	12/12/91
NITRATE BY IC	004	S	91LICA82	12/03/91	12/12/91	12/12/91
TOTAL CYANIDE	004	S	91LC371	12/03/91	12/13/91	12/13/91 10
PHOSPHATE BY IC	004	S	91LICA82	12/03/91	12/12/91	12/12/91 9
SULFATE BY IC	004	S	91LICA82	12/03/91	12/12/91	12/12/91
NITRATE NITRITE	004	S	91LNC264	12/03/91	12/17/91	12/18/91 15
TOTAL ORGANIC CARBON	004	S	92LTZ001	12/03/91	01/08/92	01/09/92 37
SUB-OUT TEST FOR SUB	004	S		12/03/91		

LAB QC:

CHLORIDE BY IC	MB1	S	91LICA82	N/A	12/12/91	12/12/91

9713516.1709

APPENDIX G

DATA VALIDATION DOCUMENTATION

SDG: 9112L661

SAMPLE: B015N9

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.

9713516.1711

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9713516.1712

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L661	REVIEWER: [illegible]	DATE: 6/23/92	PAGE 1 OF 5
COMMENTS: VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
2-Butanone	R	B015N9	ICV RRF <0.05 CCV RRF <0.05
Acetone	u	B015N9	present in blank

9713516.1713

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91121661	REVIEWER: [illegible]	DATE: 6/23/92	PAGE 2 OF 5
COMMENTS: Semi-VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
2,4-Dimethylphenol	UJ	B015N9	CC - 8072596
3-Nitroaniline	UJ	↓	↓
Pyrene through indeno(1,2,3-cd)pyrene	UJ	B015N9	FS chrysene-d12 & Dec-ang-d12 below lower limit
			as per summary
Aldol Condensate	R	B015N9	lab contaminant

9713516.1714

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L661	REVIEWER: [illegible]	DATE: 6/25/92	PAGE 3 OF 5
COMMENTS: Pest/PCB			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
All Pest/PCB TCL compounds	UJ	8015N9	Extracted out of holding time

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L661	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 4 OF 5
COMMENTS: metals			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Antimony	UJ	B015N9	MS %R < 75%
Lead	J	↓	↓
Nickel	J	↓	↓
Cyanide	UJ	↓	↓
Aluminum	J	B015N9	ICP Serial Dil'n out of control limit
Calcium	J	↓	↓
Iron	J	↓	↓
Magnesium	J	↓	↓
Manganese	J	↓	↓
Sodium	J	↓	↓
Lead	none - analyzed by MSA	B015N9	GFAA Spike out of control limit

9713516.1716

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L661	REVIEWER: [illegible]	DATE: 6/29/93	PAGE 5 OF 5
COMMENTS: Inorganic Chemistry			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Nitrate	J	B01SN9	Analyzed out of holding time
Phosphate	J	↓	↓
Nitrate + Nitrite	already Rejected no qualifier qual DE 6/24/93	↓	↓
Nitrate + nitrite	R	B01SN9	Discrepancy with ionic data
Cyanide	J	B01SN9	MS % R < 75%

9713516.1717

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.1718 0000017

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 27.0-29.5

B015N9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L661-001

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

Lab File ID: 0121112

Level: (low/med) LOW

Date Received: 12/07/91

% Moisture: not dec. 10

Date Analyzed: 12/11/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	6	U
67-64-1	Acetone	29	~~B~~ U
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
~~78-93-3~~	~~2-Butanone~~	~~11~~	~~U~~ R
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

FORM 1 V-1 12/88 Rev.

9713516.1719 0000019

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 27.0-29.5

B015N9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L661-001

Sample wt/vol: 30.6 (g/mL) G

Lab File ID: S010308

Level: (low/med) LOW

Date Received: 12/07/91

% Moisture: not dec. 5 dec.

Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/03/92

GPC Cleanup: (Y/N) N pH: 7.3

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
100-51-6	Benzyl alcohol	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	bis(2-Chloroisopropyl)ether	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	~~U~~
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U

6/23/9

9713516.1720 0000020

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 27.0-29.5

BO15N9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L661-001

Sample wt/vol: 30.6 (g/mL) G Lab File ID: S010308

Level: (low/med) LOW Date Received: 12/07/91

% Moisture: not dec. 5 dec. Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/03/92

GPC Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
84-74-2	Di-n-Butylphthalate	51	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	680	U
56-55-3	Benzo(a)anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)phthalate	340	U
117-84-0	Di-n-Octyl phthalate	340	U
205-99-2	Benzo(b)fluoranthene	340	U
207-08-9	Benzo(k)fluoranthene	340	U
50-32-8	Benzo(a)pyrene	340	U
193-39-5	Indeno(1,2,3-cd)pyrene	340	U
53-70-3	Dibenzo(a,h)anthracene	340	U
191-24-2	Benzo(g,h,i)perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

9713516.1721 0000021

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-42-4 27.0-29.5
B015N9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L661-001

Sample wt/vol: 30.6 (g/mL) G Lab File ID: S010308

Level: (low/med) LOW Date Received: 12/07/91

% Moisture: not dec. 5 dec. Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/03/92

GPC Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	5.83	200	JA

R

FORM 1 SV-TIC 12/88 Rev.

6/23/9

9713516.1722 0000015

ID

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46A 27.0-29.5

BO15N9

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L661-001

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

Lab File ID: 01089213.13

Level: (low/med) LOW

Date Received: 12/07/91

% Moisture: not dec. 10 dec.

Date Extracted: 12/16/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/09/92

GPC Cleanup: (Y/N) Y pH: 7.3

Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
319-84-6	Alpha-BHC	18 ~~8.8~~	U	
319-85-7	Beta-BHC	18 ~~8.8~~	U	
319-86-8	Delta-BHC	18 ~~8.8~~	U	
58-89-9	gamma-BHC (Lindane)	18 ~~8.8~~	U	
76-44-8	Heptachlor	18 ~~8.8~~	U	
309-00-2	Aldrin	18 ~~8.8~~	U	
1024-57-3	Heptachlor epoxide	18 ~~8.8~~	U	
959-98-8	Endosulfan I	18 ~~8.8~~	U	
60-57-1	Dieldrin	36 ~~18~~	U	
72-55-9	4,4'-DDE	36 ~~18~~	U	
72-20-8	Endrin	36 ~~18~~	U	
33213-65-9	Endosulfan II	36 ~~18~~	U	
72-54-8	4,4'-DDD	36 ~~18~~	U	
1031-07-8	Endosulfan sulfate	36 ~~18~~	U	
50-29-3	4,4'-DDT	36 ~~18~~	U	
72-43-5	Methoxychlor	180 ~~88~~	U	
53494-70-5	Endrin ketone	36 ~~18~~	U	
5103-71-9	alpha-Chlordane	180 ~~88~~	U	
5103-74-2	gamma-Chlordane	180 ~~88~~	U	
8001-35-2	Toxaphene	360 180	U	
12674-11-2	Aroclor-1016	180 ~~88~~	U	
11104-28-2	Aroclor-1221	180 ~~88~~	U	
11141-16-5	Aroclor-1232	180 ~~88~~	U	
53469-21-9	Aroclor-1242	180 ~~88~~	U	
12672-29-6	Aroclor-1248	180 ~~88~~	U	
11097-69-1	Aroclor-1254	360 ~~180~~	U	
11096-82-5	Aroclor-1260	360 ~~180~~	U	

DS 1-15-92

6/25/92 6/25/92

FORM 1 PEST 12/88 Rev.

6/25/92

9713516.1723 0000016

U.S. EPA - CLP

6/6/92 EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B015N9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP661

Matrix (soil/water): SOIL Lab Sample ID: 911266101

Level (low/med): LOW Date Received: 12/07/91

% Solids: 90.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4040.00		E	P
7440-36-0	Antimony	5.09	U	N	P
7440-38-2	Arsenic	1.50	B		F
7440-39-3	Barium	53.70			P
7440-41-7	Beryllium	.22	U		P
7440-43-9	Cadmium	.66	U		P
7440-70-2	Calcium	5680.00		E	P
7440-47-3	Chromium	6.50			P
7440-48-4	Cobalt	5.90	B		P
7440-50-8	Copper	8.80			P
7439-89-6	Iron	11100.00			P
7439-92-1	Lead	3.40		S	F
7439-95-4	Magnesium	3420.00		E	P
7439-96-5	Manganese	205.00		E	P
7439-97-6	Mercury	.18			CV
7440-02-0	Nickel	17.50			P
7440-09-7	Potassium	690.00	B		P
7782-49-2	Selenium	.44	U	N	F
7440-22-4	Silver	.88	U		P
7440-23-5	Sodium	1590.00			P
7440-28-0	Thallium	.44	U		F
7440-62-2	Vanadium	16.00			P
7440-66-6	Zinc	24.50			P
	Cyanide	5.24	U	N	C
7440-69-9	Bismuth	33.2	U		P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/14/92

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

WESTON BATCH #: 9112L661

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B015N9	% Solids	90.4	%	0.10
		Nitrate by IC	24.9	MG/KG	1.4
		Cyanide, Total	5.2	MG/KG	1.1
	216-B-46A	Phosphate by IC	86.7	MG/KG	1.4
		Sulfate by IC	15.9	MG/KG	1.4
	27.0-29.5	~~Nitrate Nitrite~~	~~8.6~~	~~MG-N/KG~~	~~1.1~~ R
		Total Organic Carbon	267 u	MG/KG	267

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ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/23/92
LABORATORY: Weston	CASE: 9117L661	SDG: 661
SAMPLES/MATRIX: 3015N9/Soil		

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

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).

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.

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COMMENTS (attach additional sheets as necessary):

The Surrogate Toluene-d8 is out of the control limits at 122% Recovery for sample B015N9. However, all other surrogates are within limits and ~~as~~ therefore no qualification is required

6/27/

Holding Times Summary

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

DATE RECEIVED: 12/07/91 RFW LOT # :9112L661

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015N9	001	S	91LVQ066	12/04/91	N/A	12/11/91 7
B015N9	001 MS	S	91LVQ067	12/04/91	N/A	12/12/91 8
B015N9	001 MSD	S	91LVQ067	12/04/91	N/A	12/12/91 7
LAB QC:						
VBLK	MB1	S	91LVQ066	N/A	N/A	12/11/91
VBLK	MB1	S	91LVQ067	N/A	N/A	12/12/91

Holding Times were met
6/23/92

6/22

Calib 9/13510.1734 Summary

0000025

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: 9112L661

Instrument ID: 10500 Calibration Date(s): 12/11/91 12/11/91

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

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = 0121104 RRF50 = 0121103
RRF100= 0121105 RRF150= 0121106 RRF200= 0121107

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	1.790	2.041	2.270	2.075	1.639	1.963	12.7#
Bromomethane	1.640	1.726	2.059	2.338	2.222	1.997	15.3
Vinyl Chloride *	1.767	1.922	2.042	2.520	2.399	2.130	15.0*
Chloroethane	1.089	1.196	1.267	1.482	1.513	1.309	14.0
Methylene Chloride	1.380	1.451	1.524	1.680	1.705	1.548	9.2
Acetone	0.897	0.850	0.677	0.694	0.718	0.767	13.0
Carbon Disulfide	3.058	3.507	3.567	3.795	3.923	3.570	9.3
1,1-Dichloroethene *	1.357	1.388	1.423	1.434	1.433	1.407	2.4*
1,1-Dichloroethane #	2.583	2.760	2.700	2.793	2.797	2.727	3.3#
1,2-Dichloroethene (total)	1.265	1.331	1.337	1.326	1.327	1.317	2.2
Chloroform *	2.599	2.698	2.713	2.751	2.707	2.694	2.1*
1,2-Dichloroethane	2.220	2.345	2.282	2.337	2.326	2.302	2.3
2-Butanone	0.051	0.045	0.050	0.049	0.054	0.050	6.6
1,1,1-Trichloroethane	0.927	0.544	0.787	0.618	0.602	0.696	22.7
Carbon Tetrachloride	0.433	0.357	0.394	0.429	0.439	0.410	8.4
Vinyl Acetate	0.748	0.698	0.757	0.815	0.883	0.780	9.1
Bromodichloromethane	0.468	0.462	0.514	0.541	0.556	0.508	8.3
1,2-Dichloropropane *	0.312	0.296	0.316	0.358	0.381	0.333	10.7*
cis-1,3-Dichloropropene	0.416	0.432	0.455	0.506	0.539	0.470	11.0
Trichloroethene	0.369	0.359	0.380	0.404	0.411	0.385	5.8
Dibromochloromethane	0.353	0.389	0.455	0.507	0.554	0.452	18.3
1,1,2-Trichloroethane	0.277	0.277	0.306	0.334	0.369	0.313	12.6
Benzene	0.847	0.837	0.887	0.948	0.973	0.898	6.7
Trans-1,3-Dichloropropene	0.382	0.432	0.464	0.568	0.591	0.487	18.3
Bromoform #	0.236	0.260	0.306	0.339	0.359	0.300	17.3#
4-Methyl-2-pentanone	0.503	0.485	0.469	0.480	0.544	0.496	5.9
2-Hexanone	0.413	0.393	0.367	0.387	0.436	0.399	6.6
Tetrachloroethene	0.390	0.392	0.398	0.412	0.416	0.402	2.9
1,1,2,2-Tetrachloroethane #	0.561	0.572	0.592	0.622	0.690	0.607	8.5#
Toluene *	0.575	0.593	0.594	0.622	0.635	0.604	4.0*
Chlorobenzene #	0.934	0.914	0.899	0.883	0.882	0.902	2.4#
Ethylbenzene *	0.435	0.429	0.421	0.423	0.424	0.426	1.3*
Styrene	0.800	0.809	0.831	0.829	0.819	0.818	1.6
Xylene (total)	0.443	0.457	0.444	0.445	0.433	0.444	1.9
Toluene-d8	1.234	1.211	1.199	1.250	1.258	1.230	2.0
Bromofluorobenzene	0.827	0.786	0.818	0.776	0.756	0.793	3.7
1,2-Dichloroethane-d4	2.180	2.184	2.211	2.208	2.215	2.200	0.7

Calibration 9713514 1735 0000028 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: 9112L661

Instrument ID: 1050Q Calibration Date: 12/11/91 Time: 1130

Lab File ID: Q121103 Init. Calib. Date(s): 12/11/91 12/11/91

Matrix:(soil/water) SOIL 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 #	1.963	2.041	-4.0 #	✓
Bromomethane	1.997	1.726	13.6	
Vinyl Chloride *	2.130	1.922	9.8 *	✓
Chloroethane	1.309	1.196	8.6	
Methylene Chloride	1.548	1.451	6.3	
Acetone	0.767	0.850	-10.8	
Carbon Disulfide	3.570	3.507	1.8	
1,1-Dichloroethene *	1.407	1.388	1.4 *	✓
1,1-Dichloroethane #	2.727	2.760	-1.2 #	✓
1,2-Dichloroethene (total)	1.317	1.331	-1.1	
Chloroform *	2.694	2.698	-0.1 *	✓
1,2-Dichloroethane	2.302	2.345	-1.9	
2-Butanone	0.050	0.045	10.0	R
1,1,1-Trichloroethane	0.696	0.544	21.8	
Carbon Tetrachloride	0.410	0.357	12.9	
Vinyl Acetate	0.780	0.698	10.5	
Bromodichloromethane	0.508	0.462	9.1	
1,2-Dichloropropane *	0.333	0.296	11.1 *	✓
cis-1,3-Dichloropropene	0.470	0.432	8.1	
Trichloroethene	0.385	0.359	6.8	
Dibromochloromethane	0.452	0.389	13.9	
1,1,2-Trichloroethane	0.313	0.277	11.5	
Benzene	0.898	0.837	6.8	
Trans-1,3-Dichloropropene	0.487	0.432	11.3	
Bromoform #	0.300	0.260	13.3 #	✓
4-Methyl-2-pentanone	0.496	0.485	2.2	
2-Hexanone	0.399	0.393	1.5	
Tetrachloroethene	0.402	0.392	2.5	
1,1,2,2-Tetrachloroethane #	0.607	0.572	5.8 #	✓
Toluene *	0.604	0.593	1.8 *	✓
Chlorobenzene #	0.902	0.914	-1.3 #	✓
Ethylbenzene *	0.426	0.429	-0.7 *	✓
Styrene	0.818	0.809	1.1	
Xylene (total)	0.444	0.457	-2.9	
Toluene-d8	1.230	1.211	1.5	
Bromofluorobenzene	0.793	0.786	0.9	
1,2-Dichloroethane-d4	2.200	2.184	0.7	

Blank 9713516-1736 0000073 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: SOIL

Lab Sample ID: 91LV0067-MB1

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

Lab File ID: 0121204

Level: (low/med) LOW

Date Received: 12/12/91

% Moisture: not dec. 0

Date Analyzed: 12/12/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

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	U
67-64-1	Acetone	7	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

x10=70

FORM 1 V-1 12/88 Rev.

6/23/9

Accuracy Summary 9213514 1737 0000010 pg 1 of 1

2B
SOIL VOLATILE SURROGATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD Level:(low/med) LOW

RFW Lot No.: 9112L661

No qualification is required

	CLIENT SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	B015N9	122 *	118	121		1
02	B015N9MS	97	91	97		0
03	B015N9MSD	100	99	96		0
04	VBLKLVQ056-MB1	103	106	102		0
05	VBLKLVQ057-MB1	99	93	98		0

	QC LIMITS
S1 (TOL) = Toluene-d8	(81-117)
S2 (BFB) = Bromofluorobenzene	(74-121)
S3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

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

6/23/9

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/23/92
LABORATORY: Weston	CASE: 2L661	SDG: 661
SAMPLES/MATRIX: 8015N9/Soil		

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?	6/28/92 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

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.

9213516.1745

Holding Time Summary

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

DATE RECEIVED: 12/07/91 RFW LOT # :9112L661

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO15N9	001	S	91LE1691	12/04/91	12/13/91 9	01/03/92 21
BO15N9	001 MS	S	91LE1691	12/04/91	12/13/91	01/03/92
BO15N9	001 MSD	S	91LE1691	12/04/91	12/13/91	01/03/92

LAB QC:

SBLK	MB1	S	91LE1691	N/A	12/13/91	01/04/92
SBLK	MB1 BS	S	91LE1691	N/A	12/13/91	01/04/92

Holding times were met.

6/23/92

6/23/

Accuracy 9713516.1746 Summary 0000012 Pg 1 of 1

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9112L661-001

MATRIX Spike - Sample No.: B015N9 Level:(low/med) LOW

No qual is required. All surrogates are in.

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
Phenol	3380	0	3310	98 *	26- 90
2-Chlorophenol	3380	0	3100	92	25-102
1,4-Dichlorobenzene	1690	0	1430	85	28-104
N-Nitroso-Di-n-propylamine	1690	0	1340	79	41-126
1,2,4-Trichlorobenzene	1690	0	1480	88	38-107
4-Chloro-3-methylphenol	3380	0	3160	93	26-103
Acenaphthene	1690	0	1540	91	31-137
4-Nitrophenol	3380	0	2670	79	11-114
2,4-Dinitrotoluene	1690	0	1460	86	28- 89
Pentachlorophenol	3380	0	2210	65	17-109
Pyrene	1690	0	2510	148 *	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	3480	3500	101 *	3	35	26- 90
2-Chlorophenol	3480	3280	94	2	50	25-102
1,4-Dichlorobenzene	1740	1490	85	0	27	28-104
N-Nitroso-Di-n-propylamine	1740	1430	82	3	38	41-126
1,2,4-Trichlorobenzene	1740	1530	88	0	23	38-107
4-Chloro-3-methylphenol	3480	3310	95	2	33	26-103
Acenaphthene	1740	1670	96	5	19	31-137
4-Nitrophenol	3480	2960	85	7	50	11-114
2,4-Dinitrotoluene	1740	1590	91 *	5	47	28- 89
Pentachlorophenol	3480	2390	69	5	47	17-109
Pyrene	1740	2550	147 *	0	36	35-142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 5 out of 22 outside limits

COMMENTS:

Calibration Summary 0000068 Pg 1 of 1

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L661

Instrument ID: 5100SP Calibration Date: 01/03/92 Time: 1030

Lab File ID: S010302 Init. Calib. Date(s): 12/31/91 12/31/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ Sample B015N9

	COMPOUND	RRF	RRF50	%D
15	Phenol *	1.871	1.641	12.3 *
16	bis(2-Chloroethyl)ether	1.858	1.709	8.0
	2-Chlorophenol	1.562	1.393	10.8
	1,3-Dichlorobenzene	1.702	1.585	6.9
	1,4-Dichlorobenzene *	1.771	1.675	5.4 *
	Benzyl alcohol	0.978	0.877	10.3
	1,2-Dichlorobenzene	1.734	1.598	7.8
	2-Methylphenol	1.381	1.166	15.6
	bis(2-Chloroisopropyl)ether	2.424	2.084	14.0
	4-Methylphenol	1.508	1.266	16.0
	N-Nitroso-Di-n-propylamine #	1.489	1.258	15.5 #
	Hexachloroethane	0.878	0.739	15.8
	Nitrobenzene	0.482	0.424	12.0
	Isophorone	0.956	0.873	8.7
	2-Nitrophenol *	0.235	0.232	1.3 *
	2,4-Dimethylphenol	0.378	0.278	26.5
	Benzoic acid	0.338	0.271	19.8
	bis(2-Chloroethoxy)methane	0.546	0.527	3.5
	2,4-Dichlorophenol *	0.306	0.301	1.6 *
	1,2,4-Trichlorobenzene	0.335	0.337	-0.6
	Naphthalene	1.032	0.990	4.1
	4-Chloroaniline	0.405	0.377	6.9
	Hexachlorobutadiene *	0.179	0.179	0.0 *
	4-Chloro-3-methylphenol *	0.338	0.298	11.8 *
	2-Methylnaphthalene	0.689	0.667	3.2
	Hexachlorocyclopentadiene #	0.190	0.175	7.9 #
	2,4,6-Trichlorophenol *	0.351	0.340	3.1 *
	2,4,5-Trichlorophenol	0.368	0.356	3.3
	2-Chloronaphthalene	1.145	1.104	3.6
	2-Nitroaniline	0.523	0.418	20.1
	Dimethylphthalate	1.301	1.230	5.5
	Acenaphthylene	1.692	1.659	2.0
	2,6-Dinitrotoluene	0.303	0.299	1.3
	3-Nitroaniline	0.198	0.259	-30.8
	Acenaphthene *	1.059	0.998	5.8 *
	2,4-Dinitrophenol #	0.181	0.148	18.2 #
	4-Nitrophenol #	0.162	0.141	13.0 #

6/23/92

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8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L661

Lab File ID (Standard): S010302 Date Analyzed: 01/03/92

Instrument ID: 5100SP Time Analyzed: 1030

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	158380	18.17	115409	23.30	78691	27.73
	UPPER LIMIT	316760	18.67	230818	23.80	157382	28.23
	LOWER LIMIT	79190	17.67	57705	22.80	39346	27.23
	CLIENT SAMPLE NO.						
01	B015N9	98895	18.17	40710*	23.32	29744*	27.73
02	B015N9MS	102447	18.15	45651*	23.12	37461*	27.50
03	B015N9MSD	101859	18.15	47575*	23.27	37571*	27.68

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

9713516.1749

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/25/9
LABORATORY: Weston	CASE: 91-2L661	SDG: 661
SAMPLES/MATRIX: B015N9		

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? GPC. 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):

GPC cleanup was performed on the sample extract. Therefore, the PRQL was multiplied by a factor of 2.
6/25/92.

The ~~calculation~~ calibration factors for the quant column (2250/2401) were recalculated and corrected. However the percent RSD for the original and corrected CF factors are the same and did not require correction. All %RSD quant column were less than or equal to 10.0.

6/25/92

Holding Time Summary 9213516.1758

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 12/07/91 RFW LOT # :9112L661

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BO15N9	001	S	91LE1717	12/04/91	12/16/91 12	01/09/92 24
BO15N9	001 MS	S	91LE1717	12/04/91	12/16/91	01/09/92
BO15N9	001 MSD	S	91LE1717	12/04/91	12/16/91	01/09/92

LAB QC:

PBLK	MB1	S	91LE1717	N/A	12/16/91	01/09/92
PBLK	MB1 BS	S	91LE1717	N/A	12/16/91	01/09/92

The sample was extracted past the required holding time. All sample results were qualified as estimated. (U. for non-detects)

6/25/92

6/25/

9713516.1759

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/26/92
LABORATORY: Weston	CASE: 91121 661	SDG: 661
SAMPLES/MATRIX: BOISN9/Soil		

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 $\geq$0.995? Yes No N/A

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

It was performed, but not required

6/26/97

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.

9213516.1764 Holding Time Summary pg 1 of 2

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

DATE RECEIVED: 12/07/91 RFW LOT # :9112L661

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015N9						
SILVER, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/08/92 66
SILVER, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/08/92
SILVER, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/08/92
ALUMINUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92 65
ALUMINUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
ALUMINUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
ARSENIC, TOTAL	001	S	92L0108	12/04/91	01/10/92	01/17/92 44
ARSENIC, TOTAL	001 REP	S	92L0108	12/04/91	01/10/92	01/17/92
ARSENIC, TOTAL	001 MS	S	92L0108	12/04/91	01/10/92	01/17/92
BARIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92 65
BARIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
BARIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
BERYLLIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92
BERYLLIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
BERYLLIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
BISMUTH, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/08/92 66
BISMUTH, TOTAL REP	001 REP	S	92L0109	12/04/91	01/10/92	02/08/92
BISMUTH, TOTAL SPIKE	001 MS	S	92L0109	12/04/91	01/10/92	02/08/92
CALCIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92 65
CALCIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
CALCIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
CADMIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92
CADMIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
CADMIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
COBALT, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92
COBALT, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
COBALT, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
CHROMIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/08/92 66
CHROMIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/08/92
CHROMIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/08/92
COPPER, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92 65
COPPER, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
COPPER, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
IRON, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92
IRON, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92
IRON, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92
MERCURY, TOTAL	001	S	91C0365	12/04/91	12/20/91	12/20/91 6

9413516.1765 Time Summary Pg 2 of 2

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

DATE RECEIVED: 12/07/91 RFW LOT # :9112L661

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
MERCURY, TOTAL	001 REP	S	91C0365	12/04/91	12/20/91	12/20/91	16
MERCURY, TOTAL	001 MS	S	91C0365	12/04/91	12/20/91	12/20/91	
POTASSIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92	65
POTASSIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92	
POTASSIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92	
MAGNESIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92	
MAGNESIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92	
MAGNESIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92	
MANGANESE, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92	
MANGANESE, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92	
MANGANESE, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92	
SODIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92	
SODIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92	
SODIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92	
NICKEL, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/11/92	7
NICKEL, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92	65
NICKEL, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92	
LEAD, TOTAL	001	S	92L0108	12/04/91	01/10/92	01/16/92	43
LEAD, TOTAL	001 REP	S	92L0108	12/04/91	01/10/92	01/16/92	
LEAD, TOTAL	001 MS	S	92L0108	12/04/91	01/10/92	01/16/92	
ANTIMONY, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/08/92	66
ANTIMONY, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92	65
ANTIMONY, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92	
SELENIUM, TOTAL	001	S	92L0108	12/04/91	01/10/92	01/16/92	43
SELENIUM, TOTAL	001 REP	S	92L0108	12/04/91	01/10/92	01/16/92	
SELENIUM, TOTAL	001 MS	S	92L0108	12/04/91	01/10/92	01/16/92	
THALLIUM, TOTAL	001	S	92L0108	12/04/91	01/10/92	01/16/92	
THALLIUM, TOTAL	001 REP	S	92L0108	12/04/91	01/10/92	01/16/92	
THALLIUM, TOTAL	001 MS	S	92L0108	12/04/91	01/10/92	01/16/92	
VANADIUM, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/08/92	66
VANADIUM, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/08/92	
VANADIUM, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/08/92	
ZINC, TOTAL	001	S	92L0109	12/04/91	01/10/92	02/07/92	65
ZINC, TOTAL	001 REP	S	92L0109	12/04/91	01/10/92	02/07/92	
ZINC, TOTAL	001 MS	S	92L0109	12/04/91	01/10/92	02/07/92	

LAB QC:

SILVER LABORATORY	LC1 BS	S	92L0109	N/A	01/10/92	02/08/92
ALUMINUM LABORTORY	LC1 BS	S	92L0109	N/A	01/10/92	02/07/92

Blank Summary 9713516.1766 0000026 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.: CLP661

Preparation Blank Matrix (soil/water): SOIL

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

not assoc. w/ B015N9
No qual for Cs required

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		5x		5x		
Aluminum	150.0	U	150.0	U	150.0	U			30.000	U	P
Antimony	23.0	U	23.0	U	23.0	U	23.0	U	4.600	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	38.0	U	38.0	U	38.0	U			7.600	U	P
Beryllium	1.0	U	1.0	U	1.0	U			.200	U	P
Cadmium	3.0	U	3.0	U	3.0	U			.600	U	P
Calcium	88.0	U	88.0	U	88.0	U			17.600	U	P
Chromium	6.0	U	6.0	U	6.0	U	38.5 7.7	B	1.200	U	P
Cobalt	5.0	U	5.0	U	5.0	U			1.000	U	P
Copper	6.0	U	6.0	U	6.0	U			1.200	U	P
Iron	39.0	U	39.0	U	39.0	U			7.800	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	78.0	U	78.0	U	78.0	U			15.600	U	P
Manganese	2.0	U	2.0	U	2.0	U			.400	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.050	U	CV
Nickel	18.0	U	18.0	U	18.0	U	18.0	U	3.600	U	P
Potassium	734.0	U	734.0	U	734.0	U			146.800	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	26.0 5.2	B	49.5 9.9	B	30.5 6.1	B			7.0 1.400	B	P ulrea
Sodium	638.0	U	638.0	U	638.0	U			127.600	U	P
Thallium	2.0	U	2.0	U	2.0	U			.400	U	F
Vanadium	5.0	U	5.0	U	5.0	U			1.000	U	P
Zinc	4.0	U	4.0	U	4.0	U			.800	U	P
Cyanide	20.0	U	20.0	U					1.000	U	C

FORM III - IN 03/90

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9112L661	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B015N9	Lead	77.2	B015N9	None - Analyzed by MSA

9135516.1767

9713516.1768

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/29/92
LABORATORY: Weston	CASE: 91121L661	SDG: 661
SAMPLES/MATRIX: BOISNG/Soil		

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	Y		
Cover Page	Y		
Traffic Reports/Chain-of-Custody	Y		
Sample Analysis Data Report Forms	Y		
Standards Data	Y		
QC Summary			
Blanks Summary Report Forms	Y		
Spike Sample Recovery Report Forms	Y		
Duplicate Sample Analysis Report Forms	Y		
Laboratory Control Sample Report Forms			
Raw Data			
Ion Chromatograph Chromatograms			
TOC and TOX Instrument Printouts		TOC	TOX
Laboratory Bench Sheets	Y		
Additional Data			
Laboratory Sample Preparation Logs	Y		
Instrument Run Logs	Y		
Internal Laboratory Chain-of-Custory		X	
Percent Solids Analysis Records	Y		
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.

9713516.1772 Holding Time Summary pg 1 of 1

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

DATE RECEIVED: 12/07/91 RFW LOT # :9112L661

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
B015N9							
% SOLIDS	001	S	91LRS073	12/04/91	12/13/91	12/14/91	10
NITRATE BY IC	001	S	91LICA87	12/04/91	12/19/91	12/19/91	15
NITRATE BY IC	001 REP	S	91LICA87	12/04/91	12/19/91	12/19/91	
NITRATE BY IC	001 MS	S	91LICA87	12/04/91	12/19/91	12/19/91	
NITRATE BY IC	001 MSD	S	91LICA87	12/04/91	12/19/91	12/19/91	
TOTAL CYANIDE	001	S	91LC370	12/04/91	12/12/91	12/12/91	8
TOTAL CYANIDE	001 MS	S	91LC370	12/04/91	12/12/91	12/12/91	
TOTAL CYANIDE	001 MSD	S	91LC370	12/04/91	12/12/91	12/12/91	
PHOSPHATE BY IC	001	S	91LICA87	12/04/91	12/19/91	12/19/91	15
PHOSPHATE BY IC	001 REP	S	91LICA87	12/04/91	12/19/91	12/19/91	
PHOSPHATE BY IC	001 MS	S	91LICA87	12/04/91	12/19/91	12/19/91	
PHOSPHATE BY IC	001 MSD	S	91LICA87	12/04/91	12/19/91	12/19/91	
SULFATE BY IC	001	S	91LICA87	12/04/91	12/19/91	12/19/91	
SULFATE BY IC	001 REP	S	91LICA87	12/04/91	12/19/91	12/19/91	
SULFATE BY IC	001 MS	S	91LICA87	12/04/91	12/19/91	12/19/91	
SULFATE BY IC	001 MSD	S	91LICA87	12/04/91	12/19/91	12/19/91	
NITRATE NITRITE	001	S	92LNA002	12/04/91	01/03/92	01/03/92	30
NITRATE NITRITE	001 REP	S	92LNA002	12/04/91	01/03/92	01/03/92	
NITRATE NITRITE	001 MS	S	92LNA002	12/04/91	01/03/92	01/03/92	
NITRATE NITRITE	001 MSD	S	92LNA002	12/04/91	01/03/92	01/03/92	
TOTAL ORGANIC CARBON	001	S	91LTZ029	12/04/91	12/18/91	12/19/91	15
SUB-OUT TEST FOR SUB	001	S		12/04/91			

LAB QC:

CHLORIDE BY IC	MB1	S	91LICA87	N/A	12/19/91	12/19/91
CHLORIDE BY IC	MB1 BS	S	91LICA87	N/A	12/19/91	12/19/91
FLUORIDE BY IC	MB1	S	91LICA87	N/A	12/19/91	12/19/91
FLUORIDE BY IC	MB1 BS	S	91LICA87	N/A	12/19/91	12/19/91
NITRITE BY IC	MB1	S	91LICA87	N/A	12/19/91	12/19/91
NITRITE BY IC	MB1 BS	S	91LICA87	N/A	12/19/91	12/19/91
NITRATE BY IC	MB1	S	91LICA87	N/A	12/19/91	12/19/91
NITRATE BY IC	MB1 BS	S	91LICA87	N/A	12/19/91	12/19/91
PHOSPHATE BY IC	MB1	S	91LICA87	N/A	12/19/91	12/19/91
PHOSPHATE BY IC	MB1 BS	S	91LICA87	N/A	12/19/91	12/19/91
SULFATE BY IC	MB1	S	91LICA87	N/A	12/19/91	12/19/91
SULFATE BY IC	MB1 BS	S	91LICA87	N/A	12/19/91	12/19/91

Summary

Pg 1 of 1

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 01/14/92

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

WESTON BATCH #: 9112L661

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV
-001	B015N9	Nitrate by IC	80.2	24.9	55.3	100
		Nitrate by IC MSD	79.8	24.9	55.3	99.3
		Cyanide, Total	7.8	5.2	5.5	45.8
		Cyanide, Total MSD	8.5	5.2	5.5	59.2
		Phosphate by IC	140	86.7	55.3	95.8
		Phosphate by IC MSD	139	86.7	55.3	94.5
		Sulfate by IC	70.0	15.9	55.3	97.8
		Sulfate by IC MSD	70.1	15.9	55.3	98.0
		Nitrate Nitrite	20.0	8.6	11.1	103
		Nitrate Nitrite MSD	20.0	8.6	11.1	103
BLANK10	91LICA87-MB1	Nitrate by IC	49.7	1.2 u	50.0	99.4
		Phosphate by IC	49.6	1.2 u	50.0	99.1
		Sulfate by IC	49.9	1.2 u	50.0	99.8
BLANK10	92LNA002-MB1	Nitrate Nitrite	2.0	0.50u	2.0	102
		Nitrate Nitrite MSD	2.1	0.50u	2.0	106
BLANK20	92LNA002-MB2	Nitrate Nitrite	2.0	0.50u	2.0	102
BLANK10	91LTZ029-MB1	Total Organic Carbon	416	20.0 u	400	104
BLANK20	91LTZ029-MB2	Total Organic Carbon	404	20.0 u	400	101

9713516.1774 Precision Summary 0000042 Pg 1 of 1

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B015N9L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP661

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	18245.40		12446.00		31.8	E	P
Antimony	23.00	U	115.00	U			P
Arsenic							NR
Barium	242.60		190.00	U	38.0		P
Beryllium	1.00	U	5.00	U			P
Cadmium	3.00	U	15.00	U			P
Calcium	25675.80		17993.00	B	29.9	E	P
Chromium	29.20		340.50	1	66.1		P
Cobalt	26.70	B	25.50	B	4.5		P
Copper	39.80		30.00	U	79.9		P
Iron	50148.00		34962.50		30.3	E	P
Lead							NR
Magnesium	15448.30		10868.00	B	29.6	E	P
Manganese	928.30		649.00		30.1	E	P
Mercury							NR
Nickel	79.30		90.00	U	43.9		P
Potassium	3119.60	B	3670.00	U	100.0		P
Selenium							NR
Silver	4.00	U	38.50	B	100.0		P
Sodium	7195.70		3944.00	B	45.2		P
Thallium							NR
Vanadium	72.30		267.50		270.0		P
Zinc	110.60		96.00	B	13.2		P

FORM IX - IN

03/90

9713516.1775

APPENDIX H

DATA VALIDATION DOCUMENTATION

SDG: 9112L747

SAMPLES: B015P3, B015P7

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

9713516.1776

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.

9713516.1777

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91121747	REVIEWER: [illegible]	DATE: 6/23/92	PAGE 1 OF 5
COMMENTS: U of A			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chloromethane	UJ	All	ICV RSD 73%
Chloroethane	UJ	↓	↓
Bromomethane	UJ	B015P3	CCV %D 72.5%
Chloroethane	UJ	↓	↓
Acetone	J	↓	↓
2-Butanone	UJ	↓	↓
Chloromethane	UJ	B015P7	CCV %D 72.5%
Acetone	J	↓	↓
2-Butanone	UJ	↓	↓
2-Hexanone	UJ	↓	↓
~~———~~	~~———~~	~~B015P7RE~~	~~CCV %D 72.5%~~ 6/23/92
MeCl2	↓	All	Present in blank
Acetone	↓	↓	↓
6/23/92 ~~All three SS compounds~~ All volatile TCL compounds	~~UJ~~ 6/23/92	B015P3, P7, P7RE	All three SS area counts are ~~out~~ below the lower limit 6/23/92

9713516.1779

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L747	REVIEWER: [illegible]	DATE: 8/23/92	PAGE 2 OF 5
COMMENTS: Semi-VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
4-Cl-phenyl-phenyl ether	UJ	8015P3	CCV %D >25%
Indeno (1,2,3-cd) pyrene	UJ	↓	↓
Dibenzo (a,h) anthracene	UJ	↓	↓
Benzo (g,h,i) perylene	UJ	↓	↓
2,4,6-Tribromophenol (Surrogate)	none	8015P3	CCV %D >25%
2,4-Dinitrophenol	R	8015P7	ICV RRF <0.05
4,6-Dinitro-2-methyl phenol	R	8015P7	ICV RRF <0.05
Aldol Condensates	R	All	laboratory contaminant

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112L747	REVIEWER: [illegible]	DATE: 6/25/92	PAGE 3 OF 5
COMMENTS: Pest/PCB			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
All Pest/PCB TCL compounds	UJ	B015P3	Extracted out of holding time

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 9112174	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 4 OF 5
COMMENTS: Metals			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	U	B015P3 & B015P7	present in blanks
Cadmium	↓	↓	↓
Cobalt	↓	↓	↓
Zinc	↓	↓	↓
Antimony	UJ	B015P3 & B015P7	MS & R out of control limits
Arsenic	~~UJ~~ J	↓	↓
Cyanide	UJ	↓	↓
Aluminum	J	B015P3/B015P7	ICP Serial Dil'n %D > 10%
Calcium	↓	↓ ↓	↓
Iron	↓	↓ ↓	↓
Magnesium	↓	↓ ↓	↓
Manganese	↓	↓ ↓	↓
Lead	none-analyzed by MSA	B015P3/B015P7	GFAA Analytical spike out of CL
Selenium	UJ	B015P7	↓

9713516.1782

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 91132L747	REVIEWER: [illegible]	DATE: 6/29/92	PAGE 5 OF 5
COMMENTS: Wet Chemistry			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrate	J	B015P3 & B015P=	Analyzed out of holding time
Phosphate	~~UJ~~ ~~J~~ J	↓	↓
Cyanide	UJ	B015P3K B015P=	MS %R < 75%
Nitrate + Nitrite	R	B015P3K B015P7	Discrepancy with HPLC data

9713516.1783

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

9713516.1784 0000023

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46B 3.0-6.0

BO15P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L747-001

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

Lab File ID: W121818

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 4

Date Analyzed: 12/18/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

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	15	B
67-64-1	Acetone	20	B
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	1	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

6/23/9

6/23

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6/23

9713516.1785 0000032

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46B 8.5-11.0

B015P7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L747-002

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

Lab File ID: W121925

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 4

Date Analyzed: 12/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

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	9	B
67-64-1	Acetone	43	B
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

6/23/92

9713516.1786 0000038

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46B 8.5-11
BO15P7RE

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L747-002

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

Lab File ID: W122015

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 4

Date Analyzed: 12/21/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

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	B
67-64-1	Acetone	15	B
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

6/23

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SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46B 3.0-6.0

BO15P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L747-001

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: J011015

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 0 dec.

Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/10/92

GPC Cleanup: (Y/N) Y pH: 8.3

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic acid	1600	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1600	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1600	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

9713516.1788 0000020

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46B 3.0-6.0

B015P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L747-001

Sample wt/vol: 30.5 (g/mL) G Lab File ID: J011015

Level: (low/med) LOW Date Received: 12/13/91

% Moisture: not dec. 0 dec. Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/10/92

GPC Cleanup: (Y/N) Y pH: 8.3 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1600	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	67	J
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

9713516.1789 0000021

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-46B 3.0-6.0

BO15P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L747-001

Sample wt/vol: 30.5 (g/mL) G

Lab File ID: J011015

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 0 dec.

Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/10/92

GPC Cleanup: (Y/N) Y pH: 8.3

Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
~~1.~~	~~ALDOL CONDENSATE~~	~~6.21~~	~~300~~	~~JAB~~
2.	ADIPATE	23.18	70000	~~JB~~

FORM 1 SV-TIC 12/88 Rev.

9213516.1790 0000030

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-58 8.5-11.0

B015P7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L747-002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J012111

Level: (low/med) LOW Date Received: 12/13/91

% Moisture: not dec. 4 dec. Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/21/92

GPC Cleanup: (Y/N) Y pH: 8.1 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

9213516.1791 1C 0000031

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO. 216-B-46B 8.5-11.0

BO15P7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L747-002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J012111

Level: (low/med) LOW Date Received: 12/13/91

% Moisture: not dec. 4 dec. Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/21/92

GPC Cleanup: (Y/N) Y pH: 8.1 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	350	U
~~51-28-5~~	~~2,4-Dinitrophenol~~	~~1700~~	~~U~~ R
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	1700	U
~~534-52-1~~	~~4,6-Dinitro-2-methylphenol~~	~~1700~~	~~U~~ R
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-Butylphthalate	40	J
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	690	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	170	J
117-84-0	Di-n-Octyl phthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenzo(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

9713516.1792

0000032

CLIENT SAMPLE NO.
216-B-46B 8.5-11.0

B015P7

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9112L747-002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: J012111

Level: (low/med) LOW Date Received: 12/13/91

% Moisture: not dec. 4 dec. Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/21/92

GPC Cleanup: (Y/N) Y pH: 8.1 Dilution Factor: 1.00

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
~~1.~~	~~ALDOL CONDENSATE~~	~~6.32~~	~~300~~	~~JAB~~	R
~~2.~~	~~ALDOL CONDENSATE~~	~~7.92~~	~~100~~	~~JA~~	R
3.	ADIPATE	23.28	60000	~~JB~~	NJ
4.	UNKNOWN	24.10	200	~~J~~	NJ

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0000015

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46R 3.0-6.0

BO15P3

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L747-001

Sample wt/vol: 29.9 (g/mL) G

Lab File ID: 01279203.22

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 4 dec.

Date Extracted: 12/18/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/27/92

GPC Cleanup: (Y/N) N pH: 7.7

Dilution Factor: ~~2.50~~ 5.0

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

CAS NO.	COMPOUND			
319-84-6	Alpha-BHC	42 ~~21~~	U	45
319-85-7	Beta-BHC	42 ~~21~~	U	
319-86-8	Delta-BHC	42 ~~21~~	U	
58-89-9	gamma-BHC (Lindane)	42 ~~21~~	U	
76-44-8	Heptachlor	42 ~~21~~	U	
309-00-2	Aldrin	42 ~~21~~	U	
1024-57-3	Heptachlor epoxide	42 ~~21~~	U	
959-98-8	Endosulfan I	42 ~~21~~	U	
60-57-1	Dieldrin	84 ~~42~~	U	
72-55-9	4,4'-DDE	84 ~~42~~	U	
72-20-8	Endrin	84 ~~42~~	U	
33213-65-9	Endosulfan II	84 ~~42~~	U	
72-54-8	4,4'-DDD	84 ~~42~~	U	
1031-07-8	Endosulfan sulfate	84 ~~42~~	U	
50-29-3	4,4'-DDT	84 ~~42~~	U	
72-43-5	Methoxychlor	420 ~~210~~	U	
53494-70-5	Endrin ketone	84 ~~42~~	U	
5103-71-9	alpha-Chlordane	420 ~~210~~	U	
5103-74-2	gamma-Chlordane	420 ~~210~~	U	
8001-35-2	Toxaphene	840 ~~420~~	U	
12674-11-2	Aroclor-1016	420 ~~210~~	U	
11104-28-2	Aroclor-1221	420 ~~210~~	U	
11141-16-5	Aroclor-1232	420 ~~210~~	U	
53469-21-9	Aroclor-1242	420 ~~210~~	U	
12672-29-6	Aroclor-1248	420 ~~210~~	U	
11097-69-1	Aroclor-1254	840 ~~420~~	U	
11096-82-5	Aroclor-1260	840 ~~420~~	U	

2-4-92

③ 6/26/92

FORM 1 PEST

④ 6/26/92 12/88 Rev.

9713516.1794

1D

0000020

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-46B 8.5-11.C

BO15P7

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9112L747-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 01279203.23

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 4 dec.

Date Extracted: 12/18/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/27/92

GPC Cleanup: (Y/N) N pH: 7.8

Dilution Factor: ~~2.50~~ 5.0 @ 6/26/92

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	42 ~~21~~	U
319-85-7	Beta-BHC	42 ~~21~~	U
319-86-8	Delta-BHC	42 ~~21~~	U
58-89-9	gamma-BHC (Lindane)	42 ~~21~~	U
76-44-8	Heptachlor	42 ~~21~~	U
309-00-2	Aldrin	42 ~~21~~	U
1024-57-3	Heptachlor epoxide	42 ~~21~~	U
959-98-8	Endosulfan I	42 ~~21~~	U
60-57-1	Dieldrin	84 ~~42~~	U
72-55-9	4,4'-DDE	84 ~~42~~	U
72-20-8	Endrin	84 ~~42~~	U
33213-65-9	Endosulfan II	84 ~~42~~	U
72-54-8	4,4'-DDD	84 ~~42~~	U
1031-07-8	Endosulfan sulfate	84 ~~42~~	U
50-29-3	4,4'-DDT	84 ~~42~~	U
72-43-5	Methoxychlor	420 ~~210~~	U
53494-70-5	Endrin ketone	84 ~~42~~	U
5103-71-9	alpha-Chlordane	420 ~~210~~	U
5103-74-2	gamma-Chlordane	420 ~~210~~	U
8001-35-2	Toxaphene	840 ~~420~~	U
12674-11-2	Aroclor-1016	420 ~~210~~	U
11104-28-2	Aroclor-1221	420 ~~210~~	U
11141-16-5	Aroclor-1232	420 ~~210~~	U
53469-21-9	Aroclor-1242	420 ~~210~~	U
12672-29-6	Aroclor-1248	420 ~~210~~	U
11097-69-1	Aroclor-1254	840 ~~420~~	U
11096-82-5	Aroclor-1260	840 ~~420~~	U

DS 2-4-92

FORM 1 PEST 12/88 Rev.

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0000017

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

216-B-46B 3.0-6.0

BO15P3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP747

Matrix (soil/water): SOIL Lab Sample ID: 911274701

Level (low/med): LOW Date Received: 12/13/91

% Solids: 96.4

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	4240.00		*E	P	~~UJ~~ J 6/26/92
7440-36-0	Antimony	7.00	~~B~~	N	P	UJ
7440-38-2	Arsenic	2.20		N	F	J
7440-39-3	Barium	70.00			P	
7440-41-7	Beryllium	.31	B		P	
7440-43-9	Cadmium	1.30			P	U
7440-70-2	Calcium	7750.00		*E	P	~~UJ~~ J 6/26/92
7440-47-3	Chromium	5.70			P	
7440-48-4	Cobalt	8.70	~~B~~		P	U
7440-50-8	Copper	12.40			P	
7439-89-6	Iron	12100.00		*E	P	J
7439-92-1	Lead	4.90		S	F	
7439-95-4	Magnesium	3170.00		E	P	J
7439-96-5	Manganese	266.00		E	P	J
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	8.90			P	
7440-09-7	Potassium	1250.00			P	
7782-49-2	Selenium	.42	U		F	
7440-22-4	Silver	.83	U		P	
7440-23-5	Sodium	132.00	U		P	
7440-28-0	Thallium	.42	U		F	
7440-62-2	Vanadium	22.50			P	
7440-66-6	Zinc	20.10			P	U
	Cyanide	1.04	~~U~~	N	C	UJ
7440-69-9	Bismuth	31.1	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

6/26

9713516.1796 0000018

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
216-B-46R 8.5-11.C

B015P7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP747

Matrix (soil/water): SOIL Lab Sample ID: 911274702

Level (low/med): LOW Date Received: 12/13/91

% Solids: 95.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3270.00		*E	P	
7440-36-0	Antimony	8.90	B	N	P	
7440-38-2	Arsenic	2.00	B	N	F	
7440-39-3	Barium	65.80			P	
7440-41-7	Beryllium	.24	B		P	
7440-43-9	Cadmium	1.30			P	
7440-70-2	Calcium	6000.00		*E	P	
7440-47-3	Chromium	4.20			P	
7440-48-4	Cobalt	7.10	B		P	
7440-50-8	Copper	11.00			P	
7439-89-6	Iron	9530.00		*E	P	
7439-92-1	Lead	4.00		S	F	
7439-95-4	Magnesium	2530.00		E	P	
7439-96-5	Manganese	218.00		E	P	
7439-97-6	Mercury	.05	U		CV	
7440-02-0	Nickel	6.70	B		P	
7440-09-7	Potassium	845.00	B		P	
7782-49-2	Selenium	.42	U	W	F	
7440-22-4	Silver	.81	U		P	
7440-23-5	Sodium	263.00	B		P	
7440-28-0	Thallium	.42	U		F	
7440-62-2	Vanadium	18.70			P	
7440-66-6	Zinc	21.90			P	
	Cyanide	1.04	U	N	CP	
	Bismuth	30.5	U			

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 03/90

9713516.1797

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 01/07/92

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

WESTON BATCH #: 9112L747

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B015P3	% Solids	96.4	%	0.10
		Nitrate by IC	60.6	MG/KG	1.3
	216-B-46B	Cyanide, Total	1.0 u	MG/KG	1.0
		Phosphate by IC	2.8	MG/KG	1.3
	3.0-6.0	Sulfate by IC	31.5	MG/KG	1.3
		~~Nitrate Nitrite~~	~~19.5~~	~~MG-N/KG~~	~~5.2~~
		Total Organic Carbon	0.49	%	0.10
-002	B015P7	% Solids	95.8	%	0.10
		Nitrate by IC	135	MG/KG	13.0
	216-B-46B	Cyanide, Total	1.0 u	MG/KG	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3
	8.5-11.0	Sulfate by IC	477	MG/KG	13.0
		~~Nitrate Nitrite~~	~~46.9~~	~~MG-N/KG~~	13.0
		Total Organic Carbon	0.52	%	0.10

9713516.1798

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

9713516.1799

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/23/92
LABORATORY: Nuston	CASE: 9112-747	SDG: 747
SAMPLES/MATRIX: B015P3, B015P7 / Soils		

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		X ⊠ 6/23/92
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

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? with qualifications (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.

9713516.1806

COMMENTS (attach additional sheets as necessary):

All three IS compounds ~~were~~ had area counts below the lower limit for all three samples (B015P3, B015P7, B015P7RE). An MS/MSD was performed on B015P3, therefore a rerun of the sample was not required. The area counts of the MS/MSD (B015P3) were all within limits.

For the samples with area counts below the lower limits - all of the retention times were within the control windows. Therefore all results for these three samples were qualified as estimated (J for detects / UJ for non-detects

9213516.1807 Holding Time Summary

pg 1 of 1

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

DATE RECEIVED: 12/13/91 RFW LOT # :9112L747

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
BO15P3	001	S	91LVW215	12/10/91	N/A	12/18/91	8
BO15P3	001 MS	S	91LVW217	12/10/91	N/A	12/20/91	10
BO15P3	001 MSD	S	91LVW217	12/10/91	N/A	12/20/91	↓
BO15P7	002	S	91LVW217	12/11/91	N/A	12/20/91	9
BO15P7	002 R1	S	91LVW218	12/11/91	N/A	12/21/91	10

LAB QC:

VBLK	MB1	S	91LVW215	N/A	N/A	12/18/91
VBLK	MB1	S	91LVW217	N/A	N/A	12/19/91
VBLK	MB1	S	91LVW218	N/A	N/A	12/20/91

Holding times were met [illegible] 6/23/92

FEB 1992
RECEIVED
OSM DMO

[illegible] 6/22/92

Calibration S~~9213514-1808~~ 0000048 pg 1 of 3

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Instrument ID: 1050W Calibration Date(s): 12/17/91 12/17/91

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

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = W121704 RRF50 = W121702
RRF100= W121708 RRF150= W121709 RRF200= W121710

COMPOUND		RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane	#	1.059	0.718	0.302	0.800	0.711	0.718	37.9#
Bromomethane		1.795	1.323	1.029	1.516	1.379	1.408	19.9
Vinyl Chloride	*	1.597	1.215	1.319	0.946	0.728	1.161	28.9*
Chloroethane		1.113	0.705	0.937	0.484	0.373	0.722	42.5
Methylene Chloride		1.705	1.220	1.342	1.775	1.447	1.498	15.8
Acetone		0.892	0.612	0.510	0.628	0.463	0.621	26.8
Carbon Disulfide		4.056	3.478	3.454	3.588	3.607	3.637	6.7
1,1-Dichloroethene	*	1.214	1.021	1.074	1.017	0.938	1.053	9.7*
1,1-Dichloroethane	#	1.978	1.804	1.865	1.791	1.687	1.825	5.9#
1,2-Dichloroethene (total)		1.327	1.004	1.045	1.048	0.890	1.063	15.1
Chloroform	*	2.147	1.513	1.574	1.982	1.455	1.734	17.9*
1,2-Dichloroethane		1.008	0.953	0.954	0.950	0.946	0.962	2.7
2-Butanone		0.121	0.125	0.127	0.111	0.104	0.118	8.3
1,1,1-Trichloroethane		0.443	0.361	0.418	0.394	0.394	0.402	7.6
Carbon Tetrachloride		0.440	0.360	0.434	0.425	0.424	0.417	7.8
Vinyl Acetate		0.657	0.523	0.580	0.634	0.654	0.610	9.4
Bromodichloromethane		0.644	0.492	0.593	0.563	0.577	0.574	9.6
1,2-Dichloropropane	*	0.411	0.348	0.358	0.370	0.378	0.373	6.5*
cis-1,3-Dichloropropene		0.502	0.426	0.480	0.479	0.491	0.476	6.2
Trichloroethene		0.444	0.382	0.475	0.432	0.433	0.433	7.7
Dibromochloromethane		0.590	0.566	0.675	0.690	0.703	0.645	9.7
1,1,2-Trichloroethane		0.315	0.271	0.320	0.302	0.308	0.303	6.4
Benzene		1.162	0.957	1.013	1.001	1.009	1.028	7.6
Trans-1,3-Dichloropropene		0.468	0.390	0.395	0.438	0.439	0.426	7.7
Bromoform	#	0.640	0.661	0.750	0.828	0.824	0.741	11.9#
4-Methyl-2-pentanone		0.529	0.448	0.408	0.474	0.459	0.464	9.5
2-Hexanone		0.487	0.371	0.325	0.386	0.362	0.386	15.7
Tetrachloroethene		0.524	0.489	0.511	0.530	0.518	0.514	3.1
1,1,2,2-Tetrachloroethane	#	0.740	0.641	0.670	0.685	0.672	0.682	5.3#
Toluene	*	0.805	0.689	0.689	0.716	0.689	0.718	7.0*
Chlorobenzene	#	1.024	0.899	0.907	0.934	0.903	0.933	5.6#
Ethylbenzene	*	0.418	0.382	0.388	0.403	0.393	0.397	3.6*
Styrene		0.634	0.567	0.669	0.691	0.707	0.654	8.5
Xylene (total)		0.425	0.389	0.390	0.407	0.423	0.407	4.2
Toluene-d8		1.232	1.355	1.249	1.358	1.338	1.306	4.7
Bromofluorobenzene		0.753	0.726	0.780	0.842	0.868	0.794	7.5
1,2-Dichloroethane-d4		0.958	1.104	1.029	1.064	1.063	1.044	5.2

MDW 11/15/92

Cal. Summary 9/15/16.1809 UUUUU/4 pg 2 of 3

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Instrument ID: 1050W Calibration Date: 12/18/91 Time: 0918

Lab File ID: W121802 Init. Calib. Date(s): 12/17/91 12/17/91

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

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

Assoc. w/Sample B01SP3 only

COMPOUND	RRF	RRF50	%D
Chloromethane #	0.718	0.596	17.0 #
Bromomethane	1.408	0.750	46.7
Vinyl Chloride *	1.161	1.315	-13.3 *
Chloroethane	0.722	0.960	-33.0
Methylene Chloride	1.498	1.360	9.2
Acetone	0.621	0.808	-30.1
Carbon Disulfide	3.637	3.507	3.6
1,1-Dichloroethene *	1.053	1.110	-5.4 *
1,1-Dichloroethane #	1.825	1.834	-0.5 #
1,2-Dichloroethene (total)	1.063	1.173	-10.3
Chloroform *	1.734	1.986	-14.5 *
1,2-Dichloroethane	0.962	0.911	5.3
2-Butanone	0.118	0.155	-31.4
1,1,1-Trichloroethane	0.402	0.397	1.2
Carbon Tetrachloride	0.417	0.427	-2.4
Vinyl Acetate	0.610	0.544	10.8
Bromodichloromethane	0.574	0.550	4.2
1,2-Dichloropropane *	0.373	0.344	7.8 *
cis-1,3-Dichloropropene	0.476	0.432	9.2
Trichloroethene	0.433	0.438	-1.2
Dibromochloromethane	0.645	0.644	0.2
1,1,2-Trichloroethane	0.303	0.300	1.0
Benzene	1.028	0.956	7.0
Trans-1,3-Dichloropropene	0.426	0.379	11.0
Bromoform #	0.741	0.802	-8.2 #
4-Methyl-2-pentanone	0.464	0.525	-13.1
2-Hexanone	0.386	0.457	-18.4
Tetrachloroethene	0.514	0.527	-2.5
1,1,2,2-Tetrachloroethane #	0.682	0.736	-7.9 #
Toluene *	0.718	0.716	0.3 *
Chlorobenzene #	0.933	0.935	-0.2 #
Ethylbenzene *	0.397	0.387	2.5 *
Styrene	0.654	0.633	3.2
Xylene (total)	0.407	0.370	9.1
Toluene-d8	1.306	1.264	3.2
Bromofluorobenzene	0.794	0.742	6.5
1,2-Dichloroethane-d4	1.044	1.006	3.6

FORM VII VOA 5/88 Rev.

MDW 11/5/92

Calibration Summary 9/135 16.1810 0000000 pg 3 of 3

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Instrument ID: 1050W Calibration Date: 12/19/91 Time: 2153

Lab File ID: W121921 Init. Calib. Date(s): 12/17/91 12/17/91

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

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

Assoc. w/ sample B01SP7

COMPOUND	RRF	RRF50	%D
Chloromethane #	0.718	0.463	35.5 #
Bromomethane	1.408	1.381	1.9
Vinyl Chloride *	1.161	1.207	-4.0 *
Chloroethane	0.722	0.814	-12.7
Methylene Chloride	1.498	1.343	10.3
Acetone	0.621	0.441	29.0
Carbon Disulfide	3.637	3.419	6.0
1,1-Dichloroethene *	1.053	1.078	-2.4 *
1,1-Dichloroethane #	1.825	1.753	3.9 #
1,2-Dichloroethene (total)	1.063	0.813	23.5
Chloroform *	1.734	1.406	18.9 *
1,2-Dichloroethane	0.962	0.929	3.4
2-Butanone	0.118	0.088	25.4
1,1,1-Trichloroethane	0.402	0.371	7.7
Carbon Tetrachloride	0.417	0.391	6.2
Vinyl Acetate	0.610	0.459	24.8
Bromodichloromethane	0.574	0.527	8.2
1,2-Dichloropropane *	0.373	0.345	7.5 *
cis-1,3-Dichloropropene	0.476	0.432	9.2
Trichloroethene	0.433	0.422	2.5
Dibromochloromethane	0.645	0.587	9.0
1,1,2-Trichloroethane	0.303	0.283	6.6
Benzene	1.028	1.005	2.2
Trans-1,3-Dichloropropene	0.426	0.382	10.3
Bromoform #	0.741	0.658	11.2 #
4-Methyl-2-pentanone	0.464	0.398	14.2
2-Hexanone	0.386	0.282	26.9
Tetrachloroethene	0.514	0.492	4.3
1,1,2,2-Tetrachloroethane #	0.682	0.612	10.3 #
Toluene *	0.718	0.715	0.4 *
Chlorobenzene #	0.933	0.946	-1.4 #
Ethylbenzene *	0.397	0.375	5.5 *
Styrene	0.654	0.685	-4.7
Xylene (total)	0.407	0.419	-2.9
Toluene-d8	1.306	1.281	1.9
Bromofluorobenzene	0.794	0.795	-0.1
1,2-Dichloroethane-d4	1.044	0.987	5.5

FORM VII VOA 5/88 Rev.

mow 11/5/92

Blank Sample 91LVW215-MB1 0000102 Pg 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: SOIL

Lab Sample ID: 91LVW215-MB1

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

Lab File ID: W121803

Level: (low/med) LOW

Date Received: 12/18/91

% Moisture: not dec. 0

Date Analyzed: 12/18/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

Assoc. w/ Sample 8015P3

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	2	J
67-64-1	Acetone	6	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

MC=20

MC=60

FORM 1 V-1 12/88 Rev.

6/23

Blank Summary 91T5511 1812 0000112 2 of 5

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: SOIL

Lab Sample ID: 91LVW217-MB1

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

Lab File ID: W121922

Level: (low/med) LOW

Date Received: 12/19/91

% Moisture: not dec. 0

Date Analyzed: 12/19/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

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	2	J
67-64-1	Acetone	8	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

K10 = 20
K10 = 80

FORM 1 V-1 12/88 Rev.

6/23/95

Blank 9213514 1813 0000122 pg 3 of 3

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: SOIL Lab Sample ID: 91LVW218-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: W122004

Level: (low/med) LOW Date Received: 12/20/91

% Moisture: not dec. 0 Date Analyzed: 12/20/91

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

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

Assoc w/ B015P7

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	2	J x10=20
67-64-1	Acetone	5	J x10=50
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

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Lab File ID (Standard): W121802 Date Analyzed: 12/18/91

Instrument ID: 1050W Time Analyzed: 0918

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

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
		1		18		33	
	12 HOUR STD	73166	5.13	179493	15.40	156023	20.23
	UPPER LIMIT	146332	5.63	358986	15.90	312046	20.73
	LOWER LIMIT	36583	4.63	89747	14.90	78012	19.73
	CLIENT SAMPLE NO.						
01	B015P3	32011*	5.10	85045*	15.43	69714*	20.27
02	VBLKLVW215-MB1	44747	5.10	124484	15.47	102862	20.27

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

Internal Standard Summary 0000092 Pg 2 of 3

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Lab File ID (Standard): W121921 Date Analyzed: 12/19/91

Instrument ID: 1050W Time Analyzed: 2153

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

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	58783	5.13	149726	15.40	120201	20.23
	UPPER LIMIT	117566	5.63	299452	15.90	240402	20.73
	LOWER LIMIT	29392	4.63	74863	14.90	60101	19.73
	CLIENT SAMPLE NO.						
01	B015P3MS	35772	5.10	85080	15.43	76359	20.23
02	B015P3MSD	38198	5.07	92487	15.43	74565	20.23
03	B015P7	22348*	5.10	69838*	15.40	51822*	20.23
04	VBLKLVW217-MB1	57244	5.17	130882	15.40	113474	20.23

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

Internal Standard Summary pg 3 of 3

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Lab File ID (Standard): W122003 Date Analyzed: 12/20/91

Instrument ID: 1050W Time Analyzed: 1723

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

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	60091	5.13	140994	15.40	124871	20.23
	UPPER LIMIT	120182	5.63	281988	15.90	249742	20.73
	LOWER LIMIT	30046	4.63	70497	14.90	62436	19.73
	CLIENT SAMPLE NO.						
01	B015P7RE	26593*	5.13	60876*	15.43	52530*	20.27
02	VBLKLVW218-MB1	64734	5.20	146231	15.43	123586	20.27

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

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

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/23/92
LABORATORY: Weston	CASE: 91121L747	SDG: 747
SAMPLES/MATRIX: B015B- B015P3, B015P7/ Soil		
6/23/92		

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		

4.2. FIELD BLANKS

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

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

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

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

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

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

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

5.2 MATRIX SPIKE RECOVERY

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

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

Are there any calculation errors? Yes No N/A

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.

9213516.1822 Holding Time Summary pg 1 of 1

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

DATE RECEIVED: 12/13/91 RFW LOT # :9112L747

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015P3	001	S	91LE1772	12/10/91	12/13/91 3	01/10/92 28
B015P3	001 MS	S	91LE1772	12/10/91	12/13/91	01/10/92
B015P3	001 MSD	S	91LE1772	12/10/91	12/13/91	01/10/92
B015P7	002	S	91LE1772	12/11/91	12/13/91 2	01/21/92 39

LAB QC:

SBLK	MB1	S	91LE1772	N/A	12/13/91	01/10/92
SBLK	MB1 BS	S	91LE1772	N/A	12/13/91	01/10/92

Holding Times were met.
6/23/92

FEB 1992
RECEIVED
OSM DMO

6B

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Instrument ID: IN50J Calibration Date(s): 01/21/92 01/21/92

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

Assoc. w/ sample B015P7 only

LAB FILE ID: RRF20 = J012110 RRF50 = J012106
RRF80 = J012107 RRF120= J012108 RRF160= J012109

COMPOUND		RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol	*	1.597	1.587	1.766	1.946	1.901	1.759	9.5
bis(2-Chloroethyl)ether		1.296	1.336	1.408	1.554	1.635	1.446	10.0
2-Chlorophenol		1.262	1.321	1.455	1.600	1.648	1.457	11.6
1,3-Dichlorobenzene		1.336	1.412	1.486	1.644	1.752	1.526	11.1
1,4-Dichlorobenzene	*	1.411	1.511	1.596	1.748	1.816	1.616	10.3
Benzyl alcohol		0.755	0.815	0.862	0.963	1.055	0.890	13.4
1,2-Dichlorobenzene		1.329	1.465	1.578	1.759	1.849	1.596	13.3
2-Methylphenol		1.129	1.161	1.296	1.394	1.423	1.281	10.4
bis(2-Chloroisopropyl)ether		1.834	1.930	1.950	2.090	2.239	2.009	7.9
4-Methylphenol		1.147	1.194	1.306	1.408	1.421	1.295	9.5
N-Nitroso-Di-n-propylamine	#	0.966	1.019	1.024	1.104	1.176	1.058	7.8
Hexachloroethane		0.527	0.585	0.598	0.663	0.720	0.619	12.0
Nitrobenzene		0.360	0.379	0.393	0.420	0.447	0.400	8.6
Isophorone		0.686	0.731	0.766	0.822	0.863	0.774	9.1
2-Nitrophenol	*	0.123	0.129	0.149	0.169	0.179	0.150	16.3
2,4-Dimethylphenol		0.325	0.321	0.372	0.396	0.407	0.364	10.9
Benzoic acid			0.071	0.088	0.098	0.100	0.089	14.8
bis(2-Chloroethoxy)methane		0.422	0.453	0.481	0.537	0.559	0.490	11.6
2,4-Dichlorophenol	*	0.258	0.275	0.305	0.343	0.348	0.306	13.1
1,2,4-Trichlorobenzene		0.286	0.309	0.329	0.370	0.398	0.338	13.4
Naphthalene		0.936	1.030	1.072	1.012	0.969	1.004	5.3
4-Chloroaniline		0.385	0.415	0.458	0.510	0.549	0.463	14.5
Hexachlorobutadiene	*	0.164	0.174	0.181	0.201	0.208	0.186	9.9
4-Chloro-3-methylphenol	*	0.249	0.262	0.290	0.326	0.334	0.292	12.9
2-Methylnaphthalene		0.563	0.622	0.672	0.777	0.756	0.678	13.3
Hexachlorocyclopentadiene	#	0.231	0.259	0.303	0.342	0.377	0.302	19.6
2,4,6-Trichlorophenol	*	0.274	0.288	0.338	0.378	0.416	0.339	17.6
2,4,5-Trichlorophenol			0.357	0.399	0.440	0.426	0.405	9.0
2-Chloronaphthalene		0.967	1.068	1.150	1.302	1.335	1.164	13.3
2-Nitroaniline			0.340	0.374	0.400	0.430	0.386	9.9
Dimethylphthalate		1.045	1.131	1.166	1.241	1.285	1.174	8.0
Acenaphthylene		1.540	1.743	1.923	2.044	1.975	1.845	11.0
2,6-Dinitrotoluene		0.221	0.246	0.272	0.310	0.339	0.278	17.1
3-Nitroaniline			0.244	0.273	0.303	0.325	0.286	12.3
Acenaphthene	*	0.947	1.059	1.176	1.349	1.381	1.182	15.7
2,4-Dinitrophenol	#		0.033	0.044	0.057	0.068	0.050	30.2
4-Nitrophenol	#		0.088	0.109	0.125	0.122	0.111	15.2

Calibration 97 3514 1824 Bulk Hardy

0000095

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6C

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Instrument ID: IN50J Calibration Date(s): 01/21/92 01/21/92

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

Assoc w/ 801527 only

LAB FILE ID: RRF20 = J012110 RRF50 = J012106
RRF80 = J012107 RRF120= J012108 RRF160= J012109

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.344	1.455	1.564	1.678	1.626	1.533	8.8
2,4-Dinitrotoluene	0.263	0.292	0.325	0.349	0.366	0.319	13.1
Diethylphthalate	1.021	1.089	1.140	1.206	1.230	1.137	7.5
4-Chlorophenyl-phenylether	0.554	0.657	0.718	0.770	0.762	0.692	12.9
Fluorene	1.146	1.401	1.612	1.745	1.652	1.511	15.9
4-Nitroaniline		0.206	0.231	0.235	0.228	0.225	5.8
4,6-Dinitro-2-methylphenol		0.038	0.050	0.064	0.074	0.056	27.9
N-Nitrosodiphenylamine (1) *	0.508	0.589	0.618	0.712	0.743	0.634	15.0*
4-Bromophenyl-phenylether	0.211	0.244	0.249	0.273	0.289	0.253	11.8
Hexachlorobenzene	0.239	0.269	0.272	0.297	0.314	0.278	10.3
Pentachlorophenol *		0.070	0.089	0.111	0.114	0.096	21.5*
Phenanthrene	1.000	1.134	1.206	1.299	1.299	1.188	10.6
Anthracene	0.986	1.113	1.212	1.265	1.153	1.146	9.3
Di-n-Butylphthalate	0.941	1.159	1.223	1.255	1.222	1.160	11.0
Fluoranthene *	0.779	0.954	1.006	1.095	1.087	0.984	13.1*
Pyrene	1.420	1.523	1.537	1.483	1.337	1.460	5.6
Butylbenzylphthalate	0.548	0.632	0.640	0.673	0.711	0.641	9.4
3,3'-Dichlorobenzidine	0.226	0.289	0.335	0.397	0.444	0.338	25.5
Benzo(a)anthracene	1.067	1.252	1.279	1.390	1.520	1.302	12.9
Chrysene	0.963	1.087	1.078	1.126	1.174	1.086	7.2
bis(2-Ethylhexyl)phthalate	0.724	0.878	0.937	1.036	1.166	0.948	17.5
Di-n-Octyl phthalate *	1.483	1.829	1.912	2.252	2.571	2.009	20.7*
Benzo(b)fluoranthene	1.117	1.278	1.390	1.576	1.723	1.417	16.9
Benzo(k)fluoranthene	0.940	1.160	1.235	1.498	1.589	1.284	20.4
Benzo(a)pyrene *	0.841	1.035	1.135	1.317	1.462	1.158	20.9*
Indeno(1,2,3-cd)pyrene	0.744	0.793	0.885	0.979	1.005	0.881	12.9
Dibenzo(a,h)anthracene	0.586	0.739	0.778	0.869	0.946	0.784	17.4
Benzo(g,h,i)perylene	0.682	0.731	0.795	0.791	0.779	0.756	6.4
Nitrobenzene-d5	0.357	0.376	0.392	0.427	0.452	0.401	9.6
2-Fluorobiphenyl	1.197	1.335	1.440	1.598	1.573	1.429	11.7
p-Terphenyl-d14	1.046	1.178	1.180	1.219	1.102	1.145	6.1
Phenol-d5	1.537	1.532	1.682	1.842	1.864	1.691	9.4
2-Fluorophenol	1.184	1.174	1.300	1.387	1.391	1.287	8.2
2,4,6-Tribromophenol	0.105	0.123	0.143	0.160	0.164	0.139	18.0

(1) Cannot be separated from Diphenylamine

Calibration Summary 9213516 1825 0000086 pg 3 of 3

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9112L747

Instrument ID: IN50J Calibration Date: 01/10/92 Time: 0953

Lab File ID: J011002 Init. Calib. Date(s): 01/03/92 01/03/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

Assoc. w/ sample B01593 only

COMPOUND	RRF	RRF50	%D
Dibenzofuran	1.789	1.846	-3.2
2,4-Dinitrotoluene	0.329	0.365	-10.9
Diethylphthalate	1.405	1.488	-5.9
4-Chlorophenyl-phenylether	0.816	1.080	-32.4
Fluorene	1.773	2.121	-19.6
4-Nitroaniline	0.209	0.217	-3.8
4,6-Dinitro-2-methylphenol	0.161	0.122	24.2
N-Nitrosodiphenylamine (1) *	0.818	0.746	8.8 *
4-Bromophenyl-phenylether	0.321	0.350	-9.0
Hexachlorobenzene	0.361	0.424	-17.5
Pentachlorophenol *	0.183	0.170	7.1 *
Phenanthrene	1.576	1.541	2.2
Anthracene	1.484	1.544	-4.0
Di-n-Butylphthalate	1.800	1.927	-7.1
Fluoranthene *	1.460	1.620	-11.0 *
Pyrene	1.595	1.606	-0.7
Butylbenzylphthalate	0.820	0.693	15.5
3,3'-Dichlorobenzidine	0.482	0.384	20.3
Benzo(a)anthracene	1.628	1.624	0.2
Chrysene	1.387	1.322	4.7
bis(2-Ethylhexyl)phthalate	1.386	1.194	13.9
Di-n-Octyl phthalate *	2.196	2.094	4.6 *
Benzo(b)fluoranthene	1.593	1.575	1.1
Benzo(k)fluoranthene	1.466	1.603	-9.3
Benzo(a)pyrene *	1.335	1.254	6.1 *
Indeno(1,2,3-cd)pyrene	0.996	0.674	32.3
Dibenzo(a,h)anthracene	0.898	0.625	30.4
Benzo(g,h,i)perylene	0.796	0.582	26.9
Nitrobenzene-d5	0.558	0.551	1.3
2-Fluorobiphenyl	1.894	1.895	-0.1
p-Terphenyl-d14	1.277	1.404	-9.9
Phenol-d5	1.954	1.643	15.9
2-Fluorophenol	1.444	1.398	3.2
2,4,6-Tribromophenol	0.161	0.212	-31.7

(1) Cannot be separated from Diphenylamine

Blank Sw 9/10/91 1826

1B

0000141

Pg 1 of 2

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LE1772-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: J011004

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 0 dec.

Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/10/92

GPC Cleanup: (Y/N) Y pH: 7.0

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	54	J
111-44-4	bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

x5=270

All assoc. sample results are ND See Phenol. No qual. is necessary.

FORM 1 SV-1

12/88 Rev.

Blank Summary 9213516.1827 0000143 Pg 2 of 2

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LE1772-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: J011004

Level: (low/med) LOW

Date Received: 12/13/91

% Moisture: not dec. 0 dec.

Date Extracted: 12/13/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 01/10/92

GPC Cleanup: (Y/N) Y pH: 7.0

Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1.	ALDOL CONDENSATE	6.22	100	JA	xs = 500
2.	ADIPATE	23.15	9000	J	xs = 4500

Accuracy Report 9713516.1828 0000012 Pg 1 of 1

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9112L747-001

MATRIX Spike - Sample No.: B015P3 Level:(low/med) LOW

All Surrogates are in. No qual. is required

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC
Phenol	3300	0	1880	57	26- 90
2-Chlorophenol	3300	0	1750	53	25-102
1,4-Dichlorobenzene	1650	0	693	42	28-104
N-Nitroso-Di-n-propylamine	1650	0	672	41	41-126
1,2,4-Trichlorobenzene	1650	0	762	46	38-107
4-Chloro-3-methylphenol	3300	0	2060	62	26-103
Acenaphthene	1650	0	692	42	31-137
4-Nitrophenol	3300	0	2120	64	11-114
2,4-Dinitrotoluene	1650	0	846	51	28- 89
Pentachlorophenol	3300	0	2250	68	17-109
Pyrene	1650	0	1130	68	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	3290	2560	78	31	35	26- 90
2-Chlorophenol	3290	2210	67	23	50	25-102
1,4-Dichlorobenzene	1640	843	51	19	27	28-104
N-Nitroso-Di-n-propylamine	1640	849	52	23	38	41-126
1,2,4-Trichlorobenzene	1640	920	56	19	23	38-107
4-Chloro-3-methylphenol	3290	2550	78	22	33	26-103
Acenaphthene	1640	867	53	23 *	19	31-137
4-Nitrophenol	3290	2320	71	10	50	11-114
2,4-Dinitrotoluene	1640	886	54	5	47	28- 89
Pentachlorophenol	3290	2410	73	7	47	17-109
Pyrene	1640	1100	67	1	36	35-142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 1 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS:

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

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/25/97
LABORATORY: Weston	CASE: 9112L747	SDG: 747
SAMPLES/MATRIX: B015P3, B015P7 / Soil		

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	✓		
Data Summary	✓		
Chain-of-Custody	✓		
QC Summary			
Surrogate report	✓		
MS/MSD report	✓		
Blank summary report	✓		
Sample Data			
Sample reports	✓		
Chromatograms	✓		
GC integration reports	✓		
Worksheets		X	
UV traces from GPC			X
GC/MS confirmation spectra			X
Standards Data			
Pesticides Evaluation Standards Summary	✓		
Pesticides/PCB Standards Summary	✓		
Pesticides/PCB identification	✓		
Pesticides standard chromatograms	✓		
Raw QC Data			
Blank analysis report forms and chromatograms	✓		
MS/MSD report forms and chromatograms	✓		

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

The assoc samples - yes
MS/MSD were analyzed - - - of holding time

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.

9213516.1837

Holding Time Summary

pg 1 of 1

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 12/13/91 RFW LOT # :9112L747

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015P3	001	S	91LE1730	12/10/91	12/18/91 8	01/27/92 4
B015P7	002	S	91LE1730	12/11/91	12/18/91 7	01/27/92 4
B015P7	002 MS	S	91LE1730	12/11/91	12/18/91	01/28/92 4
B015P7	002 MSD	S	91LE1730	12/11/91	12/18/91	01/28/92 4

LAB QC:

PBLK	MB1	S	91LE1730	N/A	12/18/91	01/27/92
PBLK	MB1 BS	S	91LE1730	N/A	12/18/91	01/27/92

Sample B015P3 was extracted out of holding time. The sample results were qualified as estimated UJ

The MS & MSD of sample B015P7 were analyzed out of holding time. However, since this does not directly effect the sample data, no qualification is required.

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OSM DMO

6/25/9

9713516.1838

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

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/26/92
LABORATORY: Weston	CASE: 91121747	SDG: 747
SAMPLES/MATRIX: B015P3, B015P7 / Soils		

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 $\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.

Holding Time Summary

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Pg 1 of 3

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

DATE RECEIVED: 12/13/91 RFW LOT # :9112L747

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
E015P3							
SILVER, TOTAL	001	S	92L0154	12/10/91	01/14/92	02/03/92	55
SILVER, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	02/03/92	
SILVER, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	02/03/92	
ALUMINUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	51
ALUMINUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
ALUMINUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
ARSENIC, TOTAL	001	S	92L0153	12/10/91	01/14/92	01/20/92	41
ARSENIC, TOTAL	001 REP	S	92L0153	12/10/91	01/14/92	01/20/92	
ARSENIC, TOTAL	001 MS	S	92L0153	12/10/91	01/14/92	01/20/92	
BARIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	51
BARIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
BARIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
BERYLLIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	
BERYLLIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
BERYLLIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
BISMUTH, TOTAL	001	S	92L0154	12/10/91	01/14/92	02/03/92	55
BISMUTH, TOTAL REP	001 REP	S	92L0154	12/10/91	01/14/92	02/03/92	
BISMUTH, TOTAL SPIKE	001 MS	S	92L0154	12/10/91	01/14/92	02/03/92	
CALCIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	51
CALCIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
CALCIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
CADMIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	02/04/92	56
CADMIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	02/04/92	
CADMIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	02/04/92	
COBALT, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	51
COBALT, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
COBALT, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
CHROMIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	
CHROMIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
CHROMIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
COPPER, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	
COPPER, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
COPPER, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
IRON, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92	
IRON, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92	
IRON, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92	
MERCURY, TOTAL	001	S	92C0011	12/10/91	01/07/92	01/07/92	28

9213516.1844

Holding Time Summary

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

DATE RECEIVED: 12/13/91 RFW LOT # :9112L747

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 REP	S	92C0011	12/10/91	01/07/92	01/07/92 28
MERCURY, TOTAL	001 MS	S	92C0011	12/10/91	01/07/92	01/07/92
POTASSIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92 51
POTASSIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92
POTASSIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92
MAGNESIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92
MAGNESIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92
MAGNESIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92
MANGANESE, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92
MANGANESE, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92
MANGANESE, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92
SODIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92
SODIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92
SODIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92
NICKEL, TOTAL	001	S	92L0154	12/10/91	01/14/92	01/30/92
NICKEL, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92
NICKEL, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92
LEAD, TOTAL	001	S	92L0237	12/10/91	01/22/92	01/26/92 47
LEAD, TOTAL	001 REP	S	92L0237	12/10/91	01/22/92	01/26/92
LEAD, TOTAL	001 MS	S	92L0237	12/10/91	01/22/92	01/26/92
ANTIMONY, TOTAL	001	S	92L0154	12/10/91	01/14/92	02/07/92 59
ANTIMONY, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	01/30/92 51
ANTIMONY, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	01/30/92
SELENIUM, TOTAL	001	S	92L0153	12/10/91	01/14/92	01/20/92 41
SELENIUM, TOTAL	001 REP	S	92L0153	12/10/91	01/14/92	01/20/92
SELENIUM, TOTAL	001 MS	S	92L0153	12/10/91	01/14/92	01/20/92
THALLIUM, TOTAL	001	S	92L0153	12/10/91	01/14/92	01/20/92
THALLIUM, TOTAL	001 REP	S	92L0153	12/10/91	01/14/92	01/20/92
THALLIUM, TOTAL	001 MS	S	92L0153	12/10/91	01/14/92	01/20/92
VANADIUM, TOTAL	001	S	92L0154	12/10/91	01/14/92	02/03/92 55
VANADIUM, TOTAL	001 REP	S	92L0154	12/10/91	01/14/92	02/03/92
VANADIUM, TOTAL	001 MS	S	92L0154	12/10/91	01/14/92	02/03/92
ZINC, TOTAL	001	S	92L0512	12/10/91	02/17/92	02/17/92 69
ZINC, TOTAL	001 REP	S	92L0512	12/10/91	02/17/92	02/17/92
ZINC, TOTAL	001 MS	S	92L0512	12/10/91	02/17/92	02/17/92
B015P7						
SILVER, TOTAL	002	S	92L0154	12/11/91	01/14/92	02/03/92 54
ALUMINUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92 50

Holding time Summary

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

DATE RECEIVED: 12/13/91 RFW LOT # :9112L747

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	002	S	92L0153	12/11/91	01/14/92	01/20/92 40
BARIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92 50
BERYLLIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92 50
BISMUTH, TOTAL	002	S	92L0154	12/11/91	01/14/92	02/03/92 54
CALCIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92 50
CADMIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	02/04/92 55
COBALT, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92 50
CHROMIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92
COPPER, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92
IRON, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92
MERCURY, TOTAL	002	S	92C0011	12/11/91	01/07/92	01/07/92 27
POTASSIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92 50
MAGNESIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92
MANGANESE, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92
SODIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92
NICKEL, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92
LEAD, TOTAL	002	S	92L0237	12/11/91	01/22/92	01/26/92 46
ANTIMONY, TOTAL	002	S	92L0154	12/11/91	01/14/92	01/30/92 50
SELENIUM, TOTAL	002	S	92L0153	12/11/91	01/14/92	01/20/92 40
THALLIUM, TOTAL	002	S	92L0153	12/11/91	01/14/92	01/20/92
VANADIUM, TOTAL	002	S	92L0154	12/11/91	01/14/92	02/03/92 54
ZINC, TOTAL	002	S	92L0512	12/11/91	02/17/92	02/17/92 68

LAB QC:

SILVER LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	02/03/92
ALUMINUM LABORTORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
BARIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
BERYLLIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
BISMUTH, LCS	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
CALCIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
CADMIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	02/04/92
COBALT LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
CHROMIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
COPPER LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
IRON LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
POTASSIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
MAGNESIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
MANGANESE LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92
SODIUM LABORATORY	LC1 BS	S	92L0154	N/A	01/14/92	01/30/92

Blank Summary 9213516.1846 0000025 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.: CLP747

Preparation Blank Matrix (soil/water): SOIL

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
	5x		5x		5x		5x		5x		
Aluminum	83.0	U	83.0	U	83.0	U	83.0	U	16.600	U	P
Antimony	23.0	U	151 30.2	B	234.5 46.9	B	23.0	U	4.600	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	38.0	U	38.0	U	38.0	U	38.0	U	7.600	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	.200	U	P
Cadmium	3.0	U	16 3.2	B	3.0	U	15 3.0		.600	U	P
Calcium	88.0	U	88.0	U	88.0	U	88.0	U	17.600	U	P
Chromium	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Cobalt	51.5 10.3	B	29 5.8	B	54 10.8	B	31.5 6.3	B	10 2.000	B	P
Copper	6.0	U	6.0	U	6.0	U	32 6.4	B	1.200	U	P
Iron	39.0	U	39.0	U	39.0	U	39.0	U	7.800	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	78.0	U	78.0	U	78.0	U	492 98.4	B	15.600	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	P
Mercury	.1	U	.1	U	.1	U	.1	U	.050	U	CV
Nickel	18.0	U	18.0	U	18.0	U	18.0	U	3.600	U	P
Potassium	734.0	U	734.0	U	734.0	U	734.0	U	146.800	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	4.0	U	4.0	U	4.0	U	4.0	U	.800	U	P
Sodium	638.0	U	638.0	U	638.0	U	638.0	U	127.600	U	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Vanadium	5.0	U	29.5 5.9	B	5.0	U	5.0	U	1.000	U	P
Zinc	4.0	U	4.0	U	4.0	U	4.0	U	71.5 14.300		P
Cyanide	20.0	U	20.0	U	20.0	U			1.000	U	C

FORM III - IN 03/90

6/26/9

Accuracy 9713516.1842 0000033 Pg 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B015P3S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP747

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 96.4

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	65.4000		7.0000	B	103.70	56.3	N	P
Arsenic	75-125	8.4000		2.2000		8.30	74.8	N	F
Barium	75-125	442.3000		70.0000		414.80	89.7		P
Beryllium	75-125	8.8000		.3100	B	10.40	81.6		P
Cadmium	75-125	11.4000		1.3000		10.40	97.1		P
Calcium									NR
Chromium	75-125	42.6000		5.7000		41.50	88.9 ~~102.6~~		P
Cobalt	75-125	97.4000		8.7000	B	103.70	85.5		P
Copper	75-125	56.5000		12.4000		51.90	85.0		P
Iron									NR
Lead	75-125	8.3000		4.9000		4.10	82.9		F
Magnesium									NR
Manganese	75-125	367.7000		266.2000		103.70	97.9		P
Mercury	75-125	.5440		.0519	U	.52	104.6 ~~101.6~~		CV
Nickel	75-125	92.5000		8.9000		103.70	80.6		P
Potassium									NR
Selenium	75-125	2.0000		.4148	U	2.10	95.0		F
Silver	75-125	8.0000		.8296	U	10.40	76.8		P
Sodium									NR
Thallium	75-125	9.5000		.4148	U	10.40	91.6		F
Vanadium	75-125	121.8000		22.5000		103.70	95.8		P
Zinc	75-125	113.0000		20.1000		103.70	89.6		P
Cyanide	75-125	3.3300		1.0380	U	5.19	63.3	N	C

Comments:

FORM V (Part 1) - IN 03/90

$\%R = \frac{SSR - SR}{SA} \times 100$

Chromium $\%R = \frac{42.6 - 5.7}{41.5} \times 100 = 88.9\%$

Mercury $\%R = \frac{0.5440 - \emptyset}{0.52} \times 100 = 104.6\%$

Precision 97 1351 6 1948 0000041 Pg 1 of 1

U.S. EPA - CLP

9
ICP SERIAL DILUTIONS

EPA SAMPLE NO.

BO15P3L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP747

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M	
Aluminum	20430.60		25246.50		23.6	E	P	J
Antimony	33.90	B	115.00	U	100.0		P	
Arsenic							NR	
Barium	337.60		421.00	B	24.7		P	
Beryllium	1.50	B	5.00	U	100.0		P	
Cadmium	6.50		17.50	B	169.2		P	J
Calcium	37384.80		46235.51		23.7	E	P	
Chromium	27.70		34.50	B	24.5		P	
Cobalt	42.10	B	74.50	B	77.0		P	
Copper	59.90		112.00	B	87.0		P	
Iron	58459.10		72372.00		23.8	E	P	J
Lead							NR	
Magnesium	15260.70		19169.00	B	25.6	E	P	J
Manganese	1283.60		1586.00		23.6	E	P	J
Mercury							NR	
Nickel	43.00		90.00	U	100.0		P	
Potassium	6032.40		10661.50	B	76.7		P	
Selenium							NR	
Silver	4.00	U	20.00	U			P	
Sodium	638.00	U	3190.00	U			P	
Thallium							NR	
Vanadium	108.40		169.50	B	56.4		P	
Zinc	96.70		82.00	B	15.2		P	

FORM IX - IN

03/90

ACCURACY DATA SUMMARY - FORM B-4

SDG: 9112L747	REVIEWER: [illegible]	DATE: 6/26/92	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	**COMPOUND**	**% RECOVERY**	**SAMPLE(S) AFFECTED**	**QUALIFIER REQUIRED**
B01SP3	Lead	81.8	See Sample ID column	none - Analyzed by MSA
B01SP7	Lead	82.7	↓	none - Analyzed by MSA
B01SP7	Selenium	80.0	↓	UJ

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

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 6/29/92
LABORATORY: Western	CASE: 9112L747	SDG: 747
SAMPLES/MATRIX: B015P3, B015P7 / Soils		

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		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

Phosphate - B0150P5

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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COMMENTS (attach additional sheets as necessary):

The sample ~~cont~~ concentration for B015P5, Phosphate, is not non-detect. The result is 1.3 mg/kg Phosphate.

~~The~~

For the MS-Sulfate, the sample concentration exceeds the spiked amount by a factor greater than four. Therefore, the %R are not reliable and qualification is not necessary.

9213516 1855 Holding Time Summary Pg 1 of 1

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

DATE RECEIVED: 12/13/91 RFW LOT # :9112L747

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B015P3						
% SOLIDS	001	S	91L%S261	12/10/91	12/20/91	12/21/91 11
% SOLIDS	001 REP	S	91L%S261	12/10/91	12/20/91	12/21/91
NITRATE BY IC	001	S	91LICA91	12/10/91	12/30/91	12/30/91 20
TOTAL CYANIDE	001	S	91LC381	12/10/91	12/20/91	12/20/91 10
TOTAL CYANIDE	001 REP	S	91LC381	12/10/91	12/20/91	12/20/91
TOTAL CYANIDE	001 MS	S	91LC381	12/10/91	12/20/91	12/20/91
TOTAL CYANIDE	001 MSD	S	91LC381	12/10/91	12/20/91	12/20/91
PHOSPHATE BY IC	001	S	91LICA91	12/10/91	12/30/91	12/30/91 20
SULFATE BY IC	001	S	91LICA91	12/10/91	12/30/91	12/30/91
NITRATE NITRITE	001	S	92LNA003	12/10/91	01/06/91	01/06/91 27
NITRATE NITRITE	001 REP	S	92LNA003	12/10/91	01/06/91	01/06/91
NITRATE NITRITE	001 MS	S	92LNA003	12/10/91	01/06/91	01/06/91
NITRATE NITRITE	001 MSD	S	92LNA003	12/10/91	01/06/91	01/06/91
TOTAL ORGANIC CARBON	001	S	91LOM069	12/10/91	12/19/91	12/27/91 17
TOTAL ORGANIC CARBON	001 REP	S	91LOM069	12/10/91	12/19/91	12/27/91
SUB-OUT TEST FOR SUB	001	S		12/10/91		
B015P7						
% SOLIDS	002	S	91L%S261	12/11/91	12/20/91	12/21/91 10
NITRATE BY IC	002	S	91LICA91	12/11/91	12/30/91	12/30/91 19
NITRATE BY IC	002 REP	S	91LICA91	12/11/91	12/30/91	12/30/91
NITRATE BY IC	002 MS	S	91LICA91	12/11/91	12/30/91	12/30/91
NITRATE BY IC	002 MSD	S	91LICA91	12/11/91	12/30/91	12/30/91
TOTAL CYANIDE	002	S	91LC381	12/11/91	12/20/91	12/20/91 9
PHOSPHATE BY IC	002	S	91LICA91	12/11/91	12/30/91	12/30/91 19
PHOSPHATE BY IC	002 REP	S	91LICA91	12/11/91	12/30/91	12/30/91
PHOSPHATE BY IC	002 MS	S	91LICA91	12/11/91	12/30/91	12/30/91
PHOSPHATE BY IC	002 MSD	S	91LICA91	12/11/91	12/30/91	12/30/91
SULFATE BY IC	002	S	91LICA91	12/11/91	12/30/91	12/30/91
SULFATE BY IC	002 REP	S	91LICA91	12/11/91	12/30/91	12/30/91
SULFATE BY IC	002 MS	S	91LICA91	12/11/91	12/30/91	12/30/91
SULFATE BY IC	002 MSD	S	91LICA91	12/11/91	12/30/91	12/30/91
NITRATE NITRITE	002	S	92LNA003	12/11/91	01/06/91	01/06/91 26
TOTAL ORGANIC CARBON	002	S	91LOM069	12/11/91	12/19/91	12/27/91 16
SUB-OUT TEST FOR SUB	002	S		12/11/91		

LAB QC:

6/29/92

97 Accuracy Summary

Pg 1 of 1

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 01/07/92

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9112L747

WORK ORDER: 6168-02-01-0000

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECO
-001	BO15P3	Cyanide, Total	3.3	1.0 u	5.2	64.
		Cyanide, Total MSD	3.3	1.0 u	5.2	63.
		Nitrate Nitrite	72.4	19.5	51.9	102
		Nitrate Nitrite MSD	73.0	19.5	51.9	103
-002	BO15P7	Nitrate by IC	189	135	52.1	102
		Nitrate by IC MSD	198	135	52.1	120
		Phosphate by IC	55.6	1.3 u	52.1	107
		Phosphate by IC MSD	54.0	1.3 u	52.1	104
		Sulfate by IC	542	477	52.1	125
		Sulfate by IC MSD	544	477	52.1	129
BLANK10	91LICA91-MB1	Nitrate by IC	50.0	1.2 u	50.0	100
		Phosphate by IC	49.7	1.2 u	50.0	99.
		Sulfate by IC	50.4	1.2 u	50.0	101
BLANK10	92LNA003-MB1	Nitrate Nitrite	1.9	0.50u	2.0	96.
		Nitrate Nitrite MSD	2.0	0.50u	2.0	99.
BLANK20	92LNA003-MB2	Nitrate Nitrite	2.0	0.50u	2.0	101

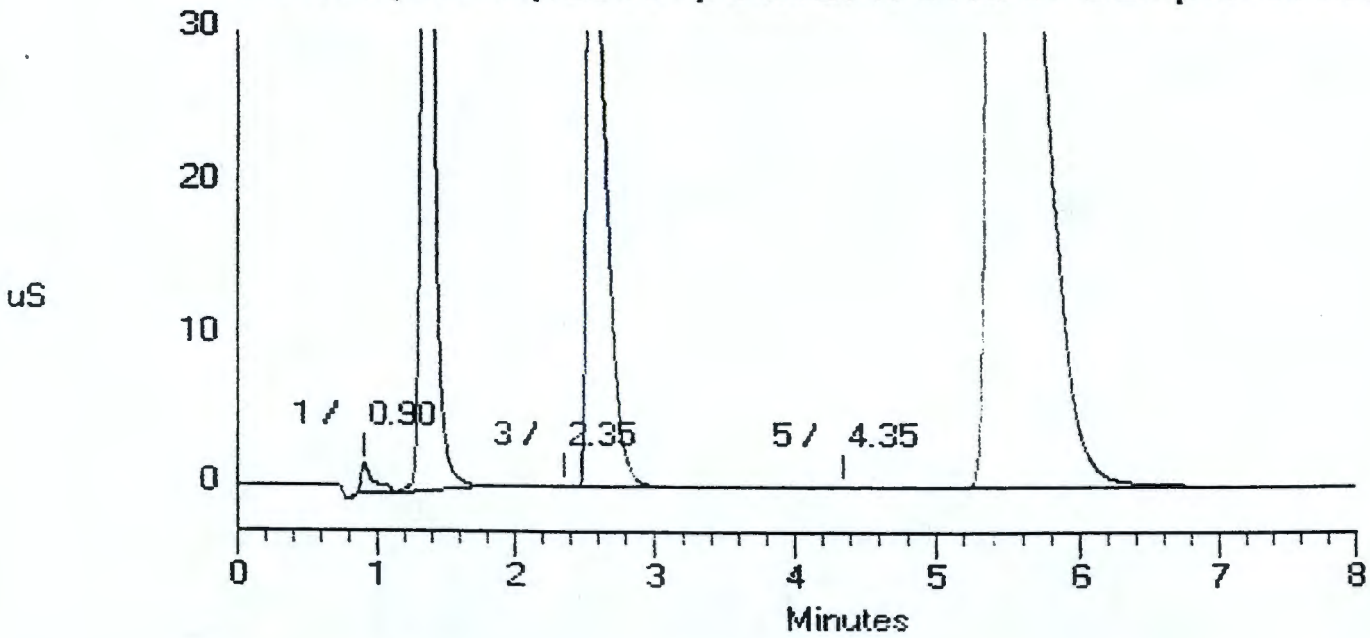
9713516.1857 Ion Summary

Sample Name: 9112L747-002		Date: Mon Dec 30 19:37:36 1991	
Data File : D:\DATA\123091\RAWDATC1.D41			
Method : C:\DX\METHOD\AS4A7B.met			
ACI Address: 1	System : 1	Inject#: 41	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	0.90	FLUORIDE	0.399	1789	11970	1	0.00
2	1.37	CHLORIDE	19.364	88126	486280	1	4.28
3	2.35	BROMIDE	0.133	73	423	2	7.07
4	2.57	NITRATE	25.125	41814	393799	2	4.20
5	4.35	PHOSPHATE	0.243	55	640	1	5.96
6	5.47	SULFATE	710.671	89597	1829756	1	-1.08
		Totals	755.935	221454	2722866		

File: D:\DATA\123091\RAWDATC1.D41 Sample: 9112L747-0



$$mg/kg = \frac{C \times V}{W \times D}$$

$$mg/kg\ Phosphate = \frac{(0.243)(30)}{(6)(0.9588)} = 1.267 \approx 1.3$$

6/29/97