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MEMORANDUM

DATE: 22 December 1998

TO: David Bennett, WAM, U S. EPA, Region X

FROM. Michelle Turner, Chemist, WESTON, Seattle
rnm Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT. Validation of Polychlorinated Biphenyls (Aroclor) Data
Laboratory Batch. K9805833
Site: Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC CONTROL NO.. 4000-019-038-AAAK

cc Bruce Woods, RAP-WAM, U S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle (memo only)
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of twenty sediment samples, laboratory batch K9805833, collected from the Duwamish River has been completed Samples were analyzed for polychlorinated biphenyls as Aroclors using EPA Method 8082 by Columbia Analytical Services of Kelso, Washington The samples were numbered:

98354040	98354041	98354042	98354043	98354044
98354045	98354046	98354047	98354048	98354049
98354050	98354051	98354052	98354053	98354054
98354055	98354056	98354057	98354058	98354059

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review

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follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240.1-05, February 1994)

1 Timeliness

All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis as specified in the Sampling and Analysis Plan

2 Initial Calibration

a) Mixed Aroclor 1016/1260 Standard

A six point initial calibration was performed Calibration factors were calculated for a minimum of five peaks, none of which are common to both Aroclors The calibration factor percent relative standard deviation (%RSD) was less than 20 percent for all peaks used for quantitation

b) Individual Aroclor Standards

Calibration factors were calculated from a mid-range standard for the other 5 Aroclors using 3 to 5 peaks

3 Calibration Verification

Aroclor 1016/1260 calibration verification standards were analyzed every 12 hours using a midrange standard The calibration factor percent difference was less than 25 percent of the initial calibration value

4 Retention Time Windows

Retention Time Windows were calculated from initial calibration. Retention times for calibration verification standards were within established windows.

5 Detection Limits

Instrument detection limits met project required quantitation limits

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6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met.

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recovery met quality control criteria for all samples.

8. Matrix Spike and Matrix Spike Duplicate

All matrix spike (MS), matrix spike duplicate (MSD) and relative percent difference (RPD) results were within QC limits.

9 Laboratory Control Sample (LCS) Analysis

LCS recovery goals for Aroclors were established in the project Sampling and Analysis Plan at 70 to 130% for sediment. Based on conversations with the laboratory, historical control chart limits of 26 – 142 for Aroclor 1016 and 40-139 for Aroclor 1260 were also used for data qualification

All LCS percent recoveries met QC guidelines (P-project, L-laboratory) with the following exceptions

Sample	Compound	Percent Recovery	QC Limits
K980908-LCS	Aroclor 1016	66	70-130 (P) 26-142 (L)

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Results for compounds listed above were qualified as estimated (J) Undetected results were also qualified as estimated (UJ)

10 Field Duplicate Analysis

Samples 98354044 and 98354045 were field duplicates. The relative percent difference between duplicate results was within limits of 35 percent RPD for all analytes where concentrations were greater than 5 times the reporting limit.

Samples 98354054 and 98354055 were also field duplicates. The relative percent difference between duplicate results was within limits of 35 percent RPD for all analytes where concentrations were greater than 5 times the reporting limit

11. Second Column Confirmation

The Relative Percent Difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples

Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98354043	Aroclor 1254	24 7	36 3	38
98354046	Aroclor 1254	118	85 3	32
98354047	Aroclor 1254	138	92 3	40
98354051	Aroclor 1242	52 8	28 2	61
98354054	Aroclor 1260	21 0	28 9	32
98354056	Aroclor 1260	17 9	26 5	39

Differences can arise from analytical interferences on one column However, the RPDs are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte

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12. Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete A duplicate analysis was performed on sample 98354040 No analytes were detected in the duplicate samples. No complications were noted in the case narrative.

13 Laboratory Contact

No laboratory contact was required

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U - The compound was analyzed for, but was not detected

UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less then CRDL or lowest calibration standard.

R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification

N - Presumptive evidence of presence of material (tentative identification).

I - Elevated reporting limit due to matrix interference

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354040	Units	ug/Kg (ppb)
Lab Code	K9805833-001	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	UJ
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/14/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354041	Units	ug/Kg (ppb)
Lab Code	K9805833-002	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/14/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/14/98	34	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/14/98	ND	

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354042	Units	ug/Kg (ppb)
Lab Code	K9805833-003	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	21	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354043	Units	ug/Kg (ppb)
Lab Code	K9805833-004	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	36	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	35	

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Analytical Report

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354044	Units	ug/Kg (ppb)
Lab Code	K9805833-005	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/16/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/16/98	184	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/16/98	69	

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354045	Units	ug/Kg (ppb)
Lab Code	K9805833-006	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/16/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/16/98	177	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/16/98	70	

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Analytical Report

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Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354046	Units	ug/Kg (ppb)
Lab Code	K9805833-007	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	UJ
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/16/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/16/98	85	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/16/98	42	

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Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354047	Units	ug/Kg (ppb)
Lab Code	K9805833-008	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/16/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/16/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/16/98	92	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/16/98	78	

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354048	Units	ug/Kg (ppb)
Lab Code	K9805833-009	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	25	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354049	Units	ug/Kg (ppb)
Lab Code	K9805833-010	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	24	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	27	

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354050	Units	ug/Kg (ppb)
Lab Code	K9805833-011	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	-
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	

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Analytical Report

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Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354051	Units	ug/Kg (ppb)
Lab Code	K9805833-012	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	28	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	97	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	68	

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Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354052	Units	ug/Kg (ppb)
Lab Code	K9805833-013	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	

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Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354053	Units	ug/Kg (ppb)
Lab Code	K9805833-014	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354054	Units	ug/Kg (ppb)
Lab Code	K9805833-015	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	25	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	29	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354055	Units	ug/Kg (ppb)
Lab Code	K9805833-016	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	23	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	23	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354056	Units	ug/Kg (ppb)
Lab Code	K9805833-017	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	25	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	26	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354057	Units	ug/Kg (ppb)
Lab Code	K9805833-018	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND UJ	
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	39	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	33	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354058	Units	ug/Kg (ppb)
Lab Code	K9805833-019	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	UJ
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	39	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	33	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805833
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/26/98
Sample Matrix:	Sediment	**Date Received:**	8/27/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98354059	Units	ug/Kg (ppb)
Lab Code	K9805833-020	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	UJ
Aroclor 1221	EPA 3550B	8082	40	1	9/8/98	10/15/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	9/8/98	10/15/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	9/8/98	10/15/98	32	
Aroclor 1260	EPA 3550B	8082	20	1	9/8/98	10/15/98	31	

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