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MEMORANDUM

DATE. 3 December 1998

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

FROM: Michelle Turner, Chemist, WESTON, Seattle
RMM Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Chlorinated Pesticide Data
Laboratory Batch: K9805481
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 three sediment samples, laboratory batch K9805481, collected from the Duwamish River has been completed Samples were analyzed for chlorinated pesticides by Columbia Analytical Services of Kelso, Washington using EPA Method 8081 The samples were numbered·

98334037 98334047 98334056

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

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1. Timeliness

All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis.

2. GC/ECD Instrument Performance

i) Retention Time Windows

Retention times of all pesticides were within windows calculated from the initial calibration

ii) DDT/Endrin Breakdown

The percent breakdown for 4,4'-DDT and Endrin was less than 20 percent for each compound and combined breakdown was less than 30 percent on both GC columns

3. Initial Calibration

a) Individual Standard Mixtures

Retention time windows were calculated correctly

Appropriate standards concentrations were used and peak heights of 50 to 100 percent of full scale were obtained.

Calibration factor percent relative standard deviation (%RSD) met QC criteria of 20 percent for pesticides and 30 percent for surrogates.

4 Calibration Verification

Instrument blanks and PEM samples were analyzed at the proper frequency

The difference between actual and calculated concentrations of individual pesticides was within QC criteria of ±25 percent

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5. Detection Limits

Instrument detection limits met project required quantitation limits with the following exceptions

Sample	Compound	QL Goal (µg/Kg)	Reported QL (µg/Kg)
98334037	Heptachlor Epoxide	1	2
98334037	Endosulfan Sulfate	2	3
98334047	alpha-Chlordane	1	2
98334047	Endrin	2	6
98334047	DDT	2	3
98334047	Toxaphene	10	160
98334056	alpha-Chlordane	1	2
98334056	DDE	1	2

Where quantitation limit goals were exceeded, undetected analytes were qualified (UI) to indicate matrix interference.

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.

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8. Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) or matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines (P-project, L-laboratory)

Sample	Compound	Percent Recovery	QC Limits
K9805449-016MS (Batch QC)	gamma-BHC (Lindane)	40	46-127 (P) 28-123 (L)
K9805449-016MS (Batch QC)	Dieldrin	not calc	31-134 (P) 35-126 (L)
K9805449-016DMS (Batch QC)	gamma-BHC (Lindane)	40	46-127 (P) 28-123 (L)
K9805449-016DMS (Batch QC)	Dieldrin	not calc	31-134 (P) 35-126 (L)
K9805449-016DMS (Batch QC)	Endrin	40	42-139 (P) 39-130 (L)

Relative percent differences (RPD) between the MS and MSD percent recoveries met QC guidelines MS percent recoveries were not calculated for Dieldrin due to matrix interference. PCB components present in the sample prevented accurate quantitation of Dieldrin. No action was taken based solely on MS/MSD data.

9. Laboratory Control Sample (LCS)

The following compounds were outside the QC guidelines (P-project, L-laboratory)

Sample	Compound	Percent Recovery	QC Limits
K980817-LCS	Aldrin	60	70-130 (P) 43-108 (L)
K980817-LCS	Dieldrin	60	70-130 (P) 42-127 (L)

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

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10. Field Duplicate Analysis

No field duplicate samples were associated with this sample delivery group.

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	DB-608 Conc	RPD
98334037	alpha-Chlordane	1.26	0 86 (ND)	38
98334037	Dieldrin	0 30 (ND)	5 32	179
98334037	DDE	0 30 (ND)	1 45	131
98334037	Endrin	1 46 (ND)	2 93	67
98334037	DDT	2 48	1.74 (ND)	84
98334047	Heptachlor Epoxide	69 41	0 85 (ND)	3940
98334047	DDD	4 32	2 0	73
98334047	Methoxychlor	12 41	0 45 (ND)	690
98334056	Heptachlor Epoxide	61 61	0 43 (ND)	3500
98334056	DDD	2 42	0 87 (ND)	89

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

12 Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. The case narrative indicated that the MS/DMS recovery of dieldrin could not be calculated because of matrix interference. PCB components were present and interfered with accurate evaluation of the spike recovery No unusual problems were noted

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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:**	K9805481
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/13/98
Sample Matrix:	Sediment	**Date Received:**	8/14/98

Organochlorine Pesticides

Sample Name	98334037	Units	ug/Kg (ppb)
Lab Code	K9805481-001	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
beta-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Heptachlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Aldrin	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND 1 UJ	
Heptachlor Epoxide	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 2 UJ	B
gamma-Chlordane	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Endosulfan I	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
alpha-Chlordane	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Dieldrin	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 1 UJ	
4,4'-DDE	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Endrin	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endosulfan II	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
4,4'-DDD	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endrin Aldehyde	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	3	1	8/17/98	8/22/98	ND 3 UJ	B
4,4'-DDT	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endrin Ketone	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Methoxychlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Toxaphene	EPA 3550A	8081A	10	1	8/17/98	8/22/98	ND	

B The MRL is elevated because of matrix interferences

VMQT 11/9/98

Approved By Vonda Neuneker Date 9-3-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805481
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/13/98
Sample Matrix:	Sediment	**Date Received:**	8/14/98

Organochlorine Pesticides

Sample Name	98334047	Units	ug/Kg (ppb)
Lab Code	K9805481-011	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
beta-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Heptachlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Aldrin	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND 1 UJ	
Heptachlor Epoxide	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
gamma-Chlordane	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Endosulfan I	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
alpha-Chlordane	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 2 UI	~~B~~
Dieldrin	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND 1 UJ	
4,4'-DDE	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Endrin	EPA 3550A	8081A	6	1	8/17/98	8/22/98	ND 6 UI	~~B~~
Endosulfan II	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
4,4'-DDD	EPA 3550A	8081A	2	1	8/17/98	8/22/98	2	
Endrin Aldehyde	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
4,4'-DDT	EPA 3550A	8081A	3	1	8/17/98	8/22/98	ND 3 UI	~~B~~
Endrin Ketone	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Methoxychlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Toxaphene	EPA 3550A	8081A	160	1	8/17/98	8/22/98	ND 160 UI	~~B~~

B The MRL is elevated because of matrix interferences

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Approved By Wanda Neuneker Date 9-3-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805481
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/13/98
Sample Matrix:	Sediment	**Date Received:**	8/14/98

Organochlorine Pesticides

Sample Name	98334056	Units	ug/Kg (ppb)
Lab Code	K9805481-020	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
alpha-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
beta-BHC	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
gamma-BHC (Lindane)	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Heptachlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Aldrin	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	1UJ
Heptachlor Epoxide	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
gamma-Chlordane	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Endosulfan I	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
alpha-Chlordane	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	2UJ B
Dieldrin	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	1UJ
4,4'-DDE	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	2UJ B
Endrin	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endosulfan II	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
4,4'-DDD	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endrin Aldehyde	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endosulfan Sulfate	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
4,4'-DDT	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Endrin Ketone	EPA 3550A	8081A	2	1	8/17/98	8/22/98	ND	
Methoxychlor	EPA 3550A	8081A	1	1	8/17/98	8/22/98	ND	
Toxaphene	EPA 3550A	8081A	10	1	8/17/98	8/22/98	ND	

B The MRL is elevated because of matrix interferences

Approved By Wanda Neuneker Date 9-3-98

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