

DEPARTMENT OF ECOLOGY

WA-12-1110

WA-12-1115

March 15, 1996

TO: Bob Duffy, SWRO

FROM: Art Johnson and Dale Davis, Environmental Investigations

SUBJECT: Results of Pesticide/PCB Monitoring in Chambers/Clover Creek Drainage

Summary of Findings

Seven herbicides and two organophosphorus insecticides were detected in water samples collected from Chambers Creek near Steilacoom and Clover Creek above Steilacoom Lake during June, August, and October, 1995. The only compounds identified on more than one occasion were the herbicides 2,4-D and dichlobenil (Casoron), and the insecticide parathion (by way of a degradation product). A tissue sample from marine mussels at the mouth of Chambers Creek contained detectable levels of several of the older chlorinated pesticides or their metabolites (DDE, dieldrin, chlordane, and nonachlor) as well as polychlorinated biphenyls (PCBs).

Pesticide concentrations in the water and tissue samples were less than 1 part per billion, which is too low to represent a water quality concern. The total PCB concentration of 8 ug/Kg (ppb) found in the mussel sample, although not unusually elevated for Puget Sound mussels or other harvested species, is sufficiently high to put Chambers Creek on the 303(d) water quality limited list for exceeding the human health edible tissue criterion of 1.4 ug/Kg.

Background

The 1994 Needs Assessment for the South Puget Sound management area concluded that pesticides may pose a risk to the Chambers/Clover Creek drainage (Emmett, 1995). This conclusion was based primarily on consideration of land uses rather than water quality data.

In response to a request from the Southwest Regional Office, Environmental Investigations and Laboratory Services (EILS) expanded its routine monitoring program for pesticides, the Washington State Pesticide Monitoring Program (WSPMP), to include the Chambers/Clover Creek samples listed in Table 1. The sampling sites are those used in EILS Ambient Monitoring Program (Figure 1).

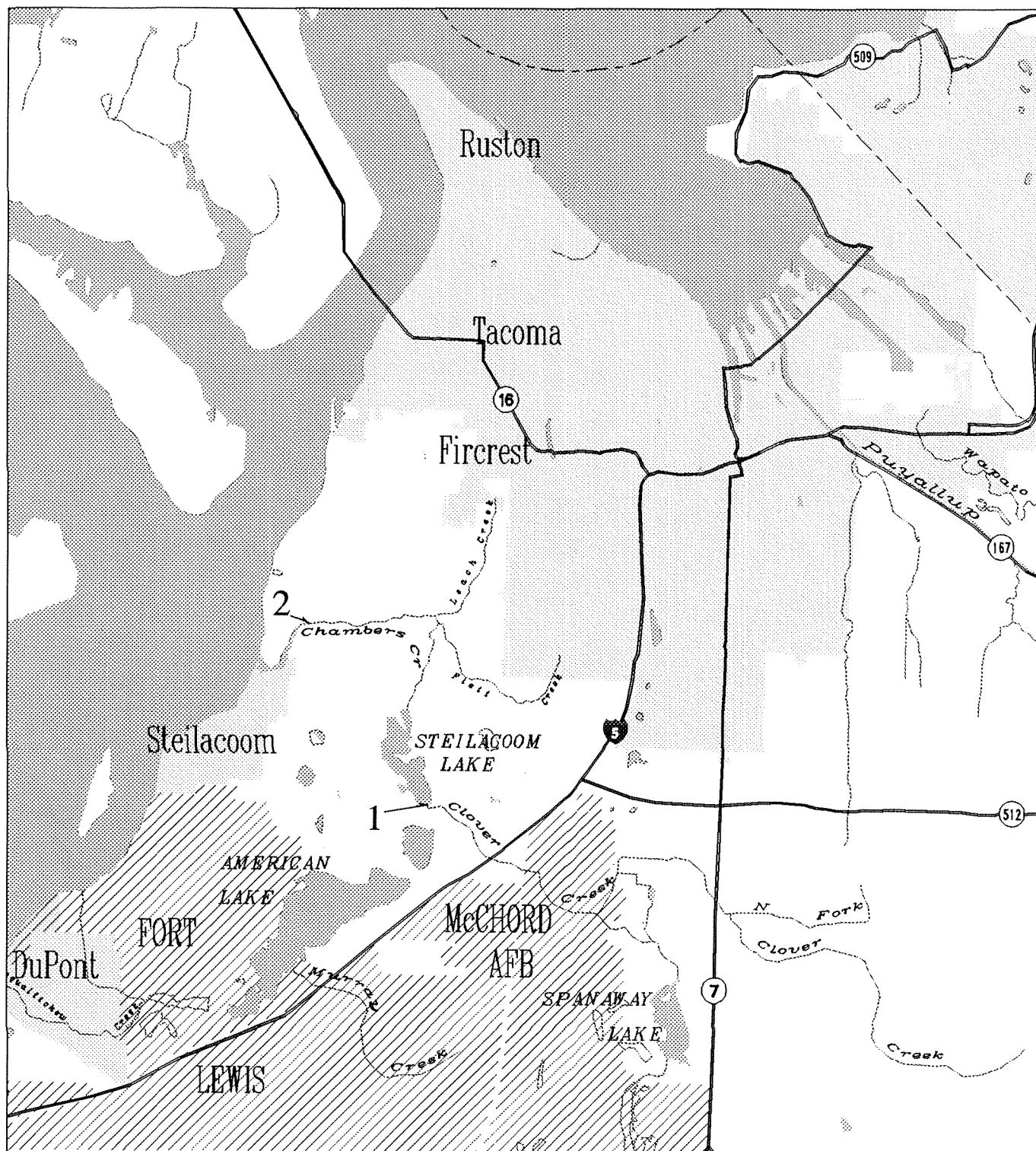


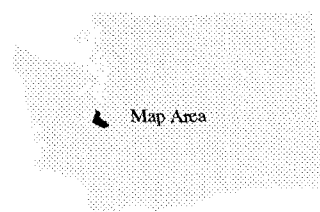
Figure 1. Sampling Sites for Pesticides in Chambers/Clover Creek Drainage, 1995

Sampling Sites:

1. Clover Creek above Steilacoom Lake
2. Chambers Creek near Steilacoom

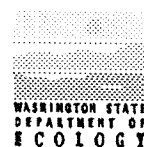
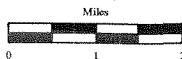
Source:

Sampling sites by lat/long - A.Johnson Ecology/EILS
Roads and Hydrology - WOFM 1990 TIGER



Map Area

Scale 1:140,000



EILS GIS 12/95

Table 1. Pesticide Samples Analyzed from Chambers/Clover Creek Drainage

Location	Sample Type	Date (1995)	Sample No.
Clover Cr. ab. Steilacoom Lk.	Water	26 June	268055
		26 June - duplicate	268066
		7 August	328046
		2 October	408031
Chambers Cr. near Steilacoom	Water	26 June	268057
		7 August	328047
		2 October	408030
"	Mussels	17 May	208044

The water samples were analyzed for 162 pesticides, or breakdown products, that include the majority of compounds currently or historically used in the Puget Sound Basin. Table 2 summarizes the types of compounds analyzed. The mussel sample (*Mytilus trossulus*, formerly *M. edulis*) was analyzed for a subset of 43 compounds that have significant bioaccumulation potential. Mussels were also analyzed for PCBs.

Methods of Sampling and Analysis

Detailed information on sampling methods, chemical analysis, and quality assurance is provided in 1995 WSPMP reports by Davis (in prep.) and Johnson and Davis (1995). Briefly, water samples were collected as composites from quarter-point transects using USGS depth integrated samplers or by hand. The mussel sample was a composite of the entire soft parts from 33 individual organisms.

Water samples were analyzed by Manchester Laboratory using EPA Method 615 (chlorinated herbicides), EPA Method 531.1 (carbamates), and a modification of EPA Method 1618 (remaining compounds). Conventional water quality data were also obtained (Appendix A). Mussel samples were analyzed at the California Department of Fish and Game, Water Pollution Control Laboratory using GC/ECD methods described in Rasmussen and Blethrow (1991) and Magoon (1993).

The quality of the data was assessed in reviews by Manchester Laboratory. The data in this report have been qualified in the few instances where problems were identified with the analysis. Appendix B (water) and Appendix C (mussels) contain the quality assurance reviews and complete data set showing results for all target compounds, including method blanks, duplicate analyses, and recoveries of surrogate compounds and matrix spikes.

Table 2. Pesticides Analyzed in Chambers/Clover Creek Water Samples

Analytical Group	Number of Chemicals	Examples
Nitrogen-containing Pesticide	46	dichlobenil (Casoron), propachlor (Ramrod), atrazine, trifluralin
Organophosphorous Pesticide	37	chlorpyrifos (Lorsban), diazinon, parathion, azinphos (Guthion)
Chlorinated Pesticides	34	DDT, dieldrin, chlordane, lindane, endosulfan, captan, mirex
Chlorinated Herbicides	25	pentachlorophenol, 2,4,5-TP (Silvex) 2,4-D, dicamba, dacthal (DCPA)
Carbamates	11	aldicarb, carbaryl (Sevin)
Pyrethrins	4	fenvalerate, permethrin
Sulfur-containing Pesticides	1	propargite

Note: see Appendices B and C for complete list of compounds analyzed

Results

The data obtained on water samples are summarized in Table 3. Nine pesticides or their degradation products were detected. Seven were herbicides, including 2,6-dichlorobenzamide which results from hydrolysis of dichlobenil (Casoron). Two organophosphorous insecticides -- diazinon and parathion (by way of its 4-nitrophenol degradation product) -- were also identified. Concentrations of all compounds were less than 1 ug/L (part per billion).

Detections tended to be more frequent in Chambers Creek than in Clover Creek. The only compounds occurring on more than one occasion were 2,4-D (5 of 6 samples), 4-nitrophenol (3 of 6), and dichlobenil/2,6-dichlorobenzamide (3 of 6). 2,4-D and dichlobenil are among the most frequently detected pesticides in Puget Sound rivers and streams (Davis, in prep.)

No state or EPA aquatic life criteria have been established for the above compounds.

Table 3. Pesticides Detected in Chambers/Clover Creek Drainage Water Samples (ug/L)

Location:	<u>Clover Cr. above Steilacoom Lk.</u>			<u>Chambers Cr. near Steilacoom</u>		
Date (1995):	26 June	7 August	2 October	26 June	7 August	2 October
<u>Herbicides</u>						
2,4-D	0.077*	0.035 J	0.026 J	0.008 J	0.089	nd
dichlobenil	nd	nd	0.006 J	nd	0.009 J	0.007 J
2,6-dichlorobenzamide	nd	nd	0.013 J	nd	0.018 J	0.023 J
dicamba	nd	nd	nd	nd	0.009 J	nd
diuron	nd	nd	nd	nd	nd	0.022 NJ
MCPA	nd	nd	nd	nd	0.019 J	nd
MCPP	nd	nd	nd	nd	0.066 J	nd
triclopyr	nd	nd	nd	nd	0.027	nd
<u>OP Insecticides</u>						
diazinon	nd	nd	nd	nd	0.009 NJ	nd
4-nitrophenol	nd	0.015 J	0.016 J	nd	nd	0.020 J

nd = not detected

J = compound positively identified; value is an estimate

NJ = evidence that compound is present; value is an estimate

* mean of duplicate analysis (0.081 and 0.073 ug/L)

Table 4 compares these data to other available criteria and to selected toxicity information. As can be seen by this comparison, none of the pesticide concentrations observed in the Chambers/Clover Creek drainage appears to be a significant water quality concern.

The mussel sample from the mouth of Chambers Creek (site 2 in Figure 1) contained trace amounts of four pesticide compounds -- the DDT metabolite 4,4'-DDE, dieldrin, and two chlordane constituents -- and PCBs (Table 5). These again are commonly reported contaminants in Puget Sound biota (Johnson & Davis, 1995). Due to their low solubility, detection in water samples is infrequent. Chlordane continues to have some local use for control of termites (Tetra Tech, 1988), the other chemicals having been long banned.

Table 6 compares the mussel results to criteria for protection of human health and wildlife. The human health criteria are the EPA 10^{-6} excess lifetime cancer risk values used to identify water quality limited waterbodies for the 303(d) list. The wildlife criteria have been proposed by the state of New York for protecting fish-eating wildlife. Pesticide concentrations in the Chambers Creek mussel sample are well below these levels of concern.

Table 4. Pesticide Concentrations in Chambers/Clover Creek Compared to Aquatic Life Criteria and Toxicity Data (ug/L)

Compound	Chambers/ Clover Creek	Aquatic Life Criteria		Most Sensitive Fresh- water Species LC50 ⁴	
		Chronic	Acute	Invert.	Fish
2,4-D	nd - 0.089	6 ²	4 ^{1,3}	90 - 1,400	190 - 330
dichlobenil	nd - 0.007	--	37 ¹	3,300	4,000
2,6-dichlorobenzamide	nd - 0.023	--	--	--	--
dicamba	nd - 0.009	39 ²	10 ³	> 56,000	28,000
diuron	nd - 0.022				
MCPA	nd - 0.019	--	2.6 ³	> 180,000	89,000
MCPP	nd - 0.066	--	--	--	115,000
trichlopyr	nd - 0.027	3 ²	30 ²	1,170,000	117,000
diazinon	nd - 0.009	--	0.009 ¹	0.15 - 0.28	90
4-nitrophenol	nd - 0.020	--	--	--	--

nd = not detected

-- = no criteria or toxicity data found

¹NAS (1973)

²Norris & Dost (1991)

³CCREM (1987)

⁴Johnson & Finley (1980); EPA (1988,1989); Seyler et al. (1994)

The PCB concentrations in the mussels exceed the EPA human health criterion of 1.4 ug/Kg (part per billion) and, therefore, qualify Chamber Creek for listing under 303(d). Although PCB concentrations have been decreasing in Puget Sound since the 1970s, present-day background levels are such that tissue samples from a variety of harvested species often exceed 1.4 ug/Kg total PCBs. The six sites where mussels were collected during the 1995 WSPMP had total PCB concentrations ranging from 2 - 70 ug/Kg, with a median value of 14 ug/Kg (Johnson and Davis, 1995).

Other sources of pesticide or PCB data could not be located for this drainage.

Table 5. Pesticides/PCBs Detected in Chambers Creek Mussel Sample (ug/Kg, wet wt.)

Location:	Chambers Creek near Steilacoom
Date (1995):	17 May

Chlorinated Pesticides

4,4'-DDE	0.33 J
dieldrin	0.16 N
cis-chlordane	0.37 J
trans-nonachlor	0.38

Polychlorinated Biphenyls

PCB-1254	6 J
PCB-1260	2

J = compound positively identified; value is an estimate

N = tentatively identified

Table 6. Pesticide/PCB Concentrations in Chambers Creek Mussels Compared to Human Health and Wildlife Criteria (ug/Kg, wet wt.)

Compound	Chambers Creek	Human Health ¹	Fish-eating Wildlife ²
4,4'- DDE	0.33	32	200
dieldrin	0.16	0.65	22
cis-chlordane	0.37	8.3*	370*
trans-nonachlor	0.38	8.3*	370*
PCB-1254	6	1.4	110**
PCB-1260	2	1.4	110**

¹ National Toxics Rule

² Newell et al. (1987)

* total chlordane (cis + trans isomers of chlordane and nonachlor)

** total PCBs

References

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- Norris, L. and F. Dost. 1991 (draft). Proposed Surface Water Quality Criteria for Selected Pesticides Used for Forest Management and Management of Forest Tree Seedling and Christmas Tree Plantations in Oregon and Washington. Oregon State Univ., Corvallis.
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Seyler, L., J. Allen, D. Rutz, and M. Kamrin. 1994. Extension Toxicology Network Pesticide Information Notebook. Cornell University Resource Center, Ithaca, NY.

Tetra Tech. 1988. Pesticides of Concern in the Puget Sound Basin: Review of Contemporary Pesticide Usage. prep. for EPA Region 10, Seattle. TC 3338-32.

Appendix A

Appendix A. Ancillary Water Quality Data for Chambers/Clover Creek Pesticides

Location:	Clover Cr. above Steilacoom Lk.			Chambers Cr. near Steilacoom		
Date (1995):	26 June	7 August	2 October	26 June	7 August	2 October
Flow (cfs)	13	6	3	55	40	45
Temperature (C)	18.2	15.5	13.6	--	13.9	12.5
Conduct. (umhos/cm)	135	127	142	171	172	191
pH (S.U.)	7.4	7.2	7.4	7.2	6.9	7.5
TSS (mg/L)	2	2	8	2	1	<1
TOC (mg/L)	2.2	3.2	2.8	1.8	6.3	1.3
NO ³ +NO ² (mg/L)	1.60	1.46	1.36	1.20	1.45	1.40

Appendix B

Appendix B

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE


September 20, 1995

Subject: Chambers-Clover Pesticides

Samples: 95 - 268055 to -268057

Case No. 1959 -95

Officer: Art Johnson

By: Dickey D. Huntamer 
Organics Analysis Unit

PESTICIDES ANALYSES

ANALYTICAL METHODS:

The water samples were extracted with methylene chloride, solvent exchanged and analyzed by capillary Gas Chromatography and Atomic Emission Detector (GC/AED) using EPA Method 1618. Confirmation was done by Ion-Trap mass spectrometry.

HOLDING TIMES:

All samples were extracted within seven days and the extracts were analyzed within the recommended holding time.

BLANKS:

No target analytes were detected in the laboratory blanks.

NITROGEN PESTICIDES

SURROGATES:

The surrogate compound for the nitrogen pesticides by GC/AED is dimethylnitrobenzene. Recoveries ranged from 76% to 120%. No dimethylnitrobenzene recovery limits have been established for this method .

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

No special problems were encountered in the analysis and the data is acceptable for use as qualified..

ORGANO-PHOSPHOROUS PESTICIDES**SURROGATES:**

Triphenyl Phosphate (TPP) was used as the organo-phosphorous pesticide surrogate. The range of surrogate recoveries was 60% to 120% for TPP. No recommended recovery limits have been established for this method.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

No special problems were encountered in the analysis. The data is acceptable for use as qualified.

CHLORINATED PESTICIDES/PCB**SURROGATES:**

Surrogate recoveries ranged from 41% to 77% for tetrachloro-m-xylene (TMX) and 43% to 113% for decachlorobiphenyl (DCB). TMX is a relatively new surrogate and has shown significant recovery variability. Since DCB recoveries were acceptable no qualifiers were added to the water results based on surrogate recoveries.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

There were no problems with the analysis. The data is acceptable for use as qualified.

PYRETHRIN PESTICIDES
SULFUR PESTICIDES

SURROGATES:

No specific pyrethrin or sulfur surrogates are available for this method. See the surrogate for the nitrogen, organo-phosphorous and chlorinated pesticides.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples..

ANALYTICAL COMMENTS:

No special problems were encountered in the analysis. The data is acceptable for use as qualified.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an <u>estimate</u> .
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are <u>unusable</u> for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 .
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268055

Date Received: 06/27/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	.16	U	Butachlor	.28	U
Tebuthiuron	.12	U	Carboxin	.89	U
Propachlor (Ramrod)	.2	U	Fenarimol	.24	U
Ethalfuralin (Sonalan)	.12	U	Diuron	.49	U
Treflan (Trifluralin)	.12	U	Di-allate (Avadex)	.31	U
Simazine	.081	U	Profluralin	.2	U
Atrazine	.081	U	Metalaxyl	.55	U
Pronamide (Kerb)	.32	U	Cyanazine	.12	U
Terbacil	.24	U			
Metribuzin	.081	U	Surrogate Recoveries		
Alachlor	.29	U			
Prometryn	.081	U	1,3-Dimethyl-2-nitrobenzene	120	%
Bromacil	.32	U			
Metolachlor	.32	U			
Diphenamid	.24	U			
Pendimethalin	.12	U			
Napropamide	.24	U			
Oxyfluorfen	.32	U			
Norflurazon	.16	U			
Fluridone	.49	UJ			
Eptam	.16	U			
Butylate	.16	U			
Vernolate	.16	U			
Cycloate	.16	U			
Benefin	.12	U			
Prometon (Pramitol 5p)	.081	U			
Propazine	.081	U			
Chlorothalonil (Daconil)	.2	U			
Triallate	.21	U			
Ametryn	.081	U			
Terbutryn (Igran)	.081	U			
Hexazinone	.12	U			
Pebulate	.16	U			
Molinate	.16	U			
Chlorpropham	.32	U			
Atraton	.24	U			
Triadimefon	.21	U			
MGK264	.57	U			

Authorized By: D. Hunter

Release Date: 9/6/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268056

Date Received: 06/27/95

Method: EPA1618

Field ID: FLETT

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	.17	U	Butachlor	.29	U
Tebuthiuron	.12	U	Carboxin	.92	U
Propachlor (Ramrod)	.2	U	Fenarimol	.25	U
Ethalfuralin (Sonalan)	.12	U	Diuron	.5	U
Treflan (Trifluralin)	.12	U	Di-allate (Avadex)	.32	U
Simazine	.084	U	Profluralin	.2	U
Atrazine	.083	U	Metalaxyl	.57	U
Pronamide (Kerb)	.33	U	Cyanazine	.12	U
Terbacil	.25	U			
Metribuzin	.083	U	Surrogate Recoveries		
Alachlor	.3	U	1,3-Dimethyl-2-nitrobenzene	76	%
Prometryn	.083	U			
Bromacil	.33	U			
Metolachlor	.33	U			
Diphenamid	.25	U			
Pendimethalin	.12	U			
Napropamide	.25	U			
Oxyfluorfen	.33	U			
Norflurazon	.17	U			
Fluridone	.5	UJ			
Eptam	.17	U			
Butylate	.17	U			
Vernolate	.17	U			
Cycloate	.17	U			
Benefin	.12	U			
Prometon (Pramitol 5p)	.083	U			
Propazine	.083	U			
Chlorothalonil (Daconil)	.2	U			
Triallate	.22	U			
Ametryn	.083	U			
Terbutryn (Igran)	.083	U			
Hexazinone	.12	U			
Pebulate	.17	U			
Molinate	.17	U			
Chlorpropham	.33	U			
Atraton	.25	U			
Triadimefon	.22	U			
MGK264	.58	U			

Authorized By: E. Hunter

Release Date: 9/6/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268057

Date Received: 06/27/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	.18	U	Butachlor	.31	U
Tebuthiuron	.13	U	Carboxin	.98	U
Propachlor (Ramrod)	.21	U	Fenarimol	.27	U
Ethalfuralin (Sonalan)	.13	U	Diuron	.54	U
Treflan (Trifluralin)	.13	U	Di-allate (Avadex)	.34	U
Simazine	.089	U	Profluralin	.21	U
Atrazine	.089	U	Metalaxyl	.61	U
Pronamide (Kerb)	.36	U	Cyanazine	.13	U
Terbacil	.27	U			
Metribuzin	.089	U	Surrogate Recoveries		
Alachlor	.32	U			
Prometryn	.089	U	1,3-Dimethyl-2-nitrobenzene	94	%
Bromacil	.36	U			
Metolachlor	.36	U			
Diphenamid	.27	U			
Pendimethalin	.13	U			
Napropamide	.27	U			
Oxyfluorfen	.36	U			
Norflurazon	.18	U			
Fluridone	.54	UJ			
Eptam	.18	U			
Butylate	.18	U			
Vernolate	.18	U			
Cycloate	.18	U			
Benefin	.13	U			
Prometon (Pramitol 5p)	.089	U			
Propazine	.089	U			
Chlorothalonil (Daconil)	.21	U			
Triallate	.23	U			
Ametryn	.089	U			
Terbutryn (Igran)	.089	U			
Hexazinone	.13	U			
Pebulate	.18	U			
Molinate	.18	U			
Chlorpropham	.36	U			
Atraton	.27	U			
Triadimefon	.23	U			
MGK264	.62	U			

Authorized By: De Herta

Release Date: 9/6/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN52144

Method: EPA1618

Blank ID: BW5178

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	.16	U	Butachlor	.28	U
Tebuthiuron	.12	U	Carboxin	.89	U
Propachlor (Ramrod)	.19	U	Fenarimol	.24	U
Ethalfuralin (Sonalan)	.12	U	Diuron	.48	U
Treflan (Trifluralin)	.12	U	Di-allate (Avadex)	.31	U
Simazine	.081	U	Profluralin	.19	U
Atrazine	.081	U	Metalaxyl	.55	U
Pronamide (Kerb)	.32	U	Cyanazine	.12	U
Terbacil	.24	U			
Metribuzin	.081	U	Surrogate Recoveries		
Alachlor	.29	U			
Prometryn	.081	U	1,3-Dimethyl-2-nitrobenzene	96	%
Bromacil	.32	U			
Metolachlor	.32	U			
Diphenamid	.24	U			
Pendimethalin	.12	U			
Napropamide	.24	U			
Oxyfluorfen	.32	U			
Norflurazon	.16	U			
Fluridone	.48	UJ			
Eptam	.16	U			
Butylate	.16	U			
Vernolate	.16	U			
Cycloate	.16	U			
Benefin	.12	U			
Prometon (Pramitol 5p)	.081	U			
Propazine	.081	U			
Chlorothalonil (Daconil)	.19	U			
Triallate	.21	U			
Ametryn	.081	U			
Terbutryn (Igran)	.081	U			
Hexazinone	.12	U			
Pebulate	.16	U			
Molinate	.16	U			
Chlorpropham	.32	U			
Atraton	.24	U			
Triadimefon	.21	U			
MGK264	.56	U			

Authorized By: D. Hunter

Release Date: 9/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN52145

Method: EPA1618

Blank ID: BW5178D

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	.16	U	Butachlor	.28	U
Tebuthiuron	.12	U	Carboxin	.89	U
Propachlor (Ramrod)	.19	U	Fenarimol	.24	U
Ethalfuralin (Sonalan)	.12	U	Diuron	.48	U
Treflan (Trifluralin)	.12	U	Di-allate (Avadex)	.31	U
Simazine	.081	U	Profluralin	.19	U
Atrazine	.081	U	Metalaxyl	.55	U
Pronamide (Kerb)	.32	U	Cyanazine	.12	U
Terbacil	.24	U			
Metribuzin	.081	U	Surrogate Recoveries		
Alachlor	.29	U			
Prometryn	.081	U	1,3-Dimethyl-2-nitrobenzene	83	%
Bromacil	.32	U			
Metolachlor	.32	U			
Diphenamid	.24	U			
Pendimethalin	.12	U			
Napropamide	.24	U			
Oxyfluorfen	.32	U			
Norflurazon	.16	U			
Fluridone	.48	UJ			
Eptam	.16	U			
Butylate	.16	U			
Vernolate	.16	U			
Cycloate	.16	U			
Benefin	.12	U			
Prometon (Pramitol 5p)	.081	U			
Propazine	.081	U			
Chlorothalonil (Daconil)	.19	U			
Triallate	.21	U			
Ametryn	.081	U			
Terbutryn (Igran)	.081	U			
Hexazinone	.12	U			
Pebulate	.16	U			
Molinate	.16	U			
Chlorpropham	.32	U			
Atraton	.24	U			
Triadimefon	.21	U			
MGK264	.56	U			

Authorized By: E. Johnson

Release Date: 9/21/95

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Organophosphorous Pesticides (GC/AED)

Units: ug/L

Triphenyl Phosphate	120	%
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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268056

Date Received: 06/27/95

Method: EPA1618

Field ID: FLETT

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	.058	U
Sulfotepp	.05	U
Demeton-S	.058	U
Fonofos	.05	U
Disulfoton (Di-Syston)	.05	U
Methyl Chlorpyrifos	.058	U
Fenitrothion	.058	U
Malathion	.067	U
Chlorpyrifos	.058	U
Merphos (1 & 2)	.13	U
Ethion	.058	U
Carbophenothion	.083	U
EPN	.083	U
Ethyl Azinphos (Ethyl Guthion)	.13	U
Ethoprop	.067	U
Phorate	.058	U
Dimethoate	.067	U
Diazinon	.067	U
Methyl Parathion	.058	U
Ronnel	.058	U
Fenthion	.058	U
Parathion	.067	U
Fensulfothion	.083	U
Bolstar (Sulprofos)	.058	U
Imidan	.092	U
Azinphos (Guthion)	.13	U
Coumaphos	.1	U
Dichlorvos (DDVP)	.067	U
Mevinphos	.083	U
Dioxathion	.14	U
Propetamphos	.17	U
Methyl Paraoxon	.15	U
Phosphamidan	.2	U
Tetrachlorvinphos (Gardona)	.17	U
Fenamiphos	.12	U
Butifos (DEF)	.12	U
Abate (Temephos)	.75	U

Surrogate Recoveries

Triphenyl Phosphate	82	%
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Authorized By: [Signature]

Release Date: 7/26/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268057

Date Received: 06/27/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	.062	U
Sulfotepp	.054	U
Demeton-S	.062	U
Fonofos	.054	U
Disulfoton (Di-Syston)	.054	U
Methyl Chlorpyrifos	.062	U
Fenitrothion	.062	U
Malathion	.071	U
Chlorpyrifos	.062	U
Merphos (1 & 2)	.14	U
Ethion	.062	U
Carbophenothion	.089	U
EPN	.089	U
Ethyl Azinphos (Ethyl Guthion)	.14	U
Ethoprop	.071	U
Phorate	.062	U
Dimethoate	.071	U
Diazinon	.071	U
Methyl Parathion	.062	U
Ronnel	.062	U
Fenthion	.062	U
Parathion	.071	U
Fensulfothion	.089	U
Bolstar (Sulprofos)	.062	U
Imidan	.098	U
Azinphos (Guthion)	.14	U
Coumaphos	.11	U
Dichlorvos (DDVP)	.071	U
Mevinphos	.089	U
Dioxathion	.15	U
Propetamphos	.18	U
Methyl Paraoxon	.16	U
Phosphamidan	.21	U
Tetrachlorvinphos (Gardona)	.18	U
Fenamiphos	.13	U
Butifos (DEF)	.12	U
Abate (Temephos)	.8	U

Surrogate Recoveries

Triphenyl Phosphate	99	%
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Authorized By: 

Release Date: 7/11/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN52144

Method: EPA1618

Blank ID: BW5178

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	.056	U
Sulfotepp	.048	U
Demeton-S	.056	U
Fonofos	.048	U
Disulfoton (Di-Syston)	.048	U
Methyl Chlorpyrifos	.056	U
Fenitrothion	.056	U
Malathion	.064	U
Chlorpyrifos	.056	U
Merphos (1 & 2)	.13	U
Ethion	.056	U
Carbophenothion	.081	U
EPN	.081	U
Ethyl Azinphos (Ethyl Guthion)	.13	U
Ethoprop	.064	U
Phorate	.056	U
Dimethoate	.064	U
Diazinon	.064	U
Methyl Parathion	.056	U
Ronnel	.056	U
Fenthion	.056	U
Parathion	.064	U
Fensulfothion	.081	U
Bolstar (Sulprofos)	.056	U
Imidan	.089	U
Azinphos (Guthion)	.13	U
Coumaphos	.097	U
Dichlorvos (DDVP)	.064	U
Mevinphos	.081	U
Dioxathion	.14	U
Propetamphos	.16	U
Methyl Paraaxon	.14	U
Phosphamidan	.19	U
Tetrachlorvinphos (Gardona)	.16	U
Fenamiphos	.12	U
Butifos (DEF)	.11	U
Abate (Temephos)	.72	U

Surrogate Recoveries

Triphenyl Phosphate	86	%
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Authorized By: D. J. Hinton

Release Date: 7/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN52145

Method: EPA1618

Blank ID: BW5178D

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier			
Demeton-O	.056	U	Surrogate Recoveries		
Sulfotepp	.048	U			
Demeton-S	.056	U	Triphenyl Phosphate		
Fonofos	.048	U	60	%	
Disulfoton (Di-Syston)	.048	U			
Methyl Chlorpyrifos	.056	U			
Fenitrothion	.056	U			
Malathion	.064	U			
Chlorpyrifos	.056	U			
Merphos (1 & 2)	.13	U			
Ethion	.056	U			
Carbophenothion	.081	U			
EPN	.081	U			
Ethyl Azinphos (Ethyl Guthion)	.13	U			
Ethoprop	.064	U			
Phorate	.056	U			
Dimethoate	.064	U			
Diazinon	.064	U			
Methyl Parathion	.056	U			
Ronnel	.056	U			
Fenthion	.056	U			
Parathion	.064	U			
Fensulfothion	.081	U			
Bolstar (Sulprofos)	.056	U			
Imidan	.089	U			
Azinphos (Guthion)	.13	U			
Coumaphos	.097	U			
Dichlorvos (DDVP)	.064	U			
Mevinphos	.081	U			
Dioxathion	.14	U			
Propetamphos	.16	U			
Methyl Paraaxon	.14	U			
Phosphamidan	.19	U			
Tetrachlorvinphos (Gardona)	.16	U			
Fenamiphos	.12	U			
Butifos (DEF)	.11	U			
Abate (Temephos)	.72	U			

Authorized By: D. J. [Signature]

Release Date: 9/21/98

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Sulfur Containing Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Project Officer: Art Johnson

Method: EPA1618

Date Reported: 20-SEP-95

Matrix: Water

Analyte: Propargite

Sample	QC	Field ID	Result	Qualifier	Units	Received	Analyzed
95268055		CLOVER	0.16	U	ug/L	06/27/95	07/07/95
95268056		FLETT	0.17	U	ug/L	06/27/95	07/07/95
95268057		CHAMBERS	0.18	U	ug/L	06/27/95	07/07/95
BLN52144		BW5178	0.16	U	ug/L		07/07/95
BLN52145		BW5178D	0.16	U	ug/L		07/07/95

Authorized By: De Nante

Release Date: 9/20/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268055

Date Received: 06/27/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
------------	------	---

Phenothrin	0.68	UJ
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cis-Permethrin	0.16	U
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Fenvalerate (2 isomers)	0.33	U
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Authorized By: D. Harte

Release Date: 7/21/95 Page:

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268056

Date Received: 06/27/95

Method: EPA1618

Field ID: FLETT

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
Resmethrin	0.17	U
Phenothrin	0.17	U
cis-Permethrin	0.33	U
Fenvalerate (2 isomers)	0.17	U

Authorized By: 

Release Date: 9/12/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268057

Date Received: 06/27/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
Resmethrin	0.18	U
Phenothrin	0.25	UJ
cis-Permethrin	0.18	U
Fenvalerate (2 isomers)	0.36	U

Authorized By: 

Release Date: 9/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN52144

Blank ID: BW5178

Project Officer: Art Johnson

Date Prepared: 06/27/95

Date Analyzed:

Method: EPA1618

Matrix: Water

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
Phenothrin	0.16	U
cis-Permethrin	0.31	U
Fenvalerate (2 isomers)	0.16	U

Authorized By: D. H. [Signature]

Release Date: 7/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN52145

Method: EPA1618

Blank ID: BW5178D

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
Phenothrin	0.16	U
cis-Permethrin	0.31	U
Fenvalerate (2 isomers)	0.16	U

Authorized By: 

Release Date: 9/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268055

Date Received: 06/27/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	.049	U
Beta-BHC	.049	U
Gamma-BHC (Lindane)	.049	U
Delta-BHC	.049	U
Heptachlor	.049	U
Aldrin	.049	U
Heptachlor Epoxide	.049	U
Trans-Chlordane (Gamma)	.049	U
Endosulfan I	.049	U
Dieldrin	.049	U
4,4'-DDE	.003	U
Endrin	.049	U
Endosulfan II	.049	U
4,4'-DDD	.003	U
Endrin Aldehyde	.049	U
Endosulfan Sulfate	.049	U
4,4'-DDT	.003	U
Endrin Ketone	.049	U
Methoxychlor	.049	U
Alpha-Chlordene	.049	U
Gamma-Chlordene	.049	U
Oxychlordane	.049	U
DDMU	.049	U
Cis-Chlordane (Alpha-Chlordane	.049	U
Cis-Nonachlor	.049	U
Kelthane	.2	UJ
Captan	.15	U
2,4'-DDE (correct CAS# is 3424	.049	U
Trans-Nonachlor	.049	U
2,4'-DDD	.049	U
2,4'-DDT	.049	U
Captafol	.24	U
Mirex	.049	U
Toxaphene	.98	U

Surrogate Recoveries

Tetrachloro-m-xylene	77	%
Decachlorobiphenyl	113	%

Authorized By: 

Release Date: 9/20/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268056

Date Received: 06/27/95

Method: EPA1618

Field ID: FLETT

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	.05	U
Beta-BHC	.05	U
Gamma-BHC (Lindane)	.05	U
Delta-BHC	.05	U
Heptachlor	.05	U
Aldrin	.05	U
Heptachlor Epoxide	.05	U
Trans-Chlordane (Gamma)	.05	U
Endosulfan I	.05	U
Dieldrin	.05	U
4,4'-DDE	.003	U
Endrin	.05	U
Endosulfan II	.05	U
4,4'-DDD	.003	U
Endrin Aldehyde	.05	U
Endosulfan Sulfate	.05	U
4,4'-DDT	.003	U
Endrin Ketone	.05	U
Methoxychlor	.05	U
Alpha-Chlordene	.05	U
Gamma-Chlordene	.05	U
Oxychlordane	.05	U
DDMU	.05	U
Cis-Chlordane (Alpha-Chlordane	.05	U
Cis-Nonachlor	.05	U
Kelthane	.2	U
Captan	.15	U
2,4'-DDE (correct CAS# is 3424	.05	U
Trans-Nonachlor	.05	U
2,4'-DDD	.05	U
2,4'-DDT	.05	U
Captafol	.25	U
Mirex	.05	U
Toxaphene	1	U

Surrogate Recoveries

Tetrachloro-m-xylene	41	%
Decachlorobiphenyl	51	%

Authorized By: 

Release Date: 9/10/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268057

Date Received: 06/27/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/07/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	.054	U
Beta-BHC	.054	U
Gamma-BHC (Lindane)	.054	U
Delta-BHC	.054	U
Heptachlor	.054	U
Aldrin	.054	U
Heptachlor Epoxide	.054	U
Trans-Chlordane (Gamma)	.054	U
Endosulfan I	.054	U
Dieldrin	.054	U
4,4'-DDE	.004	U
Endrin	.054	U
Endosulfan II	.054	U
4,4'-DDD	.004	U
Endrin Aldehyde	.054	U
Endosulfan Sulfate	.054	U
4,4'-DDT	.004	U
Endrin Ketone	.054	U
Methoxychlor	.054	U
Alpha-Chlordene	.054	U
Gamma-Chlordene	.054	U
Oxychlordane	.054	U
DDMU	.054	U
Cis-Chlordane (Alpha-Chlordane	.054	U
Cis-Nonachlor	.054	U
Kelthane	.21	UJ
Captan	.16	U
2,4'-DDE (correct CAS# is 3424	.054	U
Trans-Nonachlor	.054	U
2,4'-DDD	.054	U
2,4'-DDT	.054	U
Captafol	.27	U
Mirex	.054	U
Toxaphene	1.1	U

Surrogate Recoveries

Tetrachloro-m-xylene	55	%
Decachlorobiphenyl	89	%

Authorized By: 

Release Date: 9/20/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959- 95

Sample: BLN52144

Method: EPA1618

Blank ID: BW5178

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	.048	U
Beta-BHC	.048	U
Gamma-BHC (Lindane)	.048	U
Delta-BHC	.048	U
Heptachlor	.048	U
Aldrin	.048	U
Heptachlor Epoxide	.048	U
Trans-Chlordane (Gamma)	.048	U
Endosulfan I	.048	U
Dieldrin	.048	U
4,4'-DDE	.003	U
Endrin	.048	U
Endosulfan II	.048	U
4,4'-DDD	.003	U
Endrin Aldehyde	.048	U
Endosulfan Sulfate	.048	U
4,4'-DDT	.003	U
Endrin Ketone	.048	U
Methoxychlor	.048	U
Alpha-Chlordene	.048	U
Gamma-Chlordene	.048	U
Oxychlordane	.048	U
DDMU	.048	U
Cis-Chlordane (Alpha-Chlordane	.048	U
Cis-Nonachlor	.048	U
Kelthane	.19	UJ
Captan	.14	U
2,4'-DDE (correct CAS# is 3424	.048	U
Trans-Nonachlor	.048	U
2,4'-DDD	.048	U
2,4'-DDT	.048	U
Captafol	.24	U
Mirex	.048	U
Toxaphene	.97	U

Surrogate Recoveries

Tetrachloro-m-xylene	58	%
Decachlorobiphenyl	55	%

Authorized By: D. Hunter

Release Date: 9/20/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN52145

Method: EPA1618

Blank ID: BW5178D

Date Prepared: 06/27/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier			
Alpha-BHC	.048	U	Surrogate Recoveries		
Beta-BHC	.048	U			
Gamma-BHC (Lindane)	.048	U			
Delta-BHC	.048	U			
Heptachlor	.048	U			
Aldrin	.048	U			
Heptachlor Epoxide	.048	U			
Trans-Chlordane (Gamma)	.048	U			
Endosulfan I	.048	U			
Dieldrin	.048	U			
4,4'-DDE	.003	U			
Endrin	.048	U			
Endosulfan II	.048	U			
4,4'-DDD	.003	U			
Endrin Aldehyde	.048	U			
Endosulfan Sulfate	.048	U			
4,4'-DDT	.003	U			
Endrin Ketone	.048	U			
Methoxychlor	.048	U			
Alpha-Chlordene	.048	U			
Gamma-Chlordene	.048	U			
Oxychlordane	.048	U			
DDMU	.048	U			
Cis-Chlordane (Alpha-Chlordane	.048	U			
Cis-Nonachlor	.048	U			
Kelthane	.19	UJ			
Captan	.14	U			
2,4'-DDE (correct CAS# is 3424	.048	U			
Trans-Nonachlor	.048	U			
2,4'-DDD	.048	U			
2,4'-DDT	.048	U			
Captafol	.24	U			
Mirex	.048	U			
Toxaphene	.97	U			

Tetrachloro-m-xylene	52	%
Decachlorobiphenyl	43	%

Authorized By: D. Hunter

Release Date: 9/20/95

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MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

October 2, 1995

Subject: Chambers-Clover Pesticides

Samples: 95 -268055 to -268057

Case No. 1959 - 95

Officer: Art Johnson

By: Dickey D. Huntamer
Organics Analysis Unit

CHLORINATED HERBICIDES

ANALYTICAL METHODS:

Extraction and analysis was accomplished using methylene chloride Manchester Lab modified EPA Method 1658. Analysis was by capillary column GC analysis with Atomic Emission Detector (AED) and Ion-trap GC/MS confirmation.

HOLDING TIMES:

All sample extraction and analysis holding times were met.

BLANKS:

No target compounds were detected in the laboratory blanks.

SURROGATES:

No recovery limits have been established for this method. Surrogate recoveries ranged from 30% to 92%. The lowest recoveries, 30% and 43% were in the two laboratory blanks.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

There were no significant problems with the herbicide analysis. One target compound, 2,4-D was detected in all three samples.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an <u>estimate</u> .
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are <u>unusable</u> for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 .
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

CN_CHAM2.DOC

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268055

Date Received: 06/27/95

Method: SW8150

Field ID: CLOVER

Date Prepared: 06/28/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/19/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.024	U
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4-Nitrophenol	0.070	U
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2,4,5-Trichlorophenol	0.024	U
-----------------------	-------	---

2,3,4,6-Tetrachlorophenol	0.022	U
---------------------------	-------	---

MCCP (Mecoprop)	0.083	U
-----------------	-------	---

MCPA	0.081	U
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Bromoxynil	0.041	U
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2,3,4,5-Tetrachlorophenol	0.022	U
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Pentachlorophenol	0.020	U
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Dinoseb	0.061	U
---------	-------	---

Bentazon	0.061	U
----------	-------	---

2,4,5-TB	0.037	U
----------	-------	---

Acifluorfen (Blazer)	0.16	U
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3,5-Dichlorobenzoic Acid	0.040	U
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Dicamba I	0.041	U
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Dichlorprop	0.045	U
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2,4-D	0.081	
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Trichlopyr	0.033	U
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2,4,5-TP (Silvex)	0.032	U
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2,4,5-T	0.032	U
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2,4-DB	0.049	U
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Ioxynil	0.041	U
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Picloram	0.041	U
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Dacthal (DCPA)	0.033	U
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Diclofop-Methyl	0.061	U
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Surrogate Recoveries

2,4,6-Tribromophenol	92	%
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Authorized By: Dr. Hunter

Release Date: 9/28/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268056

Date Received: 06/27/95

Method: SW8150

Field ID: FLETT

Date Prepared: 06/28/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/19/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.024	U
4-Nitrophenol	0.070	U
2,4,5-Trichlorophenol	0.024	U
2,3,4,6-Tetrachlorophenol	0.022	U
MCCP (Mecoprop)	0.083	U
MCPA	0.081	U
Bromoxynil	0.041	U
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	0.020	UJ
Dinoseb	0.061	U
Bentazon	0.061	U
2,4,5-TB	0.037	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.040	U
Dicamba I	0.041	U
Dichlorprop	0.045	U
2,4-D	0.073	
Trichlopyr	0.033	U
2,4,5-TP (Silvex)	0.032	U
2,4,5-T	0.032	U
2,4-DB	0.049	U
Ioxynil	0.041	U
Picloram	0.041	U
Dacthal (DCPA)	0.033	U
Diclofop-Methyl	0.061	U

Surrogate Recoveries

2,4,6-Tribromophenol	76	%
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Authorized By: D. X. [Signature]

Release Date: 9/18/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268057

Date Received: 06/27/95

Method: SW8150

Field ID: CHAMBERS

Date Prepared: 06/28/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/19/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.025	U
4-Nitrophenol	0.071	U
2,4,5-Trichlorophenol	0.024	U
2,3,4,6-Tetrachlorophenol	0.023	U
MCP (Mecoprop)	0.084	U
MCPA	0.083	U
Bromoxynil	0.042	U
2,3,4,5-Tetrachlorophenol	0.023	UJ
Pentachlorophenol	0.020	UJ
Dinoseb	0.062	U
Bentazon	0.062	U
2,4,5-TB	0.037	U
Acifluorfen (Blazer)	0.17	U
3,5-Dichlorobenzoic Acid	0.041	U
Dicamba I	0.041	U
Dichloroprop	0.045	U
2,4-D	0.0081	J
Trichlopyr	0.033	U
2,4,5-TP (Silvex)	0.033	U
2,4,5-T	0.033	U
2,4-DB	0.050	U
Ioxynil	0.042	U
Picloram	0.042	U
Dacthal (DCPA)	0.033	U
Diclofop-Methyl	0.062	U

Surrogate Recoveries

2,4,6-Tribromophenol	69	%
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Authorized By: D. Harts

Release Date: 7/18/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN53116

Method: SW8150

Blank ID: BW5179H

Date Prepared: 06/23/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/19/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.023	U
4-Nitrophenol	0.067	U
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.021	U
MCPP (Mecoprop)	0.079	U
MCPA	0.078	U
Bromoxynil	0.039	U
2,3,4,5-Tetrachlorophenol	0.021	U
Pentachlorophenol	0.019	U
Dinoseb	0.058	UJ
Bentazon	0.058	U
2,4,5-TB	0.035	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.039	U
Dicamba I	0.039	U
Dichlorprop	0.043	U
2,4-D	0.039	U
Trichlopyr	0.031	U
2,4,5-TP (Silvex)	0.031	U
2,4,5-T	0.031	U
2,4-DB	0.047	U
Ioxynil	0.040	U
Picloram	0.039	U
Dacthal (DCPA)	0.031	U
Diclofop-Methyl	0.058	U

Surrogate Recoveries

2,4,6-Tribromophenol	30	%
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Authorized By: D. White

Release Date: 9/28/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN53117

Method: SW8150

Blank ID: BW5179DH

Date Prepared: 06/23/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 07/19/95

Units: ug/L

Analyte	Result	Qualifier
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2,4,6-Trichlorophenol	0.023	U
4-Nitrophenol	0.067	U
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.021	U
MCP (Mecoprop)	0.079	U
MCPA	0.078	U
Bromoxynil	0.039	U
2,3,4,5-Tetrachlorophenol	0.021	U
Pentachlorophenol	0.019	U
Dinoseb	0.058	UJ
Bentazon	0.058	U
2,4,5-TB	0.035	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.039	U
Dicamba I	0.039	U
Dichlorprop	0.043	U
2,4-D	0.039	U
Trichlopyr	0.031	U
2,4,5-TP (Silvex)	0.031	U
2,4,5-T	0.031	U
2,4-DB	0.047	U
Ioxynil	0.040	U
Picloram	0.039	U
Dacthal (DCPA)	0.031	U
Diclofop-Methyl	0.058	U

Surrogate Recoveries

2,4,6-Tribromophenol	43	%
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Authorized By: D. J. [Signature]

Release Date: 9/18/95

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Manchester Environmental Laboratory

7411 Beach Dr E
Port Orchard Washington 98366
November 13, 1995

Project: **Chambers Clover Pesticides -- Week 26**

Samples: 268055 through 268057

By: Karin Feddersen *KF*

These samples were analyzed by EPA Method 531.1, modified, for Carbamates.

Holding Times:

This method states that the analytes are stable for twenty-eight days prior to analysis. The samples were extracted within twenty-eight days from collection. The extracts were then stored in methanol before analysis. Although no holding time from extraction to analysis has been established for this method, it has been observed that the analytes of interest are extremely stable when stored in methanol even for several months.

Method Blanks:

No analytes of interest were detected in either method blank.

Initial Calibration:

The % Relative Standard Deviations were within the maximum of 20% for all target analytes with one notable exception. 1-Naphthol standard quantitation is unreliable. All results for this analyte have been qualified with "REJ".

Surrogates:

BDMC was added as a surrogate to each sample. No BDMC was recovered from the method blanks. Since method blanks are used to evaluate potential laboratory contamination, inadequate surrogate recoveries could indicate poor analyte recovery. Thus a potential low bias for target analytes in the method blank exists. The levels reported for the samples may not accurately reflect that the target analytes detected are potentially the result of contamination. There is no definitive proof that the positive results are native to the samples, they most likely are.

Non-detected results are unaffected. No analytes were detected in any of the samples.

All surrogate recoveries for these samples and the matrix spikes are between 54% and 101%. This range is considered reasonable and acceptable. No QC limits have yet been established for this modified method.

Matrix Spikes (MS/MSD):

A MS and MSD were performed on WSPMP sample 95268051. 1-Napthol was not added as a spike compound. Aldicarb recovery was slightly low in the MS, and acceptable in the MSD. No qualification is necessary for this condition. All other matrix spike recoveries were between 95% and 119%. This range and the precision data are reasonable and acceptable.

Sample Results:

There is a significant amount of baseline fluctuation (noise) in the chromatograms. The samples and standards were reanalyzed with no improvement in the chromatography.

The quantitation limits are based on the low standard. However, the peak responses from low standard (0.4 ng -- see accompanying copies of standard chromatogram) are too slight to distinguish from the baseline noise. Because of the inherent noise associated with the samples, quantitation limits have been raised to the concentration determined to be appropriate for each analyte. These limits are based on two-and-a-half times the noise level.

This data is acceptable for use as amended.

DATA QUALIFIER CODES:

- U - The analyte was not detected at or above the reported value.
- J - The analyte was positively identified. The associated numerical value is an estimate.
- UJ - The analyte was not detected at or above the reported estimated result.
- NJ - There is evidence that the analyte is present. The associated numerical result is an estimate.
- NAF - Not analyzed for.
- REJ - The data are unusable for all purposes.

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959- 95

Sample: 95268055

Date Received: 06/27/95

Method: EPA531.1

Field ID: CLOVER

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/07/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.3	U
Aldicarb Sulfoxide	0.3	U
Oxamyl (Vydate)	0.3	U
Methomyl	0.3	U
3-Hydroxycarbofuran	0.3	U
Aldicarb	0.3	U
Baygon (Propoxur)	0.3	U
Carbofuran	0.3	U
1-Naphthol		REJ
Carbaryl	0.3	U
Methiocarb	0.3	U

Surrogate Recoveries

BDMC	54	%
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Authorized By: 

Release Date: 9/26/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for Carbamate Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268056

Date Received: 06/27/95

Method: EPA531.1

Field ID: FLETT

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/07/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.3	U
Aldicarb Sulfoxide	0.3	U
Oxamyl (Vydate)	0.3	U
Methomyl	0.3	U
3-Hydroxycarbofuran	0.3	U
Aldicarb	0.3	U
Baygon (Propoxur)	0.3	U
Carbofuran	0.3	U
1-Naphthol		REJ
Carbaryl	0.3	U
Methiocarb	0.3	U

Surrogate Recoveries

BDMC	86	%
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Authorized By: 

Release Date: 9/26/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for Carbamate Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: 95268057

Date Received: 06/27/95

Method: EPA531.1

Field ID: CHAMBERS

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/07/95

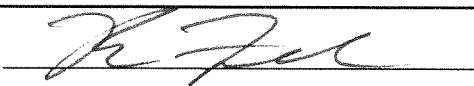
Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Aldicarb Sulfone	0.3	U
Aldicarb Sulfoxide	0.3	U
Oxamyl (Vydate)	0.3	U
Methomyl	0.3	U
3-Hydroxycarbofuran	0.3	U
Aldicarb	0.3	U
Baygon (Propoxur)	0.3	U
Carbofuran	0.3	U
1-Naphthol		REJ
Carbaryl	0.3	U
Methiocarb	0.3	U

Surrogate Recoveries

BDMC	101	%
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Authorized By: 

Release Date: 9/26/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN53088

Method: EPA531.1

Blank ID: BW5195

Matrix: Water

Project Officer: Art Johnson


Date Analyzed: 09/06/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.3	UJ
Aldicarb Sulfoxide	0.3	UJ
Oxamyl (Vydate)	0.3	UJ
Methomyl	0.3	UJ
3-Hydroxycarbofuran	0.3	UJ
Aldicarb	0.3	UJ
Baygon (Propoxur)	0.3	UJ
Carbofuran	0.3	UJ
1-Naphthol		REJ
Carbaryl	0.3	UJ
Methiocarb	0.3	UJ

Surrogate Recoveries

BDMC	0	%
------	---	---

Authorized By: 

Release Date: 9/26/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Chambers-Clover Pesticides

LIMS Project ID: 1959-95

Sample: BLN53089

Method: EPA531.1

Blank ID: BW5195D

Matrix: Water

Project Officer: Art Johnson


Date Analyzed: 09/07/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.3	UJ
Aldicarb Sulfoxide	0.3	UJ
Oxamyl (Vydate)	0.3	UJ
Methomyl	0.3	UJ
3-Hydroxycarbofuran	0.3	UJ
Aldicarb	0.3	UJ
Baygon (Propoxur)	0.3	UJ
Carbofuran	0.3	UJ
1-Naphthol		REJ
Carbaryl	0.3	UJ
Methiocarb	0.3	UJ

Surrogate Recoveries

BDMC	0	%
------	---	---

Authorized By: 

Release Date: 9/26/95

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Manchester Environmental Laboratory

7411 Beach Dr E, Port Orchard Washington 98366

CASE NARRATIVE

November 6, 1995

Subject: WSPMP, Yakima TMDL, Chambers/Clover - Weeks 31 & 32 of 1995

Samples: 95318030-35 & 95328040-41 -- WSPMP
95318416-18 -- Yakima TMDL
95328046 & 47 -- Chambers/Clover

Officer(s): Dale Davis -- WSPMP
Joe Joy -- Yakima TMDL
Art Johnson -- Chambers/Clover

By: Norman Olson *NO*
Organics Analysis Unit

NEUTRAL PESTICIDE ANALYSIS

ANALYTICAL METHODS: The water samples were extracted with methylene chloride, solvent exchanged to iso-octane, and analyzed by capillary Gas Chromatography and Atomic Emission Detection (GC/AED). The method follows Manchester Laboratory's standard operating procedure for the screening and analysis of pesticides. Confirmation of detected pesticides was performed by Gas Chromatography and Ion-Trap mass spectrometry (GC/ITD).

BLANKS: No target compounds were detected in the laboratory blanks.

HOLDING TIMES: All samples were extracted within seven days of sampling. All extracts were analyzed within recommended holding times.

COMMENTS:

The surrogate tetrachloro-m-xylene (TMX) that has been utilized in the chlorinated pesticide procedure is not being reported. See attached explanation if interested.

The recovery for the Nitrogen Pest surrogate dimethylnitrobenzene in sample 95318032 is 0%. This is due to this sample going dry on the nitrogen gas stream evaporation apparatus. This surrogate is the most volatile compound in the method. The other surrogate recoveries were OK. No qualifiers were applied on this basis.

The Sulfur pesticide Propargite was found in 95318416 and is reported in the opposite report.

Carbaryl was found in samples for WSPMP and Yakima TMDL but was reported only for the Yakima TMDL. The HPLC carbamate analysis was performed for WSPMP and carbaryl will be reported in that report.

Data usable as qualified.

Tetrachloro-m-xylene and Dibromo-octafluorobiphenyl

Both surrogate compounds tetrachloro-m-xylene (TMX) and dibromo-octafluorobiphenyl (DBOB) have demonstrated, under certain conditions, not to track the target analytes. Both have shown extremely low recoveries while all the target analytes show good recoveries. Because these compounds are the earliest chromatographic eluters it was assumed that volatility was the cause for the recovery loss. A search for where in the procedure the loss occurred turned up negative. Other possible causes were checked i.e., solubility or adsorption, but also were negative.

Some months ago the true reason for the recovery loss was finally discovered. This laboratory has always utilized a magnetic stir bar technique for sample-solvent mixing in place of the manual shaking method. For years these Teflon coated stir bars were cleaned by acetone using the soxhlet extraction apparatus only. Approximately 4 years ago a large dishwasher was installed for glassware cleaning. The stir bars were also washed in this dishwasher. It was discovered that the machine dishwashing is the cause of these two compounds, out of the entire list of compounds, being lost.

When EPA, ESAT and DOE extraction personnel were informed that all Teflon needed to be cleaned by the soxhlet technique the recoveries for TMX and DBOB were back up. With the high turn-over in this area of the lab, communication was lost. The last few sample sets have had low and variable recoveries. Upon asking all personnel, it was discovered the stir bars are always cleaned by soxhlet, but at times they also are precleaned in the dishwasher.

This is the reason that the surrogate is omitted for these sets.

Manchester Environmental Laboratory

7411 Beach Dr E, Port Orchard Washington 98366

CASE NARRATIVE

November 6, 1995

Subject: WSPMP, Chambers/Clover & PGW - Weeks 31, 32 & of 1995

Samples: 95318030-35 & 95328040-41 -- WSPMP
95328046 & 47 -- Chambers/Clover
95338270 & 72-75 -- PGW

Officer(s): Dale Davis -- WSPMP
Art Johnson -- Chambers/Clover
Art Larson -- PGW

By: Norman Olson
Organics Analysis Unit

ACIDIC HERBICIDE ANALYSIS

ANALYTICAL METHOD: The water samples were hydrolyzed with base, washed with methylene chloride, acidified and extracted with methylene chloride, solvent exchanged to iso-octane, methylated and analyzed by capillary Gas Chromatography and Atomic Emission Detection (GC/AED). The procedure follows method 1658 (modified) for the analysis of acidic herbicides in water. Confirmation of detected herbicides was performed by Gas Chromatography and Ion-Trap mass spectrometry (GC/ITD).

BLANKS: No target compounds were detected in the laboratory blanks.

HOLDING TIMES: All samples were extracted within seven days of sampling. All extracts were analyzed within recommended holding times.

COMMENTS: Although Dinoseb had relatively good matrix spike recoveries in these sets it was 'UJ' qualified as an estimate due to the recovery variability the analyte has shown. Since changing from method 515.1 to 1658 the recoveries are much better.

Picloram and Dacthal were 'UJ' qualified as estimates due to the low recoveries obtained. It is unknown why Picloram had low recoveries. It is suspected that Dacthal's low recoveries can be attributed to the hydrolysis portion of the method. Dacthal is a di-acid compound. When in the di-methyl form it is the toughest of the analytes to hydrolyze, (with the exception of the Cl-phenols). The standard used for the matrix spiking contains the di-methyl form of dacthal and it appears it was not fully hydrolyzed prior to the methylene chloride wash. Because of the AED's unique selectivity, the methylene chloride wash portion of the procedure can be avoided, in most cases, thus potentially alleviating the problem.

Data is acceptable for use as qualified.

DATA QUALIFIER CODES:

DATA QUALIFIER CODES:

- U - The analyte was not detected at or above the reported value.
- J - The analyte was positively identified. The associated numerical value is an estimate.
- UJ - The analyte was not detected at or above the reported estimated result.
- REJ - The data are unusable for all purposes.
- EXP - The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 .
- NAF - Not analyzed for.
- N - For organic analytes there is evidence the analyte is present in this sample.
- NJ - There is evidence that the analyte is present. The associated numerical result is an estimate.
- E - This qualifier is used when the concentration of the associated value exceeds the known calibration range.
- * - The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328046

Date Received: 08/09/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.16	U	Butachlor	0.28	U
Tebuthiuron	0.12	U	Carboxin	0.89	U
Propachlor (Ramrod)	0.19	U	Fenarimol	0.24	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.48	U
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.31	U
Simazine	0.081	U	Profluralin	0.19	U
Atrazine	0.081	U	Metalaxyl	0.55	U
Pronamide (Kerb)	0.32	U	Cyanazine	0.12	U
Terbacil	0.24	U			
Metribuzin	0.081	U	Surrogate Recoveries		
Alachlor	0.29	U			
Prometryn	0.081	U	1,3-Dimethyl-2-nitrobenzene	62	%
Bromacil	0.32	U			
Metolachlor	0.32	U			
Diphenamid	0.24	U			
Pendimethalin	0.12	U			
Napropamide	0.24	U			
Oxyfluorfen	0.32	U			
Norflurazon	0.16	U			
Fluridone	0.48	UJ			
Eptam	0.16	U			
Butylate	0.16	U			
Vernolate	0.16	U			
Cycloate	0.16	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.081	U			
Propazine	0.081	U			
Chlorothalonil (Daconil)	0.19	U			
Triallate	0.21	U			
Ametryn	0.081	U			
Terbutryn (Igran)	0.081	U			
Hexazinone	0.12	U			
Pebulate	0.16	U			
Molinate	0.16	U			
Chlorpropham	0.32	U			
Atraton	0.24	U			
Triadimefon	0.21	U			
MGK264	0.56	U			

Authorized By: D. H. L. L.

Release Date: 11/13/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328047

Date Received: 08/09/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.009	J	Butachlor	0.28	U
Tebuthiuron	0.12	U	Carboxin	0.88	U
Propachlor (Ramrod)	0.19	U	Fenarimol	0.24	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.48	U
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.30	U
Simazine	0.080	U	Profluralin	0.19	U
Atrazine	0.080	U	Metalaxyl	0.54	U
Pronamide (Kerb)	0.32	U	Cyanazine	0.12	U
Terbacil	0.24	U	2,6-Dichlorobenzamide	0.018	J
Metribuzin	0.080	U			
Alachlor	0.29	U	Surrogate Recoveries		
Prometryn	0.080	U			
Bromacil	0.32	U	1,3-Dimethyl-2-nitrobenzene	67	%
Metolachlor	0.32	U			
Diphenamid	0.24	U			
Pendimethalin	0.12	U			
Napropamide	0.24	U			
Oxyfluorfen	0.32	U			
Norflurazon	0.16	U			
Fluridone	0.48	UJ			
Eptam	0.16	U			
Butylate	0.16	U			
Vernolate	0.16	U			
Cycloate	0.16	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.080	U			
Propazine	0.080	U			
Chlorothalonil (Daconil)	0.19	U			
Triallate	0.21	U			
Ametryn	0.080	U			
Terbutryn (Igran)	0.080	U			
Hexazinone	0.12	U			
Pebulate	0.16	U			
Molinate	0.16	U			
Chlorpropham	0.32	U			
Atraton	0.24	U			
Triadimefon	0.21	U			
MGK264	0.56	U			

Authorized By: 

Release Date: 11/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53580

Method: EPA1618

Blank ID: BW5223

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.16	U	Butachlor	0.28	U
Tebuthiuron	0.12	U	Carboxin	0.88	U
Propachlor (Ramrod)	0.19	U	Fenarimol	0.24	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.48	U
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.30	U
Simazine	0.080	U	Profluralin	0.19	U
Atrazine	0.080	U	Metalaxyl	0.54	U
Pronamide (Kerb)	0.32	U	Cyanazine	0.12	U
Terbacil	0.24	U			
Metribuzin	0.080	U	Surrogate Recoveries		
Alachlor	0.29	U	1,3-Dimethyl-2-nitrobenzene	78	%
Prometryn	0.080	U			
Bromacil	0.32	U			
Metolachlor	0.32	U			
Diphenamid	0.24	U			
Pendimethalin	0.12	U			
Napropamide	0.24	U			
Oxyfluorfen	0.32	U			
Norflurazon	0.16	U			
Fluridone	0.48	UJ			
Eptam	0.16	U			
Butylate	0.16	U			
Vernolate	0.16	U			
Cycloate	0.16	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.080	U			
Propazine	0.080	U			
Chlorothalonil (Daconil)	0.19	U			
Triallate	0.21	U			
Ametryn	0.080	U			
Terbutryn (Igran)	0.080	U			
Hexazinone	0.12	U			
Pebulate	0.16	U			
Molinate	0.16	U			
Chlorpropham	0.32	U			
Atraton	0.24	U			
Triadimefon	0.21	U			
MGK264	0.56	U			

Authorized By: E. J. Gento

Release Date: 10/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53581

Method: EPA1618

Blank ID: BW5223D

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.16	U	Butachlor	0.28	U
Tebuthiuron	0.12	U	Carboxin	0.88	U
Propachlor (Ramrod)	0.19	U	Fenarimol	0.24	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.48	U
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.30	U
Simazine	0.080	U	Profluralin	0.19	U
Atrazine	0.080	U	Metalaxyl	0.54	U
Pronamide (Kerb)	0.32	U	Cyanazine	0.12	U
Terbacil	0.24	U			
Metribuzin	0.080	U	Surrogate Recoveries		
Alachlor	0.29	U			
Prometryn	0.080	U	1,3-Dimethyl-2-nitrobenzene	66	%
Bromacil	0.32	U			
Metolachlor	0.32	U			
Diphenamid	0.24	U			
Pendimethalin	0.12	U			
Napropamide	0.24	U			
Oxyfluorfen	0.32	U			
Norflurazon	0.16	U			
Fluridone	0.48	UJ			
Eptam	0.16	U			
Butylate	0.16	U			
Vernolate	0.16	U			
Cycloate	0.16	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.080	U			
Propazine	0.080	U			
Chlorothalonil (Daconil)	0.19	U			
Triallate	0.21	U			
Ametryn	0.080	U			
Terbutryn (Igran)	0.080	U			
Hexazinone	0.12	U			
Pebulate	0.16	U			
Molinate	0.16	U			
Chlorpropham	0.32	U			
Atraton	0.24	U			
Triadimefon	0.21	U			
MGK264	0.56	U			

Authorized By: 

Release Date: 11/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328046

Date Received: 08/09/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
------------	------	---

Phenothrin	0.16	U
------------	------	---

cis-Permethrin	0.16	U
----------------	------	---

Fenvalerate (2 isomers)	0.32	U
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Authorized By: D. Hewitt

Release Date: 11/13/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328047

Date Received: 08/09/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
------------	------	---

Phenothrin	0.16	U
------------	------	---

cis-Permethrin	0.16	U
----------------	------	---

Fenvalerate (2 isomers)	0.32	U
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Authorized By: De Hunter

Release Date: 10/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53580

Method: EPA1618

Blank ID: BW5223

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
------------	------	---

Phenothrin	0.16	U
------------	------	---

cis-Permethrin	0.16	U
----------------	------	---

Fenvalerate (2 isomers)	0.32	U
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Authorized By: D. Hents

Release Date: 11/13/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53581

Blank ID: BW5223D

Project Officer: Art Johnson

Date Prepared: 08/11/95

Date Analyzed: 08/25/95

Method: EPA1618

Matrix: Water

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
------------	------	---

Phenothrin	0.16	U
------------	------	---

cis-Permethrin	0.16	U
----------------	------	---

Fenvalerate (2 isomers)	0.32	U
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Authorized By: 

Release Date: 11/13/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Sulfur Containing Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Project Officer: Art Johnson

Method: EPA1618

Date Reported: 02-NOV-95

Matrix: Water

Analyte: Propargite

Sample	QC	Field ID	Result	Qualifier	Units	Received	Analyzed
95328046		CLOVER	0.16	U	ug/L	08/09/95	08/25/95
95328047		CHAMBERS	0.16	U	ug/L	08/09/95	08/25/95
BLN53580		BW5223	0.16	U	ug/L		08/25/95
BLN53581		BW5223D	0.16	U	ug/L		08/25/95

Authorized By: Dr. Hunter

Release Date: 11/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328046

Date Received: 08/09/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	0.056	U
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Sulfotepp	0.048	U
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Demeton-S	0.056	U
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Fonofos	0.048	U
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Disulfoton (Di-Syston)	0.048	U
------------------------	-------	---

Methyl Chlorpyrifos	0.065	U
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Fenitrothion	0.056	U
--------------	-------	---

Malathion	0.065	U
-----------	-------	---

Chlorpyrifos	0.065	U
--------------	-------	---

Merphos (1 & 2)	0.097	U
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Ethion	0.056	U
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Carbophenothion	0.081	U
-----------------	-------	---

EPN	0.081	U
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Azinphos Ethyl	0.13	U
----------------	------	---

Ethoprop	0.065	U
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Phorate	0.056	U
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Dimethoate	0.065	U
------------	-------	---

Diazinon	0.065	U
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Methyl Parathion	0.056	U
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Ronnel	0.056	U
--------	-------	---

Fenthion	0.056	U
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Parathion	0.065	U
-----------	-------	---

Fensulfothion	0.081	U
---------------	-------	---

Bolstar (Sulprofos)	0.056	U
---------------------	-------	---

Imidan	0.089	U
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Azinphos (Guthion)	0.15	U
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Coumaphos	0.097	U
-----------	-------	---

Dichlorvos (DDVP)	0.065	U
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Mevinphos	0.081	U
-----------	-------	---

Dioxathion	0.14	U
------------	------	---

Propetamphos	0.16	U
--------------	------	---

Methyl Paraoxon	0.15	U
-----------------	------	---

Phosphamidan	0.19	UJ
--------------	------	----

Tetrachlorvinphos (Gardona)	0.16	U
-----------------------------	------	---

Fenamiphos	0.12	U
------------	------	---

Butifos (DEF)	0.11	U
---------------	------	---

Abate (Temephos)	0.73	U
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Surrogate Recoveries

Triphenyl Phosphate	134	%
---------------------	-----	---

Authorized By: De Vito

Release Date: 11/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328047

Date Received: 08/09/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	0.056	U
Sulfotepp	0.048	U
Demeton-S	0.056	U
Fonofos	0.048	U
Disulfoton (Di-Syston)	0.048	U
Methyl Chlorpyrifos	0.064	U
Fenitrothion	0.056	U
Malathion	0.064	U
Chlorpyrifos	0.064	U
Merphos (1 & 2)	0.096	U
Ethion	0.056	U
Carbophenothion	0.080	U
EPN	0.080	U
Azinphos Ethyl	0.13	U
Ethoprop	0.064	U
Phorate	0.056	U
Dimethoate	0.064	U
Diazinon	0.009	NJ
Methyl Parathion	0.056	U
Ronnel	0.056	U
Fenthion	0.056	U
Parathion	0.064	U
Fensulfothion	0.080	U
Bolstar (Sulprofos)	0.056	U
Imidan	0.088	U
Azinphos (Guthion)	0.14	U
Coumaphos	0.096	U
Dichlorvos (DDVP)	0.064	U
Mevinphos	0.080	U
Dioxathion	0.19	UJ
Propetamphos	0.16	U
Methyl Paraoxon	0.14	U
Phosphamidan	0.19	UJ
Tetrachlorvinphos (Gardona)	0.16	U
Fenamiphos	0.12	U
Butifos (DEF)	0.11	U
Abate (Temephos)	0.72	U

Surrogate Recoveries

Triphenyl Phosphate	139	%
---------------------	-----	---

Authorized By: Dr. Harts

Release Date: 11/13/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53580

Method: EPA1618

Blank ID: BW5223

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	0.056	U
Sulfotepp	0.048	U
Demeton-S	0.056	U
Fonofos	0.048	U
Disulfoton (Di-Syston)	0.048	U
Methyl Chlorpyrifos	0.064	U
Fenitrothion	0.056	U
Malathion	0.064	U
Chlorpyrifos	0.064	U
Merphos (1 & 2)	0.096	U
Ethion	0.056	U
Carbophenothion	0.080	U
EPN	0.080	U
Azinphos Ethyl	0.13	U
Ethoprop	0.064	U
Phorate	0.056	U
Dimethoate	0.064	U
Diazinon	0.064	U
Methyl Parathion	0.056	U
Ronnel	0.056	U
Fenthion	0.056	U
Parathion	0.064	U
Fensulfothion	0.080	U
Bolstar (Sulprofos)	0.056	U
Imidan	0.088	U
Azinphos (Guthion)	0.14	U
Coumaphos	0.096	U
Dichlorvos (DDVP)	0.064	U
Mevinphos	0.080	U
Dioxathion	0.14	U
Propetamphos	0.16	U
Methyl Paraoxon	0.14	U
Phosphamidan	0.19	UJ
Tetrachlorvinphos (Gardona)	0.16	U
Fenamiphos	0.12	U
Butifos (DEF)	0.11	U
Abate (Temephos)	0.72	U

Surrogate Recoveries

Triphenyl Phosphate	117	%
---------------------	-----	---

Authorized By: D. N. [Signature]

Release Date: 11/13/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53581

Method: EPA1618

Blank ID: BW5223D

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	0.056	U
Sulfotepp	0.048	U
Demeton-S	0.056	U
Fonofos	0.048	U
Disulfoton (Di-Syston)	0.048	U
Methyl Chlorpyrifos	0.064	U
Fenitrothion	0.056	U
Malathion	0.064	U
Chlorpyrifos	0.064	U
Merphos (1 & 2)	0.096	U
Ethion	0.056	U
Carbophenothion	0.080	U
EPN	0.080	U
Azinphos Ethyl	0.13	U
Ethoprop	0.064	U
Phorate	0.056	U
Dimethoate	0.064	U
Diazinon	0.064	U
Methyl Parathion	0.056	U
Ronnel	0.056	U
Fenthion	0.056	U
Parathion	0.064	U
Fensulfothion	0.080	U
Bolstar (Sulprofos)	0.056	U
Imidan	0.088	U
Azinphos (Guthion)	0.14	U
Coumaphos	0.096	U
Dichlorvos (DDVP)	0.064	U
Mevinphos	0.080	U
Dioxathion	0.14	U
Propetamphos	0.16	U
Methyl Paraoxon	0.14	U
Phosphamidan	0.19	UJ
Tetrachlorvinphos (Gardona)	0.16	U
Fenamiphos	0.12	U
Butifos (DEF)	0.11	U
Abate (Temephos)	0.72	U

Surrogate Recoveries

Triphenyl Phosphate	114	%
---------------------	-----	---

Authorized By: Dr. H. H. H.

Release Date: 11/13/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328046

Date Received: 08/09/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	0.048	U
Beta-BHC	0.048	U
Gamma-BHC (Lindane)	0.048	U
Delta-BHC	0.048	U
Heptachlor	0.048	U
Aldrin	0.048	U
Heptachlor Epoxide	0.048	U
Trans-Chlordane (Gamma)	0.048	U
Endosulfan I	0.048	U
Dieldrin	0.048	U
4,4'-DDE	0.0032	U
Endrin	0.048	U
Endosulfan II	0.048	U
4,4'-DDD	0.0032	U
Endrin Aldehyde	0.048	U
Endosulfan Sulfate	0.048	U
4,4'-DDT	0.0032	U
Endrin Ketone	0.048	U
Methoxychlor	0.048	U
Alpha-Chlordene	0.048	U
Gamma-Chlordene	0.048	U
Oxychlordane	0.048	U
DDMU	0.048	U
Cis-Chlordane (Alpha-Chlordane)	0.048	U
Cis-Nonachlor	0.048	UJ
Kelthane	0.19	UJ
Captan	0.15	U
2,4'-DDE	0.048	U
Trans-Nonachlor	0.048	U
2,4'-DDD	0.048	U
2,4'-DDT	0.048	U
Captafol	0.24	U
Mirex	0.048	U
Toxaphene	0.97	U

Surrogate Recoveries

Decachlorobiphenyl	50	%
--------------------	----	---

Authorized By: Dr. H. H. H. H.

Release Date: 11/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328047

Date Received: 08/09/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	0.048	U
Beta-BHC	0.048	U
Gamma-BHC (Lindane)	0.048	U
Delta-BHC	0.048	U
Heptachlor	0.048	U
Aldrin	0.048	U
Heptachlor Epoxide	0.048	U
Trans-Chlordane (Gamma)	0.048	U
Endosulfan I	0.048	U
Dieldrin	0.048	U
4,4'-DDE	0.0032	U
Endrin	0.048	U
Endosulfan II	0.048	U
4,4'-DDD	0.0032	U
Endrin Aldehyde	0.048	U
Endosulfan Sulfate	0.048	U
4,4'-DDT	0.0032	U
Endrin Ketone	0.048	U
Methoxychlor	0.048	U
Alpha-Chlordene	0.048	U
Gamma-Chlordene	0.048	U
Oxychlordane	0.048	U
DDMU	0.048	U
Cis-Chlordane (Alpha-Chlordane)	0.048	U
Cis-Nonachlor	0.048	UJ
Kelthane	0.19	UJ
Captan	0.14	U
2,4'-DDE	0.048	U
Trans-Nonachlor	0.048	U
2,4'-DDD	0.048	U
2,4'-DDT	0.048	U
Captafol	0.24	U
Mirex	0.048	U
Toxaphene	0.96	U

Surrogate Recoveries

Decachlorobiphenyl	92	%
--------------------	----	---

Authorized By: E. H. [Signature]

Release Date: 11/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53580

Method: EPA1618

Blank ID: BW5223

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	0.048	U
Beta-BHC	0.048	U
Gamma-BHC (Lindane)	0.048	U
Delta-BHC	0.048	U
Heptachlor	0.048	U
Aldrin	0.048	U
Heptachlor Epoxide	0.048	U
Trans-Chlordane (Gamma)	0.048	U
Endosulfan I	0.048	U
Dieldrin	0.048	U
4,4'-DDE	0.0032	U
Endrin	0.048	U
Endosulfan II	0.048	U
4,4'-DDD	0.0032	U
Endrin Aldehyde	0.048	U
Endosulfan Sulfate	0.048	U
4,4'-DDT	0.0032	U
Endrin Ketone	0.048	U
Methoxychlor	0.048	U
Alpha-Chlordene	0.048	U
Gamma-Chlordene	0.048	U
Oxychlordane	0.048	U
DDMU	0.048	U
Cis-Chlordane (Alpha-Chlordane)	0.048	U
Cis-Nonachlor	0.048	U
Kelthane	0.19	U
Captan	0.14	U
2,4'-DDE	0.048	U
Trans-Nonachlor	0.048	UJ
2,4'-DDD	0.048	UJ
2,4'-DDT	0.048	U
Captafol	0.24	U
Mirex	0.048	U
Toxaphene	0.96	U

Surrogate Recoveries

Decachlorobiphenyl	88	%
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Authorized By: D. Hunter

Release Date: 11/3/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53581

Method: EPA1618

Blank ID: BW5223D

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 08/25/95

Units: ug/L

Analyte	Result	Qualifier
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Alpha-BHC	0.048	U
Beta-BHC	0.048	U
Gamma-BHC (Lindane)	0.048	U
Delta-BHC	0.048	U
Heptachlor	0.048	U
Aldrin	0.048	U
Heptachlor Epoxide	0.048	U
Trans-Chlordane (Gamma)	0.048	U
Endosulfan I	0.048	U
Dieldrin	0.048	U
4,4'-DDE	0.0032	U
Endrin	0.048	U
Endosulfan II	0.048	U
4,4'-DDD	0.0032	U
Endrin Aldehyde	0.048	U
Endosulfan Sulfate	0.048	U
4,4'-DDT	0.0032	U
Endrin Ketone	0.048	U
Methoxychlor	0.048	U
Alpha-Chlordene	0.048	U
Gamma-Chlordene	0.048	U
Oxychlordane	0.048	U
DDMU	0.048	U
Cis-Chlordane (Alpha-Chlordane)	0.048	U
Cis-Nonachlor	0.048	UJ
Kelthane	0.19	UJ
Captan	0.14	U
2,4'-DDE	0.048	U
Trans-Nonachlor	0.048	U
2,4'-DDD	0.048	U
2,4'-DDT	0.048	U
Captafol	0.24	U
Mirex	0.048	U
Toxaphene	0.96	U

Surrogate Recoveries

Decachlorobiphenyl	87	%
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Authorized By: E. A. Ventres

Release Date: 11/13/95

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1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328046

Date Received: 08/09/95

Method: SW8150

Field ID: CLOVER

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/12/95

Units: ug/L

Analyte	Result	Qualifier
2,4,6-Trichlorophenol	0.024	U
4-Nitrophenol	0.015	J
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.022	U
MCPP (Mecoprop)	0.081	U
MCPA	0.079	U
Bromoxynil	0.040	U
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	0.020	U
Dinoseb	0.060	UJ
Bentazon	0.060	U
2,4,5-TB	0.036	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.040	U
Dicamba I	0.040	U
Dichloroprop	0.044	U
2,4-D	0.035	J
Trichlopyr	0.032	U
2,4,5-TP (Silvex)	0.031	U
2,4,5-T	0.032	U
2,4-DB	0.048	U
Ioxynil	0.040	U
Picloram	0.040	UJ
Dacthal (DCPA)	0.032	UJ
Diclofop-Methyl	0.060	U

Surrogate Recoveries

2,4,6-Tribromophenol	119	%
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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328047

Date Received: 08/09/95

Method: SW8150

Field ID: CHAMBERS

Date Prepared: 08/11/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/12/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.024	U
4-Nitrophenol	0.070	U
2,4,5-Trichlorophenol	0.024	U
2,3,4,6-Tetrachlorophenol	0.022	U
MCP (Mecoprop)	0.066	J
MCPA	0.019	J
Bromoxynil	0.041	U
2,3,4,5-Tetrachlorophenol	0.022	U
Pentachlorophenol	0.020	U
Dinoseb	0.060	U
Bentazon	0.060	U
2,4,5-TB	0.036	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.040	U
Dicamba I	0.0089	J
Dichlorprop	0.044	U
2,4-D	0.089	
Trichlopyr	0.027	
2,4,5-TP (Silvex)	0.032	U
2,4,5-T	0.032	U
2,4-DB	0.049	U
Ioxynil	0.041	U
Picloram	0.041	UJ
Dacthal (DCPA)	0.032	UJ
Diclofop-Methyl	0.060	U

Surrogate Recoveries

2,4,6-Tribromophenol	119	%
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Authorized By: NO/son

Release Date: 11/6/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53671

Method: SW8150

Blank ID: BW5223

Date Prepared: 08/07/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/12/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.023	U
4-Nitrophenol	0.068	U
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.021	U
MCCP (Mecoprop)	0.080	U
MCPA	0.078	U
Bromoxynil	0.039	U
2,3,4,5-Tetrachlorophenol	0.021	U
Pentachlorophenol	0.020	U
Dinoseb	0.059	UJ
Bentazon	0.059	U
2,4,5-TB	0.035	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.039	U
Dicamba I	0.039	U
Dichlorprop	0.043	U
2,4-D	0.039	U
Trichlopyr	0.031	U
2,4,5-TP (Silvex)	0.031	U
2,4,5-T	0.031	U
2,4-DB	0.047	U
Ioxynil	0.040	U
Picloram	0.039	UJ
Dacthal (DCPA)	0.031	UJ
Diclofop-Methyl	0.059	U

Surrogate Recoveries

2,4,6-Tribromophenol	51	%
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Authorized By: NCP/Bar

Release Date: 11/7/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53672

Blank ID: BW5223D

Project Officer: Art Johnson

Date Prepared: 08/07/95

Date Analyzed: 09/12/95

Method: SW8150

Matrix: Water

Units: ug/L

Analyte	Result	Qualifier
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2,4,6-Trichlorophenol	0.023	U
4-Nitrophenol	0.068	U
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.021	U
MCP (Mecoprop)	0.080	U
MCPA	0.078	U
Bromoxynil	0.039	U
2,3,4,5-Tetrachlorophenol	0.021	U
Pentachlorophenol	0.020	U
Dinoseb	0.059	UJ
Bentazon	0.059	U
2,4,5-TB	0.035	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.039	U
Dicamba I	0.039	U
Dichloroprop	0.043	U
2,4-D	0.039	U
Trichlopyr	0.031	U
2,4,5-TP (Silvex)	0.031	U
2,4,5-T	0.031	U
2,4-DB	0.047	U
Ioxynil	0.040	U
Picloram	0.039	UJ
Dacthal (DCPA)	0.031	UJ
Diclofop-Methyl	0.059	U

Surrogate Recoveries

2,4,6-Tribromophenol	48	%
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Authorized By: NW/aw

Release Date: 11/7/95

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Manchester Environmental Laboratory

7411 Beach Dr E
Port Orchard Washington 98366
November 8, 1995

Project: **WSPMP 31, 32**

Samples: 318030 through 318035, 328040 through 328042

By: Karin Feddersen *KF*

These samples were analyzed by EPA Method 531.1, modified, for Carbamates. There was a significant amount of baseline fluctuation (noise) in the original chromatograms. The noise was resolved, and the samples were reanalyzed. However, there was insufficient sample to reanalyze sample 95328040. Results and quantitation limits from the original analysis were used for this sample.

Holding Times:

This method states that the analytes are stable for twenty-eight days prior to analysis. The samples were extracted within twenty-eight days from collection. The extracts were then stored in methanol before analysis. Although no holding time from extraction to analysis has been established for this method, it has been observed that the analytes of interest are extremely stable when stored in methanol even for several months.

Method Blanks:

No analytes of interest were detected in either method blank.

Initial Calibration:

The % Relative Standard Deviations were within the maximum of 20% for all target analytes with one exception. 1-Naphthol standard responses were unreliable below 1 ng on column. Sample quantitation limits for 1-naphthol have been raised to 0.3 ug/L.

Surrogates:

BDMC was added as a surrogate to each sample. No QC limits have yet been established for this modified method. BDMC recovery was low in one of the method blanks. Since the recovery for the other method blank was adequate, no qualification of the results was necessary for this condition.

All sample surrogate recoveries are considered reasonable and acceptable.

Matrix Spikes (MS/MSD):

Sample 95318034 was analyzed as a matrix spike and matrix spike duplicate. 1-Naphthol was not added to the spiking solution. All spike results for 1-naphthol have been qualified "NAF".

Methiocarb recovery was slightly lower than expected. A new spiking solution has been prepared that exhibits acceptable recoveries for Methiocarb.

Aldicarb recovery was excellent in the matrix spike (107%), and low in the matrix spike duplicate (51%). Since Aldicarb was not detected in any of the samples, this precision data does not affect the results

None of these conditions indicate a wider QC problem. Therefore, no qualification of the sample results is necessary.

All other matrix spike recoveries were between 67% and 144%. This range and the precision data are reasonable and acceptable.

Sample Results:

This data is acceptable for use as reported.

DATA QUALIFIER CODES:

U - The analyte was not detected at or above the reported value.

J - The analyte was positively identified. The associated numerical value is an estimate.

UJ - The analyte was not detected at or above the reported estimated result.

NJ - There is evidence that the analyte is present. The associated numerical result is an estimate.

NAF - Not analyzed for.

REJ - The data are unusable for all purposes.

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328046

Date Received: 08/09/95

Method: EPA531.1

Field ID: CLOVER

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/14/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.1	U
Aldicarb Sulfoxide	0.1	U
Oxamyl (Vydate)	0.1	U
Methomyl	0.1	U
3-Hydroxycarbofuran	0.1	U
Aldicarb	0.1	U
Baygon (Propoxur)	0.1	U
Carbofuran	0.1	U
1-Naphthol	0.3	U
Carbaryl	0.1	U
Methiocarb	0.1	U

Surrogate Recoveries

BDMC	64	%
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Authorized By: 

Release Date: 11/8/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: 95328047

Date Received: 08/09/95

Method: EPA531.1

Field ID: CHAMBERS

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/14/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.1	U
Aldicarb Sulfoxide	0.1	U
Oxamyl (Vydate)	0.1	U
Methomyl	0.1	U
3-Hydroxycarbofuran	0.1	U
Aldicarb	0.1	U
Baygon (Propoxur)	0.1	U
Carbofuran	0.1	U
1-Naphthol	0.3	U
Carbaryl	0.1	U
Methiocarb	0.1	U

Surrogate Recoveries

BDMC	75	%
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Authorized By: Karin Ledda

Release Date: 11/8/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53181

Method: EPA531.1

Blank ID: BW5237

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 09/27/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Aldicarb Sulfone	0.1	U
Aldicarb Sulfoxide	0.1	U
Oxamyl (Vydate)	0.1	U
Methomyl	0.1	U
3-Hydroxycarbofuran	0.1	U
Aldicarb	0.1	U
Baygon (Propoxur)	0.1	U
Carbofuran	0.1	U
1-Naphthol	0.3	U
Carbaryl	0.1	U
Methiocarb	0.1	U

Surrogate Recoveries

BDMC	73	%
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Authorized By: 

Release Date: 11/8/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Chambers/Clover Pesticides

LIMS Project ID: 2087-95

Sample: BLN53182

Method: EPA531.1

Blank ID: BW5237D

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/03/95

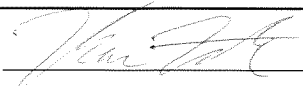
Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Aldicarb Sulfone	0.1	U
Aldicarb Sulfoxide	0.1	U
Oxamyl (Vydate)	0.1	U
Methomyl	0.1	U
3-Hydroxycarbofuran	0.1	U
Aldicarb	0.1	U
Baygon (Propoxur)	0.1	U
Carbofuran	0.1	U
1-Naphthol	0.3	U
Carbaryl	0.1	U
Methiocarb	0.1	U

Surrogate Recoveries

BDMC	19	%
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Authorized By: 

Release Date: 11/8/95

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1

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

December 21, 1995

Subject: Chambers-Clover Pesticides

Samples: ~~95-268055 to 268057~~ 95-408030 and -408031 a.g.

Case No. 2220 - 95

Officer: Art Johnson

By: Dickey D. Huntamer
Organics Analysis Unit

PESTICIDES ANALYSES

ANALYTICAL METHODS:

The water samples were extracted with methylene chloride, solvent exchanged and analyzed by capillary Gas Chromatography and Atomic Emission Detector (GC/AED) using EPA Method 1618. Confirmation was done by Ion-Trap mass spectrometry.

HOLDING TIMES:

All samples were extracted within seven days and the extracts were analyzed within the recommended holding time.

BLANKS:

No target analytes were detected in the laboratory blanks.

NITROGEN PESTICIDES

SURROGATES:

The surrogate compound for the nitrogen pesticides by GC/AED is dimethylnitrobenzene. Recoveries ranged from 86% to 100%. No dimethylnitrobenzene recovery limits have been established for this method.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

No special problems were encountered in the analysis and the data is acceptable for use as qualified. Diclobenil and 2,6-dichlorobenzamide was detected in both samples. Diuron was presumptively detected in sample, -408030 (NJ). Only the breakdown product was detected and the concentration was too low to perform HPLC confirmation.

ORGANO-PHOSPHOROUS PESTICIDES**SURROGATES:**

Triphenyl Phosphate (TPP) was used as the organo-phosphorous pesticide surrogate. The range of surrogate recoveries was 90% to 104% for TPP. No recommended recovery limits have been established for this method.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

No special problems were encountered in the analysis. The data is acceptable for use as qualified.

CHLORINATED PESTICIDES/PCB**SURROGATES:**

Surrogate recoveries ranged from 106% to 114% for decachlorobiphenyl (DCB). No data qualifiers were added to the water results based on surrogate recoveries.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

There were no problems with the analysis. The data is acceptable for use as qualified.

PYRETHRIN PESTICIDES
SULFUR PESTICIDES

SURROGATES:

No specific pyrethrin or sulfur surrogates are available for this method. See the surrogate for the nitrogen, organo-phosphorous and chlorinated pesticides.

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples..

ANALYTICAL COMMENTS:

No special problems were encountered in the analysis. The data is acceptable for use as qualified.

CHLORINATED HERBICIDES

ANALYTICAL METHODS:

Extraction and analysis was accomplished using methylene chloride Manchester Lab modified EPA Method 1658. Analysis was by capillary column GC analysis with Atomic Emission Detector (AED) and Ion-trap GC/MS confirmation.

HOLDING TIMES:

All sample extraction and analysis holding times were met.

BLANKS:

No target compounds were detected in the laboratory blanks.

SURROGATES:

No recovery limits have been established for this method. Surrogate recoveries ranged from 56% to 102% except for the duplicate laboratory blank, BLN53426 which had 19% recovery. No recovery limits have been established for this method and no qualifiers were added to the data

MATRIX SPIKE AND MATRIX SPIKE :

No matrix spikes were analyzed with these samples.

ANALYTICAL COMMENTS:

There were no significant problems with the herbicide analysis. One target compound, 2,4-D was detected in all sample, -408031 and 4-nitrophenol was detected in both sample.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an <u>estimate</u> .
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are <u>unusable</u> for all purposes.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 .
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

CN_CHAM3.DOC

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408030

Date Received: 10/03/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 10/03/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/17/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.007	J	Butachlor	0.27	U
Tebuthiuron	0.12	U	Carboxin	0.86	U
Propachlor (Ramrod)	0.19	U	Fenarimol	0.23	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.022	NJ
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.30	U
Simazine	0.078	U	Profluralin	0.19	U
Atrazine	0.078	U	Metalaxyl	0.53	U
Pronamide (Kerb)	0.31	U	Cyanazine	0.12	U
Terbacil	0.23	U	2,6-Dichlorobenzamide	0.023	J
Metribuzin	0.078	U	Surrogate Recoveries		
Alachlor	0.28	U	1,3-Dimethyl-2-nitrobenzene	91	%
Prometryn	0.078	U			
Bromacil	0.31	U			
Metolachlor	0.31	U			
Diphenamid	0.23	U			
Pendimethalin	0.12	U			
Napropamide	0.23	U			
Oxyfluorfen	0.31	U			
Norflurazon	0.16	U			
Fluridone	0.47	UJ			
Eptam	0.16	U			
Butylate	0.16	U			
Vernolate	0.16	U			
Cycloate	0.16	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.078	U			
Propazine	0.078	U			
Chlorothalonil (Daconil)	0.19	U			
Triallate	0.20	U			
Ametryn	0.078	U			
Terbutryn (Igran)	0.078	U			
Hexazinone	0.12	U			
Pebulate	0.16	U			
Molinate	0.16	U			
Chlorpropham	0.31	U			
Atraton	0.23	U			
Triadimefon	0.20	U			
MGK264	0.55	U			

Authorized By: D. Hunter

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408031

Date Received: 10/03/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 10/03/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/17/95

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.006	J	Butachlor	0.28	U
Tebuthiuron	0.12	U	Carboxin	0.88	U
Propachlor (Ramrod)	0.19	U	Fenarimol	0.24	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.48	U
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.30	U
Simazine	0.080	U	Profluralin	0.19	U
Atrazine	0.080	U	Metaxyl	0.54	U
Pronamide (Kerb)	0.32	U	Cyanazine	0.12	U
Terbacil	0.24	U	2,6-Dichlorobenzamide	0.013	J
Metribuzin	0.080	U			
Alachlor	0.29	U	Surrogate Recoveries		
Prometryn	0.080	U			
Bromacil	0.32	U	1,3-Dimethyl-2-nitrobenzene	87	%
Metolachlor	0.32	U			
Diphenamid	0.24	U			
Pendimethalin	0.12	U			
Napropamide	0.24	U			
Oxyfluorfen	0.32	U			
Norflurazon	0.16	U			
Fluridone	0.48	UJ			
Eptam	0.16	U			
Butylate	0.16	U			
Vernolate	0.16	U			
Cycloate	0.16	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.080	U			
Propazine	0.080	U			
Chlorothalonil (Daconil)	0.19	U			
Triallate	0.21	U			
Ametryn	0.080	U			
Terbutryn (Igran)	0.080	U			
Hexazinone	0.12	U			
Pebulate	0.16	U			
Molinate	0.16	U			
Chlorpropham	0.32	U			
Atraton	0.24	U			
Triadimefon	0.21	U			
MGK264	0.56	U			

Authorized By: Art Johnson

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53405

Method: EPA1618

Blank ID: BW5276

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.15	U	Butachlor	0.27	U
Tebuthiuron	0.12	U	Carboxin	0.85	U
Propachlor (Ramrod)	0.18	U	Fenarimol	0.23	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.46	U
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.29	U
Simazine	0.077	U	Profluralin	0.18	U
Atrazine	0.077	U	Metalaxyl	0.52	U
Pronamide (Kerb)	0.31	U	Cyanazine	0.12	U
Terbacil	0.23	U			
Metribuzin	0.077	U	Surrogate Recoveries		
Alachlor	0.28	U			
Prometryn	0.077	U	1,3-Dimethyl-2-nitrobenzene	100	%
Bromacil	0.31	U			
Metolachlor	0.31	U			
Diphenamid	0.23	U			
Pendimethalin	0.12	U			
Napropamide	0.23	U			
Oxyfluorfen	0.31	U			
Norflurazon	0.15	U			
Fluridone	0.46	UJ			
Eptam	0.15	U			
Butylate	0.15	U			
Vernolate	0.15	U			
Cycloate	0.15	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.077	U			
Propazine	0.077	U			
Chlorothalonil (Daconil)	0.18	U			
Triallate	0.20	U			
Ametryn	0.077	U			
Terbutryn (Igran)	0.077	U			
Hexazinone	0.12	U			
Pebulate	0.15	U			
Molinate	0.15	U			
Chlorpropham	0.31	U			
Atraton	0.23	U			
Triadimefon	0.20	U			
MGK264	0.54	U			

Authorized By: 

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Nitrogen Containing Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53406

Method: EPA1618

Blank ID: BW5276D

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlobenil	0.15	U	Butachlor	0.27	U
Tebuthiuron	0.12	U	Carboxin	0.85	U
Propachlor (Ramrod)	0.18	U	Fenarimol	0.23	U
Ethalfuralin (Sonalan)	0.12	U	Diuron	0.46	U
Treflan (Trifluralin)	0.12	U	Di-allate (Avadex)	0.29	U
Simazine	0.077	U	Profluralin	0.18	U
Atrazine	0.077	U	Metalaxyl	0.52	U
Pronamide (Kerb)	0.31	U	Cyanazine	0.12	U
Terbacil	0.23	U			
Metribuzin	0.077	U	Surrogate Recoveries		
Alachlor	0.28	U			
Prometryn	0.077	U	1,3-Dimethyl-2-nitrobenzene	86	%
Bromacil	0.31	U			
Metolachlor	0.31	U			
Diphenamid	0.23	U			
Pendimethalin	0.12	U			
Napropamide	0.23	U			
Oxyfluorfen	0.31	U			
Norflurazon	0.15	U			
Fluridone	0.46	UJ			
Eptam	0.15	U			
Butylate	0.15	U			
Vernolate	0.15	U			
Cycloate	0.15	U			
Benefin	0.12	U			
Prometon (Pramitol 5p)	0.077	U			
Propazine	0.077	U			
Chlorothalonil (Daconil)	0.18	U			
Triallate	0.20	U			
Ametryn	0.077	U			
Terbutryn (Igran)	0.077	U			
Hexazinone	0.12	U			
Pebulate	0.15	U			
Molinate	0.15	U			
Chlorpropham	0.31	U			
Atraton	0.23	U			
Triadimefon	0.20	U			
MGK264	0.54	U			

Authorized By: D. Henton

Release Date: 12/11/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408030

Date Received: 10/03/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 10/03/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/17/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	0.047	U
Beta-BHC	0.047	U
Gamma-BHC (Lindane)	0.047	U
Delta-BHC	0.047	U
Heptachlor	0.047	U
Aldrin	0.047	U
Heptachlor Epoxide	0.047	U
Trans-Chlordane (Gamma)	0.047	U
Endosulfan I	0.047	U
Dieldrin	0.047	U
4,4'-DDE	0.0031	U
Endrin	0.047	U
Endosulfan II	0.047	U
4,4'-DDD	0.0031	U
Endrin Aldehyde	0.047	U
Endosulfan Sulfate	0.047	U
4,4'-DDT	0.0031	U
Endrin Ketone	0.047	U
Methoxychlor	0.047	U
Alpha-Chlordene	0.047	U
Gamma-Chlordene	0.047	U
Oxychlordane	0.047	U
DDMU	0.047	U
Cis-Chlordane (Alpha-Chlordane)	0.047	U
Cis-Nonachlor	0.047	UJ
Kelthane	0.19	UJ
Captan	0.14	UJ
2,4'-DDE	0.047	U
Trans-Nonachlor	0.047	U
2,4'-DDD	0.047	U
2,4'-DDT	0.047	U
Captafol	0.23	UJ
Mirex	0.047	U
Toxaphene	0.94	U

Surrogate Recoveries

Decachlorobiphenyl	109	%
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Authorized By: De Kuntz

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408031

Date Received: 10/03/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 10/03/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/17/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	0.048	U
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Surrogate Recoveries

Beta-BHC	0.048	U
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Gamma-BHC (Lindane)	0.048	U
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Decachlorobiphenyl	114	%
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Delta-BHC	0.048	U
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Heptachlor	0.048	U
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Aldrin	0.048	U
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Heptachlor Epoxide	0.048	U
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Trans-Chlordane (Gamma)	0.048	U
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Endosulfan I	0.048	U
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Dieldrin	0.048	U
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4,4'-DDE	0.0032	U
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Endrin	0.048	U
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Endosulfan II	0.048	U
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4,4'-DDD	0.0032	U
----------	--------	---

Endrin Aldehyde	0.048	U
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Endosulfan Sulfate	0.048	U
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4,4'-DDT	0.0032	U
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Endrin Ketone	0.048	U
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Methoxychlor	0.048	U
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Alpha-Chlordene	0.048	U
-----------------	-------	---

Gamma-Chlordene	0.048	U
-----------------	-------	---

Oxychlordane	0.048	U
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DDMU	0.048	U
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Cis-Chlordane (Alpha-Chlordane)	0.048	U
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Cis-Nonachlor	0.048	UJ
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Kelthane	0.19	UJ
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Captan	0.14	UJ
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2,4'-DDE	0.048	U
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Trans-Nonachlor	0.048	U
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2,4'-DDD	0.048	U
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2,4'-DDT	0.048	U
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Captafol	0.24	UJ
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Mirex	0.048	U
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Toxaphene	0.96	U
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Authorized By: *D. Hunter*

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53405

Method: EPA1618

Blank ID: BW5276

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Alpha-BHC	0.046	U
Beta-BHC	0.046	U
Gamma-BHC (Lindane)	0.046	U
Delta-BHC	0.046	U
Heptachlor	0.046	U
Aldrin	0.046	U
Heptachlor Epoxide	0.046	U
Trans-Chlordane (Gamma)	0.046	U
Endosulfan I	0.046	U
Dieldrin	0.046	U
4,4'-DDE	0.0031	U
Endrin	0.046	U
Endosulfan II	0.046	U
4,4'-DDD	0.0031	U
Endrin Aldehyde	0.046	U
Endosulfan Sulfate	0.046	U
4,4'-DDT	0.0031	U
Endrin Ketone	0.046	U
Methoxychlor	0.046	U
Alpha-Chlordene	0.046	U
Gamma-Chlordene	0.046	U
Oxychlordane	0.046	U
DDMU	0.046	U
Cis-Chlordane (Alpha-Chlordane)	0.046	U
Cis-Nonachlor	0.046	UJ
Kelthane	0.18	UJ
Captan	0.14	UJ
2,4'-DDE	0.046	U
Trans-Nonachlor	0.046	U
2,4'-DDD	0.046	U
2,4'-DDT	0.046	U
Captafol	0.23	UJ
Mirex	0.046	U
Toxaphene	0.92	U

Surrogate Recoveries

Decachlorobiphenyl	106	%
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Authorized By: 

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorinated Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53406

Method: EPA1618

Blank ID: BW5276D

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier			
Alpha-BHC	0.046	U	Surrogate Recoveries		
Beta-BHC	0.046	U			
Gamma-BHC (Lindane)	0.046	U	Decachlorobiphenyl	106	%
Delta-BHC	0.046	U			
Heptachlor	0.046	U			
Aldrin	0.046	U			
Heptachlor Epoxide	0.046	U			
Trans-Chlordane (Gamma)	0.046	U			
Endosulfan I	0.046	U			
Dieldrin	0.046	U			
4,4'-DDE	0.0031	U			
Endrin	0.046	U			
Endosulfan II	0.046	U			
4,4'-DDD	0.0031	U			
Endrin Aldehyde	0.046	U			
Endosulfan Sulfate	0.046	U			
4,4'-DDT	0.0031	U			
Endrin Ketone	0.046	U			
Methoxychlor	0.046	U			
Alpha-Chlordene	0.046	U			
Gamma-Chlordene	0.046	U			
Oxychlordane	0.046	U			
DDMU	0.046	U			
Cis-Chlordane (Alpha-Chlordane)	0.046	U			
Cis-Nonachlor	0.046	UJ			
Kelthane	0.18	UJ			
Captan	0.14	UJ			
2,4'-DDE	0.046	U			
Trans-Nonachlor	0.046	U			
2,4'-DDD	0.046	U			
2,4'-DDT	0.046	U			
Captafol	0.23	UJ			
Mirex	0.046	U			
Toxaphene	0.92	U			

Authorized By: D. Hunter

Release Date: 12/18/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408030

Field ID: CHAMBERS

Project Officer: Art Johnson

Date Received: 10/03/95

Date Prepared: 10/03/95

Date Analyzed: 10/17/95

Method: EPA1618

Matrix: Water

Units: ug/L

Analyte	Result	Qualifier			
Demeton-O	0.055	U	Surrogate Recoveries		
Sulfotepp	0.047	U			
Demeton-S	0.055	U	Triphenyl Phosphate 104 %		
Fonofos	0.047	U			
Disulfoton (Di-Syston)	0.047	U			
Methyl Chlorpyrifos	0.063	U			
Fenitrothion	0.055	U			
Malathion	0.063	U			
Chlorpyrifos	0.063	U			
Merphos (1 & 2)	0.094	U			
Ethion	0.055	U			
Carbophenothion	0.078	U			
EPN	0.078	U			
Azinphos Ethyl	0.13	U			
Ethoprop	0.063	U			
Phorate	0.055	U			
Dimethoate	0.063	U			
Diazinon	0.063	U			
Methyl Parathion	0.055	U			
Ronnel	0.055	U			
Fenthion	0.055	U			
Parathion	0.063	U			
Fensulfothion	0.078	U			
Bolstar (Sulprofos)	0.055	U			
Imidan	0.086	U			
Azinphos (Guthion)	0.14	U			
Coumaphos	0.094	U			
Dichlorvos (DDVP)	0.063	U			
Mevinphos	0.078	U			
Dioxathion	0.13	U			
Propetamphos	0.16	U			
Methyl Paraoxon	0.14	U			
Phosphamidan	0.19	UJ			
Tetrachlorvinphos (Gardona)	0.16	U			
Fenamiphos	0.12	UJ			
Butifos (DEF)	0.11	U			
Abate (Temephos)	0.70	U			

Authorized By: D. Hunter

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408031

Date Received: 10/03/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 10/03/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/17/95

Units: ug/L

Analyte	Result	Qualifier			
Demeton-O	0.056	U	Surrogate Recoveries		
Sulfotepp	0.048	U			
Demeton-S	0.056	U	Triphenyl Phosphate 94 %		
Fonofos	0.048	U			
Disulfoton (Di-Syston)	0.048	U			
Methyl Chlorpyrifos	0.064	U			
Fenitrothion	0.056	U			
Malathion	0.064	U			
Chlorpyrifos	0.064	U			
Merphos (1 & 2)	0.096	U			
Ethion	0.056	U			
Carbophenothion	0.080	U			
EPN	0.080	U			
Azinphos Ethyl	0.13	U			
Ethoprop	0.064	U			
Phorate	0.056	U			
Dimethoate	0.064	U			
Diazinon	0.064	U			
Methyl Parathion	0.056	U			
Ronnel	0.056	U			
Fenthion	0.056	U			
Parathion	0.064	U			
Fensulfothion	0.080	U			
Bolstar (Sulprofos)	0.056	U			
Imidan	0.088	U			
Azinphos (Guthion)	0.14	U			
Coumaphos	0.096	U			
Dichlorvos (DDVP)	0.064	U			
Mevinphos	0.080	U			
Dioxathion	0.14	U			
Propetamphos	0.16	U			
Methyl Paraoxon	0.14	U			
Phosphamidan	0.19	UJ			
Tetrachlorvinphos (Gardona)	0.16	U			
Fenamiphos	0.12	UJ			
Butifos (DEF)	0.11	U			
Abate (Temephos)	0.72	U			

Authorized By: Dr. Hunter

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53405

Method: EPA1618

Blank ID: BW5276

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	0.054	U
Sulfotepp	0.046	U
Demeton-S	0.054	U
Fonofos	0.046	U
Disulfoton (Di-Syston)	0.046	U
Methyl Chlorpyrifos	0.062	U
Fenitrothion	0.054	U
Malathion	0.062	U
Chlorpyrifos	0.062	U
Merphos (1 & 2)	0.092	U
Ethion	0.054	U
Carbophenothion	0.077	U
EPN	0.077	U
Azinphos Ethyl	0.12	U
Ethoprop	0.062	U
Phorate	0.054	U
Dimethoate	0.062	U
Diazinon	0.062	U
Methyl Parathion	0.054	U
Ronnel	0.054	U
Fenthion	0.054	U
Parathion	0.062	U
Fensulfothion	0.077	U
Bolstar (Sulprofos)	0.054	U
Imidan	0.085	U
Azinphos (Guthion)	0.14	U
Coumaphos	0.092	U
Dichlorvos (DDVP)	0.062	U
Mevinphos	0.077	U
Dioxathion	0.13	U
Propetamphos	0.15	U
Methyl Paraoxon	0.14	U
Phosphamidan	0.18	UJ
Tetrachlorvinphos (Gardona)	0.15	U
Fenamiphos	0.12	UJ
Butifos (DEF)	0.11	U
Abate (Temephos)	0.69	U

Surrogate Recoveries

Triphenyl Phosphate	90	%
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Authorized By: D. Kuntz

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Organophosphorous Pesticides (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53406

Method: EPA1618

Blank ID: BW5276D

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Demeton-O	0.054	U
Sulfotepp	0.046	U
Demeton-S	0.054	U
Fonofos	0.046	U
Disulfoton (Di-Syston)	0.046	U
Methyl Chlorpyrifos	0.062	U
Fenitrothion	0.054	U
Malathion	0.062	U
Chlorpyrifos	0.062	U
Merphos (1 & 2)	0.092	U
Ethion	0.054	U
Carbophenothion	0.077	U
EPN	0.077	U
Azinphos Ethyl	0.12	U
Ethoprop	0.062	U
Phorate	0.054	U
Dimethoate	0.062	U
Diazinon	0.062	U
Methyl Parathion	0.054	U
Ronnel	0.054	U
Fenthion	0.054	U
Parathion	0.062	U
Fensulfothion	0.077	U
Bolstar (Sulprofos)	0.054	U
Imidan	0.085	U
Azinphos (Guthion)	0.14	U
Coumaphos	0.092	U
Dichlorvos (DDVP)	0.062	U
Mevinphos	0.077	U
Dioxathion	0.13	U
Propetamphos	0.15	U
Methyl Paraoxon	0.14	U
Phosphamidan	0.18	UJ
Tetrachlorvinphos (Gardona)	0.15	U
Fenamiphos	0.12	UJ
Butifos (DEF)	0.11	U
Abate (Temephos)	0.69	U

Surrogate Recoveries

Triphenyl Phosphate	94	%
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Authorized By: D. Hunte

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408030

Date Received: 10/03/95

Method: EPA1618

Field ID: CHAMBERS

Date Prepared: 10/03/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/17/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
Phenothrin	0.16	U
cis-Permethrin	0.16	U
Fenvalerate (2 isomers)	0.31	U

Authorized By: O. V. [Signature]

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408031

Date Received: 10/03/95

Method: EPA1618

Field ID: CLOVER

Date Prepared: 10/03/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/17/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.16	U
------------	------	---

Phenothrin	0.16	U
------------	------	---

cis-Permethrin	0.16	U
----------------	------	---

Fenvalerate (2 isomers)	0.32	U
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Authorized By: 

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53405

Method: EPA1618

Blank ID: BW5276

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
Resmethrin	0.15	U
Phenothrin	0.15	U
cis-Permethrin	0.15	U
Fenvalerate (2 isomers)	0.31	U

Authorized By: 

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Pyrethrins (GC/AED)

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53406

Method: EPA1618

Blank ID: BW5276D

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Resmethrin	0.15	U
Phenothrin	0.15	U
cis-Permethrin	0.15	U
Fenvalerate (2 isomers)	0.31	U

Authorized By: *D. H. [Signature]*

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Sulfur Containing Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Project Officer: Art Johnson

Method: EPA1618

Date Reported: 20-DEC-95

Matrix: Water

Analyte: Propargite

Sample	QC	Field ID	Result	Qualifier	Units	Received	Analyzed
95408030		CHAMBERS	0.16	U	ug/L	10/03/95	10/17/95
95408031		CLOVER	0.16	U	ug/L	10/03/95	10/17/95
BLN53405		BW5276	0.15	U	ug/L		
BLN53406		BW5276D	0.15	U	ug/L		

Authorized By: D. Vento

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408030

Date Received: 10/03/95

Method: SW8150

Field ID: CHAMBERS

Date Prepared: 10/04/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 11/03/95

Units: ug/L

Analyte	Result	Qualifier
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2,4,6-Trichlorophenol	0.023	U
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4-Nitrophenol	0.020	J
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2,4,5-Trichlorophenol	0.022	U
-----------------------	-------	---

2,3,4,6-Tetrachlorophenol	0.021	U
---------------------------	-------	---

MCPP (Mecoprop)	0.077	U
-----------------	-------	---

MCPA	0.076	U
------	-------	---

Bromoxynil	0.038	U
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2,3,4,5-Tetrachlorophenol	0.021	U
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Pentachlorophenol	0.019	U
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Dinoseb	0.057	U
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Bentazon	0.057	U
----------	-------	---

2,4,5-TB	0.034	U
----------	-------	---

Acifluorfen (Blazer)	0.15	U
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3,5-Dichlorobenzoic Acid	0.038	U
--------------------------	-------	---

Dicamba I	0.038	U
-----------	-------	---

Dichlorprop	0.042	U
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2,4-D	0.038	U
-------	-------	---

Trichlopyr	0.030	U
------------	-------	---

2,4,5-TP (Silvex)	0.030	U
-------------------	-------	---

2,4,5-T	0.030	U
---------	-------	---

2,4-DB	0.046	U
--------	-------	---

Ioxynil	0.039	U
---------	-------	---

Picloram	0.038	U
----------	-------	---

Dacthal (DCPA)	0.030	U
----------------	-------	---

Diclofop-Methyl	0.057	U
-----------------	-------	---

Surrogate Recoveries

2,4,6-Tribromophenol	78	%
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Authorized By: D. K. [Signature]

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408031

Date Received: 10/03/95

Method: SW8150

Field ID: CLOVER

Date Prepared: 10/04/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 11/03/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.023	U
4-Nitrophenol	0.016	J
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.021	U
MCPD (Mecoprop)	0.078	U
MCPA	0.076	U
Bromoxynil	0.039	U
2,3,4,5-Tetrachlorophenol	0.021	U
Pentachlorophenol	0.033	U
Dinoseb	0.057	U
Bentazon	0.057	U
2,4,5-TB	0.034	U
Acifluorfen (Blazer)	0.15	U
3,5-Dichlorobenzoic Acid	0.038	U
Dicamba I	0.038	U
Dichloroprop	0.042	U
2,4-D	0.026	J
Trichlopyr	0.031	U
2,4,5-TP (Silvex)	0.030	U
2,4,5-T	0.030	U
2,4-DB	0.046	U
Ioxynil	0.039	U
Picloram	0.039	U
Dacthal (DCPA)	0.031	U
Diclofop-Methyl	0.057	U

Surrogate Recoveries

2,4,6-Tribromophenol	102	%
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Authorized By: Dr. Hackett

Release Date: 12/11/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53425

Blank ID: BW5277H

Project Officer: Art Johnson

Date Prepared: 10/04/95

Date Analyzed:

Method: SW8150

Matrix: Water

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.023	U
4-Nitrophenol	0.068	U
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.021	U
MCP (Mecoprop)	0.080	U
MCPA	0.078	U
Bromoxynil	0.039	U
2,3,4,5-Tetrachlorophenol	0.021	U
Pentachlorophenol	0.020	U
Dinoseb	0.059	U
Bentazon	0.059	U
2,4,5-TB	0.035	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.039	U
Dicamba I	0.039	U
Dichlorprop	0.043	U
2,4-D	0.039	U
Trichlopyr	0.031	U
2,4,5-TP (Silvex)	0.031	U
2,4,5-T	0.031	U
2,4-DB	0.047	U
Ioxynil	0.040	U
Picloram	0.039	U
Dacthal (DCPA)	0.031	U
Diclofop-Methyl	0.059	U

Surrogate Recoveries

2,4,6-Tribromophenol	56	%
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Authorized By: 

Release Date: 12/21/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Chlorophenoxy Herbicides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN53426

Method: SW8150

Blank ID: BW5277HD

Date Prepared: 10/04/95

Matrix: Water

Project Officer: Art Johnson

Date Analyzed:

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

2,4,6-Trichlorophenol	0.023	U
4-Nitrophenol	0.068	U
2,4,5-Trichlorophenol	0.023	U
2,3,4,6-Tetrachlorophenol	0.021	U
MCPP (Mecoprop)	0.080	U
MCPA	0.078	U
Bromoxynil	0.039	U
2,3,4,5-Tetrachlorophenol	0.021	U
Pentachlorophenol	0.020	U
Dinoseb	0.059	U
Bentazon	0.059	U
2,4,5-TB	0.035	U
Acifluorfen (Blazer)	0.16	U
3,5-Dichlorobenzoic Acid	0.039	U
Dicamba I	0.039	U
Dichloroprop	0.043	U
2,4-D	0.039	U
Trichlopyr	0.031	U
2,4,5-TP (Silvex)	0.031	U
2,4,5-T	0.031	U
2,4-DB	0.047	U
Ioxynil	0.040	U
Picloram	0.039	U
Dacthal (DCPA)	0.031	U
Diclofop-Methyl	0.059	U

Surrogate Recoveries

2,4,6-Tribromophenol	19	%
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Authorized By: D. Hutto

Release Date: 12/21/95

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Manchester Environmental Laboratory

7411 Beach Dr E
Port Orchard Washington 98366
December 5, 1995

Project: **Clover Chamber Pesticides -- week 40**

Samples: 408030 through 408031

By: Karin Feddersen *KF*

These samples were analyzed by EPA Method 531.1, modified, for Carbamates.

Holding Times:

This method states that the analytes are stable for twenty-eight days prior to analysis. The samples were extracted within twenty-eight days from collection. The extracts were then stored in methanol before analysis. Although no holding time from extraction to analysis has been established for this method, it has been observed that the analytes of interest are extremely stable when stored in methanol even for several months.

Method Blanks:

No analytes of interest were detected in either method blank.

Initial Calibration:

The % Relative Standard Deviations were within the maximum of 20% for all target analytes with one exception. 1-Naphthol standard responses were unreliable below 2 ng on column. Sample quantitation limits for 1-Naphthol have been raised to 0.6 ug/L.

Surrogates:

BDMC was added as a surrogate to each sample. No QC limits have yet been established for this modified method. BDMC recovery was low in one of the method blanks. Since the recovery for the other method blank was adequate, no qualification of the results was necessary for this condition.

The surrogate recoveries for samples 95398000 and 95398001 are lower than expected. No analytes were detected in these samples, therefore all associated results have been qualified "UJ". All other sample surrogate recoveries are considered reasonable and acceptable.

Matrix Spikes (MS/MSD):

Sample 95408008 of WSPMP was analyzed as a matrix spike and matrix spike duplicate. 1-Naphthol was not added to the spiking solution. All spike results for 1-Naphthol have been qualified "NAF".

Aldicarb Sulfone and Aldicarb recoveries were higher than expected in both spikes, indicating a possible high bias for these two analytes. Since these analytes were not detected in any of the samples, no qualification of the results is necessary.

These analytes were low in the standards when compared to the spiking solution used. Analysis of new standards prepared from new stock solution demonstrated more acceptable values. Therefore, spike results from future sample sets are expected to also be within a more acceptable range.

All other matrix spike recoveries were between 71% and 117%. This range and the precision data are reasonable and acceptable.

Sample Results:

This data is acceptable for use as reported.

DATA QUALIFIER CODES:

- U - The analyte was not detected at or above the reported value.
- J - The analyte was positively identified. The associated numerical value is an estimate.
- UJ - The analyte was not detected at or above the reported estimated result.
- NJ - There is evidence that the analyte is present. The associated numerical result is an estimate.
- NAF - Not analyzed for.
- REJ - The data are unusable for all purposes.

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408030

Date Received: 10/03/95

Method: EPA531.1

Field ID: CHAMBERS

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/06/95

Units: ug/L

Analyte	Result	Qualifier
---------	--------	-----------

Aldicarb Sulfone	0.12	U
Aldicarb Sulfoxide	0.12	U
Oxamyl (Vydate)	0.12	U
Methomyl	0.12	U
3-Hydroxycarbofuran	0.12	U
Aldicarb	0.12	U
Baygon (Propoxur)	0.12	U
Carbofuran	0.12	U
1-Naphthol	0.6	U
Carbaryl	0.12	U
Methiocarb	0.12	U

Surrogate Recoveries

BDMC	80	%
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Authorized By: Karin Tedde

Release Date: 12/5/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: 95408031

Date Received: 10/03/95

Method: EPA531.1

Field ID: CLOVER

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/06/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.12	U
Aldicarb Sulfoxide	0.12	U
Oxamyl (Vydate)	0.12	U
Methomyl	0.12	U
3-Hydroxycarbofuran	0.12	U
Aldicarb	0.12	U
Baygon (Propoxur)	0.12	U
Carbofuran	0.12	U
1-Naphthol	0.6	U
Carbaryl	0.12	U
Methiocarb	0.12	U

Surrogate Recoveries

BDMC	77	%
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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN54000

Method: EPA531.1

Blank ID: BW5279

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/11/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.12	U
Aldicarb Sulfoxide	0.12	U
Oxamyl (Vydate)	0.12	U
Methomyl	0.12	U
3-Hydroxycarbofuran	0.12	U
Aldicarb	0.12	U
Baygon (Propoxur)	0.12	U
Carbofuran	0.12	U
1-Naphthol	0.6	U
Carbaryl	0.12	U
Methiocarb	0.12	U

Surrogate Recoveries

BDMC	61	%
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Authorized By: Karin Tedder

Release Date: 12/5/95

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Carbamate Pesticides

Project Name: Clover Chamber Pesticides

LIMS Project ID: 2220-95

Sample: BLN54001

Method: EPA531.1

Blank ID: BW5279D

Matrix: Water

Project Officer: Art Johnson

Date Analyzed: 10/11/95

Units: ug/L

Analyte	Result	Qualifier
Aldicarb Sulfone	0.12	UJ
Aldicarb Sulfoxide	0.12	UJ
Oxamyl (Vydate)	0.12	UJ
Methomyl	0.12	UJ
3-Hydroxycarbofuran	0.12	UJ
Aldicarb	0.12	UJ
Baygon (Propoxur)	0.12	UJ
Carbofuran	0.12	UJ
1-Naphthol	0.6	UJ
Carbaryl	0.12	UJ
Methiocarb	0.12	UJ

Surrogate Recoveries

BDMC	28	%
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Authorized By: Karin Tedde

Release Date: 12/5/95

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Appendix C

Appendix C

State of Washington Department of Ecology
Manchester Environmental Laboratory
7411 Beach Dr. East Port Orchard WA. 98366
August 23, 1995

Project: WSPMP Fish Tissue

Sample(s): 208040, 208041, 208042, 208043, 208044, 218046

Laboratory: California Department of Fish and Game
Water Pollution Control Laboratory

By: Karin Feddersen

Case Summary

These samples were received at the Manchester Environmental Laboratory on May 26, 1995, and transported to California Department of Fish and Game Water Pollution Control Laboratory on May 31, 1995, for Pest/PCB with subsequent confirmation on GC/MS Ion Trap, % Lipids, and % Non-Polar Lipids analysis.

This data was reviewed for qualitative and quantitative accuracy, validity, and usefulness.

The % Lipids and % Non-Polar Lipids data are acceptable. The Pesticide/PCB data are further reviewed on the following pages.

There is no need to assimilate the "dilution factor" or "sample wt/vol" into the final values reported; these calculations have already been figured into the reported values.

DATA QUALIFIER DEFINITIONS

- U - The analyte was not detected at or above the reported result.
- J - The associated numerical result is an estimated quantity.
- N - The analyte has been tentatively identified.
- NJ - The analyte has been tentatively identified. The associated numerical result is an estimated quantity.
- C - The presence of the analyte has been positively confirmed on the GC/MS Ion Trap.
- JC - The presence of the analyte has been positively confirmed on the GC/MS Ion Trap. The associated numerical result is an estimated quantity.

Pesticides/PCB's

Holding Times:

A one year holding time from collection to extraction has been established for fish and shellfish in EPA's Guidance For Assessing Chemical Contaminant Data For Use In Fish Advisories. These samples were kept frozen until the time of extraction. The sample extracts were analyzed within forty (40) days from extraction.

Method Blank:

Oxychlordane was detected in the method blank. This analyte was detected in the samples at an amount less than five (5) times that detected in the method blank. The results for oxychlordane in the samples have been qualified with a "U". This qualifier indicates that this analyte was not detected in the samples at or above the suspected laboratory contamination level.

GC/MS Tuning and Calibration:

Calibration against Decafluorotriphenylphosphine (DFTPP) is acceptable for the confirmation of all associated sample extracts.

Calibration:

The % Relative Standard Deviations were within the maximum of 25% for all calibrations.

Duplicates:

A duplicate analysis was performed on sample 208043. Relative Percent Differences (RPD) are reasonable, acceptable, and within advisory QC limits.

Matrix Spikes (MS/MSD):

Sample 218046 was analyzed as a matrix spike and matrix spike duplicate (MS/MSD). Matrix spike recoveries are within method QC limits of $\geq 50\%$ of the expected values with several exceptions. Heptachlor recovery was 46% in the MS and 39% in the MSD, indicating a possible low bias for this analyte. Heptachlor is recovered from the first florisil fraction. The surrogate DBOB is also recovered from the first fraction. DBOB recoveries were lower (although still acceptable) in the MS and MSD than in the other samples. Thus the low recovery of heptachlor is most likely specific to the MS and MSD and not indicative of a larger QC problem. Therefore, no qualification is necessary for this analyte.

Endrin Aldehyde, Methyl Parathion, and Ethion recoveries were also low. The corresponding surrogate recoveries for these analytes are comparable with the recoveries in the other samples. These analytes have been qualified; when detected with a "J", when not detected, with a "UJ".

All Relative Percent Differences (RPD) are within method QC limits of 50%.

Surrogates:

All surrogate recoveries for these samples and for the associated method blank are reasonable, acceptable, and within QC limits.

Sample Data:

The RPD between the two columns was greater than 30% for some analytes. When these analytes were not confirmed in the sample by GC/MS, results above the quantitation limit have been qualified with "NJ". Results below the quantitation limit have been changed to "U". This was done in order to be consistent with Manchester Environmental Laboratory's standard reporting format.

All target analytes that have been positively confirmed in the samples by the GC/MS Ion Trap have been qualified with a "C".

This data is acceptable for use as amended.

Location			Elmoro	Padilla Bay	Duwamish WW	
Sample No.		Method Blank	20-8040	20-8041	20-8042	
Date Extracted	Fresh Weight	8/21/95	8/27/95	8/27/95	8/27/95	
	Quantitation Limit (QL)	Fresh Weight	Fresh Weight	Fresh Weight	Fresh Weight	
	(based on 50g sample weight)	Concentration	Concentration	Concentration	Concentration	
COMPOUND	ug/Kg (ppb)	ug/Kg (ppb)	ug/Kg (ppb)	ug/Kg (ppb)	ug/Kg (ppb)	
aldrin	0.30	U	U	U	U	
cis-chlordane	0.50	U	0.33 J	U	0.97	
trans-chlordane	0.50	U	0.50	U	0.91	
oxychlordane	0.50	0.33 J	U	U	U	
cis-nonachlor	0.75	U	U	U	0.20 J	
trans-nonachlor	0.30	U	U	U	0.66 NJ	
cis-chlordene	0.30	U	U	U	U	
trans-chlordene	0.35	U	U	U	U	
chlorpyrifos	1.5	U	U	U	U	
dicofol	6.5	U	U	U	U	
dichlorobenzophenone	20	U	U	U	U	
dacthal	0.15	U	0.33	U	U	
diazinon	3.0	U	U	U	U	
dieldrin	0.15	U	0.43 J	U	0.22	
endosulfan I	0.18	U	0.18	0.15 J	U	
endosulfan II	0.65	U	U	U	U	
endosulfan sulfate	1.5	U	U	U	U	
endrin	0.10	U	U	U	U	
ethion	3.5	U	UJ	UJ	UJ	
alpha BHC	0.25	U	U	0.06 J	0.06 J	
beta BHC	0.80	U	U	U	U	
gamma BHC	0.40	U	U	U	U	
delta BHC	0.50	U	U	U	U	
2,4'-DDD	1.5	U	U	U	U	
4,4'-DDD	1.5	U	1.8 C	0.05 J	0.88 J	
2,4'-DDE	1.0	U	U	U	U	
4,4'-DDE	0.60	U	6.5 C	0.57 J C	1.4 C	
4,4'-DDMU	1.5	U	U	U	U	
2,4'-DDT	0.65	U	0.25 J	U	0.61 J	
4,4'-DDT	0.80	U	0.91	0.12 J	2.8 NJ	
heptachlor	0.30	U	0.01 J	U	U	
heptachlor epoxide	0.50	U	0.14 J	U	U	
hexachlorobenzene	0.20	U	0.14 J	0.03 J	U	
methoxychlor	3.0	U	U	U	U	
oxadiazon	0.25	U	U	U	U	
ethyl parathion	0.45	U	U	U	U	
methyl parathion	0.30	U	UJ	UJ	UJ	
tetradifon	0.30	U	U	U	U	
toxaphene	15	U	U	U	U	
mirex	0.80	U	U	U	U	
pentachloroanisole	0.55	U	U	U	0.05 J	
endrin aldehyde	0.15	U	UJ	UJ	UJ	
endrin ketone	0.60	U	U	U	U	
PCB 1016	6.0	U	U	U	U	
PCB 1221	6.0	U	U	U	U	
PCB 1232	6.0	U	U	U	U	
PCB 1242	6.0	U	U	U	U	
PCB 1248	6.0	U	U	U	U	
PCB 1254	6.0	U	6.4 N	2 J	32	
PCB 1260	6.0	U	U	U	12 J C	
% Lipid		not analyzed	1.09%	0.846%	1.14%	
% Nonpolar Lipid		not analyzed	0.130%	0.085%	0.102%	
% Moisture		not analyzed	89.0%	89.5%	87.1%	

Location		Hylebos WW	Hylebos WW	Chambers Cr.
Sample No.		20-8043	20-8043 Dup	20-8044
Date Extracted	Fresh Weight	8/29/95	8/29/95	8/27/95
	Quantitation Limit (QL)	Fresh Weight	Fresh Weight	Fresh Weight
	(based on 50g sample weight)	Concentration	Concentration	Concentration
COMPOUND	ug/Kg (ppb)	ug/Kg (ppb)	ug/Kg (ppb)	ug/Kg (ppb)
aldrin	0.30	U	U	U
cis-chlordane	0.50	1.2	1.2	0.37 J
trans-chlordane	0.50	1.0	1.0	U
oxychlordane	0.50	U	U	U
cis-nonachlor	0.75	0.26 J	0.37 J	U
trans-nonachlor	0.30	0.99 NJ	1.1 NJ	0.38
cis-chlordene	0.30	U	U	U
trans-chlordene	0.35	U	U	U
chlorpyrifos	1.5	U	U	U
dicofol	6.5	U	U	U
dichlorobenzophenone	20	U	U	U
dacthal	0.15	U	U	U
diazinon	3.0	U	U	U
dieldrin	0.15	0.71	0.77	0.16 N
endosulfan I	0.15	22	25	U
endosulfan II	0.65	12	13	U
endosulfan sulfate	1.5	7.4	8.4	U
endrin	0.10	U	U	U
ethion	3.5	UJ	UJ	UJ
alpha BHC	0.25	0.10 J	0.12 J	U
beta BHC	0.80	U	U	U
gamma BHC	0.40	0.08 J	0.09 J	U
delta BHC	0.50	U	U	U
2,4'-DDD	1.5	U	U	U
4,4'-DDD	1.5	3.7	3.8	U
2,4'-DDE	1.0	0.14 J	0.15 J	U
4,4'-DDE	0.60	5.9 C	6.4	0.33 J
4,4'-DDMU	1.5	U	U	U
2,4'-DDT	0.65	1.4	1.7	U
4,4'-DDT	0.80	5.5 NJ	5.7 NJ	U
heptachlor	0.30	U	U	U
heptachlor epoxide	0.50	U	U	U
hexachlorobenzene	0.20	0.43	0.45	U
methoxychlor	3.0	U	U	U
oxadiazon	0.25	U	U	U
ethyl parathion	0.45	U	U	U
methyl parathion	0.30	UJ	UJ	UJ
tetradifon	0.30	U	U	U
toxaphene	15	U	U	U
mirex	0.80	U	U	U
pentachloroanisole	0.55	0.28 J	0.31 J	U
endrin aldehyde	0.15	UJ	UJ	UJ
endrin ketone	0.60	U	U	U
PCB 1016	6.0	U	U	U
PCB 1221	6.0	U	U	U
PCB 1232	6.0	U	U	U
PCB 1242	6.0	U	U	U
PCB 1248	6.0	18	17	U
PCB 1254	6.0	42 C	50	6.1
PCB 1260	6.0	5 J	5 J	2 J
% Lipid		1.25%	1.13%	0.958%
% Nonpolar Lipid		0.407%	0.360%	0.128%
% Moisture		85.2%	85.8%	87.2%

Location		Budd Inlet	Budd Inlet	Budd Inlet			
Sample No.		21-8048	21-8048MS	21-8048MSD			
Date Extracted	Fresh Weight	8/21/95	8/21/95	8/21/95			
	Quantitation Limit (QL)	Fresh Weight	Fresh Weight	Fresh Weight			
	(based on 15g sample weight)	Concentration	Concentration	Concentration			
COMPOUND	ug/Kg (ppb)	ug/Kg (ppb)	ug/Kg (ppb)	ug/Kg (ppb)			
aldrin	0.80	U	12	11			
cis-chlordane	1.5	0.49 J	15	14			
trans-chlordane	1.5	0.58	13	12			
oxychlordane	1.5	U	12	11			
cis-nonachlor	2.0	U	22	21			
trans-nonachlor	0.80	0.34	15	16			
cis-chlordane	0.80	U	12	11			
trans-chlordane	0.95	U	14	14			
chlorpyrifos	4.0	U	24	23			
dieldrin	20	U	150	130			
dichlorobenzophenone	45	U	35	29			
dacthal	0.40	U	17	16			
diazinon	7.0	U	280	260			
dieldrin	0.35	U	21	19			
endosulfan I	0.50	0.66 NJ	18	17			
endosulfan II	2.0	U	12	16			
endosulfan sulfate	3.0	U	20	24			
endrin	0.30	U	15	14			
echin	9.0	U	44	54			
alpha BHC	0.70	0.07 J	4.6	4.1			
beta BHC	2.0	U	15	12			
gamma BHC	1.0	U	6.6	5.4			
delta BHC	1.5	U	8.2	5.7			
2,4'-DDD	3.5	U	39	36			
4,4'-DDD	4.0	0.45 J	44	39			
2,4'-DDE	2.0	U	27	28			
4,4'-DDE	2.0	0.70	32	35			
4,4'-DDMU	3.5	U	60	61			
2,4'-DDT	2.0	U	36	37			
4,4'-DDT	2.0	U	99	97			
heptachlor	0.75	U	8.9	7.4			
heptachlor epoxide	1.5	U	12	12			
hexachlorobenzene	0.5	U	7.3	7.2			
methoxychlor	7.5	U	77	76			
oxadiazon	0.65	U	32	30			
acetyl parathion	1.5	U	41	34			
methyl parathion	0.70	UJ	21	18			
tetradifon	0.70	U	36	34			
toxaphene	35	U	U	U			
murex	2.0	U	50	53			
pentachloroanisole	1.5	0.15 J	11	9.8			
aldrin aldehyde	0.35	UJ	7.3	5.9			
aldrin ketone	2.0	U	11	13			
PCB 1016	20	U	U	U			
PCB 1221	20	U	U	U			
PCB 1232	20	U	U	U			
PCB 1242	20	U	U	U			
PCB 1248	20	U	U	U			
PCB 1254	20	21	23	24			
PCB 1260	20	U	U	U			
% Lipid		1.44%	1.77%	1.57%			
% Nonpolar Lipid		0.124%	0.126%	0.130%			
% Moisture		84.1%	82.8%	84.0%			

	Percent Recovery	Percent Recovery		Percent Recovery	Percent Recovery			
Sample No.	21-8048MS	21-8048MSD	RPD	21-8048MS*	21-8048MSD*	RPD*		
COMPOUND								
aldrin	58	55	5.0	58	55	5.0		
cis-chlordane	85	79	7.1	85	79	7.1		
trans-chlordane	79	76	3.9	79	76	3.9		
oxychlordane	75	70	8.0	75	70	8.0		
cis-nonachlor	86	83	4.0	86	83	4.0		
trans-nonachlor	71	78	9.4	71	78	9.4		
cis-chlordene	59	56	4.7	59	56	4.7		
trans-chlordene	61	59	2.8	61	59	2.8		
chlorpyrifos	52	51	1.6	52	51	1.6		
dicofol	106	91	14.0	106	91	14.0		
dichlorobenzophenone	92	78	16.0	92	78	16.0		
dacthal	77	70	9.7	72	68	5.7		
diazinon	62	58	6.0	62	58	6.0		
dieldrin	92	87	5.0	92	87	5.0		
endosulfan I	89	86	3.6	86	83	3.6		
endosulfan II	80	78	2.2	80	78	2.2		
endosulfan sulfate	73	64	13.0	73	64	13.0		
endrin	89	85	4.9	89	85	4.9		
ethion	39	49	21.5	39	49	21.5		
alpha BHC	55	50	8.7	55	50	8.7		
beta BHC	57	46	21.8	57	46	21.8		
gamma BHC	54	45	18.3	54	45	18.3		
delta BHC	51	35	36.2	51	35	36.2		
2,4'-DDD	88	83	5.7	88	83	5.7		
4,4'-DDD	96	86	11.5	96	86	11.5		
2,4'-DDE	68	73	7.0	68	73	7.0		
4,4'-DDE	80	87	8.4	80	87	8.4		
4,4'-DDMU	74	77	4.3	74	77	4.3		
2,4'-DDT	83	86	3.6	83	86	3.6		
4,4'-DDT(F1 Mix & F2 Mix)	94	93	1.4	94	93	1.4		
heptachlor	46	39	17.4	46	39	17.4		
heptachlor epoxide	75	70	7.5	75	70	7.5		
hexachlorobenzene	57	56	2.1	57	56	2.1		
methoxychlor	85	83	2.3	85	83	2.3		
oxadiazon	81	76	5.4	81	76	5.4		
ethyl parathion	57	47	18.4	55	45	20.0		
methyl parathion	47	41	13.9	47	41	13.9		
tetradifon	81	71	7.4	81	71	7.4		
mirex	96	102	6.0	96	102	6.0		
pentachloroanisole	60	54	9.4	60	54	9.4		
endrin aldehyde	39	30	25.0	37	29	24.2		
endrin ketone	74	66	11.7	74	66	11.7		
DBOB (F1,F2, & F3 Mix)	51	50	3.3	51	50	3.3		
DCB (F1,F2, & F3 Mix)	98	98	0.1	98	98	0.1		
DBCE (F1,F2, & F3 Mix)	87	83	5.3	87	83	5.3		
average	72	69	9.0	72	69	9.0		
std. dev.	17	18	7.3	17	18	7.3		

* Recoveries corrected for analyte or contamination reported in unspiked sample

[illegible]