Tables

Table 1. QUALITY CONTROL DATA for SPLITTING SAMPLES

Metropolitan Mosquito Control District (MMCD) Wetlands Project 1998

Date of Collection	April 24-26				May 19-20				June 9-12				June 30-July 3				July 19-22			
	Site 21		Site 14		Site 21		Site 25		Site 11		Site 14		Site 51		Site 12		Site 17		Site 18	
	Subsample		Subsample		Subsample		Subsample		Subsample		Subsample		Subsample		Subsample		Subsample		Subsample	
TAXON	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Chironomidae	10	1	114	130	10	22	56	40	131	103	151	178	51	37	91	87	13	7	11	6
Stratiomyidae	1	1			1		4		2				1	2	2	1			2	1
Ceratopogonidae	2	2	2				1		8	10	2		2		9	9		3	4	2
Tipulidae							2	3	4	2			4	1	6	7				1
Culicidae									1				1							
other Diptera	1					2	5	1	3	1		1	2	3	13	18	2	2		
Oligochaeta	26	37	150	174	22	25	9	3	5	5	5	18	8	9	6	10	20	15	4	
leeches			5	4	1	0	16	10	1	1	23	28	5	5	1		2		11	7
Bivalvia	25	15			10	9			30	35		1	22	20	22	22		1	2	2
Gastropoda	6	11	3		15	5	13	8	75	47	1	3			9	16	8	4	3	1
Coleoptera			1		2	5	2	1	6	17	15	9	2	3	4	11	4	5	2	5
Odonata			5	3						1	2	1								
Hemiptera							2		1	1	3	4							2	
Trichoptera				1								1								
Lepidoptera				1			1													
Ephemeroptera			2								3	1								
Amphipoda			39	48	2	4			1		426	334					1	3		
TOTAL	71	67	321	361	63	72	111	66	268	223	631	579	98	80	163	181	50	40	41	25
ERROR(%)	1		3		3		13		5		2		5		3		6		12	

Table 2. **QUALITY CONTROL DATA for PICKING SAMPLES**

Metropolitan Mosquito Control District (MMCD) Wetlands Project 1998

Date of Collection	April 24-26		April 24-26		April 24-26		April 24-26		April 24-26		May 19-20		May 19-20		May 19-20		May 19-20		June 9-12		June 9-12		June 30-July 3		June 30-July 3		June 30-July 3		July 19-22		July 19-22		July 19-22	
sample Size	1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/4 sample		1/8 sample		1/8 sample		1/8 sample		1/8 sample		1/8 sample		1/8 sample	
	site 9		site 17		site 30		site 22		site 23		site 22		Site 23		site 5		site 14		site 4		site 10		site 12		site 19		site 24		site 22		site 17		site 18	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
TAXON	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick	pick
Chironomidae	24	16	49	8	17	4	6	6	4	6	117	45	2	1	37	6	406	17	86	19	64	8	91	12	11	1	146	16	8	13	7	3	11	2
Stratiomyidae	1	1	1	0	4	0									1	0							2	0	1	0	4	1					2	1
Ceratopogonidae	1	0	2	1	1	1	3	0	0	1	1	1	1	0	10	2	3	0	8	2	11	3	9	4	1	0	15	1	2	8	3	1	4	
Tipulidae											2	0			4	0				1	12	1	12	3	1		2		2	1				
Culicidae	2	0					1	0							5	0			1	1	3								2	0				
other Diptera			11	1	2	0	2	1			1				2	0	5	1	1	1	1		1		3		7		5	1	2			
Oligochaeta	32	14	160	1	15	1	3	3	25	5	24	1	3	1	9	0	29	0	9	2	5		6		16	1	42	6	4	3	15	4	4	
leeches					2	1	1	0	1	0	8	0	0	0	1	1	20	0	13	1	2		1		4		2		5	1		1	11	
Bivalvia	49	13			1	0	2	3			5	0			5	0			37	0	9	2	22	2	1		48	2	12		1	1	2	
Gastropoda	7	1	1	0	1	0	2	0	17	4	2	0	16	4	3	0	23	0	9	8	14	3	9	2	6	1	3		11	7	4	2	3	1
Coleoptera							3	0			8	3	1	0	6	1	5	0	4	1	59	8	4	0	1		7		18	7	5		2	2
Odonata	1	0							0	1	1	0					1	0	1	0														
Hemiptera																	2	1	2	0														
Trichoptera			1	0															4	0													2	1
Ephemeroptera																	1	0	2	0														
Crustacea	3	0			2	0											95	10			1	2							1		3			
TOTAL	120	45	225	11	45	7	23	13	47	17	169	50	23	6	83	10	590	29	177	36	181	27	157	23	45	3	276	26	70	41	40	12	41	7
EFFICIENCY(%)	72.7		95.3		86.5		63.9		73.4		77.2		79.3		89.2		95.3		83.1		87.0		87.2		93.8		91.4		63.1		76.9		85.4	
ERROR(%)	27.3		4.7		13.5		36.1		26.6		22.8		20.7		10.8		4.7		16.9		13.0		12.8		6.3		8.6		36.9		23.1		14.6	

Table 3. Water depths (cm) at locations where core samples were taken in 1998

* = Depth of water measured above mat M = cores taken from mat, not from bottom seepage = <5 cm water

Date	April 25		May 18		June 10		July 2		July 19		
Site	Location	Depth	Location	Depth	Location	Depth	Location	Depth	Location	Depth	Vegetation/comments
3	20-18	34	2-4	45	16-6	43	10-2	38M	24-6	9	ground frozen in some areas in April
	26-12	7	2-12	90	16-8	55	10-12	15M	24-8	9	floating mat
	40-4	23	2-22	72	16-16	42M	10-20	11M	24-18	seepage	cattails in most areas
	40-12	8	2-24	103	16-24	*8M	10-24	*7M	24-20	seepage	
	40-18	48	30-8	35	26-2	64	36-6	*24M	44-6	13	
	40-22	50	30-14	28	26-12	*18M	36-14	*7M	44-8	6	
	44-18	45	30-20	44	26-16	*17M	36-16	*15M	44-12	13	
	50-24	29	30-22	46	26-18	*18M	36-20	M	44-22	47	
4	20-4	40	2-4	27	16-6	19	10-2	17	24-6	38	ground frozen in some areas in April
	20-12	22	2-12	26	16-8	11	10-12	39	24-8	30	floating mat
	20-18	19	2-22	6	16-16	11	10-20	seepage	24-18	11	cattails
	20-22	15	2-24	11	16-24	48	10-24	20	24-20	20	areas of grass and sedges
	26-4	20	30-8	61	26-2	35	36-6	23M	44-6	15M	
	26-12	13	30-14	73	26-12	53	36-14	18M	44-8	10M	
	16-18	14	30-20	63	26-16	60	36-16	17M	44-12	13M	
	26-22	8	30-22	70	26-18	71	36-22	10M	44-22	20M	
5	20-4	*9M	2-4	90M	16-6	89M	10-2	*seepage M	24-6	*seepage M	
	20-12	*7M	2-12	103M	16-8	88M	10-12	*seepage M	24-8	*seepage M	ground frozen in some areas in April
	20-18	*17M	2-22	118M	16-16	100M	10-20	*seepage M	24-18	*20M	
	20-22	*16M	2-24	109M	16-24	111M	10-24	*15m	24-20	*17M	floating mat
	26-4	*14M	42-6	94M	26-2	92M	36-6	*seepage M	44-6	*seepage M	cattails, grasses, sedges,rushes
	26-12	*10M	42-8	91M	26-12	96M	36-14	*12M	44-8	*seepage M	
	26-18	*7M	42-16	115M	26-16	100M	36-16	*17M	44-12	*seepage M	cored mat most of time
	26-22	*14M	42-22	142M	26-18	102M	36-22	*8M	44-20	*5M	
6	20-4	40	2-4	25	16-6	30	10-2	27	24-6	16	
	20-12	60	2-12	29	16-8	35	10-12	30	24-8	24	ground frozen in some areas in April
	20-18	70	2-22	20	16-16	58	10-20	37	24-18	46	some floating mats
	20-22	50	2-24	56	16-24	47	10-24	20	24-20	53	cattails,grasses
	26-4	96	30-8	37	26-2	26	36-6	13	44-6	seepage	some areas of open water
	26-12	32	30-14	24	26-12	41	36-14	14	44-8	6	
	26-18	35	30-20	39	26-16	52	36-16	8	44-12	7	cored bottom
	26-22	58	30-22	36	26-18	48	36-22	10	44-22	37	
7	20-4	33	2-4	20	16-6	18	10-2	15	24-6	22	
	20-12	49	2-12	30	16-8	19	10-12	22	24-8	25	cattails,
	20-18	51	2-22	35	16-16	25	10-20	18	24-18	46	some open areas
	20-22	51	2-24	37	16-24	40	10-24	43	24-20	46	
	26-4	35	30-8	47	26-2	34	36-6	42	44-6	18	
	26-12	36	30-14	34	26-12	44	36-14	42	44-8	19	
	26-18	40	30-20	53	26-16	40	36-16	51	44-12	30	
	26-22	31	30-22	59	26-18	32	36-22	51	44-22	34	
51	20-4	35	2-4	15	16-6	26	10-2	24	24-6	35	
	20-12	39	2-12	45	16-8	39	10-12	30	24-8	31	
	20-18	45	2-22	55	16-16	42	10-20	28	24-18	50	cattails, grass
	20-22	55	2-24	45	16-24	34	10-24	12	24-20	55	
	26-4	14	30-8	38	26-2	33	36-6	20	44-6	46	few shrubs
	26-12	20	30-14	35	26-12	37	36-14	36	44-8	34	
	26-18	27	30-20	47	26-16	37	36-16	51	44-12	43	some open areas
	26-22	55	30-22	70	26-18	61	36-22	59	44-22	63	
9	20-4	16	2-4	21	16-6	27	10-2	13	24-6	8	
	20-12	14	2-12	26	16-8	12	10-12	16	24-8	15	cattails, grass,sedge
	20-10	11	2-22	29	16-16	12	10-20	7	24-18	15	
	20-14	10	2-24	18	16-24	31	10-24	5	24-20	15	
	26-4	20	30-8	10	26-6	20	36-6	seepage	44-6	8	
	26-12	11	30-14	10	26-12	9	36-14	8	44-8	10	cores contain clay sediment
	26-18	5	30-20	8	26-16	13	36-16	13	44-12	15	
	26-22	15	30-22	8	26-18	16	36-22	10	44-22	10	
10											
	20-12	19	2-4	8	16-6	12	10-2	9	24-6	11	ground frozen in some areas in April
	20-10	19	2-12	18	16-8	18	10-12	8	24-8	31	
	20-14	3	2-22	18	16-16	11	10-20	7	24-18	11	cattails,
			2-24	16	16-24	13	10-24	8	24-20	12	
	26-12	11	30-8	19	26-6	14	36-6	4	44-6	12	
	26-18	6	30-14	15	26-12	18	36-14	14	44-8	11	
	26-22	9	30-20	9	26-16	20	36-16	16	44-12	13	
			30-22	8	26-18	20	36-22	3	44-22	10	

Table 3 continued

* = Depth of water measured above mat M = cores taken from mat, not from bottom seepage = <5 cm water

Date	April 25		May 18		June 10		July 2		July 19		
Site	Location	Depth	Location	Depth	Location	Depth	Location	Depth	Location	Depth	Vegetation/comments
11	20-4	42	2-4	41	16-6	16	10-2	35	24-6	20	
	20-12	37	2-12	51	16-8	17	10-12	38	24-8	18	
	20-18	48	2-22	51	16-16	25	10-20	42	24-18	35	cattails
	20-22	44	2-24	54	16-24	48	10-24	40	24-20	35	
	26-4	29	30-8	39	26-6	18	36-6	33	44-6	22	
	26-12	41	30-14	35	26-12	21	36-14	32	44-8	22	
	26-18	33	30-20	35	26-16	32	36-16	28	44-12	25	
	26-22	32	30-22	36	26-18	30	36-22	33	44-22	30	
12	20-4	9	2-4	9	16-6	seepage	10-2	7	24-6	14	ground frozen in some areas in April
	20-12	8	2-12	25	16-8	11	10-12	16	24-8	3	
	30-12	19	2-22	50	16-16	17	10-20	*4M	24-18	8	shrubs, cattails, grasses,sedges
	30-4	9	2-24	48	16-24	8	10-24	*6M	24-20	11	
	40-2	5	30-8	14	26-6	seepage	36-4	16	44-6	10	floating mat
	40-6	2	30-14	40	26-12	11	36-6	15	44-8	13	
	0-4	21	30-20	44	26-16	16	36-14	9	44-12	14	
	0-7	17	30-22	43	26-18	*7M	36-16	5	44-22	10	
13	20-4	16	2-4	25	16-6	34	10-2	16	24-6	42	
	20-12	38	2-12	54	16-8	38	10-12	39	24-8	39	
	26-4	16	2-22	56	16-16	52	10-20	51	24-18	37	cattails,
	26-12	48	2-24	61	16-24	75	10-24	51	24-20	41	
	20-10	45	30-8	36	26-6	30	36-6	29	44-6	24	some open areas
	20-14	38	30-14	52	26-12	40	36-14	50	44-8	42	
	24-4	27	30-20	74	26-16	51	36-16	63	44-12	47	
	24-12	40	30-22	79	26-18	69	36-22	78	44-22	54	
14	20-4	32	2-4	37	16-6	35	10-2	37	24-6	28	
	20-12	51	2-12	45	16-8	31	10-12	46	24-8	40	
	20-18	61	2-22	58	16-16	66	10-20		24-18	45	open area
	20-20	65	2-24	60	16-18	63	10-24	62	24-20	51	
	26-4	44	30-8	44	26-6	28	36-6	37	44-6	28	
	26-12	47	30-14	66	26-12	52	36-14	50	44-8	32	
	26-18	68	30-20	62	26-16	47	36-16	57	44-12	58	
	26-20	54	30-22	82	26-18	67	36-22	62	44-22	67	
17	20-4	43	2-4	10	16-6	seepage	10-2	22	24-6	15	
	20-10	30	2-12	23	16-8	seepage	10-12	22	24-8	12	
	20-12	37	2-22	22	16-16	seepage	10-20	32	24-18	11	cattails
	20-18	51	2-24	51	16-24	12	10-24	31	24-20	23	
	26-4	34	30-8	6	26-18	seepage	36-6	10	44-6	seepage	floating mat
	26-12	39	30-14	11	26-20	seepage	36-14	19	44-8	seepage	
	26-18	30	30-20	10	8-2	seepage	36-16	22	44-12	2	
	26-20	38	30-22	14	8-8	seepage	36-22	21	44-22	8	
18	20-4	5	2-4	54	16-6	26	10-2	33	24-6	31	open areas
	20-12	41	2-12	56	16-8	31	10-12	40	24-8	54	
	20-18	35	2-22	50	16-16	24	10-20	37	24-18	48	floating mat
	20-22	27	2-24	37	16-24	24	10-24	36	24-20	78	cattails
	26-4	32	30-8	47	26-2	33	36-6	45	44-6	12	
	26-12	49	30-14	19	26-12	33	36-14	64	44-8	15	cored bottom
	26-18	32	30-20	55	26-16	26	36-16	66	44-12	51	
	26-22	60	30-22	60	26-18	30	36-22	70	44-22	72	
19	20-4	22	2-4	16	16-6	12	10-2	6	24-6	14	
	20-12	25	2-12	18	16-8	13	10-12	15	24-8	16	ground frozen in some areas in April
	20-18	27	2-22	13	16-16	10	10-20	15	24-18	14	
	20-22	16	2-24	24	16-24	18	10-24	15	24-20	16	cattails
	26-4	28.5	30-8	21	26-2	22	36-6	17	44-6	25	
	26-12	26.5	30-14	20	26-12	13	36-14	18	44-8	17	
	26-18	30	30-20	25	26-16	26	36-16	20	44-12	15	
	26-22	25	30-22	21	26-18	27	36-22	28	44-22	11	
20	20-4	32	2-4	33	16-6	32M	10-2	30M	24-6	85M	
	20-12	54	2-12	43	16-8	38	10-12	19M	24-8	99	floating mat
	26-4	18	2-22	86M	16-16	85	10-20	39M	44-6	35	
	26-12	25	2-24	95M	16-18	89	10-24	43M	44-8	49	deep water - unstable
	24-4	17	30-8	44	26-2	39	36-6	20M	44-12	92	
	24-12	12	30-14	59	26-12	56	36-14	85M	24-14	100M	cattails, sedges,rushes
	28-4	42	30-20	41	26-16	77	36-16	81M	24-16	98M	
	23-8	19	30-22	45	26-18	80	36-22	88M	44-2	11	

Table 3 continued

* = Depth of water measured above mat M = cores taken from mat, not from bottom seepage = <5 cm water

Date	April 25		May 18		June 10		July 2		July 19		
Site	Location	Depth	Location	Depth	Location	Depth	Location	Depth	Location	Depth	Vegetation/comments
21	20-4	21	2-4	20	16-6	12	10-2	44	24-6	11	cattail hummocks
	20-12	26	2-12	13	16-8	19	10-12	41	24-8	21	
	20-18	36	2-22	20	16-16	23	10-20	37	24-18	19	
	20-22	33	2-24	15	16-24	22	10-24	33	24-20	20	
	26-4	30	30-8	17	26-2	23	36-6	26	44-6	18	
	26-12	30	30-14	13	26-12	18	36-14	33	44-8	24	
	26-18	32	30-20	26	26-16	24	36-16	35	44-12	21	
	26-22	45.5	30-22	28	26-18	27	36-22	38	44-22	25	
22	20-4	27	2-4	37	16-6	*9M	10-2	18	24-6	17	
	20-12	45	2-12	26	16-8	*19M	10-12	20	24-8	16	cattails
	20-18	*39M	2-22	45	16-16	*18M	10-20	21	24-18	72M	
	20-22	*51M	2-24	*	16-24	*20M	10-24	18	24-20	78M	floating mat, cattails
	26-4	43	30-8	*18M	26-2	*12M	36-6	15	44-6	49M	
	26-12	*46M	30-14	*19M	26-12	*9M	36-14	18	44-8	60M	
	26-18	*54M	30-20	*26M	26-16	*36M	36-16	56	44-12	86M	
	26-22	*49M	30-22	*24M	26-18	*25M	36-22	28	44-22	94M	
23	20-4	47	2-4	33	32-6	14	10-2	80	24-6	39	
	20-12	49	2-12	37	32-8	19	10-12	82	24-8	40	
	20-18	52	2-22	40	33-16	23	10-20	85	24-18	43	cattails and phragmites
	20-22	53	2-24	36	32-24	18	10-24	90	24-20	65	
	26-4	44	30-8	14	26-2	10	36-6	77	44-6	38	ground frozen in some areas in April
	26-12	53	30-14	27	26-12	25	36-14	88	44-8	37	
	26-18	56	30-20	35	26-16	25	36-16	85	44-12	41	
	26-22	54	30-22	31	26-18	23	36-22	84	44-22	56	
24	20-4	*18M	2-4	5	16-6	*36M	10-2	20	24-6	>100M	floating mat
	20-12	*18M	2-12	25	16-8	*21M	10-12	35	24-8	>100M	cattails, sedges, shrubs, rushes
	20-18	*19M	2-22	65	16-16	*25M	10-20	*13M	24-18	>100M	
	20-22	*22M	2-24	70	16-18	*25M	10-24	*2M	24-20	>100M	
	26-4	*24M	30-8	52	26-2	*6M	36-6	*2M	44-6	>100M	
	26-12	*29M	30-14	*14M	26-12	*19M	36-14	*14M	44-8	>100M	
	26-18	*22M	30-20	*22M	26-16	*17M	36-16	*9M	44-12	>100M	
	26-22	*42M	30-22	*31M	26-18	*32M	36-22	*11M	44-22	>100M	
25	20-4	47	2-4	27	16-6	34	10-2	39	24-6	43	cattails, grasses
	20-12	54	2-12	33	16-8	32	10-12	48	24-8	41	some open areas
	20-18	49	2-22	30	16-16	37	10-20	48	24-18	50	
	20-22	48	2-24	34	16-24	34	10-24	51	24-20	46	
	26-4	50	30-8	56	26-2	23	36-6	63	44-6	59	
	26-12	46	30-14	58	26-12	42	36-14	63	44-8	61	
	26-18	57	30-20	51	26-16	40	36-16	60	44-12	68	
	26-22	59	30-22	44	26-18	38	36-22	62	44-22	57	
26	20-4	51	2-4	13	16-6	76	10-2	57	24-6	72	
	20-12	56	2-12	28	16-8	73	10-12	58	24-8	79	floating mat
	20-18	47	2-22	22	16-16	85M	10-20		24-18	84M	cattails, grasses
	20-22	46	2-24	30	16-24	72	10-24	56	24-20	86	open areas
	26-4	52	30-8	67	26-2	42	36-6		44-6	87	
	26-12	45	30-14	69	26-12	62	36-14	98	44-8	92	
	26-18	25	30-20	68	26-16	68M	36-16	92	44-12	91M	
	26-22	77	30-22	64	26-18	54M	36-22	98	44-22	79M	
27	20-4	9	2-4	seepage	16-6	2	10-2	21	16-6	12	
	20-12	10	2-12	seepage	16-8	5	10-12	11	16-8	20	cattails, phragmites
	20-18	15	2-22	seepage	16-16	seepage	10-20	20	16-18	10	
	20-22	14	2-24	seepage	16-24	seepage	10-24	20	16-20	7	ground frozen in some areas in April
	26-4	10	30-8	5	26-2	3	36-6	17	44-6	14	
	26-12	20	30-14	9	26-12	4	36-14	15	44-8	17	
	26-18	27	30-20	7	26-16	8	36-16	16	44-12	14	
	26-22	32	30-22	9	26-18	12	36-22	20	44-22	16	
29	20-4	21	2-4	19	16-6	11	10-2	27	24-6	30	
	20-12	32	2-12	12	16-8	18	10-12	28	24-8	80	cattails, sedges
	20-18	*1M	2-22	23	16-16	50M	10-20	*13M	24-18	100	
	20-22	*4M	2-24	35	16-24	51M	10-24	24	24-20	>100	floating mat
	26-4	*25M	30-8	16	26-2	12	36-6	28	44-6	53	
	26-12	*21M	30-14	31	26-12	*16M	36-14	12	44-8	80	
	26-18	*52M	30-20	71	26-16	*15M	36-16	25	44-12	91	
	26-22	*16M	30-22	95M	26-18	*18M	36-22	32	44-22	>100	
30	20-4	37	2-4	12	16-6	38	10-2	47	24-6	32	
	20-12	43	2-12	32	16-8	27	10-12	69	24-8	38	cattails, rushes
	20-18	47	2-22	47	16-16	48	10-20	61	24-18	68	
	20-22	47	2-24	40	16-24	50	10-24	72	24-20	64	open areas
	26-4	--	30-8	66	26-2	39	36-6	71	44-6	67	
	26-12	37	30-14	61	26-12	45	36-14	77	44-8	70	
	26-18	53	30-20	42	26-16	50	36-16	69	44-12	66	
	26-22	43	30-22	57	26-18	56	36-22	73	44-22	69	

Table 4. Water depths (cm) at locations of artificial substrates that were placed inside the main sample plot in 1998

* depth of water above mat

Site	Location	Water Depth (cm) April 25	May 19	June 10	June 30	July 19	Vegation type/Comments
3	0-0	60	60	59	—	51	ground partially frozen in April
	2-6	95	98	93	83	91	area is a floating mat
	14-14	34	48	34	20	37	cattails are primary vegetation
	40-2	29	39	41	35	25	some open areas
	38-20	30	28	54	19	23	
	44-18	*25	*30	*24	*8	96	
	48-2	*41	*32	*31	*19	95	
	46-22	—	56	51	50	50	
4	32-20	61	52	63	—	51	floating mat
	34-10	43	46	50	45	57	cattails, sedges, rushes
	14-18	28	19	16	20	35	
	14-14	27	22	10	20	29	Disks are suspended just below mat
	44-14	73	52	42	37	51	using floats on rods
	40-2	59	52	51	55	57	
	32-8	58	55	54	50	58	
	18-8	25	17	14	15	47	
5	14-14	95	89	81	—	100	floating mat
	14-18	97	86	96	—	75	
	18-8	90	98	77	—	94	cattails, rushes,grass,sedges
	32-8	90	92	84	72	92	disks suspended below mat
	32-20	94	92	99	—	100	
	34-10	87	91	80	79	92	
	42-6	90	93	98	75	95	
	44-14	100	93	87	—	100	
6	14-14	39	41	39	—	34	floating mat
	14-18	45	43	40	—	49	some disks below mat
	18-8	45	45	37	—	39	cattails,grasses,sedges
	32-8	30	19	14	—	11	
	32-20	50	42	40	—	57	
	34-10	25	18	10	—	19	
	40-2	28	21	16	—	13	
	44-14	50	51	46	—	53	
7	14-14	29	28	24	—	25	
	14-18	42	36	31	—	30	cattails
	18-8	32	31	28	—	32	
	32-8	29	30	24	—	28	
	32-20	34	32	29	—	39	
	34-10	38	39	42	—	38	
	40-2	31	31	30	—	38	
	44-14	30	20	12	—	33	
51	14-14	39	43	48	40	53	
	14-18	47	46	45	45	47	
	18-8	34	58	33	35	40	cattails,sedges
	32-8	40	50	54	47	63	few shrubs
	32-20	42	42	46	45	43	
	34-10	25	22	23	24	46	
	40-2	24	23	25	10	20	
	44-14	38	55	45	38	45	
9	14-2	32	19	33	—	37	
	14-14	25	18	14	—	18	cattails, grass,
	14-18	29	22	19	—	20	
	18-8	27	22	23	—	24	
	32-14	27	17	14	—	12	
	32-20	26	19	11	—	18	
	40-12	26	18	16	—	15	
	44-14	—	—	—	—	22	
10	14-2	24	12	15	12	11	ground frozen in some areas in April
	32-8	30	21	18	18	20	
	32-14	30	17	16	35	27	
	34-12	24	21	16	20	15	cattails
	40-2	27	16	7	17	14	
	40-12	23	21	38	28	18	
	40-16	22	12	11	10	8	
	46-8	25	15	7	17	18	

Table 4 continued

* depth of water above mat

Site	Location	Water Depth (cm) April 25	May 19	June 10	June 30	July 19	Vegation type/Comments
11	14-14	35	33	41	50	33	
	14-18	32	31	34	45	45	cattails
	18-8	30	31	36	45	55	
	32-8	35	31	32	37	34	
	32-20	28	24	19	27	30	
	34-10	27	24	30	35	32	
	40-2	31	36	32	37	53	
	44-14	25	20	24	27	23	
12	No disks						
					—		
13	14-14	34	38	36	—	44	cattails,
	14-18	51	52	55	—	53	
	18-8	37	33	28	—	33	open areas
	32-8	33	31	31	—	33	
	32-14	52	47	49	—	59	
	34-10	44	45	43	—	53	
	40-12	25	31	29	—	63	
	44-14	46	45	40	—	49	
14	14-14	55	47	65	42	68	
	14-18	58	61	63	60	82	open area
	18-8	51	52	46	49	56	
	32-8	42	43	40	39	40	
	32-20	62	64	59	60	40	
	34-10	46	45	37	40	67	
	40-2	25	32	14	—	70	
	44-14	—	64	64	—	14	
17	14-14	36	8	dry	—	43	
	14-18	36	9	seepage	—	65	floating mat
	14-2	31	dry	seepage	—	—	cattails
	18-8	33	10	dry	—	33	
	32-8	29	6	dry	—	60	
	32-14	31	dry	dry	—	34	Moved second set of disks to
	32-20	28	5	dry	—	40	deeper water on June 10th
	34-10	26	dry	dry	—	30	
18	14-14	40	32	25	—	25	
	14-18	44	31	24	—	36	cattails
	18-8	43	40	36	—	37	
	32-8	40	28	21	—	25	some open areas
	32-20	45	38	40	—	55	
	34-10	33	31	26	—	43	
	40-2	38	32	26	—	50	
	44-13	55	43	53	—	45	
19	14-14	23	11	11	—	6	ground partially frozen in April
	14-18	23	14	13	—	9	
	18-8	26	16	18	—	6	cattails
	32-8	28	16	12	—	6	
	32-20	32	22	28	—	20	
	34-10	26	15	23	—	10	
	36-2	27	25	25	—	30	
	44-14	25	14	14	—	—	
20	14-2	29	16	19	—	22	floating mat
	14-8	45	33	38	—	47	
	14-14	48	53	44	—	80	cattails, sedge
	32-8	34	41	35	—	50	
	32-12	53	24	75	—	—	
	34-10	77	69	63	—	79	
	40-2	30	26	34	—	47	
	44-14	80	62	78	—	—	
21	14-14	22	8	5	—	—	cattail hummocks
	14-18	26	11	9	—	—	
	18-8	24	16	11	—	—	Most disks could not be
	32-8	27	17	17	—	18	found in july
	38-20	25	25	23	—	—	
	34-10	26	20	21	—	19	disk black - anoxic in july
	42-6	38	30	9	—	23	
	44-14	28	18	16	—	—	storm knocked down vegetation

Table 4 continued

* depth of water above mat

Site	Location	Water Depth (cm) April 25	May 19	June 10	June 30	July 19	Vegation type/Comments
22	14-14	30	18	15	15	9	
	14-18	29	14	12	9	20	floating mat
	18-8	28	17	13	13	17	dense cattails
	32-8	40	27	28	36	25	
	32-20	85	25	22	23	30	
	34-10	53	44	42	36	42	
	40-2	52	42	46	38	40	
	44-14	45	29	26	19	79	
23	14-14	55	23	18	80	58	
	14-18	55	26	21	84	58	cattails
	18-8	49	21	15	84	44	
	32-8	40	19	10	78	41	
	32-20	47	23	16	—	54	
	34-10	45	15	11	73	42	
	40-2	38	15	6	72	58	
	44-14	45	15	14	83	41	
24	14-14	100	90	89	—	>100	
	14-16	100	74	*53	—	>100	floating mat
	18-8	*30	*27	*24	—	81	
	32-8	*15	*7	*8	—	*5	
	32-16	*20	*12	*8	—	*1	
	34-10	*28	*12	*15	—	*8	
	40-2	*16	*8	*4	—	*3	
	44-14	*27	*14	*12	—	*44	
25	14-14	40	33	30	50	45	
	14-18	45	35	35	55	44	cattails
	18-8	42	32	30	52	45	
	32-8	55	47	49	65	55	some open areas
	32-20	50	44	55	80	65	
	34-10	56	43	45	71	60	
	40-2	50	49	52	65	58	
	44-14	59	50	50	68	58	
26	14-14	40	28	30	56	52	floating mat
	14-18	40	30	28	—	44	cattails
	18-8	41	28	42	56	63	
	32-8	73	23	69	67	75	
	32-20	78	16	65	—	87	
	34-10	80	71	60	—	76	
	40-2	76	34	44	—	48	
	44-14	70	—	65	—	—	
27	no disks						
29	14-14	29	19	90	18	13	floating mat
	14-18	25	11	*15	14	20	
	18-8	27	21	*22	32	38	cattails, sedges
	32-8	23	30	*10	29	27	
	32-20	40	30	*16	29	—	
	34-10	26	21	*21	37	30	
	40-2	25	16	*13	33	40	
	44-14	50	20	*18	21	18	
30	14-14	45	39	48	74	53	
	14-18	38	40	28	66	53	cattails, rushes
	18-8	36	35	36	63	43	
	32-8	34	40	40	90	—	
	32-20	45	45	19	79	58	
	34-10	67	35	45	58	42	
	40-2	52	58	57	—	71	
	44-14	35	48	47	77	66	

Table 5. Water depths (cm) at locations of artificial substrates that were placed outside the main sample plots in 1998. A subset of the disks collected on June10 and July 19 were randomly assigned to separate groups (2 or 3) for analysis.

* depth of water above mat

Site	Substrate #	Water Depth (cm) April 25	May 19	June 10	June 30	July 19	Analysis Group June	Analysis Group July	Vegetation Type/comments
3	1	85	98	77	65	80		2	Area is floating mat
	2	39	48	40	32	41	3		
	3	41	38	27	31	22	2	2	cattails are dominant vegetation
	4	23	30	25	18	24	3		
	5	40	106	53	43	46	2		
	6	36	103	33	27	25		3	
	7	31	111	26	26	18	2		
	8	39	130	31	18	14	3	3	
	9	40	32	*26	29	21	2	3	
	10	27	15	*14	18	13		2	
	11	21	15	*28	15	14	2	2	
	12	29	20	*16	17	12	3		
	13	35	40	*37	25	19		2	
	14	82	79	*70	34	73		3	
	15	10	80	*30	25	41			
	16	87	79	*73	72	74	3	3	
4	1	61	80	75	70	65	2	3	
	2	82	80	77	80	39	3	2	floating mat
	3	44	35	37	30	40	2		cattails, sedges, grasses
	4	28	34	51	50	—			some open areas
	5	63	61	78	*60	60		2	few shrubs
	6	50	—	65	24	26	3	2	
	7	62	62	75	60	45	2	3	
	8	67	*55	73	70	70		2	
	9	*47	58	60	*	62		2	
	10	64	60	60	*	58	3		
	11	54	28	59	*	60	2		
	12	45	42	58	*	46			
	13	30	35	49	*	57			
	14	34	57	47	*	54	3	3	
	15	44	59	45	*	56	2	3	
	16	67	80	76	*	76	3	3	
5	1	40	49	70	23	42		3	ground frozen in some areas in April
	2	98	102	89	58	100	3	2	
	3	84	100	75	19	35	2	3	floating mat
	4	82	81	70	22	82	3		cattails,rushes,
	5	*50	*32	116	23	50	2		
	6	*40	*56	110	32	35		2	only 8 disks were placed in April
	7	92	100	80	18	20		2	rest set out in May
	8	106	100	107	61	100	3		
	9	no disks	93	58	—	—	2		
	10		*20	99	6	14		2	
	11	frozen	20	13	seepage	34	2	3	
	12	area	107	93	59	97			
	13		29	16	13	101		3	
	14	in	80	110	23	28	3	2	
	15		110	104	65	100	2		
	16	april	153	107	56	100	3	3	
6	1	25	23	10	—	17	3		
	2	26	28	20	—	19	2	2	
	3	27.5	42	33	—	38		3	cattails, sedges, grass
	4	33	14	20	—	19	2	3	
	5	17	20	20	—	17	3		
	6	35	40	30	—	36		2	
	7	20	27	27	—	25		3	
	8	42	25	25	—	20	2	2	
	9	39	27	30	—	43	3		
	10	34	29	24	—	18			
	11	30	55	52	—	51		3	
	12	46	60	40	—	49	2	2	
	13	28	10	3	—	12	3	3	
	14	19	63	48	—	47			
	15	50	86	45	—	59	3	3	
	16	24	55	62	—	59	2		
7	1	21	20	20	—	—	3		
	2	32	34	29	—	27	2		ground frozen in some areas in April
	3	28	19	20	—	—			
	4	32	41	33	—	40	2	2	
	5	33	51	25	—	40	3	3	cattails,
	6	45	43	37	—	45		2	some open areas
	7	38	47	30	—	25	2		
	8	28	87	55	—	51		3	
	9	37	68	47	—	52	3	2	
	10	22	44	27	—	49		3	
	11	36	61	51	—	59	3	2	
	12	69	67	65	—	70			
	13	88	75	64	—	—	3		
	14	29	35	31	—	42	2	2	
	15	75	93	65	—	67		3	
	16	47	89	22	—	22	2	3	
51	1	27	25	25	—	28	3	3	
	2	37	40	35	—	48	2	3	cattails,
	3	24	25	22	—	28		2	some shrubs
	4	23	54	30	—	25	2		
	5	34	42	43	—	45	3	2	some open areas
	6	29	63	57	—	46	2		
	7	49	70	57	—	45		3	
	8	31	45	41	—	49	2		
	9	29	64	28	—	35	3	3	
	10	54	60	48	—	52			
	11	25	78	45	—	42		3	
	12	47	60	67	—	54			
	13	40	58	54	—	55	3	2	
	14	46	69	57	—	65			
	15	32	22	41	—	30	3	2	
	16	24	60	26	—	28	2	2	

Table 5 continued

* depth of water above mat

Site	Substrate #	Water Depth (cm) April 25	May 19	June 10	June 30	July 19	Analysis Group June	Analysis Group July	Vegetation Type/comments
9	1	18	20	8	—	23			
	2	42	35	37	—	44	2	2	ground frozen in some areas in April
	3	35	39	23	—	23	2		
	4	22	29	15	—	22	2	2	cattails
	5	35	17	11	—	17		2	
	6	24	20	11	—	17	2	2	small wetland, only 8 disks used
	7	21	10	10	—	11	2		
	8	18	20	10	—	14		2	
10	1	15	8	8	9	5	2	3	ground frozen in some areas in April
	2	10	55	9	9	5	3		
	3	18	11	10	11	10	2	3	cattails
	4	10	11	9	8	6			
	5	20	5	10	10	—	2		
	6	10	11	11	9	—	3		
	7	15	11	5	8	8		2	
	8	12	11	12	9	—	3		
	9	25	10	13	13	11	2	3	
	10	15	18	10	12	12	3		
	11	20	—	8	9	7	2	2	
	12	25	—	8	14	20		2	
	13	15	5	0	7	7		2	
	14	18	19	10	7	8	3	3	
	15	10	8	1	8	8		3	
	16	16	12	15	12	10		2	
11	1	51	51	45	—	55		2	ground frozen in some areas in April
	2	60	71	63	—	69	3	2	
	3	48	49	48	—	57	2		cattails,
	4	61	66	58	—	63		2	
	5	48	30	32	—	64	2		
	6	48	—	—	—	—			
	7	25	22	18	—	19		3	
	8	31	78	27	—	31	3		
	9	29	58	28	—	49	2	3	
	10	30	—	24	—	36		3	
	11	45	—	39	—	53	2	3	
	12	39	94	26	—	35	3	3	
	13	56	30	33	—	43		2	
	14	32	93	29	—	40	3		
	15	58	16	13	—	—	2		
	16	23	—	26	—	48	3	2	
12	No disks								
13	1	21.5	30	24	—	23		2	
	2	29	32	37	—	35	3	2	ground frozen in some areas in April
	3	39	41	51	—	45	2	2	
	4	26	22	21	—	18		3	cattails
	5	22	27	27	—	44		3	
	6	34	30	32	—	29	3		
	7	42	55	42	—	31	2		some open water areas
	8	47	44	46	—	32	3		
	9	29	39	30	—	34	2	3	
	10	25	37	21	—	24			
	11	40	45	38	—	43			
	12	45	70	62	—	74	3		
	13	23	58	39	—	30	2	3	
	14	49	70	57	—	56	3	2	
	15	57	26	79	—	76	2	2	
	16	25	26	29	—	28		3	
14	1	20	20	10	12	23		2	open areas
	2	45	35	40	35	43	2	3	
	3	20	20	12	23	23	3	3	few cattails,grasses
	4	70	70	60	50	65	2		
	5	32	30	23	—	—	3		
	6	85	99	100	78	80		2	
	7	40	38	26	29	34	3	3	
	8	37	29	22	24	30	2		
	9	40	43	35	39	—	3		
	10	35	32	26	35	46			
	11	40	32	27	38	29		2	
	12	50	47	59	40	45	2	3	
	13	25	27	12	17	16	3	2	
	14	40	45	36	33	44			
	15	40	38	31	42	53		3	
	16	60	70	65	47	70	2	2	
17	1	39	10	dry	—	41		2	
	2	43	25	9	—	29	2	2	
	3	61	30	19	—	35	2		cattails, phragmites,
	4	46	22	7	—	—	2		floating mat
	5	27	dry	dry	—	35			some open areas
	6	28	dry	dry	—	—			
	7	59	25	19	—	27	2	2	Moved second set of disks to deeper water
	8	38	10	dry	—	—			on June 10th
	9	35	38	dry	—	30		4	
	10	48	20	10	—	20		2	
	11	55	78	14	—	15	2		
	12	34	10	dry	—	14			
	13	37	11	dry	—	80		2	
	14	38	5	dry	—	2			
	15	30	—	—	—	—			
	16	35	10	dry	—	—			

Table 5 continued

* depth of water above mat

Site	Substrate #	Water Depth (cm) April 25	May 19	June 10	June 30	July 19	Analysis Group June	Analysis Group July	Vegetation Type/comments
18	1	20	17	3	—	45		3	
	2	33	19	17	—	16	3	2	
	3	37	33	20	—	29	2	3	cattails, grass,
	4	34	26	18	—	24		2	
	5	27	21	20	—	19		2	open areas
	6	65	33	25	—	29	3	2	
	7	41	34	30	—	29	2	2	
	8	42	40	36	—	35	3		
	9	50	55	45	—	64	2		
	10	40	33	27	—	52			
	11	50	56	46	—	61	2		
	12	65	59	55	—	62	3		
	13	55	43	40	—	84		3	
	14	62	45	54	—	68			
	15	62	—	51	—	53	2	3	
	16	50	44	45	—	45	3	3	
19	1	38	30	25	—	23	2	2	cattails
	2	40	41	34	—	33	3	2	
	3	32	22	20	—	17			
	4	35	26	22	—	13	3		
	5	34	27	40	—	23	2		
	6	35	36	24	—	28	3	2	
	7	26	18	14	—	9		2	
	8	28	19	13	—	15			
	9	50	47	33	—	30	2	3	
	10	42	35	25	—	26			
	11	37	36	25	—	26	2	3	
	12	32	19	26	—	17		2	
	13	41	39	31	—	28	2		
	14	48	33	34	—	32	3	3	
	15	41	32	28	—	25		3	
	16	33	29	24	—	24	3	3	
20	1	71	—	57	—	60		2	
	2	72	54	39	—	—	3		some open areas
	3	56	53	58	—	70	2	2	cattails, rushes
	4	46	89	41	—	—			floating mats
	5	45	63	73	—	93			
	6	58	75	93	—	—	3		
	7	42	89	68	—	79	2	3	
	8	79	91	94	—	89	3	3	
	9	43	71	39	—	77	2	2	
	10	41	35	30	—	36	3		
	11	56	56	60	—	55	2	3	
	12	72	62	50	—	68	3	2	
	13	43	34	31	—	35	2	3	
	14	45	53	35	—	40		2	
	15	48	38	20	—	38		3	
	16	27	—	—	—	—			
21	1	32	20	16	—	34	2	3	cattail hummocks
	2	24	14	12	—	25	3	3	disks placed in depressions
	3	30	18	33	—	30	3	3	
	4	24	25	12	—	21			
	5	28	24	24	—	38	3		
	6	26	20	13	—	25		2	
	7	25	19	14	—	28	2	3	
	8	26	18	6	—	20	3	2	
	9	29	15	15	—	22	2	3	
	10	21	19	14	—	19		2	
	11	35	23	18	—	42		2	
	12	29	21	26	—	—			
	13	25	7	16	—	26			
	14	28	21	36	—	—	2		
	15	40	27	21	—	24	3		
	16	28	18	19	—	27	2	2	
22	1	41	46	44	—	43	2	3	
	2	35	55	55	—	52	3	2	floating mat in most areas
	3	38	24	45	—	1	2		
	4	30	39	101	—	—			
	5	—	66	—	—	68		2	
	6	—	22	—	—	—			
	7	50	38	40	—	25	2	3	
	8	42	60	59	—	55	3	3	
	9	40	28	18	—	29		3	
	10	35	26	22	—	62	3	2	
	11	45	48	42	—	44	2		
	12	41	20	51	—	54			
	13	72	51	48	—	47			
	14	73	59	70	—	57	3	3	
	15	28	21	31	—	29	2	2	
	16	32	75	69	—	60		2	

Table 5 continued

* depth of water above mat

Site	Substrate #	Water Depth (cm) April 25	May 19	June 10	June 30	July 19	Analysis Group June	Analysis Group July	Vegetation Type/comments
23	1	31	seepage	dry	—	—			
	2	31	seepage	dry	—	—			
	3	38	12	dry	—	—			cattails
	4	35	11	dry	—	—			
	5	48	15	13	—	43	2	3	
	6	42	12	6	—	35		3	
	7	45	21	13	—	40	2	2	
	8	52	23	21	—	50	3		
	9	38	22	18	—	42	2	3	
	10	55	26	23	—	57	3		
	11	36	11	5	—	34	2	2	
	12	47	20	20	—	43	3	2	
	13	61	32	23	—	60		3	
	14	34	13	7	—	35	3	3	
	15	51	25	9	—	48	2	2	
	16	49	27	18	—	45	3	2	
24	1	*19	*9	*8	—	*8	2	2	
	2	*25	*15	*28	—	*17	2	2	floating mat
	3	*19	*12	*6	—	*7			
	4	*25	*14	*22	—	*23		2	only 9 disks set out
	5	*26	*18	*10	—	*17	2		
	6	*30	*23	*30	—	*28	2	2	
	7	*37	*24	*24	—	*28			
	8	*25	*18	*25	—	*8	2	2	
25	1	49	42	34	57	49	2	3	cattails
	2	61	30	20	39	45			some open areas
	3	68	72	65	75	73	2	3	
	4	42	64	57	83	61	3		
	5	72	59	58	80	75	2		
	6	61	63	60	71	60	3	2	
	7	87	75	60	72	74		2	
	8	81	62	49	83	82		3	
	9	35	38	24	41	28		3	
	10	26	28	16	39	29	3		
	11	35	37	27	40	40	2		
	12	49	45	37	58	43		2	
	13	44	48	42	58	53			
	14	47	29	20	37	27	3	2	
	15	37	34	29	53	40	2	2	
	16	60	54	47	62	57	3	3	
26	1	17	14	15	35	35	2	2	cattails, grasses
	2	32	32	33	49	45		2	open areas
	3	38	32	24	45	35	2	3	
	4	55	36	44	71	55	3	3	
	5	45	43	—	—	—			
	6	60	59	50	78	62			
	7	52	—	42	67	55	2	3	
	8	79	58	60	86	70	3	2	
	9	47	38	36	56	53			
	10	75	52	49	90	69	3	3	
	11	50	41	42	54	45	2		
	12	31	22	14	40	42	3	2	
	13	40	36	27	48	50	2		
	14	33	20	16	33	23			
	15	28	21	20	45	27		3	
	16	38	25	23	45	33	3	2	
27	no disks								
29	1	31	34	25	38	85	2		ground frozen in some areas in April
	2	28	22	30	40	49		2	
	3	45	29	25	24	99		2	cattails,
	4	31	27	52	36	55	3		open areas
	5	22	17	28	36	77	2	2	floating mats
	6	38	59	55	86	79	3	2	
	7	85	—	—	—	—	2		
	8	39	32	21	44	45		3	
	9	44	44	43	39	56			
	10	17	16	4	25	33		3	
	11	30	33	25	33	47	2	3	
	12	25	26	20	36	34	3		
	13	26	15	19	31	35		3	
	14	21	20	14	34	31	3	2	
	15	25	27	23	39	39	2		
	16	30	30	18	37	29	3	3	
30	1	40	45	32	71	43	2		
	2	45	42	36	72	62		2	cattails
	3	45	47	37	70	55	2	3	semi open area
	4	37	36	30	76	42		2	
	5	40	44	37	74	57	2	2	
	6	52	53	46	61	61			
	7	25	21	39	64	30		3	
	8	55	53	56	91	63	3	2	
	9	30	47	50	84	65	2		
	10	38	—	32	67	64	3	3	
	11	30	27	30	55	35		2	
	12	37	20	53	83	57	3		
	13	29	17	10	44	25		3	
	14	19	26	12	45	30	3	3	
	15	21	17	12	47	27	2		
	16	34	28	20	55	40	3		

Table 6a. Number and average length (mm) and ( ) weight (g) of fish caught in minnow traps in wetlands, 1998

Site	Date	Umbra limi	Pimephales sp.	Esox lucius	Ictalurus melas	Perca flavescens	Etheostoma nigrum	Etheostoma flabellare	Micropterus salmoides	Notorus gyrinus	Culea incostans	Lepomis macrochirus	Total
5	June 30	2										54	56
	July 21												
	avg size	76.5 (6.1)										60.4 (5.4)	
7	June 30	28									2		
	July 21	27				2					16		75
	avg size	87.1 (10.0)									38 (0.7)		
11	June 30	218				2	2	1			161	3	
	July 21	128									1		516
	avg size	60.1 (2.9)				79 (5.5)	55 (1.2)	51.0 (1.1)			43.6 (8.3)	53 (3.1)	
13	June 30	13									20		
	July 21	19									7		59
	avg size	66.2 (5.1)									44.9 (7.6)		
14	June 30		3										
	July 21		92										95
	avg size		53.6 (2.6)										
17	June 30				113								
	July 21				572	2	1		10	1			699
	avg size				56.9 (2.7)	54 (1.7)	56 (1.8)		56.9 (2.7)	82 (7.2)			
20	June 30												0
	avg size												
24	June 30	2											
	July 22												2
	avg size												
25	June 30	2											
	July 22	12											14
	avg size	66.1 (4.7)											
26	June 30	12											
	July 21	97			1								110
	avg size	61.8 (3.2)			109 (17.8)								
29	June 30		1										
	July 22	2											3
	avg size	83.3 (10.4)	47 (1.4)										
30	June 30	6	35										
	July 21	130	1	1									173
	avg size	66.8 (5.8)	37.3 (0.8)	153 (29.1)									
51	June 30	15											
	July 21	1											16
	avg size	61 (3.0)											
total number collected		714	132	1	686	6	3	1	10	1	207	57	1818

Table 6b. Number of fish caught in fyke nets in wetlands, 1998

Site	Date	Umbra limi	Pimephales sp.	Ictalurus melas	Culea incostans	Lepomis macrochirus	Total
7	June 30	6					
	July 21	3					9
13	June 30	15			5		
	July 21	17	1		1		39
14	June 30		1				
	July 21		26				27
20	June 30			2		3	5
25	June 30	1					
	July 22	0					1
29	June 30	2	1				
	July 22	2					5
30	June 30	5	3				
	July 21						8
51	June 30						
	July 21	4					4
total number collected		55	32	2	6	3	98

Table 7. Number of frogs collected in wetlands in August, 1998.

Site	Date	Treatment	*Rana pipiens*	*Rana sylvatica*	*Rana clamitans*	*Hyla cimerea*	Total	Average Number
4	Aug 17	Bti	6			27	33	
6	Aug 17	Bti	14				14	
11	Aug 19	Bti	17				17	
23	Aug 18	Bti	101				101	
24	Aug 18	Bti	7				7	
30	Aug 18	Bti	3				3	
								29.2
5	Aug 17	Control	5		2		7	
14	Aug 20	Control	46				46	
18	Aug 19	Control	11				11	
19	Aug 19	Control	47				47	
26	Aug 19	Control	58				58	
51	Aug 17	Control	6				6	
								29.2
3	Aug 17	Meth	35	1			36	
9	Aug 20	Meth	27				27	
10	Aug 18	Meth	36				36	
25	Aug 19	Meth	11				11	
27	Aug 19	Meth	44				44	
29	Aug 18	Meth	8				8	
								27

Table 8. Number of sites in which each benthic invertebrate taxon was present on at least one sampling date in 1998. Trophic groups used for data analysis were predator (P), nonpredator (N), and unclassified (U) according Merritt and Cummins (1996) and Thorp and Covich (1991).

Taxon	Trophic Group	Number of sites with taxa		
		control	BTI	Methoprene
DIPTERA				
CHIRONOMIDAE				
Subgroup Chironomini				
Chironomus	N	9	9	6
Cladopelma	N	1	0	0
Dicrotendipes	N	6	5	5
Endochironomus	N	3	3	1
Glyptotendipes	N	5	1	1
Kiefferulus	N	4	5	1
Lauterborniella	N	5	2	1
Microtendipes	N	1	1	0
Parachironomus	P	7	5	2
Paratendipes	N	6	5	4
Polypedilum	P	9	9	6
Pseudochironomus	N	2	1	1
Tribelos	N	2	0	3
Subgroup Tanytarsini				
Cladotanytarsus	N	1	1	1
Cladotanytarsus/Neozaurelia	N	0	0	1
Micropsectra	N	8	6	6
Neozzaurelia	N	2	3	2
Paratanytarsus	N	8	8	4
Stempellinella	N	7	5	5
Tanytarsus	N	7	6	6
Zavrelia	N	0	0	1
Subgroup Orthocladinae				
Acricotopus	N	9	8	7
Corynoneura	N	9	9	7
Cricotopus	N	4	5	2
Cricotopus/Orthocladius/Para	N	4	5	6
Limnophyes	N	8	8	7
Metriocnemus	N	2	2	1
Nanocladius	N	0	1	0
Parametriocnemus	N	0	1	0
Paraphaenocladius	N	7	4	6
Psectrocladius	N	3	1	1
Pseudosmittia	N	2	3	2
Smittia	N	0	0	1

Table 8 Continued

Taxon	Trophic Group	Number of sites with taxa control	BTI	Methoprene
Subgroup Tanypodinae				
Ablabesmyia	P	7	9	6
Guttipelopia	P	1	3	0
Labrundinia	P	3	2	0
Larsia	P	6	6	5
Monopelopia	P	7	8	6
Natarsia	P	5	8	6
Paramerina	U	2	1	1
Procladius	P	5	7	3
Zavrelimyia	P	0	1	1
CERATOPOGONIDAE				
Alluaudomyia	P	3	4	5
Atrichopogon	N	6	6	5
Bezzia/Palpomyia	P	9	9	6
Culicoides	P	5	7	5
Forcipomyia	N	2	3	3
Monohelea	U	1	1	0
CHAOBORIDAE				
Chaoborus	N	4	1	2
CULICIDAE				
Anopheles	N	1	0	0
Coquillettidia	N	4	5	1
Mansonia	N	0	1	0
DIXIDAE				
Dixella	N	4	2	1
DOLICHOPODIDAE	P	2	3	2
EPHYDRIDAE	N	3	4	3
PSYCHODIDAE				
Pericoma	N	5	4	4
Psychoda	N	0	1	2
PTYCOPTERIDAE	N	1	0	1
SCIARIDAE	U	3	2	3
SCIOMYZIDAE	P	1	4	1
STATIOMYIDAE				
Caloparyphus	N	0	1	1
Odontomyia	N	5	3	5
Odontomyia/Hedriodiscus	N	4	7	3
Stratiomys	N	3	1	0
SYRPHIDAE	N	4	3	2
TABANIDAE				
Chrysops	P	1	1	1

Table 8 Continued

Taxon	Trophic Group	Number of sites with taxa control	BTI	Methoprene
TIPULIDAE				
Antocha	N	0	0	1
Helius	N	7	6	5
Limonia	P	6	7	4
Pilaria	N	0	0	1
Prionocera	N	6	6	5
Pseudolimnophila	U	3	1	4
EPHEMEROPTERA				
Caenis	N	2	1	0
LEPIDOPTERA	N	1	1	1
TRICHOPTERA				
Ceraclea	N	1	0	0
Limnephilus	N	2	1	1
ODONATA				
AESHNIDAE				
Boyeria	P	0	0	1
CORDULIIDAE	P	0	0	2
LIBELLULIDAE				
Leucorrhina	P	1	0	0
Libellula	P	1	0	0
Sympetrum	P	0	4	0
LESTIDAE				
Lestes	P	3	2	2
COENAGRIONIDAE	P	3	2	2
Enallagma	P	1	0	0
Nehalennia	P	1	2	1
HEMIPTERA				
Belostomatidae (nymph)	P	0	0	1
Corixidae	P	2	2	1
Neoplea	P	3	4	2
COLEOPTERA				
CURCULIONIDAE	N	6	8	4
DYTISCIDAE				
Celina	P	1	1	0
Desmopachria	P	2	2	2
Hygrotus	P	2	0	1
Ilybius	P	1	0	0
Laccophilus	P	1	0	0
Liodessus	P	3	1	1
Dytiscid larva	P	8	7	5
Hydroporinae larvae	P	8	9	6

Table 8 Continued

Taxon	Trophic Group	Number of sites with taxa control	BTI	Methoprene
HALIPLIDAE				
Haliplus	N	1	3	1
Peltodytes	N	0	1	0
HYDROPHILIDAE				
Cymbiodyta	N	3	2	3
Enochrus	N	5	3	1
Hydrobius	N	1	0	1
Hydrophilid larva	P	8	8	7
LAMPYRIDAE	P	1	0	1
SCIRTIDAE				
Cyphon	N	7	8	7
CRUSTACEA				
ISOPODA				
Caecidotea	N	0	2	3
AMPHIPODA				
Hyalella azteca	N	7	4	4
MOLLUSCA				
BIVALVIA	N	9	9	7
GASTROPODA				
Armiger	N	7	5	3
Fossaria	N	9	8	7
Gyraulus	N	9	8	6
Helisoma	N	2	0	0
Lymnaeidae	N	5	7	5
Physidae (Physa)	N	9	8	7
Planorbidae	N	4	2	1
Stagnicola	N	1	2	1
Valvata	N	1	1	0
ANNELIDA				
OLIGOCHAETA	U	9	9	7
HIRUDINOIDEA	U	9	9	7

Table 9. Annual mean density (#/m2) of benthic macroinvertebrates collected in core samples in 1997 and 1998
Values are back-transformed least square estimates of density.

Significant increases (I) and decreases (D) from the control are denoted after the means

	1997					1998				
Taxon	Control	BTI	significance	Meth	significance	Control	BTI	significance	Meth	significance
Total Macroinvertebrates	14943	15763		14888		17778	15753		17399	
Total Non-insects	8512	9563		10406		6408	6751		7408	
Total Annelida	5541	6504		7696		2304	2192		2886	
Mollusca	1253	1640		1672		1283	2604		2782	
Bivalvia	659	1102		1340		391	1106		1303	
Gastropoda	317	293		170		667	890		733	
Total Insects	4589	4702		2858		9774	7430		8096	
Coleoptera	373	572		268		533	539		653	
Total Diptera	3708	3750		2329		8455	5976		6360	
NonChironomids	1343	1527		1142		833	744		885	
Ceratopogonidae	233	309		228		288	324		345	
Stratiomyiidae	418	404		460		84	57		46	
Tipulidae	119	150		129		97	96		160	
Chironomidae	1652	1900		913		6974	4581		5303	
Tanypodinae	239	491		171		879	1552		603	
Orthocladiinae	173	197		220		1218	1204		1726	
Chironomini	646	619		299		1780	937		1177	
Paratendipes	139	261		104		52	70		75	
Polypedilum	168	111		116		247	220		450	
Other Chironomini	142	65		35	D	81	42		43	
Tanytarsini	219	57	D	59		754	212	D	429	
Nonpredatory Chironomids	942	833		475		4138	2352		3365	
Nonpredatory Diptera	2466	2170		1568		5075	2782	D	4105	

Table 10. Annual mean biomass (mg/m2) of benthic macroinvertebrates collected in core samples in 1997 and 1998
Values are back-transformed least square estimates of density.

Significant increases (I) and decreases (D) from the control are denoted after the means

	1997					1998				
Taxon	Control	BTI	significance	Meth	significance	Control	BTI	significance	Meth	significance
Total Macroinvertebrates	74268	96848		105933		64232	148831		167491	
Total Non-insects	59505	79215		104692		50700	140441		153370	
Total Annelida						103	141		162	
Mollusca	84482	106552		108264		80391	159595		178827	
Bivalvia	36733	63936		84179		20077	61513		86281	
Gastropoda	16581	16200		9722		36847	54242		41573	
Total Diptera	949	802		450		617	342		441	
Chironomidae	113	153		42		617	331		433	
Tanypodinae	6	24		5		34	75		28	
Orthocladiinae	4	6		7		52	65		87	
Chironomini	47	44		12		206	71	D	108	
Tanytarsini	2.1	0.3		0.4		26	3	D	10	
Predatory Chironomids	12	41		12		34	75		28	
Nonpredatory Chironomids	44	52		18		373	179	D	229	
Nonpredatory Diptera	6	24		5		372	179	D	229	

Table 11. Mean density (#/m2) of benthic macroinvertebrates on artificial substrates in June and July, 1998.
Values are back-transformed least square estimates of density.

Significant increases (I) and decreases (D) from the control are denoted after the means

	June					July				
Taxon	Control	BTI	significance	Meth	significance	Control	BTI	significance	Meth	significance
Total Macroinvertebrates	462	478		363		98	130		84	
Total Non-insects	107	161		128		64	91		48	
Total Annelida	71	118		55		55	47		18	
Mollusca	17	51		65	I	8	25		25	
Bivalvia	10	26		44		5	16		14	
Gastropoda	5	25	I	21		2	17	I	12	I
Total Insects	295	311		221		31	46		44	
Coleoptera	25	50		38		15	10		21	
Total Diptera	261	239		183		19	40		34	
NonChironomids	6	0		5		0	0		1	
Chironomidae	264	216		176		15	31		31	
Tanypodinae	15	24		18		6	19	I	10	
Orthocladiinae	72	107		67		6	7		5	
Chironomini	91	53		65		4	9		20	
Tanytarsini	62	39		21		4	6		11	
Predatory Insects	29	49		38		14	26	I	21	
Dipteran Predators	22	44		21		11	22	I	13	
Predatory Chironomids	15	24		18		6	19	I	10	