APPENDIX A1.1

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
Data for All Wetlands on All Occasions

Date mm/dd/yy	Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
05/25/88	LPS9	8.8	1.3	6.1	74	31.4	0.0	1.2	0.5	10	15	1410	35	69	10	2	-	-
05/25/88	MGR36	10.2	4.5	6.8	190	93.2	0.7	-	-	14	346	310	11	17	183	570	-	-
05/25/88	LCR93	10.2	6.4	6.4	83	21.0	2.2	0.4	0.4	13	999	560	10	25	4	5	-	-
06/06/88	JC28	10.8	6.4	6.4	56	22.2	3.0	0.0	2.9	13	340	710	2	67	19	4	-	-
06/01/88	RR5	14.3	8.5	6.2	15	5.3	2.0	1.2	3.8	5	12	580	1	31	6	4	-	-
05/25/88	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
05/25/88	ELS61	15.0	5.9	6.6	87	41.3	1.6	-	-	10	9	1670	23	60	18	11	-	-
06/06/88	PC12	11.5	9.8	6.7	54	24.0	1.0	-	-	15	50	560	10	74	46	11	-	-
06/01/88	ELW1	12.5	9.6	7.1	179	72.0	2.2	0.6	2.7	27	777	960	12	43	3860	410	-	-
06/01/88	FC1	11.8	8.8	7.3	164	78.5	6.5	0.3	1.4	36	603	640	62	82	1270	270	-	-
05/25/88	BBC24	15.8	9.4	6.8	79	32.5	1.0	1.2	2.9	14	189	2710	6	30	103	60	-	-
06/01/88	HC13	10.5	2.2	6.3	37	18.2	0.0	1.2	1.7	34	17	1040	13	63	10	6	-	-
05/25/88	SR24	15.2	2.4	5.9	34	9.0	1.6	1.2	5.0	1	8	690	4	27	7	1	-	-
6/06/88	B3I	11.8	7.0	7.3	241	88.7	5.0	0.6	0.0	8	509	410	35	153	300	90	-	-
7/11/88	LPS9	11.2	0.6	6.0	86	29.9	35.0	2.9	9.4	232	31	2560	66	391	7	2200	22.04	1000000
7/11/88	MGR36	12.2	4.3	6.7	220	89.3	6.1	0.3	0.9	34	524	370	21	34	260	80	3.53	1000000
07/11/88	LCR93	14.5	4.7	6.5	74	25.3	1.4	2.0	4.9	32	75	850	14	52	14	7	10.14	672152
07/11/88	JC28	12.8	6.4	6.6	87	25.0	4.1	0.5	0.2	56	439	430	42	68	1265	510	5.93	1000000
7/11/88	RR5	12.8	5.9	6.3	23	6.4	0.0	0.0	2.9	10	21	340	5	25	13	17	8.78	2961238
07/11/88	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/11/88	ELS61	16.0	2.0	6.3	75	33.0	9.5	1.8	6.1	35	18	1780	61	188	30	1	10.22	242099
7/11/88	PC12	14.5	2.1	6.6	71	27.4	5.0	10.6	10.4	171	27	1130	23	81	7	300	9.15	260267
7/12/88	ELW1	15.4	7.9	7.4	227	81.8	7.0	16.7	18.6	4	328	1030	10	70	91	79	4.77	1570608
07/12/88	FC1	13.2	6.9	7.1	230	87.5	3.3	0.6	1.9	38	474	420	88	85	20	62	4.98	1000000
7/12/88	BBC24	14.5	5.6	6.8	96	36.0	5.0	4.1	4.1	50	350	600	6	25	6	2	5.72	1501222
7/12/88	HC13	13.4	1.3	6.1	39	14.1	2.0	1.2	4.2	130	16	700	14	75	3	14	10.05	165316
07/12/88	SR24	15.6	3.4	5.9	37	12.0	2.0	7.1	7.3	6	21	690	4	30	1	1	11.20	1735851
07/12/88	B3I	13.2	7.0	7.1	258	96.5	10.3	1.8	0.0	20	490	360	44	67	240	20	2.72	1990654
08/08/88	LPS9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/08/88	MGR36	10.8	4.8	7.7	160	77.5	1.0	2.9	0.6	20	540	230	14	30	90	55	-	-
8/08/88	LCR93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/08/88	JC28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/08/88	RR5	19.2	7.8	7.1	24	5.8	1.8	3.5	1.2	6	14	860	4	28	34	30	-	-
8/08/88	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/08/88	ELS61	17.5	10.6	7.0	66	32.5	28.0	125.7	55.2	12	11	2100	131	315	4	10	-	-
08/08/88	PC12	16.0	2.2	7.1	55	27.5	10.9	14.9	8.5	135	18	1470	21	90	10	6	-	-
8/09/88	ELW1	15.8	5.7	6.9	230	82.0	2.5	17.6	9.5	99	1,740	1400	23	62	600	135	-	-
08/09/88	FC1	13.8	8.1	7.6	207	89.0	1.5	0.6	0.0	28	448	370	80	95	359550	278	-	-
08/09/88	BBC24	17.3	6.9	-	100	43.3	2.3	3.2	1.9	44	229	610	6	29	350	5	-	-
8/09/88	HC13	14.3	0.7	6.3	54	18.8	13.9	144.9	0.0	57	33	2380	36	181	15	1	-	-
8/09/88	SR24	16.8	3.9	6.2	30	8.6	0.0	5.3	5.0	4	11	870	3	43	10	1	-	-
08/09/88	B3I	13.4	6.4	7.1	240	97.0	5.7	1.2	0.5	10	362	320	51	85	1100	59	-	-

APPENDIX A1.1 Continued

Date mm/dd/yy	Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
09/06/88	LPS9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/06/88	MGR36	11.4	4.8	6.9	194	75.0	0.0	1.5	0.0	17	790	250	16	15	1900	3000	0.97	1000000
09/06/88	LCR93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/06/88	JC28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/06/88	RR5	16.0	5.9	6.1	27	8.7	23.4	10.6	10.8	36	19	2100	14	100	410	1	10.72	1000000
09/06/88	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/06/88	ELS61	15.5	1.4	6.4	96	36.7	8.3	9.4	4.2	29	19	2320	328	454	11	10	15.53	1000000
09/06/88	PC12	15.8	2.1	6.5	75	28.8	6.4	83.4	36.7	76	21	2760	22	186	23	42	15.26	1000000
09/07/88	ELW1	15.8	4.9	6.8	275	87.5	2.4	1.5	0.6	182	1,810	710	57	82	1300	330	2.52	1000000
09/07/88	FC1	14.3	7.4	7.3	237	91.0	3.2	0.6	0.0	27	387	430	75	97	220	378	2.45	1000000
09/07/88	BBC24	15.8	5.0	6.7	113	44.2	3.2	7.6	5.0	102	209	730	5	36	16	28	3.86	1000000
09/07/88	HC13	14.6	5.8	6.4	82	34.1	41.7	224.5	77.5	38	38	3220	36	298	2	22	19.31	1000000
09/07/88	SR24	16.0	2.9	6.0	32	10.5	6.0	7.1	2.4	39	13	1110	7	47	1	3	11.36	1000000
09/06/88	B3I	13.8	5.9	6.5	171	94.1	10.4	2.0	0.1	28	366	320	55	86	600	50	2.44	1000000
10/03/88	LPS9	10.7	1.6	5.7	188	6.6	6.4	0.8	1.7	105	92	2840	48	93	190	29	25.11	1000000
10/03/88	MGR36	10.7	6.0	6.9	193	79.3	1.0	0.3	0.3	22	986	210	9	29	2130	1251	1.24	1000000
10/03/88	LCR93	12.3	1.1	6.4	112	32.6	3.2	0.6	0.7	192	62	1420	144	188	180	300	24.29	1000000
10/03/88	JC28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/03/88	RR5	14.5	7.8	6.9	25	7.1	2.0	11.2	5.7	5	7	910	5	25	90	4	9.20	1000000
10/03/88	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/03/88	ELS61	14.6	3.5	6.7	83	36.2	2.8	2.9	2.4	1	3	1210	75	127	4	1	12.85	1000000
10/03/88	PC12	14.2	6.2	6.9	83	25.4	3.6	5.9	4.5	104	31	1400	5	56	4	11	12.46	1000000
10/05/88	ELW1	14.5	-	6.8	203	74.7	4.8	2.4	2.2	210	1180	850	46	62	250	270	6.06	1000000
10/05/88	FC1	13.7	7.3	6.9	210	88.2	3.3	0.3	1.6	48	435	200	123	123	138	71	3.69	1000000
10/05/88	BBC24	14.8	5.4	6.9	87	36.0	1.1	3.5	3.7	46	162	560	12	31	2	28	7.39	1000000
10/05/88	HC13	12.0	1.5	6.5	61	12.2	6.7	41.7	22.0	43	17	1910	25	126	4	20	23.16	1000000
10/05/88	SR24	14.7	5.0	6.7	37	9.1	6.9	14.7	10.0	17	10	1100	10	54	1	140	10.32	642020
10/05/88	B3I	13.3	4.4	7.1	228	93.7	8.0	1.2	0.1	15	527	540	59	91	310	260	5.38	1000000
10/31/88	LPS9	8.8	1.7	6.4	75	18.1	2.7	0.2	1.6	230	162	2760	14	112	8	10	-	-
10/31/88	MGR36	9.0	5.0	6.5	189	100.0	2.0	0.6	0.0	40	925	460	31	25	400	1200	-	-
10/31/88	LCR93	9.2	4.2	6.5	82	24.5	37.3	2.4	14.9	83	765	1000	50	75	130	100	-	-
10/31/88	JC28	7.5	6.4	6.1	72	20.7	2.8	0.6	0.7	4	290	1180	1	29	100	2	-	-
10/31/88	RR5	11.0	7.5	6.5	18	4.0	5.0	8.3	7.2	28	26	940	7	49	4	5	-	-
10/31/88	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/31/88	ELS61	13.5	3.9	6.5	92	36.0	12.4	3.5	23.4	11	9	1760	183	248	9	2	-	-
11/02/88	PC12	10.2	7.6	6.6	63	25.3	2.0	0.0	3.7	213	943	800	40	31	3	17	-	-
11/02/88	ELW1	11.5	7.5	7.1	175	65.0	16.5	1.8	4.0	66	24	950	16	39	370	620	-	-
11/02/88	FC1	11.2	7.4	6.7	183	77.8	7.2	0.0	1.8	87	304	460	141	80	170	70	-	-
11/02/88	BBC24	10.2	5.4	6.4	78	34.2	1.3	1.2	3.4	23	7	580	4	20	11	40	-	-
11/02/88	HC13	8.3	3.9	6.1	3	33.5	3.3	0.6	1.5	4	6	1040	14	58	7	15	-	-
11/02/88	SR24	9.8	6.4	6.2	26	25.4	4.5	4.1	4.1	22	220	820	6	34	240	2	-	-
11/02/88	B3I	12.2	7.7	6.9	71	26.2	63.1	0.6	1.9	25	490	810	79	105	>600	4200	-	-

PPENDIX A1.1 Continued

Date mm/dd/yy	Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
11/28/88	LPS9	5.8	4.0	6.8	9	16.3	1.0	1.2	0.0	111	376	900	18	28	10	12	9.30	1000000
11/28/88	MGR36	6.7	7.3	6.9	167	75.8	1.4	0.0	1.5	18	976	330	12	17	14	25	1.90	1000000
11/28/88	LCR93	7.4	5.9	6.6	83	19.5	1.8	0.0	0.0	23	1410	680	8	24	24	18	3.40	1000000
11/28/88	JC28	5.8	8.5	6.8	51	11.4	2.0	0.0	1.6	8	1350	700	3	14	7	3	6.00	1000000
11/28/88	RR5	5.7	6.8	6.9	28	3.1	1.4	0.0	2.8	1	21	200	1	9	9	1	3.50	1000000
11/28/88	ELS39	6.4	2.0	6.9	64	11.9	2.2	0.9	0.6	6	56	790	1	19	2	2	15.50	1000000
11/28/88	ELS61	6.7	3.4	7.0	137	28.5	3.0	0.0	3.4	25	3160	1320	89	100	13	1	9.60	1000000
11/30/88	PC12	5.0	8.2	6.8	54	10.3	0.3	0.2	0.6	22	1830	730	2	12	1	2	4.80	1000000
11/30/88	ELW1	3.8	11.1	6.9	180	56.5	1.1	0.0	0.8	45	2240	760	4	21	120	36	5.90	1000000
11/30/88	FC1	5.6	10.4	7.3	173	68.6	15.6	0.0	4.1	47	964	700	54	106	900	41	5.70	1000000
11/30/88	BBC24	4.8	4.6	6.9	63	20.4	1.0	0.4	2.1	71	299	740	2	20	20	5	10.20	1000000
11/30/88	HC13	4.5	4.6	6.9	43	9.8	0.7	0.3	0.3	16	1280	800	1	22	4	3	7.50	1000000
11/30/88	SR24	4.6	6.3	6.8	30	4.2	0.4	0.0	7.8	36	79	540	19	30	1	1	9.30	1000000
11/30/88	B3I	9.9	7.4	6.9	219	8.6	2.6	0.3	0.1	38	836	280	35	63	20	24	2.10	937906

APPENDIX A1.1 Continued

Date mm/dd/yy	Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
02/27/89	LPS9	3.0	6.2	6.8	89	14.8	4.0	0.3	0.3	14	516	-	10	28	< 2	< 2	-	-
02/27/89	MGR36	4.1	9.2	7.4	188	67.9	2.5	< 1.0	1.9	<10	1085	-	5	13	20	< 2	-	-
02/27/89	LCR93	2.7	10.4	7.0	75	9.0	3.5	< 1.0	1.3	<10	886	-	0	9	est 2	< 2	-	-
02/27/89	JC28	4.2	9.0	6.7	111	15.7	5.0	1.4	0.7	<10	1120	-	2	18	< 2	< 2	-	-
02/27/89	SC84	4.0	3.0	6.9	145	9.3	3.5	0.4	0.2	16	689	-	3	17	< 2	< 2	-	-
02/27/89	SC4	2.0	3.2	6.6	79	11.4	2.5	0.3	< 1.0	40	183	-	14	46	< 2	< 2	-	-
02/27/89	RR5	4.5	7.9	6.5	40	1.4	1.5	0.8	0.3	<10	1324	-	2	7	< 2	< 2	-	-
03/06/89	ELS39	4.0	11.7	6.9	74	8.0	2.0	1.4	0.1	15	533	-	4	3	< 1	< 2	-	-
03/06/89	ELS61	5.8	10.2	7.0	130	23.9	3.0	2.7	2.0	56	3113	-	62	51	< 1	est 4	-	-
03/06/89	KE	1.3	4.3	6.5	49	2.4	4.0	1.2	1.8	92	20	-	61	49	< 1	< 2	-	-
02/27/89	PC12	5.8	10.8	6.9	80	9.2	2.5	0.3	0.9	<10	690	-	1	8	< 2	< 2	-	-
03/01/89	ELW1	4.4	11.6	7.3	206	57.4	11.0	0.3	0.7	28	2474	-	4	29	< 2	6	-	-
03/01/89	FC1	4.2	11.0	7.5	214	67.7	-	2.6	0.6	33	1155	-	16	47	< 2	8	-	-
03/01/89	BBC24	3.7	9.0	7.0	93	16.5	4.5	2.9	0.3	31	639	-	2	6	est 20	< 2	-	-
03/01/89	HC13	3.7	9.5	7.0	84	10.0	2.5	0.9	0.8	29	1159	-	2	8	est 4	< 2	-	-
03/01/89	SR24	3.8	4.5	6.6	75	7.0	2.5	2.1	3.1	18	74	-	1	7	< 2	< 2	-	-
02/27/89	B3I	9.0	8.6	7.5	262	90.0	9.0	0.5	< 1.0	517	689	-	22	72	78	est 2	-	-
03/27/89	LPS9	7.3	5.1	6.7	87	21.0	3.0	0.3	0.5	<10	786	-	7	23	16	24	-	-
03/27/89	MGR36	7.6	7.5	7.2	145	58.8	3.0	5.0	0.0	<10	1091	-	4	16	est 2	12	-	-
03/27/89	LCR93	6.8	9.0	6.7	64	10.9	3.0	0.6	0.3	<10	928	-	2	31	< 2	est 2	-	-
03/27/89	JC28	7.5	8.0	6.7	145	24.3	40.0	0.7	0.7	<10	1048	-	5	72	< 2	100	-	-
03/27/89	SC84	7.5	5.1	6.7	117	23.0	2.0	0.7	< 1.0	<10	465	-	4	19	< 2	26	-	-
03/27/89	SC4	6.5	3.0	6.2	72	8.4	2.5	1.1	0.7	14	30	-	32	76	< 2	60	-	-
03/27/89	RR5	6.6	8.3	6.2	28	1.1	2.0	0.4	0.2	<10	<10	-	2	8	< 2	500	-	-
03/27/89	ELS39	8.0	10.9	6.6	96	10.2	4.0	5.6	0.9	<10	71	-	0	18	< 2	620	-	-
03/28/89	ELS61	8.5	12.0	6.9	113	31.7	3.0	19.0	6.7	<10	493	-	42	149	< 2	160	-	-
03/28/89	KE	7.5	5.7	6.5	179	2.1	<1.0	0.4	1.5	67	36	-	31	75	< 1	13	-	-
03/27/89	PC12	7.8	9.0	6.8	70	12.3	2.0	1.7	1.1	<10	991	-	3	10	< 2	1480	-	-
03/28/89	ELW1	7.0	11.3	7.2	185	56.1	7.5	0.9	0.8	15	1906	-	5	33	< 2	108	-	-
03/28/89	FC1	7.5	10.2	7.5	171	61.2	5.5	2.9	1.0	12	932	-	14	51	149	106	-	-
03/28/89	BBC24	7.5	8.9	6.9	57	18.5	1.5	1.2	2.2	<10	411	-	1	16	< 2	24	-	-
03/28/89	TC13	6.8	7.4	6.3	46	2.4	1.0	0.6	1.3	<10	640	-	6	13	< 1	37	-	-
03/28/89	HC13	7.0	7.2	7.1	45	11.6	4.0	2.0	0.8	<10	556	-	6	28	27	3	-	-
03/28/89	AL3	5.8	3.4	6.5	33	1.2	2.0	0.6	1.3	191	275	-	16	63	10	14	-	-
03/28/89	SR24	8.5	6.3	6.7	53	6.6	1.5	1.6	0.4	<10	14	-	2	20	est 1	138	-	-
03/27/89	B3I	10.0	8.5	7.3	160	59.1	13.5	2.4	< 1.0	<10	479	-	12	67	480	1840	-	-

PPENDIX A1.1 Continued

Date mm/dd/yy	Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
05/24/89	LPS9	9.2	1.4	6.3	81	21.0	87.0	41.3	19.6	103	45	-	24	1940	140	330	-	-
05/24/89	MGR36	11.8	11.2	7.4	137	69.5	<.5	1.6	0.2	872	700	-	5	11	16	420	-	-
05/24/89	LCR93	11.1	7.7	7.0	68	23.8	4.5	3.1	1.6	218	145	-	5	31	52	1960	-	-
05/24/89	JC28	9.5	7.3	6.7	85	21.6	1.0	1.7	<.1	619	461	-	29	46	60	472	-	-
05/24/89	SC84	10.3	2.1	6.6	129	53.5	35.0	2.9	<.1	90	61	-	10	78	82	920	-	-
05/24/89	SC4	9.5	0.5	6.0	106	48.5	4.0	8.1	<.1	392	78	-	169	320	10	640	-	-
05/24/89	RR5	14.1	8.8	6.3	21	4.6	1.0	5.4	<.1	80	55	-	2	33	est 6	100	-	-
05/23/89	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
05/23/89	ELS61	14.1	8.1	6.7	81	42.5	44.0	35.1	26.3	26	27	-	30	158	40	960	-	-
05/24/89	KE	11.5	2.6	4.5	29	<.1	1.0	2.1	1.4	38	30	-	31	70	<2	86	-	-
05/23/89	PC12	16.7	13.0	7.5	54	27.5	1.0	<.1	2.4	36	28	-	5	40	124	10	-	-
05/23/89	ELW1	11.7	7.7	7.6	184	84.0	19.0	8.3	<.1	169	811	-	2	71	220	580	-	-
05/23/89	FC1	11.5	8.9	7.5	162	72.5	10.5	2.1	2.1	38	635	-	31	88	680	1300	-	-
05/23/89	BBC24	13.5	8.9	6.9	56	27.3	1.0	2.9	<.1	24	38	-	2	67	14	est 8	-	-
05/23/89	TC13	9.7	4.4	5.9	38	3.3	6.0	14.7	<.1	40	94	-	9	94	<2	48	-	-
05/23/89	HC13	12.0	9.5	6.9	40	15.6	2.5	1.6	<.1	63	115	-	2	29	12	20	-	-
05/23/89	AL3	10.2	-	6.0	94	16.1	30.0	6.2	15.6	1373	71	-	414	850	<2	300	-	-
05/23/89	SR24	13.5	6.1	6.3	26	6.1	2.0	2.9	2.2	13	49	-	2	22	est 2	6	-	-
05/24/89	B3I	13.4	7.2	7.3	198	96.0	10.0	1.2	<.1	465	331	-	30	57	62	3380	-	-
07/17/89	LPS9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/17/89	MGR36	12.8	4.0	7.0	184	83.5	<1.0	1.7	<0.1	13	617	-	10	21	356	272	-	-
7/17/89	LCR93	16.2	6.2	7.0	108	41.2	12.0	8.0	2.0	<10	224	-	10	45	98	<2	-	-
07/17/89	JC28	14.5	4.8	6.7	131	39.5	7.0	1.7	<0.1	<10	259	-	122	205	502	174	-	-
07/17/89	SC84	15.7	1.9	6.7	176	65.0	7.0	13.8	1.7	490	174	-	22	115	274	114	-	-
7/17/89	SC4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/17/89	RR5	19.7	7.4	6.2	34	6.0	3.0	4.2	<0.1	104	22	-	3	29	6240	80	-	-
07/17/89	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/17/89	ELS61	19.0	6.9	6.6	106	35.0	12.7	88.9	<0.1	468	<10	-	54	232	244	960	-	-
7/17/89	KE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/17/89	PC12	19.5	4.4	6.7	78	30.2	3.0	12.1	<0.1	220	15	-	11	70	20	42	-	-
07/18/89	ELW1	17.8	5.9	7.3	201	81.5	23.0	<0.1	1.2	<10	1420	-	22	75	224	232	-	-
7/18/89	FC1	15.8	7.4	7.9	216	95.2	1.0	1.3	<0.1	10	377	-	60	70	177	244	-	-
07/18/89	BBC24	19.5	4.8	7.0	110	41.8	4.0	5.3	<0.1	108	21	-	3	27	14	784	-	-
07/18/89	TC13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/18/89	HC13	17.2	3.2	6.4	64	21.6	7.0	55.9	6.0	339	65	-	8	137	184	88	-	-
7/18/89	AL3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/18/89	SR24	20.5	4.3	6.3	45	8.9	2.7	4.7	<0.1	69	11	-	2	36	32	12	-	-
7/18/89	B3I	14.5	6.0	7.1	239	102.5	3.5	<0.1	<0.1	<10	363	-	44	60	2700	3340	-	-

APPENDIX A1.1 Continued

Date mm/dd/yy	Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
08/14/89	LPS9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/14/89	MGR36	12.8	3.3	7.0	192	84.5	2.0	4.1	<0.1	35	631	-	5	18	510	380	-	-
08/14/89	LCR93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/14/89	JC28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/14/89	SC84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/14/89	SC4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/14/89	RR5	18.8	6.2	6.4	32	3.1	4.3	5.9	<0.1	15	37	-	2	38	150	260	-	-
08/14/89	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/14/89	ELS61	18.0	3.3	6.7	87	43.0	59.3	234.8	12.0	26	6	-	62	380	500	1100	-	-
08/14/89	KE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/14/89	PC12	17.8	7.2	7.2	69	32.0	5.3	19.5	<0.1	22	13	-	9	102	380	34	-	-
08/15/89	ELW1	16.3	6.1	7.4	212	84.5	12.5	4.1	<0.1	1041	990	-	9	170	15100	3820	-	-
08/15/89	FC1	15.5	6.8	7.5	167	68.5	16.4	1.4	<0.1	109	497	-	48	160	CONF.	3640	-	-
08/15/89	BBC24	17.1	3.8	7.4	99	45.5	1.1	4.3	<0.1	19	58	-	3	28	2420	100	-	-
08/15/89	TC13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/15/89	HC13	14.2	1.6	6.6	62	21.9	11.0	75.8	<0.1	219	583	-	3	186	3640	106	-	-
08/15/89	AL3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/15/89	SR24	16.0	1.7	6.3	30	9.0	14.0	3.5	<0.1	19	47	-	1	82	2140	48	-	-
08/15/89	B3I	14.0	4.7	7.2	225	96.5	4.0	<0.1	<0.1	19	311	-	27	92	38000	260	-	-
09/11/89	LPS9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/11/89	MGR36	9.8	4.9	6.9	198	83.0	<1.0	INS	INS	51	911	-	5	14	5400	4860	-	-
09/11/89	LCR93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/11/89	JC28	11.0	6.6	6.6	143	56.6	<1.0	56.6	<0.1	41	285	-	10	27	6	110	-	-
09/11/89	SC84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/11/89	SC4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/11/89	RR5	15.5	7.5	6.2	22	5.7	2.8	8.5	4.8	99	41	-	4	24	4	3380	-	-
09/11/89	ELS39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/11/89	ELS61	16.5	1.3	6.4	121	55.5	6.5	1.9	0.4	41	<10	-	270	240	2	260	-	-
09/11/89	KE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/11/89	PC12	13.8	2.4	6.4	78	35.3	4.0	2.4	2.6	48	12	-	12	52	8	54	-	-
09/12/89	ELW1	12.8	6.7	7.1	244	86.0	1.0	<0.1	3.0	17	2020	-	16	36	7900	8125	-	-
09/12/89	FC1	12.2	6.8	7.3	239	106.0	1.0	<0.1	<0.1	30	243	-	75	106	420	840	-	-
09/12/89	BBC24	15.8	5.3	6.6	104	45.5	<1.0	1.5	3.0	142	15	-	13	21	1120	514	-	-
09/12/89	TC13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/12/89	HC13	12.8	1.1	6.2	61	23.3	7.0	18.8	4.0	208	21	-	7	45	16	68	-	-
09/12/89	AL3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/12/89	SR24	20.5	6.8	6.4	42	12.4	3.0	0.9	7.5	145	18	-	8	50	<2	12	-	-
09/11/89	B3I	13.6	6.0	7.0	INS	101.0	INS	0.2	0.2	28	325	-	53	66	142	4720	-	-

APPENDIX A1.1 Continued

Date mm/dd/yy	Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
11/14/89	LPS9	7.5	1.6	5.9	86	9.5	<1.0	<0.1	3.0	32	256	-	33	80	60	22	-	-
11/14/89	MGR36	7.5	5.3	7.0	193	76.5	<1.0	<0.1	<0.1	<10	557	-	7	13	44	144	-	-
11/14/89	LCR93	7.2	6.5	6.5	85	8.3	<1.0	1.0	<0.1	<10	983	-	2	16	10	29	-	-
11/14/89	JC28	7.5	5.4	6.5	105	16.3	4.0	<0.1	20.3	<10	635	-	2	36	9	74	-	-
11/14/89	SC84	7.8	1.4	6.0	172	17.6	1.8	0.8	0.3	71	149	-	5	40	36	26	-	-
11/14/89	SC4	9.2	0.3	5.7	268	10.1	2.2	<0.1	1.1	224	7210	-	15	90	215	150	-	-
11/14/89	RR5	7.8	5.4	5.7	28	2.0	<1.0	<0.1	<0.1	<10	838	-	4	8	<2	4	-	-
11/14/89	ELS39	8.1	1.4	5.8	86	8.2	<1.0	<0.1	1.1	<10	911	-	4	44	<20	31	-	-
11/14/89	ELS61	8.3	3.8	6.3	132	26.6	36.4	<0.1	22.2	<10	1560	-	85	330	40	220	-	-
11/14/89	KE	7.0	1.9	4.8	38	<0.1	3.6	3.6	10.7	<10	157	-	25	158	2	<2	-	-
11/16/89	PC12	7.3	7.3	6.6	77	18.0	<1.0	<0.1	3.4	35	460	-	4	18	<2	134	-	-
11/16/89	ELW1	8.7	9.3	7.2	252	66.0	<1.0	<0.1	2.3	63	1710	-	6	13	220	820	-	-
11/16/89	FC1	8.2	7.4	7.3	220	79.0	<1.0	0.5	<0.1	23	369	-	38	56	42	740	-	-
11/16/89	BBC24	6.3	4.2	6.6	67	16.3	<1.0	<0.1	2.8	59	123	-	3	15	2	240	-	-
11/16/89	TC13	5.5	3.7	4.7	38	<0.1	<1.0	<0.1	2.8	71	42	-	19	71	6	32	-	-
11/16/89	HC13	6.5	3.0	6.1	52	7.5	<1.0	<0.1	1.5	67	936	-	3	27	4	240	-	-
11/16/89	AL3	6.2	1.9	5.7	72	4.0	3.5	<0.1	11.5	156	28	-	200	330	4	780	-	-
11/16/89	SR24	6.5	4.0	6.1	62	1.8	2.0	1.0	7.5	29	86	-	11	44	8	<2	-	-
11/16/89	B3I	10.5	6.3	7.3	271	98.0	10.8	<0.1	0.7	46	308	-	28	85	108	800	-	-
12/11/89	LPS9	5.0	2.6	5.5	94	9.2	<1.0	<0.1	0.6	143	126	-	19	51	50	14	-	-
12/11/89	MGR36	3.2	7.6	6.5	226	89.5	5.1	0.3	3.0	73	598	-	12	37	10	20	-	-
12/11/89	LCR93	3.3	9.0	6.5	63	8.2	<1.0	<0.1	0.3	22	608	-	3	11	18	<2	-	-
12/11/89	JC28	4.3	8.2	6.3	97	16.6	<1.0	<0.1	3.9	25	969	-	4	15	10	2	-	-
12/11/89	SC84	4.0	2.4	5.8	195	22.7	<1.0	<0.1	1.0	121	184	-	7	32	12	12	-	-
12/11/89	SC4	5.6	1.0	5.8	97	27.2	1.4	<0.1	1.2	269	30	-	26	85	12	36	-	-
12/11/89	RR5	4.5	6.8	5.6	17	2.7	<1.0	<0.1	0.4	17	17	-	4	7	<2	<2	-	-
12/11/89	ELS39	5.0	5.2	5.4	57	8.8	<1.0	0.4	<0.1	27	19	-	13	23	2	4	-	-
12/11/89	ELS61	4.5	3.7	6.1	103	25.6	8.2	<0.1	1.4	48	732	-	20	81	760	58	-	-
12/11/89	KE	3.8	3.3	4.5	40	<0.1	<1.0	1.2	1.3	20	<10	-	63	120	<2	<2	-	-
12/13/89	PC12	4.8	9.0	6.3	63	11.9	1.0	1.2	<1.0	30	623	-	3	13	2	6	-	-
12/13/89	ELW1	6.2	10.9	6.7	249	62.5	3.0	<0.1	1.5	57	2060	-	6	20	28	28	-	-
12/13/89	FC1	4.8	7.5	6.7	223	77.5	1.2	<0.1	<0.1	35	675	-	39	42	86	10	-	-
12/13/89	BBC24	4.4	3.8	6.2	65	16.9	2.0	1.0	1.1	68	238	-	4	15	<2	2	-	-
12/13/89	TC13	3.6	3.3	4.6	37	<0.1	1.5	<0.1	2.1	32	103	-	8	39	8	<2	-	-
12/13/89	HC13	4.2	3.7	6.1	56	14.7	1.4	<0.1	1.5	20	443	-	3	25	6	6	-	-
12/13/89	AL3	2.8	2.3	5.2	44	2.8	1.4	<0.1	1.6	261	110	-	51	97	<2	<2	-	-
12/13/89	SR24	4.5	5.0	5.7	64	7.3	2.0	<0.1	2.9	39	262	-	6	29	<2	6	-	-
12/13/89	B3I	9.5	8.1	7.0	262	97.5	8.4	0.4	0.2	51	369	-	32	54	86	14	-	-

APPENDIX A2.1

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
Each Wetland by Each Season (a)

Season	Wetland Name (n)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)
S1	LPS9 (1)	7.3	5.1	6.7	87	21.0	3.0	0.3	0.5	5	786	-	7	23	16	24
S2	LPS9 (3)	9.7	1.1	6.1	80	27.4	40.7	15.1	9.8	115	30	1985	42	800	21	113
S3	LPS9 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	LPS9 (3)	9.0	1.6	6.0	116	11.4	3.2	0.3	2.1	122	170	2800	32	95	45	19
S5	LPS9 (3)	4.6	4.2	6.4	64	13.4	1.8	0.5	0.3	89	339	900	16	36	8	6
S1	MGR36 (1)	7.6	7.5	7.2	145	58.8	3.0	5.0	0.0	5	1091	-	4	16	2	12
S2	MGR36 (4)	11.8	6.0	7.0	183	83.9	1.9	1.2	0.4	233	547	340	12	21	128	269
S3	MGR36 (4)	11.2	4.4	7.1	186	80.0	0.9	2.8	0.2	31	718	240	10	19	828	743
S4	MGR36 (3)	9.1	5.4	6.8	192	85.3	1.2	0.3	0.1	22	823	335	16	22	335	600
S5	MGR36 (3)	4.7	8.0	6.9	194	77.7	3.0	0.1	2.1	32	886	330	10	22	14	8
S1	LCR93 (1)	6.8	9.0	6.7	64	10.9	3.0	0.6	0.3	5	928	-	2	31	1	2
S2	LCR93 (4)	13.2	6.3	6.7	76	28.1	5.2	3.3	2.8	67	196	780	8	49	34	15
S3	LCR93 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	LCR93 (2)	7.4	6.4	6.3	79	14.5	1.7	0.8	0.4	5	637	1180	2	23	32	8
S5	LCR93 (3)	3.9	9.3	6.8	63	9.5	2.0	0.0	1.1	12	948	700	2	11	6	1
S1	JC28 (1)	7.5	8.0	6.7	145	24.3	40.0	0.7	0.7	5	1048	-	5	72	1	100
S2	JC28 (4)	11.7	6.2	6.6	97	26.8	3.6	1.1	0.2	173	540	495	51	86	111	120
S3	JC28 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	JC28 (3)	9.7	3.6	6.4	100	24.5	14.8	1.0	12.0	93	487	1210	65	100	59	130
S5	JC28 (3)	5.3	7.7	6.5	97	17.3	2.4	0.5	1.5	18	1166	680	5	19	6	3
S1	SC84 (1)	7.5	5.1	6.7	117	23.0	2.0	0.7	0.5	5	465	-	4	19	1	26
S2	SC84 (2)	13.0	2.0	6.6	153	59.3	21.0	8.4	0.9	290	118	-	16	97	150	324
S3	SC84 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	SC84 (1)	7.8	1.4	6.0	172	17.6	1.8	0.8	0.3	71	149	-	5	40	36	26
S5	SC84 (2)	4.0	2.7	6.3	170	16.0	2.0	0.2	0.6	68	437	-	5	24	3	3
S1	SC4 (1)	6.5	3.0	6.2	72	8.4	2.5	1.1	0.7	14	30	-	32	76	1	60
S2	SC4 (1)	9.5	0.5	6.0	106	48.5	4.0	8.1	0.1	392	78	-	169	320	10	640
S3	SC4 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	SC4 (1)	9.2	0.3	5.7	268	10.1	2.2	0.1	1.1	224	7210	-	15	90	215	150
S5	SC4 (2)	3.8	2.1	6.2	88	19.3	2.0	0.2	0.9	154	107	-	20	65	3	6

APPENDIX A2.1 Continued

Season	Wetland Name (n)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)
S1	RR5 (1)	6.6	8.3	6.2	28	1.1	2.0	0.4	0.2	5	5	-	2	8	1	500
S2	RR5 (4)	15.2	7.6	6.3	23	5.6	1.5	2.7	1.7	50	28	460	3	30	41	27
S3	RR5 (4)	17.4	6.8	6.4	26	5.8	8.1	7.1	4.2	39	28	1480	6	48	54	72
S4	RR5 (3)	11.1	6.9	6.3	23	4.4	2.5	6.5	4.3	13	290	925	5	27	7	4
S5	RR5 (3)	4.9	7.2	6.4	28	2.4	1.1	0.3	1.2	8	454	200	2	8	2	1
S1	ELS39 (1)	8.0	10.9	6.6	96	10.2	4.0	5.6	0.9	5	71	-	0	18	1	620
S2	ELS39 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3	ELS39 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	ELS39 (1)	8.1	1.4	5.8	86	8.2	0.5	0.1	1.1	5	911	-	4	44	10	31
S5	ELS39 (3)	5.1	6.3	6.4	65	9.6	1.6	0.9	0.2	16	203	790	6	15	1	2
S1	ELS61 (1)	8.5	12.0	6.9	113	31.7	3.0	19.0	6.7	5	493	-	42	149	1	160
S2	ELS61 (4)	16.0	5.7	6.5	87	38.0	16.9	41.9	10.8	135	15	1725	42	160	48	56
S3	ELS61 (4)	16.9	4.2	6.6	92	41.9	25.5	93.0	17.9	27	10	2210	198	347	14	73
S4	ELS61 (3)	12.1	3.7	6.5	102	32.9	17.2	2.2	16.0	6	524	1485	114	235	11	8
S5	ELS61 (3)	5.7	5.8	6.7	123	26.0	4.7	0.9	2.3	43	2335	1320	57	77	17	6
S1	KE (1)	7.5	5.7	6.5	179	2.1	0.5	0.4	1.5	67	36	-	31	75	1	13
S2	KE (1)	11.5	2.6	4.5	29	0.1	1.0	2.1	1.4	38	30	-	31	70	1	86
S3	KE (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	KE (1)	7.0	1.9	4.8	38	0.1	3.6	3.6	10.7	5	157	-	25	158	2	1
S5	KE (2)	2.6	3.8	5.5	45	1.2	2.3	1.2	1.5	56	12	-	62	84	1	1
S1	PC12 (1)	7.8	9.0	6.8	70	12.3	2.0	1.7	1.1	5	991	-	3	10	1	1480
S2	PC12 (4)	15.6	7.3	6.9	64	27.3	2.5	7.6	4.3	111	30	845	12	66	30	34
S3	PC12 (4)	15.9	3.5	6.8	69	30.9	6.7	30.1	11.9	70	16	2115	16	108	29	26
S4	PC12 (3)	10.6	7.0	6.7	74	22.9	2.0	2.0	3.9	117	478	1100	16	35	2	29
S5	PC12 (3)	5.2	9.3	6.7	66	10.5	1.3	0.5	0.5	19	1048	730	2	11	1	2
S1	ELW1 (1)	7.0	11.3	7.2	185	56.1	7.5	0.9	0.8	15	1906	-	5	33	1	108
S2	ELW1 (4)	14.4	7.8	7.4	198	79.8	12.8	6.4	5.6	51	834	995	12	65	363	257
S3	ELW1 (4)	15.2	5.9	7.0	240	85.0	4.6	5.8	3.3	335	1640	1055	26	87	3106	1084
S4	ELW1 (3)	11.6	8.4	7.0	210	68.6	7.3	1.4	2.8	113	971	900	23	38	273	516
S5	ELW1 (3)	4.8	11.2	7.0	212	58.8	5.0	0.1	1.0	43	2258	760	5	23	15	18
S1	FC1 (1)	7.5	10.2	7.5	171	61.2	5.5	2.9	1.0	12	932	-	14	51	149	106
S2	FC1 (4)	13.1	8.0	7.4	193	83.4	5.3	1.1	1.3	31	522	530	60	81	295	270
S3	FC1 (4)	14.0	7.2	7.4	213	88.6	5.5	0.7	0.0	49	394	400	69	115	3215	753
S4	FC1 (3)	11.0	7.4	7.0	204	81.7	3.7	0.3	1.1	53	369	330	101	86	100	154
S5	FC1 (3)	4.9	9.6	7.2	203	71.2	8.4	0.9	1.6	38	931	700	36	65	43	15

APPENDIX A2.1 Continued

Season	Wetland Name (n)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)
S1	BBC24 (1)	7.5	8.9	6.9	57	18.5	1.5	1.2	2.2	5	411	-	1	16	1	24
S2	BBC24 (4)	15.8	7.2	6.9	85	34.4	2.8	3.4	1.8	49	150	1655	4	37	19	29
S3	BBC24 (4)	16.5	5.2	6.9	104	44.6	1.8	4.2	2.5	77	128	670	7	29	351	52
S4	BBC24 (3)	10.4	5.0	6.6	78	28.8	1.0	1.6	3.3	43	97	570	6	22	4	65
S5	BBC24 (3)	4.3	5.8	6.7	74	17.9	2.5	1.4	1.1	57	392	740	3	14	7	2
S1	TC13 (1)	6.8	7.4	6.3	46	2.4	1.0	0.6	1.3	5	640	-	6	13	1	37
S2	TC13 (1)	9.7	4.4	5.9	38	3.3	6.0	14.7	0.1	40	94	-	9	94	1	48
S3	TC13 (0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	TC13 (1)	5.5	3.7	4.7	38	0.1	0.5	0.1	2.8	71	42	-	19	71	6	32
S5	TC13 (1)	3.6	3.3	4.6	37	0.1	1.5	0.1	2.1	32	103	-	8	39	8	1
S1	HC13 (1)	7.0	7.2	7.1	45	11.6	4.0	2.0	0.8	5	556	-	6	28	27	3
S2	HC13 (4)	13.3	4.0	6.4	45	17.4	2.9	15.0	3.0	142	53	870	9	76	9	20
S3	HC13 (4)	14.0	2.3	6.4	65	24.5	18.4	116.0	20.4	131	169	2800	21	178	36	20
S4	HC13 (3)	8.9	2.8	6.2	39	17.7	3.5	14.1	8.3	38	320	1475	14	70	5	42
S5	HC13 (3)	4.1	5.9	6.6	61	11.5	1.5	0.4	0.9	22	961	800	2	18	5	3
S1	AL3(1)	5.8	3.4	6.5	33	1.2	2.0	0.6	1.3	191	275	-	16	63	10	14
S2	AL3(1)	10.2	-	6.0	94	16.1	30.0	6.2	15.6	1373	71	-	414	850	1	300
S3	AL3(0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S4	AL3(1)	6.2	1.9	5.7	72	4.0	3.5	0.1	11.5	156	28	-	200	330	4	780
S5	AL3(1)	2.8	2.3	5.2	44	2.8	1.4	0.1	1.6	261	110	-	51	97	1	1
S1	SR24 (1)	8.5	6.3	6.7	53	6.6	1.5	1.6	0.4	5	14	-	2	20	1	138
S2	SR24 (4)	16.2	4.0	6.1	36	9.0	2.1	4.0	3.6	22	22	690	3	29	5	3
S3	SR24 (4)	17.3	3.8	6.2	34	10.1	5.8	4.2	3.7	52	22	990	5	56	12	6
S4	SR24 (3)	10.3	5.1	6.3	42	12.1	4.5	6.6	7.2	23	105	960	9	44	12	7
S5	SR24 (3)	4.3	5.2	6.4	56	6.2	1.6	0.7	4.6	31	138	540	9	22	1	2
S1	B3I (1)	10.0	8.5	7.3	160	59.1	13.5	2.4	0.5	5	479	-	12	67	480	1840
S2	B3I (4)	13.2	6.8	7.2	234	95.9	7.2	0.9	0.0	125	423	385	38	84	331	378
S3	B3I (4)	13.7	5.7	6.9	212	97.1	6.7	0.8	0.2	21	341	320	47	82	1374	245
S4	B3I (3)	12.0	6.1	7.1	190	72.6	27.3	0.6	0.9	29	442	675	55	94	272	956
S5	B3I (3)	9.5	8.0	7.1	248	65.4	6.7	0.4	0.3	202	631	280	30	63	51	9

(a) All values are arithmetic means for individual wetlands, except for FC and Ent., where geometric means are give seasons where n = 1 represent single data points

APPENDIX A3.1

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
Each Wetland on All Occasions (a)

Wetland Name	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
LPS9	7.7	2.6	6.2	87	17.8	14.0	4.8	3.7	98	241	2094	27	282	19	23	18.8	1000000
MGR36	9.4	6.0	7.0	185	80.2	1.8	1.4	0.7	82	752	309	11	21	125	166	1.9	1000000
LCR93	8.6	7.5	6.7	72	18.1	3.3	1.5	1.5	32	583	860	4	30	14	5	8.1	836076
JC28	9.2	6.1	6.5	105	26.1	8.9	5.5	3.5	89	704	818	36	67	24	49	11.2	1000000
SC84	8.2	2.6	6.4	156	31.8	8.3	3.1	0.6	132	287	-	9	50	15	31		
SCS4	6.6	1.6	6.1	124	21.1	2.5	1.9	0.7	188	1506	-	51	123	8	46		
RR5	12.3	7.2	6.3	25	4.5	3.4	4.0	2.7	28	164	847	4	28	13	15	8.1	1490310
ELS39	6.3	6.2	6.3	75	9.4	1.8	1.7	0.5	12	318	790	4	21	2	11	15.5	1000000
ELS61	12.9	5.3	6.6	101	35.2	15.9	37.6	11.8	53	611	1737	101	208	16	28	12.1	810525
KE	6.2	3.6	5.4	67	0.9	1.9	1.7	3.3	45	50	-	42	94	1	4		
PC12	12.0	6.7	6.8	68	23.0	3.2	10.9	5.3	76	383	1264	11	56	8	23	10.4	815067
ELW1	11.6	8.3	7.1	213	73.2	7.6	3.6	3.2	135	1433	951	16	55	217	241	4.8	1142652
FC1	10.9	8.1	7.3	201	80.5	5.5	0.9	1.0	40	567	460	63	86	230	167	4.2	1000000
BBC24	12.1	6.0	6.8	85	31.7	2.0	2.7	2.2	54	199	933	5	26	20	23	6.8	1125306
TC13	6.4	4.7	5.4	40	1.4	2.3	3.9	1.6	37	220	-	10	54	2	15		
HC13	10.3	3.9	6.5	52	17.8	6.9	38.0	8.1	85	352	1584	12	87	11	14	15.0	791329
AL3	6.3	2.5	5.9	61	6.0	9.2	1.7	7.5	495	121	-	170	335	3	43		
SR24	12.4	4.6	6.3	42	9.2	3.4	3.7	4.4	31	62	831	6	37	5	5	10.5	1094468
B3I	12.1	6.7	7.1	218	83.0	11.7	0.8	0.3	85	450	434	40	80	328	212	3.2	1232140
Mean	9.6	5.3	6.4	104	30.0	6.0	6.8	3.3	95	474	994	33	92	15	29	9.3	1024134
SD (b)	2.4	2.0	0.5	60	27.3	4.3	10.8	3.0	104	398	493	41	86	5	3	4.8	183542
CV (b)	0.25	0.37	0.08	0.57	0.91	0.71	1.59	0.91	1.10	0.84	0.50	1.25	0.94	0.60	0.36	0.52	0.18
Max	12.9	8.3	7.3	218	83.0	15.9	38.0	11.8	495	1506	2094	170	335	328	241	18.8	1490310
Min	6.2	1.6	5.4	25	0.9	1.8	0.8	0.3	12	50	309	4	21	1	4	1.9	791329

(a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.
(b) SD = standard deviation; CV = coefficient of variation = SD/Mean

APPENDIX A3.2

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
Each Wetland/All Occasions by Five Categories (C/T x N/M/H) (a)

Wetland Name		Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
MGR36	Mean	9.4	6.0	7.0	185	80.2	1.8	1.4	0.7	82	752	309	11	21	125	166	1.9	1000000
RR5	Mean	12.3	7.2	6.3	25	4.5	3.4	4.0	2.7	28	164	847	4	28	13	15	8.1	1490310
HC13	Mean	10.3	3.9	6.5	52	17.8	6.9	38.0	8.1	85	352	1584	12	87	11	14	15.0	791329
AL3	Mean	6.3	2.5	5.9	61	6.0	9.2	1.7	7.5	495	121	-	170	335	3	43	-	-
SR24	Mean	12.4	4.6	6.3	42	9.2	3.4	3.7	4.4	31	62	831	6	37	5	5	10.5	1094468
CN (b)	Mean	10.1	4.8	6.4	73	23.5	5.0	9.8	4.7	144	290	893	41	102	12	24	8.9	1094027
(n=5)	SD	2.3	1.6	0.4	57	28.7	2.7	14.1	2.8	177	251	454	65	119	4	3	4.7	253726
	CV	0.22	0.34	0.06	0.78	1.22	0.55	1.45	0.61	1.23	0.86	0.51	1.60	1.17	0.54	0.38	0.53	0.23
LPS9	Mean	7.7	2.6	6.2	87	17.8	14.0	4.8	3.7	98	241	2094	27	282	19	23	18.8	1000000
LCR93	Mean	8.6	7.5	6.7	72	18.1	3.3	1.5	1.5	32	583	860	4	30	14	5	8.1	836076
BBC24	Mean	12.1	6.0	6.8	85	31.7	2.0	2.7	2.2	54	199	933	5	26	20	23	6.8	1125306
SC4	Mean	6.6	1.6	6.1	124	21.1	2.5	1.9	0.7	188	1506	-	51	123	8	46	-	-
CM (b)	Mean	8.7	4.4	6.4	92	22.1	5.5	2.7	2.0	93	632	1296	22	115	14	19	11.2	987127
(n=4)	SD	2.1	2.4	0.3	20	5.6	5.0	1.3	1.1	60	526	565	19	104	1	2	5.4	118428
	CV	0.24	0.54	0.05	0.21	0.25	0.91	0.46	0.54	0.64	0.83	0.44	0.88	0.90	0.15	0.27	0.48	0.12
FC1	Mean	10.9	8.1	7.3	201	80.5	5.5	0.9	1.0	40	567	460	63	86	230	167	4.2	1000000
B3I	Mean	12.1	6.7	7.1	218	83.0	11.7	0.8	0.3	85	450	434	40	80	328	212	3.2	1232140
CH (b)	Mean	11.5	7.4	7.2	209	81.8	8.6	0.9	0.6	63	508	447	52	83	275	188	3.7	1116070
(n=2)	SD	0.6	0.7	0.1	8	1.2	3.1	0.0	0.3	23	58	13	11	3	1	1	0.5	116070
	CV	0.05	0.09	0.01	0.04	0.02	0.36	0.04	0.50	0.36	0.11	0.03	0.22	0.03	0.03	0.02	0.14	0.10
KE	Mean	6.2	3.6	5.4	67	0.9	1.9	1.7	3.3	45	50	-	42	94	1	4	-	-
PC12	Mean	12.0	6.7	6.8	68	23.0	3.2	10.9	5.3	76	383	1264	11	56	8	23	10.4	815067
TC13	Mean	6.4	4.7	5.4	40	1.4	2.3	3.9	1.6	37	220	-	10	54	2	15	-	-
TN (b)	Mean	8.2	5.0	5.8	58	8.5	2.5	5.5	3.4	52	218	1264	21	68	2	11	10.4	815067
(n=3)	SD	2.7	1.3	0.7	13	10.3	0.6	3.9	1.5	17	136	0	15	19	2	2	0.0	0
	CV	0.33	0.26	0.11	0.23	1.22	0.23	0.72	0.45	0.32	0.63	0.00	0.69	0.27	0.99	0.31	0.00	0.00
JC28	Mean	9.2	6.1	6.5	105	26.1	8.9	5.5	3.5	89	704	818	36	67	24	49	11.2	1000000
SC84	Mean	8.2	2.6	6.4	156	31.8	8.3	3.1	0.6	132	287	-	9	50	15	31	-	-
ELS39	Mean	6.3	6.2	6.3	75	9.4	1.8	1.7	0.5	12	318	790	4	21	2	11	15.5	1000000
ELW1	Mean	11.6	8.3	7.1	213	73.2	7.6	3.6	3.2	135	1433	951	16	55	217	241	4.8	1142652
ELS61	Mean	12.9	5.3	6.6	101	35.2	15.9	37.6	11.8	53	611	1737	101	208	16	28	12.1	810525
TM (b)	Mean	9.6	5.7	6.6	130	35.1	8.5	10.3	3.9	84	671	1074	33	80	19	41	10.9	988294
(n=5)	SD	2.4	1.8	0.3	49	21.0	4.5	13.7	4.1	47	414	388	36	65	5	3	3.9	118007
	CV	0.24	0.32	0.04	0.38	0.60	0.53	1.33	1.05	0.56	0.62	0.36	1.08	0.82	0.52	0.27	0.35	0.12

APPENDIX A3.2 Continued

Wetland Type		Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
CN (b)	Mean	10.1	4.8	6.4	73	23.5	5.0	9.8	4.7	144	290	893	41	102	12	24	8.9	1094027
CM (b)	Mean	8.7	4.4	6.4	92	22.1	5.5	2.7	2.0	93	632	1296	22	115	14	19	11.2	987127
CH (b)	Mean	11.5	7.4	7.2	209	81.8	8.6	0.9	0.6	63	508	447	52	83	275	188	3.7	1116070
TN (b)	Mean	8.2	5.0	5.8	58	8.5	2.5	5.5	3.4	52	218	1264	21	68	2	11	10.4	815067
TM (b)	Mean	9.6	5.7	6.6	130	35.1	8.5	10.3	3.9	84	671	1074	33	80	19	41	10.9	988294

(a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.
SD = standard deviation; CV = coefficient of variation = SD/Mean

(b) C = Control, T = Treatment, N = Nonurbanized, M = moderately urbanized, H = highly urbanized

APPENDIX A3.3

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
Each Wetland/All Occasions by Control/Treatment Status (a)

Wetland Name		Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
Control																		
MGR36	Mean	9.4	6.0	7.0	185	80.2	1.8	1.4	0.7	82	752	309	11	21	125	166	1.9	1000000
RR5	Mean	12.3	7.2	6.3	25	4.5	3.4	4.0	2.7	28	164	847	4	28	13	15	8.1	1490310
HC13	Mean	10.3	3.9	6.5	52	17.8	6.9	38.0	8.1	85	352	1584	12	87	11	14	15.0	791329
AL3	Mean	6.3	2.5	5.9	61	6.0	9.2	1.7	7.5	495	121	-	170	335	3	43	-	-
SR24	Mean	12.4	4.6	6.3	42	9.2	3.4	3.7	4.4	31	62	831	6	37	5	5	10.5	1094468
LPS9	Mean	7.7	2.6	6.2	87	17.8	14.0	4.8	3.7	98	241	2094	27	282	19	23	18.8	1000000
LCR93	Mean	8.6	7.5	6.7	72	18.1	3.3	1.5	1.5	32	583	860	4	30	14	5	8.1	836076
BBC24	Mean	12.1	6.0	6.8	85	31.7	2.0	2.7	2.2	54	199	933	5	26	20	23	6.8	1125306
SC4	Mean	6.6	1.6	6.1	124	21.1	2.5	1.9	0.7	188	1506	-	51	123	8	46	-	-
n=9	Mean	9.5	4.7	6.4	81	22.9	5.2	6.6	3.5	121	442	1065	32	108	13	21	9.9	1048213
	SD (b)	2.3	2.0	0.3	46	21.7	3.9	11.1	2.6	140	432	543	51	113	3	3	5.2	213532
	CV (b)	0.24	0.43	0.05	0.56	0.95	0.75	1.68	0.74	1.16	0.98	0.51	1.58	1.05	0.40	0.34	0.52	0.20
	Max	12.4	7.5	7.0	185	80.2	14.0	38.0	8.1	495	1506	2094	170	335	125	166	18.8	1490310
	Min	6.3	1.6	5.9	25	4.5	1.8	1.4	0.7	28	62	309	4	21	3	5	1.9	791329
Treatment																		
KE	Mean	6.2	3.6	5.4	67	0.9	1.9	1.7	3.3	45	50	-	42	94	1	4	-	-
PC12	Mean	12.0	6.7	6.8	68	23.0	3.2	10.9	5.3	76	383	1264	11	56	8	23	10.4	815067
TC13	Mean	6.4	4.7	5.4	40	1.4	2.3	3.9	1.6	37	220	-	10	54	2	15	-	-
JC28	Mean	9.2	6.1	6.5	105	26.1	8.9	5.5	3.5	89	704	818	36	67	24	49	11.2	1000000
SC84	Mean	8.2	2.6	6.4	156	31.8	8.3	3.1	0.6	132	287	-	9	50	15	31	-	-
ELS39	Mean	6.3	6.2	6.3	75	9.4	1.8	1.7	0.5	12	318	790	4	21	2	11	15.5	1000000
ELW1	Mean	11.6	8.3	7.1	213	73.2	7.6	3.6	3.2	135	1433	951	16	55	217	241	4.8	1142652
ELS61	Mean	12.9	5.3	6.6	101	35.2	15.9	37.6	11.8	53	611	1737	101	208	16	28	12.1	810525
n=8	Mean	9.1	5.4	6.3	103	25.1	6.2	8.5	3.7	72	501	1112	29	76	9	25	10.8	953649
	SD	2.6	1.7	0.6	53	21.9	4.6	11.3	3.4	42	403	355	30	53	5	3	3.5	126260
	CV	0.28	0.31	0.09	0.51	0.87	0.74	1.34	0.91	0.58	0.80	0.32	1.05	0.70	0.76	0.34	0.32	0.13
	Max	12.9	8.3	7.1	213	73.2	15.9	37.6	11.8	135	1433	1737	101	208	217	241	15.5	1142652
	Min	6.2	2.6	5.4	40	0.9	1.8	1.7	0.5	12	50	790	4	21	1	4	4.8	810525
Control	Mean	9.5	4.7	6.4	81	22.9	5.2	6.6	3.5	121	442	1065	32	108	13	21	9.9	1048213
Treat.	Mean	9.1	5.4	6.3	103	25.1	6.2	8.5	3.7	72	501	1112	29	76	9	25	10.8	953649

(a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometricc means are given.
(b) SD = standard deviation; CV = coefficient of variation = SD/Mean

APPENDIX A3.4

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
Each Wetland/All Occasions by Open-water or Flow-through Status (a)

Wetland Name		Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
Open Water System																		
RR5	Mean	12.3	7.2	6.3	25	4.5	3.4	4.0	2.7	28	164	847	4	28	13	15	8.1	1490310
HC13	Mean	10.3	3.9	6.5	52	17.8	6.9	38.0	8.1	85	352	1584	12	87	11	14	15.0	791329
AL3	Mean	6.3	2.5	5.9	61	6.0	9.2	1.7	7.5	495	121	-	170	335	3	43	-	-
SR24	Mean	12.4	4.6	6.3	42	9.2	3.4	3.7	4.4	31	62	831	6	37	5	5	10.5	1094468
BBC24	Mean	12.1	6.0	6.8	85	31.7	2.0	2.7	2.2	54	199	933	5	26	20	23	6.8	1125306
KE	Mean	6.2	3.6	5.4	67	0.9	1.9	1.7	3.3	45	50	-	42	94	1	4	-	-
PC12	Mean	12.0	6.7	6.8	68	23.0	3.2	10.9	5.3	76	383	1264	11	56	8	23	10.4	815067
TC13	Mean	6.4	4.7	5.4	40	1.4	2.3	3.9	1.6	37	220	-	10	54	2	15	-	-
SC84	Mean	8.2	2.6	6.4	156	31.8	8.3	3.1	0.6	132	287	-	9	50	15	31	-	-
ELS39	Mean	6.3	6.2	6.3	75	9.4	1.8	1.7	0.5	12	318	790	4	21	2	11	15.5	1000000
ELS61	Mean	12.9	5.3	6.6	101	35.2	15.9	37.6	11.8	53	611	1737	101	208	16	28	12.1	810525
n=11	Mean	9.6	4.9	6.2	70	15.5	5.3	9.9	4.4	95	252	1141	34	91	6	16	11.2	1018143
	SD (b)	2.8	1.5	0.5	34	12.3	4.2	13.4	3.4	130	156	362	51	92	3	2	3.0	231877
	CV (b)	0.29	0.31	0.08	0.48	0.79	0.79	1.35	0.77	1.37	0.62	0.32	1.50	1.02	0.58	0.25	0.27	0.23
	Max	12.9	7.2	6.8	156	35.2	15.9	38.0	11.8	495	611	1737	170	335	20	43	15.5	1490310
	Min	6.2	2.5	5.4	25	0.9	1.8	1.7	0.5	12	50	790	4	21	1	4	6.8	791329
Flow-thru System																		
MGR36	Mean	9.4	6.0	7.0	185	80.2	1.8	1.4	0.7	82	752	309	11	21	125	166	1.9	1000000
.PS9	Mean	7.7	2.6	6.2	87	17.8	14.0	4.8	3.7	98	241	2094	27	282	19	23	18.8	1000000
LCR93	Mean	8.6	7.5	6.7	72	18.1	3.3	1.5	1.5	32	583	860	4	30	14	5	8.1	836076
SC4	Mean	6.6	1.6	6.1	124	21.1	2.5	1.9	0.7	188	1506	-	51	123	8	46	-	-
IC28	Mean	9.2	6.1	6.5	105	26.1	8.9	5.5	3.5	89	704	818	36	67	24	49	11.2	1000000
ELW1	Mean	11.6	8.3	7.1	213	73.2	7.6	3.6	3.2	135	1433	951	16	55	217	241	4.8	1142652
FC1	Mean	10.9	8.1	7.3	201	80.5	5.5	0.9	1.0	40	567	460	63	86	230	167	4.2	1000000
3I	Mean	12.1	6.7	7.1	218	83.0	11.7	0.8	0.3	85	450	434	40	80	328	212	3.2	1232140
n=8	Mean	9.5	5.9	6.7	151	50.0	6.9	2.6	1.8	94	779	847	31	93	57	67	7.5	1030124
	SD	1.8	2.3	0.4	56	29.4	4.2	1.7	1.3	47	425	558	19	77	4	3	5.5	116348
	CV	0.19	0.40	0.06	0.37	0.59	0.60	0.67	0.72	0.50	0.55	0.66	0.61	0.83	0.34	0.30	0.74	0.11
	Max	12.1	8.3	7.3	218	83.0	14.0	5.5	3.7	188	1506	2094	63	282	328	241	18.8	1232140
	Min	6.6	1.6	6.1	72	17.8	1.8	0.8	0.3	32	241	309	4	21	8	5	1.9	836076
OW	Mean	9.6	4.9	6.2	70	15.5	5.3	9.9	4.4	95	252	1141	34	91	6	16	11.2	1018143
T	Mean	9.5	5.9	6.7	151	50.0	6.9	2.6	1.8	94	779	847	31	93	57	67	7.5	1030124

(a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.
(b) SD = standard deviation; CV = coefficient of variation = SD/Mean

APPENDIX A4.1

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands by Each Occasion (a)

Date mm/dd/yy	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microto
05/25/88 (n=13)	12.2	6.3	6.6	99	41.3	2.1	0.8	2.1	15	298	942	17	57	48	19	-	-
07/11/88 (n=13)	13.8	4.5	6.6	117	43.4	7.0	3.8	5.5	63	216	866	31	92	24	29	8.4	116149
08/08/88 (n=10)	15.5	5.7	7.0	117	48.2	6.8	32.0	8.2	42	341	1061	37	96	131	16	-	-
09/06/88 (n=10)	14.9	4.6	6.6	130	51.1	10.5	34.8	13.7	57	367	1395	62	140	64	41	8.4	100000
10/03/88 (n=12)	13.3	4.5	6.7	126	41.8	4.1	7.1	4.6	67	293	1096	47	84	38	49	11.8	970168
10/31/88 (n=13)	10.2	5.7	6.5	87	37.7	12.3	1.8	5.2	64	321	1043	45	70	45	34	-	-
11/28/88 (n=13)	5.9	6.6	6.9	99	25.3	2.6	0.2	2.0	27	1115	659	18	35	12	5	6.6	995224
02/27/89 (n=17)	4.1	8.2	6.9	117	24.8	4.0	1.1	0.9	54	962	-	12	25	2	1	-	-
03/27/89 (n=19)	7.5	7.7	6.8	98	22.1	5.3	2.5	1.1	19	619	-	10	41	3	61	-	-
05/23/89 (n=18)	11.9	6.8	6.6	88	35.2	14.4	7.8	4.0	259	210	-	45	223	18	198	-	-
07/17/89 (n=13)	17.1	5.1	6.8	130	50.1	6.6	15.2	0.9	142	275	-	29	86	207	129	-	-
08/14/89 (n=10)	16.1	4.4	7.0	118	48.9	13.0	35.3	1.2	152	317	-	17	126	1754	304	-	-
09/11/89 (n=11)	14.0	5.0	6.6	125	55.5	2.7	9.1	2.5	77	354	-	43	62	56	484	-	-
11/14/89 (n=19)	7.6	4.2	6.2	121	24.5	3.7	0.4	4.8	48	911	-	26	78	13	68	-	-
12/11/89 (n=19)	4.6	5.4	5.9	108	26.4	2.1	0.3	1.3	71	430	-	17	42	8	5	-	-

(a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.

APPENDIX A4.2

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands/Each Occasion by Five Categories (C/T x N/M/H) (a)

Date mm/dd/yy	Category Type (b)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
05/25/88	CN (n=4)	12.6	4.4	6.3	69	31.4	1.1	1.2	3.5	14	96	655	7	35	17	11	-	-
	CM (n=3)	11.8	5.7	6.4	70	28.7	1.3	0.8	2.1	12	181	1610	14	55	27	8	-	-
	CH (n=2)	11.8	7.9	7.3	203	83.6	5.8	0.4	0.7	22	556	525	49	118	617	156	-	-
	TN (n=1)	11.5	9.8	6.7	54	24.0	1.0			15	50	560	10	74	46	11	-	-
	TM (n=3)	12.6	7.3	6.7	116	44.8	2.0	0.5	1.5	17	595	1063	15	43	65	28	-	-
07/11/88	CN (n=4)	13.5	3.7	6.3	80	30.5	2.5	2.1	3.8	45	146	525	11	41	10	12	8.4	1465601
	CM (n=3)	13.4	3.6	6.4	85	30.4	13.8	3.0	6.1	105	152	1337	29	156	8	31	12.6	1057791
	CH (n=2)	13.2	7.0	7.1	244	92.0	6.8	1.2	0.9	29	482	390	66	76	69	35	3.9	1495327
	TN (n=1)	14.5	2.1	6.6	71	27.4	5.0	10.6	10.4	171	27	1130	23	81	7	300	9.2	260267
	TM (n=3)	14.7	5.4	6.8	130	46.6	6.9	6.3	8.3	32	262	1080	38	109	151	34	7.0	937569
08/08/88	CN (n=4)	15.3	4.3	6.8	67	27.7	4.2	39.2	1.7	22	150	1085	14	70	26	6	-	-
	CM (n=1)	17.3	6.9		100	43.3	2.3	3.2	1.9	44	229	610	6	29	350	5	-	-
	CH (n=2)	13.6	7.2	7.4	224	93.0	3.6	0.9	0.2	19	405	345	66	90	19887	128	-	-
	TN (n=1)	16.0	2.2	7.1	55	27.5	10.9	14.9	8.5	135	18	1470	21	90	10	6	-	-
	TM (n=2)	16.7	8.2	7.0	148	57.3	15.3	71.7	32.4	56	876	1750	77	189	49	37	-	-
9/06/88	CN (n=4)	14.5	4.9	6.4	84	32.1	17.8	60.9	22.7	33	215	1670	18	115	35	21	10.6	1000000
	CM (n=1)	15.8	5.0	6.7	113	44.2	3.2	7.6	5.0	102	209	730	5	36	16	28	3.9	1000000
	CH (n=2)	14.1	6.6	6.9	204	92.5	6.8	1.3	0.1	28	377	375	65	91	363	137	2.4	1000000
	TN (n=1)	15.8	2.1	6.5	75	28.8	6.4	83.4	36.7	76	21	2760	22	186	23	42	15.3	1000000
	TM (n=2)	15.7	3.2	6.6	186	62.1	5.4	5.4	2.4	106	915	1515	193	268	120	57	9.0	1000000
0/03/88	CN (n=4)	13.0	5.1	6.8	79	26.9	4.1	17.0	9.5	22	255	1033	12	59	30	61	11.0	910505
	CM (n=2)	12.8	3.5	6.3	138	21.3	3.8	2.2	2.7	75	127	1700	30	62	19	28	16.3	1000000
	CH (n=2)	13.5	5.9	7.0	219	90.9	5.6	0.7	0.8	32	481	370	91	107	207	136	4.5	1000000
	TN (n=1)	14.2	6.2	6.9	83	25.4	3.6	5.9	4.5	104	31	1400	5	56	4	11	12.5	1000000
	TM (n=3)	13.8	2.3	6.6	133	47.8	3.6	2.0	1.7	134	415	1160	88	126	56	43	14.4	1000000
10/31/88	CN (n=4)	9.5	5.7	6.3	59	40.7	3.7	3.4	3.2	24	294	815	15	42	40	21	-	-
	CM (n=3)	8.8	4.5	6.3	75	24.3	2.3	0.6	1.9	86	153	1507	6	54	21	9	-	-
	CH (n=2)	11.7	7.5	6.8	127	52.0	35.2	0.3	1.9	56	397	635	110	92	319	542	-	-
	TN (n=1)	10.2	7.6	6.6	63	25.3	2.0	0.0	3.7	213	943	800	40	31	3	17	-	-
	TM (n=3)	11.4	5.2	6.7	116	41.8	22.1	2.5	14.1	53	266	1237	83	121	76	50	-	-
11/28/88	CN (n=4)	5.4	6.2	6.9	67	23.2	1.0	0.1	3.1	18	589	468	8	20	5	3	5.6	1000000
	CM (n=3)	5.5	5.7	6.8	41	16.0	1.3	0.5	1.2	63	675	780	8	21	11	6	8.5	1000000
	CH (n=2)	7.8	8.9	7.1	196	38.6	9.1	0.1	2.1	43	900	490	45	84	134	31	3.9	968953
	TN (n=1)	5.0	8.2	6.8	54	10.3	0.3	0.2	0.6	22	1830	730	2	12	1	2	4.8	1000000
	TM (n=4)	6.1	5.6	6.8	116	29.1	2.0	0.2	1.2	25	1717	888	26	41	17	6	8.6	1000000

APPENDIX A4.2 Continued

Date mm/dd/yy	Category Type (b)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)		SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)
02/27/89	CN (n=4)	4.0	7.8	6.9	97	21.6	2.3	1.0	1.5	14	910	-	2	9	3	1
	CM (n=4)	2.9	7.2	6.8	84	12.9	3.6	0.9	0.6	22	556	-	7	22	3	1
	CH (n=2)	6.6	9.8	7.5	238	78.8	9.0	1.6	0.5	275	922	-	19	59	9	4
	TN (n=2)	3.6	7.5	6.7	65	5.8	3.3	0.7	1.3	49	355	-	31	28	1	1
	TM (n=5)	4.5	9.1	7.0	133	22.8	4.9	1.2	0.7	24	1586	-	15	24	1	2
03/27/89	CN (n=5)	7.1	6.5	6.7	61	15.8	2.5	1.9	0.6	42	484	-	6	27	4	32
	CM (n=4)	7.0	6.5	6.6	70	14.7	2.5	0.8	0.9	7	539	-	11	36	2	16
	CH (n=2)	8.8	9.4	7.4	166	60.1	9.5	2.6	0.7	9	705	-	13	59	267	442
	TN (n=3)	7.4	7.4	6.5	98	5.6	1.2	0.9	1.3	26	556	-	13	33	1	89
	TM (n=5)	7.7	9.5	6.8	131	29.0	11.3	5.4	1.9	7	796	-	11	58	1	123
05/23/89	CN (n=5)	12.3	8.9	6.6	64	22.4	7.2	3.5	3.6	480	198	-	85	189	3	69
	CM (n=4)	10.8	4.6	6.6	78	30.2	24.1	13.9	5.3	184	76	-	50	590	32	240
	CH (n=2)	12.5	8.1	7.4	180	84.2	10.3	1.7	1.1	252	483	-	31	72	205	2096
	TN (n=3)	12.6	6.7	6.0	40	10.3	2.7	5.6	1.3	38	51	-	15	68	5	35
	TM (n=4)	11.4	6.3	6.9	120	50.4	24.8	12.0	6.6	226	340	-	18	88	81	701
07/17/89	CN (n=4)	17.6	4.7	6.5	82	30.0	3.3	16.6	1.5	131	179	-	6	56	338	69
	CM (n=2)	17.9	5.5	7.0	109	41.5	8.0	6.7	1.0	57	123	-	7	36	37	28
	CH (n=2)	15.2	6.7	7.5	228	98.8	2.3	0.7	0.1	8	370	-	52	65	691	903
	TN (n=1)	19.5	4.4	6.7	78	30.2	3.0	12.1	0.1	220	15	-	11	70	20	42
	TM (n=4)	16.8	4.9	6.8	154	55.3	12.4	26.1	0.8	242	465	-	55	157	294	258
08/14/89	CN (n=4)	15.5	3.2	6.6	79	29.6	7.8	22.3	0.1	72	325	-	3	81	879	150
	CM (n=1)	17.1	3.8	7.4	99	45.5	1.1	4.3	0.1	19	58	-	3	28	2420	100
	CH (n=2)	14.8	5.7	7.3	196	82.5	10.2	0.7	0.1	64	404	-	38	126	38000	973
	TN (n=1)	17.8	7.2	7.2	69	32.0	5.3	19.5	0.1	22	13	-	9	102	380	34
	TM (n=2)	17.2	4.7	7.1	150	63.8	35.9	119.5	6.0	534	498	-	36	275	2748	2050
09/11/89	CN (n=4)	14.7	5.1	6.4	81	31.1	3.3	9.4	5.4	126	248	-	6	33	24	340
	CM (n=1)	15.8	5.3	6.6	104	45.5	0.5	1.5	3.0	142	15	-	13	21	1120	514
	CH (n=2)	12.9	6.4	7.1	239	103.5	1.0	0.1	0.1	29	284	-	64	86	244	1991
	TN (n=1)	13.8	2.4	6.4	78	35.3	4.0	2.4	2.6	48	12	-	12	52	8	54
	TM (n=3)	13.4	4.8	6.7	169	66.0	2.7	19.5	1.1	33	770	-	99	101	46	615
11/14/89	CN (n=5)	6.9	3.9	6.1	81	18.3	1.4	0.2	4.1	52	489	-	45	84	6	40
	CM (n=4)	7.6	3.1	6.1	127	11.0	0.9	0.3	1.7	80	2143	-	13	50	23	69
	CH (n=2)	9.4	6.9	7.3	246	88.5	5.7	0.3	0.4	35	339	-	33	70	67	769
	TN (n=3)	6.6	4.3	5.4	51	6.0	1.5	1.2	5.6	37	220	-	16	82	2	16
	TM (n=5)	8.1	4.2	6.4	149	26.9	8.6	0.2	9.2	30	993	-	20	93	31	101
12/11/89	CN (n=5)	3.8	5.0	5.8	81	23.4	2.1	0.1	1.9	82	286	-	15	39	2	4
	CM (n=4)	4.6	4.1	6.0	80	15.4	1.1	0.3	0.8	126	251	-	13	41	10	6
	CH (n=2)	7.2	7.8	6.9	243	87.5	4.8	0.2	0.1	43	522	-	36	48	86	12
	TN (n=3)	4.1	5.2	5.1	46	4.0	1.0	0.8	1.1	27	244	-	25	57	3	2
	TM (n=5)	4.8	6.1	6.0	140	27.2	2.5	0.1	1.6	56	793	-	10	34	22	11

(a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric me are given.
(b) C = Control, T = Treatment, N = Nonurbanized, M = moderately urbanized, H = highly urbanized

APPENDIX A4.3

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands/Each Occasion by Control/Treatment Status (a)

Date m/dd/yy		Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
5/25/88	C (n=7)	12.2	5.0	6.4	69	30.3	1.2	1.0	2.8	13	132	1064	10	43	20	9	-	-
	T (n=4)	12.3	7.9	6.7	101	39.6	1.7	0.5	1.5	16	459	938	14	51	60	22	-	-
07/11/88	C (n=7)	13.5	3.7	6.3	82	30.4	7.4	2.5	4.8	71	148	873	19	90	9	18	10.2	1290826
	T (n=4)	14.7	4.6	6.7	115	41.8	6.4	7.4	8.8	66	203	1093	34	102	70	59	7.5	768244
08/08/88	C (n=5)	15.7	4.8	6.8	74	30.8	3.8	32.0	1.7	26	165	990	13	62	44	6	-	-
	T (n=3)	16.4	6.2	7.0	117	47.3	13.8	52.8	24.4	82	590	1657	58	156	29	20	-	-
09/06/88	C (n=5)	14.8	4.9	6.4	90	34.5	14.8	50.2	19.1	46	214	1482	16	99	30	22	9.2	1000000
	T (n=3)	15.7	2.8	6.6	149	51.0	5.7	31.4	13.8	96	617	1930	136	241	69	52	11.1	1000000
10/03/88	C (n=6)	12.9	4.5	6.6	98	25.1	4.0	12.0	7.2	40	212	1255	18	60	26	47	12.7	940337
	T (n=4)	13.9	3.6	6.7	120	42.2	3.6	2.9	2.4	127	319	1220	67	108	29	31	13.9	1000000
10/31/88	C (n=7)	9.2	5.2	6.3	66	33.7	3.1	2.2	2.6	50	234	1111	11	47	30	15	-	-
	T (n=4)	11.1	5.8	6.7	103	37.7	17.1	1.9	11.5	93	435	1128	72	98	34	38	-	-
/28/88	C (n=7)	5.2	5.8	6.9	37	10.9	1.1	0.3	2.4	41	568	647	7	21	6	3	7.6	1000000
	T (n=5)	6.1	5.6	6.8	116	29.1	2.0	0.2	1.2	25	1717	888	26	41	17	6	8.6	1000000
2/27/89	C (n=8)	3.4	7.5	6.9	90	17.2	2.9	0.9	1.1	18	733	-	4	16	3	1	-	-
	T (n=7)	4.2	8.7	6.9	114	18.0	4.4	1.1	0.9	31	1234	-	20	25	1	2	-	-
/27/89	C (n=9)	7.1	6.5	6.7	65	15.3	2.5	1.4	0.7	27	511	-	8	31	3	24	-	-
	T (n=8)	7.6	8.7	6.7	119	20.2	7.5	3.7	1.7	14	706	-	12	49	1	109	-	-
/23/89	C (n=9)	11.7	6.8	6.6	70	25.8	14.7	8.1	4.4	349	144	-	69	367	8	120	-	-
	T (n=7)	11.9	6.5	6.5	86	33.2	15.3	9.3	4.3	145	216	-	17	80	25	193	-	-
/17/89	C (n=6)	17.7	5.0	6.7	91	33.8	4.9	13.3	1.4	106	160	-	6	49	162	51	-	-
	T (n=5)	17.3	4.8	6.8	138	50.2	10.5	23.3	0.6	238	375	-	46	139	172	179	-	-
/14/89	C (n=5)	15.8	3.3	6.7	83	32.8	6.5	18.7	0.1	61	271	-	3	70	1076	138	-	-
	T (n=3)	17.4	5.5	7.1	123	53.2	25.7	86.1	4.0	363	336	-	27	217	1421	523	-	-
/11/89	C (n=5)	14.9	5.1	6.5	85	34.0	2.8	7.5	4.8	129	201	-	7	31	52	370	-	-
	T (n=4)	13.5	4.2	6.6	147	58.4	3.0	15.2	1.5	37	581	-	77	89	30	335	-	-
11/14/89	C (n=9)	7.2	3.6	6.1	101	15.1	1.2	0.3	3.1	65	1224	-	31	69	10	51	-	-
	T (n=8)	7.5	4.3	6.0	112	19.1	6.0	0.6	7.9	33	703	-	19	89	12	51	-	-
12/11/89	C (n=9)	4.2	4.6	5.9	81	19.8	1.6	0.2	1.4	101	270	-	14	40	4	4	-	-
	T (n=8)	4.5	5.7	5.7	105	18.5	2.0	0.4	1.4	45	587	-	16	43	10	6	-	-

APPENDIX A4.3 Continued

Date mm/dd/yy	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
05/25/88 C (n=7)	12.2	5.0	6.4	69	30.3	1.2	1.0	2.8	13	132	1064	10	43	20	9	-	-
07/11/88 C (n=7)	13.5	3.7	6.3	82	30.4	7.4	2.5	4.8	71	148	873	19	90	9	18	10.2	1290826
08/08/88 C (n=5)	15.7	4.8	6.8	74	30.8	3.8	32.0	1.7	26	165	990	13	62	44	6	-	-
09/06/88 C (n=5)	14.8	4.9	6.4	90	34.5	14.8	50.2	19.1	46	214	1482	16	99	30	22	9.2	1000000
10/03/88 C (n=6)	12.9	4.5	6.6	98	25.1	4.0	12.0	7.2	40	212	1255	18	60	26	47	12.7	940337
10/31/88 C (n=7)	9.2	5.2	6.3	66	33.7	3.1	2.2	2.6	50	234	1111	11	47	30	15	-	-
11/28/88 C (n=7)	5.2	5.8	6.9	37	10.9	1.1	0.3	2.4	41	568	647	7	21	6	3	7.6	1000000
02/27/89 C (n=8)	3.4	7.5	6.9	90	17.2	2.9	0.9	1.1	18	733	-	4	16	3	1	-	-
03/27/89 C (n=9)	7.1	6.5	6.7	65	15.3	2.5	1.4	0.7	27	511	-	8	31	3	24	-	-
05/24/89 C (n=9)	11.7	6.8	6.6	70	25.8	14.7	8.1	4.4	349	144	-	69	367	8	120	-	-
07/17/89 C (n=6)	17.7	5.0	6.7	91	33.8	4.9	13.3	1.4	106	160	-	6	49	162	51	-	-
08/14/89 C (n=5)	15.8	3.3	6.7	83	32.8	6.5	18.7	0.1	61	271	-	3	70	1076	138	-	-
09/11/89 C (n=5)	14.9	5.1	6.5	85	34.0	2.8	7.5	4.8	129	201	-	7	31	52	370	-	-
11/14/89 C (n=9)	7.2	3.6	6.1	101	15.1	1.2	0.3	3.1	65	1224	-	31	69	10	51	-	-
12/11/89 C (n=9)	4.2	4.6	5.9	81	19.8	1.6	0.2	1.4	101	270	-	14	40	4	4	-	-
05/25/88 T (n=4)	12.3	7.9	6.7	101	39.6	1.7	0.5	1.5	16	459	938	14	51	60	22	-	-
07/11/88 T (n=4)	14.7	4.6	6.7	115	41.8	6.4	7.4	8.8	66	203	1093	34	102	70	59	7.5	768244
08/08/88 T (n=3)	16.4	6.2	7.0	117	47.3	13.8	52.8	24.4	82	590	1657	58	156	29	20	-	-
09/06/88 T (n=3)	15.7	2.8	6.6	149	51.0	5.7	31.4	13.8	96	617	1930	136	241	69	52	11.1	1000000
10/03/88 T (n=4)	13.9	3.6	6.7	120	42.2	3.6	2.9	2.4	127	319	1220	67	108	29	31	13.9	1000000
10/31/88 T (n=4)	11.1	5.8	6.7	103	37.7	17.1	1.9	11.5	93	435	1128	72	98	34	38	-	-
11/28/88 T (n=5)	6.1	5.6	6.8	116	29.1	2.0	0.2	1.2	25	1717	888	26	41	17	6	8.6	1000000
02/27/89 T (n=7)	4.2	8.7	6.9	114	18.0	4.4	1.1	0.9	31	1234	-	20	25	1	2	-	-
03/27/89 T (n=8)	7.6	8.7	6.7	119	20.2	7.5	3.7	1.7	14	706	-	12	49	1	109	-	-
05/24/89 T (n=7)	11.9	6.5	6.5	86	33.2	15.3	9.3	4.3	145	216	-	17	80	25	193	-	-
07/17/89 T (n=5)	17.3	4.8	6.8	138	50.2	10.5	23.3	0.6	238	375	-	46	139	172	179	-	-
08/14/89 T (n=3)	17.4	5.5	7.1	123	53.2	25.7	86.1	4.0	363	336	-	27	217	1421	523	-	-
09/11/89 T (n=4)	13.5	4.2	6.6	147	58.4	3.0	15.2	1.5	37	581	-	77	89	30	335	-	-
11/14/89 T (n=8)	7.5	4.3	6.0	112	19.1	6.0	0.6	7.9	33	703	-	19	89	12	51	-	-
12/11/89 T (n=8)	4.5	5.7	5.7	105	18.5	2.0	0.4	1.4	45	587	-	16	43	10	6	-	-

a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.

APPENDIX A4.3 continued

t-statistics (b)

Date	d.f.	Temp	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
05/25/88	9	-0.04	-1.79	-1.78	-0.98	-0.59	-1.02	2.07	1.48	-0.59	-1.87	0.31	-0.59	-0.57	-0.95	-0.71	-	-
07/11/88	9	-1.45	-0.68	-1.66	-0.84	-0.72	0.16	-1.83	-1.45	0.09	-0.46	-0.55	-1.24	-0.17	-1.89	-0.79	0.93	1.11
08/08/88	6	-0.43	-0.67	-0.59	-0.96	-0.87	-1.85	-0.52	-2.45	-2.22	-1.17	-1.46	-2.00	-1.57	0.35	-1.04	-	-
09/06/88	6	-0.89	2.29	-0.65	-1.12	-0.91	0.97	0.35	0.28	-1.54	-1.01	-0.61	-2.07	-1.57	-0.42	-0.48	-0.40	-
10/03/88	8	-1.00	0.65	-0.31	-0.55	-1.12	0.30	1.24	1.27	-2.37	-0.40	0.08	-2.31	-1.69	-0.08	0.33	-0.23	-0.88
10/31/88	9	-2.31	-0.55	-2.94	-1.11	-0.25	-2.98	0.20	-2.77	-0.93	-0.93	-0.04	-2.55	-1.46	-0.09	-0.73	-	-
11/28/88	10	-1.54	0.13	0.38	-4.22	-2.66	-2.69	0.38	0.98	0.85	-2.35	-1.73	-1.29	-1.57	-1.45	-1.10	-0.49	-
02/27/89	13	-1.36	-0.78	-0.26	-1.01	-0.08	-1.41	-0.31	0.37	-1.09	-1.25	-	-1.58	-1.18	2.70	-1.78	-	-
03/27/89	15	-1.65	-1.96	-0.14	-2.80	-0.60	-1.21	-1.11	-1.45	0.58	-0.84	-	-0.67	-1.05	2.50	-1.99	-	-
05/24/89	14	-0.27	0.17	0.18	-0.73	-0.63	-0.05	-0.19	0.01	1.12	-0.60	-	1.05	1.23	-1.17	-0.53	-	-
07/17/89	9	0.25	0.22	-0.79	-1.63	-1.15	-1.73	-0.63	0.74	-1.32	-0.91	-	-2.45	-2.78	-0.06	-1.18	-	-
08/14/89	6	-1.22	-1.85	-1.38	-0.89	-1.01	-1.82	-1.42	-1.68	-1.45	-0.26	-	-2.26	-2.37	-0.28	-1.40	-	-
09/11/89	7	0.68	0.56	-0.77	-1.47	-1.50	-0.15	-0.70	3.23	3.42	-0.93	-	-1.42	-1.48	0.26	0.07	-	-
11/14/89	15	-0.76	-0.63	0.44	-0.32	-0.39	-1.24	-0.80	-1.59	1.17	0.66	-	0.52	-0.41	-0.14	0.01	-	-
12/11/89	15	-0.90	-0.85	0.68	-0.77	0.12	-0.33	-1.02	-0.03	1.60	-1.38	-	-0.16	-0.20	-0.96	-0.33	-	-

Date	t-stat (α=0.05)	Temp	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
05/25/88	1.833	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
07/11/88	1.833	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
08/08/88	1.943	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
09/06/88	1.943	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
10/03/88	1.860	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
10/31/88	1.833	1	0	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0
11/28/88	1.812	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0
02/27/89	1.771	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
03/27/89	1.753	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0
05/24/89	1.761	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07/17/89	1.833	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
08/14/89	1.943	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
09/11/89	1.895	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
11/14/89	1.753	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12/11/89	1.753	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum		1	2	1	2	1	2	1	3	3	2	0	6	2	3	2	0	0

Note: 0 signifies not statistically significant; 1 signifies statistically significant at $P < 0.05$.
(b) d.f. = degrees of freedom; α = significance level

APPENDIX A4.4

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands/Each Occasion by Open-water or Flow-through Status (a)

Date mm/dd/yy	System Type	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
05/25/88	OW (n=6)	13.7	6.4	6.4	51	21.7	1.2	1.2	3.3	13	48	1208	10	48	18	7	-	-
	FT (n=7)	10.9	6.3	6.8	141	58.1	2.8	0.5	1.3	17	513	714	24	65	111	42	-	-
07/11/88	OW (n=6)	14.5	3.4	6.3	57	21.5	3.9	4.1	5.8	67	75	873	19	71	6	7	7.7	1176202
	FT (n=7)	13.2	5.4	6.8	169	62.2	9.6	3.5	5.1	59	337	860	41	110	76	93	7.7	1176202
08/08/88	OW (n=6)	16.9	5.3	6.7	55	22.7	9.5	49.6	12.0	43	53	1382	34	114	20	5	-	-
	FT (n=4)	13.5	6.2	7.3	209	86.4	2.7	5.6	2.6	39	773	580	42	68	2150	105	-	-
09/06/88	OW (n=6)	15.6	3.8	6.4	71	27.2	14.8	57.1	22.8	53	53	2040	69	187	12	10	2.1	1000000
	FT (n=4)	13.8	5.7	6.9	219	86.9	4.0	1.4	0.2	64	838	428	51	70	756	370	2.1	1000000
10/03/88	OW (n=6)	14.1	4.9	6.8	63	21.0	3.8	13.3	8.1	36	38	1182	22	70	5	12	11.9	964202
	FT (n=6)	12.5	4.1	6.6	189	62.5	4.4	0.9	1.1	99	547	1010	71	98	303	195	11.9	964202
10/31/88	OW (n=6)	10.5	5.8	6.4	47	26.4	4.7	2.9	7.2	50	202	990	42	73	11	8	-	-
	FT (n=7)	9.9	5.7	6.6	121	47.5	18.8	0.9	3.6	76	423	1089	47	66	148	123	-	-
11/28/88	OW (n=7)	5.4	5.1	6.9	60	12.6	1.3	0.2	2.5	25	961	731	16	30	4	2	8.6	1000000
	FT (n=7)	6.4	7.8	6.9	126	36.7	3.6	0.2	1.2	41	1165	621	19	39	34	18	6.0	994355
02/27/89	OW (n=9)	4.1	7.9	6.8	86	9.7	2.9	1.4	1.0	30	916	-	15	17	1	1	-	-
	FT (n=8)	4.2	8.7	7.1	153	41.7	5.4	0.7	0.8	81	1014	-	9	33	3	2	-	-
03/27/89	OW (n=11	7.4	7.7	6.6	76	11.0	2.1	3.1	1.5	28	395	-	10	38	1	67	-	-
	FT (n=8)	7.5	7.8	6.9	129	37.5	9.8	1.7	0.6	8	900	-	10	46	6	54	-	-
05/23/89	OW (n=10	12.6	7.1	6.4	57	19.7	12.4	7.4	4.8	178	57	-	51	144	6	63	-	-
	FT (n=8)	11.0	6.5	7.0	128	54.6	17.0	8.4	3.0	360	401	-	37	321	71	822	-	-
7/17/89	OW (n=7)	18.7	4.7	6.6	88	29.8	5.6	26.4	1.1	257	45	-	15	92	132	117	-	-
	FT (n=6)	15.3	5.7	7.2	180	73.9	7.8	2.1	0.6	7	543	-	45	79	351	144	-	-
8/14/89	OW (n=6)	17.0	4.0	6.8	63	25.8	15.9	57.3	2.0	53	124	-	13	136	902	131	-	-
	FT (n=4)	14.7	5.2	7.3	199	83.5	8.7	2.4	0.1	301	607	-	22	110	6639	1083	-	-
9/11/89	OW (n=6)	15.8	4.0	6.4	71	29.6	4.0	5.7	3.7	114	19	-	52	72	10	165	-	-
	FT (n=5)	11.9	6.2	7.0	206	86.5	0.8	14.2	0.8	33	757	-	32	50	433	1767	-	-
1/14/89	OW (n=10	7.0	3.4	5.8	75	9.3	4.6	0.5	5.8	46	481	-	33	99	5	36	-	-
	FT (n=9)	8.3	5.3	6.7	185	45.4	2.4	0.2	3.5	50	1504	-	16	49	52	163	-	-
2/11/89	OW (n=10	4.2	4.4	5.6	67	10.3	1.8	0.4	1.2	62	249	-	17	44	4	4	-	-
	FT (n=9)	5.2	6.8	6.4	164	48.5	2.6	0.1	1.3	84	679	-	18	39	26	10	-	-

APPENDIX A4.4 continued

Date mm/dd/yy	System Type	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#org/1	Ent. (org/100)	TOC (mg/l)	Microtox
05/25/88	O (n=6)	13.7	6.4	6.4	51	21.7	1.2	1.2	3.3	13	48	1208	10	48	18	7	-	-
07/11/88	O (n=6)	14.5	3.4	6.3	57	21.5	3.9	4.1	5.8	67	75	873	19	71	6	7	7.7	1176202
08/08/88	O (n=6)	16.9	5.3	6.7	55	22.7	9.5	49.6	12.0	43	53	1382	34	114	20	5	-	-
09/06/88	O (n=6)	15.6	3.8	6.4	71	27.2	14.8	57.1	22.8	53	53	2040	69	187	12	10	2.1	1000000
10/03/88	O (n=6)	14.1	4.9	6.8	63	21.0	3.8	13.3	8.1	36	38	1182	22	70	5	12	11.9	964202
10/31/88	O (n=6)	10.5	5.8	6.4	47	26.4	4.7	2.9	7.2	50	202	990	42	73	11	8	-	-
11/28/88	O (n=7)	5.4	5.1	6.9	60	12.6	1.3	0.2	2.5	25	961	731	16	30	4	2	8.6	1000000
02/27/89	O (n=9)	4.1	7.9	6.8	86	9.7	2.9	1.4	1.0	30	916	-	15	17	1	1	-	-
03/27/89	O (n=11)	7.4	7.7	6.6	76	11.0	2.1	3.1	1.5	28	395	-	10	38	1	67	-	-
05/24/89	O (n=10)	12.6	7.1	6.4	57	19.7	12.4	7.4	4.8	178	57	-	51	144	6	63	-	-
07/17/89	O (n=7)	18.7	4.7	6.6	88	29.8	5.6	26.4	1.1	257	45	-	15	92	132	117	-	-
08/14/89	O (n=6)	17.0	4.0	6.8	63	25.8	15.9	57.3	2.0	53	124	-	13	136	902	131	-	-
09/11/89	O (n=6)	15.8	4.0	6.4	71	29.6	4.0	5.7	3.7	114	19	-	52	72	10	165	-	-
11/14/89	O (n=10)	7.0	3.4	5.8	75	9.3	4.6	0.5	5.8	46	481	-	33	99	5	36	-	-
12/11/89	O (n=10)	4.2	4.4	5.6	67	10.3	1.8	0.4	1.2	62	249	-	17	44	4	4	-	-
5/25/88	F(n=7)	10.9	6.3	6.8	141	58.1	2.8	0.5	1.3	17	513	714	24	65	111	42	-	-
07/11/88	F(n=7)	13.2	5.4	6.8	169	62.2	9.6	3.5	5.1	59	337	860	41	110	76	93	7.7	1176202
08/08/88	F(n=4)	13.5	6.2	7.3	209	86.4	2.7	5.6	2.6	39	773	580	42	68	2150	105	-	-
9/06/88	F(n=4)	13.8	5.7	6.9	219	86.9	4.0	1.4	0.2	64	838	428	51	70	756	370	2.1	1000000
.0/03/88	F(n=6)	12.5	4.1	6.6	189	62.5	4.4	0.9	1.1	99	547	1010	71	98	303	195	11.9	964202
10/31/88	F(n=7)	9.9	5.7	6.6	121	47.5	18.8	0.9	3.6	76	423	1089	47	66	148	123	-	-
1/28/88	F(n=7)	6.4	7.8	6.9	126	36.7	3.6	0.2	1.2	41	1165	621	19	39	34	18	6.0	994355
02/27/89	F(n=8)	4.2	8.7	7.1	153	41.7	5.4	0.7	0.8	81	1014	-	9	33	3	2	-	-
3/27/89	F(n=8)	7.5	7.8	6.9	129	37.5	9.8	1.7	0.6	8	900	-	10	46	6	54	-	-
5/24/89	F(n=8)	11.0	6.5	7.0	128	54.6	17.0	8.4	3.0	360	401	-	37	321	71	822	-	-
07/17/89	F(n=6)	15.3	5.7	7.2	180	73.9	7.8	2.1	0.6	7	543	-	45	79	351	144	-	-
08/14/89	F(n=4)	14.7	5.2	7.3	199	83.5	8.7	2.4	0.1	301	607	-	22	110	6639	1083	-	-
9/11/89	F(n=5)	11.9	6.2	7.0	206	86.5	0.8	14.2	0.8	33	757	-	32	50	433	1767	-	-
.1/14/89	F(n=9)	8.3	5.3	6.7	185	45.4	2.4	0.2	3.5	50	1504	-	16	49	52	163	-	-
12/11/89	F(n=9)	5.2	6.8	6.4	164	48.5	2.6	0.1	1.3	84	679	-	18	39	26	10	-	-

a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.

APPENDIX A4.4 continued

t-statistics (b)

Date	d.f.	Temp	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
5/25/88	11	3.21	0.05	-1.54	-3.18	-2.79	-1.76	4.50	3.17	-0.74	-3.73	1.53	-1.69	-0.94	-1.72	-1.67	-	-
7/11/88	11	1.85	-1.78	-2.18	-3.44	-3.04	-1.25	0.22	0.25	0.20	-2.90	0.04	-1.65	-0.74	-3.08	-2.43	0.00	0.00
08/08/88	8	3.28	-0.49	-2.37	-8.76	-8.67	1.37	1.41	0.92	0.14	-3.19	2.07	-0.34	0.86	-3.28	-4.66	-	-
9/06/88	8	2.66	-1.89	-3.08	-6.58	-8.14	1.52	1.37	1.63	-0.34	-3.35	3.58	0.30	1.51	-3.97	-4.13	0.00	-
10/03/88	10	2.25	0.65	0.64	-7.04	-2.98	-0.46	2.27	2.54	-1.79	-2.95	0.42	-2.29	-1.05	-6.07	-3.46	0.00	0.00
10/31/88	11	0.67	0.09	-1.52	-2.96	-1.60	-1.57	1.89	1.07	-0.67	-1.24	-0.30	-0.17	0.21	-3.35	-2.50	-	-
1/28/88	12	-1.43	-2.33	0.25	-2.19	-2.26	-1.25	0.20	1.28	-1.12	-0.44	0.77	-0.21	-0.54	-2.88	-6.04	1.52	0.84
02/27/89	15	-0.17	-0.57	-2.16	-2.67	-3.10	-2.30	1.72	0.62	-0.92	-0.26	-	0.68	-1.69	-1.12	-1.33	-	-
03/27/89	17	-0.28	-0.14	-1.90	-2.58	-3.60	-2.13	0.70	1.58	0.99	-2.77	-	0.05	-0.51	-1.76	0.26	-	-
5/24/89	16	1.86	0.35	-1.91	-3.78	-3.27	-0.46	-0.19	0.51	-1.10	-3.92	-	0.30	-0.83	-3.19	-3.77	-	-
7/17/89	11	3.99	-1.21	-3.60	-3.65	-3.65	-0.68	1.93	0.63	3.71	-3.19	-	-1.84	0.36	-1.10	-0.19	-	-
08/14/89	8	2.49	-1.04	-2.41	-8.65	-6.37	0.68	1.29	0.88	-1.43	-3.36	-	-0.68	0.39	-2.12	-2.76	-	-
9/11/89	9	3.21	-1.78	-5.62	-6.00	-5.37	3.17	-0.83	2.62	3.00	-2.70	-	0.45	0.60	-2.54	-2.29	-	-
1/14/89	17	-2.86	-1.75	-2.95	-3.99	-3.14	0.60	0.86	0.79	-0.16	-1.43	-	0.84	1.25	-4.34	-1.78	-	-
12/11/89	17	-1.68	-2.10	-3.17	-3.36	-3.36	-0.73	1.50	-0.26	-0.66	-2.12	-	-0.14	0.31	-2.83	-1.79	-	-

Date	t-stat (α=0.05)	Temp	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
5/25/88	1.796	1	0	0	1	1	0	1	1	0	1	0	0	0	0	0	0	0
7/11/88	1.796	1	0	1	1	1	0	0	0	0	1	0	0	0	1	1	0	0
08/08/88	1.860	1	0	1	1	1	0	0	0	0	1	1	0	0	1	1	0	0
9/06/88	1.860	1	1	1	1	1	0	0	0	0	1	1	0	0	1	1	0	0
0/03/88	1.812	1	0	0	1	1	0	1	1	0	1	0	1	0	1	1	0	0
10/31/88	1.796	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	0	0
11/28/88	1.782	0	1	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0
2/27/89	1.753	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
03/27/89	1.740	0	0	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0
5/24/89	1.746	1	0	1	1	1	0	0	0	0	1	0	0	0	1	1	0	0
7/17/89	1.796	1	0	1	1	1	0	1	0	1	1	0	1	0	0	0	0	0
08/14/89	1.860	1	0	1	1	1	0	0	0	0	1	0	0	0	1	1	0	0
09/11/89	1.833	1	0	1	1	1	1	0	1	1	1	0	0	0	1	1	0	0
1/14/89	1.740	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0
12/11/89	1.740	0	1	1	1	1	0	0	0	0	1	0	0	0	1	1	0	0
um (15 dates)		10	4	11	15	14	3	4	3	2	11	2	2	0	12	11	0	0

Note: 0 signifies not statistically significant; 1 signifies statistically significant at $P < 0.05$.
(b) d.f. = degrees of freedom; α = significance level

APPENDIX A5.1

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands by Each Season (a)

eason		Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
eason 1																		
n=19)	Mean	7.5	7.7	6.8	98	22.1	5.3	2.5	1.1	19	619	-	10	41	3	61	-	-
	SD (b)	0.9	2.5	0.3	51	20.6	8.7	4.1	1.4	43	471	-	12	34	7	6	-	-
	CV (b)	0.12	0.32	0.05	0.52	0.93	1.62	1.65	1.26	2.20	0.76	-	1.15	0.83	2.52	0.10	-	-
	Max	10.0	12.0	7.5	185	61.2	40.0	19.0	6.7	191	1906	-	42	149	480	1840	-	-
	Min	5.8	3.0	6.2	28	1.1	0.5	0.3	0.0	5	14	-	0	8	1	2	-	-
eason 2																		
(n=57)	Mean	13.6	5.8	6.7	107	41.9	8.1	7.3	3.2	132	246	904	31	124	42	68	8.4	1161493
	SD	2.9	2.8	0.6	68	30.5	14.0	15.2	5.4	240	296	630	60	272	9	10	4.8	761219
	CV	0.21	0.49	0.08	0.64	0.73	1.73	2.07	1.67	1.82	1.20	0.70	1.89	2.20	0.21	0.14	0.6	0.66
	Max	20.5	13.0	7.9	258	102.5	87.0	88.9	26.3	1373	1420	2710	414	1940	6240	3380	22.0	2961238
	Min	8.8	0.5	4.5	15	0.1	0.0	0.0	0.0	1	5	310	1	11	1	1	2.7	165316
Season 3																		
=41)	Mean	15.1	4.9	6.8	122	51.0	8.2	27.8	6.4	82	345	1228	40	105	155	103	8.4	1000000
	SD	2.3	2.3	0.4	77	32.5	11.7	56.8	15.3	161	501	911	65	102	21	11	6.4	0
	CV	0.15	0.46	0.06	0.63	0.64	1.42	2.04	2.38	1.97	1.45	0.74	1.65	0.97	0.14	0.11	0.8	0.00
	Max	20.5	10.6	7.7	275	106.0	59.3	234.8	77.5	1041	2020	3220	328	454	359550	8125	19.3	1000000
	Min	9.8	0.7	6.0	22	3.1	0.0	0.1	0.0	4	5	230	1	14	1	1	1.0	1000000
ason 4																		
=44)	Mean	9.9	4.7	6.4	112	33.1	6.4	2.7	4.9	58	568	1068	37	77	25	51	11.8	970168
	SD	2.7	2.3	0.6	73	30.3	11.6	6.7	6.3	65	1103	656	49	74	8	9	7.9	98940
	CV	0.28	0.48	0.09	0.65	0.91	1.83	2.52	1.30	1.12	1.94	0.61	1.32	0.96	0.30	0.17	0.67	0.10
	Max	14.8	9.3	7.3	271	100.0	63.1	41.7	23.4	230	7210	2840	200	330	2130	4200	25.1	1000000
	Min	5.5	0.3	4.7	3	0.1	0.5	0.0	0.0	1	3	200	1	8	1	1	1.2	642020
eason 5																		
(n=49)	Mean	4.8	6.7	6.5	107	25.4	2.8	0.5	1.3	55	788	676	16	34	6	3	6.8	995565
	SD	1.7	3.0	0.7	70	27.2	3.0	0.7	1.4	85	765	271	20	29	6	4	3.6	15992
	CV	0.35	0.45	0.10	0.65	1.07	1.06	1.40	1.08	1.56	0.97	0.40	1.30	0.85	1.16	1.07	0.53	0.02
	Max	9.9	11.7	7.5	262	97.5	15.6	2.9	7.8	517	3160	1320	89	120	900	58	15.5	1000000
	Min	1.3	1.0	4.5	9	0.1	0.3	0.0	0.0	1	5	200	0	3	1	1	1.9	937906

(a) Mean values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.
(b) SD = standard deviation; CV = coefficient of variation = SD/Mean

APPENDIX A5.2

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands/Each Season by Five Categories (C/T x N/M/H) (a)

Season	Category Type (b)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
Season 1																		
	CN (n=5)	7.1	6.5	6.7	61	15.8	2.5	1.9	0.6	42	484	-	6	27	4	32	-	-
	CM (n=4)	7.0	6.5	6.6	70	14.7	2.5	0.8	0.9	7	539	-	11	36	2	16	-	-
	CH (n=2)	8.8	9.4	7.4	166	60.1	9.5	2.6	0.7	9	705	-	13	59	267	442	-	-
	TN (n=3)	7.4	7.4	6.5	98	5.6	1.2	0.9	1.3	26	556	-	13	33	1	89	-	-
	TM (n=5)	7.7	9.5	6.8	131	29.0	11.3	5.4	1.9	7	796	-	11	58	1	123	-	-
Season 2																		
	CN (n=12)	12.9	4.8	6.6	83	31.7	13.2	6.7	4.0	100	129	1473	29	255	22	43	12.6	1057791
	CM (n=17)	13.9	5.4	6.4	73	28.2	3.7	6.0	3.1	186	157	590	31	86	18	29	8.4	1465601
	CH (n=8)	13.2	7.4	7.3	214	89.7	6.3	1.0	0.7	77	473	458	49	83	279	319	3.9	1495327
	TN (n=6)	13.9	6.0	6.3	54	18.7	2.8	7.9	2.9	87	41	845	15	71	10	42	9.2	260267
	TM (n=14)	13.9	5.9	6.8	131	49.8	12.5	13.3	4.4	144	413	1072	32	102	128	139	7.0	937569
Season 3																		
	CN (n=16)	15.0	4.3	6.5	78	30.1	8.3	34.5	7.6	63	234	1378	10	75	67	51	10.6	1000000
	CM (n=4)	16.5	5.2	6.9	104	44.6	1.8	4.2	2.5	77	128	670	7	29	351	52	3.9	1000000
	CH (n=8)	13.8	6.5	7.2	212	92.9	6.0	0.7	0.1	35	367	360	58	98	1978	430	2.4	1000000
	TN (n=4)	15.9	3.5	6.8	69	30.9	6.7	30.1	11.9	70	16	2115	16	108	29	26	15.3	1000000
	TM (n=9)	15.5	5.2	6.8	164	62.7	13.5	50.2	9.4	165	765	1633	101	196	143	254	9.0	1000000
Season 4																		
	CN (n=13)	9.6	4.8	6.4	74	27.9	3.0	6.4	5.5	34	357	924	26	63	17	37	11.0	910505
	CM (n=9)	9.1	3.7	6.2	112	17.7	2.0	0.8	2.0	81	1032	1584	15	54	21	29	16.3	1000000
	CH (n=6)	11.5	6.7	7.1	197	77.1	15.5	0.4	1.0	41	406	503	78	90	164	384	4.5	1000000
	TN (n=5)	8.8	5.3	5.9	60	13.8	2.0	1.9	5.0	86	327	1100	19	67	3	15	12.5	1000000
	TM (n=11)	10.5	4.1	6.5	136	36.7	10.9	1.3	8.5	65	637	1198	56	109	47	66	14.4	1000000
Season 5																		
	CN (n=13)	4.4	6.2	6.5	82	22.8	1.8	0.4	2.1	41	571	468	9	24	3	2	5.6	1000000
	CM (n=11)	4.2	5.6	6.5	71	14.6	2.1	0.6	0.8	71	477	780	9	28	6	3	8.5	1000000
	CH (n=6)	7.2	8.8	7.2	226	68.3	7.4	0.6	0.9	120	781	490	33	64	47	11	3.9	968953
	TN (n=6)	4.1	6.5	5.9	54	5.6	1.6	0.7	1.1	34	545	730	23	40	1	2	4.8	1000000
	TM (n=14)	5.1	7.0	6.6	131	26.2	3.2	0.5	1.2	35	1340	888	16	32	6	5	8.6	1000000

a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric mens are given.
(b) C = Control, T = Treatment, N = Nonurbanized, M = moderately urbanized, H = highly urbanized

APPENDIX A5.3

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands/Each Season by Control/Treatment Status (a)

eason	Treatment Type (b)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
eason 1	C (n=9)	7.1	6.5	6.7	65	15.3	2.5	1.4	0.7	27	511	-	8	31	3	24	-	-
	T (n=8)	7.6	8.7	6.7	119	20.2	7.5	3.7	1.7	14	706	-	12	49	1	109	-	-
eason 2	C (n=29)	13.5	5.2	6.5	77	29.7	7.6	6.3	3.5	150	146	969	30	156	20	34	10.2	1290826
	T (n=20)	13.9	6.0	6.7	108	40.5	9.6	11.8	4.0	127	302	1015	27	93	59	97	7.5	768244
Season 3	C (n=20)	15.3	4.5	6.6	83	33.0	7.0	28.1	6.5	66	213	1236	10	66	93	51	9.2	1000000
	T (n=13)	15.6	4.6	6.8	135	52.9	11.4	44.0	10.2	136	535	1793	75	169	87	126	11.1	1000000
Season 4	C (n=22)	9.4	4.3	6.3	89	23.7	2.6	4.1	4.1	53	633	1178	21	59	19	34	12.7	940337
	T (n=16)	10.0	4.5	6.3	112	29.5	8.1	1.5	7.4	71	540	1174	44	96	19	42	13.9	1000000
Season 5	C (n=24)	4.3	6.0	6.5	77	19.1	1.9	0.5	1.5	55	528	601	9	26	4	3	6.8	1000000
	T (n=20)	4.8	6.8	6.4	108	20.0	2.8	0.6	1.1	35	1102	856	18	35	4	3	7.8	1000000

a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.
(b) C = Control, T = Treatment, N = Nonurbanized, M = moderately urbanized, H = highly urbanized

t-statistics (c)

Season	d.f.	Temp	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
eason 1	15	-1.65	-1.96	-0.14	-2.80	-0.60	-1.21	-1.11	-1.45	0.58	-0.84	-	-0.67	-1.05	2.50	-1.99	-	-
Season 2	47	-0.48	-0.94	-1.21	-1.99	-1.51	-0.45	-1.17	-0.29	0.32	-1.85	-0.25	0.15	0.74	-1.87	-1.63	2.09	2.45
eason 3	31	-0.36	-0.16	-1.47	-2.21	-2.17	-1.00	-0.73	-0.62	-1.14	-1.70	-1.84	-2.86	-2.88	0.06	-1.04	-0.83	-
eason 4	36	-0.68	-0.26	-0.06	-1.07	-0.71	-2.21	1.12	-1.60	-0.80	0.24	0.02	-1.54	-1.45	-0.03	-0.32	-0.46	-1.78
Season 5	42	-1.25	-0.97	0.50	-1.86	-0.15	-1.36	-0.57	0.95	1.17	-2.50	-3.56	-1.54	-1.09	0.18	-0.73	-0.93	-

Season	t-stat (α=0.05)	Temp.	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
eason 1	1.753	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0
Season 2	1.680	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	1
eason 3	1.690	0	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0
eason 4	1.690	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Season 5	1.680	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0
m (5 seasons)		0	1	0	4	1	1	0	0	0	3	2	1	1	2	1	1	2

Note: 0 signifies not statistically significant; 1 signifies statistically significant at $P < 0.05$.
(c) d.f. = degrees of freedom; α = significance level

APPENDIX A5.4

WATER COLUMN SAMPLING DATA FROM LONG-TERM WETLAND SITES
All Wetlands/Each Season by Open-water or Flow-through Status (a)

Season	System Type (b)	Temp (C)	DO (mg/l)	pH	Cond. (µmho)	Alk. (mg/l)	TSS (mg/l)	Chl a (µg/l)	Phae (µg/l)	NH3-N (µg/l)	NO3-N (µg/l)	TKN (µg/l)	SRP (µg/l)	Tot P (µg/l)	FC (#/100ml)	Ent. (#/100ml)	TOC (mg/l)	Microtox
Season 1	OW (n=11)	7.4	7.7	6.6	76	11.0	2.1	3.1	1.5	28	395	-	10	38	1	67	-	-
	FT (n=8)	7.5	7.8	6.9	129	37.5	9.8	1.7	0.6	8	900	-	10	46	6	54	-	-
Season 2	OW (n=29)	14.7	5.5	6.4	63	22.9	6.7	10.7	3.9	140	56	1041	27	96	16	30	9.2	1144332
	FT (n=28)	12.4	6.0	6.9	152	61.5	9.6	4.0	2.6	123	443	787	36	152	114	156	7.7	1176202
Season 3	OW (n=24)	16.3	4.3	6.5	65	26.3	11.0	42.4	10.1	66	62	1711	42	127	39	31	12.7	1000000
	FT (n=17)	13.4	5.9	7.1	208	85.9	4.0	5.9	0.9	105	744	504	36	73	1240	561	2.1	1000000
Season 4	OW (n=23)	9.8	4.4	6.2	64	16.8	4.4	4.5	6.8	45	293	1086	33	85	6	18	12.6	940337
	FT (n=21)	10.0	5.1	6.6	165	51.0	8.5	0.6	2.8	73	870	1052	42	69	122	156	11.0	1000000
Season 5	OW (n=27)	4.5	5.7	6.3	71	10.7	2.0	0.7	1.5	42	656	731	16	31	3	2	8.6	1000000
	FT (n=23)	5.2	7.7	6.8	149	42.5	3.8	0.3	1.1	70	943	621	15	37	13	6	4.9	991129

a) All values are arithmetic means for all wetlands, except for FC and Ent., where geometric means are given.
(b) OW = Open-water system, FT = Flow-through system

t-statistics (c)

Season	d.f.	Temp	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
eason 1	17	-0.28	-0.14	-1.90	-2.58	-3.60	-2.13	0.70	1.58	0.99	-2.77	-	0.05	-0.51	-1.76	0.26	-	-
Season 2	55	3.24	-0.63	-3.75	-6.57	-6.17	-0.80	1.69	0.87	0.26	-6.56	1.54	-0.59	-0.78	-3.84	-2.93	1.21	-0.15
eason 3	39	5.23	-2.30	-5.03	-14.1	-13.4	1.99	2.15	2.00	-0.77	-5.83	5.53	0.27	1.74	-4.31	-4.68	8.87	-
eason 4	42	-0.31	-1.00	-2.51	-6.23	-4.54	-1.17	2.00	2.17	-1.48	-1.80	0.17	-0.67	0.72	-7.26	-3.82	0.69	-2.05
Season 5	48	-1.70	-2.54	-2.49	-4.66	-5.09	-2.20	1.66	0.98	-1.19	-1.35	1.44	0.17	-0.68	-3.30	-3.39	4.17	2.13

Season	t-stat (α=0.05)	Temp	DO	pH	Cond.	Alk.	TSS	Chl a	Phae	NH3-N	NO3-N	TKN	SRP	Tot P	FC	Ent.	TOC	Microtox
eason 1	1.740	0	0	1	1	1	1	0	0	0	1	0	0	0	1	0	0	0
Season 2	1.675	1	0	1	1	1	0	1	0	0	1	0	0	0	1	1	0	0
eason 3	1.680	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0
eason 4	1.680	0	0	1	1	1	0	1	1	0	1	0	0	0	1	1	0	1
Season 5	1.680	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1
um (5 seasons)		3	2	5	5	5	3	3	2	0	4	1	0	1	5	4	2	2

Note: 0 signifies not statistically significant; 1 signifies statistically significant at $P < 0.05$.
(c) d.f. = degrees of freedom; α = significance level