Appendix 5-7: Summary Statistics for Water Quality Variables Monitored in the STA-3/4 PSTA Implementation Project

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During WY2010, water quality was monitored at all seven water control structures of the PSTA Project. Summary statistics for the water quality parameters monitored at the sampling stations are presented in this appendix. During water sample collection, water temperature, DO, conductivity, and pH were measured in situ. SRP, TP, and TDP were monitored weekly; nitrite+nitrate-nitrogen, ammonium-nitrogen, total Kjeldahl nitrogen, calcium, chloride, magnesium, potassium, sodium, hardness, and total suspended solids were monitored monthly; and sulfate and alkalinity were monitored quarterly. Unreplicated water samples were collected at the upstream side of each structure. TP was collected by both grab and auto-sampler; all other parameters were monitored by grab samples only.

Table 1. Summary statistics for water quality variables monitored biweekly, monthly, or quarterly in grab samples and weekly by auto-samplers at water control structures in the Stormwater Treatment Area 3/4 (STA-3/4) Periphyton Stormwater Treatment Area (PSTA) Implementation Project during the Water Year 2010 operational period (May 25, 2009–April 30, 2010). Note that only total phosphorus was measured in auto-sampler samples.

Station		Temp Deg C	DO mg/L	Cond µS/cm	pH s.u.	TSS mg/L	NO_x mg N/L	NH_4 mg N/L	TKN mg N/L	SRP mg P/L	TP mg P/L	TDP mg P/L	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Cl mg/L	SO4 mg/L	Hard mg/L	Alk mg $CaCO_3$/L
GRAB SAMPLES																				
G-378E	Min	8.7	0.3	722	7.1	3	0.005	0.010	1.550	0.002	0.010	0.007	41.3	5.9	83.8	15.9	75.1	42.5	279	213
	Max	29.9	7.3	1267	7.8	3	0.339	0.310	3.340	0.011	0.047	0.024	111.6	10.0	109.7	30.8	177.0	52.0	387	319
	Mean[a]	23.4	2.7	986	7.5	3	0.029	0.043	1.989	0.002	0.022	0.010	71.8	7.3	99.1	23.3	115.5	46.1	344	271
	Median	24.1	2.1	1005	7.4	3	0.009	0.030	1.940	0.002	0.021	0.010	71.8	7.0	100.1	25.2	113.0	44.9	356	284
	CV	23%	75%	15%	2%	0%	239%	134%	19%	60%	36%	30%	30%	14%	7%	21%	28%	9%	10%	12%
	N	49	47	49	49	25	24	24	25	48	49	48	25	25	25	25	25	4	25	25
G-379E	Min	5.9	2.9	548	7.1	3	0.005	0.020	1.750	0.002	0.007	0.004	45.3	5.1	43.9	14.7	82.0	18.5	180	117
	Max	31.4	12.2	1109	9.5	19	0.206	1.510	4.250	0.025	0.190	0.032	91.5	13.7	97.5	26.8	150.0	56.0	317	234
	Mean	24.2	6.3	794	7.9	4	0.064	0.292	2.410	0.003	0.026	0.010	66.3	8.7	60.5	20.8	110.8	39.1	237	161
	Median	24.9	6.1	787	7.9	3	0.033	0.080	2.300	0.002	0.021	0.009	69.8	8.8	54.3	22.3	115.0	41.0	233	147
	CV	24%	34%	17%	4%	102%	111%	146%	27%	111%	104%	53%	23%	28%	26%	20%	22%	41%	18%	34%
	N	49	47	49	47	15	14	13	15	47	49	49	15	15	15	15	15	4	15	4
G-388	Min	7.0	1.5	606	6.5	3	0.005	0.050	1.740	0.002	0.005	0.002	49.8	4.7	54.6	16.4	85.5	20.3	205	192
	Max	30.9	10.9	1004	9.5	3	0.069	0.640	2.390	0.002	0.014	0.007	91.3	8.5	89.3	24.8	150.0	43.1	293	232
	Mean	23.8	5.3	816	7.7	3	0.020	0.155	1.983	0.002	0.009	0.005	67.1	6.8	69.3	20.8	112.2	32.2	259	210
	Median	24.3	5.5	826	7.6	3	0.012	0.120	1.920	0.002	0.008	0.004	68.4	6.7	68.4	22.5	113.0	32.6	265	208
	CV	24%	38%	12%	5%	0%	104%	94%	10%	0%	27%	23%	18%	19%	12%	16%	17%	30%	10%	8%
	N	49	47	49	47	15	13	14	15	48	49	49	15	15	15	15	15	4	15	4
G-389A&B	Min	6.6	2.7	595	7.3	3	0.005	0.020	1.750	0.002	0.008	0.004	39.6	5.0	48.1	15.3	72.4	44.7	194	151
	Max	32.7	13.0	1161	8.6	10	0.069	1.710	3.950	0.005	0.056	0.017	99.9	9.9	104.0	28.2	164.0	55.9	335	262
	Mean	24.8	7.1	859	8.0	3.6	0.012	0.343	2.379	0.002	0.020	0.008	68.4	7.7	74.0	22.2	112.4	51.5	276	210
	Median	25.7	7.1	851	8.0	3	0.005	0.080	2.150	0.002	0.018	0.007	69.1	7.7	75.3	23.0	114.0	52.7	282	217
	CV	25%	29%	18%	3%	42%	128%	163%	27%	22%	46%	33%	24%	19%	21%	20%	22%	8%	16%	24%
	N	96	92	96	96	30	30	30	30	93	96	93	30	30	30	30	30	8	30	8
G-390A&B	Min	4.1	3.7	622	7.6	3	0.005	0.020	1.750	0.002	0.009	0.004	40.1	5.0	54.1	15.4	71.8	44.8	203	160
	Max	32.6	13.0	1196	8.3	5	0.049	1.630	4.000	0.006	0.051	0.017	95.6	10.3	103.3	27.8	157.0	55.6	336	264
	Mean	24.8	7.1	879	8.0	3	0.011	0.345	2.368	0.002	0.022	0.008	67.8	7.7	77.3	22.2	111.2	51.5	284	218
	Median	26.7	6.9	872	8.0	3	0.007	0.065	2.105	0.002	0.019	0.007	69.1	7.6	76.6	23.5	111.0	53.4	299	221
	CV	26%	25%	16%	2%	18%	101%	165%	27%	32%	49%	35%	23%	19%	18%	20%	22%	8%	13%	19%
	N	96	92	96	96	30	30	30	30	94	96	94	30	30	30	30	30	8	30	8

Table 1. Continued.

SAMPLING STATION		Temp Deg C	DO mg/L	Cond µS/cm	pH s.u.	TSS mg/L	NO_x mg N/L	NH_4 mg N/L	TKN mg N/L	SRP mg P/L	TP mg P/L	TDP mg P/L	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Cl mg/L	SO4 mg/L	Hard mg/L	Alk mg $CaCO_3$/L
AUTOSAMPLER SAMPLES																				
G-378E	Min	-	-	-	-	-	-	-	-	-	0.013	-	-	-	-	-	-	-	-	-
	Max	-	-	-	-	-	-	-	-	-	0.049	-	-	-	-	-	-	-	-	-
	Mean	-	-	-	-	-	-	-	-	-	0.025	-	-	-	-	-	-	-	-	-
	Median	-	-	-	-	-	-	-	-	-	0.024	-	-	-	-	-	-	-	-	-
	CV	-	-	-	-	-	-	-	-	-	31%	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	41	-	-	-	-	-	-	-	-	-
G-379E	Min	-	-	-	-	-	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-
	Max	-	-	-	-	-	-	-	-	-	0.046	-	-	-	-	-	-	-	-	-
	Mean	-	-	-	-	-	-	-	-	-	0.020	-	-	-	-	-	-	-	-	-
	Median	-	-	-	-	-	-	-	-	-	0.016	-	-	-	-	-	-	-	-	-
	CV	-	-	-	-	-	-	-	-	-	56%	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	34	-	-	-	-	-	-	-	-	-
G-388	Min	-	-	-	-	-	-	-	-	-	0.007	-	-	-	-	-	-	-	-	-
	Max	-	-	-	-	-	-	-	-	-	0.028	-	-	-	-	-	-	-	-	-
	Mean	-	-	-	-	-	-	-	-	-	0.010	-	-	-	-	-	-	-	-	-
	Median	-	-	-	-	-	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-
	CV	-	-	-	-	-	-	-	-	-	36%	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-
G-389A&B	Min	-	-	-	-	-	-	-	-	-	0.008	-	-	-	-	-	-	-	-	-
	Max	-	-	-	-	-	-	-	-	-	0.049	-	-	-	-	-	-	-	-	-
	Mean	-	-	-	-	-	-	-	-	-	0.023	-	-	-	-	-	-	-	-	-
	Median	-	-	-	-	-	-	-	-	-	0.021	-	-	-	-	-	-	-	-	-
	CV	-	-	-	-	-	-	-	-	-	49%	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	79	-	-	-	-	-	-	-	-	-
G-390A&B	Min	-	-	-	-	-	-	-	-	-	0.009	-	-	-	-	-	-	-	-	-
	Max	-	-	-	-	-	-	-	-	-	0.120	-	-	-	-	-	-	-	-	-
	Mean	-	-	-	-	-	-	-	-	-	0.022	-	-	-	-	-	-	-	-	-
	Median	-	-	-	-	-	-	-	-	-	0.018	-	-	-	-	-	-	-	-	-
	CV	-	-	-	-	-	-	-	-	-	69%	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	87	-	-	-	-	-	-	-	-	-

[a] Arithmetic mean

Temp: temperature; DO: dissolved oxygen; Cond: specific conductance; TSS: total suspended solids; NOx: nitrite+nitrate-nitrogen; NH4: ammonium-nitrogen; TKN: total Kjeldahl-nitrogen; SRP: soluble reactive phosphorus; TP: total phosphorus; TDP: total dissolved phosphorus; Na: sodium; K: potassium; Ca: calcium; Mg: magnesium; Cl: chloride; SO4: sulfate; Hard: hardness; Alk: alkalinity.