



South Florida Water Management District

PRO ERG

July 14, 1999

Dr. Garth Redfield
Lead Environmental Scientist
Water Resources Evaluation Department
South Florida Water Management District
P.O. Box 24680
West Palm Beach, FL 33416-4680

Dear Dr. Redfield:

SUBJECT: First Quarter 1999 Report to Technical Oversight Committee

Enclosed please find the first quarter 1999 graphs displaying:

- 1) the geometric mean of the total phosphorus (TP) concentration levels measured from March 1996 through March 1999 at the marsh stations within the Arthur R. Marshall Loxahatchee National Wildlife Refuge compared to the interim and long-term TP concentration levels;
- 2) the Shark River Slough 12-month moving flow-weighted mean TP concentration data for water years 1988 through 1998 compared to the interim and long-term discharge limits and, for the last 24 months, the 12-month moving average with the composited TP sample concentration for each sampling event;
- 3) the Taylor Slough and Coastal basins 12-month moving flow-weighted mean TP concentration data for water years 1988 through 1998 compared to the long-term 11 ppb discharge limit and, for the last 24 months, the 12-month moving average with the composited TP sample concentration for each sampling event.

Also enclosed are copies of individual TP sample data from all sites and daily average flow data for Shark River Slough and Taylor Slough/Coastal Basin structures as requested at the March 16, 1999 TOC meeting.

The geometric means calculated from the TP concentrations measured in water samples collected in the Arthur R. Marshall Loxahatchee National Wildlife Refuge in January, February and March 1999 were 6.9, 6.8 and 9.1 ppb, respectively. All three monthly geometric mean concentrations met the respective interim and long-term levels (Figure 1). Samples were collected from 14 stations in January, 11 stations in February and nine stations in March. Average water stage was 17.02 feet in January, 16.62 feet in February and 16.14 feet in March.

The 12-month moving average for the flow-weighted mean concentration (fwmc) of TP entering Shark River Slough was 9.4 ppb in January, 9.3 ppb in February and 9.1 ppb in March (Figure 2). These values were below the interim discharge limits of 10.2, 10.2 and 10.3 ppb for January through March, respectively, but were above the long-term discharge limits of 8.7, 8.7 and 8.8 ppb, respectively, for this same period.

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The 12-month moving average for the fwmc of TP entering Taylor Slough and the Coastal Basins was 9.8 ppb in January, 9.6 ppb in February and 9.9 ppb in March (Figure 3). These flow-weighted mean concentrations met the 11 ppb long-term limit.

The frequency of composited samples for each sampling event exceeding 10 ppb within a given 12-month period was included in the Settlement Agreement as an additional aid in tracking compliance. For Shark River Slough a frequency or percentage limit for samples greater than 10 ppb is based on observed flow. Taylor Slough and the Coastal Basins have a fixed limit of 53.1%. The following table presents the 12-month moving averages for the actual frequency exceedance and the calculated frequency limits for Shark River Slough and Taylor Slough for the previous year.

<u>Year Ending</u>	<u>Shark River Frequency Exceedance</u>		<u>Taylor Slough Frequency Exceedance</u>	
	<u>Actual</u>	<u>Limit</u>	<u>Actual</u>	<u>Limit</u>
Apr 1998	30.4	41.4	16.0	53.1
May 1998	37.5	40.3	15.4	53.1
Jun 1998	44.4*	41.2	11.5	53.1
Jul 1998	48.0*	43.4	14.8	53.1
Aug 1998	53.9*	45.8	21.4	53.1
Sep 1998	60.0*	48.1	32.1	53.1
Oct 1998	64.0*	48.3	32.1	53.1
Nov 1998	64.0*	47.1	32.1	53.1
Dec 1998	59.3*	44.5	32.1	53.1
Jan 1999	55.6*	45.0	28.6	53.1
Feb 1999	55.6*	45.3	25.0	53.1
Mar 1999	51.9*	45.7	21.4	53.1

*exceeded frequency limit

If you have questions regarding the reported results please call me at (561) 682-6392.

Sincerely,

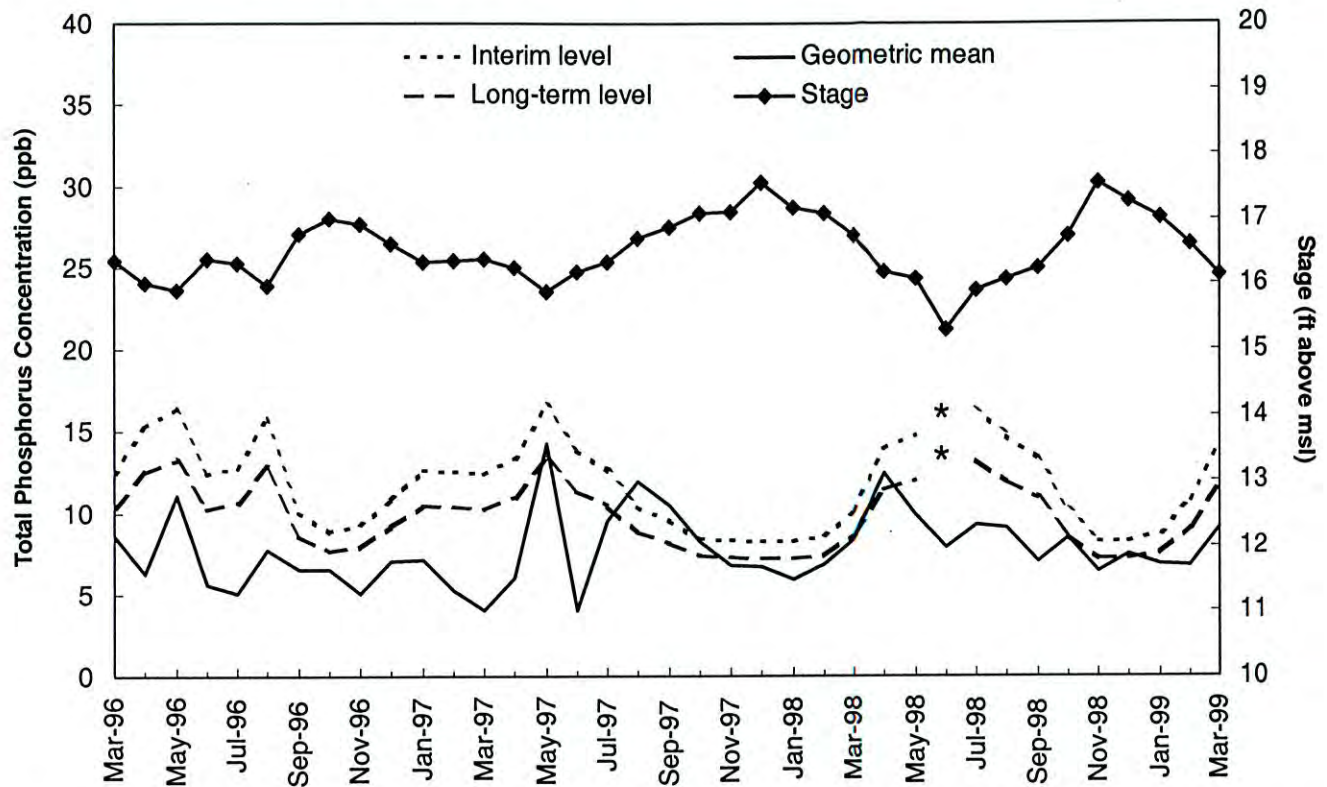


Timothy J. Bechtel, Ph.D.
Senior Supervising Environmental Scientist
Resource Assessment Division
Water Resources Evaluation Department

Enclosure
TB/dwp

c: M. Cheesman, WRE
L. Lindstrom, WRE
R. Startzman, WRE
L. Wedderburn, WRE

Monthly Total Phosphorus Concentration Levels for Loxahatchee National Wildlife Refuge



* Limits were not applicable for the June 1998 sampling event because the average stage was lower than 15.4 feet.

Figure 1. Monthly total phosphorus geometric mean concentration levels for the Loxahatchee National Wildlife Refuge compared to the interim and long-term targets. The observed concentrations and targets are adjusted for fluctuations of water level.

Discharge Limits for Shark River Slough (S12A, S12B, S12C, S12D, and S333)

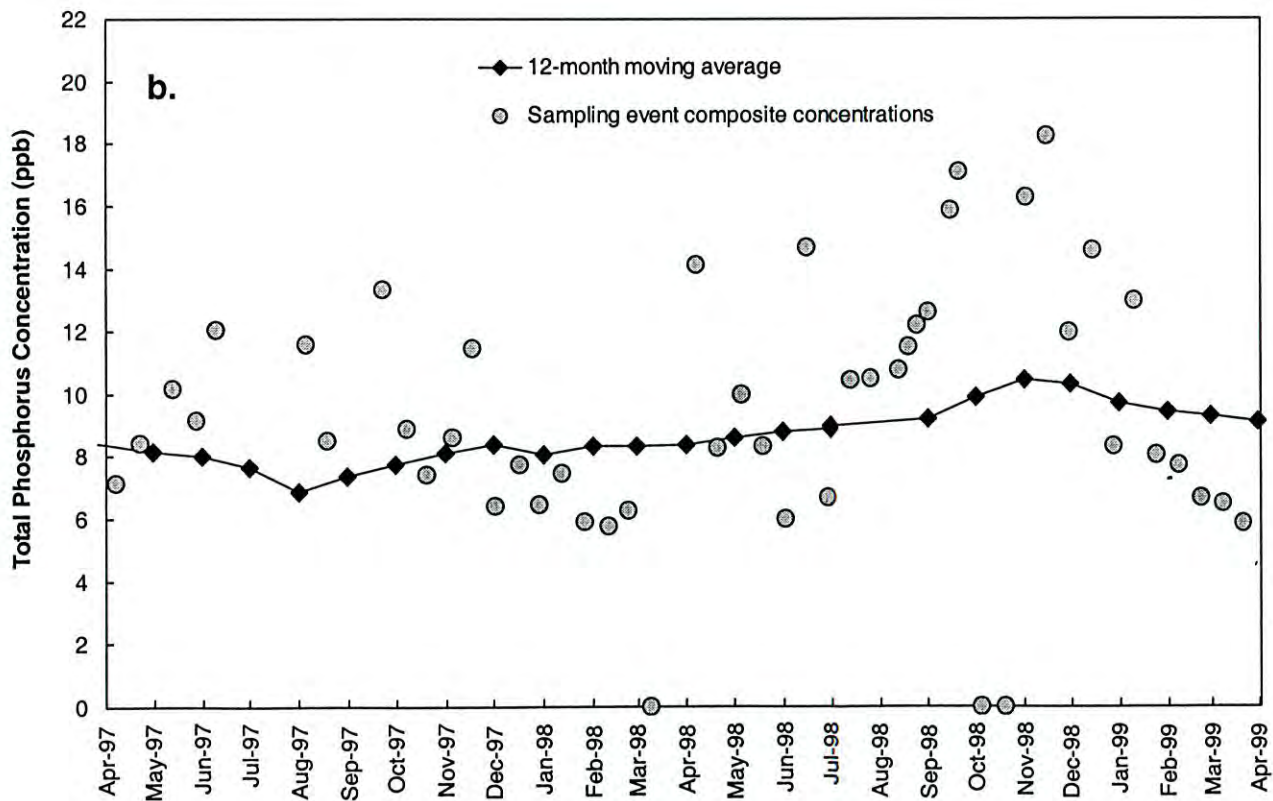
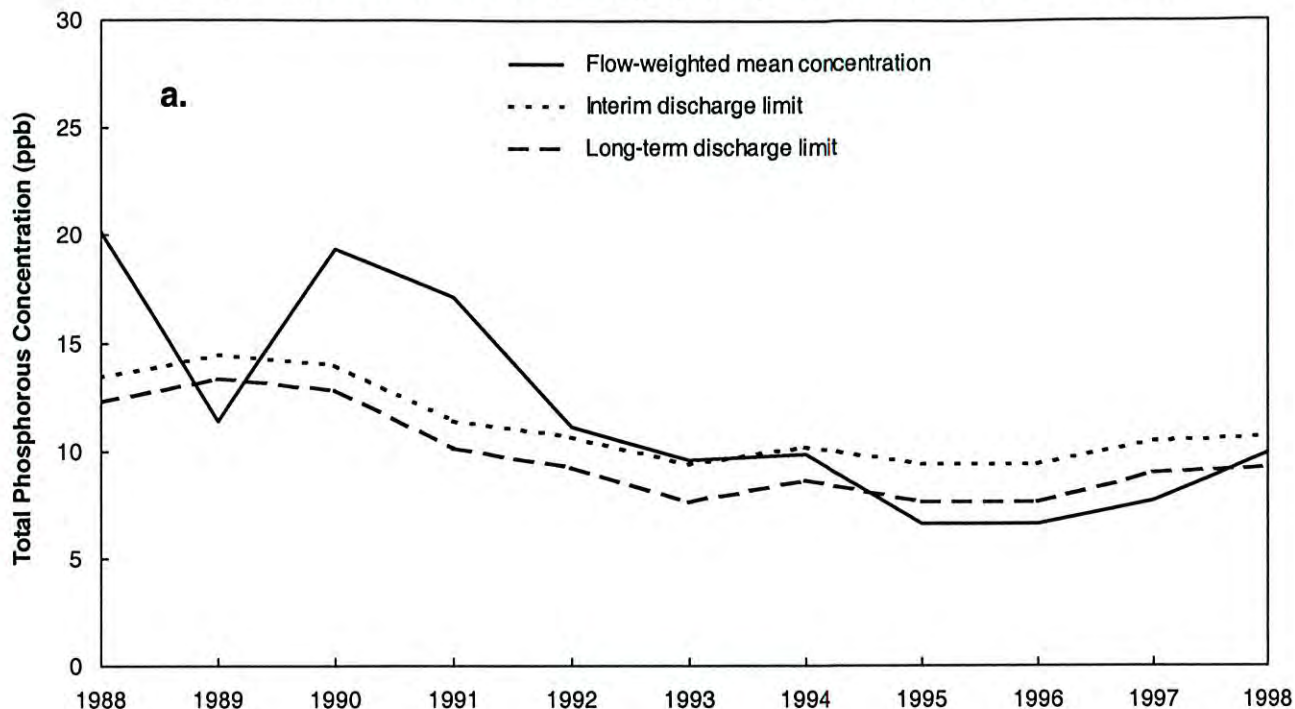


Figure 2. 12-month moving flow-weighted mean total phosphorus concentrations in the inflows to Everglades National Park (ENP) through Shark River Slough compared to the interim and long-term targets. **a.** Concentrations at the end of each water year. **b.** 12-month moving average concentration at the end of each month and the composite concentration for each sampling event.

Discharge Limits for Taylor Slough (S332 and S175) and the Coastal Basins (S18C)

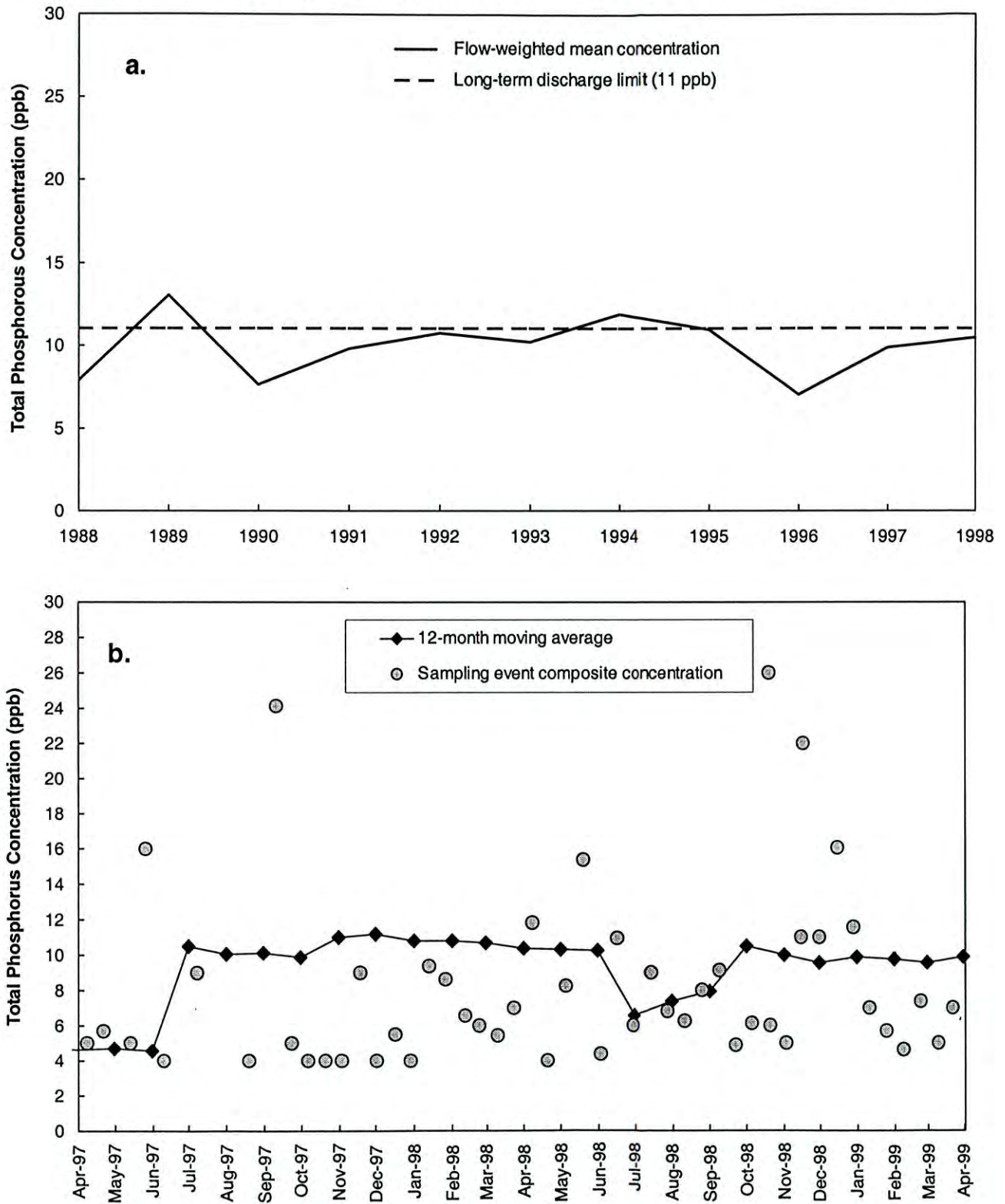


Figure 3. 12-month moving flow-weighted mean total phosphorus concentrations in the inflows to Everglades National Park (ENP) through Taylor Slough and the Coastal Basins compared to the long-term target. **a.** Concentrations at the end of each water year. **b.** 12-month moving average concentration at the end of each month and the composite concentration for each sampling event.

YYYYmmdd	LOX3	LOX4	LOX5	LOX6	LOX7	LOX8	LOX9	LOX10	LOX11	LOX12	LOX13	LOX14	LOX15	LOX16
19940113	0.011	0.011	0.011	0.006	0.006	0.007	0.009	0.007	-0.004	0.005	0.005	0.005	0.004	0.007
19940223	-0.004	0.015	-0.004	-0.004	0.013	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
19940323	0.018	0.008	0.011	0.004	0.006	0.005	0.004	0.043	0.007	0.004	0.008	0.009	0.007	0.008
19940421				0.011	0.011	0.010			0.008	0.009	0.007	0.007	0.009	0.010
19940519				0.007	0.009	0.009			0.007	0.004	0.006	0.007	0.006	0.007
19940627			0.012	0.004	0.004	0.005	0.034		0.020	0.007	0.020	0.006	0.005	0.007
19940725	0.020			0.007	0.010	0.006			0.007	0.007	0.007	0.010	0.010	0.007
19940810				0.011	0.009	0.014			0.009	0.009	0.016	0.007	0.006	0.008
19940919	0.011	0.015	0.015	0.011	0.009	0.014	0.010	0.011	0.009	0.018	0.016	0.015	0.012	0.010
19940920														
19941017			0.014	0.011	0.008	0.008	0.010	0.010	0.011	0.008	0.010	0.011	0.007	0.010
19941018	0.010	0.010		0.008	0.007	0.007	0.010	0.010	0.010	0.008	0.010	0.011	0.007	0.010
19941129	0.007	0.006	0.010	0.008	0.007	0.007	0.010	0.010	0.010	0.006	0.004	0.009	0.020	0.008
19941130				0.005	0.005	0.006	0.005	0.007	0.010	0.006	0.004	0.009	0.020	0.008
19941214	0.008	0.006	0.008	0.005	0.005	0.006	0.005	0.007	0.008	0.005	0.007	0.007	0.020	0.007
19941215				0.006	0.008	0.008	0.010	0.020	0.010	0.005	0.007	0.020	0.020	0.030
19950111	0.040	0.007	0.010	0.006	0.008	0.008	0.010	0.020	0.010	0.005	0.007	0.004	0.006	0.005
19950112	0.010	0.006	0.080	0.005	0.006	0.010	0.010	0.006	0.005	0.007	0.005	0.004	0.006	0.005
19950208	0.010	0.006	0.080	0.005	0.006	0.010	0.010	0.006	0.005	0.007	0.005	0.004	0.006	0.005
19950209				0.008	0.010	0.010			0.005	0.007	0.005	0.004	0.006	0.005
19950308	0.050	0.006	0.020	0.008	0.010	0.020	0.020	0.020	0.008	0.006	0.005	0.004	0.002	0.005
19950309				0.009	0.006	0.006	0.020	0.010	0.010	0.008	0.020	0.009	0.010	0.020
19950403		0.010	0.007	0.009	0.006	0.006	0.020	0.010	0.010	0.008	0.020	0.009	0.010	0.020
19950404				0.020	0.010	0.010			0.006	0.007	0.004	0.004	0.007	0.010
19950515				0.020	0.010	0.010			0.020	0.005	0.010	0.008	0.010	0.078
19950516				0.020	0.009	0.008	0.020	0.020	0.010	0.005	0.010	0.008	0.010	0.010
19950614		0.010	0.010	0.020	0.009	0.008	0.020	0.020	0.010	0.009	0.008	0.010	0.010	0.010
19950615				0.006	0.006	0.008			0.006	0.005	0.004	0.004	0.007	0.010
19950710		0.013	0.013	0.006	0.006	0.008			0.006	0.005	0.004	0.004	0.007	0.010
19950711	0.008	0.005	0.005	0.004	0.009	0.011	0.004	0.012	0.006	0.007	0.007	0.007	0.006	0.006
19950821				0.010	0.007	0.008			0.004	0.004	-0.004	0.005	-0.004	0.005
19950822	0.007	0.005	0.006	0.010	0.007	-0.004	-0.004	0.005	0.007	0.007	0.005	0.008	-0.004	0.005
19950918				0.004	0.006	0.005	0.012	0.005	0.007	-0.004	0.005	0.008	-0.004	0.005
19950919	0.004	0.007	-0.004	0.004	0.006	0.005	0.005	0.005	0.008	0.007	0.007	0.009	0.014	0.006
19951016				0.004	0.006	0.006	0.005	0.006	-0.004	-0.004	-0.004	0.005	0.004	0.006
19951018	-0.004	0.008	0.005	0.004	-0.004	-0.004	-0.004	0.005	0.008	0.007	0.005	0.008	0.004	0.005
19951113				0.005	0.005	0.005	0.005	0.005	0.007	0.007	0.007	0.009	0.014	0.006
19951130	0.006	0.008	0.006	0.006	0.005	0.006	0.005	0.009	0.008	0.007	0.007	0.009	0.004	0.006
19951211				-0.004	0.005	0.005	0.005	0.006	-0.004	-0.004	-0.004	0.005	0.004	0.006
19951212	0.006	0.008	0.006	0.006	0.005	0.006	0.005	0.006	0.006	0.006	0.006	0.005	0.004	0.006
19960110	-0.004	0.023	0.005	-0.004	0.005	0.005	0.005	0.006	0.006	0.006	0.006	0.005	0.004	0.005
19960111	0.006	0.007	0.006	0.007	0.007	0.007	0.008	0.009	0.006	-0.004	0.006	0.005	0.004	0.005
19960205				0.007	0.007	0.007			0.008	-0.004	0.007	0.006	-0.004	0.004
19960206				0.007	0.005	0.008	0.007	0.008	0.008	0.009	0.007	0.006	0.004	0.004
19960207				0.007	0.005	0.008	0.007	0.008	0.008	0.009	0.009	0.009	0.010	0.009
19960304	0.011	0.015	0.008	0.007	0.005	0.008	0.007	0.008	0.007	0.009	0.009	0.009	0.010	0.009
19960305				-0.004	-0.004	0.005	0.007	0.009	0.007	0.005	0.005	0.006	0.005	0.005
19960415	0.009	0.011	0.010	-0.004	0.008	0.008	0.007	0.013	0.007	0.005	0.005	0.006	0.005	0.005
19960416				0.012	0.008	0.008			0.013	0.011	0.011	0.012	0.008	0.014
19960513				0.005	0.004	0.004	-0.004	-0.004	-0.004	0.007	0.004	0.005	-0.004	-0.004
19960514	0.009	0.021	-0.004	0.005	0.004	-0.004	-0.004	-0.004	0.008	0.007	0.004	0.005	-0.004	-0.004
19960610	0.007	0.007	-0.004	-0.004	0.009	-0.004	-0.004	0.008	0.008	0.005	0.008	0.012	0.008	0.009
19960708				0.008	0.008	0.007	0.007		-0.004	0.007	0.004	0.005	-0.004	-0.004
19960709	0.008	0.007	0.007	0.007	0.008	0.007	0.007	0.007	0.008	0.005	0.004	0.005	0.008	0.009
19960805				0.005	0.007	0.006	0.007	0.010	0.006	0.006	0.010	0.005	-0.004	0.009
19960806	0.008	0.008	0.005	0.005	0.007	0.006	0.007	0.010	0.006	0.006	0.010	0.005	-0.004	0.007
19960916				0.005	0.007	0.006	0.007	0.010	0.006	0.006	0.010	0.005	-0.004	0.007
19960917				0.005	0.007	0.006	0.007	0.010	0.006	0.006	0.010	0.005	-0.004	0.007

Shark River Slough Water Quality
 (Total Phosphorus in mg/L, ppm)

-0.004 denotes below MDL measurements.
 X denotes days when wq sampling missed
 more than half of the total flow.
 ** denotes an outlier value.

yyyymmdd	S12A	S12B	S12C	S12D	S333
19971014	0.010	0.006	0.006	0.008	0.021
19971028	0.009	0.006	0.005	0.005	0.007
19971112	0.005	0.005	0.005	0.006	0.007
19971125	0.019	0.008	0.006	0.007	0.007
19971209	0.009	0.007	0.007	0.009	0.012
19971223X	0.008	0.007	0.005		0.007
19980106	0.008	0.006	0.012	0.015	0.016
19980120	0.008	0.007	0.012	0.007	0.007
19980203X	0.008	0.008			0.005
19980204				0.010	
19980217	0.010	0.011	0.009	0.008	0.008
19980303	0.008	0.008	0.006	0.006	0.007
19980317	0.009	0.008	0.007	0.018	0.017
19980330	0.010	0.011	0.006	0.007	0.007
19980414	0.009	0.013	0.013	0.012	0.008
19980427	0.011	0.007	0.007	0.006	0.012
19980514	0.011	0.010	0.009	0.010	0.011
19980521	0.017	0.013	0.011	0.010	0.012
19980526	0.014	0.011	0.012	0.010	0.013
19980602	0.019	0.011	0.012	0.012	0.013
19980609	0.029	0.217**	0.017	0.021	0.027
19980616				0.012	0.020
19980622	0.028	0.017	0.015	0.019	0.019
19980706	0.035	0.019	0.022	0.019	0.019
19980721	0.025	0.022	0.019	0.034	0.016
19980803	0.020	0.023	0.016	0.017	0.016
19980817	0.023	0.041	0.015	0.018	0.020
19980831	0.014		0.011	0.011	0.013
19980915	0.013	0.013	0.012	0.013	0.016
19980928	0.008	0.009	0.007	0.011	0.009
19981012	0.013	0.009	0.009	0.020	0.010
19981026	0.006	0.006	0.010	0.008	0.010
19981109	0.010	0.006	0.007	0.008	0.008
19981123	0.005	0.006	0.007	0.008	0.009
19981208	0.005	0.007	0.006	0.007	0.008
19981221	0.006	0.005	0.006	0.006	0.006
19990104	0.007	0.007	0.007	0.007	0.010
19990120	0.007	0.009	0.006	0.006	0.006
19990201	0.010	0.009	0.007	0.007	0.007
19990216	0.008	0.006	0.006	0.006	0.007
19990301	0.009	0.008	0.006	0.006	0.006
19990317	0.011	0.008	0.008	0.009	0.007
19990329	0.012	0.011	0.010	0.008	0.007

Shark River Slough Daily Flow in cfs

* denotes water quality sampling days.

yyyymmdd	S12A	S12B	S12C	S12D	S333
19990101	0.00	0.00	458.00	417.00	263.00
19990102	0.00	0.00	465.00	420.00	263.00
19990103	0.00	0.00	480.00	431.00	265.00
*19990104	0.00	0.00	499.00	446.00	109.00
19990105	0.00	0.00	512.00	457.00	0.00
19990106	0.00	0.00	340.00	498.00	0.00
19990107	0.00	0.00	234.00	514.00	0.00
19990108	0.00	0.00	238.00	513.00	0.00
19990109	0.00	0.00	239.00	508.00	0.00
19990110	0.00	0.00	243.00	521.00	0.00
19990111	0.00	0.00	248.00	530.00	0.00
19990112	0.00	0.00	249.00	523.00	0.00
19990113	0.00	0.00	248.00	521.00	0.00
19990114	0.00	0.00	249.00	519.00	0.00
19990115	0.00	0.00	250.00	517.00	0.00
19990116	0.00	0.00	250.00	518.00	0.00
19990117	0.00	0.00	251.00	516.00	0.00
19990118	0.00	0.00	251.00	517.00	0.00
19990119	0.00	0.00	253.00	518.00	0.00
*19990120	0.00	0.00	221.00	513.00	128.00
19990121	0.00	0.00	193.00	508.00	273.00
19990122	0.00	0.00	197.00	498.00	270.00
19990123	0.00	0.00	195.00	490.00	268.00
19990124	0.00	0.00	198.00	498.00	269.00
19990125	0.00	0.00	201.00	510.00	117.00
19990126	0.00	0.00	202.00	507.00	0.00
19990127	0.00	0.00	202.00	502.00	157.00
19990128	0.00	0.00	201.00	448.00	269.00
19990129	0.00	0.00	201.00	405.00	269.00
19990130	0.00	0.00	201.00	402.00	267.00
19990131	0.00	0.00	202.00	400.00	267.00
*19990201	0.00	0.00	201.00	397.00	266.00
19990202	0.00	0.00	201.00	395.00	266.00
19990203	0.00	0.00	175.00	395.00	266.00
19990204	0.00	0.00	147.00	393.00	310.00
19990205	0.00	0.00	147.00	390.00	347.00
19990206	0.00	0.00	147.00	386.00	345.00
19990207	0.00	0.00	146.00	383.00	344.00
19990208	0.00	0.00	145.00	381.00	343.00
19990209	0.00	0.00	145.00	378.00	342.00
19990210	0.00	0.00	82.00	377.00	342.00
19990211	0.00	0.00	35.00	375.00	340.00
19990212	0.00	0.00	35.00	377.00	341.00
19990213	0.00	0.00	36.00	388.00	345.00
19990214	0.00	0.00	36.00	388.00	346.00
19990215	0.00	0.00	36.00	381.00	344.00
*19990216	0.00	0.00	36.00	375.00	342.00
19990217	0.00	0.00	36.00	366.00	340.00
19990218	0.00	0.00	14.00	386.00	339.00
19990219	0.00	0.00	0.00	382.00	765.00
19990220	0.00	0.00	0.00	362.00	1200.00
19990221	0.00	0.00	0.00	352.00	1180.00
19990222	0.00	0.00	0.00	352.00	876.00
19990223	0.00	0.00	0.00	356.00	622.00
19990224	0.00	0.00	0.00	353.00	473.00

.19990225	0.00	0.00	0.00	349.00	375.00
19990226	0.00	0.00	0.00	346.00	374.00
19990227	0.00	0.00	0.00	340.00	373.00
19990228	0.00	0.00	0.00	333.00	372.00
*19990301	0.00	0.00	0.00	330.00	371.00
19990302	0.00	0.00	0.00	325.00	370.00
19990303	0.00	0.00	0.00	255.00	371.00
19990304	0.00	0.00	0.00	221.00	375.00
19990305	0.00	0.00	0.00	218.00	373.00
19990306	0.00	0.00	0.00	214.00	372.00
19990307	0.00	0.00	0.00	212.00	372.00
19990308	0.00	0.00	0.00	210.00	369.00
19990309	0.00	0.00	0.00	205.00	368.00
19990310	0.00	0.00	0.00	72.00	750.00
19990311	0.00	0.00	0.00	0.00	1110.00
19990312	0.00	0.00	0.00	0.00	1100.00
19990313	0.00	0.00	0.00	0.00	1080.00
19990314	0.00	0.00	0.00	0.00	1060.00
19990315	0.00	0.00	0.00	0.00	1060.00
19990316	0.00	0.00	0.00	0.00	1050.00
*19990317	0.00	0.00	0.00	0.00	1040.00
19990318	0.00	0.00	0.00	0.00	1030.00
19990319	0.00	0.00	0.00	0.00	1020.00
19990320	0.00	0.00	0.00	0.00	1010.00
19990321	0.00	0.00	0.00	0.00	1000.00
19990322	0.00	0.00	0.00	0.00	985.00
19990323	0.00	0.00	0.00	0.00	974.00
19990324	0.00	0.00	0.00	0.00	965.00
19990325	0.00	0.00	0.00	0.00	953.00
19990326	0.00	0.00	0.00	0.00	942.00
19990327	0.00	0.00	0.00	0.00	928.00
19990328	0.00	0.00	0.00	0.00	909.00
*19990329	0.00	0.00	0.00	0.00	896.00
19990330	0.00	0.00	0.00	0.00	591.00
19990331	0.00	0.00	0.00	0.00	297.00

Taylor Slough Water Quality
(Total Phosphorus in mg/L, ppm)

-0.004 denotes below MDL measurements.

yyyymmdd	S175	S332	S18C
19971015	0.016	0.017	0.004
19971028	0.006	0.007	0.012
19971113	0.007	0.007	0.005
19971125	0.015	0.006	
19971210	0.015	0.005	0.006
19971223	0.007	0.007	0.007
19980107	-0.004	0.009	0.018
19980120	0.005	-0.004	-0.004
19980204	0.012	0.004	0.007
19980218	0.015	0.018	0.013
19980304	0.006	0.005	0.004
19980318	0.008	0.013	0.009
19980331	0.006	0.006	0.006
19980415	0.004	0.009	
19980428	0.005	0.008	0.006
19980513	0.006	0.008	0.005
19980527	0.008	0.008	
19980610	0.008	0.023	0.006
19980623	0.005	0.010	-0.004
19980707	0.004	0.005	0.011
19980721			0.026
19980722	0.006	0.006	
19980804	0.005	0.005	0.007
19980817		0.011	
19980818	0.010		0.022
19980901	0.005	0.006	0.011
19980916	0.004	0.012	0.019
19980929	0.007	0.010	0.013
19981013	0.006	0.005	0.010
19981027	0.009	0.007	0.004
19981110		0.005	-0.004
19981124	0.006	0.007	0.008
19981209	0.005	0.005	0.011
19981222	0.012	0.007	0.005
19990105	0.006	0.006	0.006
19990119	0.005	0.007	0.008
19990202	0.005	0.006	0.004
19990216	0.006	0.004	0.006
19990302	0.004	0.004	-0.004
19990316	0.006	0.005	0.004
19990331	0.008	0.006	0.006

Taylor Slough Daily Flow in cfs

* denotes water quality sampling days.

yyyymmdd	S175	S332	S18C
19990101	0.00	296.51	-24.00
19990102	0.00	341.17	12.00
19990103	0.00	463.15	-4.90
19990104	19.76	325.35	-15.00
*19990105	206.66	185.87	33.00
19990106	241.30	184.82	29.00
19990107	142.51	184.82	22.00
19990108	142.80	184.74	77.00
19990109	79.74	184.74	57.00
19990110	232.09	184.82	111.00
19990111	325.12	183.85	133.00
19990112	239.40	184.82	119.00
19990113	118.11	184.66	131.00
19990114	140.15	184.73	158.00
19990115	109.36	184.74	146.00
19990116	66.31	184.82	114.00
19990117	52.41	184.82	90.00
19990118	19.09	184.82	106.00
*19990119	4.34	185.03	59.00
19990120	0.00	184.82	65.00
19990121	0.00	184.82	107.00
19990122	0.00	184.70	45.00
19990123	0.00	184.90	6.50
19990124	156.12	184.74	201.00
19990125	249.31	184.82	268.00
19990126	246.50	184.82	209.00
19990127	241.91	184.82	130.00
19990128	117.90	184.74	88.00
19990129	144.42	184.74	77.00
19990130	78.84	184.82	79.00
19990131	22.23	184.83	95.00
19990201	0.00	184.83	29.00
*19990202	0.00	184.82	1.40
19990203	0.00	184.82	7.60
19990204	0.00	184.82	15.00
19990205	0.00	184.82	10.00
19990206	0.00	184.74	35.00
19990207	0.00	184.82	39.00
19990208	0.00	184.82	4.50
19990209	0.00	184.74	3.40
19990210	47.33	177.75	56.00
19990211	0.00	184.82	0.00
19990212	0.00	184.82	21.00
19990213	0.00	184.90	18.00
19990214	0.00	184.82	-6.00
19990215	0.00	184.82	-13.00
*19990216	0.00	184.82	3.60
19990217	0.00	138.85	5.50
19990218	0.00	29.44	12.00
19990219	0.00	5.21	32.00
19990220	0.00	5.18	4.20
19990221	0.00	5.18	-14.00
19990222	0.00	5.17	-20.00
19990223	0.00	5.17	-16.00
19990224	0.00	5.16	5.00

.19990225	0.00	5.16	55.00
19990226	0.00	5.16	29.00
19990227	0.00	5.16	13.00
19990228	0.00	5.16	28.00
19990301	0.00	5.15	-8.50
*19990302	0.00	5.15	3.30
19990303	0.00	4.77	5.00
19990304	0.00	5.15	-16.00
19990305	0.00	5.15	5.90
19990306	0.00	5.15	22.00
19990307	0.00	5.15	0.45
19990308	0.00	5.15	-4.50
19990309	0.00	5.14	8.10
19990310	0.00	5.12	14.00
19990311	0.00	5.46	-13.00
19990312	0.00	12.08	0.32
19990313	0.00	5.15	16.00
19990314	0.00	5.15	9.60
19990315	0.00	5.15	21.00
*19990316	0.00	5.15	2.00
19990317	0.00	5.15	35.00
19990318	0.00	5.15	60.00
19990319	0.00	5.15	3.10
19990320	0.00	5.15	38.00
19990321	0.00	5.15	35.00
19990322	0.00	5.15	14.00
19990323	0.00	5.15	19.00
19990324	0.00	5.15	0.00
19990325	0.00	4.54	5.10
19990326	0.00	5.53	13.00
19990327	0.00	5.14	-34.00
19990328	0.00	5.14	-23.00
19990329	0.00	5.14	5.10
19990330	0.00	5.14	17.00
*19990331	0.00	5.08	-5.70