Settlement Agreement

October - December 2002

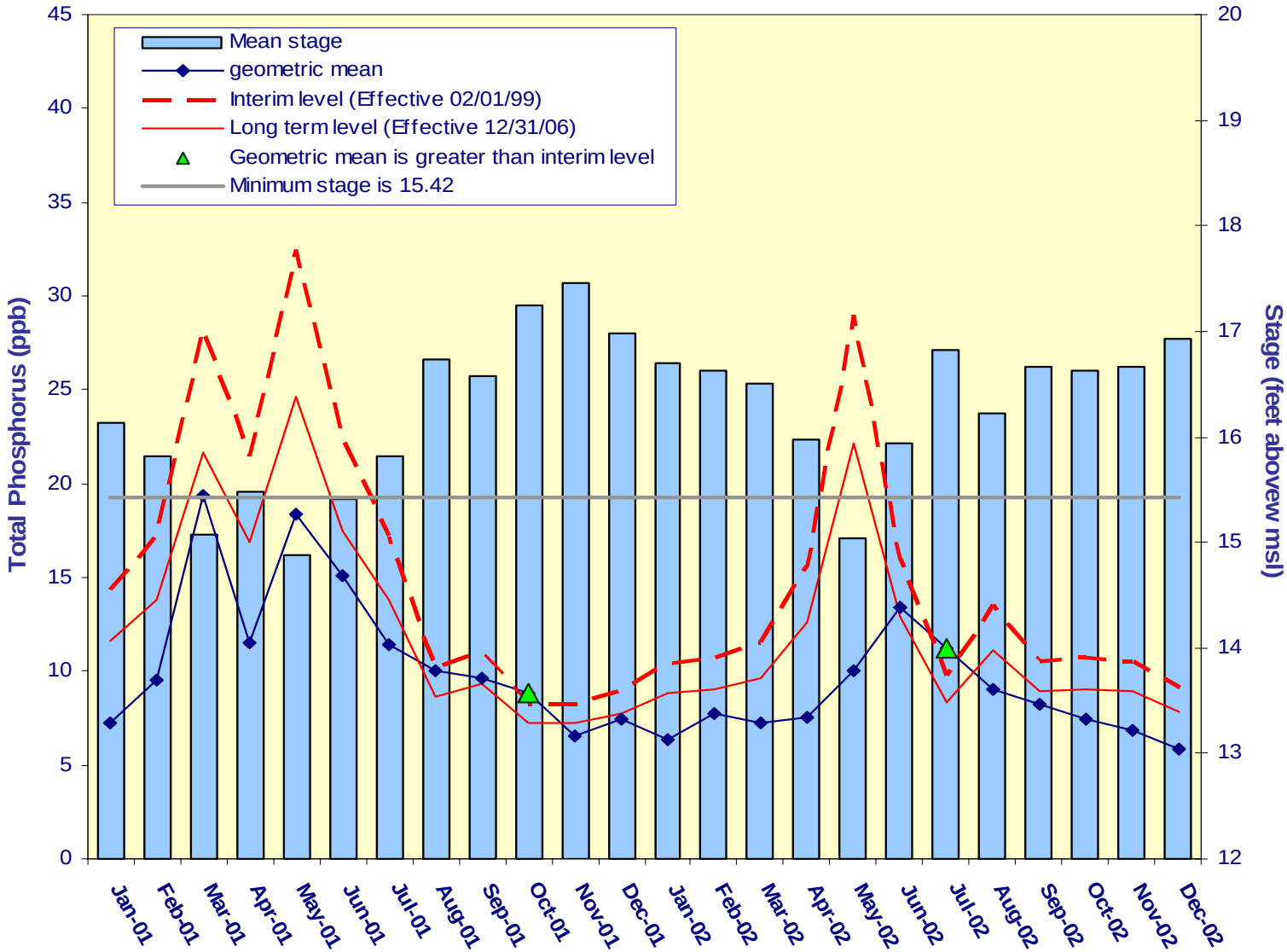


Figure 1. Monthly total phosphorus geometric mean concentrations for the A.R.M. Loxahatchee National Wildlife Refuge compared to the interim and long-term levels. The calculated level concentrations are adjusted for fluctuations in stage.

Table 1. Loxahatchee National Wildlife Refuge Total Phosphorus Compliance Tracking.

Month - Year	Geometric Mean Concentration (ppb)	Interim Level (ppb) Effective 2/1/99	Long Term Level (ppb) Effective 12/31/06	Average Stage (ft,NGVD)	Number of TP Samples	Number of Stage Measure-ments
Jan-2001	7.2	14.3	11.7	16.13	8	3
Feb-2001	9.6	17.2	13.8	15.82	9	3
Mar-2001	19.3	0.0	0.0	15.08	2	3
Apr-2001	11.5	21.4	16.9	15.48	6	3
May-2001	18.3	0.0	0.0	14.88	2	3
Jun-2001	15.1	0.0	0.0	15.42	9	3
Jul-2001	11.4	17.2	13.8	15.82	11	3
Aug-2001	10.0	10.1	8.6	16.74	14	3
Sep-2001	9.6	11.1	9.3	16.57	14	3
Oct-2001	8.8	8.3	7.2	17.24	14	3
Nov-2001	6.6	8.3	7.2	17.46	14	3
Dec-2001	7.5	8.9	7.7	16.99	14	3
Jan-2002	6.4	10.4	8.8	16.69	14	3
Feb-2002	7.8	10.7	9.1	16.63	14	3
Mar-2002	7.3	11.5	9.7	16.50	14	3
Apr-2002	7.5	15.6	12.7	15.98	11	3
May-2002	10.0	0.0	0.0	15.04	3	3
Jun-2002	13.4	16.0	12.9	15.94	10	3
Jul-2002	11.2	9.7	8.3	16.82	14	3
Aug-2002	9.0	13.5	11.1	16.22	12	3
Sep-2002	8.2	10.6	8.9	16.66	12	3
Oct-2002	7.5	10.7	9.0	16.64	12	3
Nov-2002	6.9	10.5	8.9	16.66	12	3
Dec-2002	5.9	9.2	7.9	16.93	14	3

Notes: *(1) Average Stage is calculated using stage elevations at three stations on the sampling date*
(2) Highlighted values indicate months when exceedances occurred

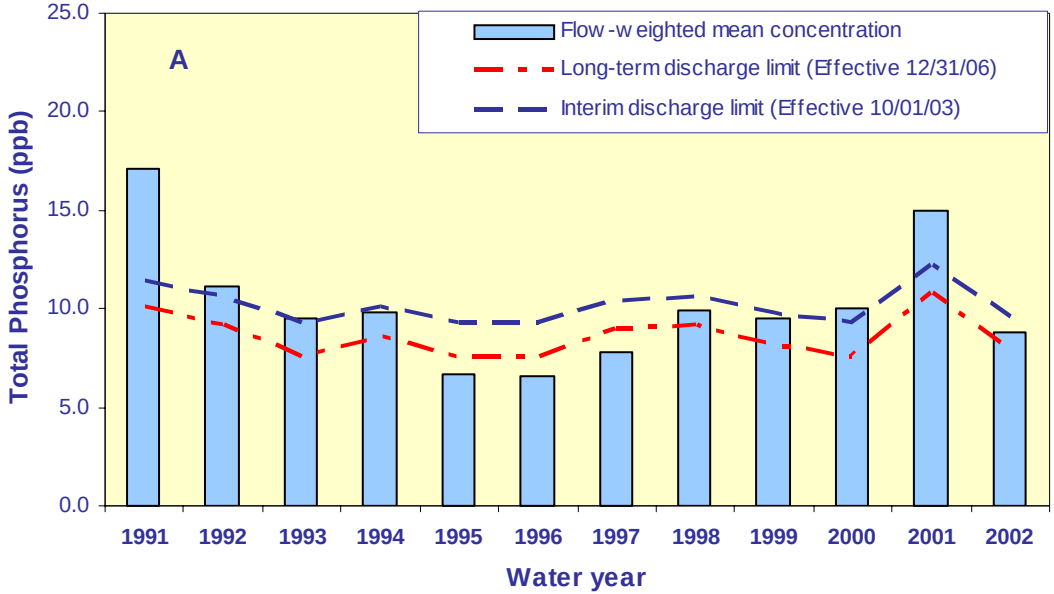


Figure 2. Total phosphorus flow-weighted mean concentrations (fwmc) in inflows to Everglades National Park through Shark River Slough.
A. The 12-month moving average fwmc at the end of each water year compared to the total phosphorus interim and long-term limits.

B. The 12-month moving average fwmc at the end of each month and the composite total phosphorus concentration for each sampling event.
*(star): denotes arithmetic average for May-02 and June-02 samples as there was no flow on these sampling dates.

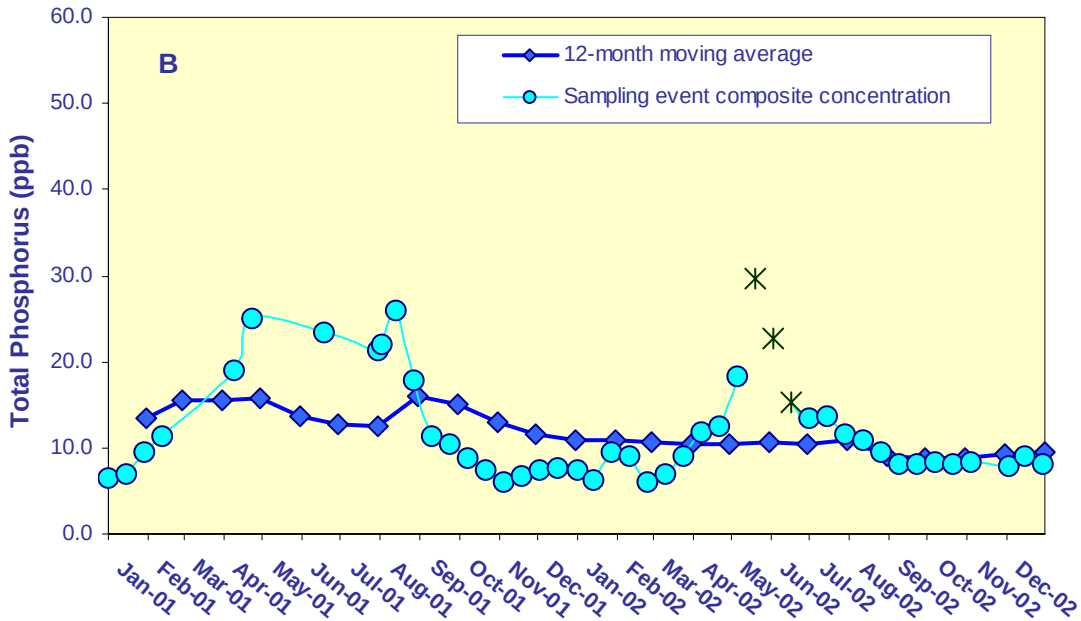


Table 2. Shark River Slough Total Phosphorus Concentration Compliance Tracking

12-Month Period Ending On	Total Period Flow	Flow Weighted Mean Total Phosphorus	Interim Limit (ppb)	Long Term Limit (ppb)	Percent of Sampling Events Greater than 10 ppb	
			Effective	Effective	(%)	
	(Kac-ft)	(ppb)	10/1/2003	12/31/2006	Guideline	Observed
31-Jan-01	367.0	13.5	12.5	11.3	59.8	***80.0***
28-Feb-01	298.4	15.5	12.9	11.7	62.2	***85.7***
31-Mar-01	275.9	15.6	13.0	11.9	63.1	***84.6***
30-Apr-01	250.4	15.8	13.2	12.0	64.0	***84.6***
31-May-01	230.9	13.7	13.3	12.1	64.7	***81.8***
30-Jun-01	221.0	12.8	13.3	12.2	65.1	***80.0***
31-Jul-01	212.8	12.5	13.4	12.2	65.4	***78.9***
31-Aug-01	324.0	16.0	12.8	11.6	61.3	***78.9***
30-Sep-01	419.7	15.0	12.2	11.0	57.9	***78.9***
31-Oct-01	502.4	13.0	11.8	10.5	55.2	***68.4***
30-Nov-01	599.2	11.5	11.3	10.0	52.1	***57.9***
31-Dec-01	677.9	11.0	10.9	9.6	49.8	***52.6***
31-Jan-02	695.1	10.9	10.8	9.5	49.3	***52.6***
28-Feb-02	728.3	10.7	10.7	9.3	48.3	45.0
31-Mar-02	779.2	10.5	10.5	9.0	46.9	40.9
30-Apr-02	797.1	10.5	10.4	8.9	46.4	40.9
31-May-02	800.7	10.6	10.4	8.9	46.3	43.5
30-Jun-02	806.8	10.5	10.4	8.9	46.2	40.9
31-Jul-02	925.7	10.9	9.9	8.3	43.2	***45.8***
31-Aug-02	956.7	9.1	9.7	8.1	42.5	39.1
30-Sep-02	996.3	8.8	9.6	7.9	41.6	30.4
31-Oct-02	945.7	8.9	9.8	8.2	42.7	30.4
30-Nov-02	830.3	9.3	10.3	8.8	45.6	31.8
31-Dec-02	758.0	9.5	10.6	9.1	47.5	30.4

Notes: Italicized values exceeded allowed percentage

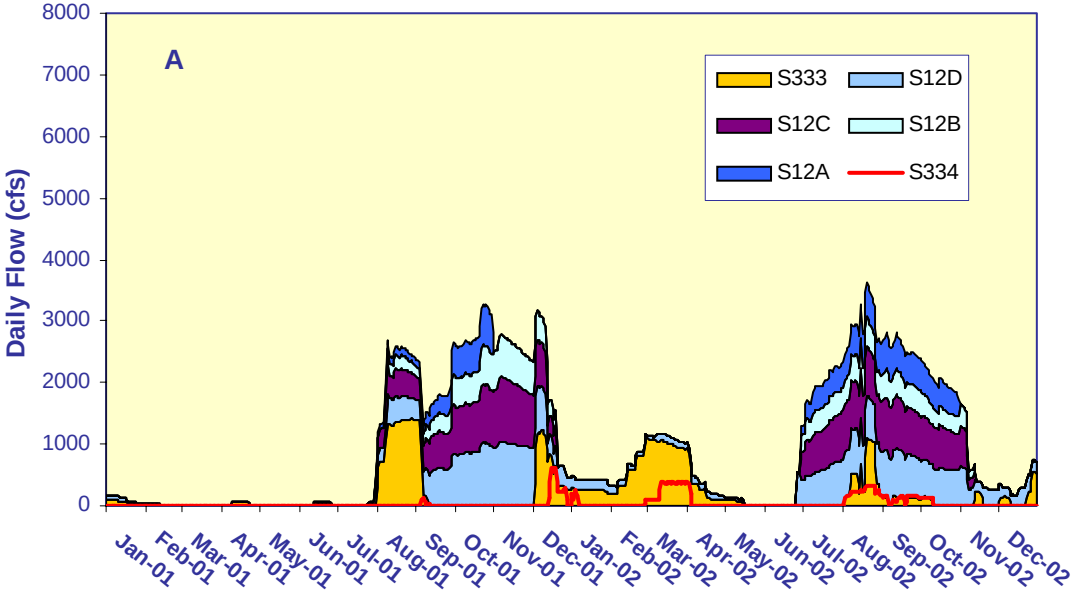
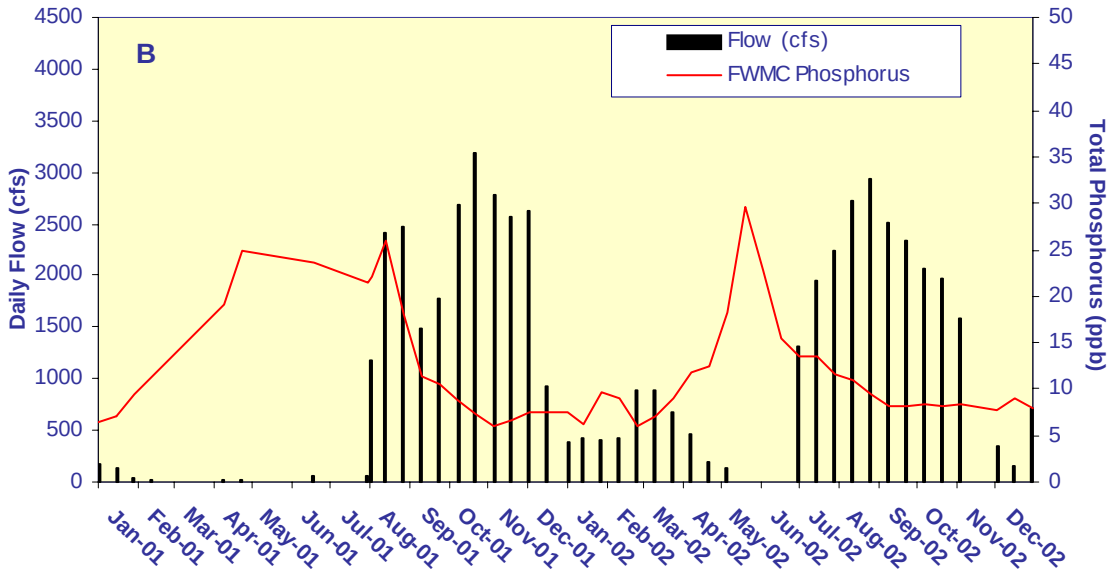


Figure 3. A. Daily flows into Shark River Slough by structure.

Figure 3. B. The relationship between daily flow at Shark River Slough structures and the corresponding flow-weighted mean total phosphorus concentrations for individual sampling events.



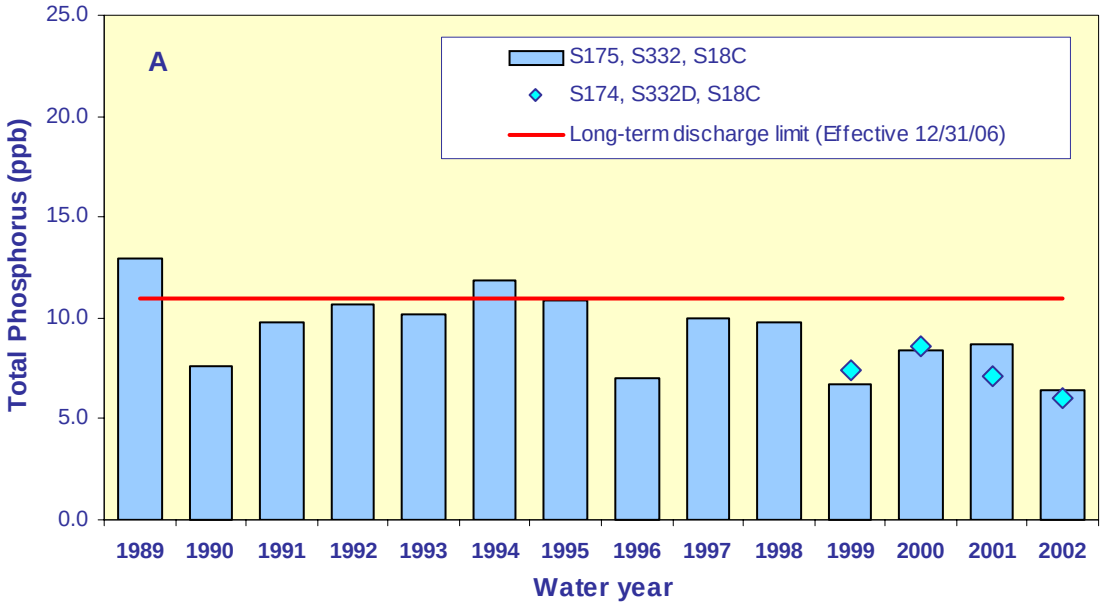


Figure 4. Total phosphorus flow-weighted mean concentrations (fwmc) in inflows to Everglades National Park through Taylor Slough and the Coastal Basins.
A. The 12-month moving average fwmc at the end of each water year compared to the 11 ppb long-term total phosphorus limit.

B. The 12-month moving average fwmc at the end of each month and the composite total phosphorus concentration for each sampling event.

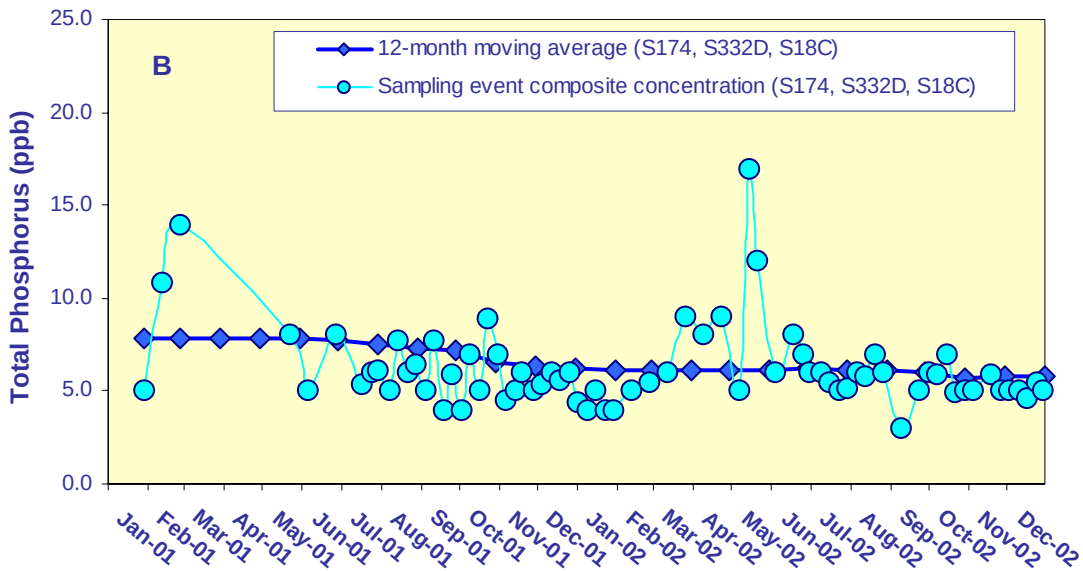


Table 3. Taylor Slough and the Coastal Basins Total Phosphorus Concentration Compliance Tracking

12-Month Period Ending On	Total Period Flow	Flow Weighted Mean Total Phosphorus	Limit (Effective 12/31/06)	Percent of Sampling Events Greater than 10 ppb	
			(ppb)	(%)	
	(Kac-ft)	(ppb)	Long Term	Guideline	Observed
31-Jan-01	307.9	7.8	11.0	53.1	15.4
28-Feb-01	281.6	7.9	11.0	53.1	21.6
31-Mar-01	269.5	7.9	11.0	53.1	22.9
30-Apr-01	260.1	7.9	11.0	53.1	20.6
31-May-01	254.1	7.8	11.0	53.1	12.9
30-Jun-01	249.0	7.8	11.0	53.1	10.0
31-Jul-01	243.0	7.5	11.0	53.1	10.7
31-Aug-01	237.1	7.3	11.0	53.1	11.5
30-Sep-01	235.1	7.2	11.0	53.1	11.5
31-Oct-01	235.2	6.5	11.0	53.1	8.0
30-Nov-01	269.7	6.3	11.0	53.1	7.4
31-Dec-01	296.5	6.2	11.0	53.1	6.7
31-Jan-02	316.0	6.1	11.0	53.1	5.9
28-Feb-02	320.6	6.1	11.0	53.1	0.0
31-Mar-02	325.9	6.1	11.0	53.1	0.0
30-Apr-02	331.1	6.1	11.0	53.1	0.0
31-May-02	336.4	6.1	11.0	53.1	5.0
30-Jun-02	364.3	6.2	11.0	53.1	4.9
31-Jul-02	392.1	6.1	11.0	53.1	4.7
31-Aug-02	388.3	6.1	11.0	53.1	4.7
30-Sep-02	357.1	6.0	11.0	53.1	4.9
31-Oct-02	301.2	5.7	11.0	53.1	4.8
30-Nov-02	256.9	5.8	11.0	53.1	5.0
31-Dec-02	235.1	5.8	11.0	53.1	4.9

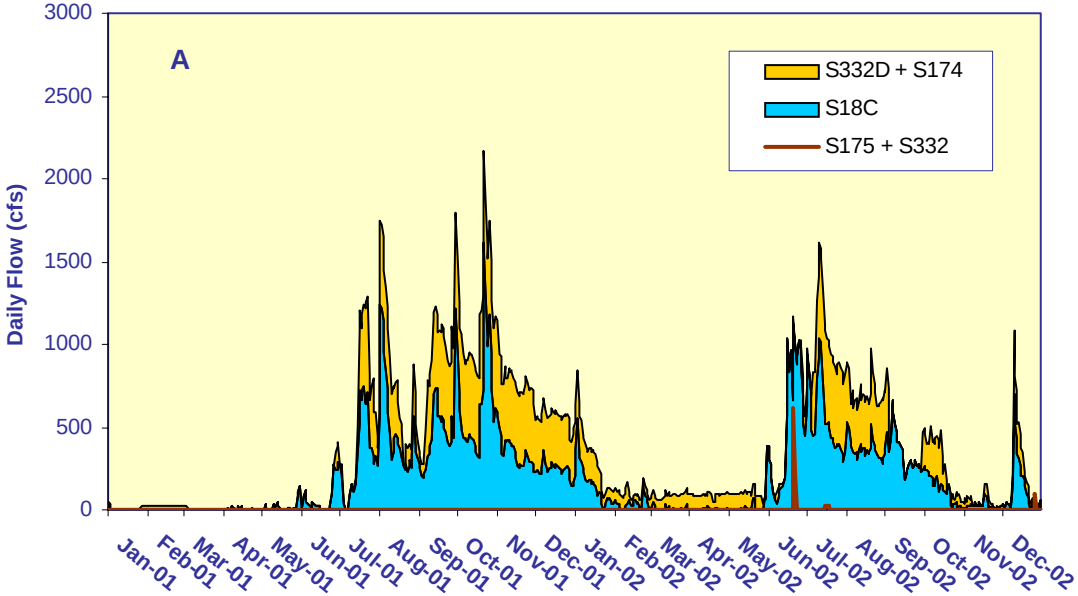
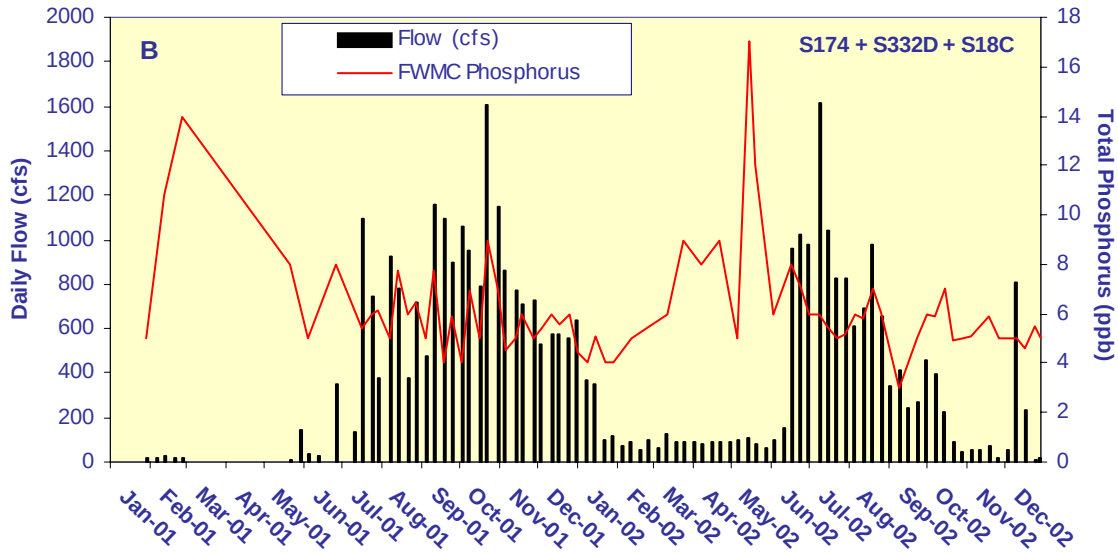


Figure 5. A. Daily flows into Everglades National Park through Taylor Slough and S18C.

B. The relationship between daily flows at Taylor Slough structures and S18C and the corresponding flow-weighted mean total phosphorus concentrations for individual sampling events.



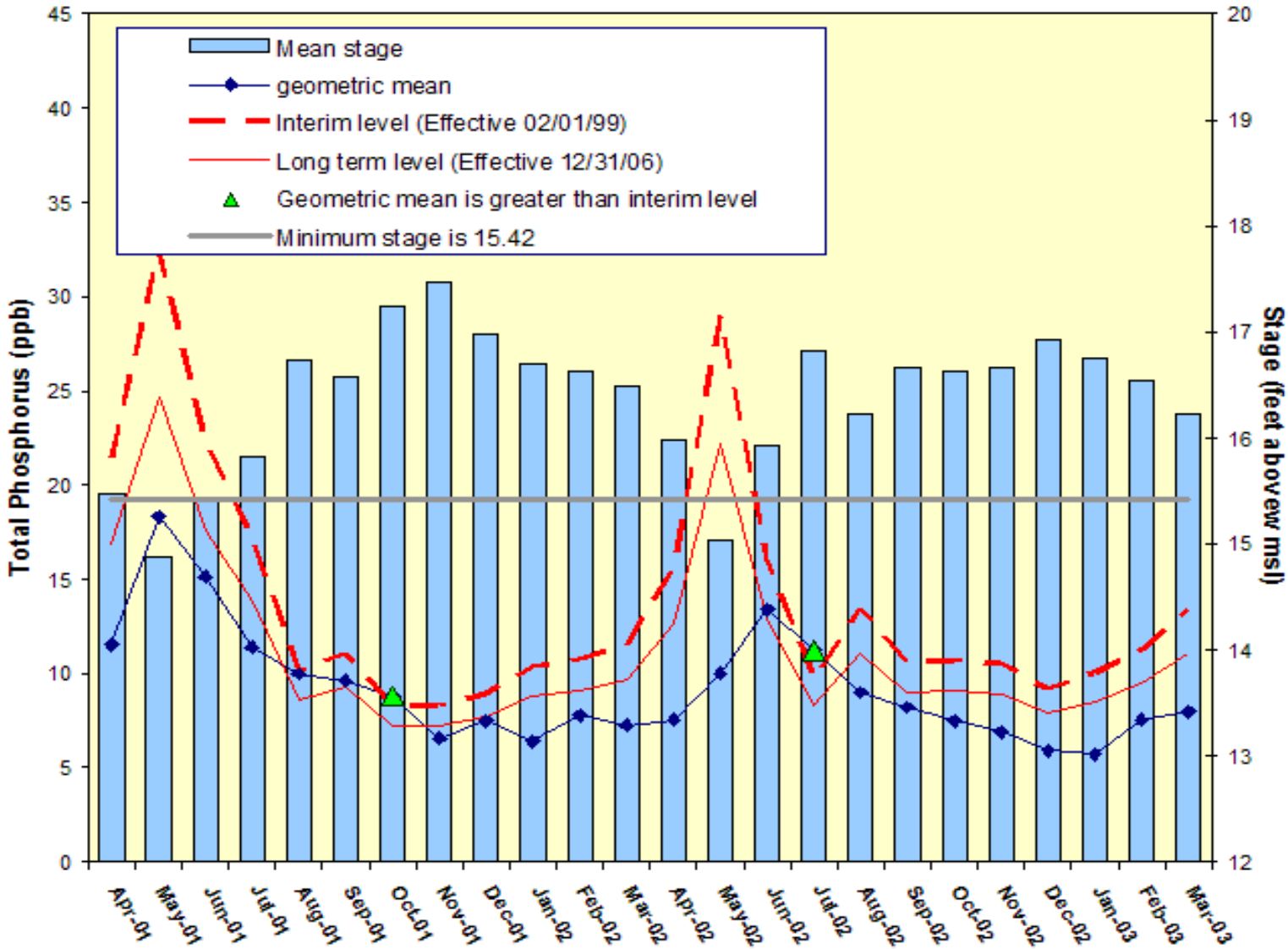


Figure 6. Monthly total phosphorus geometric mean concentrations for the A.R.M. Loxahatchee National Wildlife Refuge compared to the interim and long-term levels. The calculated level concentrations are adjusted for fluctuations in stage.

Table 4. Loxahatchee National Wildlife Refuge Total Phosphorus Compliance Tracking.

Month - Year	Geometric Mean Concentration (ppb)	Interim Level (ppb) Effective 2/1/99	Long Term Level (ppb) Effective 12/31/06	Average Stage (ft,NGVD)	Number of TP Samples	Number of Stage Measure-ments
Apr-2001	11.5	21.4	16.9	15.48	6	3
May-2001	18.3	0.0	0.0	14.88	2	3
Jun-2001	15.1	0.0	0.0	15.42	9	3
Jul-2001	11.4	17.2	13.8	15.82	11	3
Aug-2001	10.0	10.1	8.6	16.74	14	3
Sep-2001	9.6	11.1	9.3	16.57	14	3
Oct-2001	8.8	8.3	7.2	17.24	14	3
Nov-2001	6.6	8.3	7.2	17.46	14	3
Dec-2001	7.5	8.9	7.7	16.99	14	3
Jan-2002	6.4	10.4	8.8	16.69	14	3
Feb-2002	7.8	10.7	9.1	16.63	14	3
Mar-2002	7.3	11.5	9.7	16.50	14	3
Apr-2002	7.5	15.6	12.7	15.98	11	3
May-2002	10.0	0.0	0.0	15.04	3	3
Jun-2002	13.4	16.0	12.9	15.94	10	3
Jul-2002	11.2	9.7	8.3	16.82	14	3
Aug-2002	9.0	13.5	11.1	16.22	12	3
Sep-2002	8.2	10.6	8.9	16.66	12	3
Oct-2002	7.5	10.7	9.0	16.64	12	3
Nov-2002	6.9	10.5	8.9	16.66	12	3
Dec-2002	5.9	9.2	7.9	16.93	14	3
Jan-2003	5.7	10.0	8.5	16.76	13	3
Feb-2003	7.5	11.3	9.5	16.54	11	3
Mar-2003	8.0	13.4	11.0	16.23	9	3

Notes: *(1) Average Stage is calculated using stage elevations at three stations on the sampling date*
(2) Highlighted values indicate months when exceedances occurred