

Settlement Agreement Report

Third Quarter
July – September 2021

Prepared for the
Technical Oversight Committee

May 9, 2022
(Original: February 10, 2020)



This report has been revised from earlier versions to include
Shark River Slough compliance results using the final approved flow
data for federal Water Year 2021 (October 1, 2020 – September 30, 2021).

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PURPOSE

The South Florida Water Management District has prepared this report to provide a quarterly update to the Everglades Technical Oversight Committee on the compliance status with total phosphorus levels or limits defined in the 1991 Settlement Agreement, entered as a Consent Decree in 1992, and modified in 1995. The areas of interest in this report include the interior marsh stations in the Arthur R. Marshall Loxahatchee National Wildlife Refuge and two discharges to Everglades National Park: inflows to Shark River Slough and inflows to Taylor Slough and Coastal Basins.

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
cfs	cubic feet per second
EAA	Everglades Agricultural Area
ENP	Everglades National Park
Exp.	Expansion
FEB	flow equalization basin
ft NGVD29	feet relative to the National Geodetic Vertical Datum of 1929
FWMC	flow-weighted mean concentration
kac-ft	thousand acre-feet
kac-ft/yr	thousand acre-feet per year
OFW	Outstanding Florida Waters
ppb	parts per billion
Refuge	Arthur R. Marshall Loxahatchee National Wildlife Refuge
STA	stormwater treatment area
TOC	Everglades Technical Oversight Committee
TP	total phosphorus
USACE	United States Army Corps of Engineers
WCA	water conservation area
WMA	Wildlife Management Area

EXECUTIVE SUMMARY

This report fulfills the South Florida Water Management District's reporting requirements under the 1991 Settlement Agreement, entered as a Consent Decree in 1992 and modified in 1995, for the third quarter of 2021 (July - September 2021). Total phosphorus (TP) compliance highlights for this period are summarized below for the Arthur R. Marshall Loxahatchee National Wildlife Refuge (Refuge) and inflows to Everglades National Park (ENP) (**Table 1** and **Figure 1**):

- **Refuge:** The geometric mean TP concentrations were below the long-term levels for July, August, and September 2021.
- **Shark River Slough (SRS):** The TP flow-weighted mean concentration (FWMC) was above the long-term limit (LTL) for the 12-month period ending on September 30, 2021. Therefore, SRS TP FWMC did not meet the LTL during the federal Water Year (WY), WY2021 (October 1, 2020 – September 30, 2021).
- **Taylor Slough and Coastal Basins:** All three 12-month TP FWMCs were below the 12-month long-term limit of 11 parts per billion (ppb) during the third quarter.

Table 1. Third quarter 2021 TP compliance results for the Refuge, TP calculation tracking results for Shark River Slough, and TP calculation tracking results for Taylor Slough and Coastal Basins.

Month	Geometric Mean TP Concentration (ppb)		Long-Term Level (ppb)	Mean Stage (feet NGVD 29)	Number of Samples
Arthur R. Marshall Loxahatchee National Wildlife Refuge					
Jul 2021	11.1		12.5	16.00	8
Aug 2021	8.6		9.7	16.49	13
Sep 2021	7.0		8.4	16.79	13
12-Month Period Ending	Total Flow (kac-ft)	12-Month TP FWMC (ppb)	Long-Term Limit (ppb)	Percent of Sampling Events Greater than 10 ppb	
				Observed (%)	Guideline (%)
Everglades National Park – Shark River Slough					
Jul 2021	1,853.0	7.8	7.6	34.6	40.1
Aug 2021	1,780.0	7.9	7.6	46.2	40.1
Sep 2021	1,733.0	8.2	7.6	50.0	40.1
Everglades National Park – Taylor Slough and Coastal Basins					
Jul 2021	430.1	5.4	11.0	2.1	53.1
Aug 2021	410.1	5.5	11.0	2.0	53.1
Sep 2021	399.5	5.6	11.0	2.1	53.1

Notes:

- Key to units: ppb – parts per billion (values are actually in µg/L [micrograms per liter], which, for the purposes of this report, are equivalent to ppb); ft NGVD29 – elevation in feet relative to the National Geodetic Vertical Datum of 1929; and kac-ft – thousand acre-feet.
- Compliance for inflows to ENP (Shark River Slough, and Taylor Slough and Coastal Basins) is evaluated annually based on the 12-month TP FWMC for the federal water year ending on September 30. As adopted by the Everglades Technical Oversight Committee (TOC) August 2020, the compliance results shown were calculated using "Method 1.5" for Shark River Slough and "Method 3" for Taylor Slough and Coastal Basins (detailed later in this report).

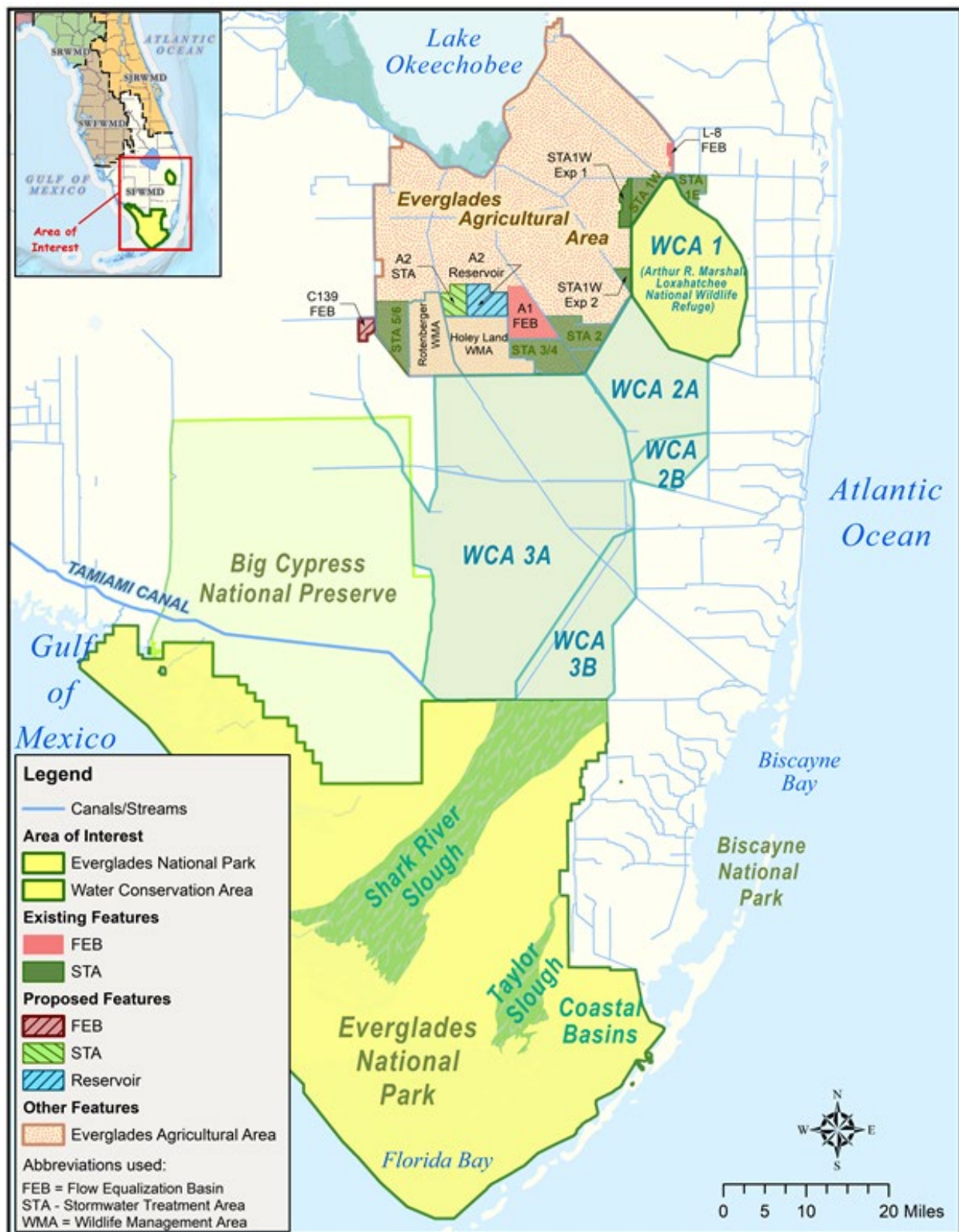


Figure 1. Areas of interest.

ARTHUR R. MARSHALL LOXAHATCHEE NATIONAL WILDLIFE REFUGE

Background

The 1991 Settlement Agreement ended the Everglades lawsuit and was entered into by the federal government, the State of Florida, and the South Florida Water Management District. The subsequent Consent Decree, as modified in 1995, specified that interim and long-term TP concentration levels for the Refuge must be met by February 1, 1999, and December 31, 2006, respectively. Both the interim and long-term concentration levels vary monthly because they are calculated as a function of water stage measured at gaging stations 1-7, 1-8C, and 1-9 within the Refuge. The stage range within which the interim and long-term concentration levels are applicable is 15.42 to 17.14 feet relative to the National Geodetic Vertical Datum of 1929 (feet NGVD29). The monthly TP concentrations are determined from water samples collected at 14 interior marsh stations, LOX3 through LOX16 (**Figure 2**). As required in the Consent Decree, the concentrations are converted to a geometric mean, which is compared to the long-term concentration level. Monthly TP data for each station for the past 36 months are provided in Appendix A. The calculation methods specified in the Consent Decree are provided in Appendix D.

Reporting Period Update

Eight stations were sampled in July and thirteen stations in August and September 2021. TP samples were not collected at LOX3, LOX5, LOX7, LOX8, LOX9, and LOX10 in July; LOX3 in August; and LOX11 in September because the water depth was less than 0.1 meter at the time of sampling.

Sampling day average stages in the Refuge were 16.00, 16.49, and 16.79 ft NGVD29 in July, August, and September 2021, respectively (**Figure 3** and **Table 2**). The geometric means calculated from TP concentrations measured in water samples collected in July, August, and September 2021 were 11.1, 8.6, and 7.0 ppb, respectively, which were below the long-term levels (**Table 2**).

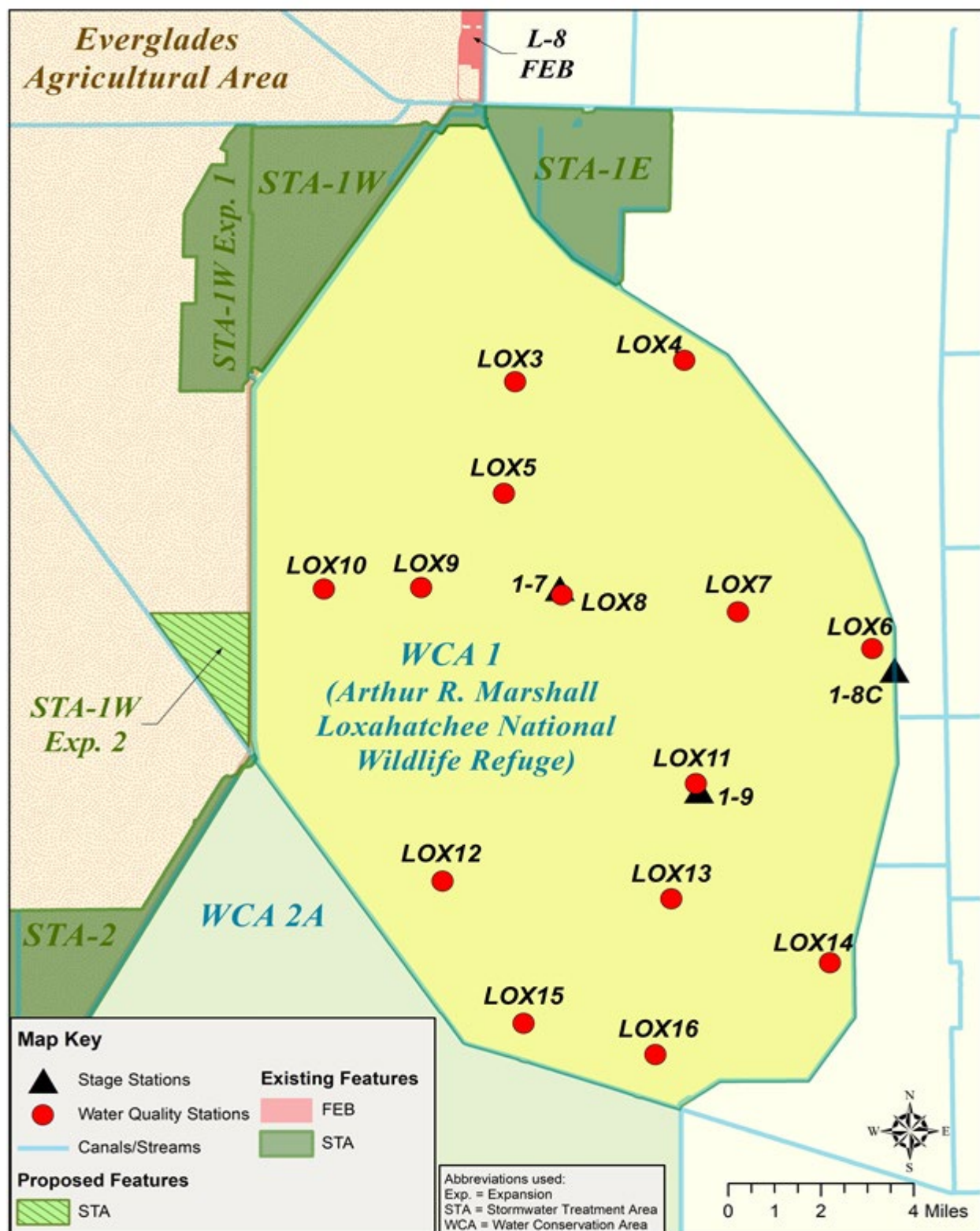


Figure 2. Refuge water quality sampling and stage measurement stations.

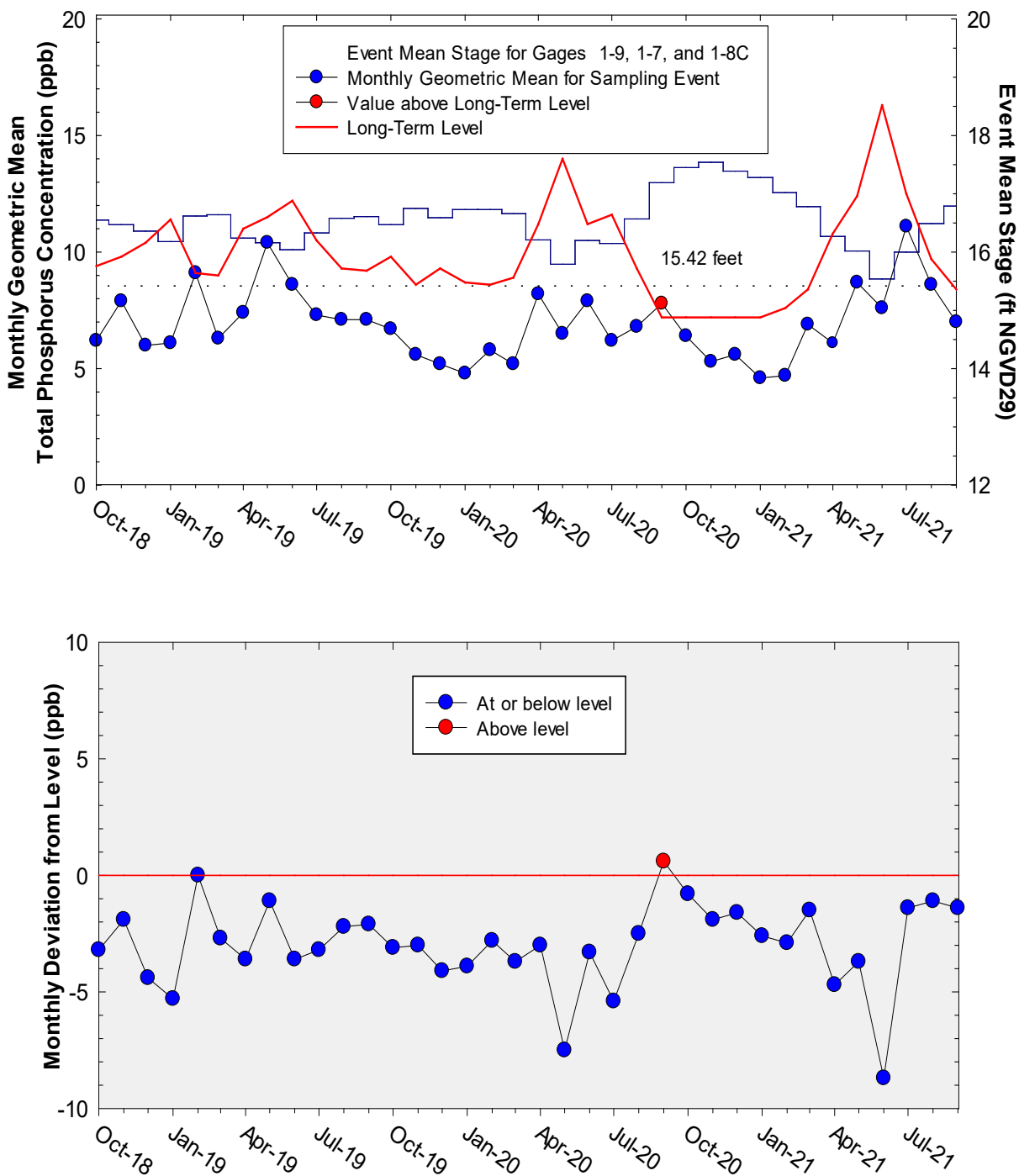


Figure 3. (A) Monthly TP geometric mean concentrations for the Refuge compared to calculated long-term levels, which are adjusted for fluctuations in stage. The geometric mean TP concentration was above the long-term level in October 2017. (B) Deviation of monthly geometric mean TP concentrations from calculated long-term levels. Negative values indicate that the geometric mean was lower than the long-term level.

Table 2. Refuge TP compliance tracking.

Month	Geometric Mean TP Concentration (ppb)	Long-Term Level (ppb)	Average Stage ^a (ft NGVD29)	Number of Samples
Oct-2018	6.2	9.4	16.55	14
Nov-2018	7.9	9.8	16.47	12
Dec-2018	6.0	10.4	16.36	11
Jan-2019	6.1	11.4	16.18	10
Feb-2019	9.1	9.1	16.62	14
Mar-2019	6.3	9.0	16.64	14
Apr-2019	7.4	11.0	16.24	12
May-2019	10.4	11.5	16.16	10
Jun-2019	8.6	12.2	16.04	9
Jul-2019	7.3	10.5	16.33	14
Aug-2019	7.1	9.3	16.58	14
Sep-2019	7.1	9.2	16.61	14
Oct-2019	6.7	9.8	16.47	13
Nov-2019	5.6	8.6	16.75	14
Dec-2019	5.2	9.3	16.59	14
Jan-2020	4.8	8.7	16.73	14
Feb-2020	5.8	8.6	16.73	14
Mar-2020	5.2	8.9	16.66	14
Apr-2020	8.2	11.2	16.21	11
May-2020	6.5	14.0	15.79	6
Jun-2020	7.9	11.2	16.20	12
Jul-2020	6.2	11.6	16.15	12
Aug-2020	6.8	9.3	16.57	14
<i>Sep-2020</i>	<i>7.8</i>	<i>7.2</i>	<i>17.19</i>	<i>14</i>
Oct-2020	6.4	7.2	17.45	14
Nov-2020	5.3	7.2	17.54	14
Dec-2020	5.6	7.2	17.39	14
Jan-2021	4.6	7.2	17.28	14
Feb-2021	4.7	7.6	17.02	14
Mar-2021	6.9	8.4	16.78	14
Apr-2021	6.1	10.8	16.27	11
May-2021	8.7	12.4	16.02	9
Jun-2021	7.6	16.3	15.54	5
Jul-2021	11.1	12.5	16.00	8
Aug-2021	8.6	9.7	16.49	13
Sep-2021	7.0	8.4	16.79	13

Notes:

- Key to units: ppb – parts per billion (values are actually in µg/L [micrograms per liter]), which, for the purposes of this report, are equivalent to ppb); and feet NGVD29 – elevation in feet relative to the National Geodetic Vertical Datum of 1929.
- Highlighted rows with bold, italicized text indicate an excursion over the long-term level.

a. Average stage is calculated using stage elevations at stations 1-7, 1-8C, and 1-9 for a given sampling date.

EVERGLADES NATIONAL PARK

Shark River Slough

Background

The Settlement Agreement/Consent Decree (1995) specified that interim and long-term TP concentration limits for discharges into ENP (**Figure 4**) through Shark River Slough be met by October 1, 2003, and December 31, 2006, respectively. It was specified that the TP concentrations be presented as 12-month flow-weighted means. Only the TP concentrations for the water year ending on September 30 are evaluated for compliance with the Consent Decree limits (Appendix D). The long-term TP concentration limit for inflows to Shark River Slough is represented by concentrations delivered through S12A, S12B, S12C, and S12D during the Outstanding Florida Waters baseline period of March 1, 1978, to March 1, 1979, and is adjusted for variations in flow. Inflow concentrations of TP through S12A, S12B, S12C, S12D, S333, S355A, and S355B are compared to the interim and long-term limits at the end of each water year (October 1 through September 30). The long-term limit went into effect in WY2007.

Routine monitoring was changed to weekly for all Shark River Slough sites beginning in August 2007. In accordance with Appendix A of the Consent Decree, only every-other-week grab concentration data were used for the FWMC calculations from October 2007 forward. Weekly TP data for each station for the past 12 months are provided in Appendix B.

Pursuant to agreement among all Everglades Technical Oversight Committee (TOC) members at the May 14, 2013, TOC meeting, the following three changes were made to the quarterly Settlement Agreement Report: (1) publishing of the quarterly 12-month TP FWMCs for Shark River Slough is discontinued, (2) provisional quarterly 12-month TP FWMCs are posted separately to the TOC website, <https://www.sfwmd.gov/our-work/toc>, and (3) the annual 12-month TP FWMC for the water year ending on September 30 will be published once the final approved flow data for the S12A, S12B, S12C, and S12D structures become available. These changes were implemented beginning with the January – March 2013 fourth quarter report. Based on a vote by the TOC on July 19, 2016, provisional 12-month results are now included in the report.

The TOC has recognized that the S356 seepage return pump, which initiated operation under the United States Army Corps of Engineers field test in fall 2015, has the ability to discharge water that originated from the water conservation areas (WCAs) to Shark River Slough. The Appendix A subteam was tasked with recommending an appropriate method for incorporating S356 into the compliance calculation. Since adoption of a single appropriate method had not yet been made by the TOC prior to publication of provisional tracking through the second quarter of WY2020, this report contains results based on two calculation methods (Method 1 and Method 2) through the 12-month tracking periods ending March 2020. On August 11, 2020, the TOC voted to accept Method 1.5 as the official reporting method for evaluating compliance for Shark River Slough under Appendix A. Method 1.5 describes a collective TP FWMC computed as the flow-weighted combination of each of the S12s' flow and TP together with each of the TP results and

adjusted inflows through the L-29 Canal to Shark River Slough, including the portion of S356 flow from S335, all reduced by the proportional volume exiting S334. TP grab results at S12A, S12B, S12C, S12D, S333, S355A, S355B, and S356 are applied to the respective flow (adjusted as described) on biweekly compliance sampling dates. S334 flow is not excluded from the total flow for long-term limit calculations.

Figure 5 depicts annual federal water year TP limits and corresponding TP FWMC levels beginning with WY1991. **Table 3** presents three years of the 12-month FWMCs for each month with the corresponding long-term TP concentration limits calculated using the 12-month period flow. For WY2018, the inflows to Shark River Slough met the TP limit, but for WY2019, the annual TP FWMC exceeded the calculated annual long-term limit. As documented in the Principals' October 2020 Guidance to TOC Representatives, the TOC members and their Principals acknowledge and agree that the 2019 Shark River Slough exceedance was caused by a localized phenomenon of phosphorus release and transport related to patterns of stage and flow, and less related to phosphorus coming from the Everglades Agricultural Area. Furthermore, the guidance outlines that the Principals will work together to form a cohesive solution.

The result of Method 1.5 for TP FWMCs for the 12-month period ending on September 30, 2021, was 8.2 ppb, which is higher than the 7.6 ppb long-term limit. Therefore, inflows to ENP through Shark River Slough exceeded the TP limit for WY2021.

Reporting Period Update

At the August 11, 2020, quarterly meeting, the TOC adopted Method 1.5 for Shark River Slough as the official method to calculate and report compliance under Appendix A. Beginning with the second quarter of 2020, only Method 1.5 values were calculated and presented in **Table 3**. Method 1.5 is TP FWMC computed as $S12s + [S333 + S355A + S355B + \text{minimum}(S356, S335) - S334]$ using all flow and TP grabs on biweekly compliance sampling dates. “Minimum (S356, S335)” is the portion of S356 daily flow through S335, approximating the volume from WCA-3 through S356. S334 flow is not excluded from the total flow for long-term limit calculations.

The newly constructed gated spillway S333N, located north of S333, started to discharge water from L-67A to the L-29 Canal east of S333 in November 2020. S333N was integrated into Method 1.5 in the current report for tracking purposes. TP FWMC is computed as $S12s + [S333 + S333N + S355A + S355B + \text{minimum}(S356, S335) - S334]$. The entire S333N flow volume counts toward the annual flow total for long-term limit calculation. Incorporation of this structure’s data into the Appendix A Shark River Slough water year compliance methodology was approved by the TOC at the May 2021 quarterly meeting.

For the 12-month periods ending in July, August, and September 2021, the 12-month TP FWMCs calculated using Method 1.5 were 7.8, 7.9, and 8.2 ppb, respectively. The 12-month long-term limits, based on the total flow into Shark River Slough, were all 7.6 ppb (**Table 3**). Because the TP FWMC for the 12-month period ending on September 30, 2021, was above the long-term limit, inflows to Shark River Slough did not meet the TP limit for WY2021.

The Consent Decree stipulates that the percentage of TP FWMCs greater than 10 ppb from each sampling event in any 12-month period must not exceed a guideline value based on flow into Shark River Slough for the same 12-month period. For the 12-month period of WY2021, the observed sampling event TP concentrations greater than 10 ppb were 50.0 percent, which was higher than the guideline of 40.1 percent.

The 12-month TP FWMCs and the TP FWMCs for individual sampling events are presented in **Figure 6**.

Daily flows through the individual Shark River Slough structures from October 2018 through September 2021 are presented in **Figures 7 through 10**.

During WY2021, a total of 1,181 kac-ft of water was discharged through the S12 structures, and 180 kac-ft of water was discharged through the S333, and 309 kac-ft through the new S333N structure. There was no discharge through S355A or S355B. 63 kac-ft of water originated from S355, was pumped at S356. 26 kac-ft of water from the L-29 Canal was discharged through S334 during WY2021 (**Figure 8**).

For additional information on the WCA-3A regulation schedule, please refer to the United States Army Corps of Engineers – Jacksonville District website¹.

1 <https://w3.saj.usace.army.mil/h2o/plots/wca3ahp.pdf>

The sum of the daily flows and corresponding TP FWMCs for individual sampling events at Shark River Slough structures is presented in **Figure 11**.

The water quality data for Shark River Slough are available in Appendix B of this report; the WY2021 monitoring data are posted separately to the TOC website.

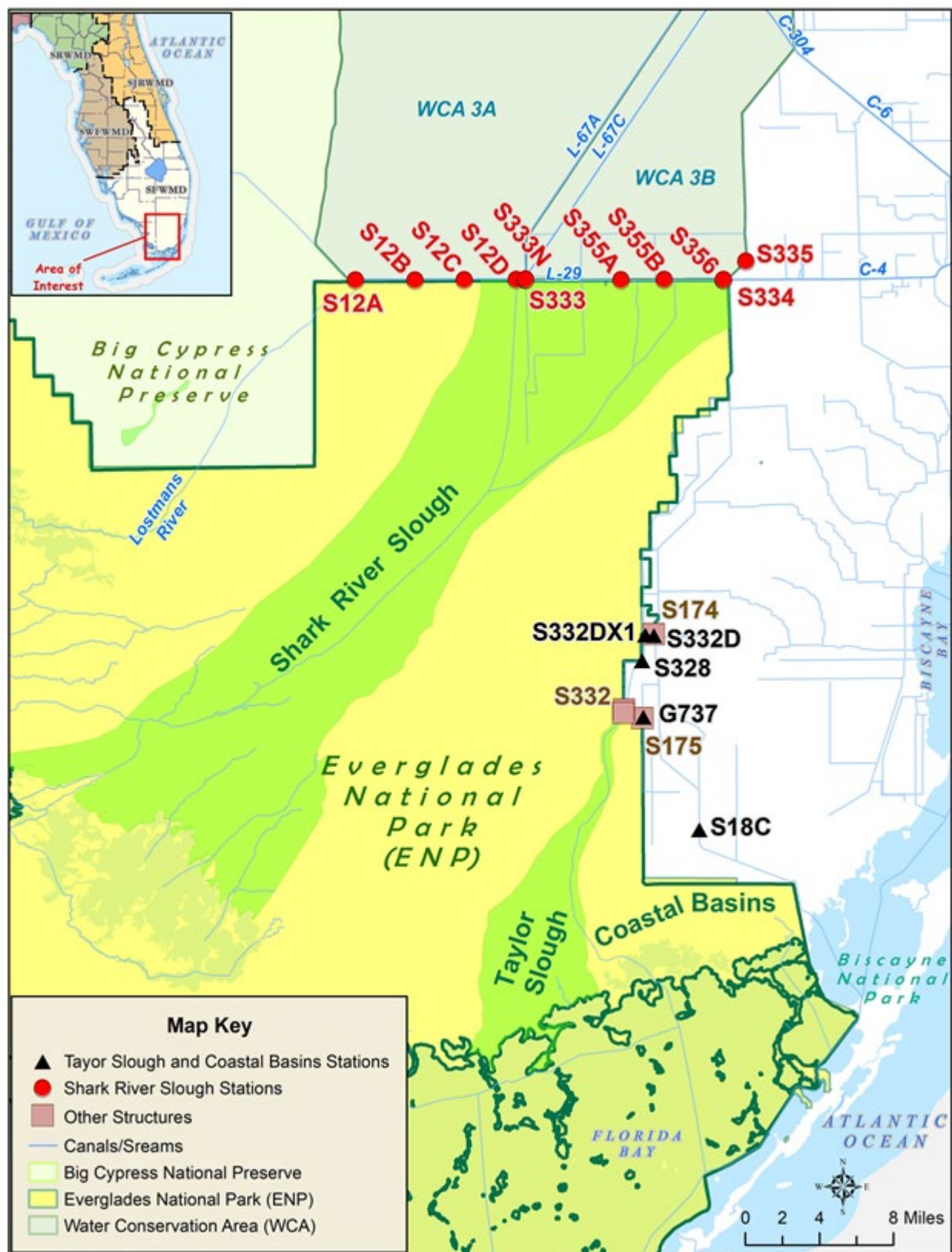


Figure 4. ENP flow structures.

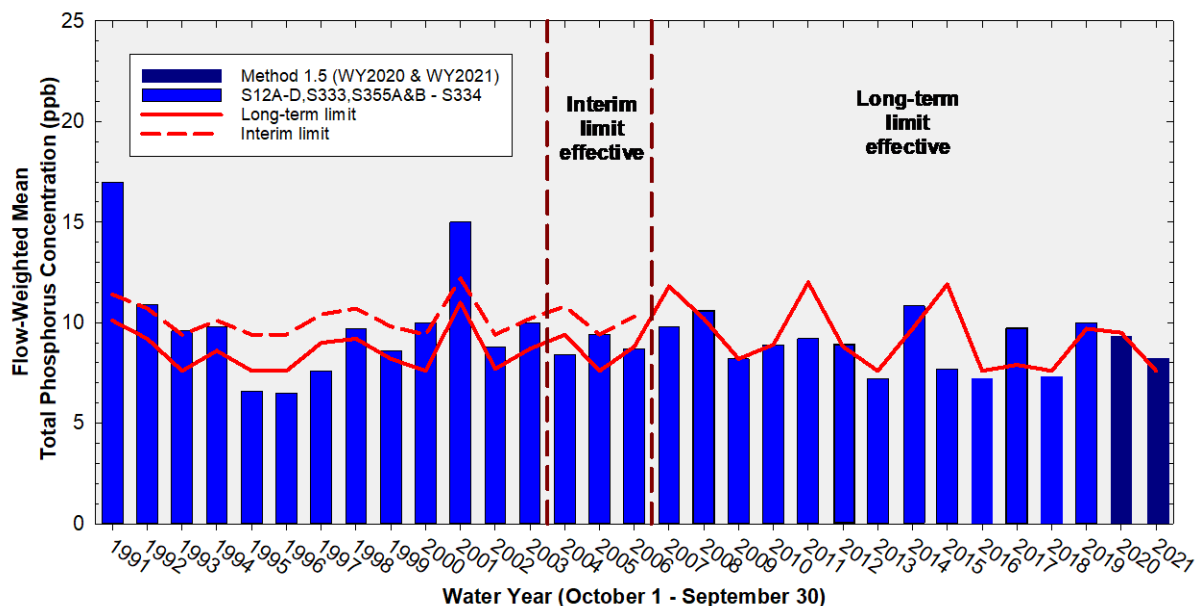


Figure 5. The 12 month TP FWMs at inflows to ENP through Shark River Slough at the end of each water year compared to the interim and long term total phosphorus limits. For WY2021, the FWM calculated using Method 1.5 was 8.2 ppb, which was above the long term limit of 7.6 ppb.

Table 3. Shark River Slough TP compliance tracking.

12-Month Period	Total Flow (kac-ft)	Flow-Weighted Mean TP Concentration (ppb)	Long-Term Limit (ppb)	Percent of Sampling Events Greater than 10 ppb	
				Observed (%)	Guideline (%)
Nov 2017 - Oct 2018	1,443.9 (1,488.4)	7.8 (7.7)	7.6 (7.6)	30.8 (30.8)	40.1 (40.1)
Dec 2017 - Nov 2018	1,117.7 (1,162.3)	8.5 (8.3)	7.6 (7.6)	36.0 (36.0)	40.1 (40.1)
Jan 2018 - Dec 2018	908.3 (952.9)	9.1 (8.9)	8.4 (8.1)	36.0 (36.0)	43.6 (42.6)
Feb 2018 - Jan 2019	822.9 (866.6)	9.6 (9.3)	8.8 (8.6)	36.0 (36.0)	45.8 (44.7)
Mar 2018 - Feb 2019	813.5 (857.1)	9.7 (9.4)	8.8 (8.6)	40.0 (40.0)	46.0 (44.9)
Apr 2018 - Mar 2019	844.0 (887.6)	9.9 (9.6)	8.7 (8.5)	37.5 (37.5)	45.2 (44.1)
May 2018 - Apr 2019	861.7 (905.3)	10.0 (9.7)	8.6 (8.4)	37.5 (37.5)	44.8 (43.7)
Jun 2018 - May 2019	858.4 (901.0)	8.8 (8.5)	8.6 (8.4)	37.5 (37.5)	44.9 (43.8)
Jul 2018 - Jun 2019	787.9 (838.3)	8.9 (8.6)	9.0 (8.7)	41.7 (41.7)	46.7 (45.4)
Aug 2018 - Jul 2019	707.7 (780.9)	9.4 (8.9)	9.4 (9.0)	50.0 (45.8)	48.9 (46.9)
Sep 2018 - Aug 2019	666.5 (755.3)	9.9 (9.2)	9.6 (9.1)	54.2 (50.0)	50.1 (47.6)
Oct 2018 - Sep 2019	654.1 (748.5)	10.0 (9.3)	9.7 (9.2)	52.0 (48.0)	50.5 (47.8)
Nov 2018 - Oct 2019	666.5 (693.2)	10.1 (9.8)	9.6 (9.5)	54.2 (50.0)	50.1 (49.3)
Dec 2018 - Nov 2019	682.6 (715.2)	10.0 (9.7)	9.5 (9.4)	48.0 (44.0)	49.6 (48.7)
Jan 2019 - Dec 2019	671.4 (704.1)	10.0 (9.7)	9.6 (9.4)	52.2 (47.8)	49.9 (49.0)
Feb 2019 - Jan 2020	666.7 (699.3)	10.0 (9.7)	9.6 (9.4)	54.5 (50.0)	50.1 (49.1)
Mar 2019 - Feb 2020	643.0 (675.6)	10.0 (9.6)	9.7 (9.4)	52.4 (47.6)	50.8 (49.8)
Apr 2019 - Mar 2020	614.7 (647.3)	9.6 (9.3)	9.9 (9.6)	50.0 (47.8)	51.6 (50.7)
May 2019 - Apr 2020	598.3	9.5	10.0	47.6	52.1
Jun 2019 - May 2020	576.4	9.3	10.1	45.0	52.8
Jul 2019 - Jun 2020	603.5	9.1	10.0	45.0	52.0
Aug 2019 - Jul 2020	656.8	9.6	9.7	40.0	50.4
Sep 2019 - Aug 2020	690.7	9.2	9.5	33.3	49.4
Oct 2019 - Sep 2020	692.7	9.3	9.5	35.0	49.3
Nov 2019 - Oct 2020	780.2	9.0	9.0	35.0	46.9
Dec 2019 - Nov 2020	1,130.1	8.2	7.6	35.0	40.1
Jan 2020 - Dec 2020	1,492.1	7.5	7.6	31.8	40.1
Feb 2020 - Jan 2021	1,691.1	7.2	7.6	30.4	40.1
Mar 2020 - Feb 2021	1,819.7	7.2	7.6	29.2	40.1
Apr 2020 - Mar 2021	1,915.4	7.4	7.6	28.0	40.1
May 2020 - Apr 2021	1,967.2	7.6	7.6	28.0	40.1
Jun 2020 - May 2021	1,979.0	7.9	7.6	30.8	40.1
Jul 2020 - Jun 2021	1,931.9	7.9	7.6	30.8	40.1
Aug 2020 - Jul 2021	1,853.0	7.8	7.6	34.6	40.1
Sep 2020 - Aug 2021	1,780.0	7.9	7.6	46.2	40.1
Oct 2020 - Sep 2021	1,733.0	8.2	7.6	50.0	40.1

Notes:

- Key to units: kac-feet – thousand acre feet; and ppb – parts per billion (values are actually in µg/L [micrograms per liter], which, for the purposes of this report, are equivalent to ppb).
- Compliance is evaluated annually based on the 12-month TP FPMC for the federal water year ending on September 30. The compliance periods are shown as highlighted rows with bold, italicized text.
- Results of both Method 1 and Method 2 are presented through the first quarter of 2020 (12-month period ending March 2020):
 - Method 1 (left value) is computed as S12s + (S333 + S355A + S355B - S334).
 - Method 2 (value in parentheses) is computed as S12s + (S333 + S355A + S355B + S356 - S334).
- Starting with the 12-month periods ending April to September 2020, results of Method 1.5 for the corresponding 12-month periods are presented:
 - Method 1.5 is computed as S12s + [S333 + S355A + S355B + minimum (S356, S335) - S334]
- All methods use all flow and TP grabs on biweekly compliance sampling dates and do not exclude S334 flow from the total flow for long-term limit calculations.

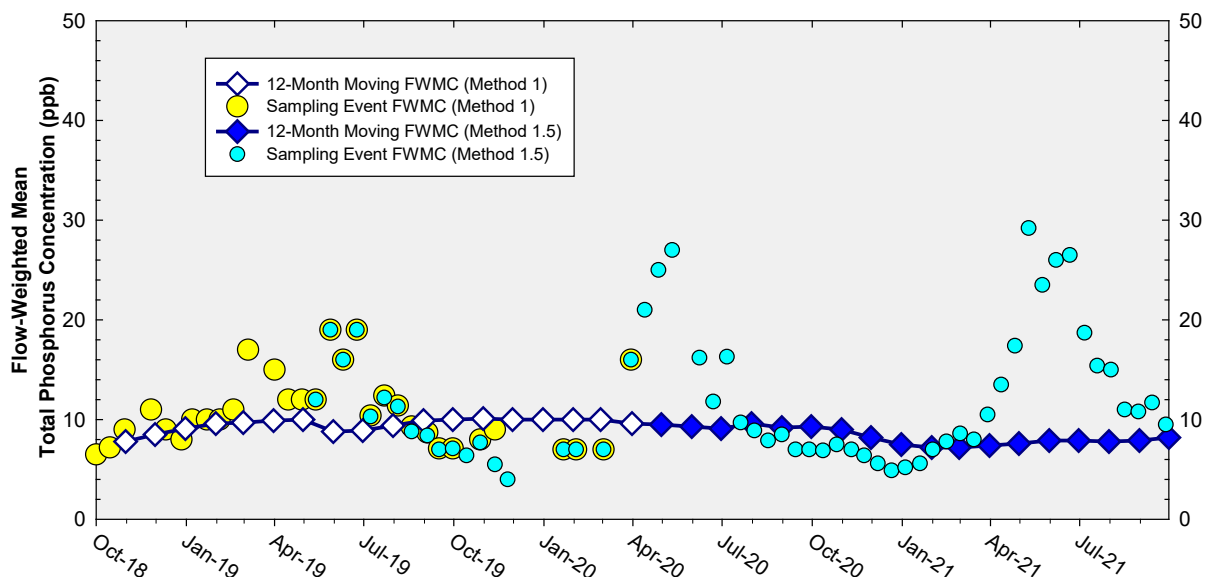


Figure 5. The 12-month TP FWMCs in inflows to ENP through Shark River Slough at the end of each month and TP FWMCs for each sampling event. Method 1 sampling event FWMCs and 12-month moving FWMCs are shown to the end of March 2020. Method 1.5 sampling event FWMCs are shown from May 2019, and 12-month moving FWMCs are shown from the period ending in April 2020.

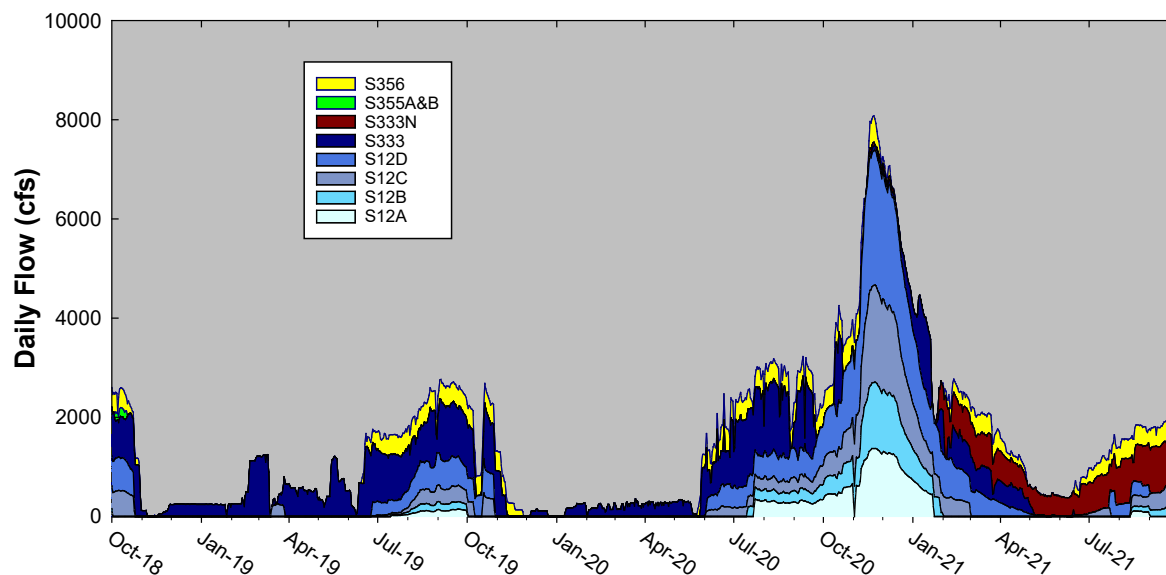


Figure 6. Daily flows at Shark River Slough structures as a stacked sum of all inflows. (Note: cfs – cubic feet per second.)

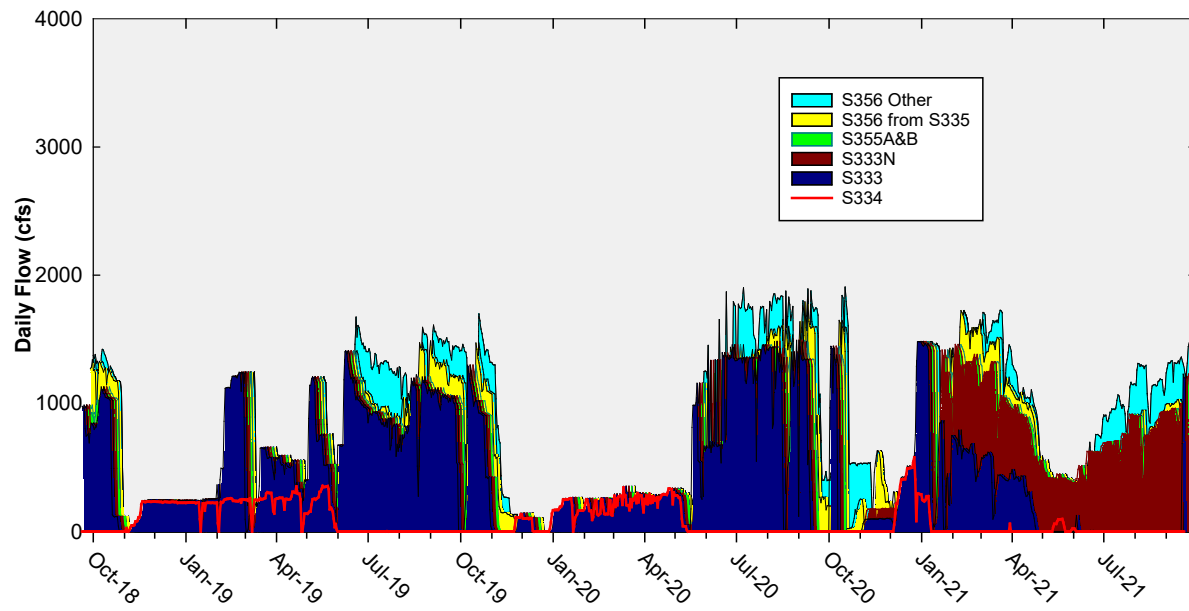


Figure 7. Daily flows into and out of the L-29 Canal.

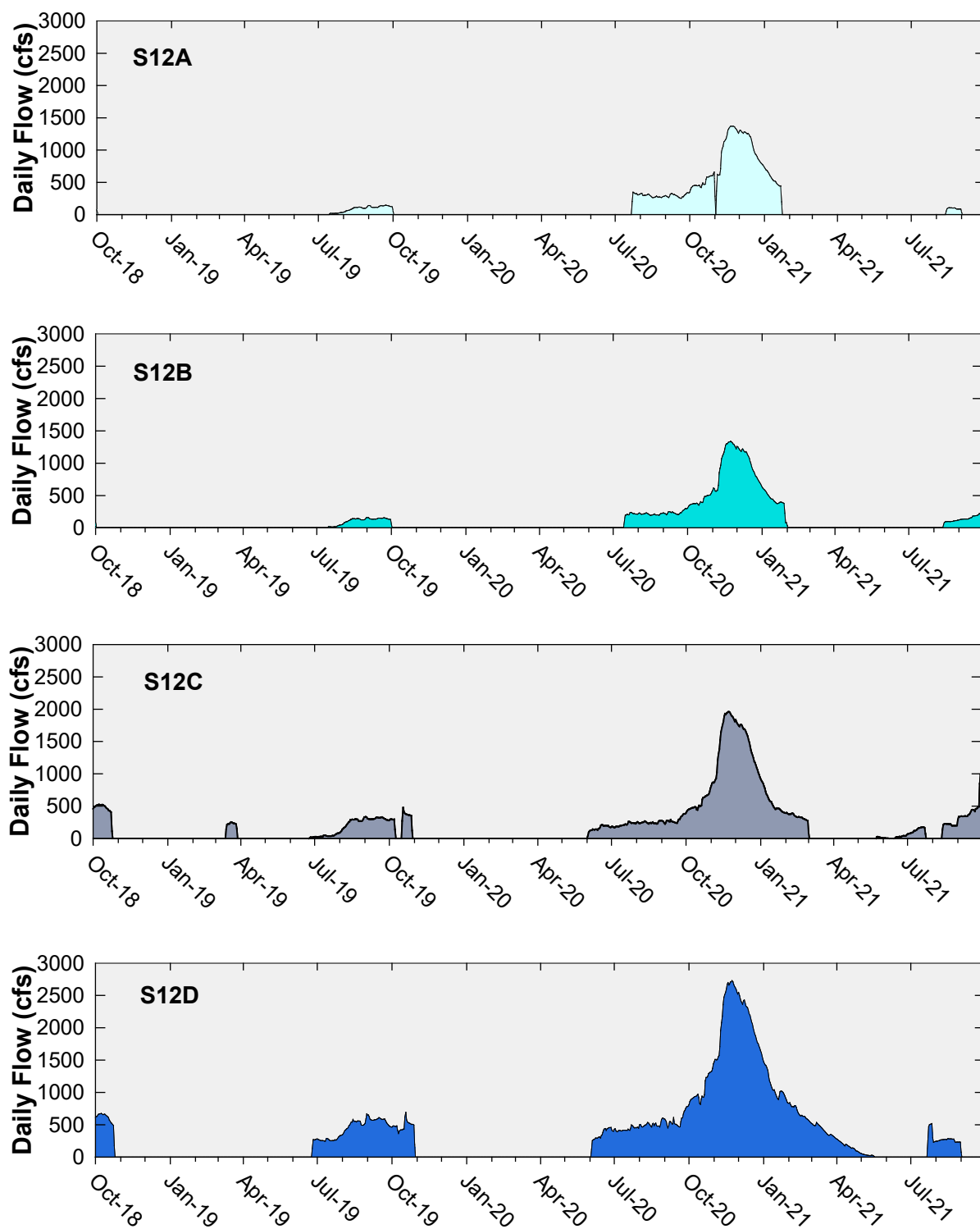


Figure 8. Daily flows at S12 structures to Shark River Slough.

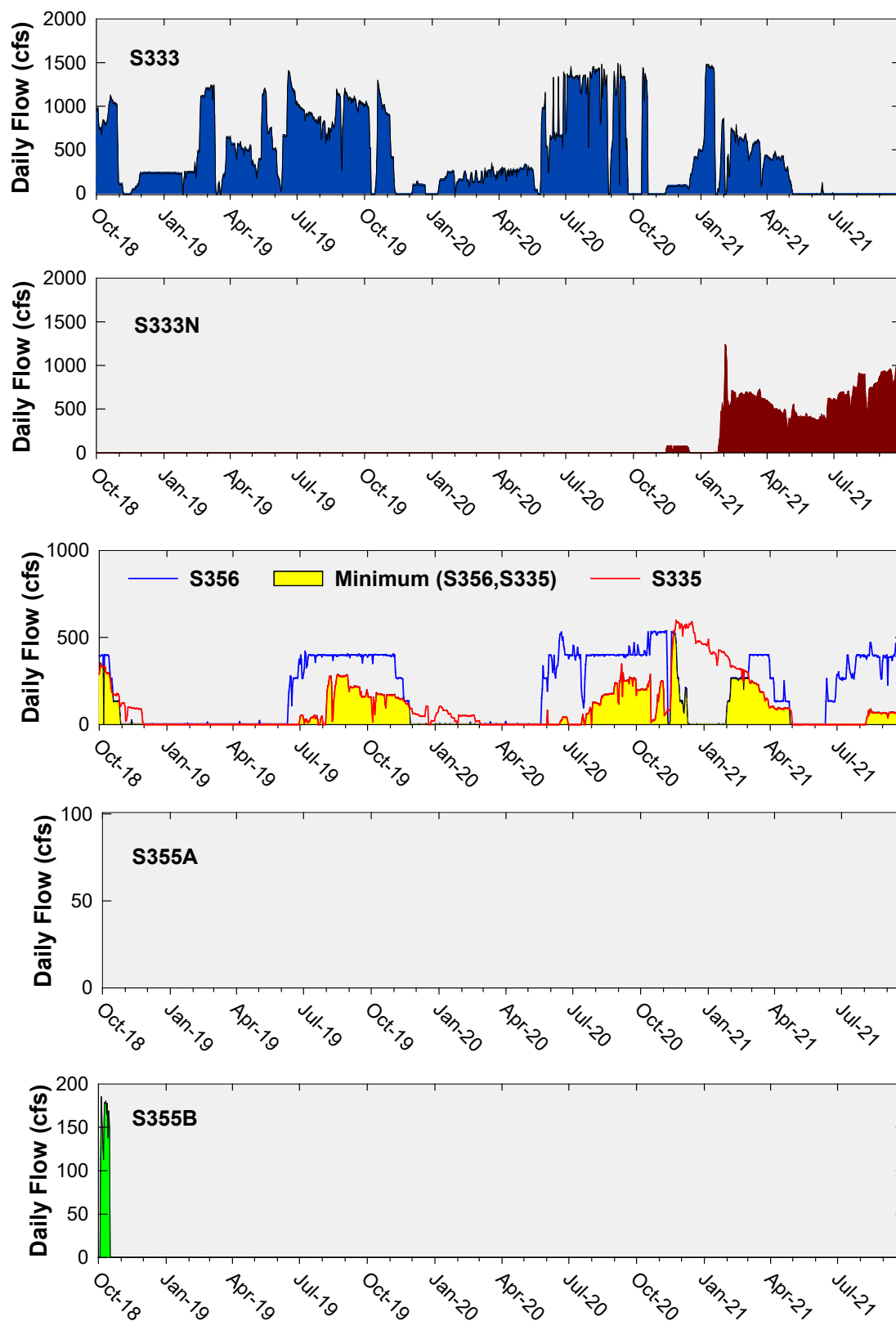


Figure 9. Daily flows at individual inflow structures to the L-29 Canal.

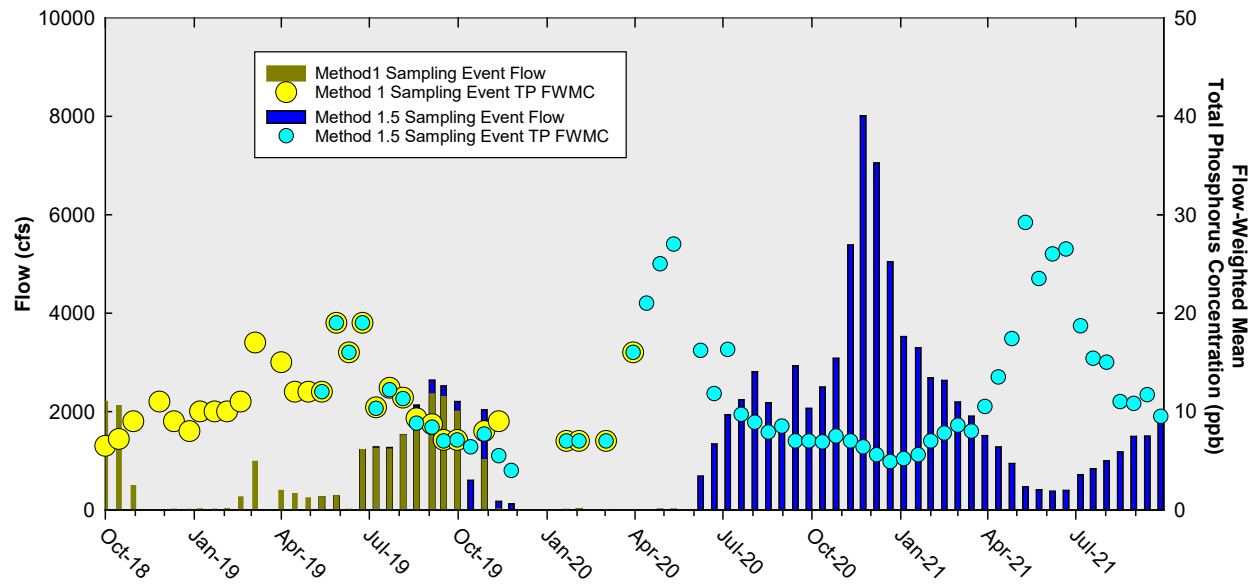


Figure 10. Flow to Shark River Slough on the day of sampling and the corresponding TP FPMCs for individual sampling events. Method 1 sampling event flows and FPMCs are shown to March 2020. Method 1.5 sampling event flows and FPMCs are shown beginning May 2019. For the period of May 2019 to March 2020, the results of both methods are shown overlapping.

Taylor Slough and Coastal Basins

Background

Under the Consent Decree, a single TP long-term limit of 11 ppb, to be met by December 31, 2006, was set for the two points of inflow to Taylor Slough (S332 and S175) and the inflow point to Coastal Basins (S18C) (see Appendix C). The 12-month TP FWMCs have consistently been lower than the long-term limit of 11 ppb.

Inflow TP concentrations to ENP through Taylor Slough and Coastal Basins are compared to the 11 ppb limit at the end of each water year using data from both the old (S175, S332, and S18C) and new (S174, S332D, and S18C) combinations of structures (**Figure 12**). The narrow bars in **Figure 12** represent the 12-month TP FWMCs from S332, S175, and S18C for WY1991 through WY2002. The wider bars for WY1999 and forward represent the new combination of structures.

TP and flow data from both sets of structures presented in prior editions of this report through December 2001 (April 2002 report) showed that, beginning in October 2000, the 12-month moving total flow for S332D, S174, and S18C was consistently greater than flow at S332, S175, and S18C. There was also a shift in TP FWMC data whereby S332D, S174, and S18C concentrations became equal to, and then consistently lower than, the concentrations at S332, S175, and S18C. These changes reflected the switch from S332 to S332D for water delivery to Taylor Slough between July 3 and July 5, 2000. Furthermore, the S174 site was plugged in September 2007, preventing any additional flow. Consequently, for WY2002 through WY2007, compliance tracking was represented by S332D, S174, and S18C. Since WY2008, S332D and S18C have represented the compliance tracking structures.

To facilitate tracking and comparison of the operation of the improved conveyance and delivery system to Taylor Slough and Coastal Basins, three alternative methods were proposed for the 12-month TP FWMC compliance tracking calculation for Taylor Slough and Coastal Basins. Method 1, computed as $S332D + S18C$; Method 2, computed as $S332D + S18C + G737$; and Method 3, computed as $(S332D - S332DX1 - S328) + S328 + S18C + G737$. Tracking of these three methods spanned June 2017 through March 2020. At the August 11, 2020, TOC regular meeting, the TOC representatives voted to select Method 3 as the official compliance method moving forward.

Beginning with the second quarter of 2020, only Method 3 results are calculated and presented for Taylor Slough and Coastal Basins. Method 3 calculates FWMCs as $[(S332D \text{ TP and } S332D \text{ adjusted flow}) + (S328 \text{ TP and flow}) + (G737 \text{ TP and flow}) + (S18C \text{ TP and flow})]$ using all flow and TP grabs on weekly compliance sampling dates. S332D adjusted flow is $S332D - S332DX1 - S328$.

The result of Method 3 for TP FWMCs for the 12-month period ending on September 30, 2021, was 5.6 ppb, which is lower than the 11.0-ppb long-term limit. Therefore, inflows to ENP through Taylor Slough and Coastal Basins did not exceed the TP limit for WY2021.

Reporting Period Update

At the August 11, 2020, quarterly meeting, the TOC adopted Method 3 for Taylor Slough and Coastal Basins as the official method to calculate and report compliance under Appendix A. Beginning with the second quarter of 2020, only Method 3 results are calculated and presented for Taylor Slough and Coastal Basins. Method 3 calculates FWMCs as $[(S332D \text{ TP and flow}) + (S328 \text{ TP and flow}) + (G737 \text{ TP and flow}) + (S18C \text{ TP and flow})]$ using all flow and TP grabs on weekly compliance sampling dates. S332D adjusted flow is $S332D - S332DX1 - S328$. **Figure 13** presents the 12-month and individual sampling event TP FWMCs at the TP compliance structures. All TP grab sample concentrations taken on positive flow days reported for surface water monitoring at the sites were used for the compliance calculations.

The daily flows toward ENP through S332D (minus S332DX1 flow), G737, and S18C are presented in **Figure 14**. Daily flows from the S332D pumps and downstream structures are presented in **Figure 15**. Daily flows at individual Taylor Slough and Coastal Basins structures into ENP are presented in **Figure 16**.

For the periods ending July, August, and September 2021, the 12-month TP FWMCs were 5.4, 5.5, and 5.6 ppb, respectively (**Table 4**). The percent of TP FWMCs greater than 10 ppb from each sampling event in any 12-month period has been much lower than the fixed guideline of 53.1% stipulated by the Consent Decree (**Table 4**). The 10.7-ppb value measured for November 10, 2020, was the only sampling event TP FWMC greater than 10 ppb in WY2021.

Figure 17 shows the relationship between daily inflows and the corresponding TP FWMCs for each sampling event. The sampling event TP FWMCs generally remained low, and the average of WY2021 sampling event TP FWMCs was 5.2 ppb.

In 1995, the United States Army Corps of Engineers authorized the C-111 Spreader Canal project to restore more natural hydrologic conditions in Taylor Slough and to maintain flood protection east of the L-31N and C-111 canals. The original project facilities consisted of pump stations (S332B, S332C, and S332D), detention cells (Cell 1 through Cell 5), a connector cell between Cell 2 and Cell 3, a flow-way cell originating at Berm B3 of Cell 5, and four diversion structures (DS1 through DS4). DS4 is now known as S328. Since completion of United States Army Corps of Engineers construction contracts 8, 8A, and 9 in 2018, an interconnected detention system exists starting at the S357 discharge to the 8.5 Square Mile Area detention cell and continuing to the S332D detention area.

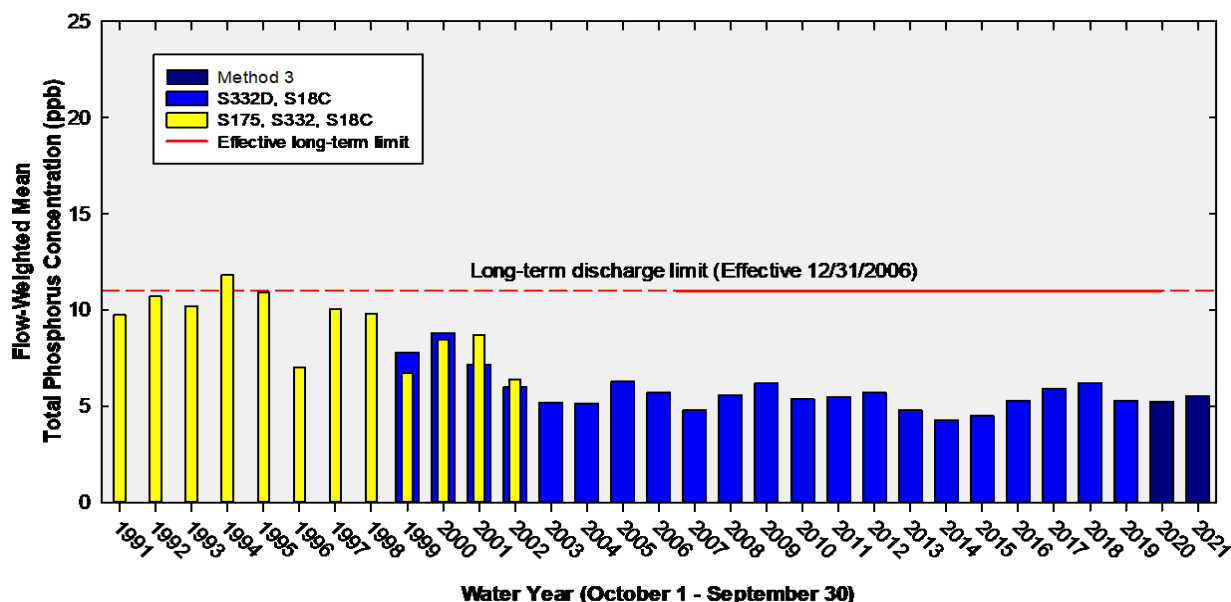


Figure 11. The 12-month TPFWMCs in inflows to ENP through Taylor Slough and Coastal Basins at the end of each water year compared to the 11 ppb long-term TP limit. Blue bars show S332D, S174, and S18C for WY1999 through WY2007, and S332D and S18C (Method 1) from WY2008 to WY2019. Method 3 for WY2020 is (S332D - S332DX1 - S328) + S328 + G737 + S18C.

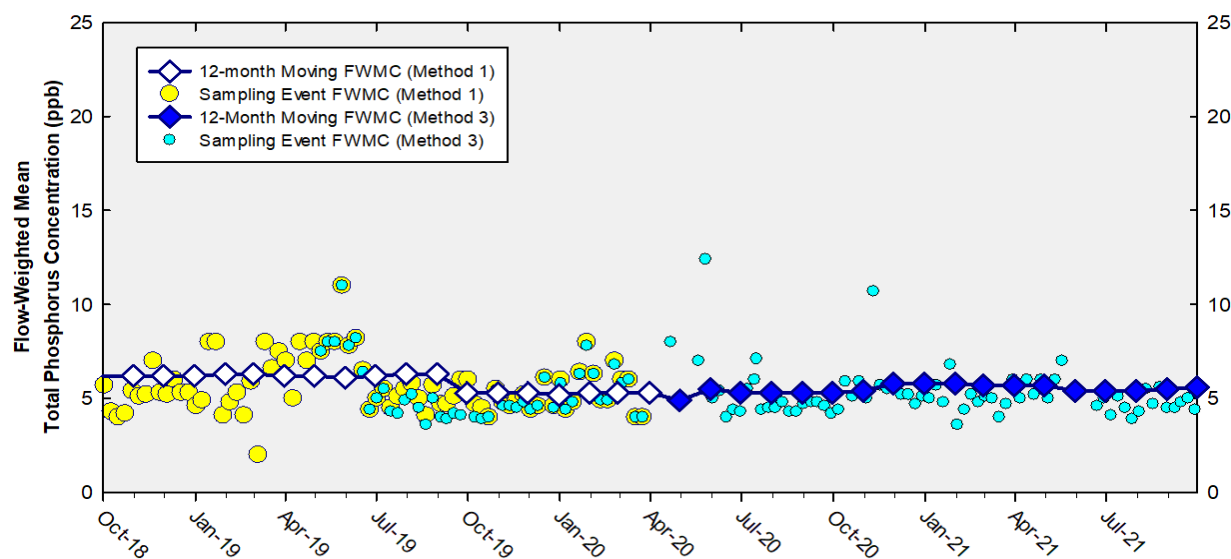


Figure 12. The 12-month TPFWMCs in inflows to ENP through Taylor Slough and Coastal Basins at the end of each month and the TP FWMC for each sampling event. Method 1 sampling event FWMCs and 12-month moving FWMCs are shown to the end of March 2020. Method 3 sampling event FWMCs are shown from May 2019, and Method 3 12-month moving FWMCs are shown from the period ending in April 2021.

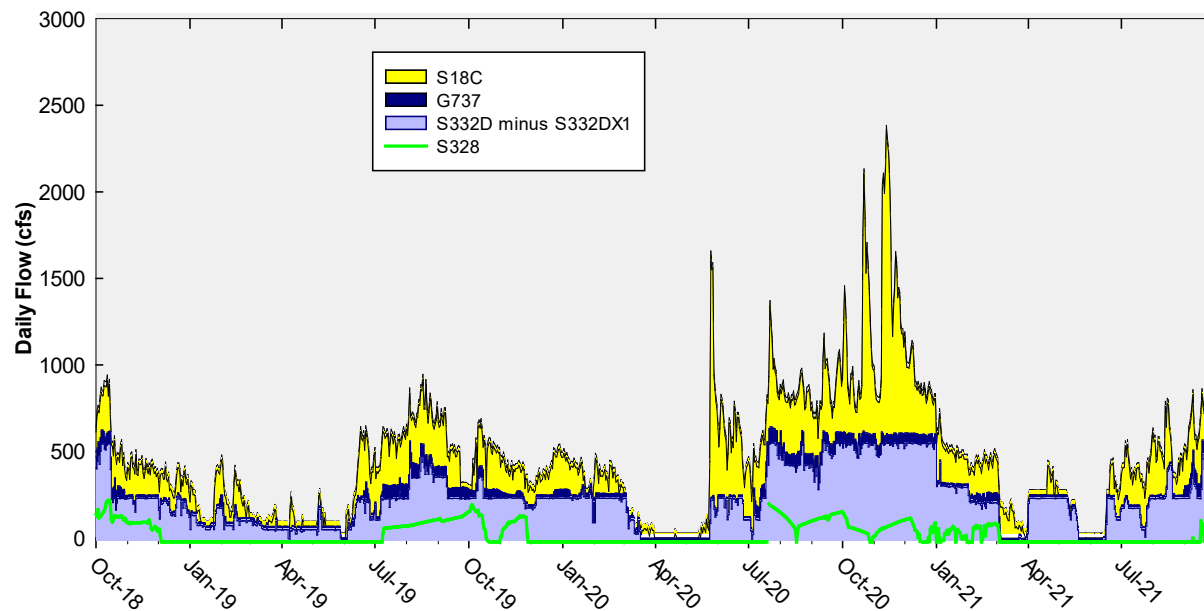


Figure 13. Daily flows into ENP as a stacked sum of Taylor Slough (structures S332D and G737) and Coastal Basins (structure S18C). Daily flow data are missing for S18C from September 23 to September 30, 2019.

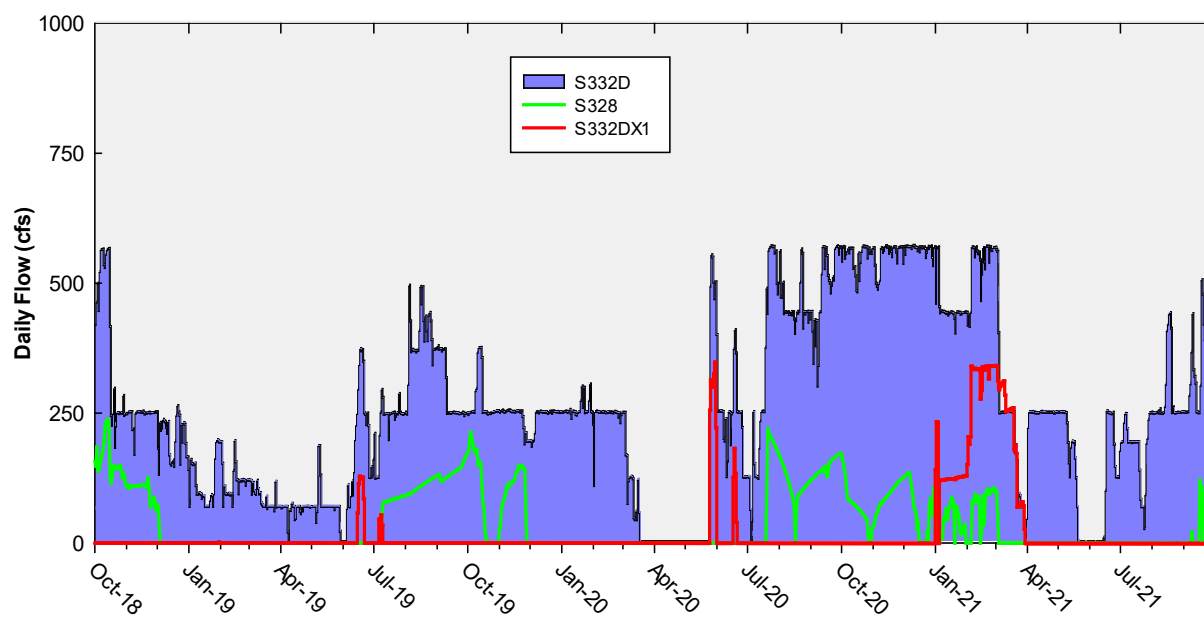


Figure 14. Daily flows from S332D pumps overlaid with stacked daily flows at downstream structures.

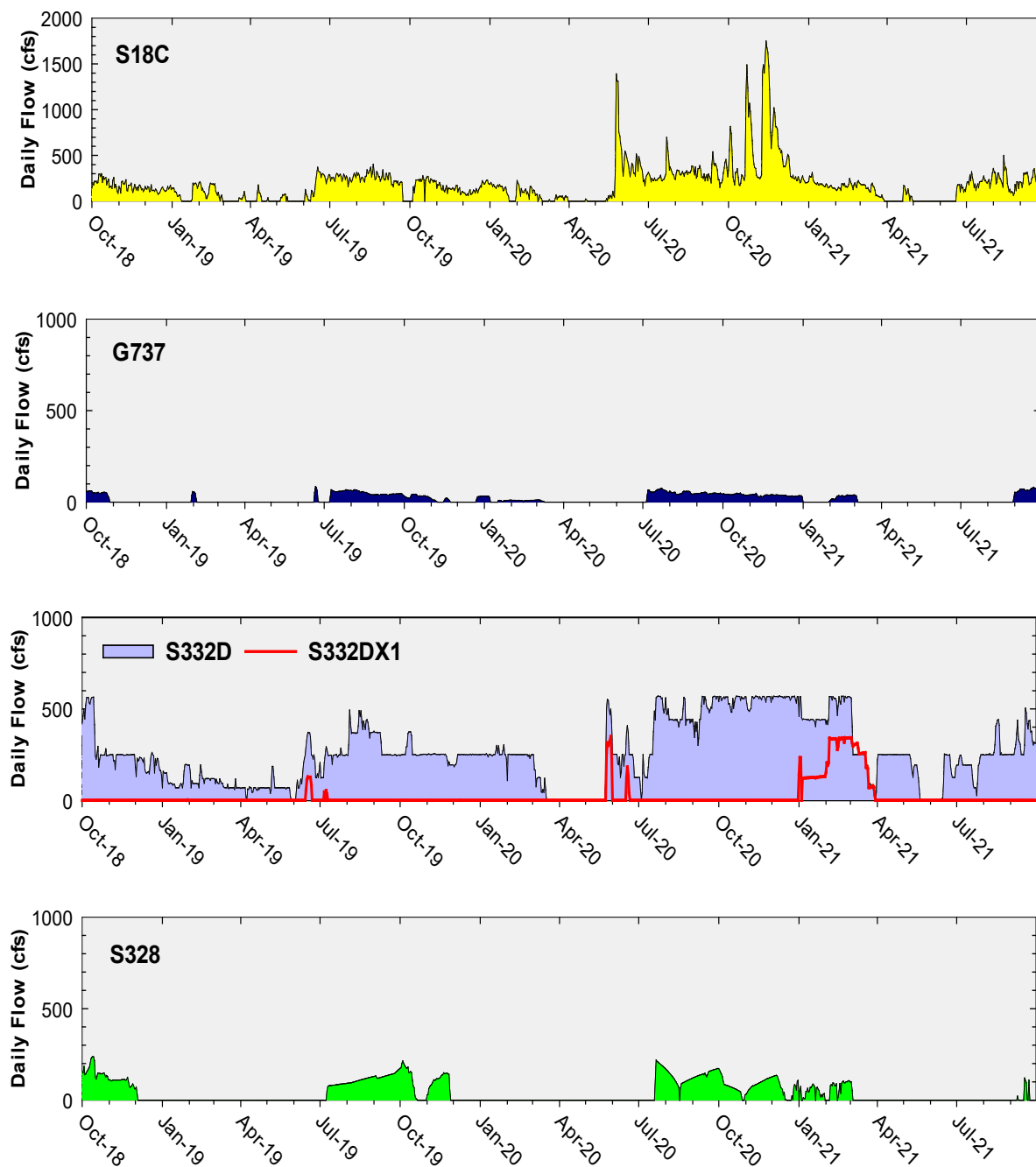


Figure 15. Daily flows at individual Taylor Slough and Coastal Basins structures into ENP. G737 flow prior to October 1, 2018, is based on S200 pump flow on days when G737 gates are open. Daily flow data are missing for S18C from September 23 to September 30, 2019.

Table 4. Taylor Slough and Coastal Basins TP compliance tracking.

12-Month Period	Total Flow (kac-ft)	Flow-Weighted Mean TP Concentration (ppb)	Long-Term Limit (ppb)	Percent of Sampling Events Greater than 10 ppb	
				Observed (%)	Guideline (%)
Nov 2017 - Oct 2018	371.5 (447.8, 429.2)	6.2 (6.0, 5.8)	11.0	3.8 (3.8, 3.8)	53.1
Dec 2017 - Nov 2018	352.0 (415.0, 396.3)	6.2 (6.0, 5.8)	11.0	3.8 (3.8, 3.8)	53.1
Jan 2018 - Dec 2018	321.1 (370.7, 352.0)	6.2 (6.0, 5.8)	11.0	3.8 (3.8, 3.8)	53.1
Feb 2018 - Jan 2019	298.2 (344.1, 325.4)	6.3 (6.1, 5.9)	11.0	3.8 (3.8, 3.8)	53.1
Mar 2018 - Feb 2019	282.5 (328.7, 322.1)	6.3 (6.1, 5.9)	11.0	3.8 (3.8, 3.8)	53.1
Apr 2018 - Mar 2019	272.3 (318.5, 318.4)	6.2 (6.0, 5.9)	11.0	3.8 (3.8, 3.8)	53.1
May 2018 - Apr 2019	272.1 (318.3, 318.3)	6.2 (6.0, 5.8)	11.0	1.9 (1.9, 1.9)	53.1
Jun 2018 - May 2019	253.6 (299.8, 299.8)	6.1 (5.9, 5.8)	11.0	3.8 (3.8, 3.8)	53.1
Jul 2018 - Jun 2019	246.3 (293.1, 291.6)	6.2 (6.0, 5.8)	11.0	3.8 (3.8, 3.8)	53.1
Aug 2018 - Jul 2019	257.3 (294.8, 293.0)	6.3 (6.1, 5.9)	11.0	3.8 (3.8, 3.8)	53.1
Sep 2018 - Aug 2019	266.2 (293.1, 291.3)	6.3 (6.2, 5.9)	11.0	3.8 (3.8, 3.8)	53.1
Oct 2018 - Sep 2019	237.8 (250.4, 248.6)	5.3 (5.2, 4.9)	11.0	1.9 (1.9, 1.9)	53.1
Nov 2018 - Oct 2019	229.8 (241.6, 239.8)	5.3 (5.2, 5.0)	11.0	1.9 (1.9, 1.9)	53.1
Dec 2018 - Nov 2019	228.4 (240.4, 238.6)	5.3 (5.2, 4.9)	11.0	1.9 (1.9, 1.9)	53.1
Jan 2019 - Dec 2019	231.5 (244.6, 242.8)	5.2 (5.1, 4.9)	11.0	1.9 (1.9, 1.9)	53.1
Feb 2019 - Jan 2020	242.3 (255.6, 253.8)	5.3 (5.2, 4.9)	11.0	1.9 (1.9, 1.9)	53.1
Mar 2019 - Feb 2020	249.4 (262.9, 261.1)	5.3 (5.2, 5.0)	11.0	1.9 (1.9, 1.9)	53.1
Apr 2019 - Mar 2020	248.7 (262.3, 260.5)	5.3 (5.2, 5.0)	11.0	1.9 (1.9, 1.9)	53.1
May 2019 - Apr 2020	255.9	4.9	11.0	2.1	53.1
Jun 2019 - May 2020	268.7	5.5	11.0	2.2	53.1
Jul 2019 - Jun 2020	282.8	5.3	11.0	2.1	53.1
Aug 2019 - Jul 2020	291.6	5.3	11.0	2.1	53.1
Sep 2019 - Aug 2020	297.5	5.3	11.0	2.1	53.1
Oct 2019 - Sep 2020	318.5	5.3	11.0	2.1	53.1
Nov 2019 - Oct 2020	357.0	5.4	11.0	2.1	53.1
Dec 2019 - Nov 2020	416.5	5.8	11.0	4.3	53.1
Jan 2020 - Dec 2020	449.1	5.8	11.0	4.2	53.1
Feb 2020 - Jan 2021	460.4	5.8	11.0	4.3	53.1
Mar 2020 - Feb 2021	463.6	5.7	11.0	4.3	53.1
Apr 2020 - Mar 2021	466.4	5.7	11.0	4.2	53.1
May 2020 - Apr 2021	482.9	5.7	11.0	3.9	53.1
Jun 2020 - May 2021	472.6	5.4	11.0	1.9	53.1
Jul 2020 - Jun 2021	447.3	5.4	11.0	2.0	53.1
Aug 2020 - Jul 2021	430.1	5.4	11.0	2.1	53.1
Sep 2020 - Aug 2021	410.1	5.5	11.0	2.0	53.1
Oct 2020 - Sep 2021	399.5	5.6	11.0	2.1	53.1

Notes:

- Key to units: kac-feet – thousand acre feet; ppb – parts per billion (values are actually in µg/L [micrograms per liter], which, for the purposes of this report, are equivalent to ppb).
- Compliance is evaluated annually based on the 12-month TP FPMC for the federal WY ending on September 30. The compliance periods are shown as highlighted rows with bold, italicized text.
- From the 12-month period ending June 2017, results of Method 1, Method 2, and Method 3 are presented:
 - Method 1 (left value) is computed as S332D + S18C.
 - Method 2 (first value in parentheses) is computed as S332D + S18C + G737.
 - Method 3 (second value in parentheses) is computed as (S332D - S332DX1 - S328) + S328 + G737 + 18C.
- Starting with the second quarter of 2020 (12-month periods ending April, May, and June 2020), only results of Method 3 for the corresponding 12-month periods are presented.

* Daily flow data are missing for S18C from September 23 to September 30, 2019.

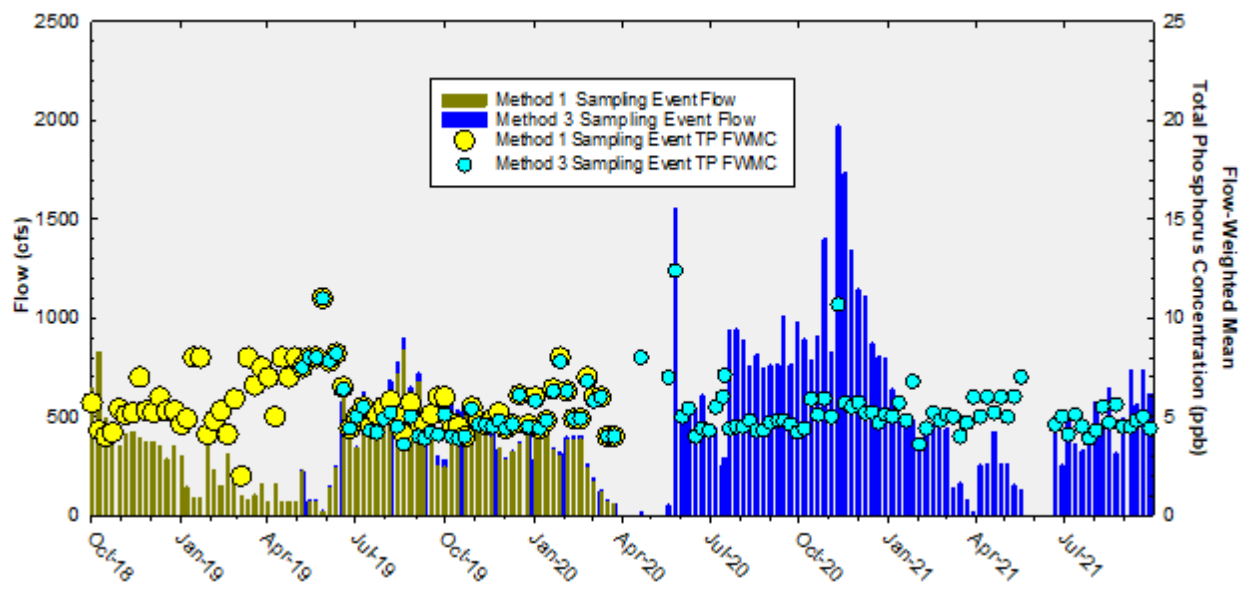


Figure 16. Flow from Taylor Slough and Coastal Basins structures (S332D and S18C) on the days of sampling, and the corresponding TP FVMCs for individual sampling events. Method 1 sampling event flows and FVMCs are shown to March 2020. Method 3 sampling event flows and FVMCs are shown beginning May 2019. For the period from May 2019 to March 2020, the results of both methods are shown overlapping.

APPENDIX A:

**MONTHLY TOTAL PHOSPHORUS
CONCENTRATION DATA FOR
THE ARTHUR R. MARSHALL
LOXAHATCHEE NATIONAL WILDLIFE REFUGE**

TP concentration data used in this report can be directly retrieved from the South Florida Water Management District's DBHYDRO database by copying and pasting the following link into the address field of a web browser:

[http://my.sfwmd.gov/dbhydroplsql/water_quality_data.report_full?v_where_clause=where+station_id+like+\('LOX%25'\)+and+station_id+not+like+\('LOXA%25'\)+and+test_number+=+25+and+date_collected+>='+01-JUL-2021'+and+date_collected+<+'01-OCT-2021'+and+sample_type_new+=+'SAMP'+v_target_code=file_csv](http://my.sfwmd.gov/dbhydroplsql/water_quality_data.report_full?v_where_clause=where+station_id+like+('LOX%25')+and+station_id+not+like+('LOXA%25')+and+test_number+=+25+and+date_collected+>='+01-JUL-2021'+and+date_collected+<+'01-OCT-2021'+and+sample_type_new+=+'SAMP'+v_target_code=file_csv)

The link above only generates data that have not been qualified. Qualified water quality data must be retrieved interactively via the DBHYDRO browser.

Stage data for stations 1-7, 1-8C, and 1-9 from the reporting quarter can be retrieved by copying and pasting the following link into the address field of a web browser:

http://my.sfwmd.gov/dbhydroplsql/web_io.report_process?v_period=uspec&v_start_date=20210701&v_end_date=20210930&v_report_type=format7&v_target_code=file_csv&v_run_mode=onLine&v_js_flag=Y&v_dbkey=FE775/FE776/FE777

Table A-1. Arthur R. Marshall Loxahatchee National Wildlife Refuge monthly TP data (in parts per billion).

Month-Year	LOX3	LOX4	LOX5	LOX6	LOX7	LOX8	LOX9	LOX10	LOX11	LOX12	LOX13	LOX14	LOX15	LOX16
Oct-2018	7	8	6	5	8	7	6	6	6	7	5	6	5	6
Nov-2018	---	8	---	8	6	6	12	10	8	9	8	7	7	8
Dec-2018	---	8	---	5	4	10	---	7	6	6	6	5	6	5
Jan-2019	---	8	---	4	6	12	---	---	6	6	6	6	4	6
Feb-2019	16	10	18	7	11	13	10	10	7	7	7	6	6	8
Mar-2019	8	7	7	4	6	9	8	7	6	5	5	6	5	7
Apr-2019	---	---	8	6	7	12	21	6	7	6	6	6	5	7
May-2019	---	9	---	14	9	20	---	---	10	8	10	9	10	9
Jun-2019	---	---	---	8	9	19	---	---	9	6	8	9	7	7
Jul-2019	8	11	7	6	7	4	11	10	4	9	7	7	8	8
Aug-2019	7	9	6	6	6	7	8	7	7	9	6	6	7	9
Sep-2019	6	9	10	5	6	9	7	6	7	7	10	6	6	7
Oct-2019	---	8	6	6	5	12	10	7	8	4	6	6	6	7
Nov-2019	7	6	5	5	5	6	7	7	6	5	4	6	6	5
Dec-2019	6	5	5	4	7	7	7	4	6	5	6	4	5	4
Jan-2020	4	6	6	4	3	6	6	4	6	4	5	5	4	6
Feb-2020	12	6	8	5	5	7	6	5	4	6	5	5	5	6
Mar-2020	6	6	7	5	5	4	5	4	6	5	5	7	4	5
Apr-2020	---	9	---	7	11	16	12	---	8	6	7	7	6	6
May-2020	---	---	---	---	---	---	---	---	7	5	8	8	5	7
Jun-2020	10	8	---	7	10	14	10	---	6	7	8	5	5	9
Jul-2020	7	---	6	5	7	9	7	---	4	5	6	6	7	7
Aug-2020	10	10	6	5	7	6	6	9	6	6	6	6	7	7
Sep-2020	6	11	7	6	8	8	7	8	8	9	7	7	8	11
Oct-2020	6	9	6	5	7	11	7	6	6	4	7	6	5	7
Nov-2020	6	9	6	4	4	8	5	4	4	5	5	6	5	6
Dec-2020	4	6	5	4	5	8	6	5	5	6	6	6	8	6
Jan-2021	4	4	5	4	5	6	4	4	4	6	4	5	5	5
Feb-2021	4	5	4	4	4	6	6	4	5	5	5	4	5	5
Mar-2021	8	9	8	6	8	9	7	8	6	6	5	5	6	7
Apr-2021	---	7	---	7	6	8	7	---	5	5	6	5	6	6
May-2021	---	---	---	8	10	12	---	---	10	6	8	7	8	11
Jun-2021	---	---	---	---	---	---	---	---	7	9	---	8	7	7
Jul-2021	---	30	---	15	---	---	---	---	10	8	9	9	8	10
Aug-2021	---	13	8	7	7	9	10	10	8	8	6	12	8	8
Sep-2021	7	12	7	7	6	6	7	6	---	7	6	7	7	8

Notes:

--- indicates sample was not collected due to insufficient water depth.

APPENDIX B:

WEEKLY GRAB TOTAL PHOSPHORUS CONCENTRATION DATA FOR SHARK RIVER SLOUGH

TP concentration data used in this report can be directly retrieved from the South Florida Water Management District's DBHYDRO database by copying and pasting the following link into the address field of a web browser:

[http://my.sfwmd.gov/dbhydroplsql/water_quality_data.report_full?v_where_clause=where+station_id+in+\('S12A','S12B','S12C','S12D','S333','S355A','S355B','S356-334'\)+and+test_number+=+25+and+collect_method+=+'G'+and+date_collected+>='01-JUL-2021'+and+date_collected+<+'01-OCT-2021'+and+sample_type_new+=+'SAMP'&v_target_code=file_csv](http://my.sfwmd.gov/dbhydroplsql/water_quality_data.report_full?v_where_clause=where+station_id+in+('S12A','S12B','S12C','S12D','S333','S355A','S355B','S356-334')+and+test_number+=+25+and+collect_method+=+'G'+and+date_collected+>='01-JUL-2021'+and+date_collected+<+'01-OCT-2021'+and+sample_type_new+=+'SAMP'&v_target_code=file_csv)

The link only generates data that have not been qualified. Qualified water quality data must be retrieved interactively via the DBHYDRO browser.

The "Preferred DBKEY" daily mean flow data for stations S12A, S12B, S12C, S12D, S333 and S334 and source daily mean flow data for stations, S355A, S355B, S355B Temporary Pumps, and S356 during the reporting quarter can be retrieved by copying and pasting the following link into the address field of a web browser:

http://my.sfwmd.gov/dbhydroplsql/web_io.report_process?v_period=uspec&v_start_date=20210701&v_end_date=20210930&v_report_type=format7&v_target_code=file_csv&v_run_mode=onLine&v_js_flag=Y&v_dbkey=FE771/FE772/FE773/FE774/MQ895/MQ896/AM173/64136/15042/FB752

Table B-1. Weekly grab TP data (in parts per billion) for Shark River Slough.

Date	S12A	S12B	S12C	S12D	S333	S333N	S355A	S355B	S356	Remarks
10/05/2020	7	7	8	9	7	8	---	---	5	N/A
10/12/2020	6	6	7	8	8	7	---	---	5	Compliance date
10/19/2020	6	5	5	8	8	8	---	---	6	N/A
10/26/2020	7	5	7	9	9	9	6	8	5	Compliance date
11/02/2020	9	6	5	9	8	9	---	---	6	N/A
11/10/2020	6	4	5	10	9	9	---	---	6	Compliance date
11/16/2020	5	4	4	12	10	11	---	---	7	N/A
11/23/2020	5	5	6	8	7	7	5	7	6	Compliance date
11/30/2020	5	4	4	7	7	7	---	---	5	N/A
12/07/2020	6	5	5	6	6	6	---	---	6	Compliance date
12/14/2020	5	4	3	7	5	6	---	---	6	N/A
12/21/2020	4	5	4	6	J5	7	J5	J5	10	Compliance date
12/28/2020	4	4	4	6	6	5	---	---	9	N/A
01/04/2021	4	4	4	7	7	7	4	6	10	Compliance date
01/11/2021	5	5	3	6	6	6	---	---	8	N/A
01/19/2021	5	5	3	7	6	6	---	---	9	Compliance date
01/25/2021	G	G	G	G	G	G	---	---	G	N/A
02/01/2021	10	---	6	8	6	8	---	---	6	Compliance date
02/08/2021	10	---	6	6	7	7	---	---	5	N/A
02/15/2021	13	---	9	8	8	8	5	8	5	Compliance date
02/22/2021	11	---	9	8	9	9	---	---	5	N/A
03/01/2021	13	---	---	8	9	10	---	---	5	Compliance date
03/08/2021	14	---	---	9	10	10	---	---	6	N/A
03/15/2021	11	---	---	8	8	9	6	9	5	Compliance date
03/22/2021	13	---	---	6	9	10	---	---	5	N/A
03/29/2021	20	---	---	11	11	11	---	---	6	Compliance date
04/05/2021	21	---	---	12	14	14	---	---	6	N/A
04/12/2021	30	---	---	14	14	14	---	---	7	Compliance date
04/19/2021	31	---	---	16	18	17	---	---	5	N/A
04/26/2021	31	---	---	22	21	17	7	13	5	Compliance date
05/03/2021	53	---	---	20	20	22	---	---	9	N/A
05/10/2021	44	---	---	32	22	29	14	20	12	Compliance date
05/17/2021	53	---	---	31	31	30	---	---	12	N/A
05/24/2021	51	---	32	---	20	23	12	22	32	Compliance date
06/01/2021	59	---	40	---	27	28	---	---	41	N/A
06/07/2021	46	---	30	---	26	26	---	---	17	Compliance date
06/14/2021	58	---	35	---	25	24	---	---	25	N/A
06/21/2021	46	---	34	---	27	26	22	36	10	Compliance date
06/28/2021	54	---	32	---	20	19	---	---	6	N/A
07/06/2021	60	---	24	---	18	18	---	---	6	Compliance date
07/12/2021	34	---	28	---	17	18	---	---	5	N/A
07/19/2021	23	---	13	---	14	16	8	13	5	Compliance date
07/26/2021	28	---	---	14	14	15	---	---	5	N/A
08/02/2021	21	---	---	---	13	15	---	---	7	Compliance date
08/09/2021	18	---	---	11	11	13	---	---	4	N/A
08/16/2021	13	11	11	12	11	11	13	14	5	Compliance date
08/23/2021	12	10	11	13	12	13	---	---	5	N/A
08/30/2021	12	10	10	12	10	11	---	---	6	Compliance date
09/07/2021	13	10	10	---	11	11	---	---	5	N/A
09/13/2021	23	11	10	---	11	13	---	---	5	Compliance date
09/20/2021	31	12	8	---	10	10	---	---	5	N/A
09/27/2021	20	12	8	---	10	10	8	10	6	Compliance date

Notes:

- --- indicates water sample was not collected.
- "Compliance date" indicates biweekly sampling date for Consent Decree calculation.
- "N/A" indicates sampling data presented for informational purposes only.
- J5: Precision or accuracy criteria not met due to improper laboratory or field protocol. Samples recorded as having been collected at a depth of 0.05 meters.
- G: Analyte was detected at or above the method detection limit in both the sample and the associated field blank, equipment blank, or trip blank, and the blank value was greater than 10% of the associated sample value.

APPENDIX C:

WEEKLY GRAB TOTAL PHOSPHORUS CONCENTRATION DATA FOR TAYLOR SLOUGH AND COASTAL BASINS

TP concentration data used in this report can be directly retrieved from the South Florida Water Management District's DBHYDRO database by copying and pasting the following link into the address field of a web browser:

[http://my.sfwmd.gov/dbhydroplsql/water_quality_data.report_full?v_where_clause=where+station_id+in+\('S332DX','S18C','S328','G737'\)+and+test_number+=+25+and+collect_method+=+'G'+and+date_collected+>='01-JUL-2021'+and+date_collected+<+'01-OCT-2021'+and+sample_type_new+=+'SAMP'&v_target_code=file_csv](http://my.sfwmd.gov/dbhydroplsql/water_quality_data.report_full?v_where_clause=where+station_id+in+('S332DX','S18C','S328','G737')+and+test_number+=+25+and+collect_method+=+'G'+and+date_collected+>='01-JUL-2021'+and+date_collected+<+'01-OCT-2021'+and+sample_type_new+=+'SAMP'&v_target_code=file_csv)

The link only generates data that have not been qualified. Qualified water quality data must be retrieved interactively via the DBHYDRO browser.

The "Preferred DBKEY" daily mean flow data for stations at Taylor Slough and the Coastal Basins (S332D, S18C, S328, and G737) during the reporting quarter can be retrieved by copying and pasting the following link into the address field of a web browser:

http://my.sfwmd.gov/dbhydroplsql/web_io.report_process?v_period=uspec&v_start_date=20210701&v_end_date=20210930&v_report_type=format7&v_target_code=file_csv&v_run_mode=onLine&v_js_flag=Y&v_dbkey=15760/TA413/AN558/AI315

Daily flow data are missing for S18C from September 23 to September 30, 2019.

The daily flow at S200 Pump Station on the days when the G737 gates were opened were used as the surrogate daily flow data for G737. The break point gate opening data can be assessed using the following link:

http://my.sfwmd.gov/dbhydroplsql/web_io.report_process?v_period=uspec&v_start_date=20210701&v_end_date=20210930&v_report_type=format7&v_target_code=file_csv&v_run_mode=onLine&v_js_flag=Y&v_dbkey=AN670/AN671/AN672

Table C-1. Weekly grab TP data (in parts per billion) for Taylor Slough and Coastal Basins.

Date	S332DX	S18C	G737	S328	Date	S332DX	S18C	G737	S328
10/06/2020	5	4	3	3	04/06/2021	5	4	--	J
10/13/2020	7	5	3	4	04/13/2021	6	4	--	49
10/20/2020	6	4	4	4	04/20/2021	6	4	--	70
10/27/2020	6	6	3	4	04/27/2021	6	5	--	J
11/03/2020	6	4	3	3	05/04/2021	5	4	--	J
11/10/2020	6	13	2	4	05/11/2021	6	5	--	J
11/17/2020	6	6	2	3	05/18/2021	7	6	--	J
11/24/2020	5	6	4	5	05/25/2021	6	5	--	J
12/01/2020	5	7	3	5	06/02/2021	7	6	--	J
12/08/2020	6	5	3	5	06/08/2021	10	6	--	J
12/15/2020	6	4	4	5	06/15/2021	6	6	13	J
12/22/2020	5	4	6	4	06/22/2021	5	4	--	14
12/29/2020	6	4	3	4	06/29/2021	6	4	--	J
01/05/2021	6	4	6	4	07/06/2021	5	3	4	J
01/12/2021	7	4	6	4	07/13/2021	6	4	--	J
01/19/2021	6	4	6	3	07/20/2021	6	4	--	--
01/26/2021	8	5	5	4	07/27/2021	5	3	--	J
02/02/2021	4	3	3	2	08/03/2021	6	3	--	--
02/09/2021	6	4	4	3	08/10/2021	6	5	--	14
02/16/2021	6	5	5	3	08/17/2021	5	4	--	--
02/23/2021	6	5	4	3	08/24/2021	6	4	--	10
03/02/2021	6	5	3	5	08/31/2021	5	4	--	--
03/09/2021	6	5	4	6	09/08/2021	5	4	4	3
03/16/2021	6	4	6	8	09/14/2021	6	4	3	--
03/23/2021	6	4	--	8	09/21/2021	6	4	3	4
03/30/2021	6	4	--	J	09/28/2021	5	4	3	--

Notes:

-- indicates a water sample was not collected.

"J" indicates the sample was collected from a disconnected pool and is not representative of the surrounding water body; the surrounding area was dry.

APPENDIX D:

CALCULATION METHODS

Long Term Marsh Concentration Levels for Loxahatchee National Wildlife Refuge

Long Term Marsh Concentration Levels:

$$C = 10.7172 - 0.541156S + 1.372\sqrt{7.5819 - 0.9310S + 0.02902216S^2}$$

Terms:

C = the natural log of the geometric mean total phosphorus concentration across 14 marsh stations.

S = average stage measured at gauges CA1-9, CA1-7, and CA1-8C on sampling date (feet).

This equation is applicable over a stage range of 15.42 to 17.14 feet. If the stage on any sampling date exceeds 17.14 feet, a stage of 17.14 feet should be used in calculating the long term concentration levels. The equation shall not apply to dates when the average stage is less than 15.42 feet.

(1991 Settlement Agreement entered as a Consent Decree in 1992 and modified in 1995, Exhibit B, Appendix B, Attachment II, page B-7)

Discharge Limits and OFW Standards for Shark River Slough

Interim Discharge Limit:

$$C = 11.16 - 0.00465Q + 1.397\sqrt{6.377 - 0.00591Q + 0.00000436Q^2}$$

Long-Term Discharge Limit & OFW Standard:

$$C = 11.38 - 0.00538Q + 1.397\sqrt{2.493 - 0.00231Q + 0.00000170Q^2}$$

Frequency Exceedance:

$$F = 48.411 - 0.02896Q + 1.397\sqrt{330.1 - 0.3071Q + 0.0002254Q^2}$$

Terms:

Water Year = October through September

Q = total inflow to Shark River Slough for water year, S-12s + S-333 + any additional inflow from the WCAs established in the future, thousand acre-ft/yr (kac-ft/yr).

C = limit on maximum flow-weighted-mean inflow concentration for any Water Year, composite of all inflows to Shark Slough (ppb).

F = exceedance for maximum frequency (percent) of inflow concentrations exceeding 10 ppb, computed from the time series of concentrations composited across all inflow structures on each sampling date with positive flow in a given Water Year.

The range of flow (Q) used in deriving the limits is 117 to 1061 kac-ft/yr. If the total flow for any water year exceeds 1061 kac-ft/yr, a flow of 1061 kac-ft/yr should be used in calculating the discharge limits.

(1991 Settlement Agreement entered as a Consent Decree in 1992 and modified in 1995, Exhibit B, Appendix A, Attachment I, page A-5)

Discharge Limits and OFW Standards for Taylor Slough and Coastal Basins

Long-Term Flow-Weighted Discharge Limit & OFW Standard = 11.0 ppb

Frequency Exceedance:

Frequency of values > 10 ppb must be less than 53.1%.

Terms:

Limits are defined on a Water Year basis, October through September.

Basin flow is the total flow through structures S-332, S-175, S-18C, plus any new release points from this basin established in the future, thousand acre-ft/yr (kac-ft/yr).

Limits apply to the flow-weighted-mean concentration for any Water Year, composite of all inflows to Taylor Slough (S-332) and Coastal Basin (S-18C).

Frequency exceedance is the exceedance for maximum frequency (percent) of inflow concentrations exceeding 10 ppb, computed from the time series of concentrations composited across all inflow structures on each sampling date with positive flow in a given Water Year.

(1991 Settlement Agreement entered as a Consent Decree in 1992 and modified in 1995, Exhibit B, Appendix A, Attachment II, page A-6)

APPENDIX E:

DOCUMENT REVISIONS

Table E-1. Revisions to this report since initial publication.

Location of Revisions	Original	Revision
Cover	February 10, 2020 Shark River Slough compliance results are published annually in this report when the final approved flow data for a federal water year (WY) are available. The WY2020 (October 1, 2019 – September 30, 2020) results will be published at that time.	May 5, 2021 (Original: February 10, 2020) This report has been revised from earlier versions to include Shark River Slough compliance results using the final approved flow data for federal Water Year 2021 (October 1, 2020 – September 30, 2021).
Contents		The Contents section was revised to reflect the revisions to the Shark River Slough section, the change of data from 'provisional' to 'final' in Table 3, and the addition of Figures 5 through 11.
Page 3 Executive Summary	Shark River Slough: Tracking results based on provisional data for the third quarter of 2021 are presented. When the final data are available, the final federal Water Year (WY) 2020 (October 1, 2019 – September 30, 2020) 12-month TP flow weighted mean concentrations (FWMCs) will be published separately as a revision to the third quarter 2021 report.	Shark River Slough: The 12-month TP flow-weighted mean concentration (FWMC) calculated using Method 1.5 was below the 12-month long-term limit during the federal Water Year (WY), WY2021 (October 1, 2020 – September 30, 2021).
Page 4 Table 1 Page 10	Table 1. Third quarter 2019 TP compliance results for the Refuge, TP calculation provisional tracking results for Shark River Slough, and TP calculation tracking results for Taylor Slough and Coastal Basins. Everglades National Park – Shark River Slough – PROVISIONAL DATA and RESULTS	Table 1. Third quarter 2021 TP compliance results for the Refuge, TP calculation tracking results for Shark River Slough, and TP calculation tracking results for Taylor Slough and Coastal Basins. Everglades National Park – Shark River Slough.
Figure 1, Figure 2, and Figure 4		Maps were revised to correct typos.
Pages 9 through 18 Everglades National Park Shark River Slough Reporting Period Update		The entire section was updated to present the third quarter of 2021, inclusive of WY2021 compliance values, calculated using the approved final flow data. Table 3 was modified to reflect the final flow data for S12s, and Figures 5 through 11 were added.
Pages 19 through 25 Everglades National Park Taylor Slough and Coastal Basins		Figure and table numbers were adjusted to reflect the addition of the figures and tables in the Shark River Slough section.

