Disclaimer: Information contained in the report addresses environmental conditions only and is not the official South Florida Water Management District operations recommendation or decision.

M E M O R A N D U M

TO: John Mitnik, Assistant Executive Director, Executive Office Staff

FROM: SFWMD Staff Environmental Advisory Team

DATE: June 24, 2020

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

The large-scale weather pattern this morning features an upper-level trough to the east of Florida, which would favor total District rainfall below the daily climatological average (0.29") today. However, the forecast is a bit tricky in that available moisture is about average for late June while instability is enhanced area wide but especially around Lake Okeechobee southward. This combination of factors suggests that, while below average total rainfall and coverage of rain are most likely, localized, significant rainfall accumulations are possible. This is very likely the case since, in addition the above ingredients, a slow translation speed of rains toward the northeast in an environment also suitable for a high degree of interaction between individual cells of rain could heighten the potential for isolated areas of heavy rainfall. Indications are that the rains would not begin until early or mid-afternoon, by which time the east and west coast sea breeze circulations will have moved inland. Thus, today's quantitative precipitation forecast (QPF) depicts rains displaced well removed from the west coast and also away from the immediate southeast coast but with an uncertain starting point over the eastern interior, the western suburbs of metropolitan Miami-Dade and/or Broward Counties could still be affected. While rains could extend past sunset in a few cases, the rains are expected to diminish overnight. A large concentration of Saharan dust and an associated Saharan Air Layer are expected to pass through the western Caribbean on Wednesday, the Gulf of Mexico this weekend and portions of the southern United States into early next week. The arrival of the dust should coincide with the expansion of a mid-level ridge of high pressure from the Atlantic to Florida. The dust's inhibiting effects on rainfall, along with increased subsidence (sinking motion) associated with the building high-pressure area aloft, should discourage typical shower and thunderstorm development from Wednesday through Friday, resulting in much below normal rainfall for the period. By late in the weekend or early next week the subtropical ridge of high pressure is forecast to weaken some while a lighter concentration of Saharan dust remains. The break in the subtropical ridge should mean a chance for rainfall to recover over Florida to near or around the daily climatological average, with a lower chance that it would exceed it. Steering winds predominantly from the east from the weekend into early next week would also favor the greatest rains over the interior and the west relative to the east or east coast. For the week ending next Tuesday morning, the deterministic total QPF is well under the weekly long-term average of close to two inches, with the model probabilistic indicating a good-to-high chance of much below normal rainfall. The greatest departures from normal are most likely to occur along or near the east coast with a better chance of greater rains over the interior and the west.

Kissimmee

Tuesday morning stages were 54.4 feet NGVD (2.1 feet below schedule) in East Lake Toho, 53.5 feet NGVD (at schedule) in Toho, and 51.4 feet NGVD (0.4 feet above schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.4 feet NGVD at S-65A and 25.9 feet NGVD at S-65D. Tuesday morning discharges were 505 cfs at S-65, 865 cfs at S-65A, 1562 cfs at S-65D and 1849 cfs at S-65E. Dissolved oxygen concentration in the Kissimmee River averaged 1.4 mg/L for the week through

Sunday. Kissimmee River mean floodplain depth on Sunday was 0.78 feet. ***This week's recommendations****:* To the extent possible, continue to adjust S61 discharge to balance the rates of stage rise in Lakes Toho and KCH. ***2020 Wet Season Recommendations for Kissimmee Basin:*** Continue to use the IS-14-50 discharge plan through the 2020 Wet Season. The discharge rate of change limits for S-65/S-65A may be adjusted for individual events after consultation with Kissimmee River Restoration Evaluation Program staff. To the extent possible, attempt to control the ascension rate in East Lake Toho to be less than 1 ft/30d during the June 1-August 15 window. To the extent possible, attempt to control the ascension rate in Lakes Toho and Kissimmee-Cypress-Hatchineha to be less than 0.5 ft/14d during the June 1-August 15 window.

Lake Okeechobee

Lake Okeechobee stage was 12.35 feet NGVD on June 22, 2020, up 0.15 feet from the previous week, and 1.23 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.25 feet below the Base Flow sub-band. Lake stage moved back into the ecological envelope (which varies seasonally from 12 – 15 feet NGVD +/- 0.5 feet) on June 2, 2020, after being up to 1.5 feet below since October 15, 2019. While ascension rates were recently quite high (over 1 foot in 3 weeks), the rate of rise slowed over the past week, providing submerged plant communities an opportunity to catch up with rising stages. Large inflows have also increased cyanobacteria bloom potential, with central, western, and northern portions of the lake showing elevated Chlorophyll-*a* concentrations based on satellite imagery.

Estuaries

Total inflow to the St. Lucie Estuary averaged 1,483 cfs over the past week with no flow coming from Lake Okeechobee. The seven-day average salinities increased in the estuary over the past week. Salinity at the US1 Bridge is in the fair range (5-10) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,098 cfs over the past week with 57 cfs (estimated) coming from the Lake. The seven-day average salinity remains low at S-79 and Val I-75 but increased at Ft. Myers, Cape Coral and Shell Point over the past week. Salinities are in the good range (0-10) for tape grass at Val I-75 and Ft. Myers. Salinities are in the good range (10-30) for adult eastern oysters at Cape Coral, Shell Point and Sanibel.

Lake stage is in the Beneficial Use sub-band of 2008 LORS. Tributary hydrological conditions are wet. The SFWMD's Lake Okeechobee Adaptive Protocol's Release Guidance suggests no S-77 release to the Caloosahatchee Estuary.

Stormwater Treatment Areas

Over the past week, no Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2021 (since May 1, 2020) is approximately 9,500 ac-feet. The total amount of inflows to the STAs in WY2021 is approximately 284,000 ac-feet. Most STA cells are above target stage. STA-1E Western Flow-way is offline for the Restoration Strategies project to fill and grade Cells 5 and 7. Operational restrictions are in place in STA-1W Northern Flow-way related to STA-1W Expansion #1 startup activities, in STA-1E Central Flow-way, STA-2 Flow-way 3, STA-2 Flow-way 4, STA-3/4 Eastern, Central, and Western Flow-ways for vegetation management activities, and in STA-5/6 Flow-ways 2 and 3 following the Restoration Strategies project to grade non-effective treatment areas. This week, there is no capacity for Lake releases in the STAs.

Everglades

Wading bird nesting has largely ended due to the onset of the rainy season. Initial estimates of nesting numbers and success indicate a well below average year for wading bird production. Wood Stork nest success was near zero and the lone bright spot was the apparent nesting success of the small herons nesting in WCA-1 and Everglades National Park. Ascension rates impact apple snail reproduction and

the current ecologically preferred rate in the Everglades is 0.05–0.15 feet per week, with a maximum of 0.25 per week or 0.5 per two weeks. These conditions occurred in portions of WCA-3A, WCA-2A, and WCA-1. Last week WCA-1 stages reversed trend and rose again, then stabilized. WCA-2A continued to ascend away from schedule last week and WCA-3A is above the Increment 1.2 action line and trending parallel to that line. Moderate to well above average rains fell over Taylor Slough and Florida Bay last week with more to the west. Florida Bay average salinities decreased in concert with the areas that received the most rainfall. The 30-day moving average at the TR mangrove zone continued to decrease as positive southward flows were steady throughout the week.

Supporting Information
KISSIMMEE BASIN
Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 1.32 inches of rainfall in the past week and the Lower Basin received 2.05 inches (SFWMD Daily Rainfall Report 6/22/2020).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in **Table 1**. KCOL stage hydrographs with respective regulation schedules and rainfall are shown in Figures 1-3.

Table 1. Average discharge (cfs) for the preceding seven days, one-day stage (feet NGVD), and departures from KCOL flood regulation (R) or temporary schedules (T, A, or S). Provisional, real-time data are from SFWMD.

Report Date: 6/23/2020

Water Body	Structure	7-day Average Discharge (cfs)[1]	Stage Monitoring Site[2]	Lake Stage (feet)	Schedule Type[3]	Schedule Stage (feet)	Daily Departure (feet)						
							6/21/20	6/14/20	6/7/20	5/31/20	5/24/20	5/17/20	5/10/20
Lakes Hart and Mary Jane	S-62	78	LKMJ	60.2	R	60.0	**0.2**	0.1	-0.2	0.1	-0.1	-0.2	-0.2
Lakes Myrtle, Preston, and Joel	S-57	0	S-57	60.8	R	61.0	**-0.2**	-0.2	-0.4	0.0	-0.1	-0.1	0.0
Alligator Chain	S-60	0	ALLI	62.8	R	63.2	**-0.4**	-0.5	-0.9	0.1	0.0	0.0	-0.1
Lake Gentry	S-63	0	LKGT	60.7	R	61.0	**-0.3**	-0.6	-1.0	0.2	-0.1	0.1	0.0
East Lake Toho	S-59	147	TOHOE	54.3	R	56.5	**-2.2**	-2.7	-3.1	-2.0	-3.0	-3.2	-3.4
Lake Toho	S-61	1,198	TOHOW, S-61	53.5	R	53.5	**0.0**	-0.1	-0.8	0.3	-0.1	-0.3	-0.5
Lakes Kissimmee, Cypress, and Hatchineha	S-65	581	KUB011, LKIS5B	51.2	R	51.0	**0.2**	-0.1	-0.6	0.8	0.0	-0.1	-0.1

[1] Seven-day average of weighted daily means through midnight.
[2] Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.
[3] A = projected ascension line, R = USACE regulation schedule, S = temporary recession target line, T = temporary schedule, N/A= not applicable or data not available.
DATA ARE PROVISIONAL

Lower Kissimmee Basin

Discharges at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 4. Mean daily dissolved oxygen concentrations, discharge, temperature, and rainfall are shown in Figure 5. The 2019-2020 Discharge Plan for S-65/S-65A, the interim regulation schedule for S-65, and a map of the Kissimmee Basin are shown respectively in Figures 6-8.

Table 2. One-day and seven-day averages of discharge at S-65x structures, of dissolved oxygen concentration in the Phase I area river channel, and water depth in the Phase I area floodplain. Data are provisional real-time data from SFWMD.

Report Date: 6/23/2020

Metric	Location	1-Day Average	Average for the Preceeding 7-Days[1]								
		6/21/2020	6/21/20	6/14/20	6/7/20	5/31/20	5/24/20	5/17/20	5/10/20	5/3/20	4/26/20
Discharge (cfs)	S-65	500	**581**	80	427	695	496	353	738	760	611
Discharge (cfs)	S-65A[2]	860	**864**	854	884	788	438	313	656	679	550
Discharge (cfs)	S-65D[2]	1,809	**1,641**	1,988	1,485	903	325	441	667	722	485
Headwater Stage (feet NGVD)	S-65D[2]	25.85	**25.74**	25.72	25.78	25.76	25.84	25.61	25.81	25.84	25.84
Discharge (cfs)	S-65E[2]	1,715	**1,549**	1,868	1,552	926	312	411	617	677	435
Discharge (cfs)	S-67	0	**0**	0	0	0	0	0	0	0	0
DO (mg/L)[3]	Phases I & II/III river channel	1.8	**1.4**	0.7	4.0	6.0	7.6	7.7	7.8	7.9	7.5
Mean depth (feet)[4]	Phase I floodplain	0.78	**0.78**	0.90	0.56	0.28	0.08	0.07	0.09	0.14	0.10

[1] Seven-day average of weighted daily means through Sunday midnight.
[2] S-65A discharge combines S-65A with auxillary strucutures; S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2; S-65D stage averages stage at S-65D and S-65DX1; S-65E discharge combines S-65E and S-65EX1.
[3] DO is the average for sondes at KRBN, PC62, PC33, PD62R, and PD42R.
[4] 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).
DATA ARE PROVISIONAL; N/A indicates that data were not available.

KCOL Hydrographs (through Sunday midnight)

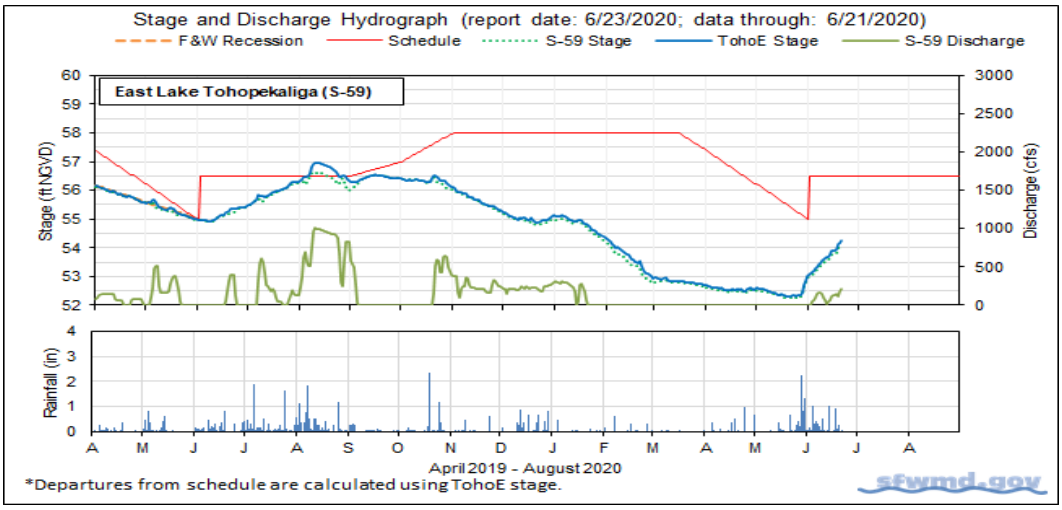


Figure 1.

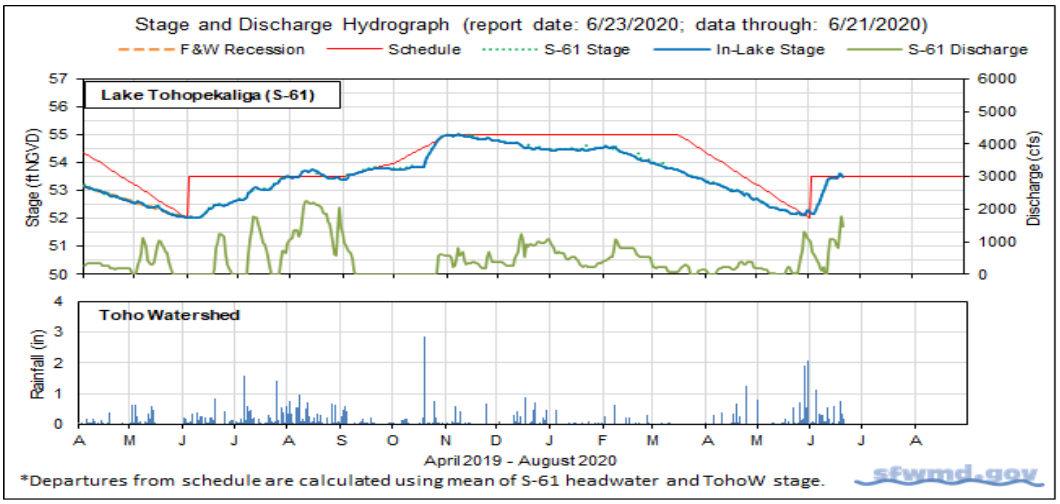


Figure 2.

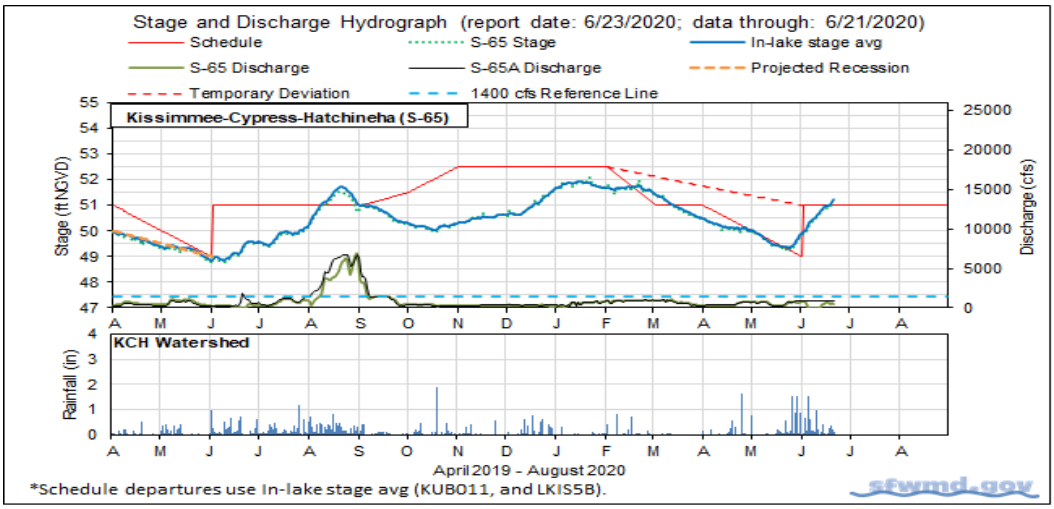


Figure 3.

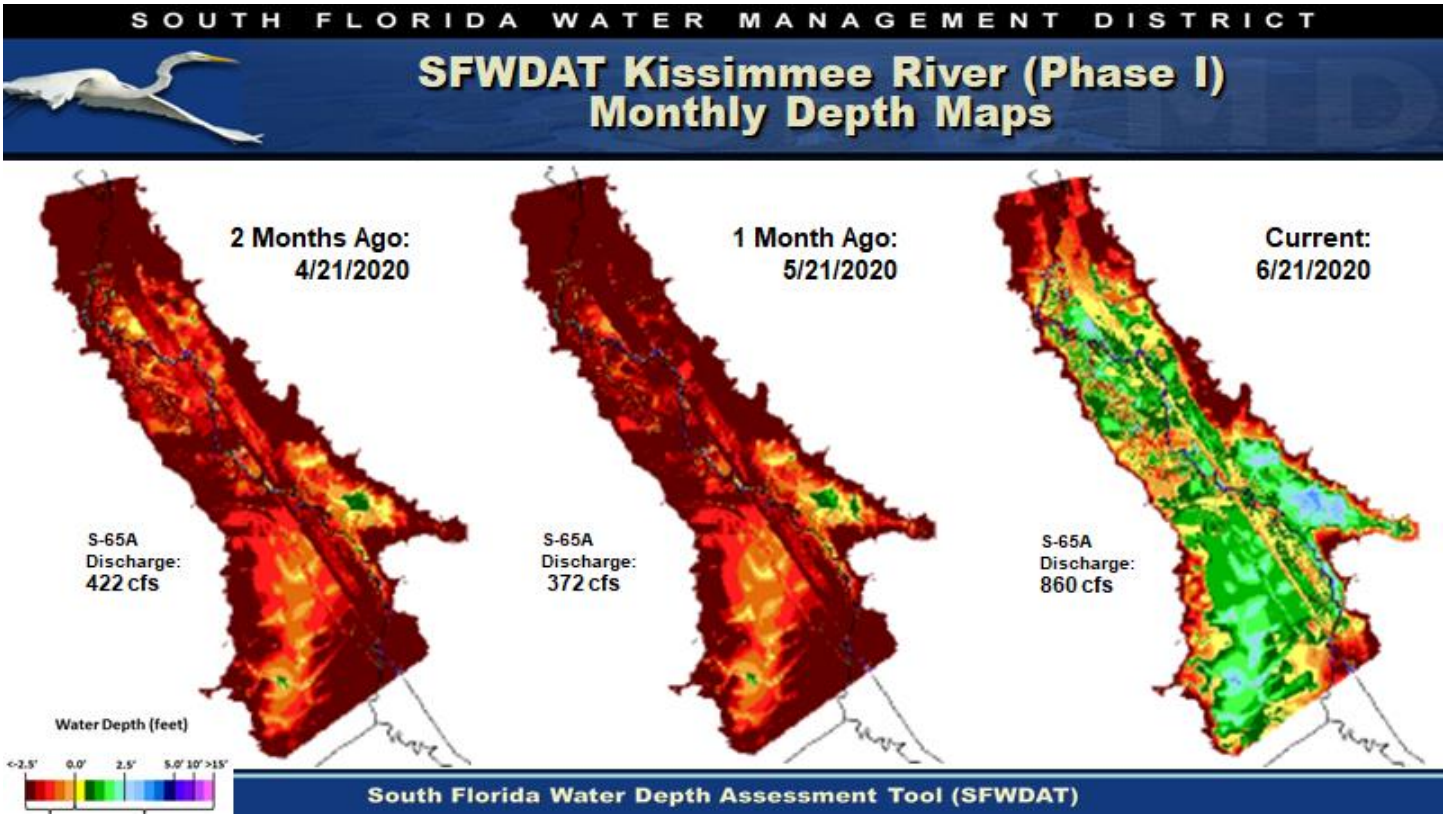


Figure 4. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.

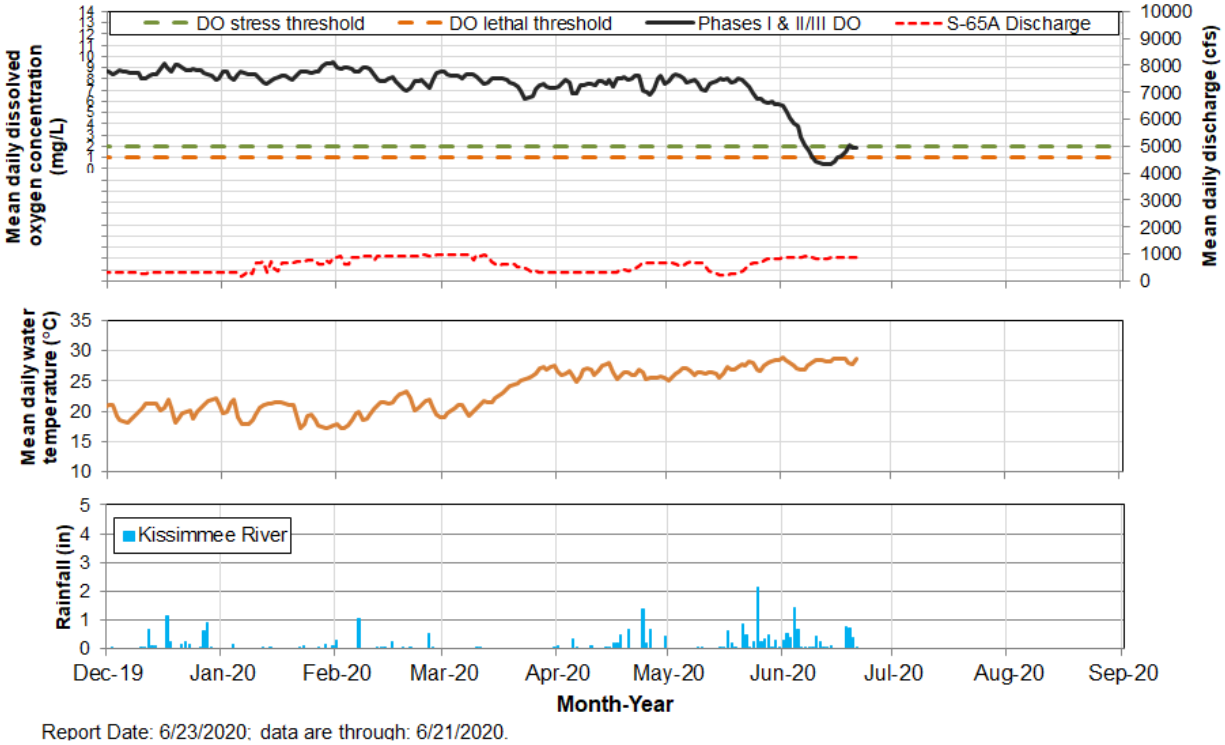


Figure 5. Mean daily dissolved oxygen, discharge, temperature and rainfall in the Phases I/II/III river channel.

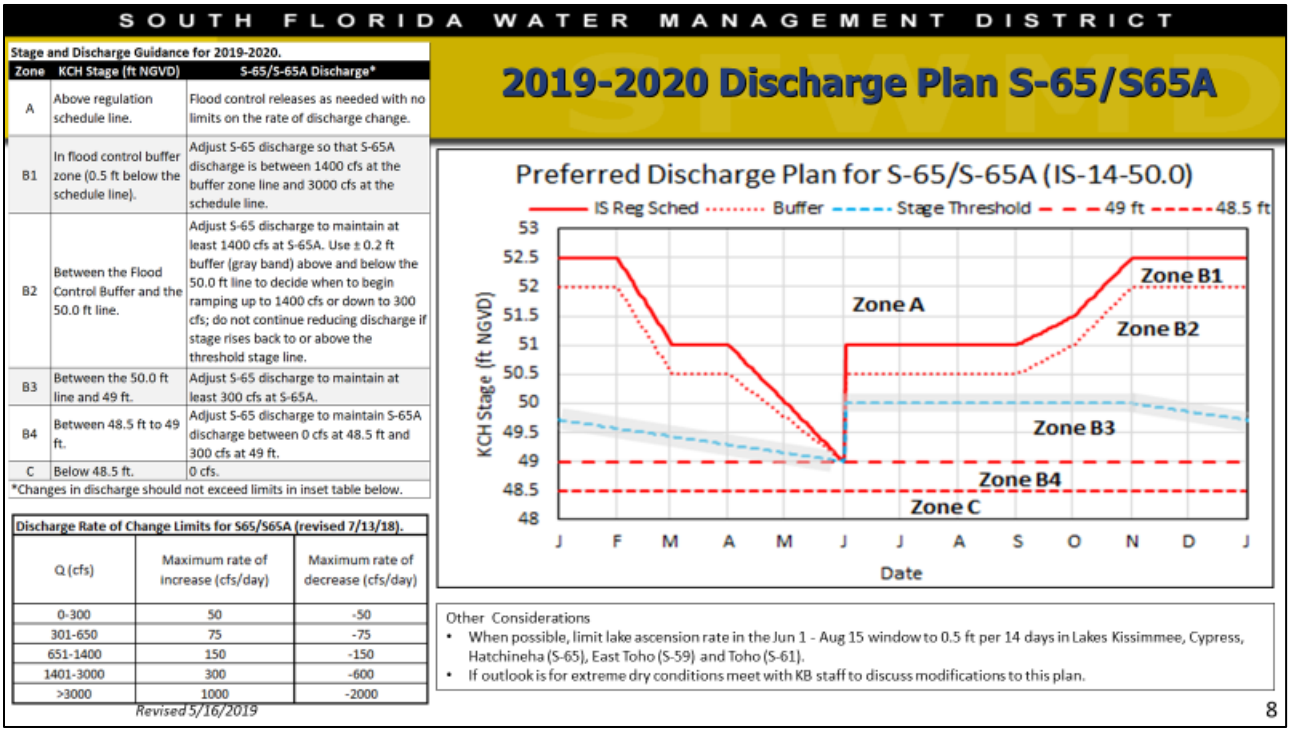


Figure 6. The 2019-2020 Discharge Plan for S-65/S-65A.

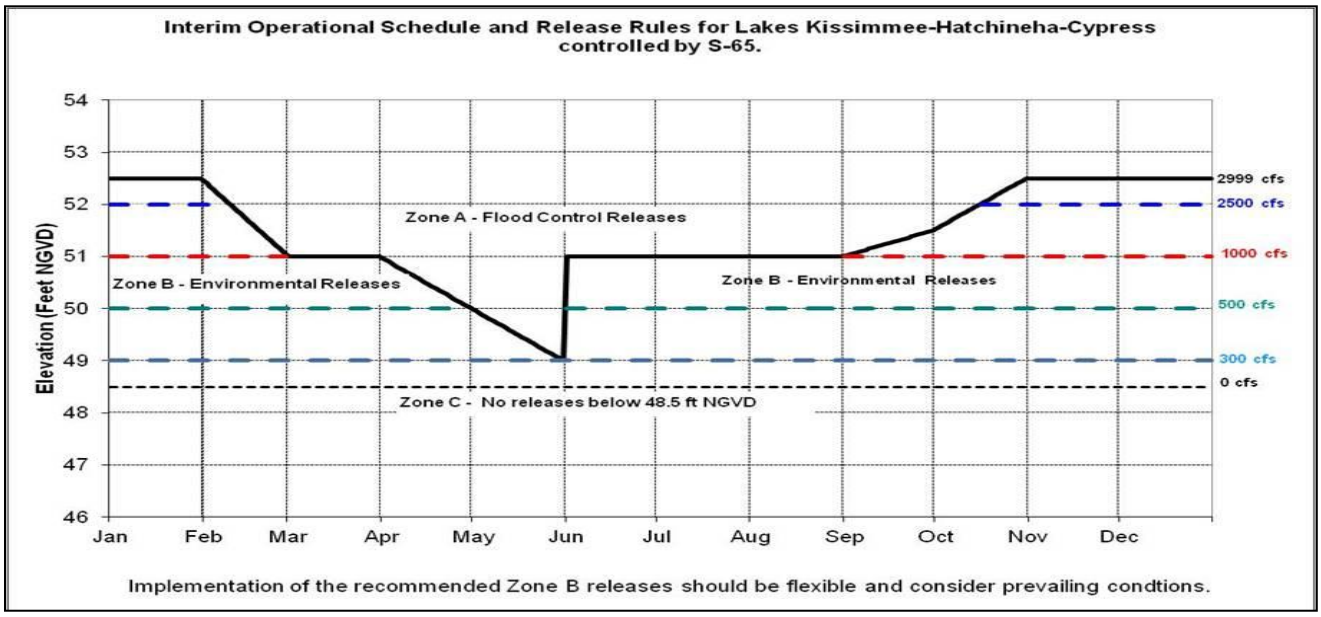


Figure 7. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.

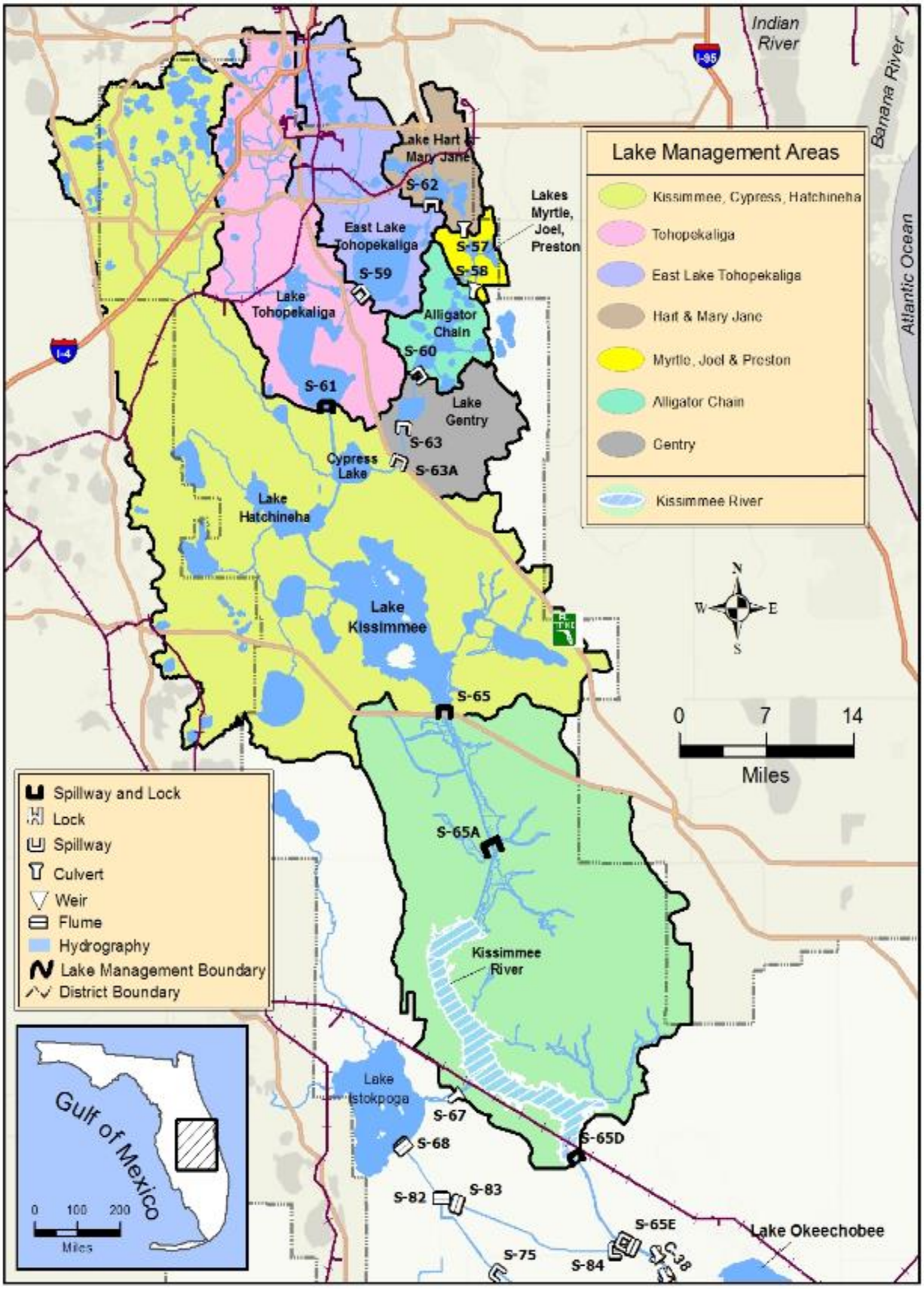


Figure 8. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee stage is 12.35 feet NGVD, 1.23 feet higher than a month ago and 1.13 feet higher than one year ago (Figure 1). The Lake is now back within the preferred ecological envelope (Figure 2). Lake stage moved into the Base Flow sub-band on September 11, 2019 and entered the Beneficial Use sub-band on March 4, 2020 (Figure 3). Lake stage reached a low of 10.99 feet NGVD on May 17 before beginning a rapid rise over the past month. According to RAINDAR, 1.60 inches of rain fell directly over the Lake during the past week (Figure 4). Most of the watershed received between 1.5 and 4 inches of rain, with interspersed pockets of between 0.5 and 1.5 inches.

The average daily inflows (minus rainfall) decreased considerably from 4,443 cfs to 3,618 cfs, while the outflows (minus evapotranspiration) increased from 84 cfs to 190 cfs. No values were recorded for S-308 on four of the past seven days, therefore S-308 downstream values were used for flow estimates. Most of the inflows came from the Kissimmee River (1,559 through S-65E & S-65EX1), while 125 cfs came from the C-41a canal (through S-84 & S-84X). 320 cfs also came from the C-44 canal through S-308, which is predominantly an outflow from the Lake. Total lake inflows and outflows for the past week are detailed in Table 1, as well as the approximate change in lake stage from each major structure's total flows over the period. Figure 5 shows the combined average daily cfs for inflows and outflows for the Lake over the past eight weeks. These data are provisional and are subject to change.

Water quality sampling occurs twice-monthly at approximately 30 stations from May – October as part of expanded monitoring efforts to track and study Harmful Algal Blooms on the Lake. The next sampling event is scheduled for this week. Last week algal samples were collected from S-77 and S-308C (lakeside). No algal blooms were observed, and no toxins were detected at either site.

Current satellite imagery (June 22, 2020) using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data suggested low/moderate potential for cyanobacterial blooms along the northern and northwestern shorelines of the Lake, slightly lower than this time last year (Figure 6). However, a large area of elevated bloom potential was observed in the central portion of the lake, extending northward.

Water Management Summary

Lake Okeechobee stage was 12.35 feet NGVD on June 22, 2020, up 0.15 feet from the previous week, and 1.23 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.25 feet below the Base Flow sub-band. Lake stage moved back into the ecological envelope (which varies seasonally from 12–15 feet NGVD +/- 0.5 feet) on June 2, 2020, after being up to 1.5 feet below since October 15, 2019. While ascension rates were recently quite high (over 1 foot in 3 weeks), the rate of rise slowed over the past two weeks, providing submerged plant communities an opportunity to catch up with rising stages. Large inflows have also increased cyanobacteria bloom potential, with central, western, and northern portions of the lake showing elevated Chlorophyll-*a* concentrations based on satellite imagery.

Table 1. Average daily inflows and outflows and the approximate depth equivalents on Lake Okeechobee for various structures.

INFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-65E & S-65EX1	1766	1559	0.7
S-71 & S-72	114	328	0.2
S-84 & S-84X	1064	125	0.1
Fisheating Creek	149	279	0.1
S-154	12	0	0.0
S-191	379	162	0.1
S-133 P	36	8	0.0
S-127 P	29	15	0.0
S-129 P	17	11	0.0
S-131 P	13	22	0.0
S-135 P	100	94	0.0
S-2 P	0	62	0.0
S-3 P	0	46	0.0
S-4 P	0	45	0.0
L-8 Backflow	157	27	0.0
Rainfall	1311	3458	1.6
Total	**5148**	**6242**	**2.9**

OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-77	71	63	0.0
S-308	-607	-320	-0.1
S-351	14	51	0.0
S-352	0	0	0.0
S-354	0	76	0.0
L-8 Outflow			
ET	2927	2740	1.3
Total	**2404**	**2610**	**1.2**

Provisional Data

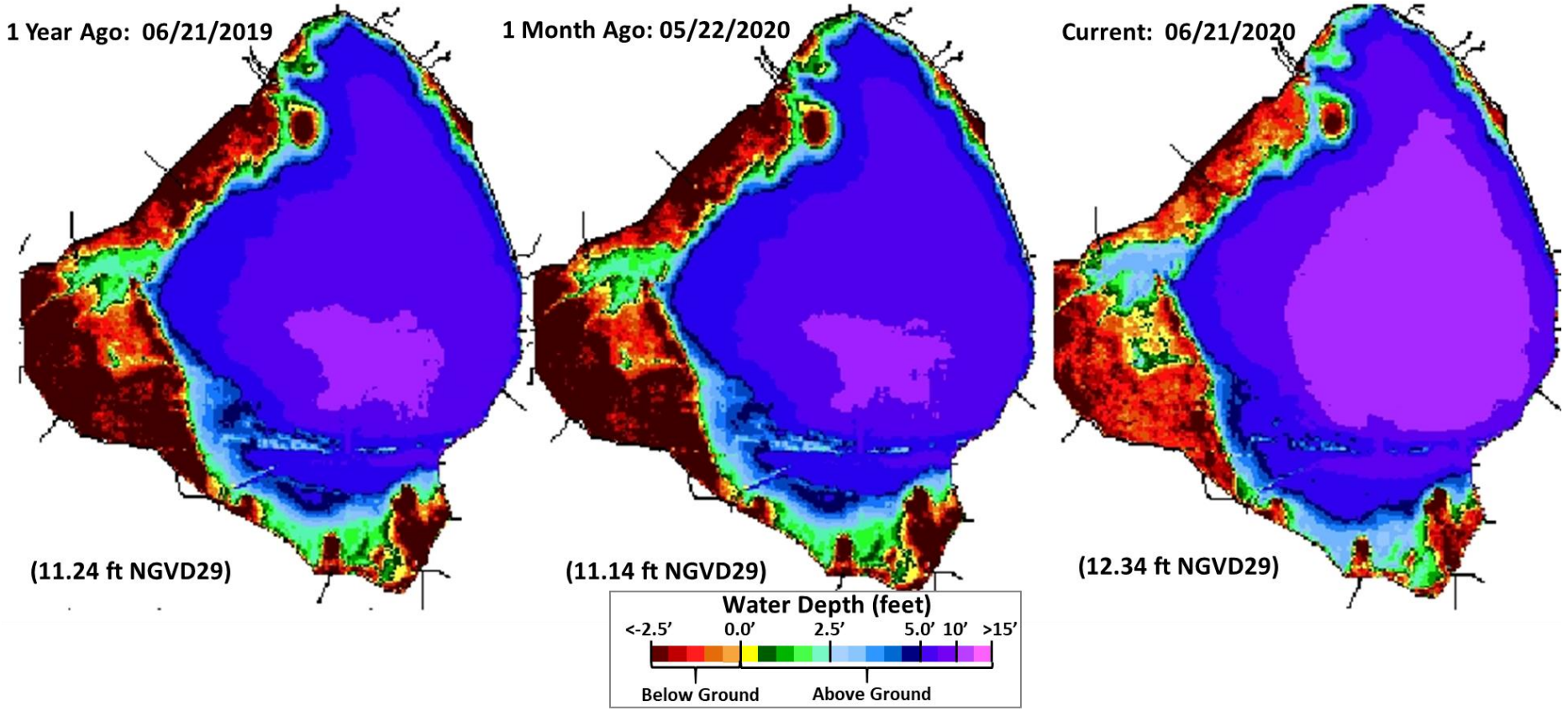


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

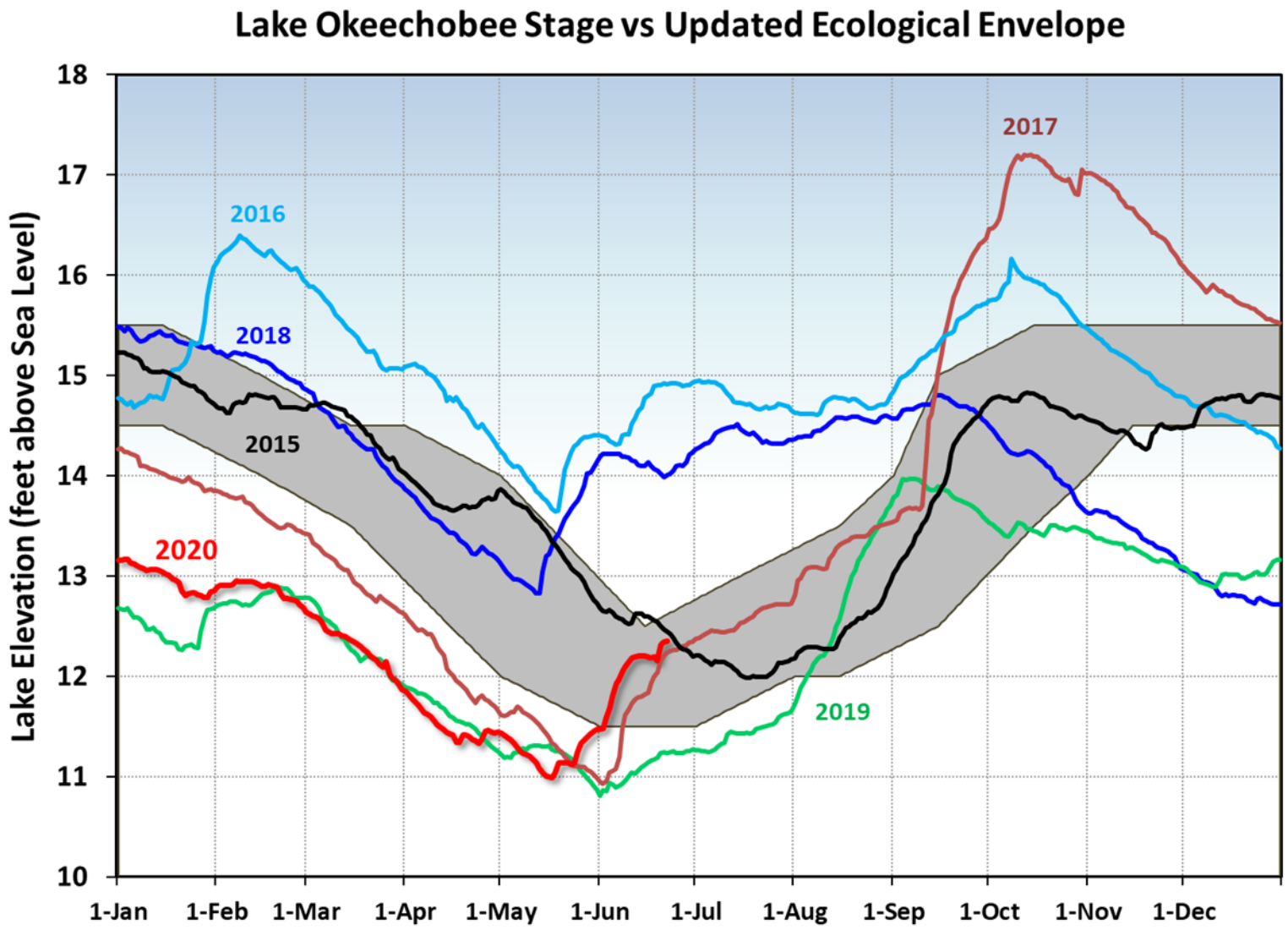


Figure 2. Select annual stage hydrographs for Lake Okeechobee in comparison to the updated Ecological Envelope.

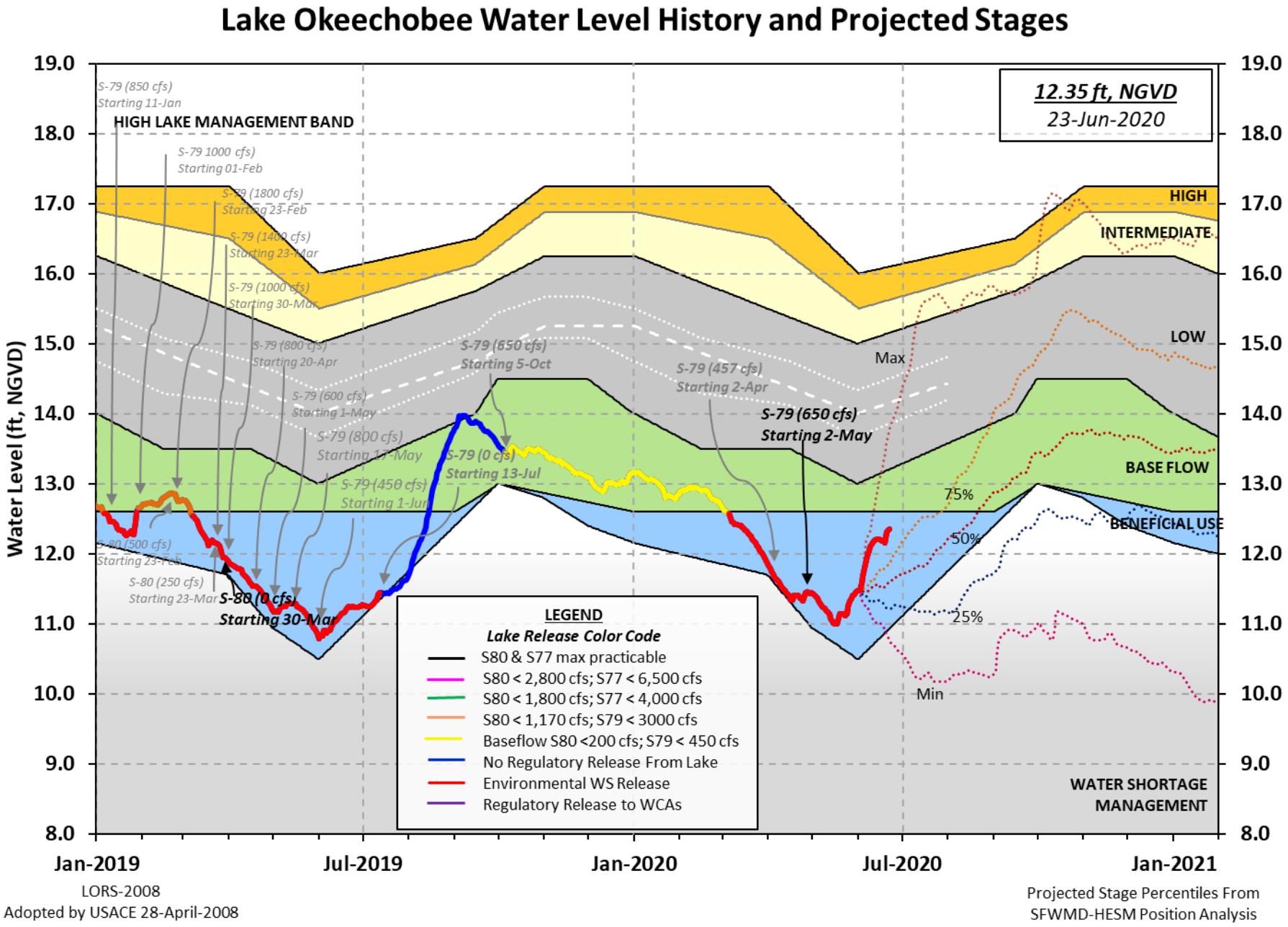


Figure 3. Recent Lake Okeechobee stage and releases, with projected stages based on a dynamic position analysis.

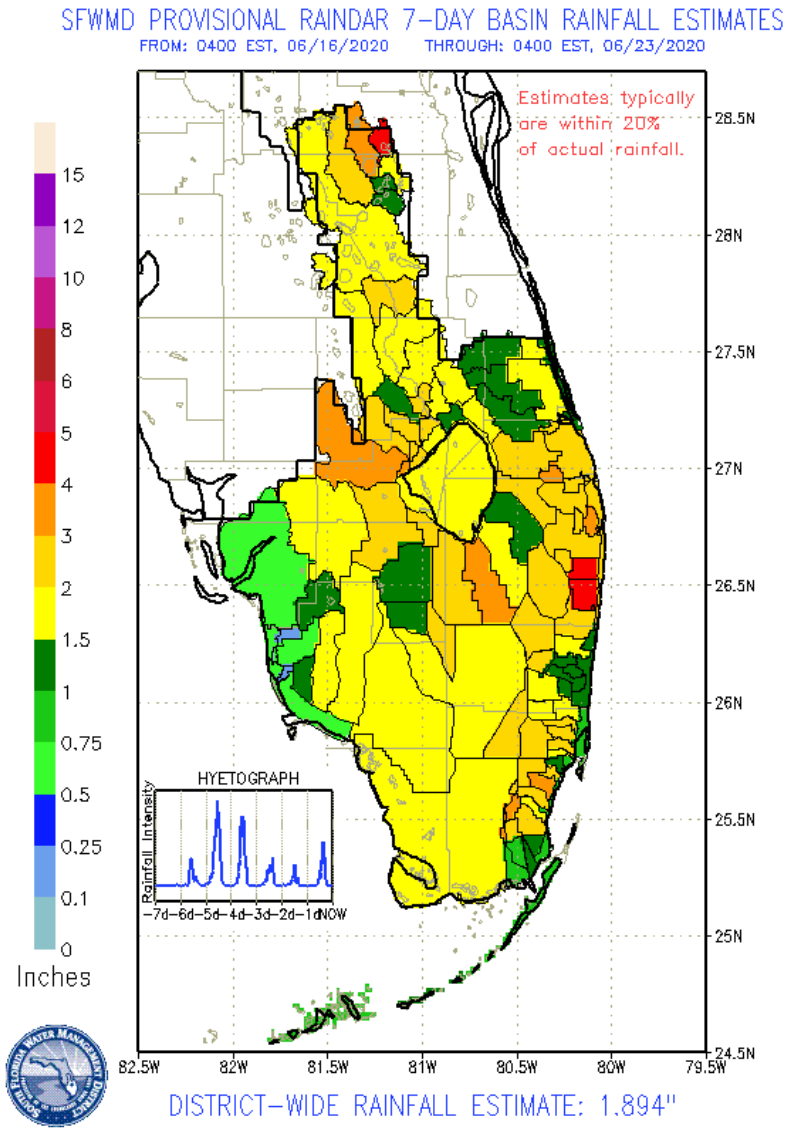


Figure 4. 7-Day rainfall estimates by RAINDAR.

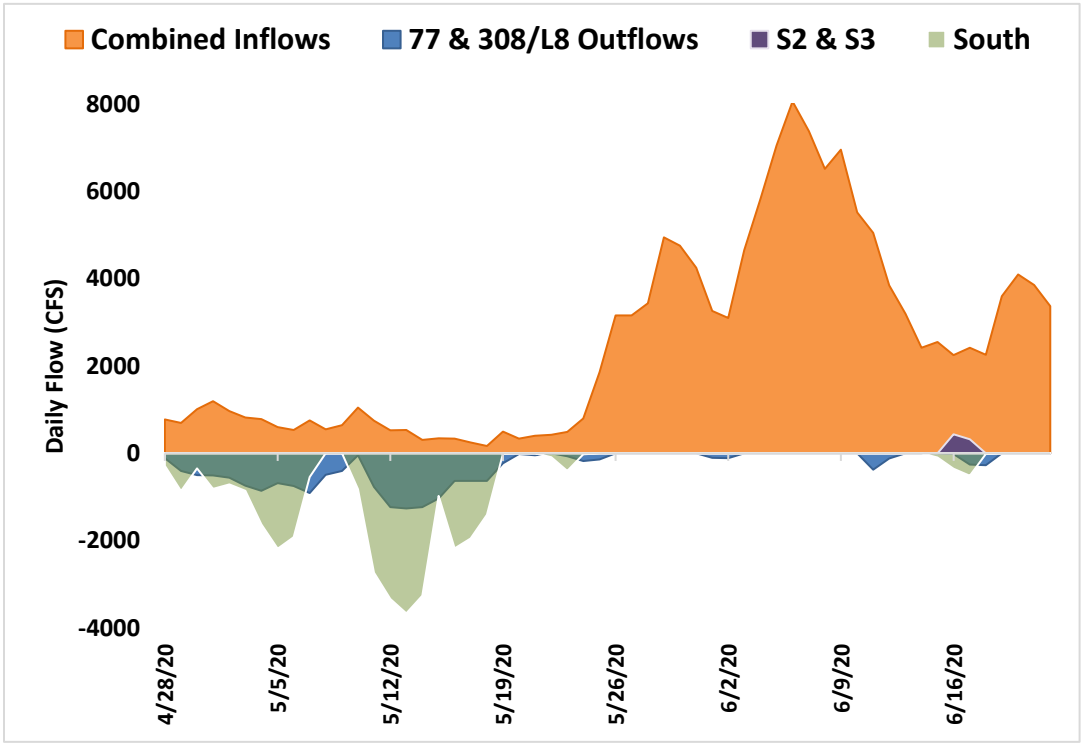


Figure 5. Major inflows (orange) and outflows (blue) of Lake Okeechobee, including the S-350 structures designated as South (green). The L-8 Canal flows through Culvert 10A are included as outflows when positive, and as inflows when backflowing into the Lake. All inflows and outflows are shown as positive and negative, respectively, for visual purposes. Outflows through the S-77 and S-308 structures are shown based on their downstream gauges to account for lock openings for navigation.

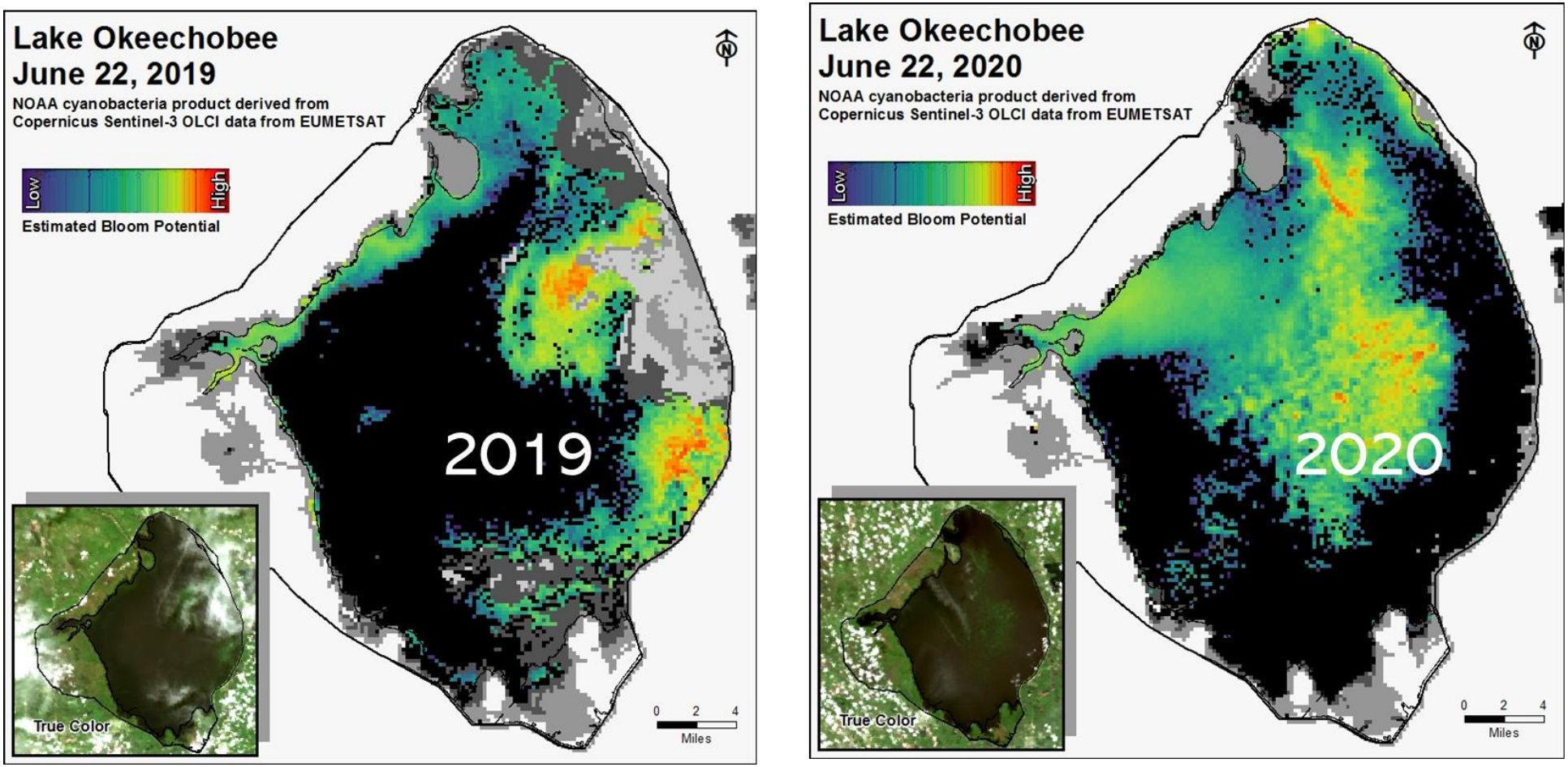


Figure 6. Potential for cyanobacterial blooms on Lake Okeechobee in mid to late-June 2019 and 2020, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

ESTUARIES

St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 1,483 cfs (Figures 1 and 2) and last month inflow averaged about 3,184 cfs. Last week's provisional averaged inflows from the tidal basin and the structures are shown in Table 1.

Table 1. Weekly average inflows (data are provisional).

Location	Flow (cfs)
Tidal Basin Inflow	799
S-80	0
S-308	-320
S-49 on C-24	240
S-97 on C-23	291
Gordy Rd. structure on Ten Mile Creek	153

Over the past week, salinity increased throughout the estuary (Table 2, Figures 3 and 4). The seven-day moving average of the water column (an average of the surface and bottom salinity) at the US1 Bridge is 8.3. Salinity conditions in the middle estuary are estimated to be within the fair range for adult eastern oysters (Figure 3).

Table 2. Seven-day average salinity at three monitoring sites in the St. Lucie Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*) in the middle estuary.

Sampling Site	Surface	Bottom	Envelope
HR1 (North Fork)	**1.4** (0.3)	**4.3** (0.4)	NA[1]
US1 Bridge	**6.0** (1.4)	**10.1** (3.6)	10.0-26.0
A1A Bridge	**14.1** (8.8)	**22.6** (21.0)	NA[1]

[1]Envelope not applicable

Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 2,098 cfs (Figures 5 and 6) and last month inflow averaged about 2,760 cfs. Last week's provisional averaged inflows from the structures and the tidal basin are shown in Table 3.

Table 3. Weekly average inflows (data is provisional).

Location	Flow (cfs)
S-77	63
S-78	465
S-79	1397
Tidal Basin Inflow	701

Over the past week in the estuary, salinity stayed about the same to Val I-75, increased downstream to Shell Point, and decreased at Sanibel (Table 4, Figures 7 & 8). The seven-day average salinity values are within the good range for adult eastern oysters at Cape Coral, Shell Point, and Sanibel (Figure 9). The seven-day average surface salinities (Table 4) are in the good range (0-10) for tape grass at Val I-75 and at Ft. Myers.

Table 4. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold, previous average in parentheses. The envelope at Val I-75 is for the protection of tape grass in the upper estuary and the envelope in the lower estuary reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*).

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	**0.1** (0.1)	**0.1** (0.1)	NA[1]
Val I75	**0.4** (0.4)	**0.5** (0.4)	0.0-5.0[2]
Ft. Myers Yacht Basin	**3.4** (2.7)	**4.3** (3.9)	NA
Cape Coral	**9.3** (8.5)	**11.1** (10.9)	10.0-30.0
Shell Point	**22.8** (20.4)	**23.8** (23.7)	10.0-30.0
Sanibel	**28.8** (29.4)	**30.1** (31.3)	10.0-30.0

[1]Envelope not applicable, [2]Envelope is based on a 2-week forecast 30-day average.

Forecast of surface salinity (Table 5 and Figure 10) at Val I-75 for the next two weeks using the autoregression model (Qiu and Wan, 2013) coupled with a linear reservoir model for the tidal basin predicts daily salinity ranging from 1.2 to 3.4 at the end of the two week period for pulse release at S-79 ranging from 0 to 800 cfs and estimated Tidal Basin inflows of 350 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 0.4 and 0.9 (Table 5). The current salinity conditions at Val I-75 are within the envelope of salinity 0.0-5.0 for this site (Table 4).

Table 5. Predicted salinity at Val I-75 at the end of forecast period

Scenario	Q79 (cfs)	TB runoff (cfs)	Daily salinity	30 day Mean
A	0	350	3.4	0.9
B	300	350	2.5	0.7
C	450	350	1.9	0.5
D	650	350	1.6	0.4
E	800	350	1.2	0.4

Red tide

The Florida Fish and Wildlife Research Institute reported on June 19, 2020, that *Karenia brevis,* the Florida red tide dinoflagellate, was not observed in samples collected from Lee or Palm Beach counties (no samples were analyzed this week from St. Lucie, Martin, Broward, or Miami-Dade counties).

Water Management Recommendations

Lake stage is in the Beneficial Use Flow sub-band. Tributary conditions are very wet. The South Florida Water Management District's Lake Okeechobee Adaptive Protocol's Release Guidance suggests no S-77 release to the Caloosahatchee Estuary.

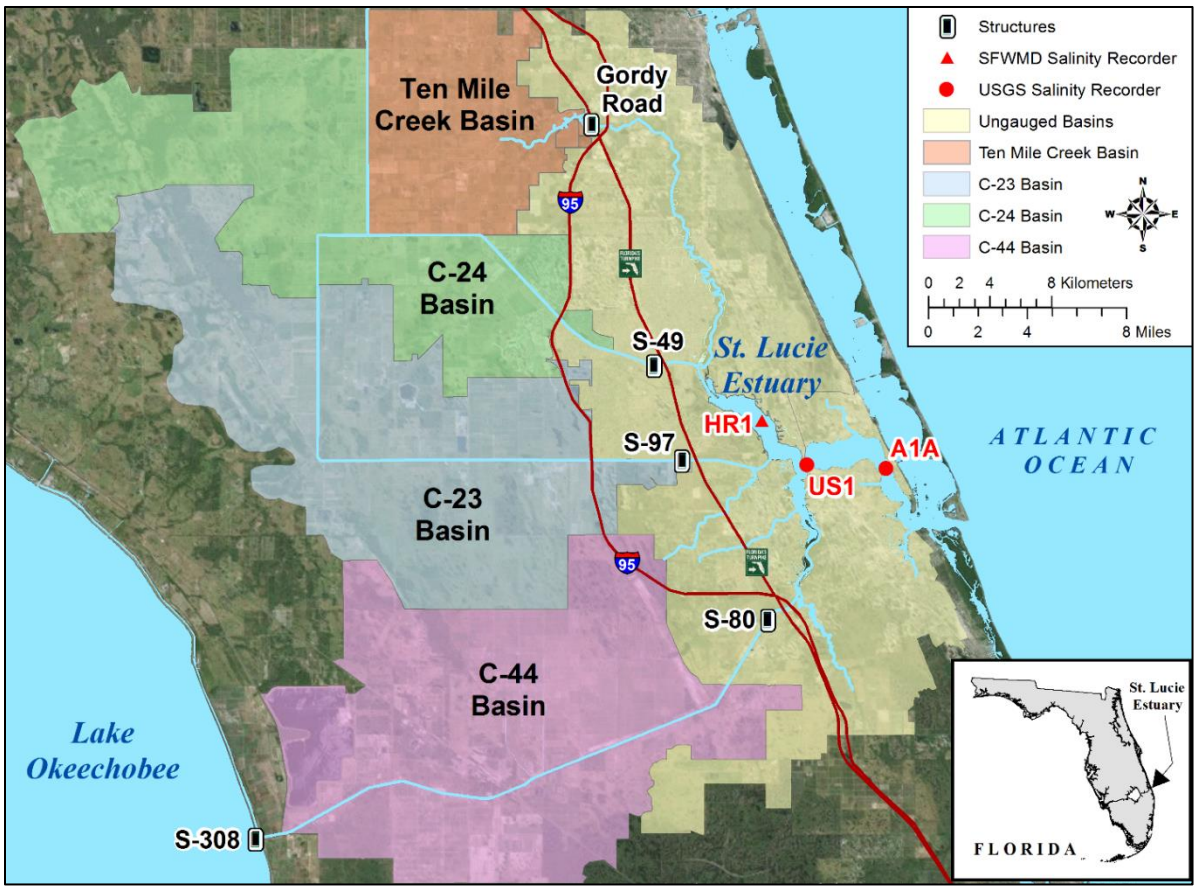


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

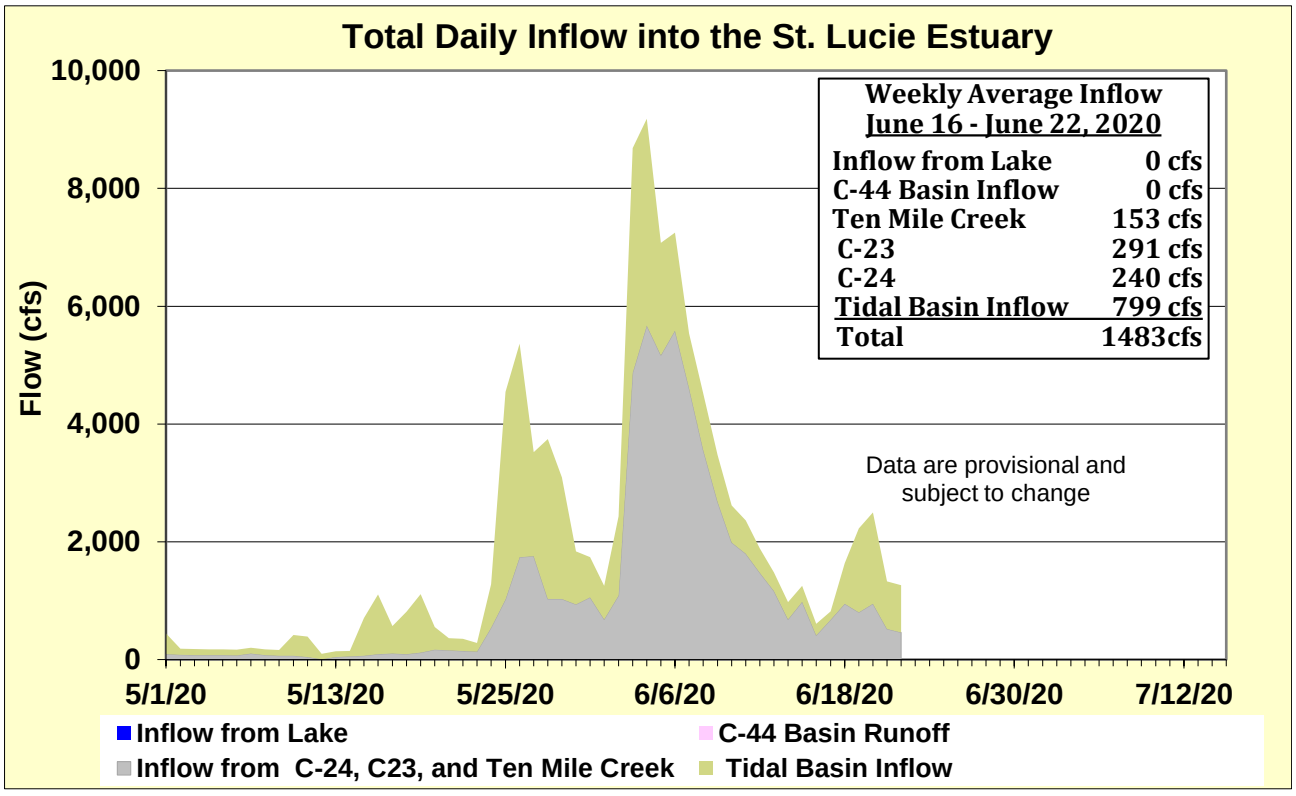


Figure 2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basin into the St. Lucie Estuary.

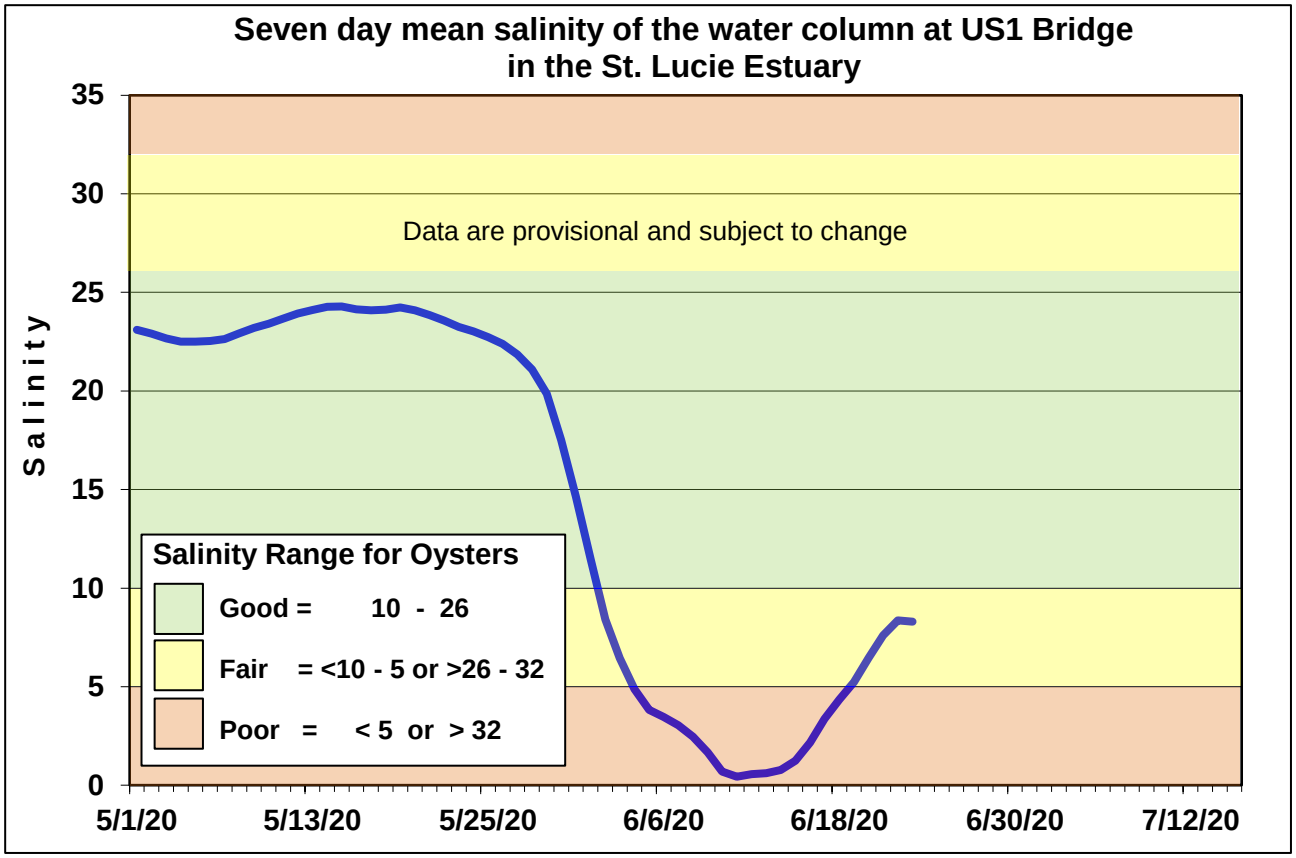


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

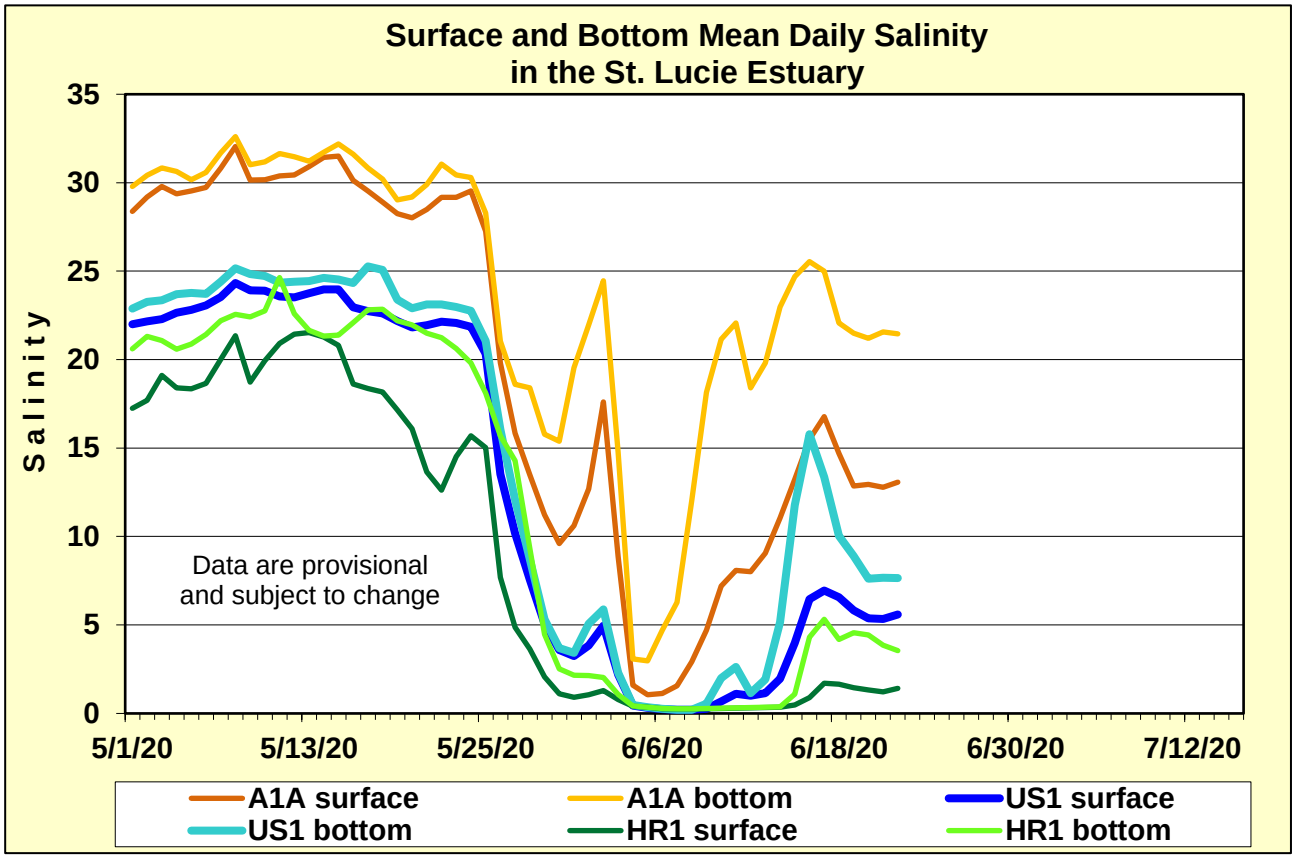


Figure 4. Daily mean salinity at the A1A, US1, and HR1 stations.

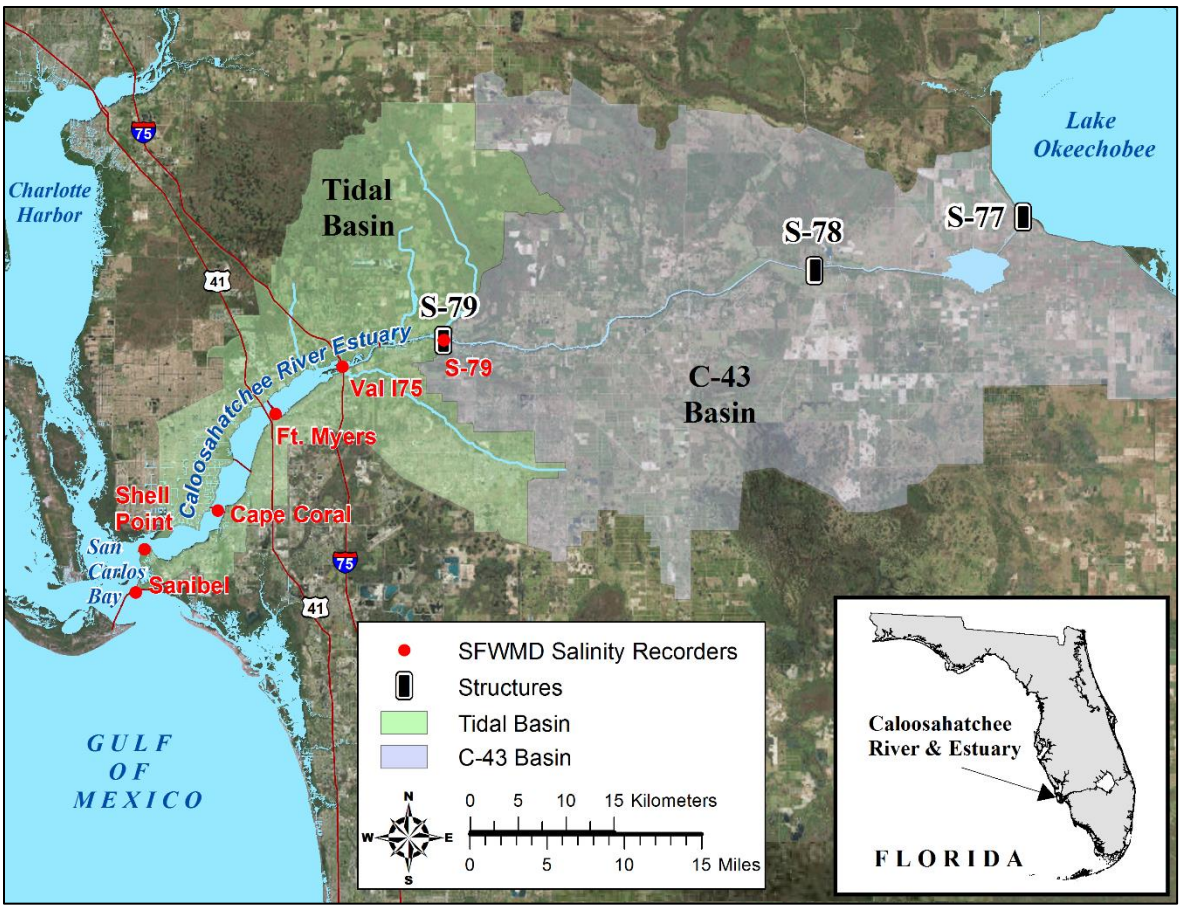


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

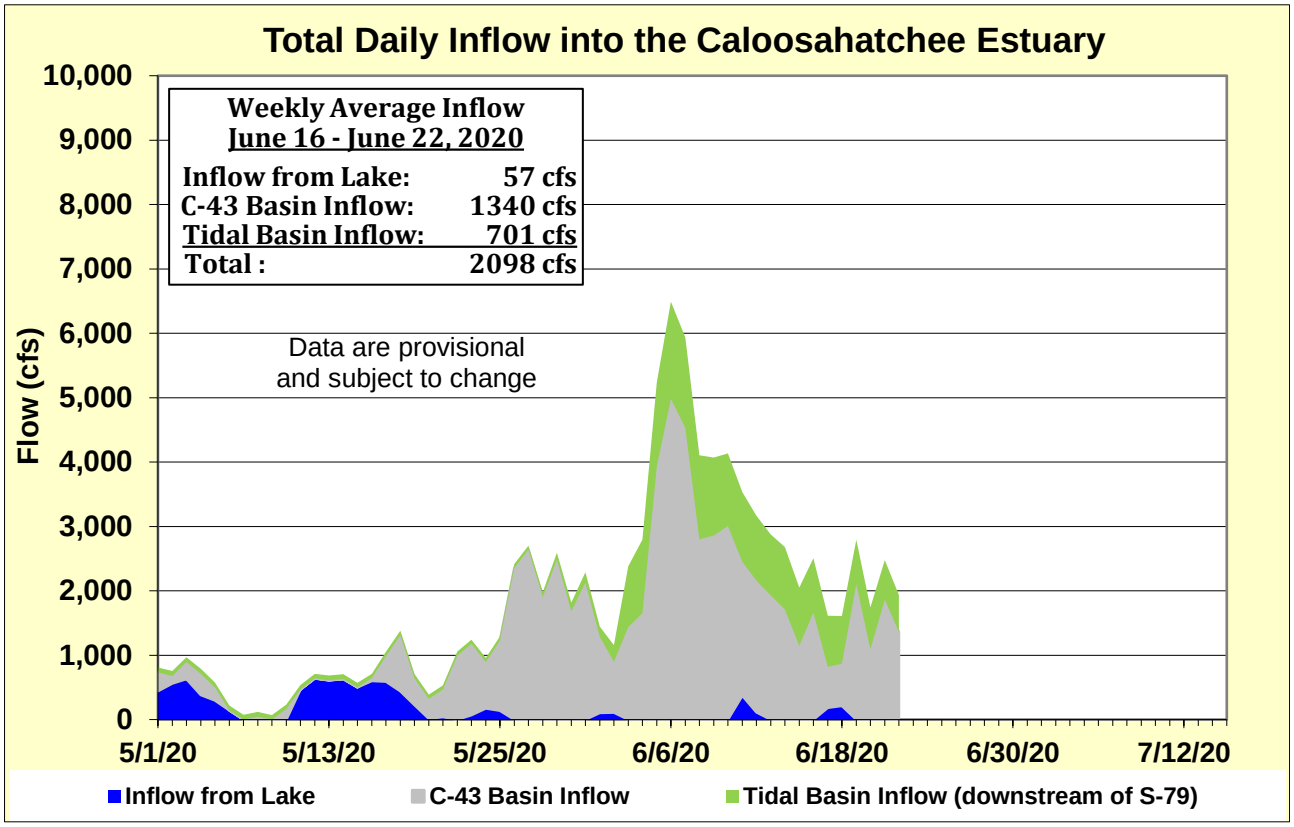


Figure 6. Total daily inflows from Lake Okeechobee, runoff from the C-43 basin

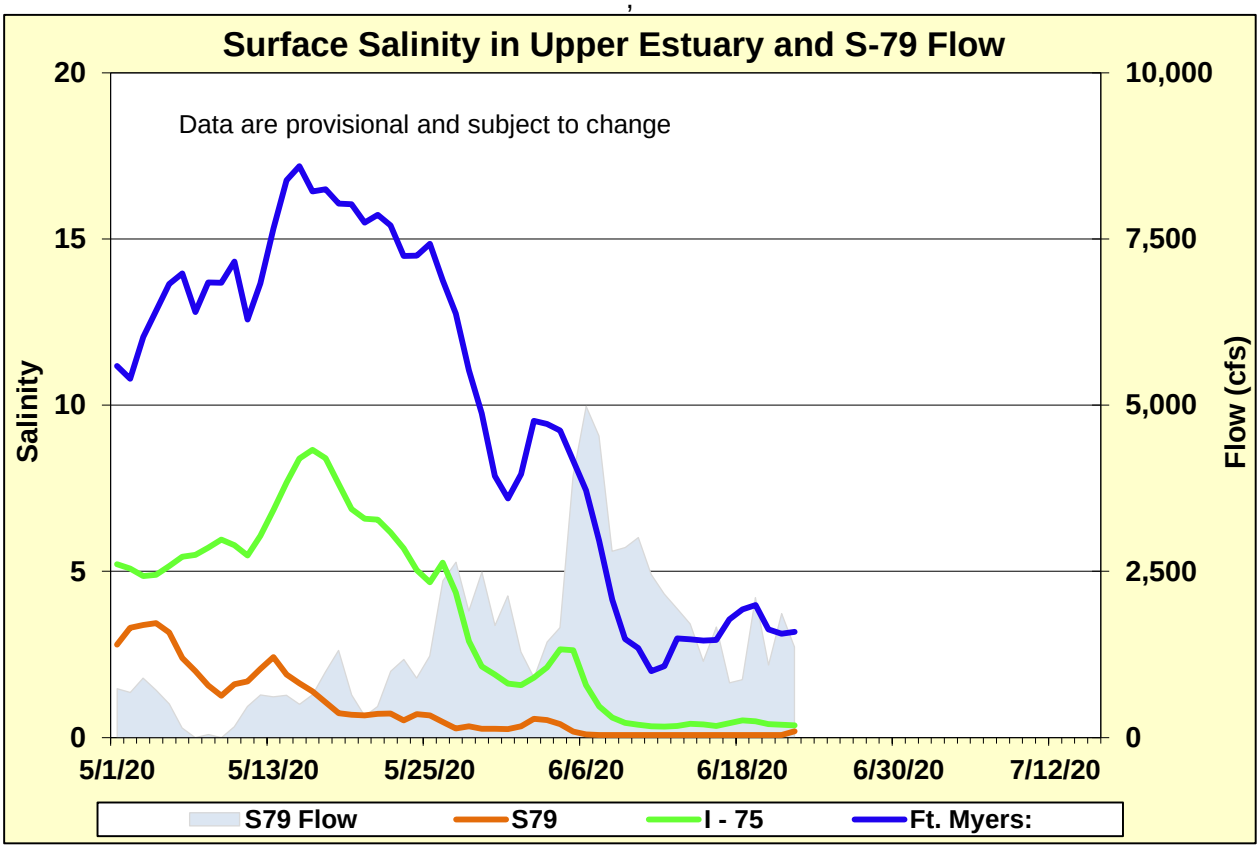


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

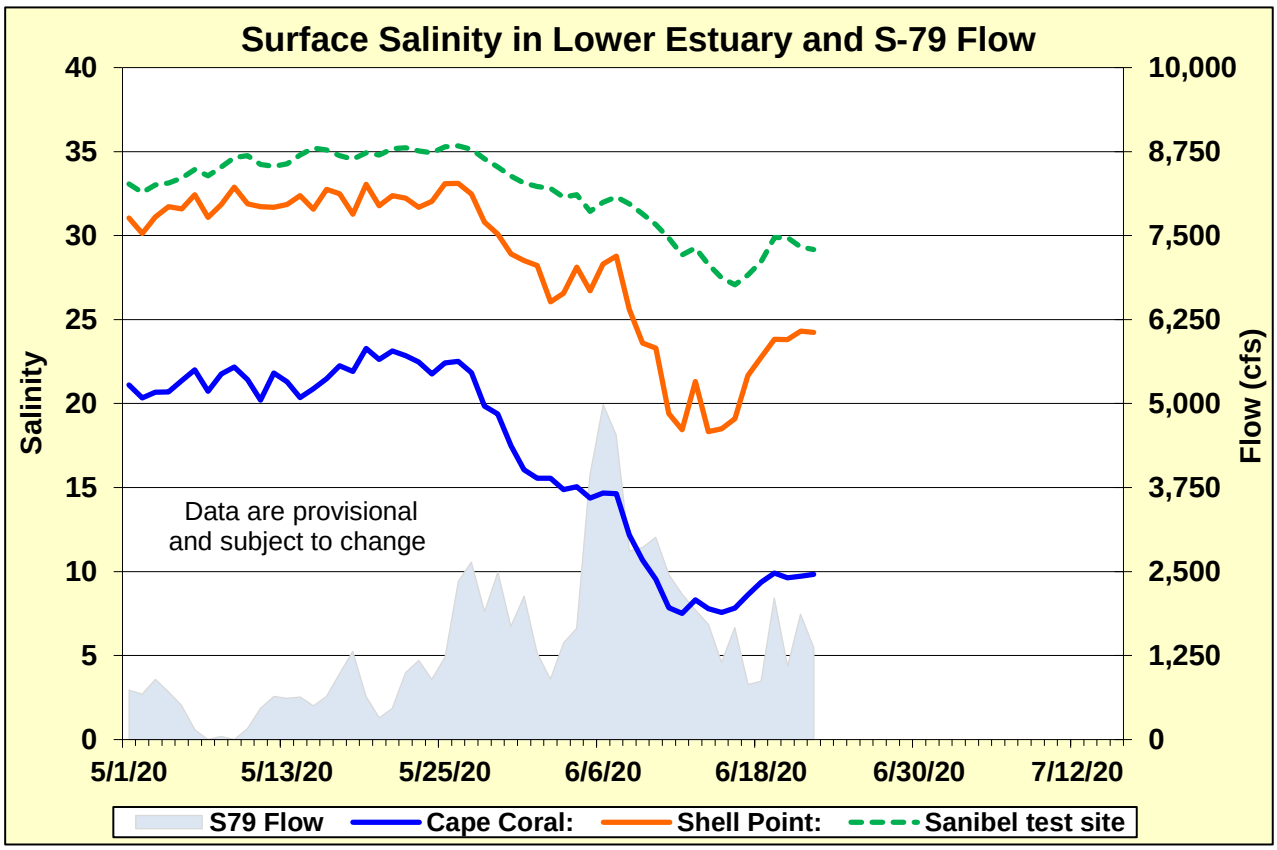


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

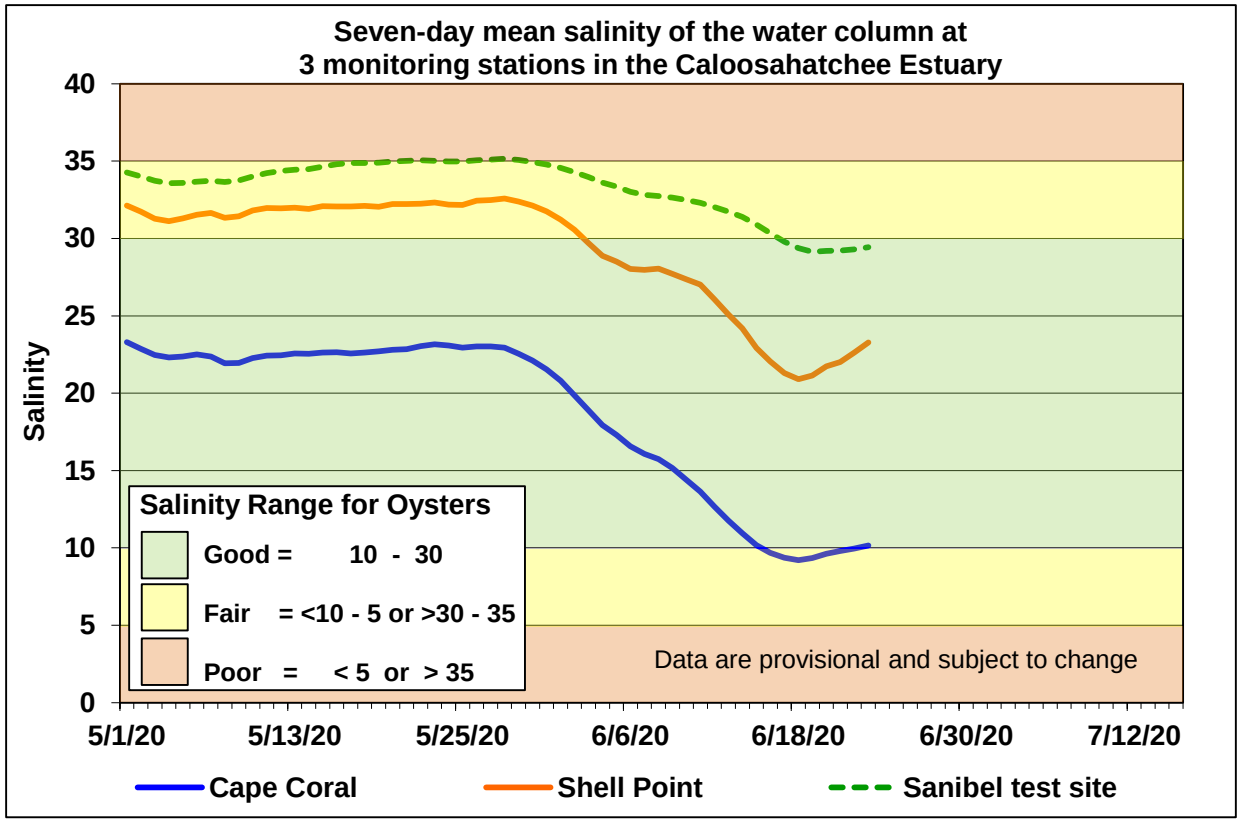


Figure 9. Seven-day mean salinity at Cape Coral, Shell Point, and Sanibel monitoring stations.

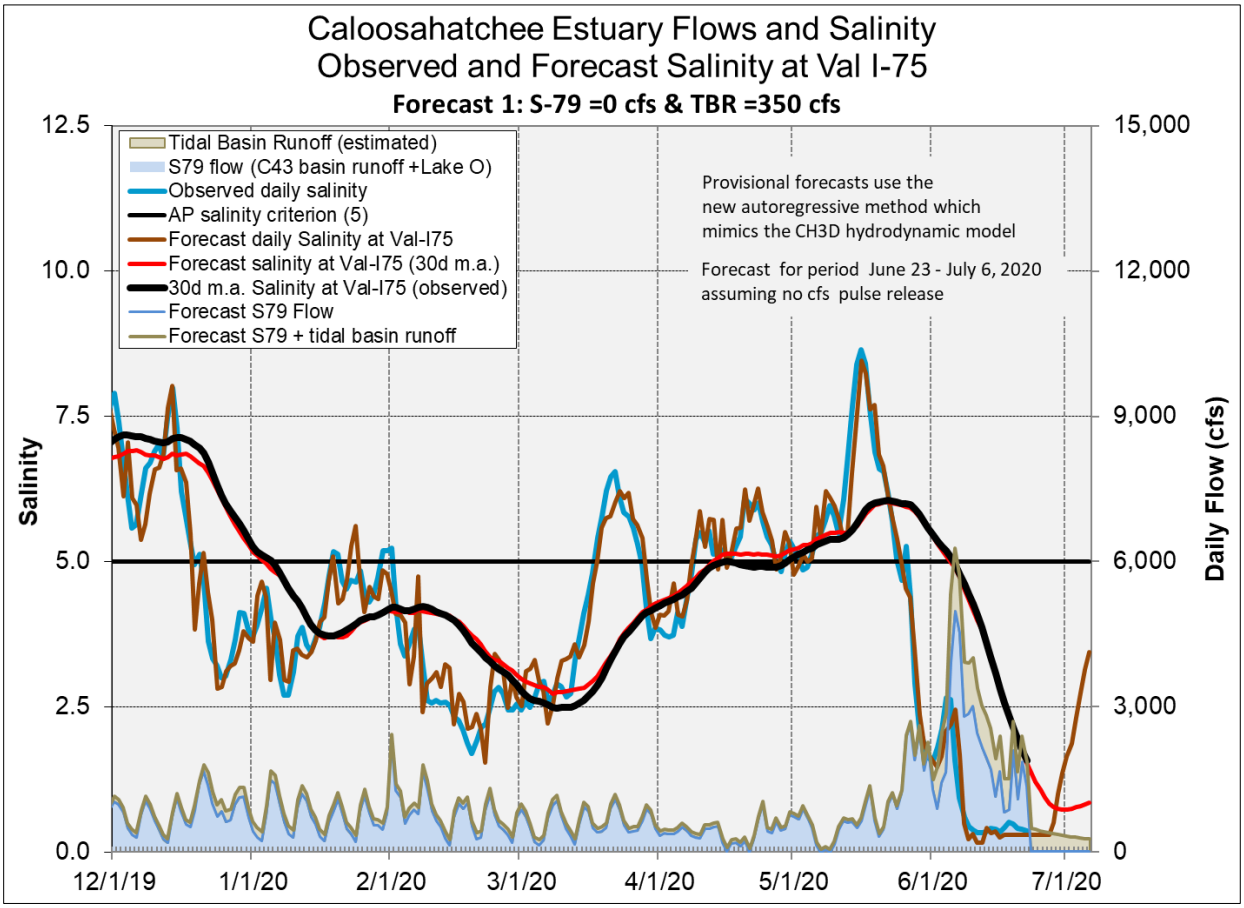
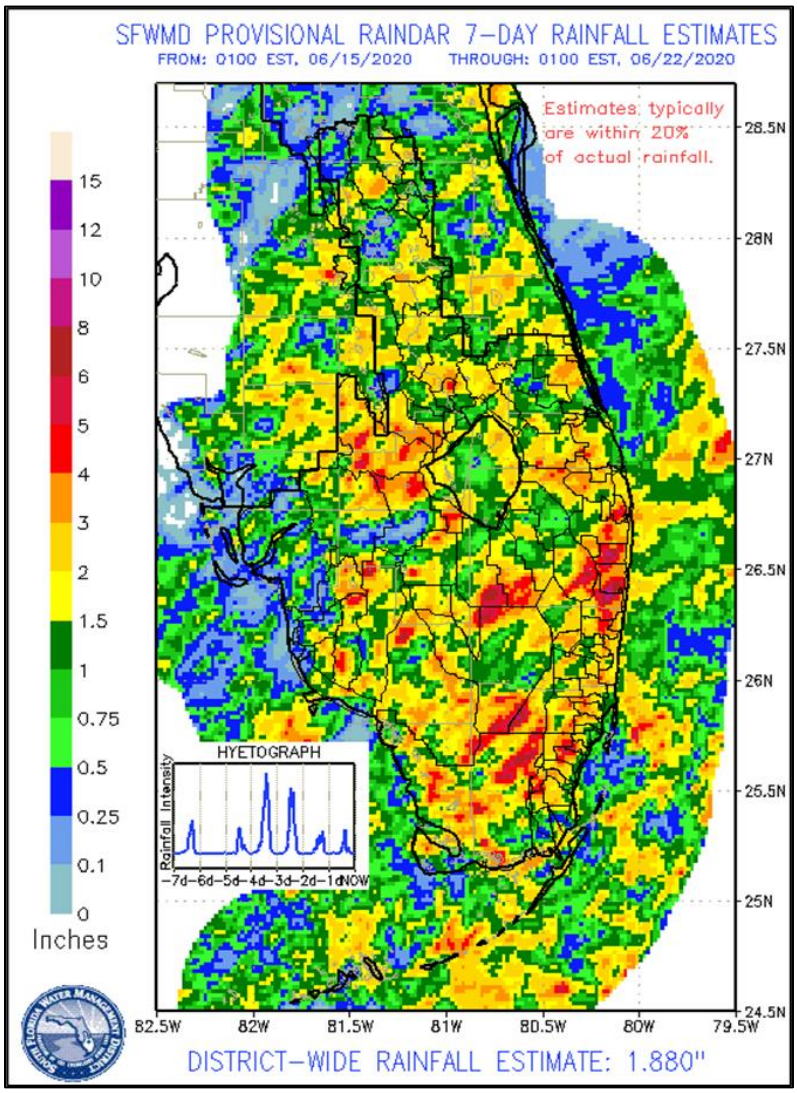


Figure 10. Forecasted Val I-75 surface salinity assuming no pulse release at S-79.

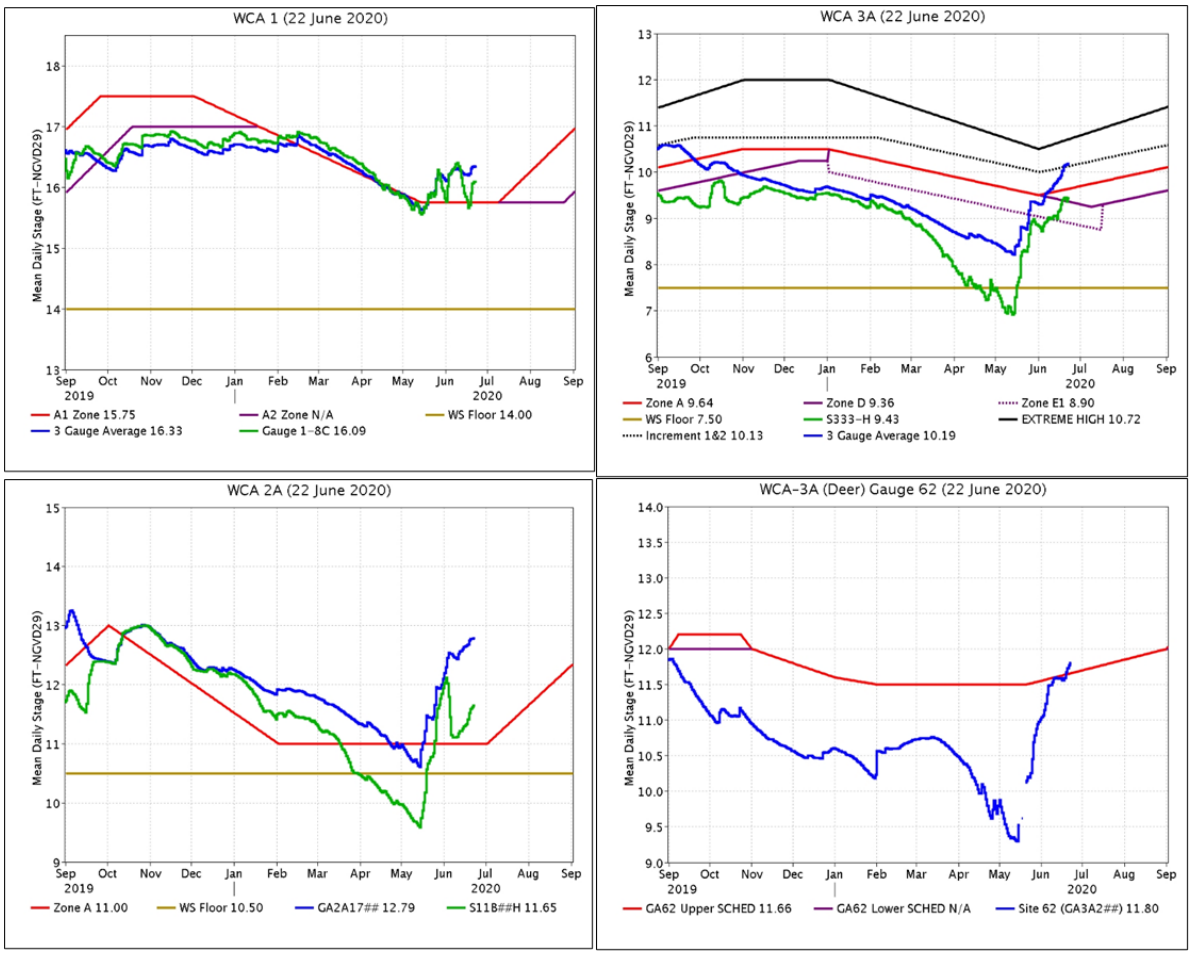
EVERGLADES

Just above average rainfall was recorded across the Everglades last week, with WCA-1 and WCA-3B receiving the most. At the gauges monitored for this report stages rose on average 0.21 feet last week with a maximum increase of +0.41 feet in WCA-3A NE for the third week in a row. Evaporation was estimated at 1.74 inches last week, which is an increase from the week prior.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	2.75	+0.15
WCA-2A	2.00	+0.15
WCA-2B	2.73	+0.12
WCA-3A	2.14	+0.29
WCA-3B	3.19	+0.19
ENP	2.29	+0.32



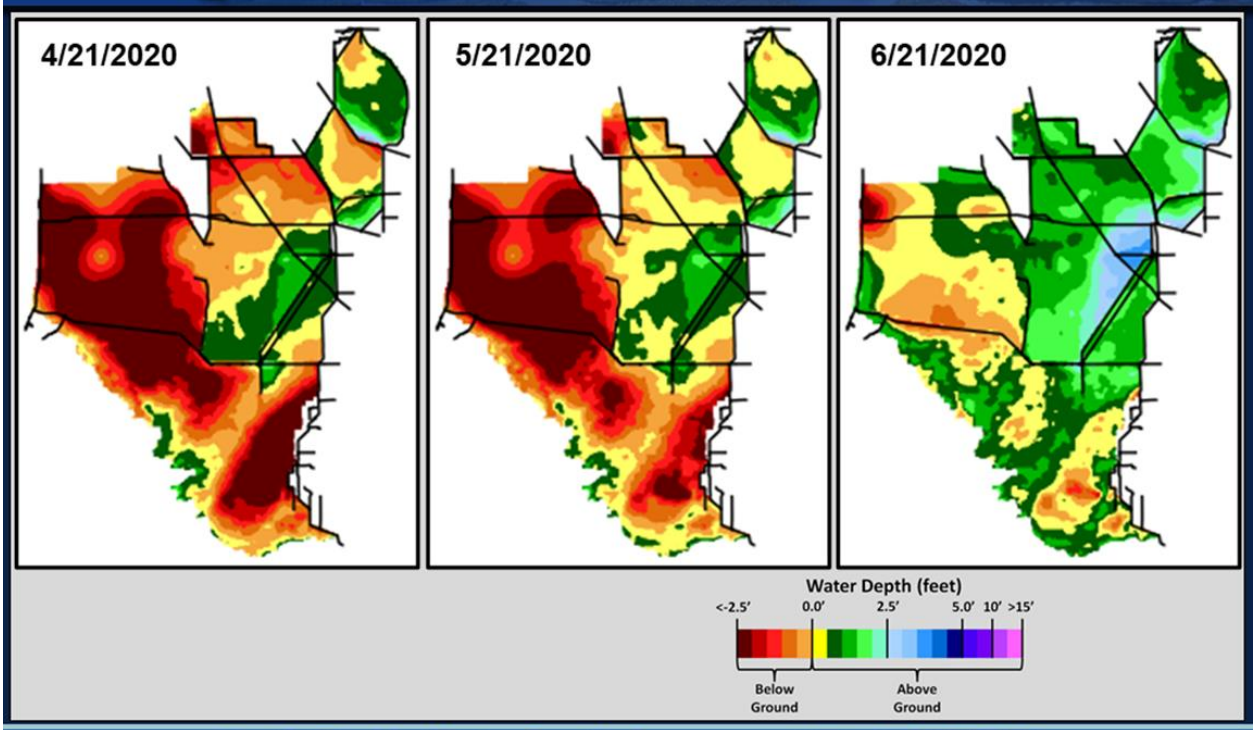
Regulation Schedules: WCA-1: Stage at the 1-8C Gauge fell sharply the week prior. Last week those stages rose again then flattened, currently 0.34 feet above the stable Zone A1 reg. line. WCA-2A: Stage at Gauge S11-B trended upwards and away from the flat Zone A reg line again last week now 0.65 feet above. WCA-3A: The Three Gauge Average continued to rise away from the Zone A regulation line last week, presently following the Increment 1.2 line, currently 0.06 feet above that rising action line. WCA-3A at gauge 62 (Northwest corner): The previous week stage rose to the Upper Schedule, now trending upwards at 0.14 feet above the rising target line.



Water Depths: The WDAT tool for spatial interpolation of depth monthly snapshots indicate depths in WCA-3A North are at 1.0 feet or higher across that entire sub-basin except in the northeast corner. Depths in WCA-3A South are building, in excess of 3.0 feet along the upper reaches of the L-67 canal. WCA-2A stages are highest along the northeastern perimeter, lowest upstream of the S-11s. Stages in WCA-1 are lowest in the northeast and deeper along the eastern perimeter and in the south. Hydrologic connectivity has returned to Shark River Slough, Taylor River and Lostman's Slough in Everglades National Park. Comparing WDAT water levels from present, over the last month stages rose significantly across the entire Everglades. Within the WCAs, the most prominent inundation occurred in northwestern WCA-3, the upper reach of the L-67 canal and northeastern WCA-2A. Looking back one year, the stage difference patterns are less striking, with mixed conditions primarily wetter in northeastern WCA-3A and 2A, and potentially drier in southwestern WCA-3A. The WDAT model indicates wetter conditions in the western basins and Everglades National Park compared to a month ago but not a year ago.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

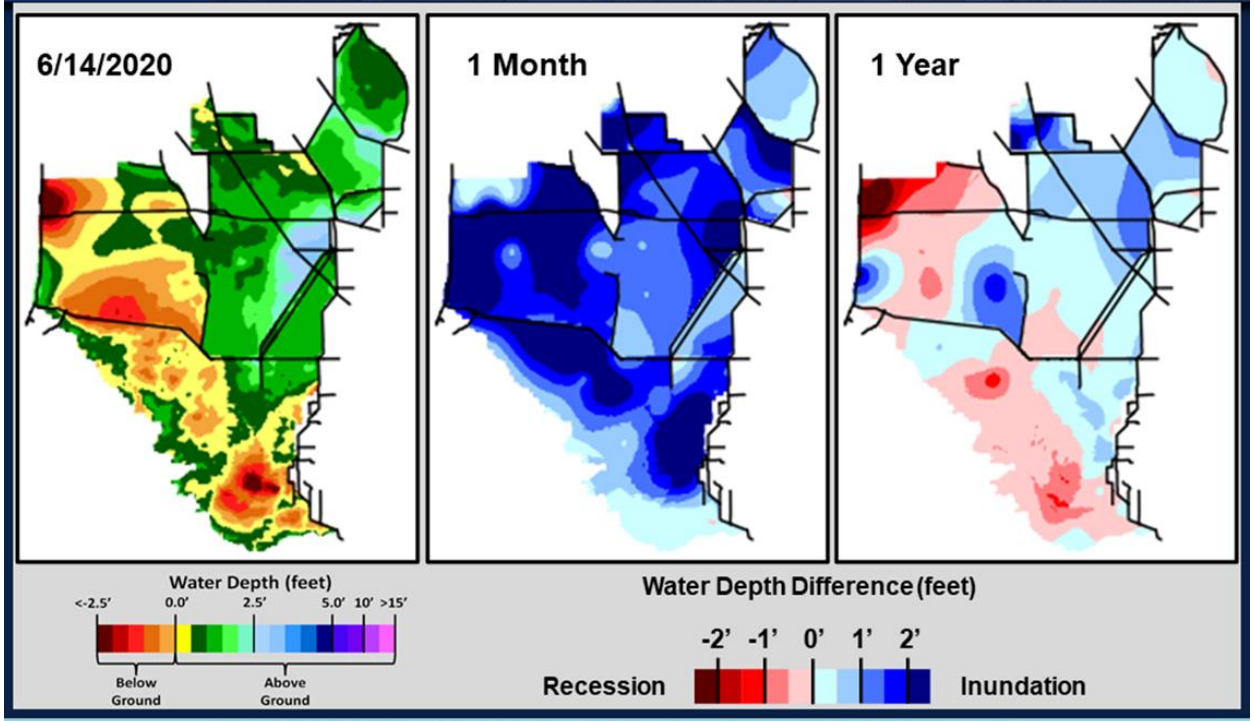
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

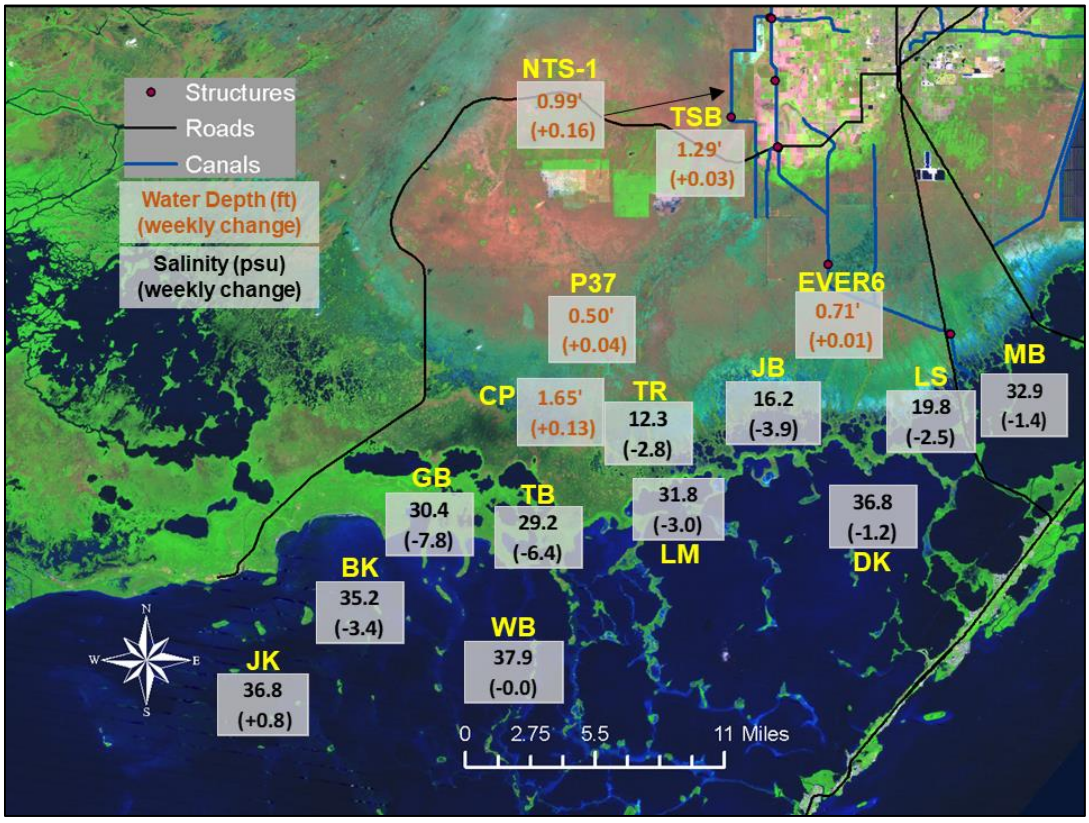
SFWDAT Everglades Difference Maps (Present – Past)

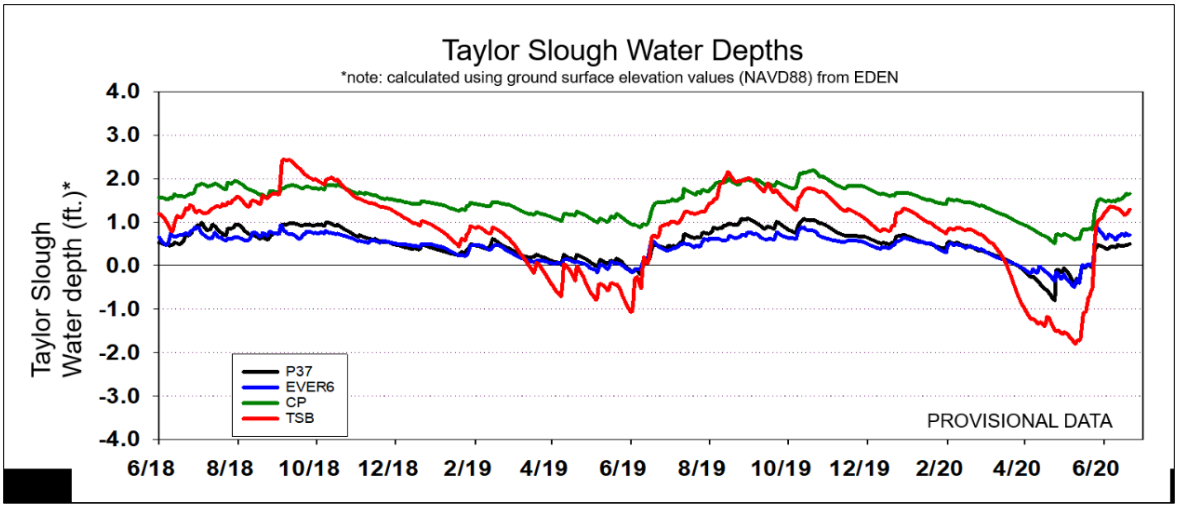


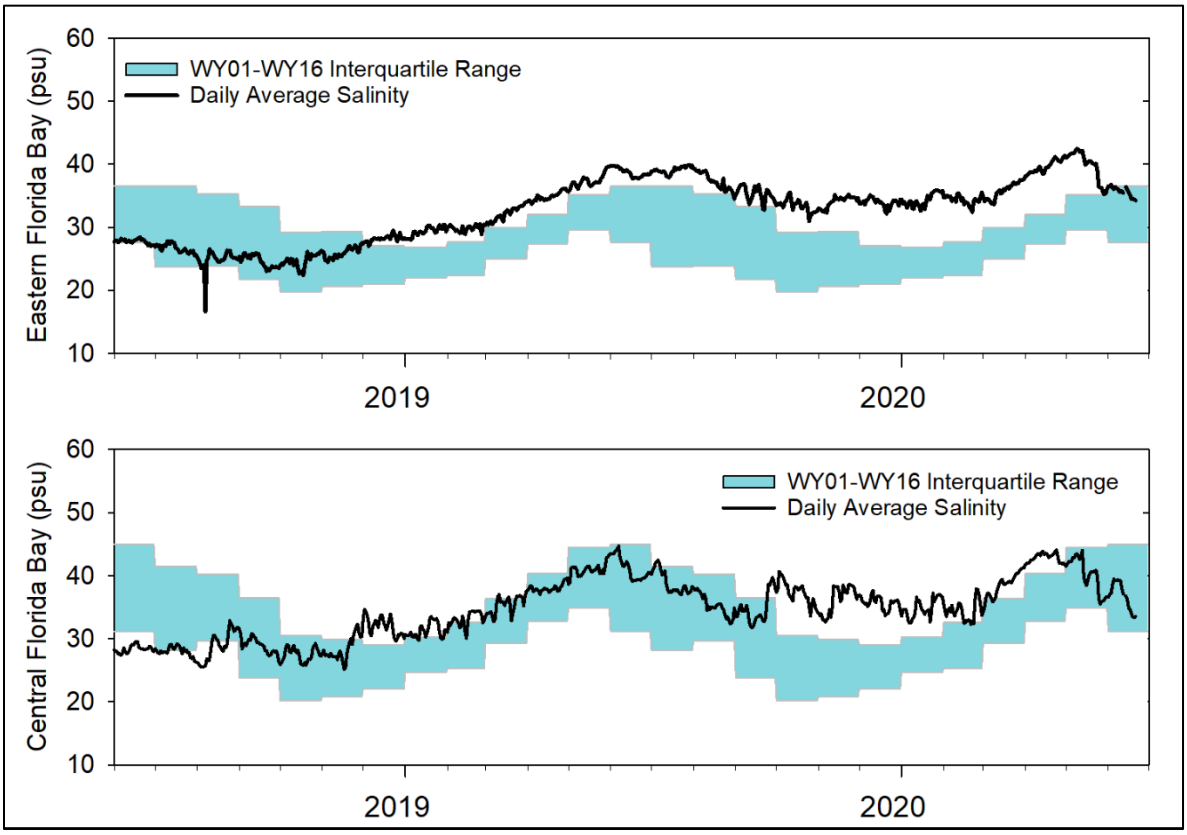
South Florida Water Depth Assessment Tool (SFWDAT)

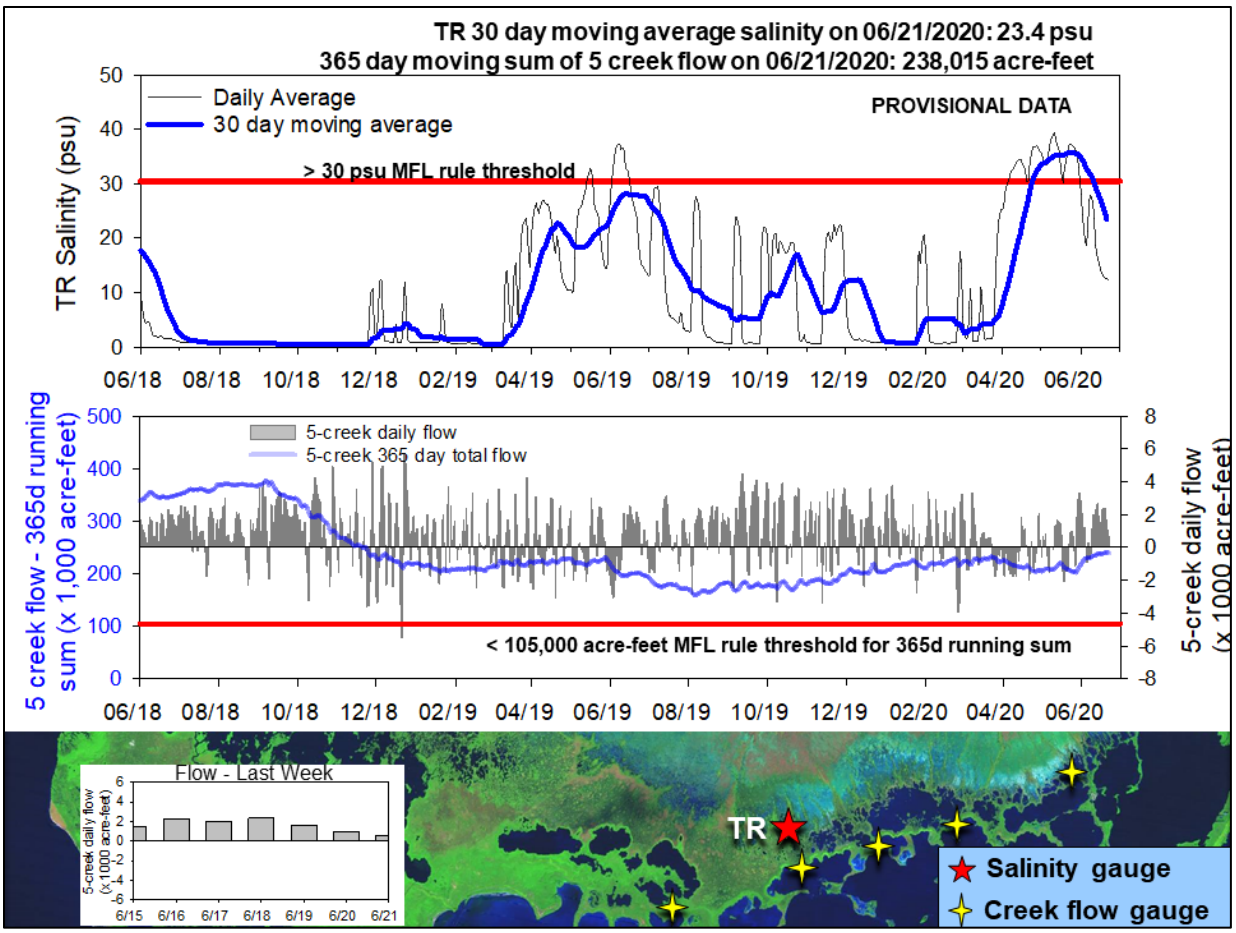
Wildlife: Wading bird update June 19, 2020:
No foraging birds were seen throughout the Everglades except for large mixed flocks in the coastal Everglades National Park. A few ibis were seen flying to or from urban areas. The number of wood stork nests has declined from 1500 to only 6 nests on 19 June 2020. All surviving nests were at Jetport S colony in WCA-3A; there are no surviving stork nests in ENP. All 3000 WHIB nests in the New 4 colony in the Refuge that were at the incubation stage have now been abandoned although 2-300 fledglings from the earlier cohort were present. The large 6th Bridge colony in WCA-3 that supported many fledglings last week is now largely empty. It is likely that many of these birds fledged. In Everglades National Park, the thousands of nests seen last week that were at the incubation stage have largely all been abandoned, although hundreds of older fledglings from earlier cohorts remain. Small heron colonies continue to be active in both the Refuge and Everglades National Park.

Taylor Slough Water Levels: An average of 2.22 inches of rain fell over Taylor Slough and Florida Bay this past week and stages increased an average of 0.07 feet. The largest increase was 0.16 feet in the north next to the L-31W canal. The second highest increase of 0.13 feet was in the southwest where 3-5 inches of rain fell this past week.




Taylor Slough Water Depths
*note: calculated using ground surface elevation values (NAVD88) from EDEN
Taylor Slough Water depth (ft.)*
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
P37
EVER6
CP
TSB
PROVISIONAL DATA
6/18
8/18
10/18
12/18
2/19
4/19
6/19
8/19
10/19
12/19
2/20
4/20
6/20


Eastern Florida Bay (psu)
WY01-WY16 Interquartile Range
Daily Average Salinity
60
50
40
30
20
10
2019
2020
Central Florida Bay (psu)
WY01-WY16 Interquartile Range
Daily Average Salinity
60
50
40
30
20
10
2019
2020



Florida Bay Salinities: Average salinity in Florida Bay decreased 3 psu this week with the largest weekly changes occurring where the highest weekly rainfall fell. Nearshore salinities have started to decrease but have not reached the seasonal lows that are expected during the wet season. More rain and water deliveries are needed to fuel freshwater flows towards Florida Bay to continue the decrease of those salinities.

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) decreased from 15 psu to 12 over the last week. The 30-day moving average decreased 5.3 psu to end at 23.4 psu. Weekly flow from the 5 creeks identified by yellow stars on the map totaled 11,400 acre-feet last week with positive flows the entire week at all 5 creeks. The 365-day moving sum of flow from the five creeks (tracked as part of the Florida Bay MFL criteria) increased 1,400 acre-feet this week to end at 238,015 acre-feet, between the 25th percentile (192,885 acre-feet) and the median (249,091 acre-feet). Creek flows are provisional USGS data.

Water Management Recommendations:

When water is discharged to tide, its potential to benefit the ecology of the Everglades is lost. Conserving water in the WCAs and sending it southward has ecological benefit. As continued inflows into WCA 3A are expected and stage at the northern gauges in that basin are around 1.0 feet higher than the historical average for this time of year, therefore we recommend moderating ascension rates to the extent possible to benefit wildlife and avoid possible high-water impacts. Recommended ascension rates are the lower than the preferred max rate of 0.25 feet per week or 0.50 per two weeks. Peak stages later in the wet season provide improved conditions to support future wading bird and snail kite breeding success. Flows towards Taylor Slough and Florida Bay freshen salinity conditions within the nearshore areas of Florida Bay and decrease the currently stressful conditions for seagrasses and

fauna as nearshore salinities remain elevated. More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

SFWMD Everglades Ecological Recommendations, June 16th, 2020 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.08'	Moderating the ascension rate to less than 0.25 feet per week or 0.50 feet per two weeks and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Apple snail reproduction is hindered by rapidly increasing stage.
WCA-2A	Stage increased by 0.16'	Moderating the ascension rate to less than 0.25 feet per week or 0.50 feet per two weeks and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Apple snail reproduction is hindered by rapidly increasing stage.
WCA-2B	Stage decreased by 0.08'	Moderating the ascension rate to less than 0.25 feet per week or 0.50 feet per two weeks and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Apple snail reproduction is hindered by rapidly increasing stage.
WCA-3A NE	Stage increased by 0.41'	Moderating the ascension rate to less than 0.25 feet per week or 0.50 feet per two weeks and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Apple snail reproduction is hindered by rapidly increasing stage.
WCA-3A NW	Stage increased by 0.10'	Moderating the ascension rate to less than 0.25 feet per week or 0.50 feet per two weeks and conserving water in this basin has ecological benefit.	
Central WCA-3A S	Stage increased by 0.14'	Moderating the ascension rate to less than 0.25 feet per week or 0.50 feet per two weeks and conserving water in this basin has ecological benefit. A recession rate in this basin has ecological benefit	Protect upstream/downstream habitat and wildlife. Apple snail reproduction is hindered by rapidly increasing stage.
Southern WCA-3A S	Stage increased by 0.31'		
WCA-3B	Stage remained unchanged	Moderating the ascension rate to less than 0.25 feet per week or 0.50 feet per two weeks and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Apple snail reproduction is hindered by rapidly increasing stage.
ENP-SRS	Stage increased by 0.05'	Make discharges to the Park according to the 2012 WCP rainfall plan	Protect upstream/downstream habitat and wildlife. Apple snail reproduction is hindered by rapidly increasing stage.
Taylor Slough	Stage changes ranged from −0.07' to +0.06'	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged −2.6 to +0.2 psu	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.