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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: May 6, 2020

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Confidence is increasing for some significant rain this weekend bringing District-wide rains of 2.5 inches and local rains around 6-8 inches. Dry high pressure remains over the area today but daytime heating may squeeze out a light shower or two around the south side of Lake Okeechobee this afternoon. A few light showers are forecast for Wednesday afternoon as moisture begins to return ahead of the next frontal system. That front is forecast to produce some light shower activity as it moves through the area Wednesday afternoon and Wednesday night. After a temporary dry out behind the front, moisture will begin to creep back north Friday with showers developing over the Florida Keys Friday night. Shower activity should increase further as the old frontal boundary lifts northward over the southern portion of the District ahead of the next frontal system and upper level energy streams across the area. Areas of moderate to heavy rains are forecast for Saturday night, Sunday, and Monday as a low pressure system develops over the Gulf of Mexico and moves across the Florida peninsula. This would be a very wet scenario. Confidence in the specifics of this rainfall is expected to increase as we move through the week. In the extended outlook, conditions appear favorable for shower and thunderstorm activity to develop daily so above-average rainfall is forecast for the second 7-day period ("Week 2").

Kissimmee

Tuesday morning stages were 52.6 feet NGVD (3.4 feet below schedule) in East Lake Toho, 52.6 feet NGVD (0.4 feet below schedule) in Toho, and 49.9 feet NGVD (at schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.2 feet NGVD at S-65A and 25.7 feet NGVD at S-65D. Tuesday morning discharges were 622 cfs at S-65, 554 cfs at S-65A, 701 cfs at S-65D and 671 cfs at S-65E. Dissolved oxygen concentration in the Kissimmee River averaged 8.3 mg/L for the week through Sunday. Kissimmee River mean floodplain depth on Sunday was 0.11 feet. Today's recommendations: Continue the snail kite recession on Lake Tohopekaliga to reach low pool (52.0 feet NGVD) on June 1, 2020. Continue the recession on Lakes Kissimmee-Cypress-Hatchineha to reach 49.0 feet NGVD on June 1, 2020.

Lake Okeechobee

Lake Okeechobee stage was 11.37 feet NGVD on May 4, 2020, down 0.09 feet from the previous week, and 0.34 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.48 feet above the Water Shortage sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12.0 – 15.0 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 0.58 feet below the bottom of the envelope. Lake stages below the ecological envelope will continue to benefit recovering submerged and emergent marsh vegetation at low elevations but will reduce aquatic habitat for fish and wildlife in the marshes. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake due to low lake stages during the breeding season.

Estuaries

Total inflow to the St. Lucie Estuary averaged 870 cfs over the past week with no flow coming from Lake Okeechobee. The seven-day average salinities decreased at HR1 and US1 Bridge but little changed at A1A Bridge over the past week. Salinity at the US1 Bridge is in the good range for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 742 cfs over the past week with 408 cfs coming from the Lake. The seven-day average salinity decreased in the estuary over the past week except at S-79 where it increased slightly. Salinities are in the good range for tape grass at Val I-75 and in the fair range at Ft. Myers. Salinities are in the good range for adult eastern oysters at Cape Coral and in the fair range at Shell Point and Sanibel.

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

Stormwater Treatment Areas

Over the past week, 3,000 ac-ft of 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 1,700 ac-feet. The total amount of inflows to the STAs in WY2021 is approximately 3,300 ac-feet. Most STA cells are above or near target stage, except STA-5/6 cells that continue to dry out. 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-3/4 Western Flow-way for repairs to the G-384 stage sensor, in STA-1E Central Flow-way, STA-2 Flow-way 1, STA-2 Flow-way 2, STA-2 Flow-way 3, STA-2 Flow-way 4, STA-3/4 Eastern Flow-way, and STA-3/4 Central Flow-way 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. Nests of Migratory Bird Treaty Act (MBTA) protected species have been observed in STA-1E and STA-1W. This week, there is no capacity for Lake releases in the STAs.

Everglades

Current stages in northeastern WCA-3A remain well below average (Site 62 in the northwest and Site 64 in the central are both 0.80 feet below average and Site 63 in the northeast is 0.86 feet below average) for this time of year. Conserving fresh water in the Everglades, distributing it to where depths are low (WCA-3A NE and WCA-3A NW), then allowing it to flow south has important ecological benefit. The recession rates across the Everglades exceeded the optimal range of 0.09 feet per week last week. Slowing those recession rates when possible has ecological benefit because it could maintain water levels above ground longer into the nesting effort. Near average rain fell over Taylor Slough and Florida Bay last week however on average stage decreased and remain well below the historical average in northern Taylor slough and nearly two feet below ground. Florida Bay salinities increased on average this week, with nearly all stations recording greater than 40 psu.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.74 inches of rainfall in the past week and the Lower Basin received 0.50 inches (SFWMD Daily Rainfall Report 5/4/2020).

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: 5/5/2020

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)						
							5/3/20	4/26/20	4/19/20	4/12/20	4/5/20	3/29/20	3/22/20
Lakes Hart and Mary Jane	S-62	19	LKMJ	59.9	R	60.1	-0.2	-0.2	-0.2	-0.3	-0.4	-0.4	-0.4
Lakes Myrtle, Preston, and Joel	S-57	4	S-57	60.3	R	60.3	0.0	0.1	0.0	-0.1	0.0	0.0	0.0
Alligator Chain	S-60	53	ALLI	62.8	R	62.8	0.0	0.1	-0.2	-0.4	-0.5	-0.6	-0.6
Lake Gentry	S-63	74	LKGT	60.3	R	60.3	0.0	0.1	0.1	0.1	0.0	-0.1	-0.1
East Lake Toho	S-59	0	TOHOE	52.6	R	56.1	-3.5	-3.8	-4.1	-4.5	-4.6	-4.8	-5.0
Lake Toho	S-61	244	TOHOW, S-61	52.6	R	53.1	-0.5	-0.6	-0.7	-0.9	-0.9	-1.1	-1.3
Lakes Kissimmee, Cypress, and Hatchineha	S-65	760	KUB011, LKIS5B	49.9	R	50.0	-0.1	-0.1	-0.3	-0.4	-0.5	-0.5	-0.2

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 8. Kissimmee River floodplain stages at selected stations are shown in Figure 9.

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: 5/5/2020

Metric	Location	1-Day Average		Average for the Preceding 7-Days ¹							
		5/3/2020	5/3/20	4/26/20	4/19/20	4/12/20	4/5/20	3/29/20	3/22/20	3/15/20	3/8/20
Discharge (cfs)	S-65	725	760	611	372	365	357	448	690	920	1,013
Discharge (cfs)	S-65A ²	639	679	550	353	323	310	350	592	837	956
Discharge (cfs)	S-65D ²	738	722	485	317	308	302	476	699	940	968
Headwater Stage (feet NGVD)	S-65D ²	25.87	25.84	25.84	25.83	25.75	25.78	25.71	25.75	25.85	25.69
Discharge (cfs)	S-65E ²	631	677	435	282	283	262	433	653	864	891
Discharge (cfs)	S-67	0	0	0	0	0	0	0	0	0	0
DO (mg/L) ³	Phases I & II/III river channel	9.1	8.3	7.5	7.9	7.4	7.4	6.9	7.6	8.0	8.3
Mean depth (feet) ⁴	Phase I floodplain	0.11	0.14	0.10	0.06	0.07	0.07	0.08	0.11	0.20	0.24

¹Seven-day average of weighted daily means through Sunday midnight.

²S-65A discharge combines S-65A with auxiliary structures; 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.

³DO is the average for sondes at KRBN, PC62, PC33, PD62R, and PD42R.

⁴1-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)

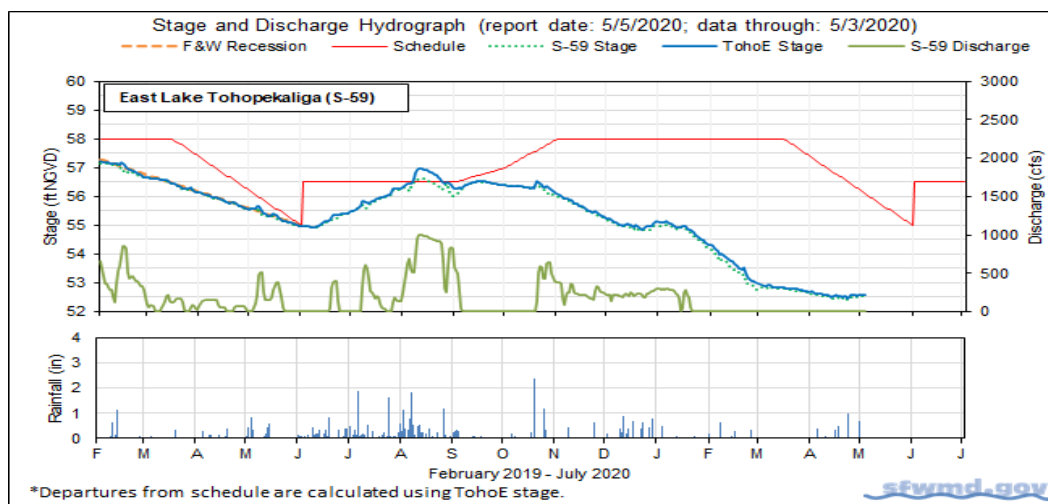


Figure 1.

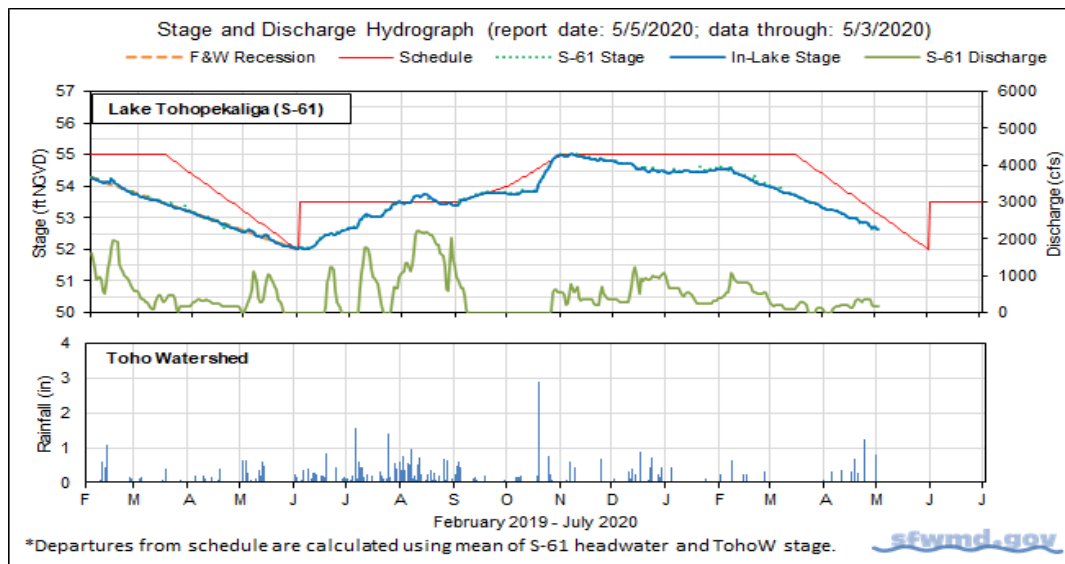


Figure 2.

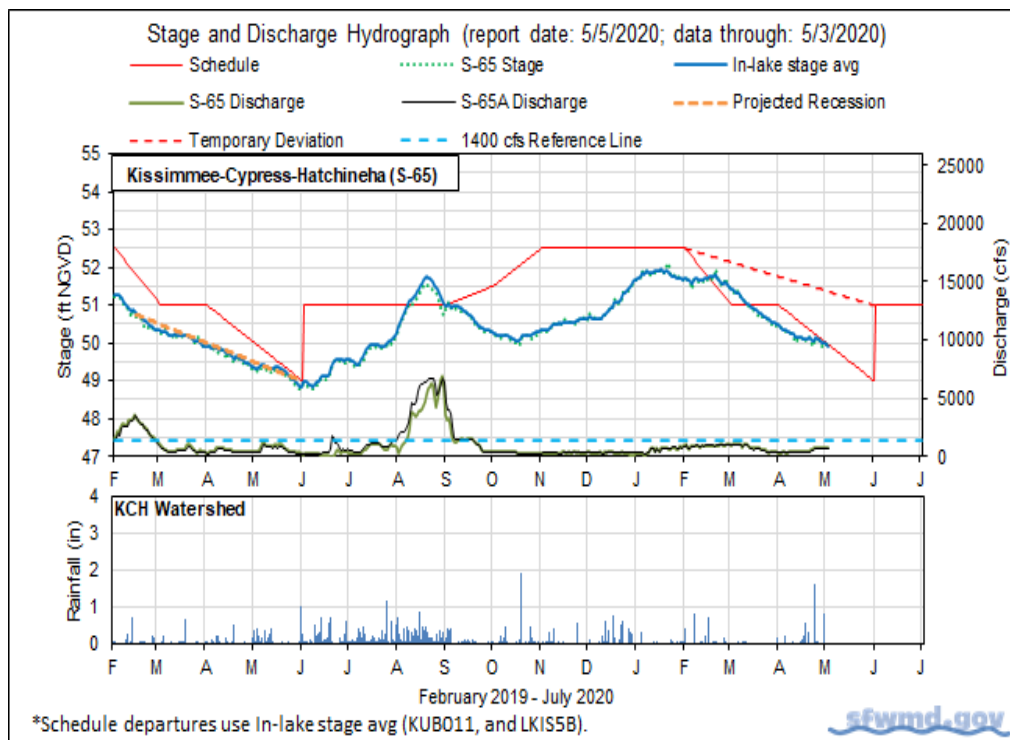


Figure 3.

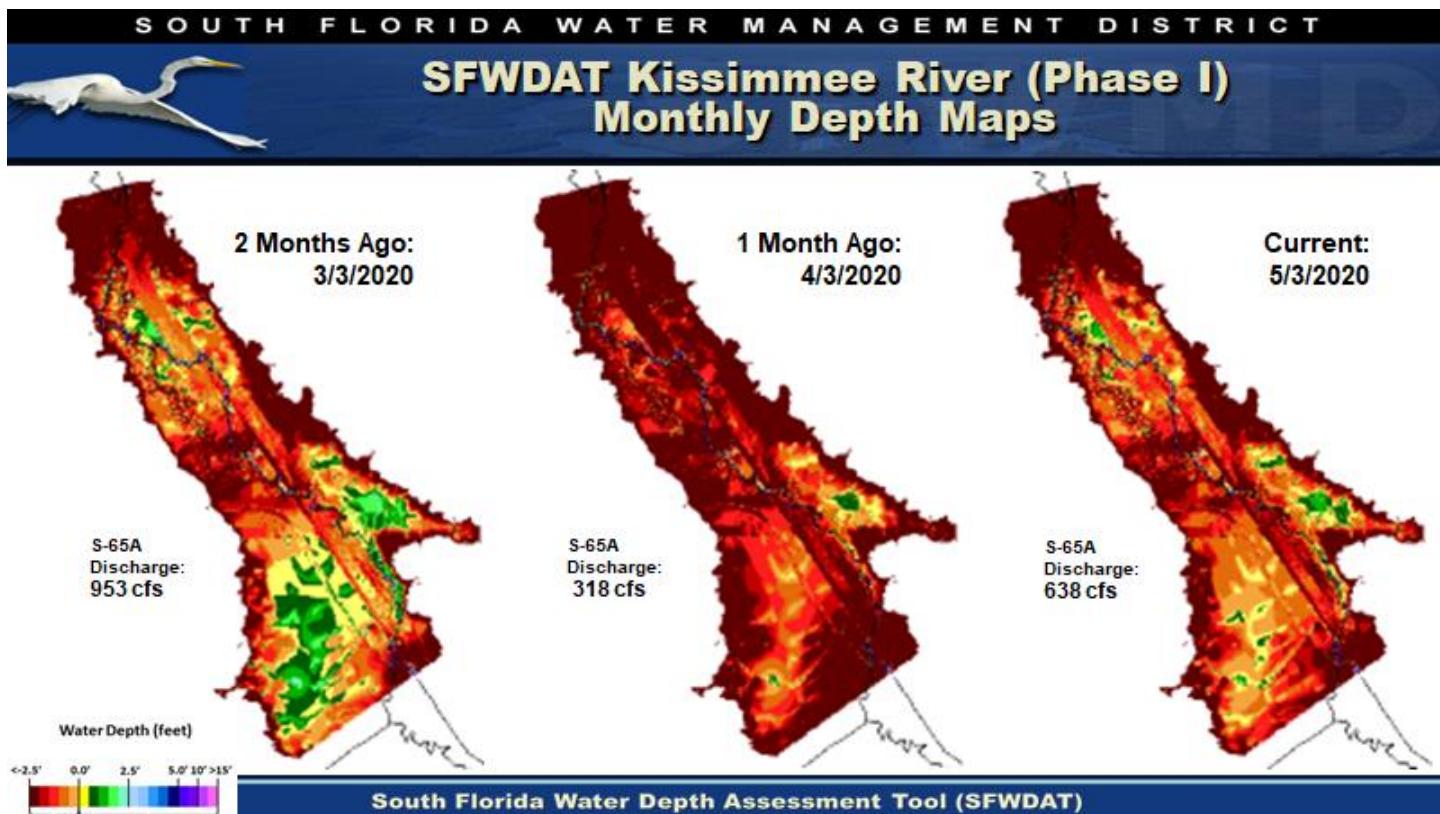
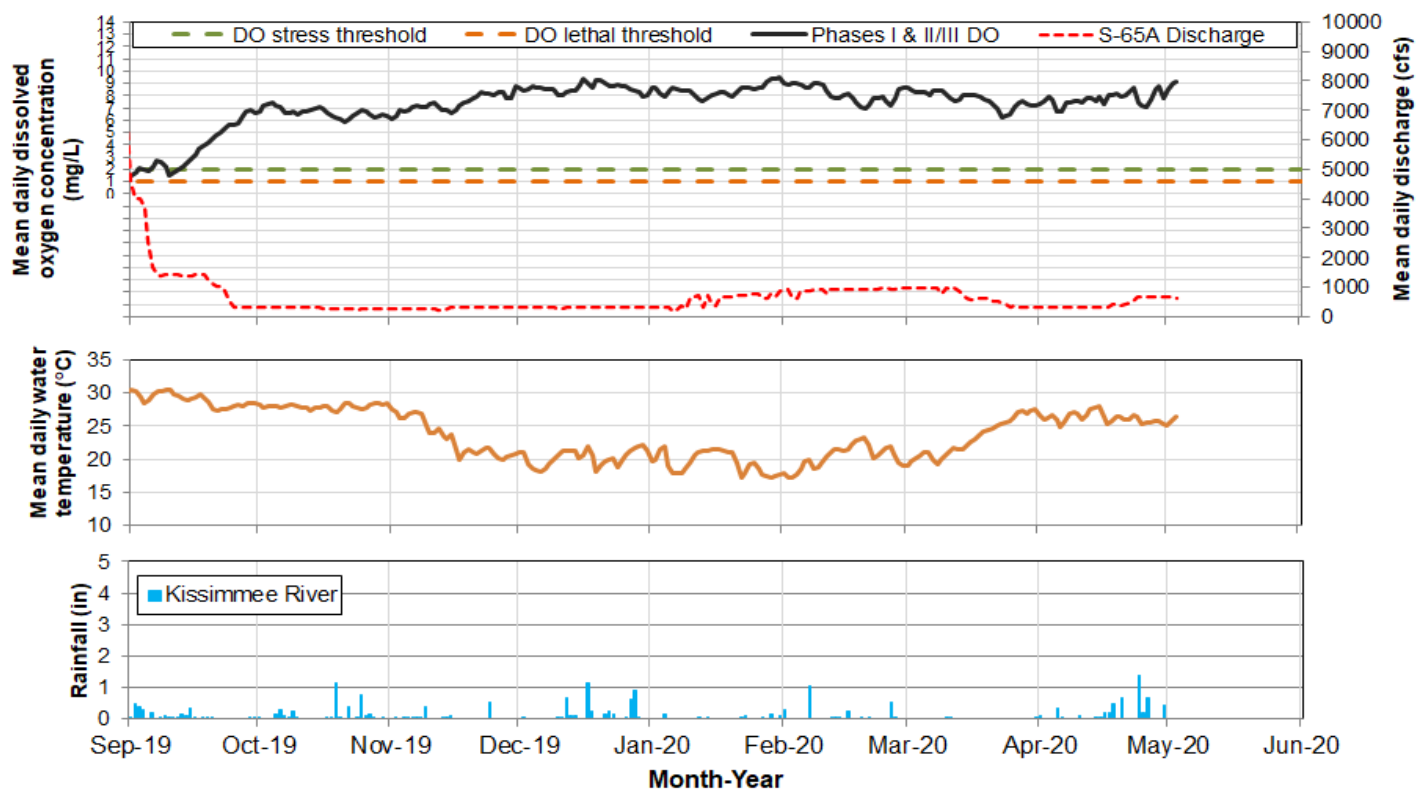


Figure 4. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.



Report Date: 5/5/2020; data are through: 5/3/2020.

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

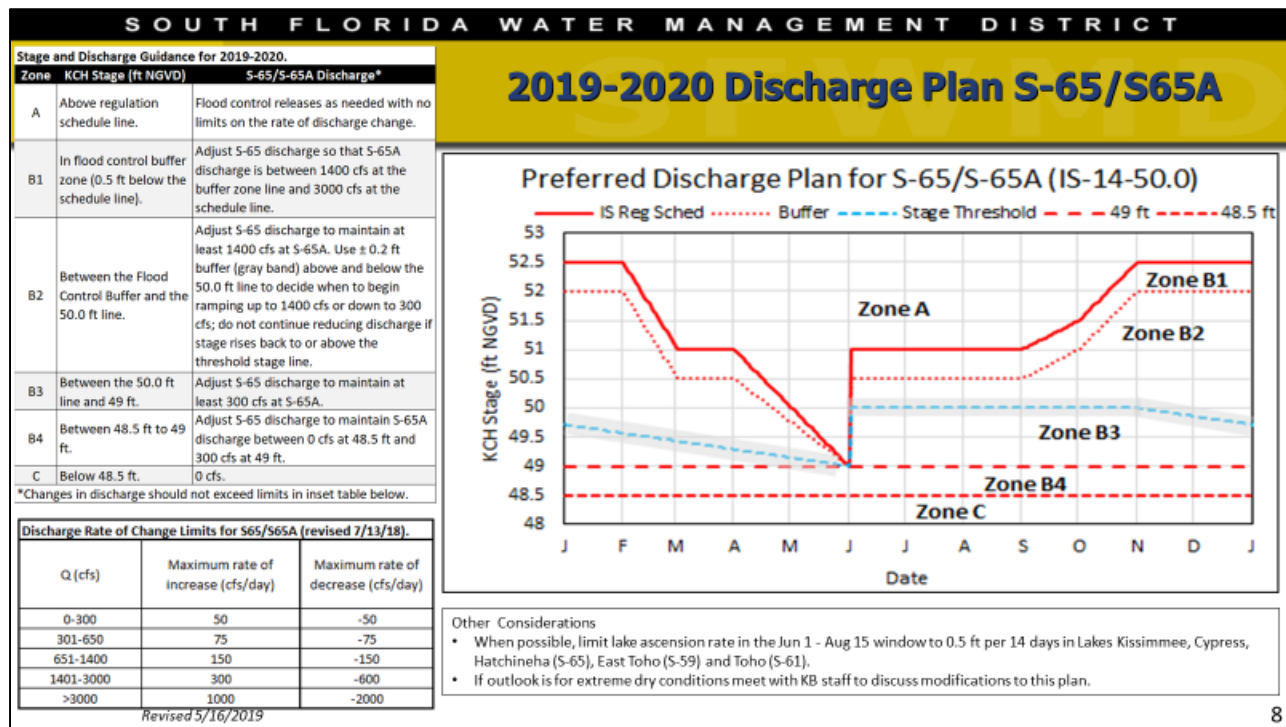


Figure 6. The 2019-2020 Discharge Plan for S-65/S-65A.

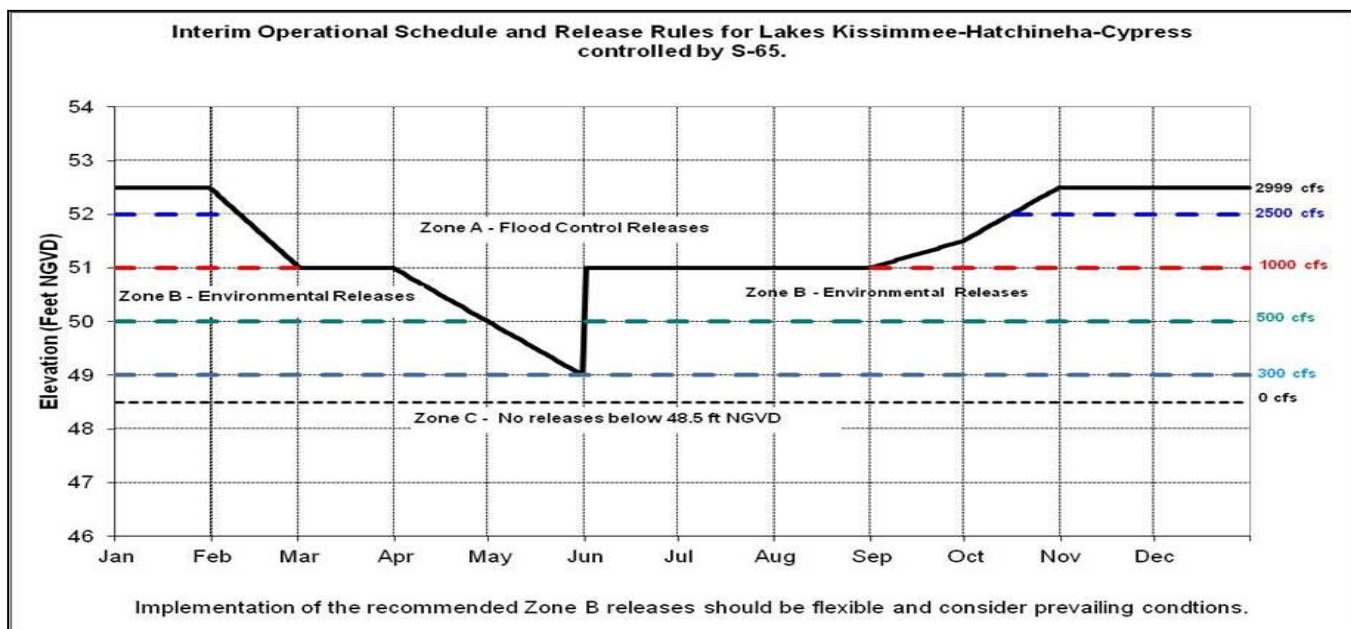


Figure 7. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.

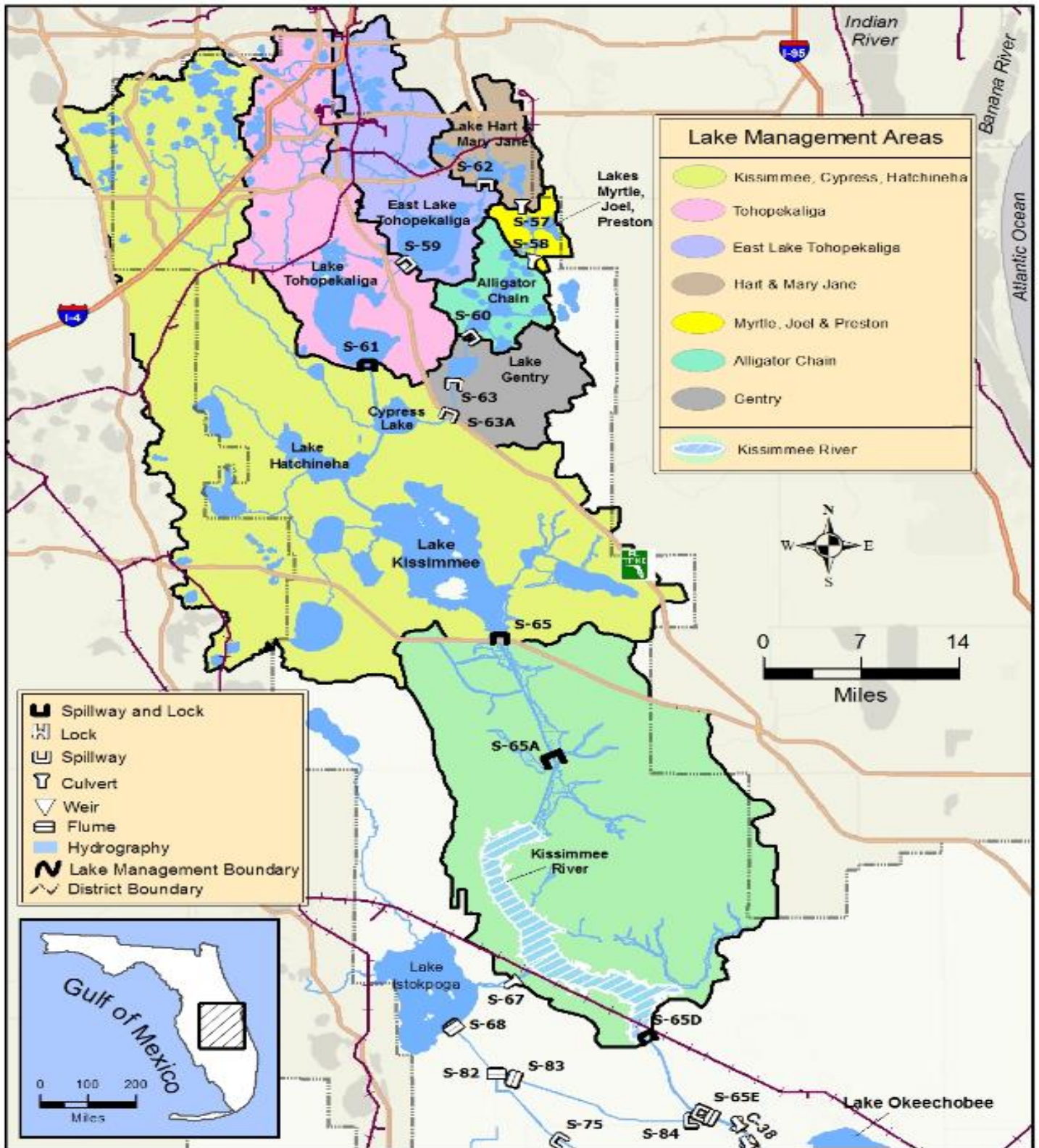


Figure 8. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee stage is 11.37 feet NGVD, 0.34 feet lower than a month ago and 0.20 feet higher than one year ago (Figure 1). The Lake is currently 0.58 feet below the preferred ecological envelope (Figure 2). Lake stages 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 had been slowly declining since about mid-February 2020 but rain events over the previous two weeks had resulted in a slight increase in lake stage. According to RAINДАР, 0.37 inches of rain fell directly over the Lake during the past week (Figure 4). Most central and southern regions received less than 0.5 inches of rain, while some west coast regions received around 1.5 inches.

The average daily inflows (minus rainfall) increased going from 590 cfs to 865 cfs, and average daily outflows (minus evapotranspiration) also increased, from 774 cfs the previous week to 1,292 cfs. Most of the inflow (671 cfs) came from the Kissimmee River (S-65E & S-65EX1). An additional 185 cfs came from the northwest canals, through S-84. Outflows of 493 cfs were released to the west through S-77 (C-43/Caloosahatchee Canal) and 790 cfs south through the S-350 structures. 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.

Current satellite imagery (May 3, 2020) using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data suggested low potential for cyanobacterial blooms along the central and northern regions of the Lake, with moderate risk along the southern and western shorelines (Figure 6). Increased surface water inflows due to recent rains, coinciding with temporary reductions in wind activity are likely components of this increased cyanobacterial activity. Blooms during this time of year tend to be ephemeral in nature with slight changes occurring in intensity and location along the shorelines from week to week, depending on environmental conditions and weather patterns.

Water Management Summary

Lake Okeechobee stage was 11.37 feet NGVD on May 4, 2020, down 0.09 feet from the previous week, and 0.34 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.48 feet above the Water Shortage sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12.0 – 15.0 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 0.58 feet below the bottom of the envelope. Lake stages below the ecological envelope will continue to benefit recovering submerged and emergent marsh vegetation at low elevations but will reduce aquatic habitat for fish and wildlife in the marshes. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake due to low lake stages during the breeding season.

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	502	671	0.3
S-71 & S-72	18	0	0.0
S-84 & S-84X	49	185	0.1
Fisheating Creek	6	4	0.0
S-154	0	0	0.0
S-191	0	0	0.0
S-133 P	0	0	0.0
S-127 P	0	0	0.0
S-129 P	0	0	0.0
S-131 P	0	0	0.0
S-135 P	0	0	0.0
S-2 P	0	0	0.0
S-3 P	0	0	0.0
S-4 P	0	0	0.0
L-8 Backflow	15	5	0.0
Rainfall	3574	768	0.4
Total	4163	1632	0.8

OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-77	545	493	0.2
S-308	-81	8	0.0
S-351	304	409	0.2
S-352	7	95	0.0
S-354	0	288	0.1
L-8 Outflow			
ET	2049	2653	1.3
Total	2822	3945	1.9

Provisional Data

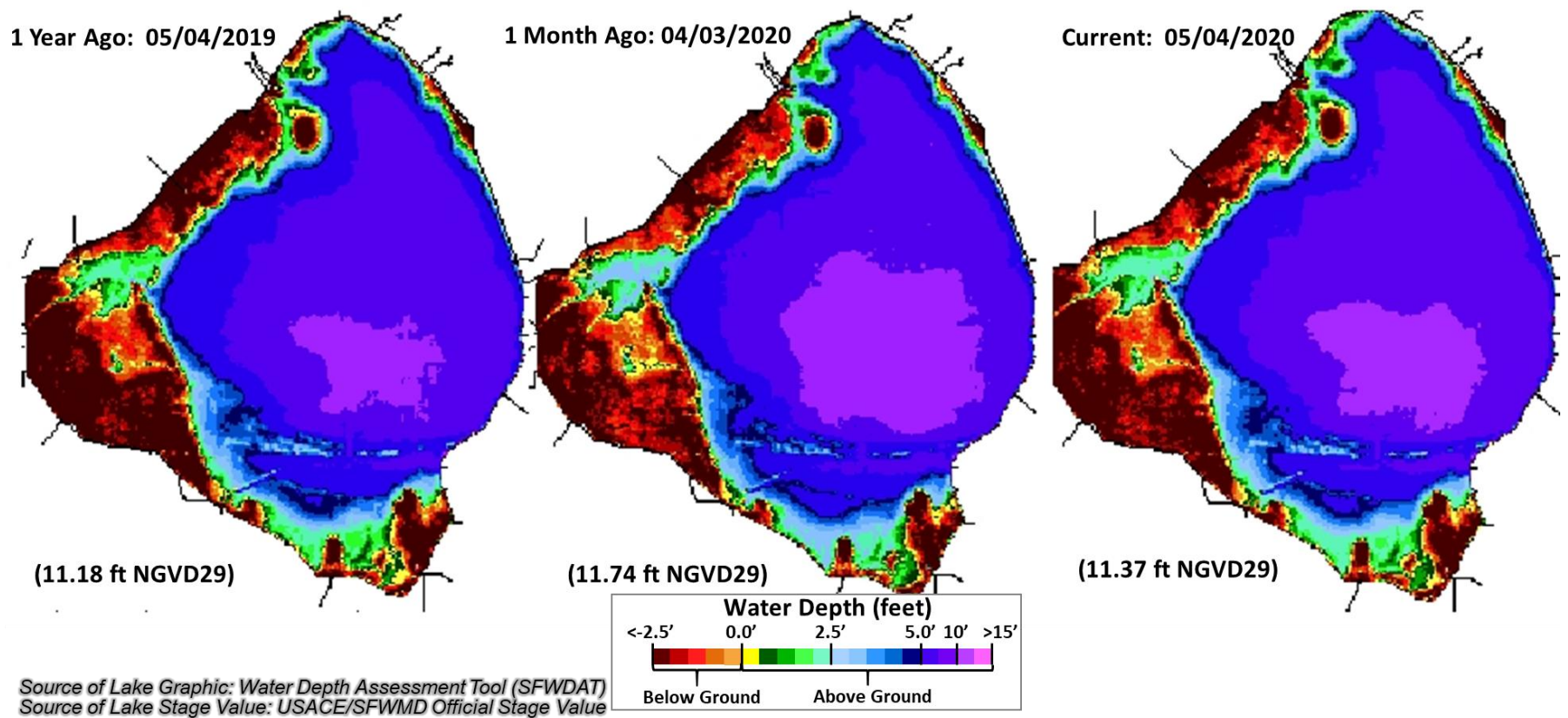


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

Lake Okeechobee Stage vs Updated Ecological Envelope

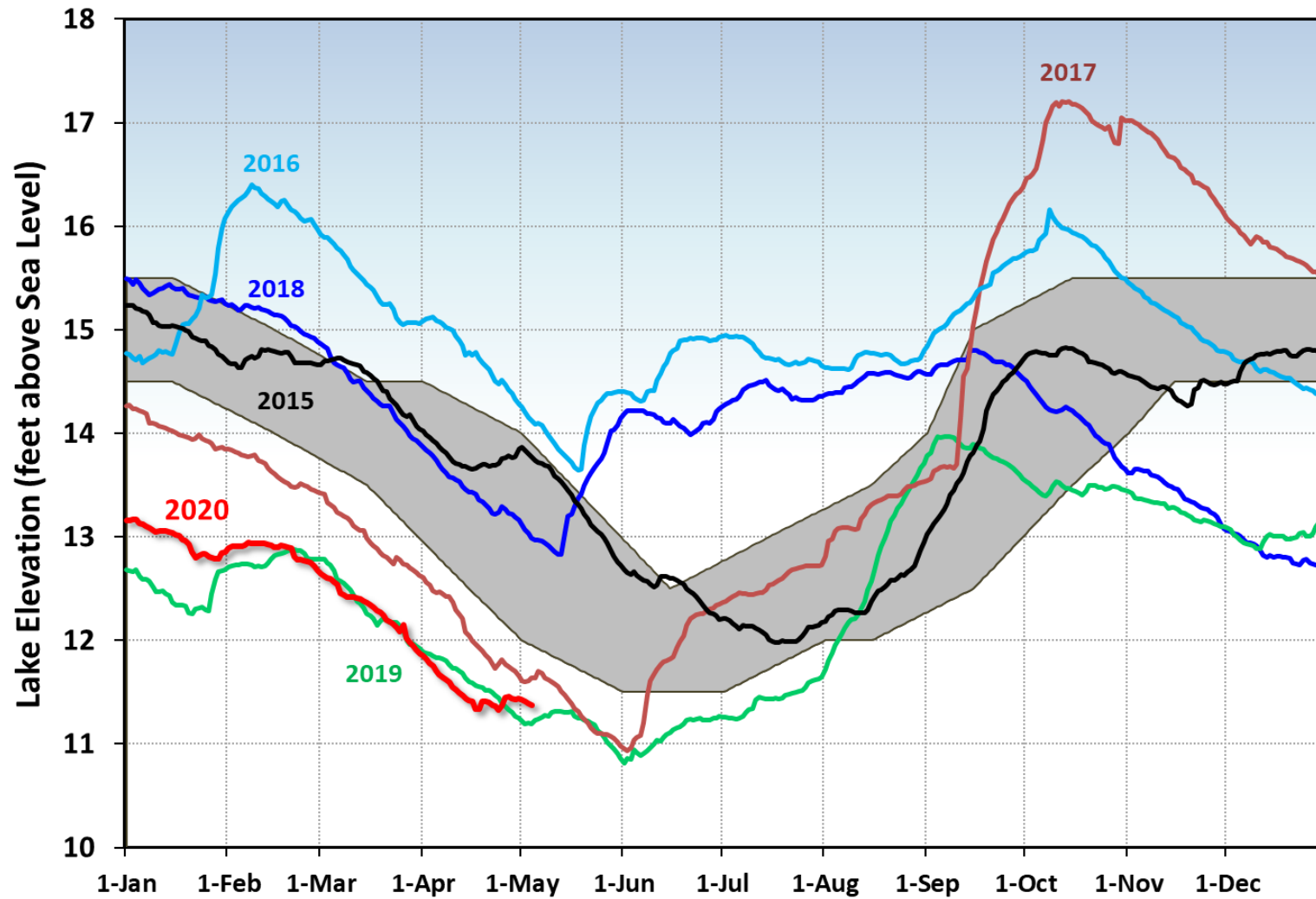
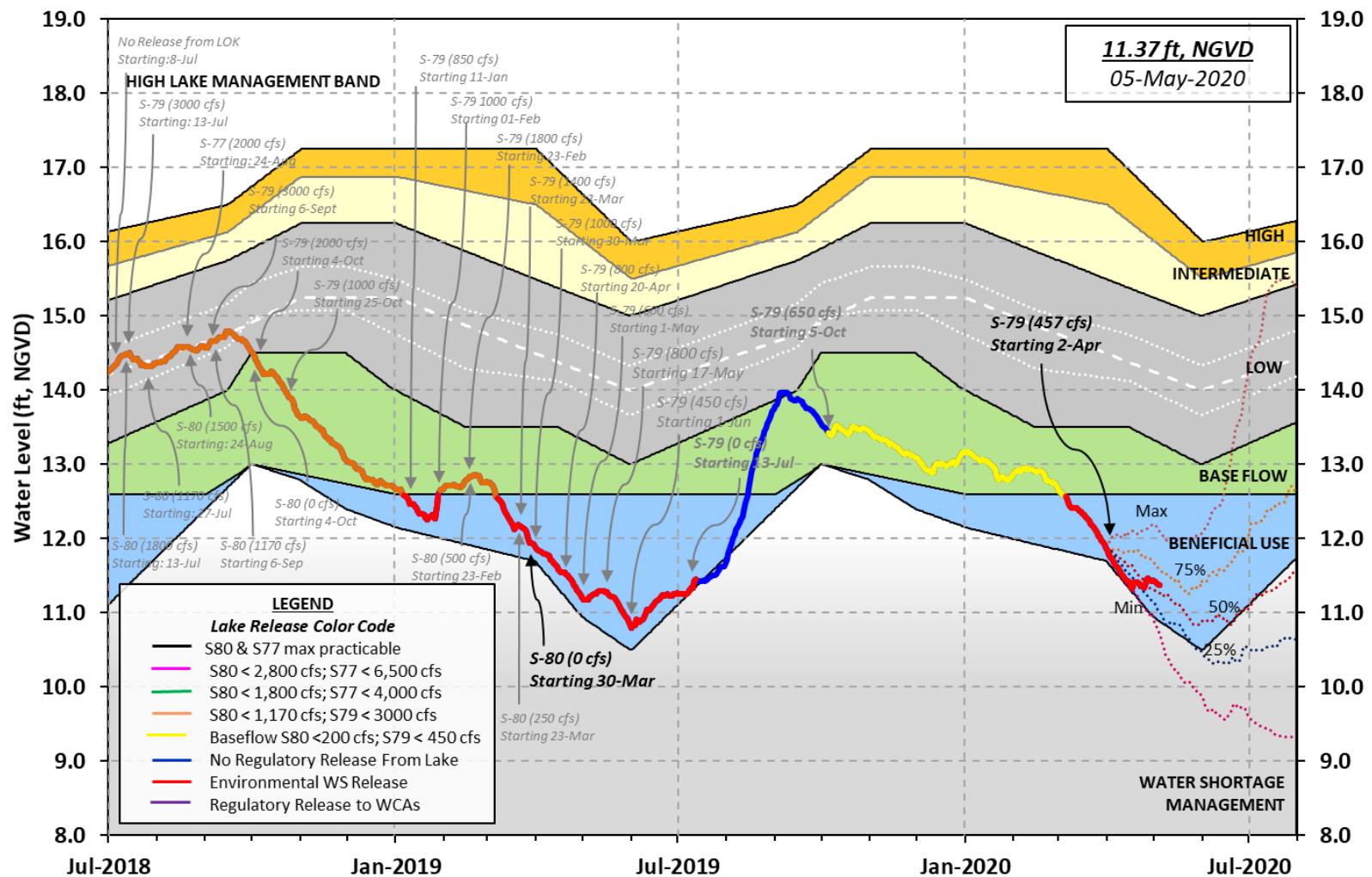


Figure 2. Select annual stage hydrographs for Lake Okeechobee in comparison to the updated Ecological Envelope.

Lake Okeechobee Water Level History and Projected Stages



LORS-2008
Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

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

SFWMD PROVISIONAL RAINDAR 7-DAY RAINFALL ESTIMATES
FROM: 0400 EST, 04/28/2020 THROUGH: 0400 EST, 05/05/2020

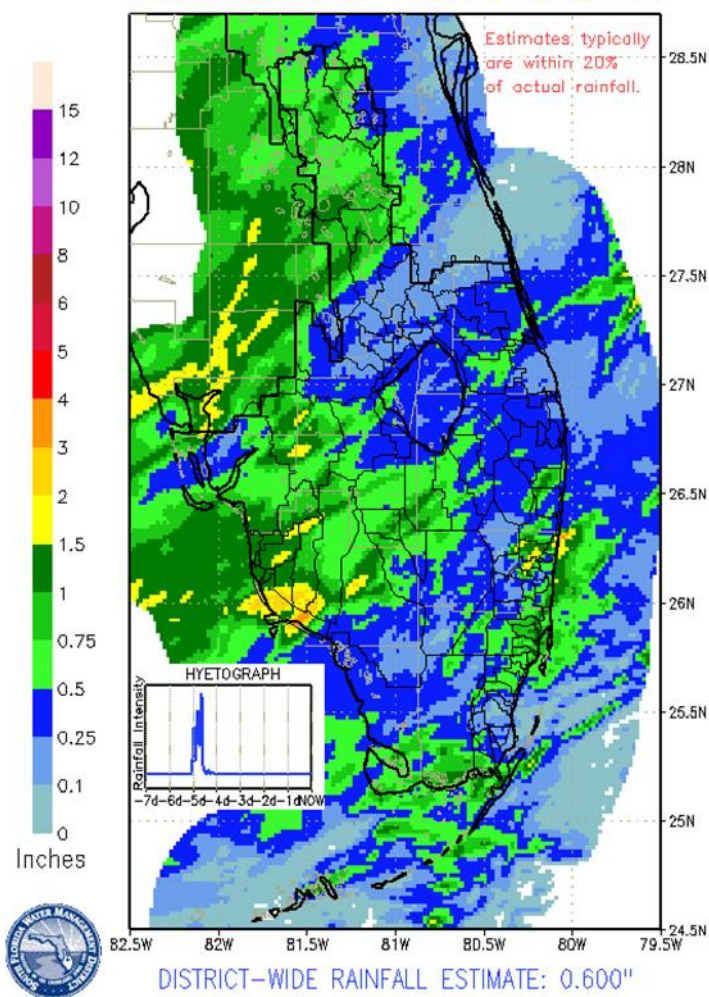


Figure 4. 7-Day rainfall estimates by RAINDAR.

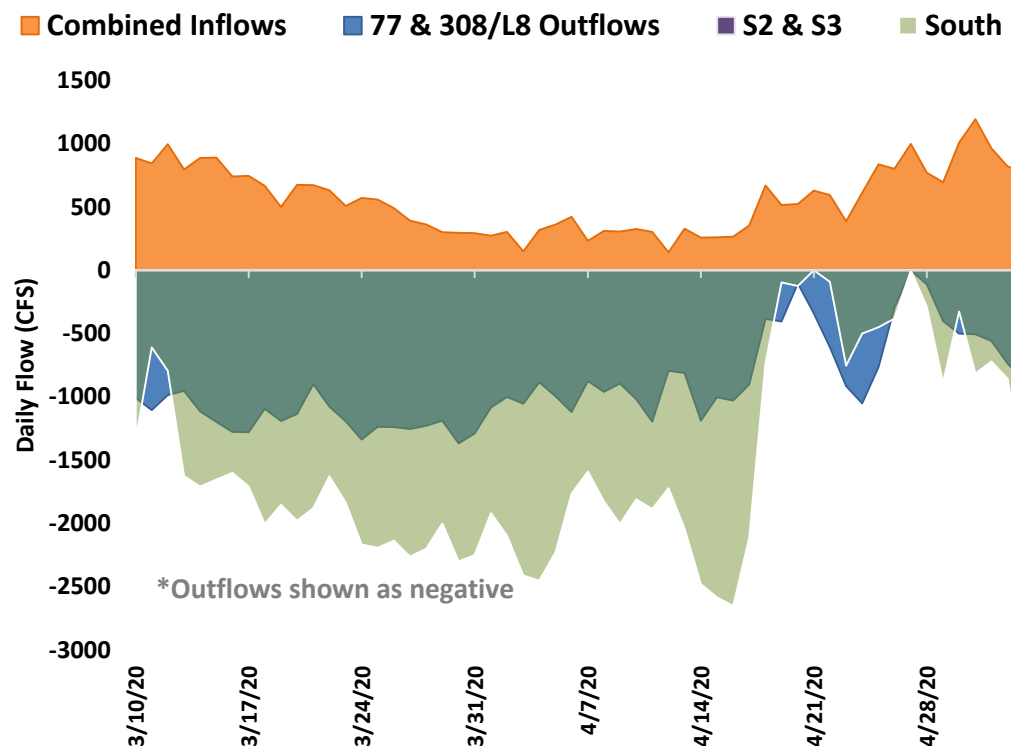


Figure 5. Major inflows (orange) and outflows (blue) of Lake Okeechobee, including the S-350 structures designated as South (green). The L-8 Canal flows through Culvert 10A are included as outflows when positive, and as inflows when backflowing into the Lake. All inflows and outflows are shown as positive 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.

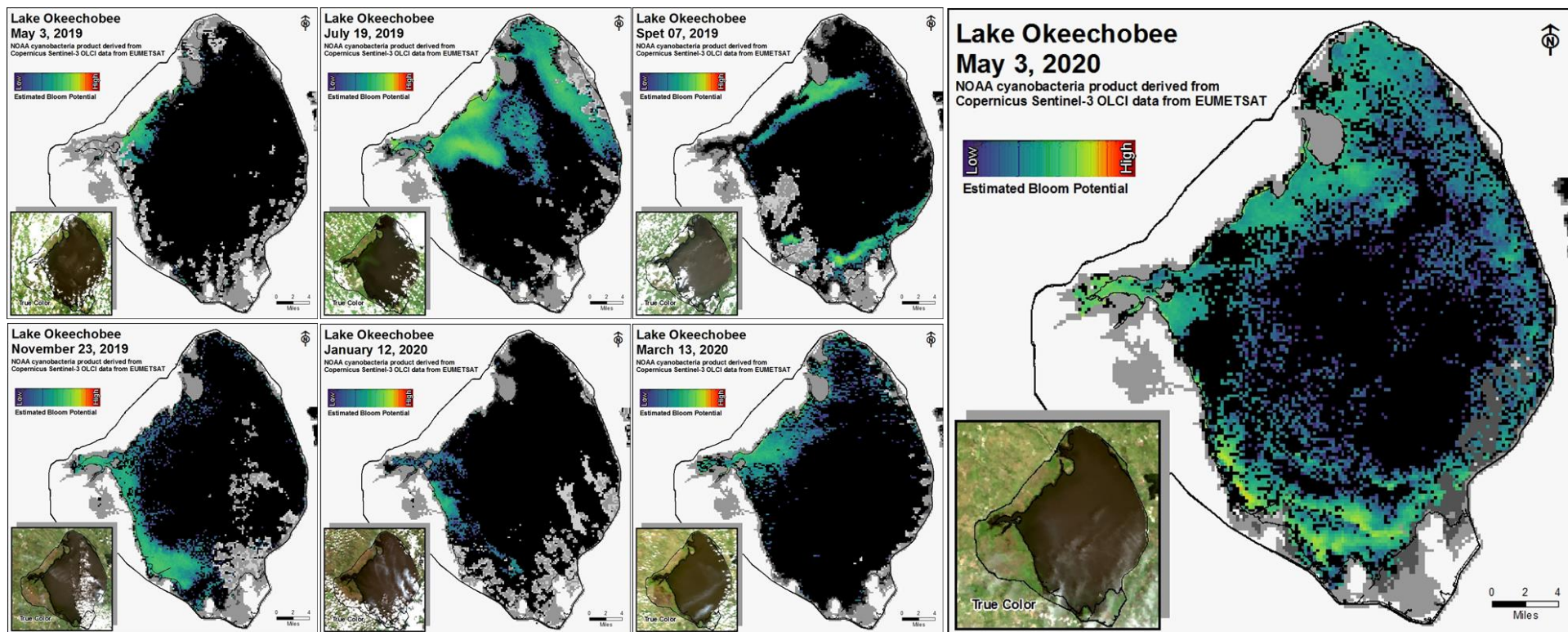


Figure 6. Potential for cyanobacterial blooms on Lake Okeechobee, based on images from NOAA cyanobacteria product derived from Copernicus Sentinel-3 OLCI data from EUMETSAT. Gray color indicates cloud cover.

ESTUARIES

St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 870 cfs (Figures 1 and 2) and last month inflow averaged about 911 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	782
S-80	0
S-308	-15
S-49 on C-24	0
S-97 on C-23	0
Gordy Rd. structure on Ten Mile Creek	88

Over the past week in the estuary, salinity decreased at HR1 and US1 Bridge and remained about the same at A1A Bridge (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 22.5. Salinity conditions in the middle estuary are estimated to be within the good 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)	18.5 (20.1)	20.7 (22.1)	NA ¹
US1 Bridge	22.1 (23.2)	23.0 (23.9)	10.0-26.0
A1A Bridge	29.0 (29.0)	30.2 (30.0)	NA ¹

¹Envelope not applicable

Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 742 cfs (Figures 5 and 6) and last month inflow averaged about 524 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	490
S-78	449
S-79	672
Tidal Basin Inflow	70

Over the past week in the estuary, surface salinity slightly increased at S-79 but decreased downstream (Table 4, Figures 7 & 8). The seven-day average salinity values are within the good range for adult eastern oysters at Cape Coral and in the fair range at Shell Point and at Sanibel (Figure 9). The seven-day average surface salinities (Table 4) are in the good range for tape grass at Val I-75 and in the fair range 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)	3.4 (1.6)	2.2 (3.0)	NA ¹
Val I75	5.1 (5.6)	6.1 (6.9)	0.0-5.0 ²
Ft. Myers Yacht Basin	12.5 (13.9)	16.0 (15.6)	NA
Cape Coral	21.5 (23.0)	23.2 (24.0)	10.0-30.0
Shell Point	~31.0 (31.8)	31.6 (32.6)	10.0-30.0
Sanibel	33.2 (34.4)	34.0 (35.1)	10.0-30.0

¹Envelope not applicable, ²Envelope 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 4.7 to 8.5 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 60 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 4.9 and 6.2 (Table 5). The current salinity conditions at Val I-75 are outside of 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	60	8.5	6.2
B	300	60	8.0	5.9
C	450	60	6.9	5.4
D	650	60	5.3	5.0
E	800	60	4.7	4.9

Red tide

The Florida Fish and Wildlife Research Institute reported on May 1, 2020, that *Karenia brevis*, the Florida red tide dinoflagellate, was observed in background concentrations in one sample collected from Lee County. *Karenia brevis* was not observed in samples collected from Palm Beach or Broward counties (no samples were analyzed this week from St. Lucie, Martin, or Miami-Dade counties).

Water Management Recommendations

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

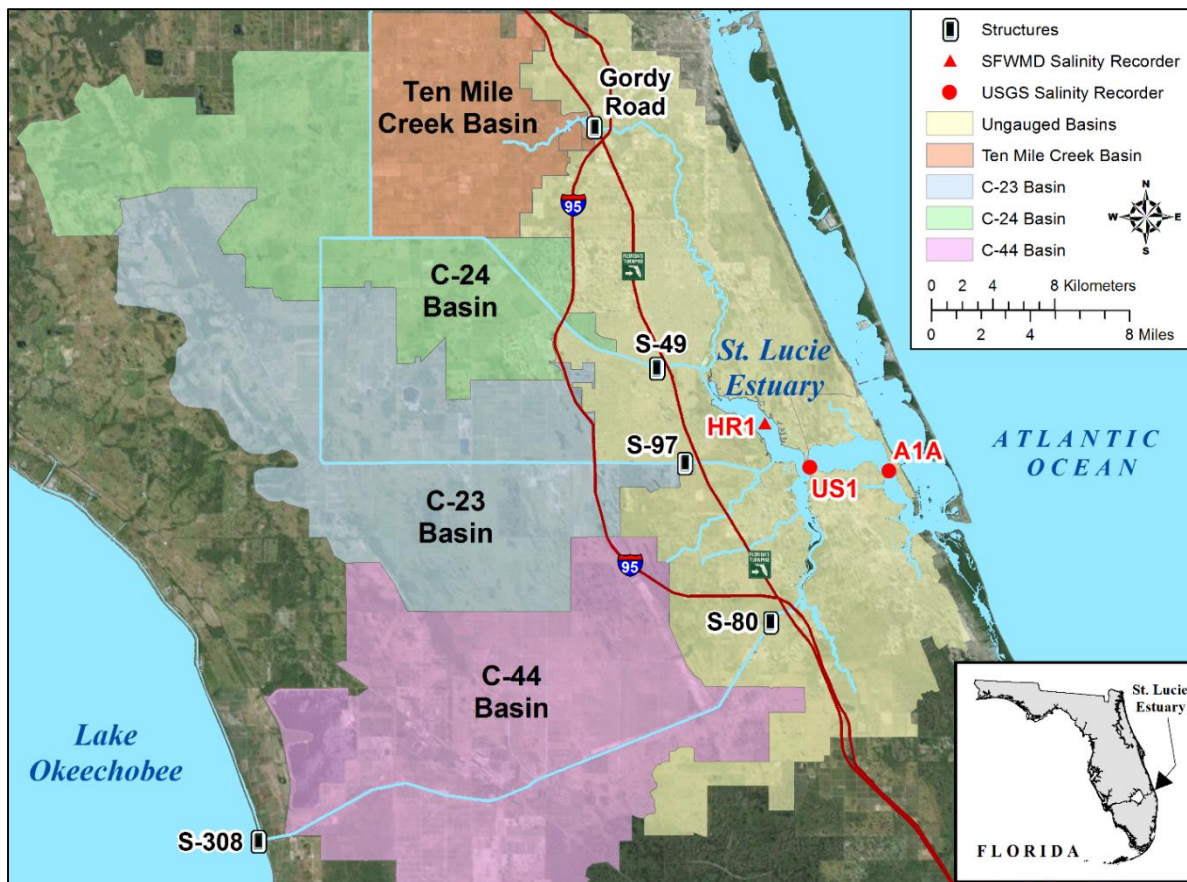


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

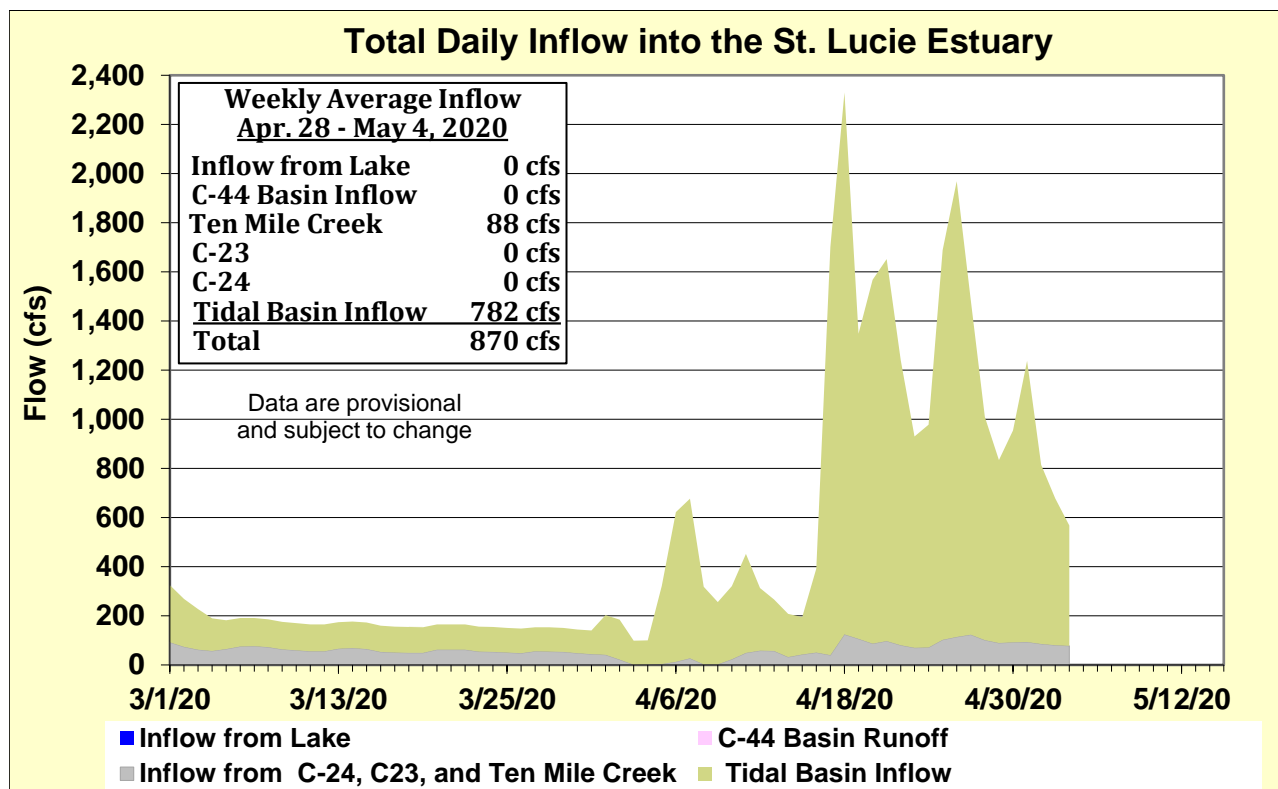


Figure 2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basin into the St. Lucie Estuary.

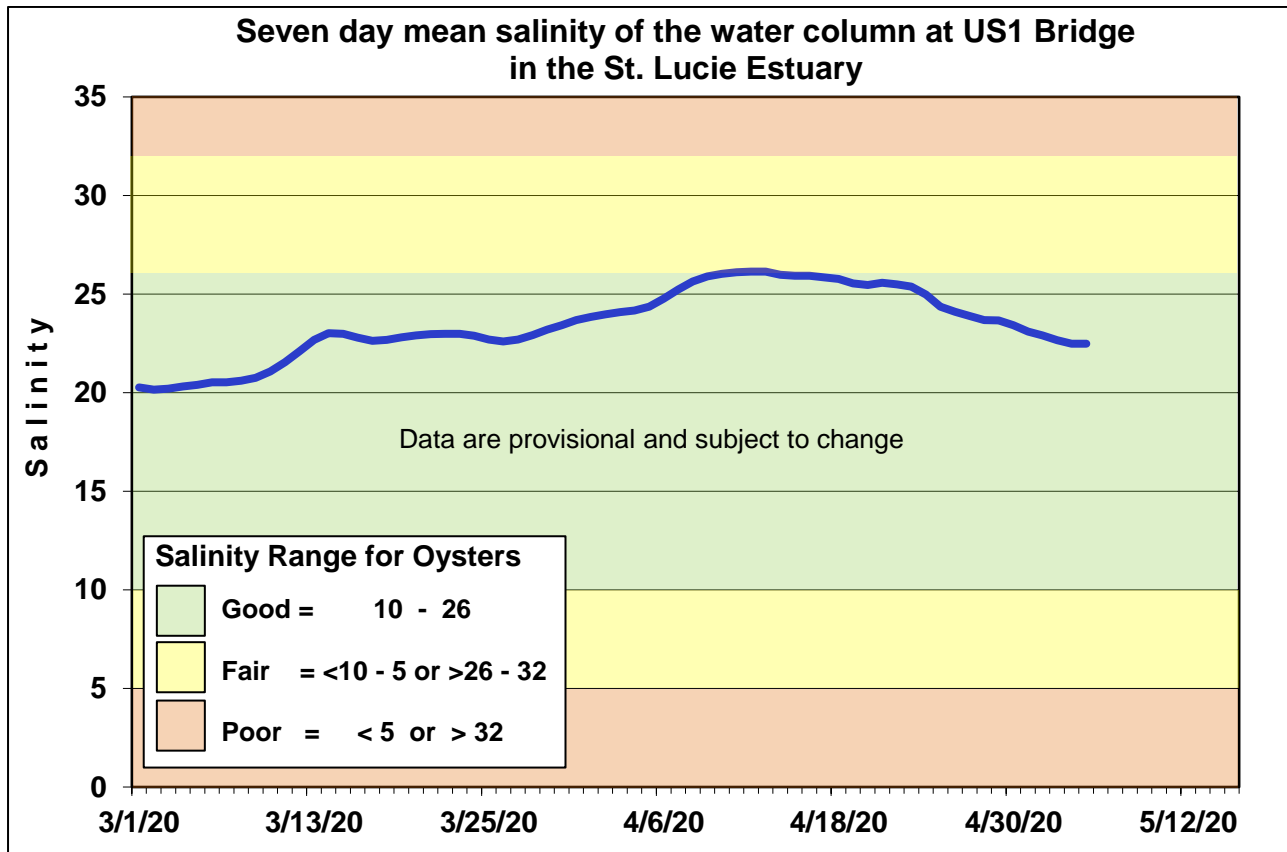


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

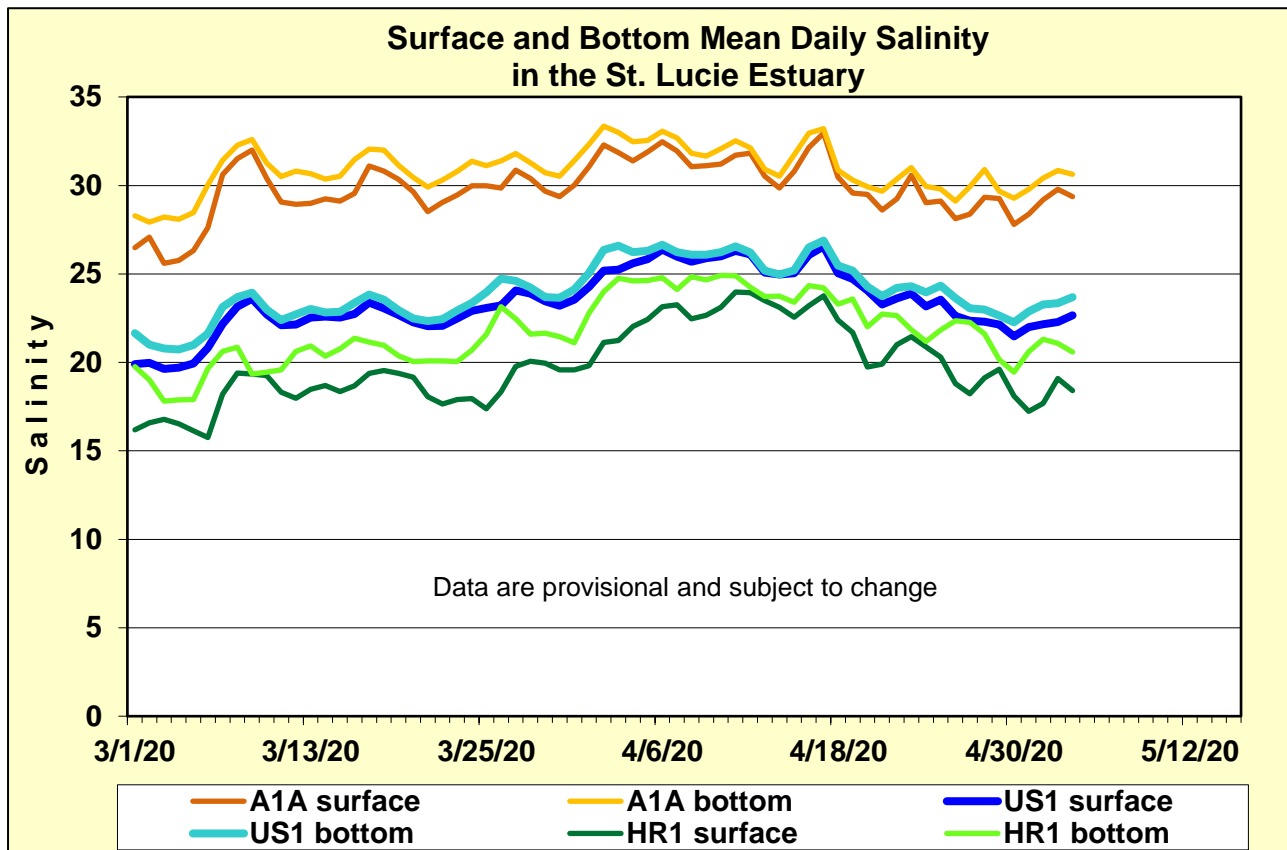


Figure 4. Daily mean salinity at the A1A, US1, and HR1 stations.

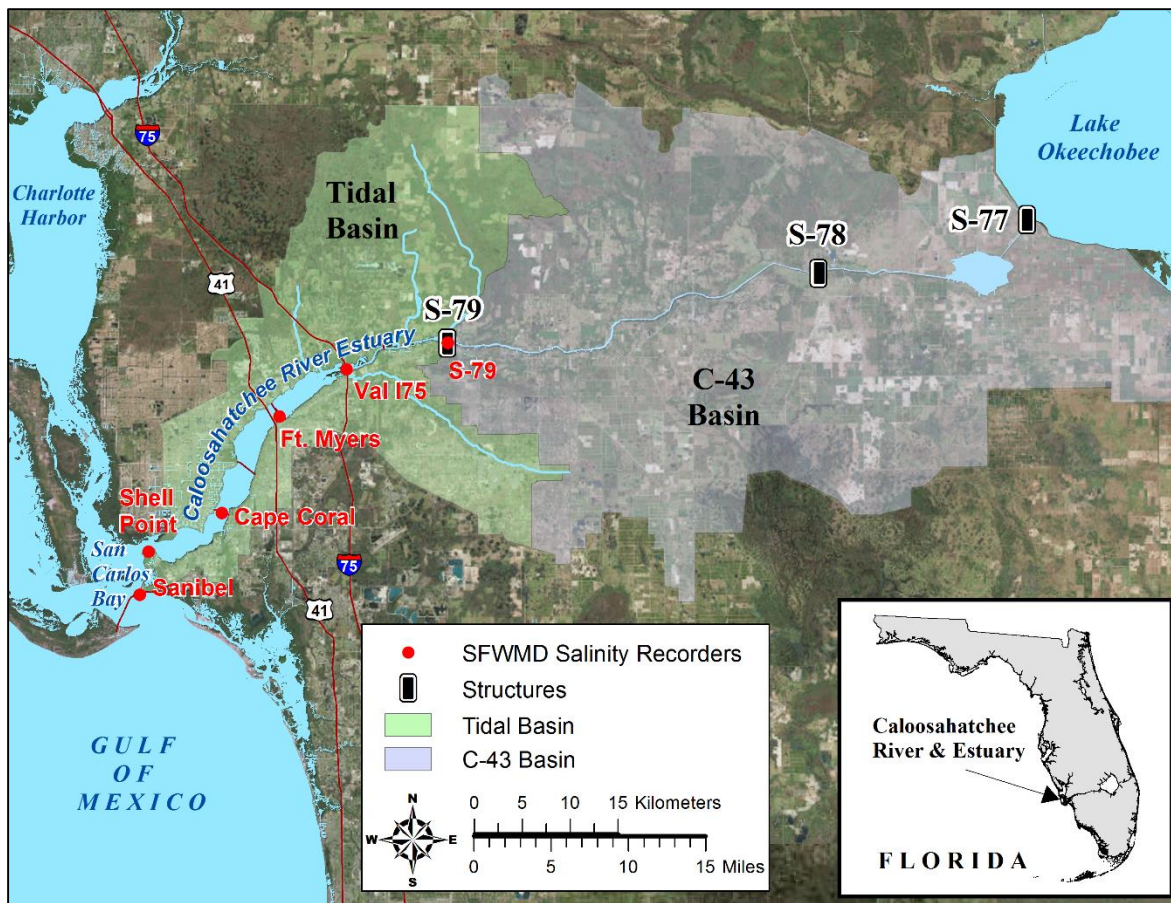


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

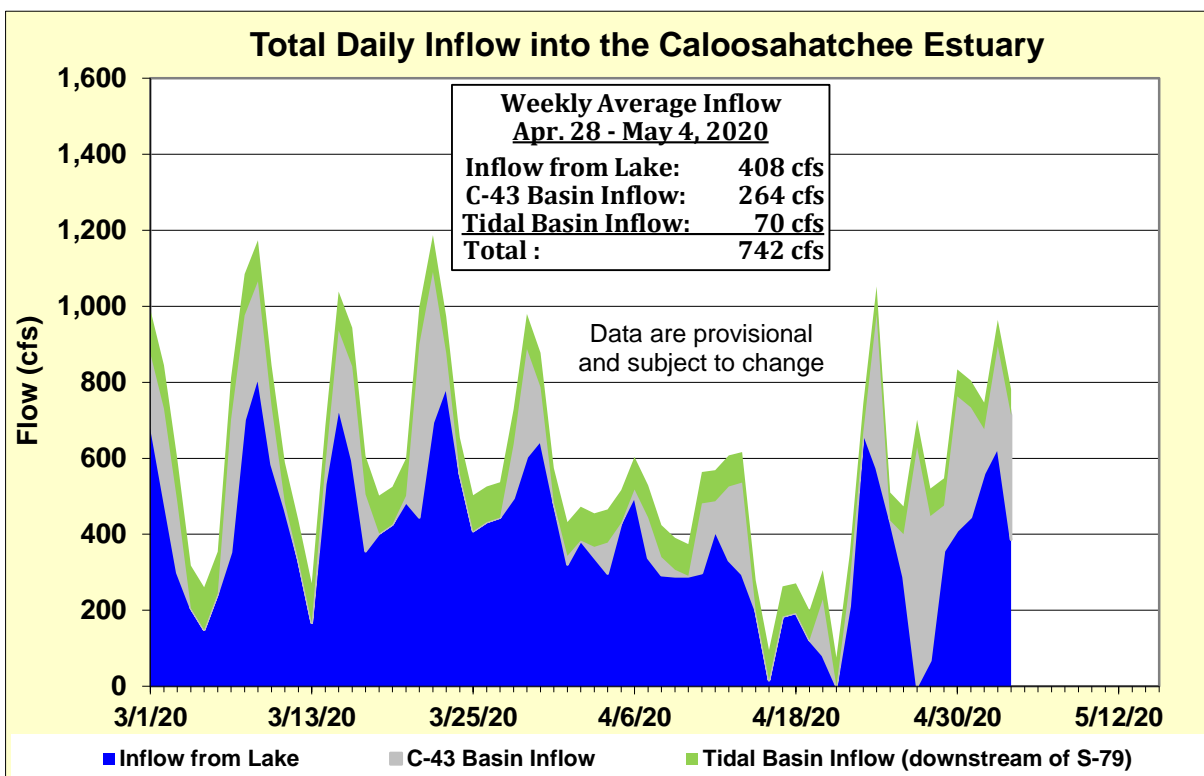


Figure 6. Total daily inflows from Lake Okeechobee, runoff from the C-43 basin

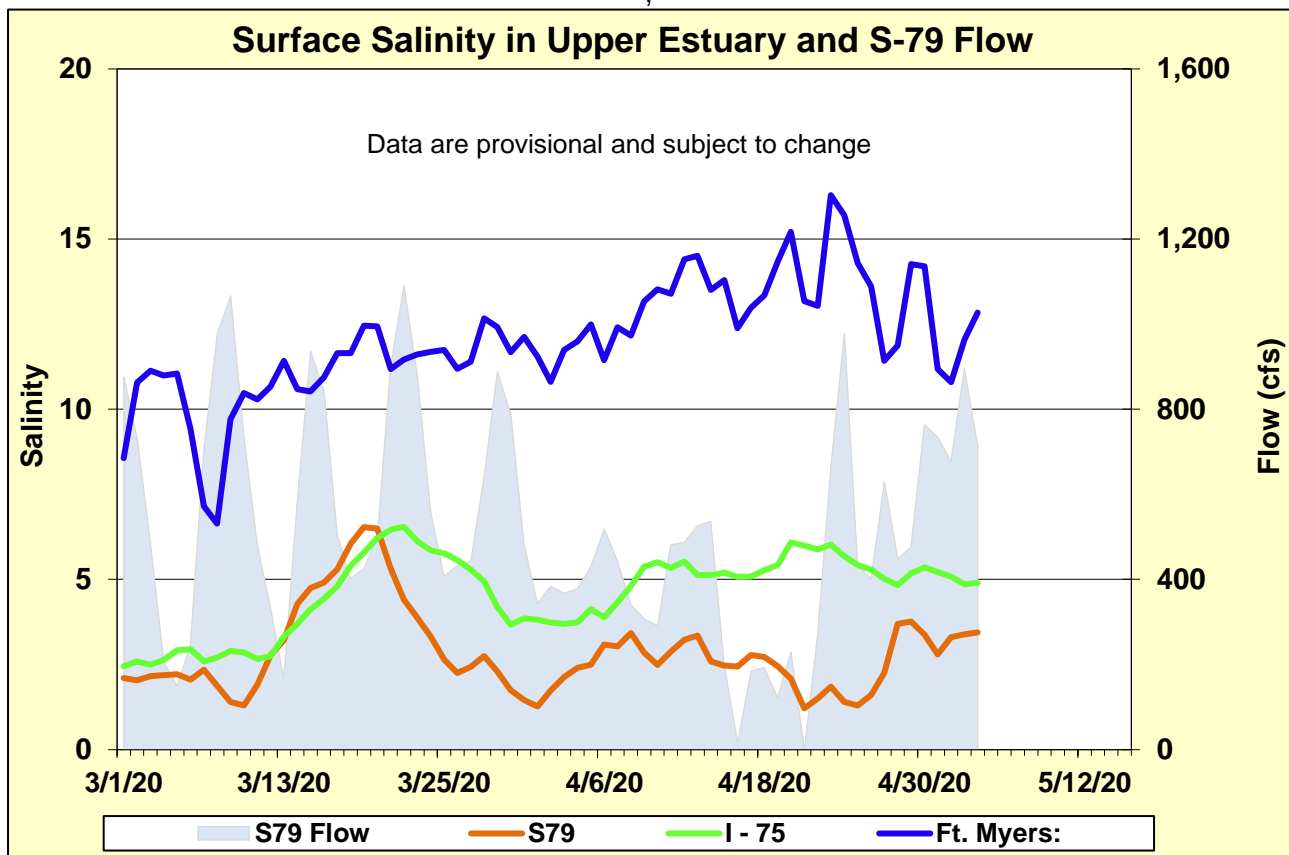


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

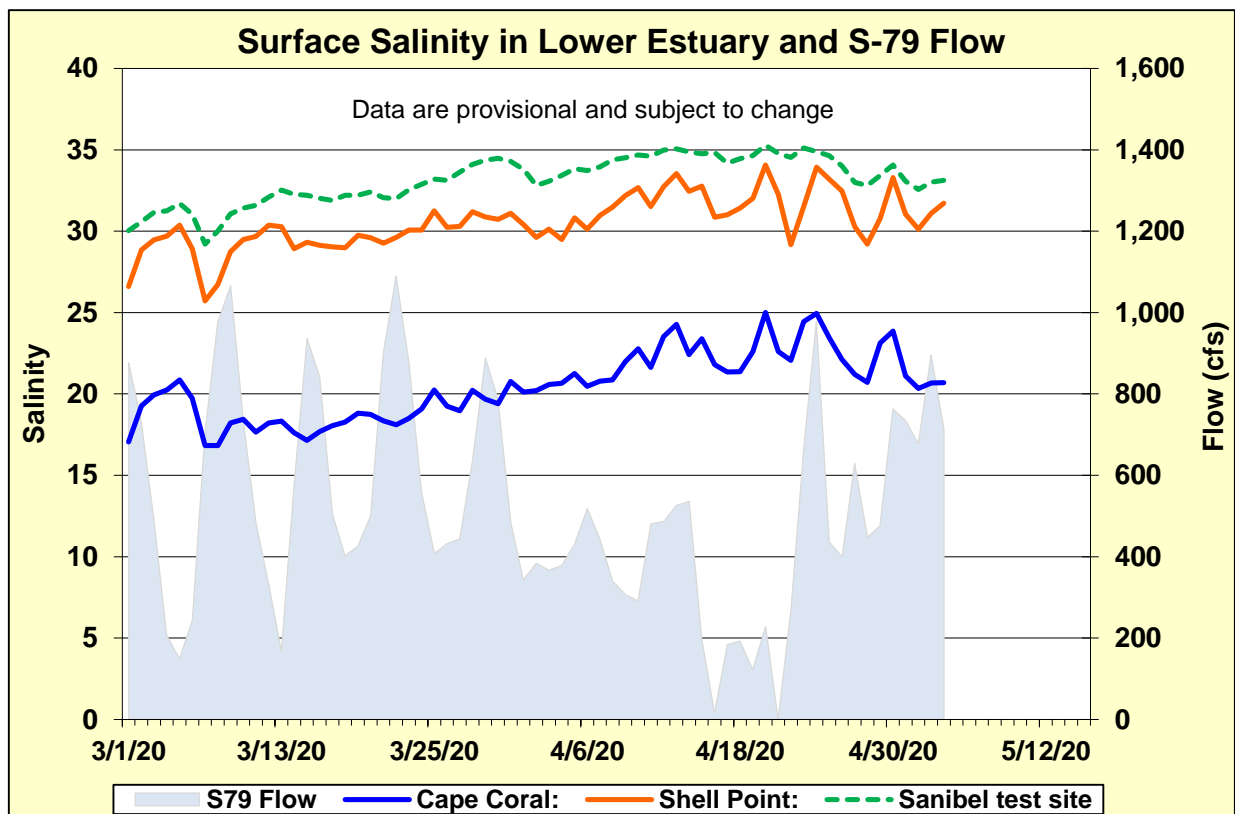


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

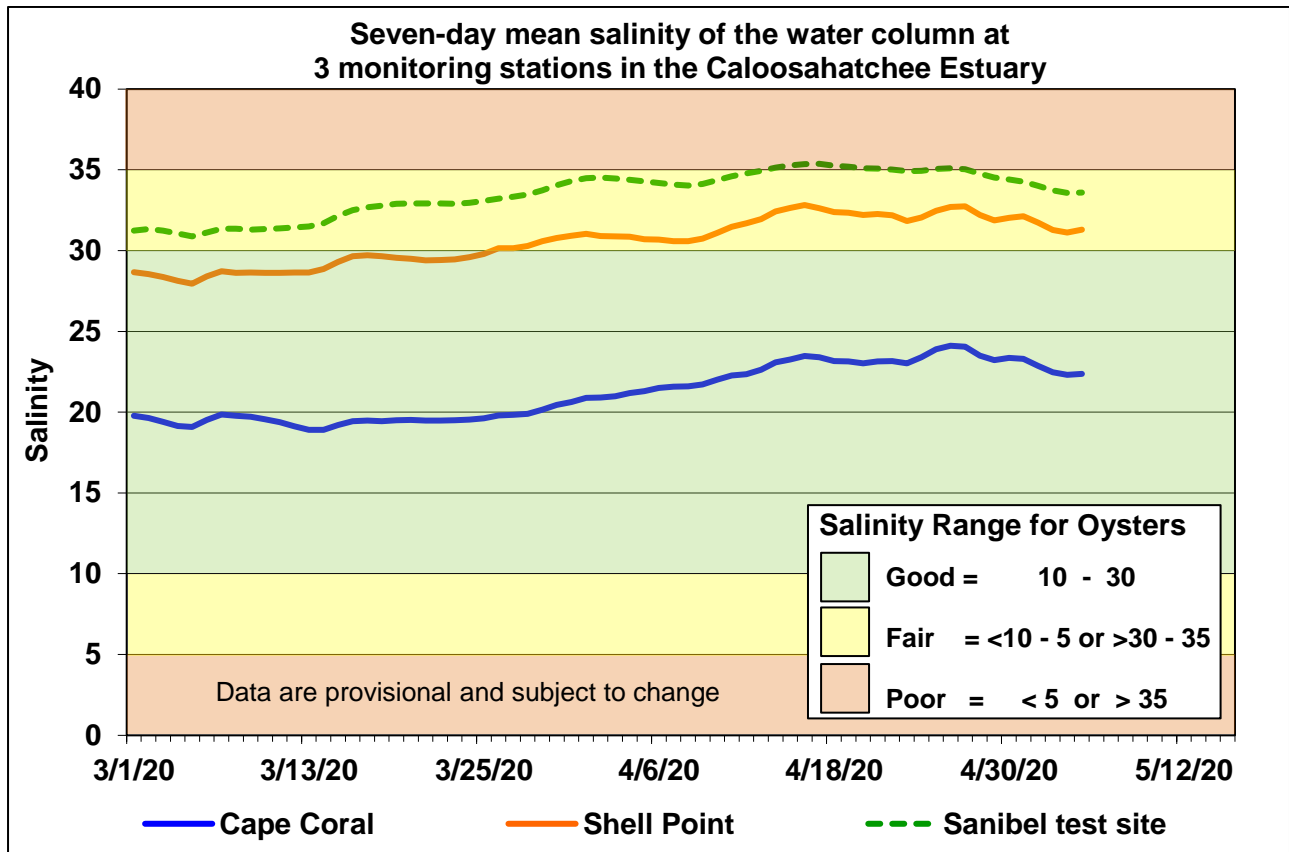


Figure 9. Seven-day mean salinity at Cape Coral, Shell Point, and Sanibel monitoring stations.

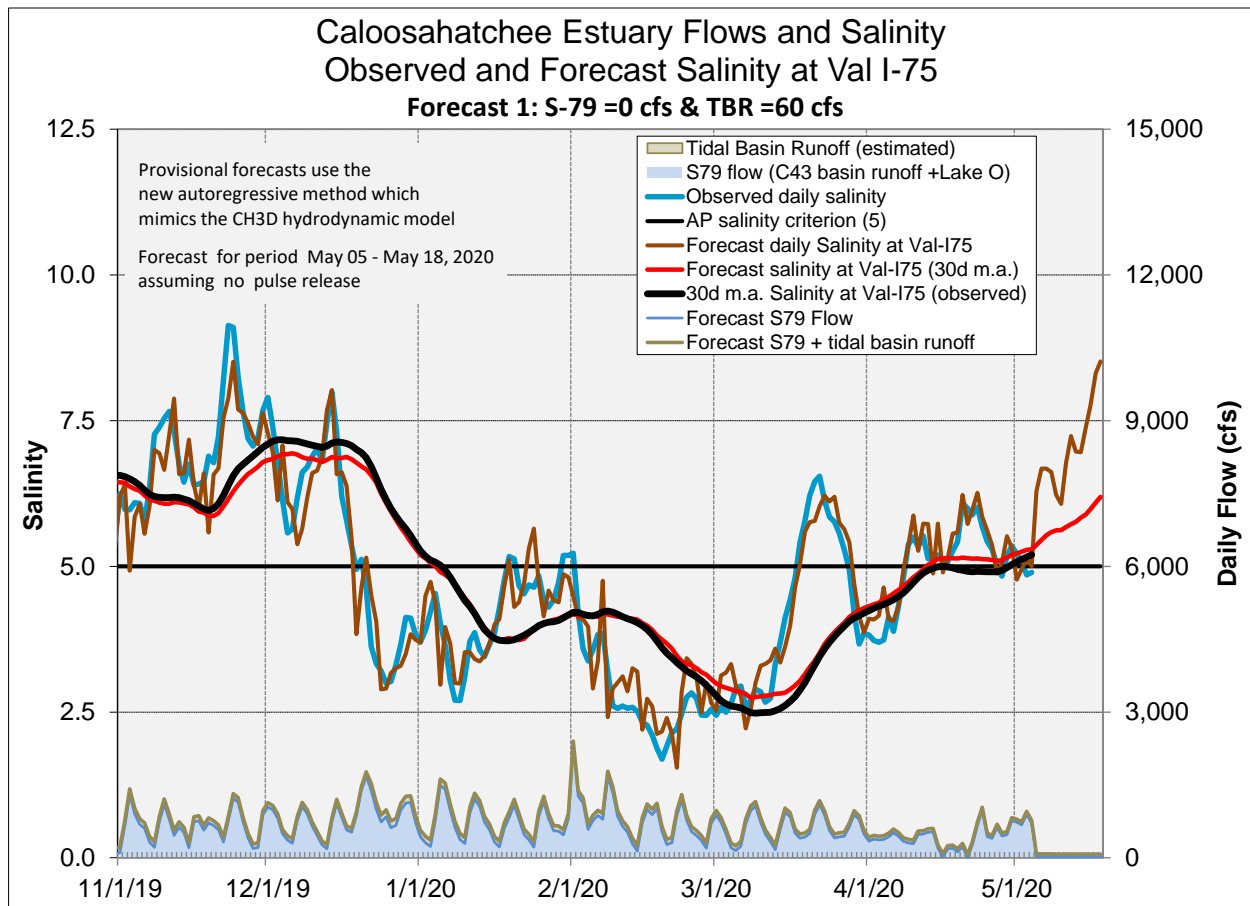
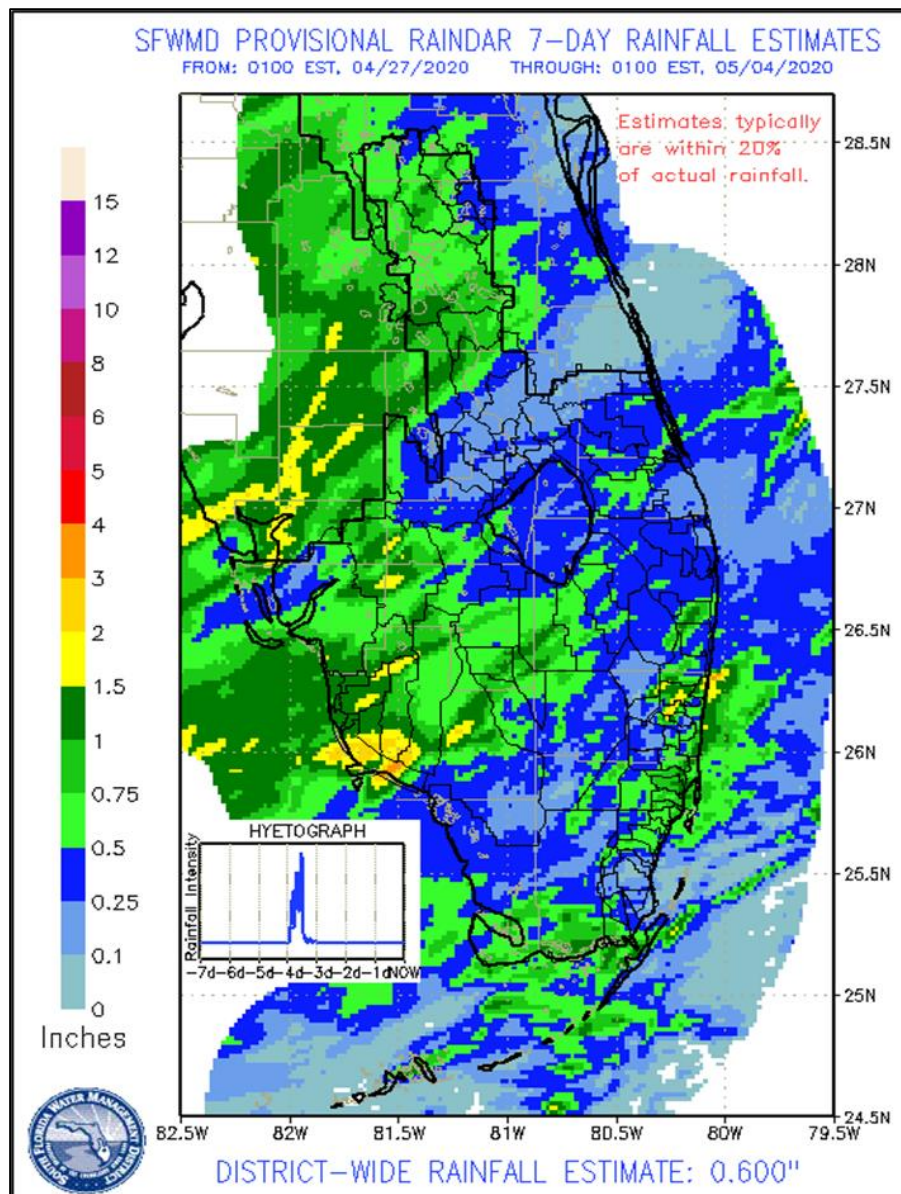


Figure 10. Forecasted Val I-75 surface salinity assuming no pulse release at S-79.

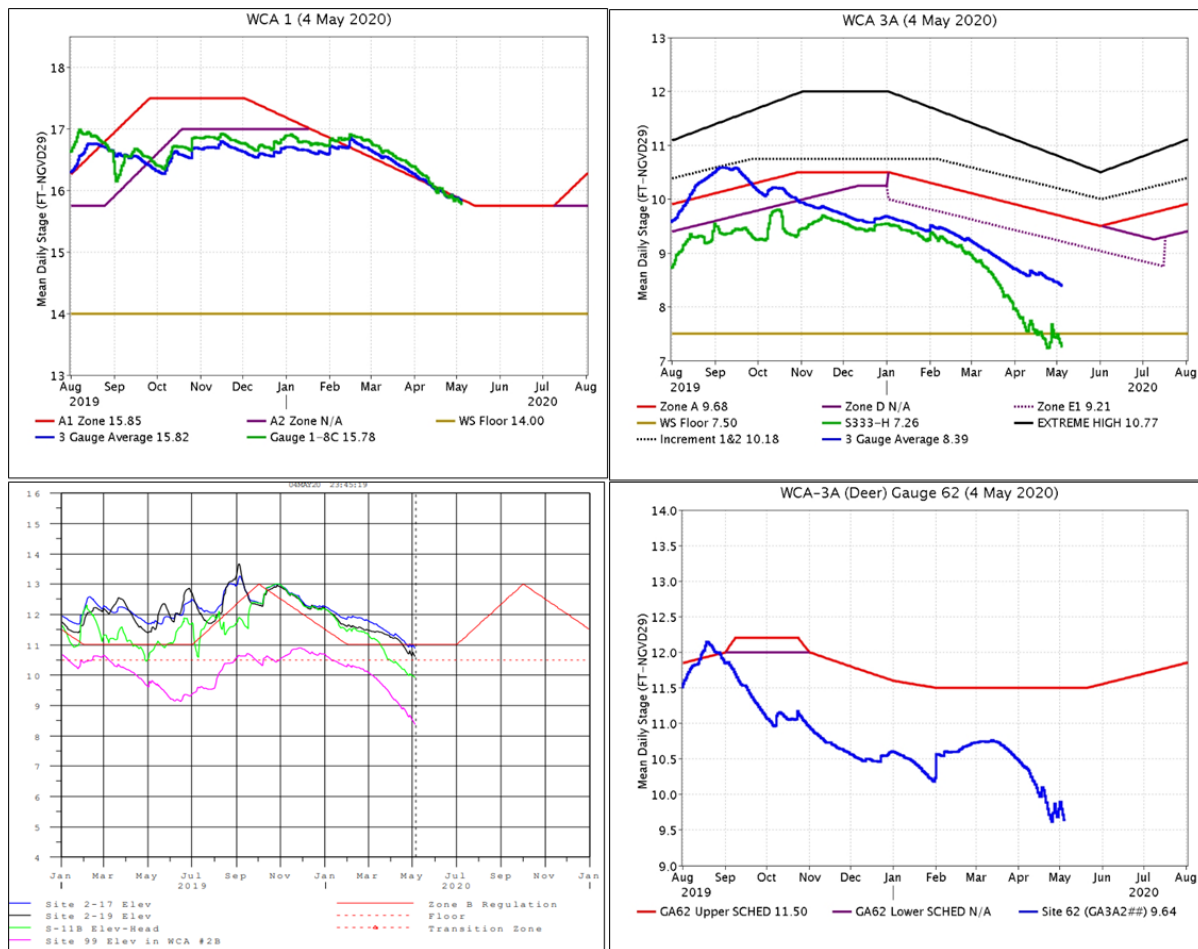
EVERGLADES

Near average rainfall was recorded across the Everglades last week, with WCA-2A receiving the least. Despite the rain, at the gauges monitored for this report stages fell on average 0.14 feet last week almost double the week prior and changes ranged from -0.30 to -0.03. Evaporation was estimated at 1.67 inches last week.

Everglades Region	Rainfall (Inches)	Stage Change (feet)	<div><div></div> Good</div> <div><div></div> Fair</div> <div><div></div> Poor</div>
WCA-1	0.40	-0.11	
WCA-2A	0.27	-0.14	
WCA-2B	0.35	-0.21	
WCA-3A	0.43	-0.15	
WCA-3B	0.50	-0.10	
ENP	0.47	-0.17	



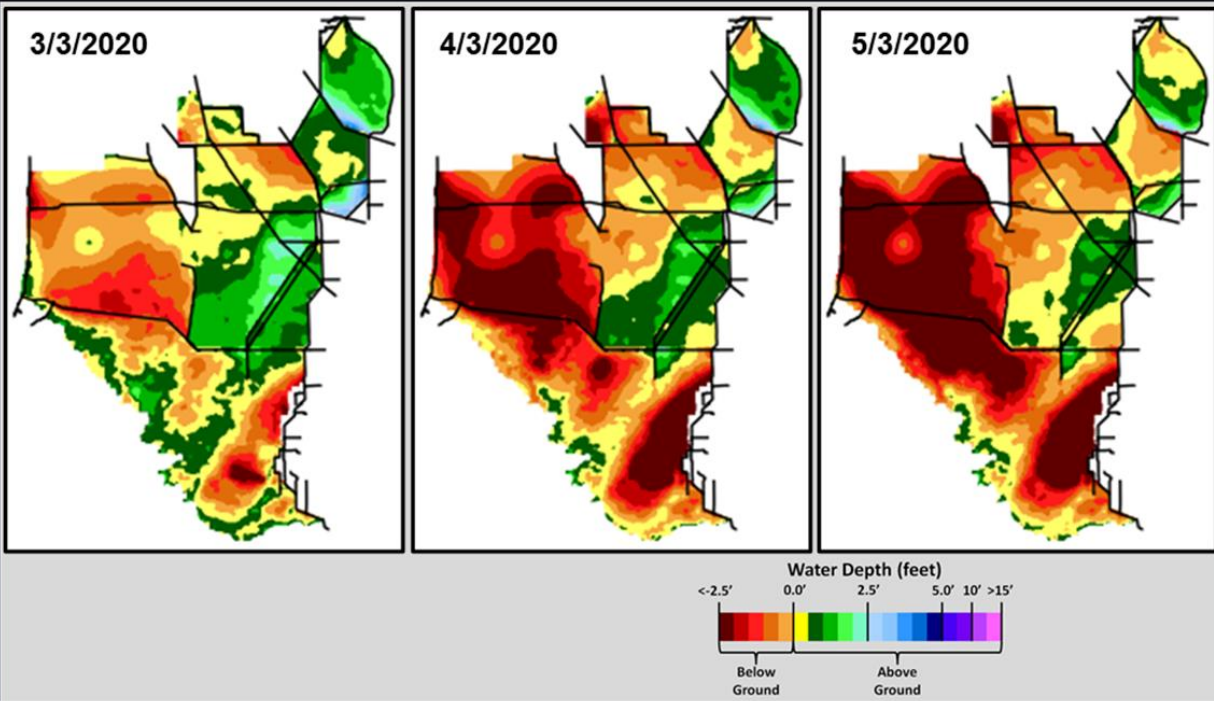
Regulation Schedules: WCA-1: Stage at the 1-8C Gauge continues to trend parallel to the falling regulation line last week, now 0.03 feet below the Zone A1 line. WCA-2A: Stage at Gauge S11-B remained below the water supply floor of the regulation schedule last week and trends downward, currently 0.61 feet below. WCA-3A: The Three Gauge Average stage trends down and away from the regulation line last week, still well below the falling Zone E1 regulation line, presently 0.82 feet below. S333-HW is 0.24 feet below the water supply floor. WCA-3A at gauge 62 (Northwest corner): Stage fell last week and remains below the Upper Schedule at 1.86 feet below the stable regulation line.



Water Depths: The WDAT tool for spatial interpolation of depth monthly snapshots indicate depths significantly below ground across WCA-3A North, and more than a foot below ground in the extreme northeast (for 2 months) and up to 1.5 feet below ground in the northwest regions (much drier than one and two months ago) with little potential for surface water in that basin. The interior of WCA-2A is drying down to ground surface, with depths in the northern area of cattail along the L-39 and south now below ground. WCA-1 depths look stable and are drawing down from north to south. All the sloughs in Everglades National Park have dried down to ground surface or near. Comparing WDAT water depths from present, over the last month there was a significant recession in portions of all the WCAs, the fastest drop taking place in northwestern WCA-3A and northeastern WCA-1. Looking back one year the depth difference patterns are more dramatic. The entirety of WCA-3A and 2A are significantly lower in depth. WCA-2A is most dramatically lower in depth in the northeastern regions of that basin and WCA-3A in the northwest and in the northern reaches of the L-67 canals. WCA-1 depths are slightly lower than they were a year ago, particularly in the north. The WDAT model indicates a much drier condition in the western basins compared to a month and a year ago.



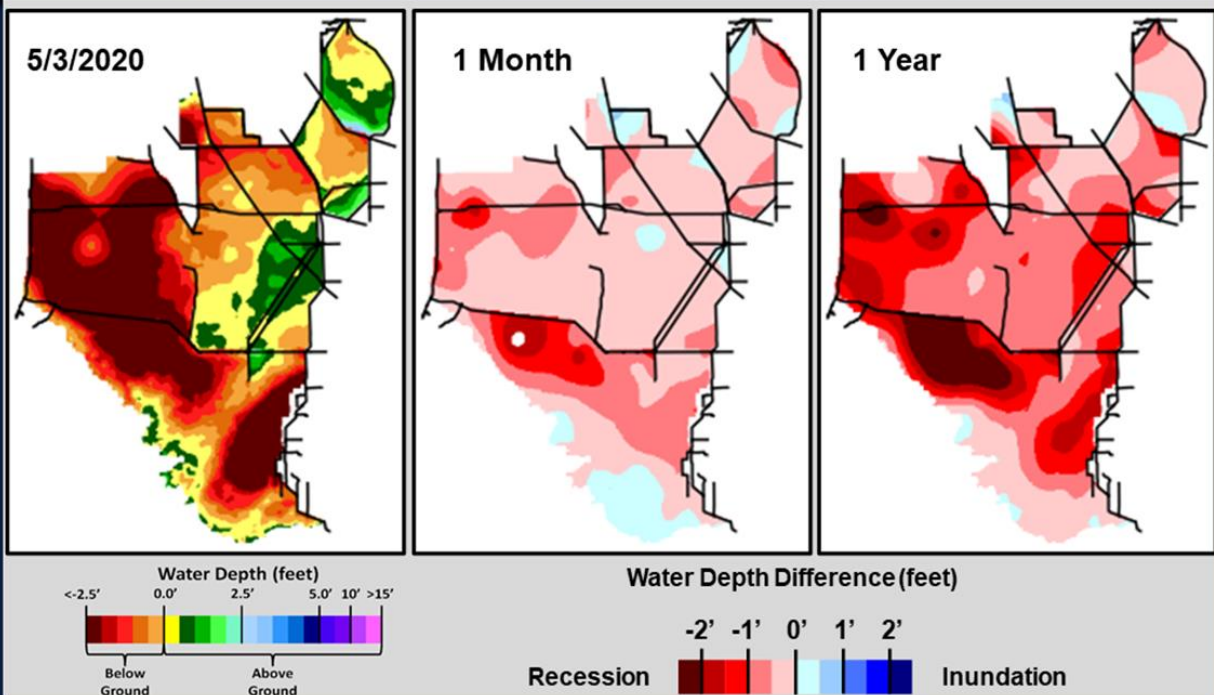
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)

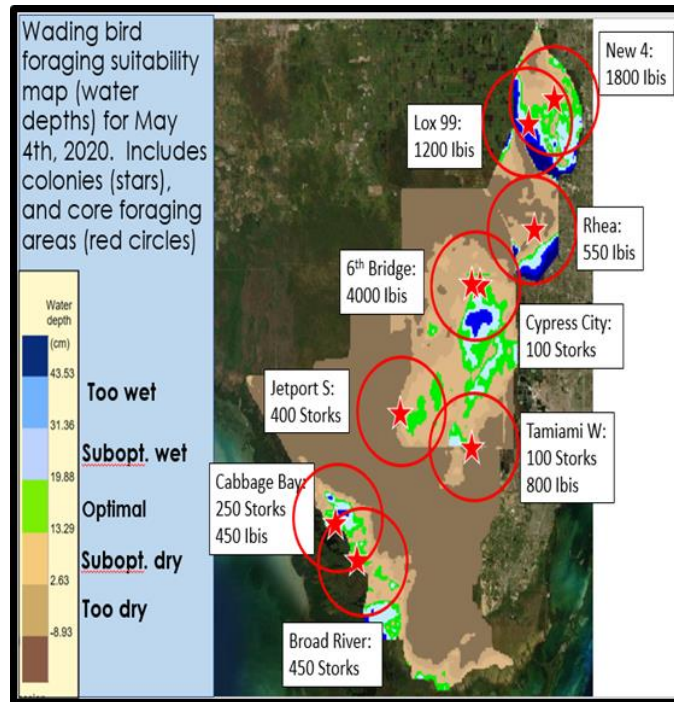


SFWDAT Everglades Difference Maps (Present – Past)

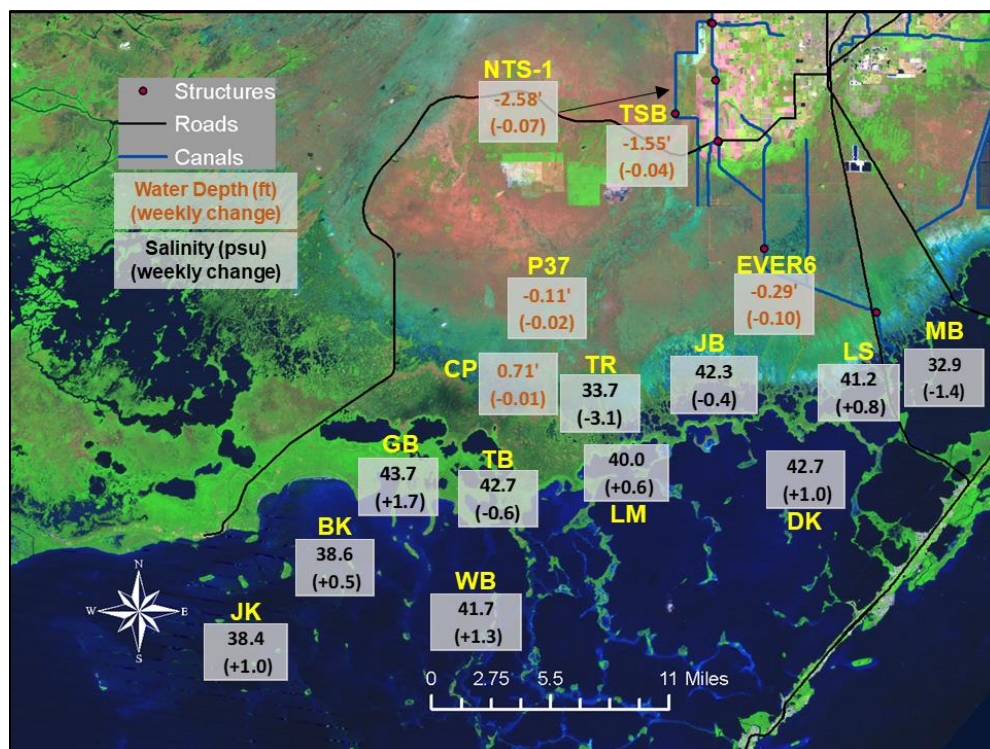


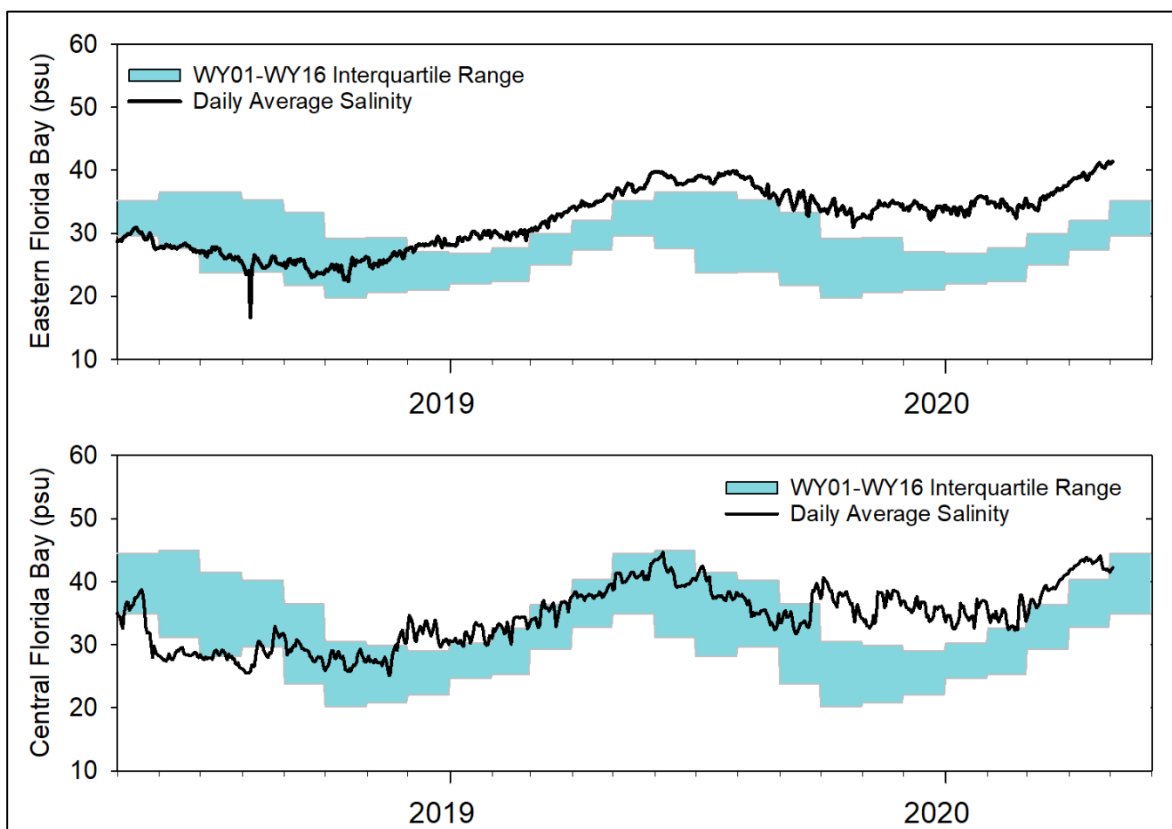
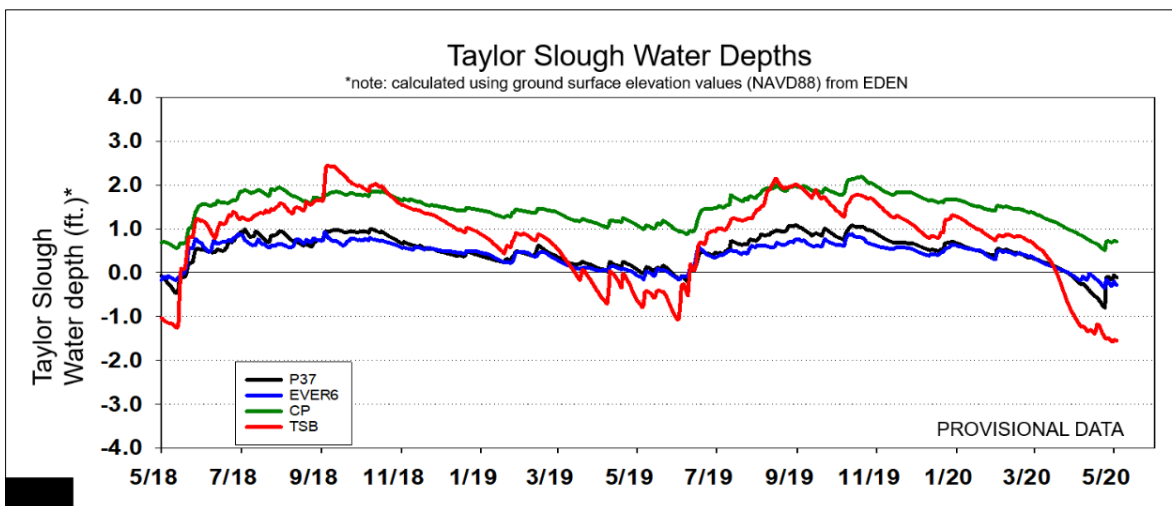
South Florida Water Depth Assessment Tool (SFWDAT)

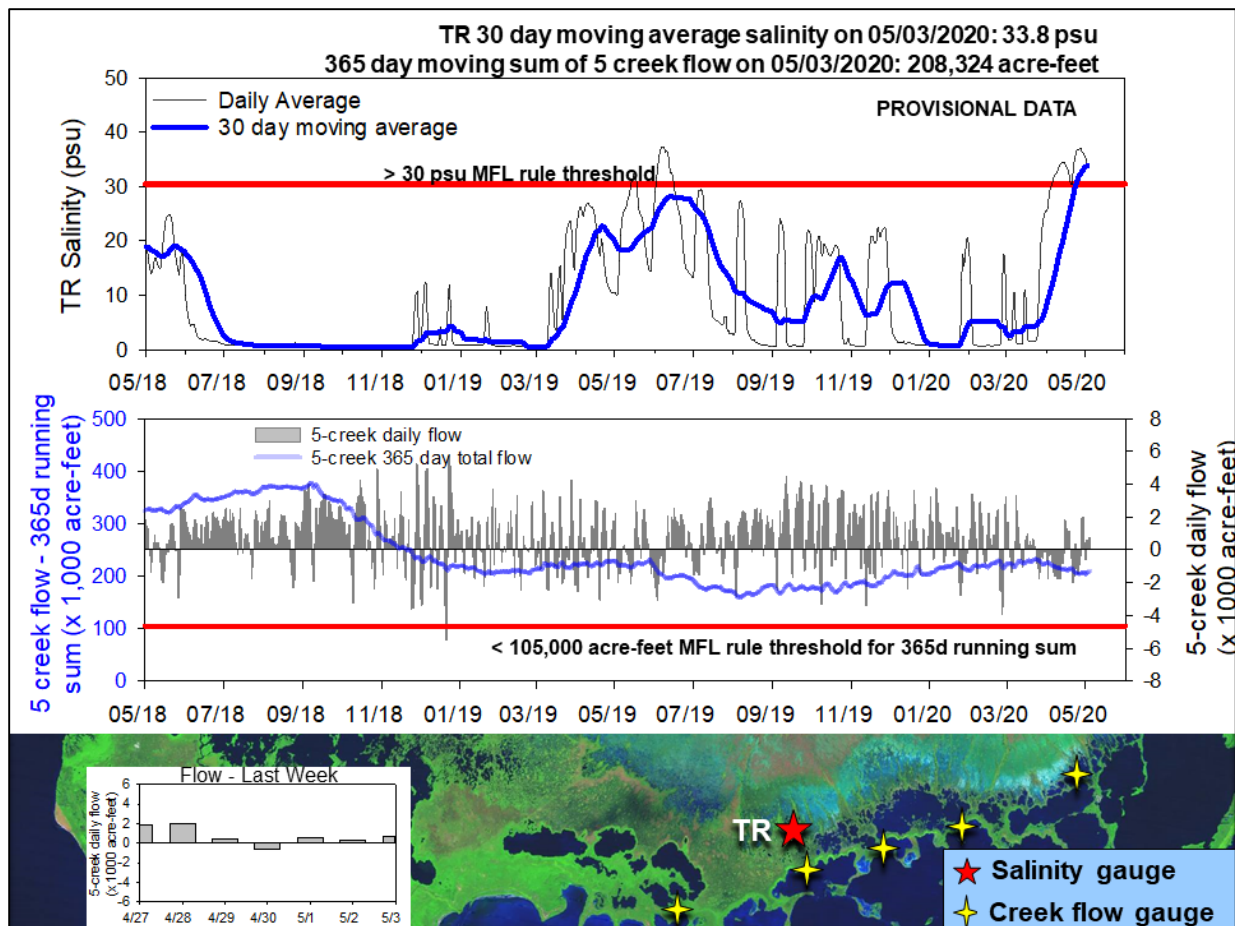
Wildlife: Wading birds HSI and core foraging areas, May 4



Taylor Slough Water Levels: An average of 0.61 inches of rain fell over Taylor Slough and Florida Bay last week, and stage decreased an average of 0.05 feet. Northernmost Taylor Slough is 17 inches below the historical average, and the water depth is more than 2 feet below ground. In order to get flows to Florida Bay this wet season, water deliveries will have to first fill these areas (the “sponge effect”).







Florida Bay Salinities: Average salinity in Florida Bay increased 0.7 psu this week. Florida Bay average salinity is 5 psu higher than the historical average for this time of year. The only areas that are not above 40 psu at this time are the areas that can experience some buffering from the Gulf of Mexico area if that water is pushed eastward.

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) decreased from 37 psu to 34 over the last week. The 30-day moving average increased 2.1 psu to end at 33.8 psu. Weekly flow from the 5 creeks identified by yellow stars on the map totaled about 5,300 acre-feet last week with negative flows on only a single day. The salinities suggest that this is just Bay water returning after upstream flows. The 365-day moving sum of flow from the five creeks (tracked as part of the Florida Bay MFL criteria) increased 5,000 acre-feet this week to end at 208,324 acre-feet, between the 25th percentile (192,885 acre-feet) and the median (249,091 acre-feet). Creek flow are provisional USGS data.

Water Management Recommendations

Discharges into historically over drained northeastern WCA-3A have the potential to maintain saturated soils and protect these over-drained portions of the Everglades. The ecological benefits include conserving peat and lowering the risk of muck fires especially as depths near the seasonal low in regions with muck fire potential. Stages at Gauge 3A-NE in northeastern WCA-3A are more than 2.0 feet below ground. While the moderation of recession rates in any part of WCA-3A North are beneficial, available water sent through the S-150 structure into Northeastern WCA-3A would have greater ecological value than the same amount of water discharged in Northwestern 3A. This is due in part to the greater potential for muck fire in the northeastern region versus the northwestern regions of that basin. Directing runoff water volumes into areas with stages below ground would minimize the potential

for a reversal that would negatively impact the core wading bird foraging areas in WCA-3A South and WCA-1. 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, decreasing the estuarine gradient within the bay. More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

SFWMD Everglades Ecological Recommendations, May 5th, 2020 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.11'	Conserving water in this basin has ecological benefit.	Protect downstream habitat and wildlife. Provide wading bird foraging opportunities as wading bird nesting continues in this basin.
WCA-2A	Stage decreased by 0.14'	Moderating the recession rate and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Provide wading bird foraging opportunities as wading bird nesting continues in this basin.
WCA-2B	Stage decreased by 0.21'	Moderating the recession rate and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Provide wading bird foraging opportunities as wading bird nesting continues nearby this basin.
WCA-3A NE	Stage decreased by 0.03'	Conserving water and slowing the recession in this basin has ecological benefit as current water depths are well below seasonal averages. Inflows to this region have ecological benefit.	Protect and conserve peat soils, prevent muck fires.
WCA-3A NW	Stage decreased by 0.25'	Conserving water and slowing the recession in this basin has ecological benefit as current water depths. Inflows to this region have ecological benefit.	
Central WCA-3A S	Stage decreased by 0.18'	Conserving water and slowing the recession in this region has ecological benefit as current water depths are below seasonal averages. Inflows to this region have great ecological benefit.	Protect upstream/downstream habitat and wildlife. Protect wading bird foraging as nesting continues.
Southern WCA-3A S	Stage decreased by 0.15'		
WCA-3B	Stage decreased by 0.10'	Conserving water in this basin has benefit.	Protect tree islands, upstream/downstream habitat and wildlife.
ENP-SRS	Stage decreased 0.17'	Make discharges to the Park according to the 2012 WCP rainfall plan	Protect upstream/downstream habitat and wildlife.
Taylor Slough	Stage changes ranged from -0.10' to -0.01'	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged -0.6 to +1.7 psu	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.