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

## MEMORANDUM

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

FROM: SFWMD Staff Environmental Advisory Team

**DATE:** March 18, 2020

SUBJECT: Weekly Environmental Conditions for Systems Operations

## Summary

## Weather Conditions and Forecast

The remnants of a weak cold front will push through the southern half of the District this morning and afternoon. A few light showers are expected from the lower east coast through the southern interior early today and over the southern and southwestern interior this afternoon to early evening. The rains should produce no more than a few hundredths of a real average rainfall. A mid-level ridge of high pressure located over western Cuba will build northward over Florida by mid-week and dominate the District's weather through Saturday. Strong atmospheric stability and sinking air associated with this weather should promote a very warm dry weather pattern. No measurable total District rainfall is predicted through late week, even though low-level moisture could produce occasional, light shower activity along or near the east coast. A jet stream disturbance and associated cold front passing through the northeastern United States early this weekend should cause the mid-level ridge to weaken and shift southward allowing the front to push into north Florida by Saturday evening. Increasing moisture and instability along and south of the frontal boundary, combined with 'forcing' from a second, fast-moving jet stream disturbance moving into the southeastern United States, should produce a large increase of rains over north Florida Sunday afternoon and evening; while some of the rains may or may not extend into portions of the Kissimmee Valley. As the jet stream impulse moves offshore, the front will sag southward into the northern part of the District and could continue to produce some rains. For the week ending next Tuesday morning, the deterministic total District quantitative precipitation forecast (QPF) is less than a tenth of an inch or about 10-15% of normal, all of which is forecast to occur on Sunday and Monday. The model probabilistic output strongly favors much below normal weekly rainfall and indicates a best-case scenario of total rainfall about a third of normal. With no significant fronts until the last few days of the month, the pattern of much below normal rainfall is likely to persist This suggests a good chance that total District rainfall for the month of March would finish at or below the 10<sup>th</sup> percentile, with a lower but non-trivial chance that the final value would be close to the all-time record low value of 0.40" (30-year climatological average is 2.51").

## **Kissimmee**

Tuesday morning stages were 52.8 feet NGVD (5.2 feet below schedule) in East Lake Toho, 53.7 feet NGVD (1.3 feet below schedule) in Toho, and 50.9 feet NGVD (0.1 feet above schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.4 feet NGVD at S-65A and 25.8 feet NGVD at S-65D. Tuesday morning discharges were 714 cfs at S-65, 610 cfs at S-65A, 736 cfs at S-65D and 559 cfs at S-65E. Dissolved oxygen concentration in the Kissimmee River averaged 8.5 mg/L for the week through Sunday. Kissimmee River mean floodplain depth on Sunday was 0.17 feet. *Recommendations made in the previous week:* Reduce S-65 discharge by 150 cfs per day on Friday 3/13 and Saturday 3/14, for a total reduction of approximately 300 cfs. Purpose is to reduce the rate of stage decline in Lakes Kissimmee-Cypress-Hatchineha. *Today's recommendation:* Continue the snail kite recession on Lake Tohopekaliga to reach low pool (52 feet) on June 1st.

#### Lake Okeechobee

Lake Okeechobee stage was 12.34 feet NGVD on March 16, 2020, down 0.08 feet from the previous week, and down 0.56 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.26 feet below the Base Flow sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12 – 15 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.13 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 if stages continue below the ecological envelope throughout the breeding season.

## Estuaries

Total inflow to the St. Lucie Estuary averaged 168 cfs over the past week with no flow coming from Lake Okeechobee. Salinities increased in the estuary 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 687 cfs over the past week with 487 cfs coming from the Lake. Salinity increased throughout the estuary over the past week. Salinities are in the good range for tape grass at Val I-75 and fair range at Ft. Myers. Salinities are in the good range for adult eastern oysters at Cape Coral and Shell Point and in the fair range at Sanibel.

Lake stage is in the Beneficial Use sub-band of 2008 LORS. Tributary hydrological conditions are dry. The 2008 LORS release guidance suggests no releases to the estuaries.

#### **Stormwater Treatment Areas**

Over the past week, 800 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2020 (since May 1, 2019) is approximately 134,600 ac-feet. The total amount of inflows to the STAs in WY2020 is approximately 947,300 ac-feet. Most STA cells are 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 Central Flow-way for energy dissipater installation, in STA-1E Eastern and Central Flow-way for East Distribution Cell levee repairs, in STA-1E Central Flow-way, STA-2 Flow-way 3, and STA-2 Flow-way 4 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, if 2008 LORS recommends Lake releases to the WCAs and the conditions allow, releases will be sent to STA-2 or A-1 FEB/STA-3/4.

#### **Everglades**

Current stages in northeastern WCA-3A remain below average (Site 62 in the northwest is 0.06 feet above and Site 63 in the northeast is 0.87 feet below) for this time of year. Conserving fresh water in the Everglades, distributing it to where depths are low (WCA-3A NE) and allowing it to flow south has important ecological benefit. As wading bird nesting begins in the Everglades, ecological recommendations are moderating recession rates where and when possible. It currently remains ecologically desirable to conserve as much water as possible. Almost no precipitation fell over Taylor Slough and Florida Bay this last week and stages fell rapidly as water movement slows due to low stage conditions in the South Dade Conveyance System. Average salinities in Florida Bay increased and remain above average. Mangrove zone salinities tracked at the Taylor River station continue to spike then fall. The time of year nears when salinities will begin increasing more rapidly with higher temperatures and dry conditions.

## **Supporting Information**

### **KISSIMMEE BASIN**

#### **Kissimmee Basin Rainfall**

The Upper Kissimmee Basin received 0.01 inches of rainfall in the past week and the Lower Basin received 0.00 inches (SFWMD Daily Rainfall Report 3/15/2020).

#### **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.

		7-day		Schedule Daily Departure (feet)									
Water Body	Structure	Average Discharge (cfs) <sup>1</sup>	Stage Monitoring Site <sup>2</sup>	Lake Stage (feet)	Schedule Type <sup>3</sup>	Stage (feet)	3/15/20	3/8/20	3/1/20	2/23/20	2/16/20	2/9/20	2/2/20
Lakes Hart and Mary Jane	S-62	0	LKMJ	60.6	R	61.0	-0.4	-0.3	-0.2	-0.1	-0.2	0.0	0.0
Lakes Myrtle, Preston, and Joel	S-57	0	S-57	60.9	R	60.9	0.0	0.0	0.0	0.0	-0.1	0.0	0.1
Alligator Chain	S-60	0	ALLI	63.3	R	64.0	-0.7	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5
Lake Gentry	S-63	0	LKGT	61.3	R	61.5	-0.2	-0.2	-0.1	-0.1	0.1	0.0	0.0
East Lake Toho	S-59	0	TOHOE	52.8	R	58.0	-5.2	-5.1	-58.0	-4.8	-4.4	-4.1	-3.7
Lake Toho	S-61	90	TOHOW, S-61	53.7	R	55.0	-1.3	-1.2	-1.0	-0.9	-0.7	-0.5	-0.4
Lakes Kissimmee, Cypress, and Hatchineha	S-65	920	KUB011, LKIS5B	51.0	R	51.0	0.0	0.2	0.4	0.3	-0.1	-0.4	-0.8

#### Report Date: 3/17/2020

<sup>1</sup> Seven-day average of weighted daily means through midnight.

<sup>2</sup>Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.

<sup>3</sup>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:	3/17/2020										
Matria	location	1-Day Average Average for the Preceeding 7-Days <sup>1</sup>									
Metric	Location	3/15/2020	3/15/20	3/8/20	3/1/20	2/23/20	2/16/20	2/9/20	2/2/20	1/26/20	1/19/20
Discharge (cfs)	S-65	731	920	1,013	983	918	922	853	808	719	606
Discharge (cfs)	S-65A <sup>2</sup>	648	837	953	956	930	895	823	766	736	557
Discharge (cfs)	S-65D <sup>2</sup>	927	940	968	985	960	946	881	785	777	632
Headwater Stage (feet NGVD)	S-65D <sup>2</sup>	25.79	25.85	25.69	25.80	25.86	25.82	25.79	25.76	25.77	25.78
Discharge (cfs)	S-65E <sup>2</sup>	876	864	891	902	880	844	861	759	713	601
Discharge (cfs)	S-67	0	0	0	0	0	0	0	0	0	0
DO (mg/L) <sup>3</sup>	Phases I & II/III river channel	8.5	8.5	8.8	8.4	7.8	8.2	8.9	9.1	8.5	8.0
Mean depth (feet) <sup>4</sup>	Phase I floodplain	0.17	0.20	0.24	0.26	0.26	0.27	0.24	0.18	0.18	0.25

<sup>1</sup>Seven-day average of weighted daily means through Sunday midnight.

<sup>2</sup>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.

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

<sup>4</sup>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 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 12.34 feet NGVD, 0.56 feet lower than a month ago and 0.12 feet higher than one year ago (Figure 1). The Lake is currently 1.13 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 hovering near 13.0 feet from December 2019 to mid-February 2020, before declining about 0.58 feet over the past three weeks. According to RAINDAR, just 0.02 inches of rain fell directly over the Lake during the past week, with much of the watershed receiving no to very little rainfall as well (Figure 4).

The average daily inflows (minus rainfall) decreased by 45 cfs and outflows decreased by 965 cfs from the previous week. Most of the inflow came from the Kissimmee River (S-65E & S-65EX1), while most of the outflows (1,333 cfs) were released south through the S-350 structures. Releases west through S-77 (C-43/Caloosahatchee Canal) and east through the S-308 (C-44/St Lucie Canal) totaled 1,207 cfs. 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 (March 13, 2020) using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data suggested moderate potential for cyanobacterial blooms along the northwest shoreline of the Lake and near Fisheating Bay, slightly higher than this time last year (Figure 6).

## Water Management Summary

Lake Okeechobee stage was 12.34 feet NGVD on March 16, 2020, down 0.08 feet from the previous week, and down 0.56 feet from the previous month. The Lake entered into the Beneficial Use sub-band on March 4, 2020 and is 0.26 feet below the Base Flow sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12 – 15 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.13 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. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake if stages continue below the ecological envelope throughout 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)	OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)	
S-65E & S-65EX1	891	845	0.4	S-77	660	878	0.4	
S-71 & S-72	0	0	0.0	S-308	456	329	0.2	
S-84 & S-84X	0	0	0.0	S-351	1171	673	0.3	
Fisheating Creek	16	18	0.0	S-352	405	208	0.1	
S 15/	0	0	0.0	S-354	814	452	0.2	
3-134	0	0	0.0	L-8 Outflow	143	145	0.1	
5-191	0	0	0.0	ET	152	1623	0.8	
S-133 P	0	0	0.0	Total	3802	4308	2.0	
S-127 P	0	0	0.0					
S-129 P	0	0	0.0					
S-131 P	0	0	0.0	Provisional Data				
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								
Rainfall	22	43	0.0					

Total

929

907

0.4



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



Lake Okeechobee Stage vs (Draft) Ecological Envelope

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



## Lake Okeechobee Water Level History and Projected Stages

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 2019 and 2020, based on NOAA's harmful algal bloom monitoring system derived from Copernicus Sentinel-3 OLCI data from EUMETSAT. Gray indicates cloud cover.

# ESTUARIES

#### St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 168 cfs (Figures 1 and 2) and last month inflow averaged about 309 cfs. Last week's provisional averaged inflows from the tidal basin and the structures are shown in Table 1.

Location	Flow (cfs)
Tidal Basin Inflow	108
S-80	0
S-308	200
S-49 on C-24	0
S-97 on C-23	0
Gordy Rd. structure on Ten Mile Creek	60

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

Over the past week, salinity increased throughout the estuary (Table 2, Figures 3 and 4). The sevenday moving average of the water column (an average of the surface and bottom salinity) at the US1 Bridge is 22.6. 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)	<b>18.5</b> (17.5)	<b>20.4</b> (19.2)	NA <sup>1</sup>
US1 Bridge	<b>22.5</b> (21.3)	<b>22.9</b> (22.1)	10.0-26.0
A1A Bridge	<b>29.3</b> (28.5)	<b>30.8</b> (30.1)	NA <sup>1</sup>

<sup>1</sup>Envelope not applicable

#### Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 687 cfs (Figures 5 and 6) and last month inflow averaged about 736 cfs. Last week's provisional averaged inflows from the structures and the tidal basin are shown in Table 3.

Table 3. Weekly average inflows	s (data is provisional).
Location	Flow (cfs)
S-77	878
S-78	513
S-79	583
Tidal Basin Inflow	104

Table 3.	Weekly avera	age inflows (data	a is provisional).
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Over the past week, salinity increased throughout the estuary except for the surface salinity at Cape Coral (Table 4, Figures 7 & 8). The seven-day average salinity values are within the good range for adult eastern ovsters at Cape Coral and at Shell Point and in the fair range 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 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 reflects the preferred salinity range for associated sampling sites.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	<b>3.3</b> (2.0)	<b>3.5</b> (2.0)	NA <sup>1</sup>
Val I75	<b>3.4</b> (2.7)	<b>6.0</b> (3.4)	0.0-5.0 <sup>2</sup>
Ft. Myers Yacht Basin	<b>10.7</b> (9.4)	<b>14.0</b> (10.6)	NA
Cape Coral	<b>17.9</b> (19.0)	<b>21.1</b> (20.2)	10.0-30.0
Shell Point	<b>29.6</b> (28.5)	<b>29.8</b> (28.7)	10.0-30.0
Sanibel	<b>32.0</b> (30.8)	<b>33.3</b> (31.9)	10.0-30.0

<sup>1</sup>Envelope not applicable and <sup>2</sup>Envelope is based on a 2-week forecast 30-day average (see Table 5 below).

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 3.8 to 8.1 at the end of the two-week period for pulse release at S-79 ranging from 0 to 1000 cfs and Tidal Basin inflows of 85 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 3.1 and 4.8 (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).

Scenario	Q79	TB runoff	Daily	30 day
	(cfs)	(cfs)	salinity	Mean
А	0	85	8.1	4.8
В	450	85	6.5	3.9
С	650	85	4.7	3.4
D	800	85	4.2	3.3
E	1000	85	3.8	3.1

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

#### **Red tide**

The Florida Fish and Wildlife Research Institute reported on March 13, 2020, that *Karenia brevis, the Florida red tide dinoflagellate, was observed at background concentrations in one sample collected from Martin County. K. brevis* was not observed in samples collected from or offshore of Lee or St. Lucie counties (no samples were analyzed this week from Palm Beach, Broward, or Miami-Dade counties).

#### Water Management Recommendations

Lake stage is in the Base Flow sub-band. Tributary conditions are dry. The 2008 LORS suggests release of up to 450 cfs at S-79 and up to 200 cfs at S-80.



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.





# **EVERGLADES**

Another week of below average precipitation fell on the WCAs, with the northern basins receiving more rain than the southern basins. Stages fell on average 0.08 feet last week, slightly slower than the week prior. Evaporation was estimated at 1.47 inches last week.



Regulation Schedules: WCA-1: Stage at the 1-8C Gauge fell in parallel to the regulation line last week, currently 0.08 feet above the falling Zone A1 line. WCA-2A: Stage at Gauge S11-B trended sharply towards the Zone A regulation line last week now 0.06 feet above the stable regulation line. WCA-3A: The Three Gauge Average stage trends down and away from parallel to the falling Zone E1 regulation line last week, currently 0.55 feet below. WCA-3A at gauge 62 (Northwest corner): Stage trends towards the stable Upper Schedule but remains well below, currently 0.76 feet below the regulation line.



Water Depths: The WDAT tool for spatial interpolation of depth monthly snapshots indicate depths more than 1.0 foot below ground in extreme northeast WCA-3A North. Anecdotal observations noted standing water along the I38 west near the new plug. Depths are falling across WCA-2B. Hydrologic connectivity has gradually diminished over the last two months but remains in Shark River Slough and in most of Taylor Slough. Comparing WDAT water levels from present, there is little significant depth change over the last month, except for northwest WCA-3A North which is slightly deeper. Looking back one year the stage differences are more significant. The northeast corner of WCA-3A is significantly lower in stage, as is most of the eastern half of WCA-3 North to a lesser degree and the rest of the basin drier but not significantly so. Within WCA-2A the eastern half of that basin is significantly drier than it was one year ago. WCA-1A is slightly deeper than it was a year ago, but not significantly so.



South Florida Water Depth Assessment Tool (SFWDAT)

Taylor Slough Water Levels: An average of 0.02 inches of rain fell over Taylor Slough and Florida Bay this last week and stages decreased an average of -0.23 feet. Upper Taylor Slough (west of S-332D impoundment) is still 12 inches higher than its historical average but is decreasing rapidly as westward water movements have stopped and temperatures are rising. The rest of Taylor Slough is 4 inches higher than the historical average. TSB has stayed above ground for 3 weeks longer than average.





Florida Bay Salinities: Average salinity in Florida Bay increased by 3 this week. Florida Bay average salinity is 6.5 higher than the historical average for this time of year. We are at the time of year when evaporation will increase salinities more rapidly until wet season rains start.

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) increased over the week to end at 10.5. The 30-day moving average salinity increased 0.8 to 4.1. Weekly flow from the 5 creeks identified by yellow stars on the map totaled almost 500 acre-feet last week with negative flows in the middle of the week. The 365-day moving sum of flow from the five creeks (tracked as part of the Florida Bay MFL criteria) increased 1,600 acre-feet this week to end at 225,753 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

Current stages in northeastern WCA-3A are low for this time of year and salinities are high in Florida Bay. Conserving water within the WCA-3A and moving low nutrient water south has many ecological benefits. These benefits are unrealized when flows are lost to tide. Discharges into historically overdrained northeastern WCA-3A have the potential to maintain saturated soils and protect these overdrained portions of the Everglades. The ecological benefits include conserving peat and lowering the risk of muck fires. Any available water sent through the S-150 into Northeastern WCA-3A would have greater ecological value than the same amount of water discharged in Northwestern 3A. 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. The current supplemental deliveries being made from WCA-3A to the south seem to no longer be effective in reaching the 332 structures. If no additional water is available to supply south to Taylor slough, that volume of water may better serve the ecology of the Everglades by being discharged farther north into Shark River Slough. More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

s	FWMD Everg	lades Ecological Recommendations,	, March 16th, 2020 (red is new)		
Area	Weekly change	Recommendation	Reasons		
WCA-1	Stage decreased by 0.03'	Conserving water in this basin has ecological benefit.	Protect downstream habitat and wildlife. Provide wading bird foraging opportunities later in the dry season.		
WCA-2A	Stage decreased by 0.07'	Moderating the recession rate and conserving water in this basin has ecological benefit as downstream basins are below seasonal average.	Protect upstream/downstream habitat and wildlife. Provide wading bird foraging opportunities later in the dry season.		
WCA-2B	Stage decreased by 0.13'	Conserving water in this basin has benefit.	Protect upstream/downstream habitat and wildlife.		
WCA-3A NE	Stage increased by 0.12'	Conserving water and slowing the recession in this basin has ecological benefit as current water depths are below seasonal averages. Inflows to this region have great ecological benefit.	Protect and conserve peat soils. Provide stage conditions that are		
WCA-3A NW	Stage remained unchanged	Conserving water and slowing the recession in this basin has ecological benefit as current water depths are below seasonal averages. Inflows to this region have ecological benefit.	conducive for succesful wading bird foraging.		
Central WCA-3A S	Stage decreased by 0.11'	Conserving water in this basin has ecological benefit as	Protect upstream/downstream habitat and wildlife. Protect wading bird		
Southern WCA-3A S Stage decreased by 0.10'		current water depths are below seasonal averages.	foraging as nesting begins in these regions.		
WCA-3B	Stage decreased by 0.07'	Conserving water in this basin has benefit.	Protect tree islands, upstream/downstream habitat and wildlife.		
ENP-SRS	Stage decreased by 0.11'	Make discharges to the Park according to the 2012 WCP rainfall plan.	Protect upstream/downstream habitat and wildlife.		
Taylor Slough	Stage changes ranged from -0.07' to -0.64'	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.		
FB- Salinity	Salinity changes ranged +0.0 to +9.9 psu	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.		