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: October 30, 2019

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Scattered shower activity this week; increasing shower activity with a frontal boundary this weekend. A cold front is currently lying across north Florida and the best moisture and resultant shower activity will be focused near this frontal boundary over the northeastern Gulf of Mexico and north Florida today. Enough moisture remains in place across the District to allow scattered afternoon and evening thunderstorms to still develop particularly over northern and western portions of the District. The frontal boundary is forecast to retreat back north on Tuesday with high pressure building in over the Florida peninsula and the northern Bahamas over the coming week which should result in drier air working its way over the District. Therefore, expect scattered showers and limited thunderstorm development each day Tuesday through Friday. The next cold front is forecast to push into central Florida and stall Friday night. This stalled boundary has the potential to bring an increase in shower activity over portions of the District Saturday and Sunday.

Kissimmee

Tuesday morning stages were 56.2 feet NGVD (1.7 feet below schedule) in East Lake Toho, 54.9 feet NGVD (at schedule) in Toho, and 50.3 feet NGVD (2.1 feet below schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.3 feet NGVD at S-65A and 26.0 feet NGVD at S-65D. Tuesday morning discharges were 316 cfs at S-65, 279 cfs at S-65A, 408 cfs at S-65D and 356 cfs S-65E. Dissolved oxygen concentration in the Kissimmee River averaged 6.7 mg/L for the week through Sunday. Kissimmee River mean floodplain depth on Sunday was 0.27 feet. Recommendations: 10/22/2019- Continue 250 cfs discharge at S65-A to maintain minimum flow to the Kissimmee River.

Lake Okeechobee

Lake Okeechobee stage is 13.49 feet NGVD, almost identical to the previous week, but still 0.14 feet lower than last month. The lake moved up into the Low sub-band on September 4, 2019 then moved back down into the Base Flow sub-band on September 11, 2019 where it has remained since. After spending about 215 days below the ecological envelope (which varies seasonally from 12.5 – 15.5 feet NGVD +/- 0.5 feet) the lake moved back into it at the start of August. After 70 days within the envelope, the lake has now been below it again for 2 weeks and is currently 0.43 ft below the bottom of the envelope. Low lake stages continue to benefit recovering SAV communities, but also stress higher elevation marshes; areas with elevations greater than approximately 14 ft NGVD have now been dry for nearly a year. The latest estimate of cyanobacteria bloom potential (October 24, 2019) shows that bloom potential is low in the Lake, as the season for large-scale blooms has ended.

Estuaries

Total inflow to the St. Lucie Estuary averaged 619 cfs over the past week with no flow coming from Lake Okeechobee. Over the past week, salinity is stable (little changed) in the estuary. Salinity at the US1 Bridge is in the good range for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 987 cfs over the past week with 79 cfs coming from the Lake. Salinity decreased in the upper estuary over the past week. Salinities are in the good range at Val I-75 for tape grass and in the 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 Base Flow sub-band of 2008 LORS. Tributary hydrological conditions are normal. The forecast of 30-day moving average of surface salinity at Val I-75 would exceed 5 over the next two weeks if there are no releases. SFWMD's Lake Okeechobee Adaptive Protocol's Release Guidance suggests up to 450 cfs @ S-79 and S-77 baseflow release to supplement as needed.

Stormwater Treatment Areas

Over the past week, approximately 100 acre-feet 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 65,000 acre-feet. The total amount of inflows to the STAs in WY2020 is approximately 779,000 acre-feet. Most STA cells are at or near target depths. STA-5/6 Flow-ways 2 and 3 are offline for the Restoration Strategies project to grade non-effective treatment areas, and STA-1E Western Flow-way is offline for West Distribution Cell levee repairs and 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-5/6 Flow-way 1 to facilitate the Restoration Strategies grading project in Flow-way 2, and in STA-1E Central Flow-way, STA-2 Flow-way 3, and STA-2 Flow-way 4 for vegetation management activities. This week, if 2008 LORS recommends Lake releases to the WCAs and the conditions allow, releases will be sent to A-1 FEB/STA-3/4.

Everglades

As the climatological dry season begins, there is concern for the ecology of the Everglades and Florida Bay. Current stages in the WCAs are low for this time of year and salinities are high in Florida Bay. Conserving fresh water in the Everglades, distributing it to where depths are low (WCA-3A North) and allowing it to flow south has important ecological benefit. Generally, rates of stage change should remain below 0.25 feet per week or 0.5 feet per 2 weeks to protect the ecology of the WCA's. However, given that the window for "wet" season precipitation draws to a close, a rate of ascension that exceeded that rate where depths are low (WCA-3A North) would be ecologically beneficial. While a near average amount of rain fell in Taylor Slough and Florida Bay this past week, stages decreased throughout the area. Average salinities fell in Florida Bay and the nearshore over the last week, and both remain above average for this time of year. Salinity conditions remain positioned much higher than desirable for the start of the dry season.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 1.01 inches of rainfall in the past week and the Lower Basin received 0.91 inches (SFWMD Daily Rainfall Report 10/28/2019).

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 1-7.

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: 10/29/2019

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)						
							10/27/19	10/20/19	10/13/19	10/6/19	9/29/19	9/22/19	9/15/19
Lakes Hart and Mary Jane	S-62	0	LKMJ	60.3	R	60.8	**-0.5**	-0.5	-0.5	-0.4	-0.1	-0.1	0.0
Lakes Myrtle, Preston, and Joel	S-57	0	S-57	61.3	R	61.8	**-0.5**	-0.6	-0.5	-0.4	-0.1	0.0	0.0
Alligator Chain	S-60	0	ALLI	63.0	R	63.9	**-0.9**	-0.8	-0.7	-0.4	-0.2	-0.1	-0.1
Lake Gentry	S-63	0	LKGT	60.8	R	61.4	**-0.6**	-0.5	-0.5	-0.4	-0.2	-0.1	-0.1
East Lake Toho	S-59	544	TOHOE	56.3	R	57.8	**-1.5**	-1.1	-1.1	-0.8	-0.6	-0.4	-0.2
Lake Toho	S-61	89	TOHOW, S-61	54.9	R	54.8	**0.1**	-0.4	-0.6	-0.4	-0.2	-0.1	0.1
Lakes Kissimmee, Cypress, and Hatchineha	S-65	318	KUB011, LKIS5B	50.2	R	52.3	**-2.1**	-1.9	-1.8	-1.5	-1.2	-0.9	-0.4

[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: **10/29/2019**

Metric	Location	1-Day Average	Average for the Preceeding 7-Days[1]								
		10/27/2019	10/27/19	10/20/19	10/13/19	10/6/19	9/29/19	9/22/19	9/15/19	9/8/19	9/1/19
Discharge (cfs)	S-65	338	**318**	354	408	411	507	1,337	1,443	2,135	5,414
Discharge (cfs)	S-65A[2]	277	**263**	286	327	327	423	1,248	1,412	2,676	5,795
Discharge (cfs)	S-65D[2]	439	**368**	379	441	483	1,189	1,780	2,976	5,734	6,983
Headwater Stage (feet NGVD)	S-65D[2]	25.90	**25.83**	25.78	25.81	25.84	26.64	26.78	27.00	27.56	27.48
Discharge (cfs)	S-65E[2]	479	**405**	367	425	453	1,070	1,766	2,988	5,615	6,932
Discharge (cfs)	S-67	0	**0**	0	0	0	0	0	28	17	31
DO (mg/L)[3]	Phases I & II/III river channel	6.8	**6.7**	6.6	6.7	7.1	6.0	4.2	2.1	2.2	0.9
Mean depth (feet)[4]	Phase I floodplain	0.27	**0.25**	0.20	0.24	0.26	0.45	0.74	1.07	2.18	2.82

[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)

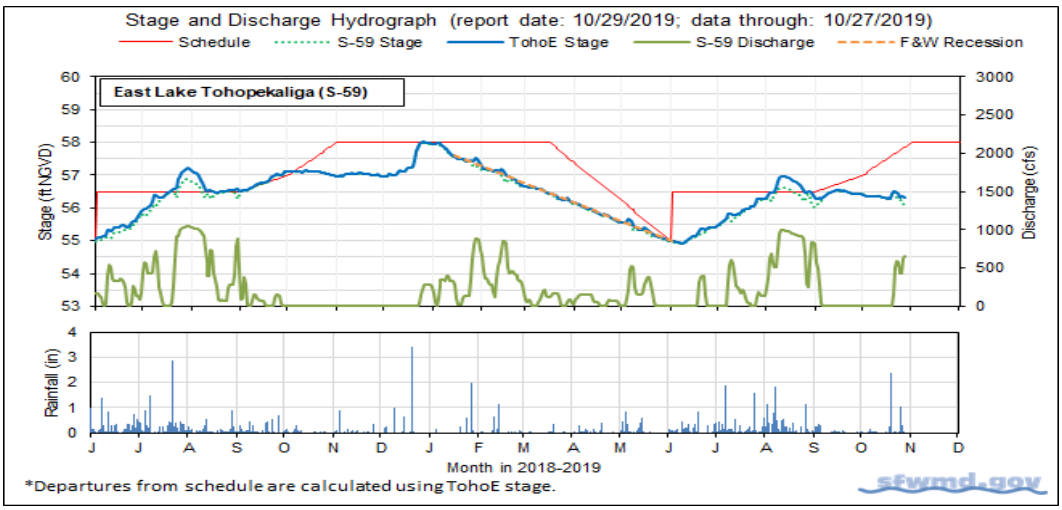


Figure 1.

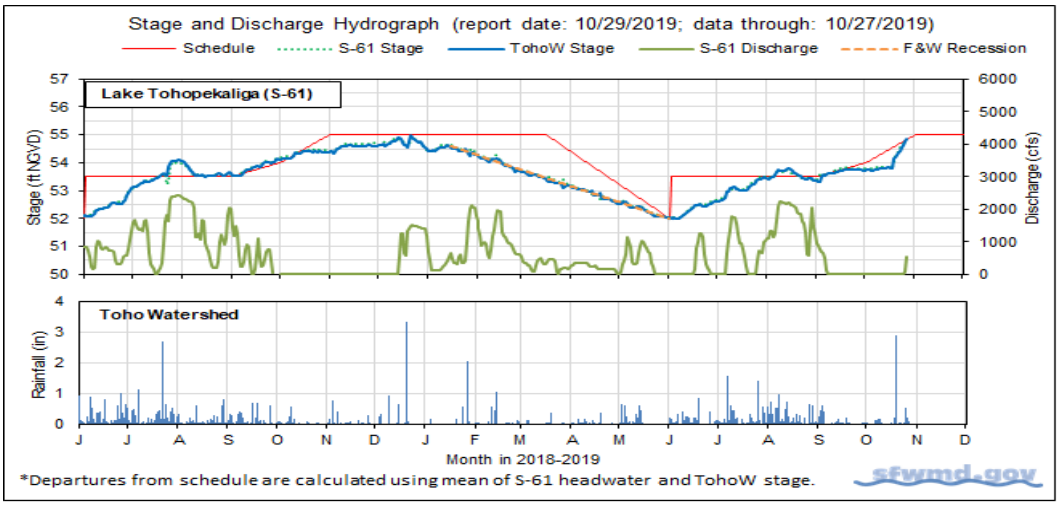


Figure 2.

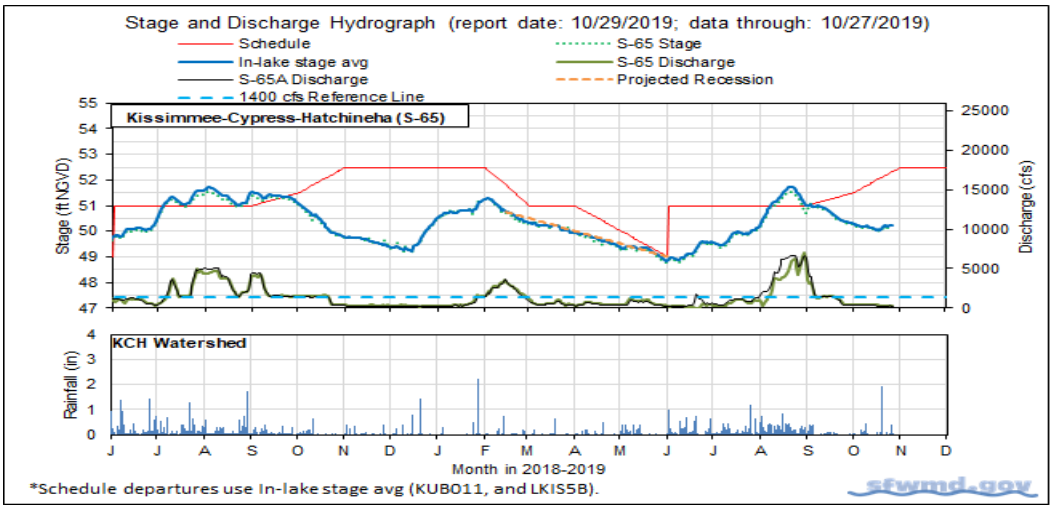


Figure 3.

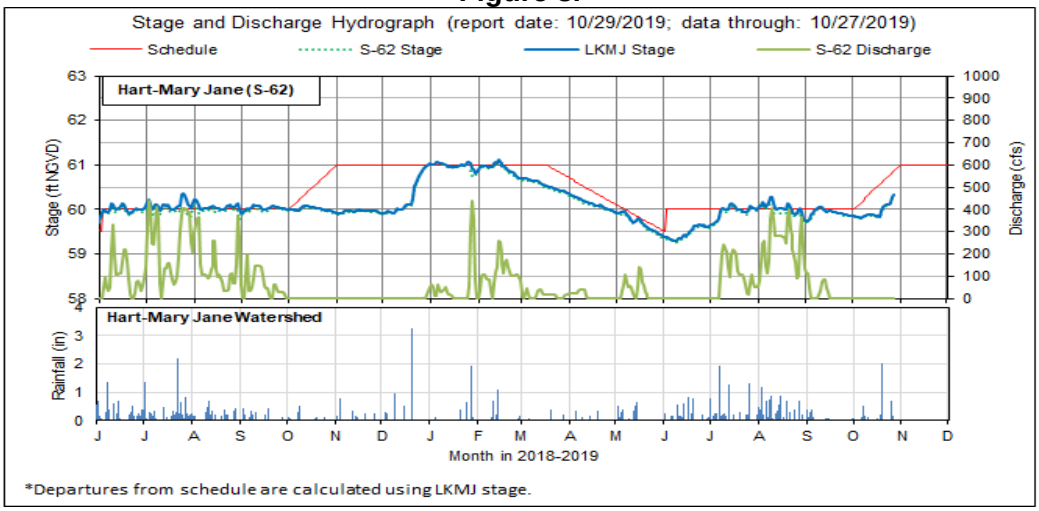


Figure 4.

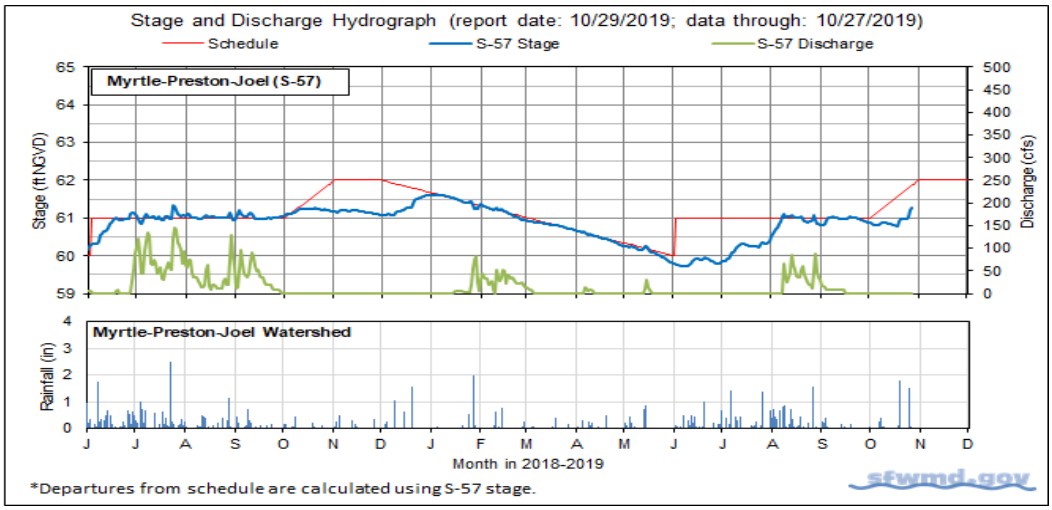


Figure 5.

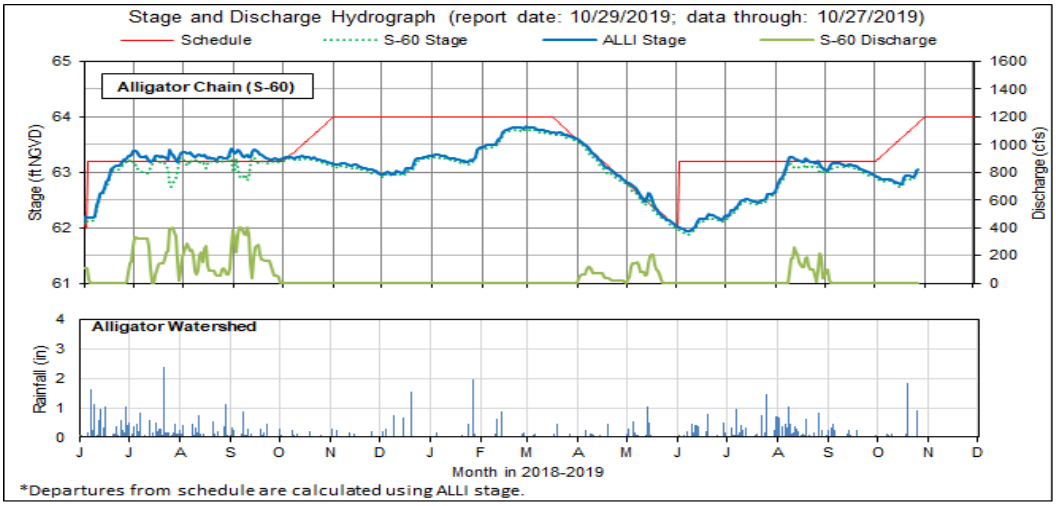


Figure 6.

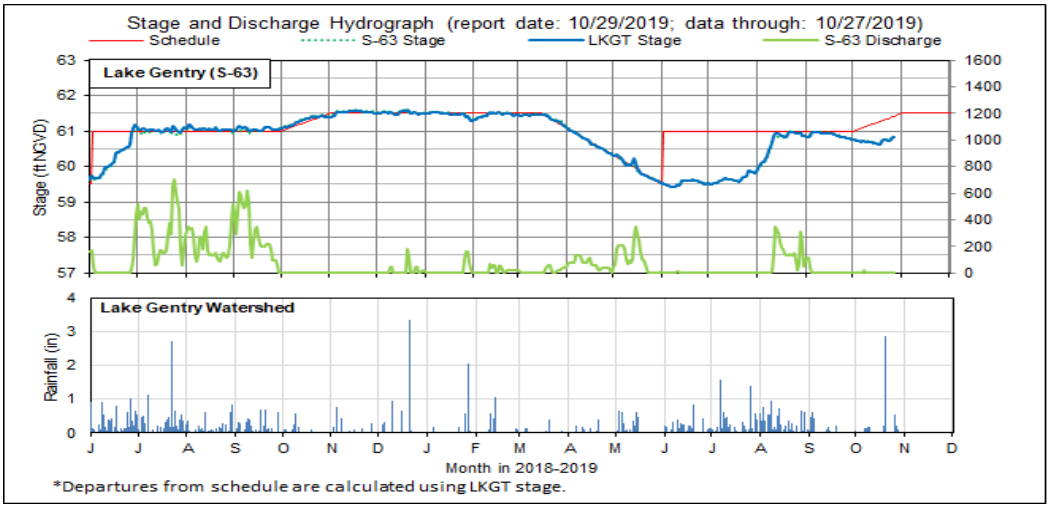


Figure 7.

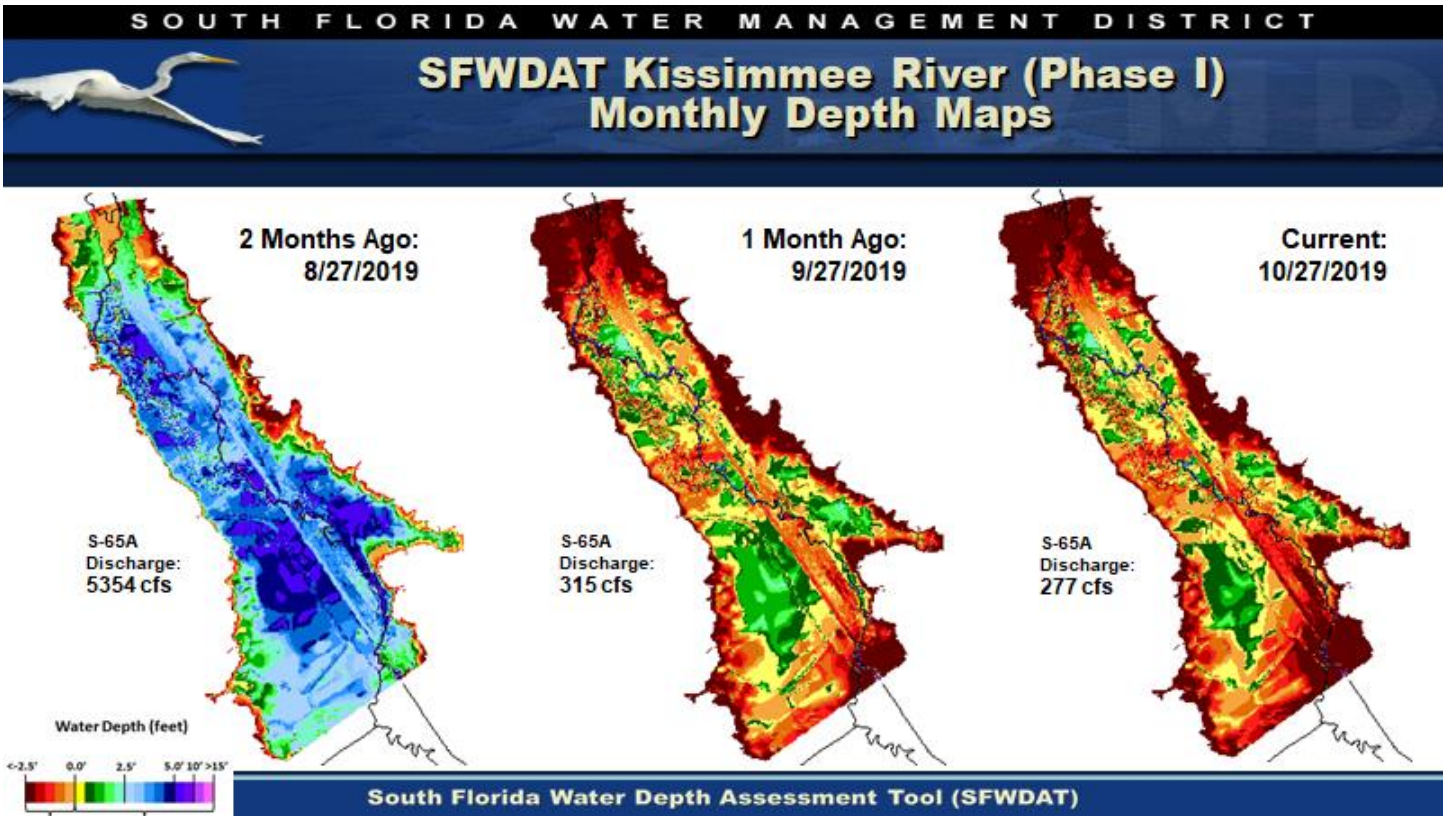


Figure 8. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.

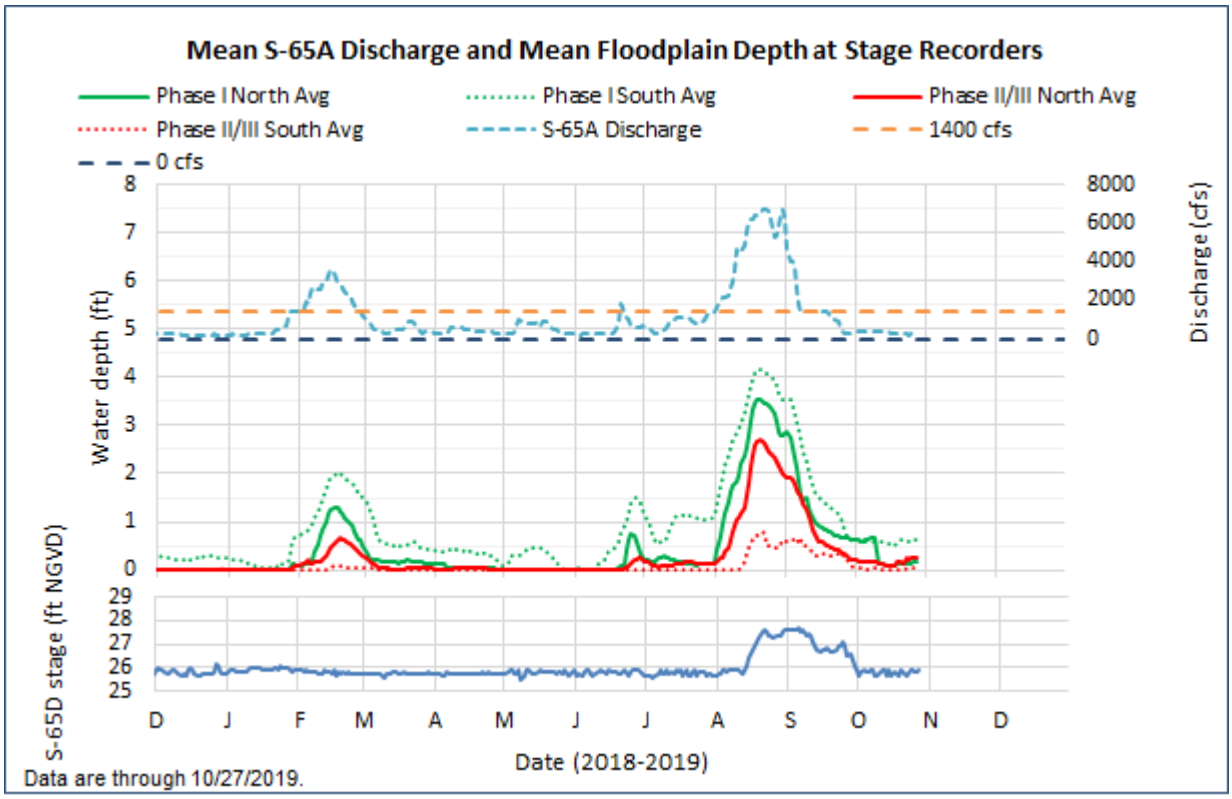


Figure 9. Mean water depth at stage recorders in the northern Phase I, southern Phase I, northern Phase II/III, and southern Phase II/III areas in relation to the S-65A discharge and S-65D headwater stage.

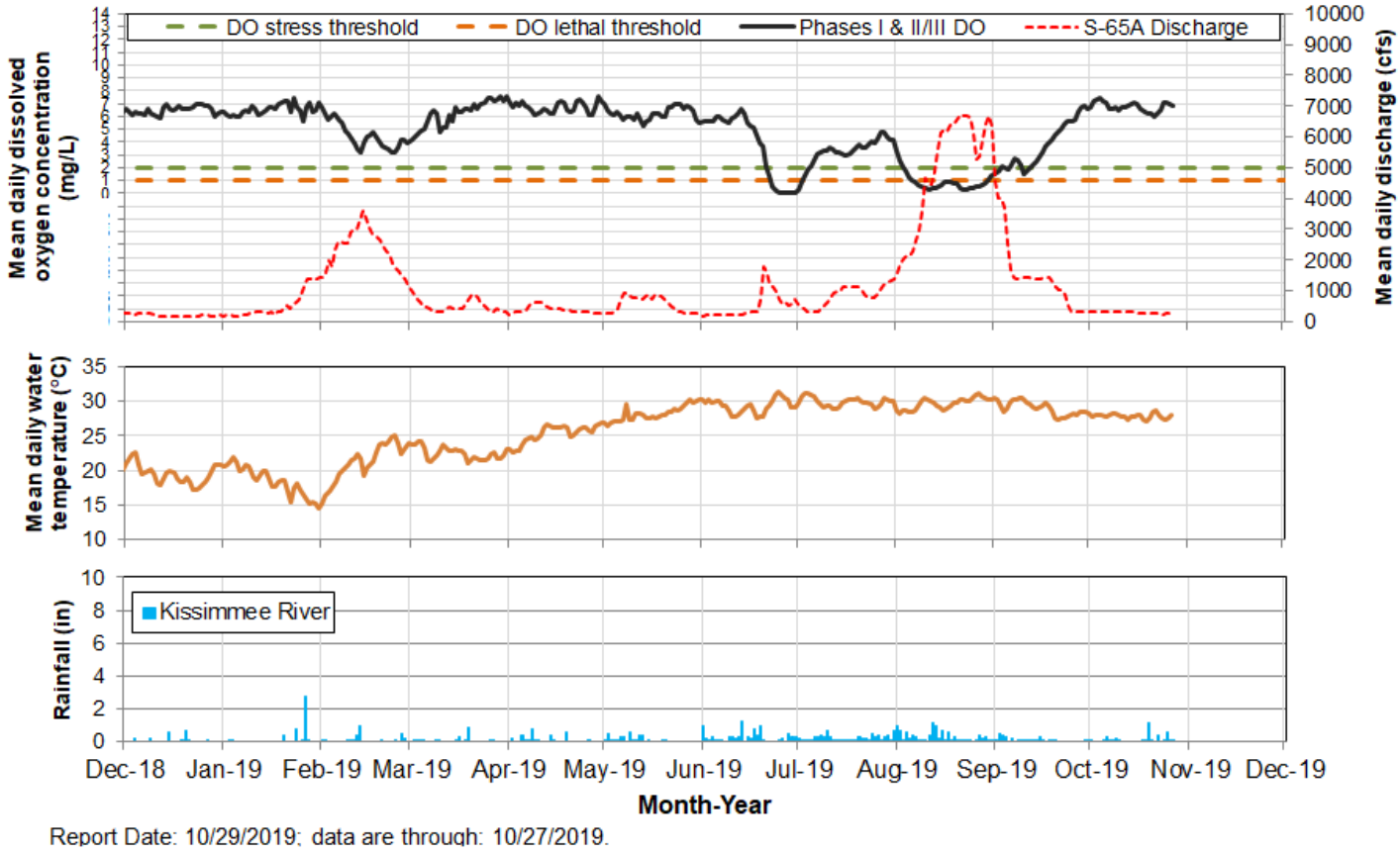


Figure 10. Mean daily dissolved oxygen, discharge, temperature and rainfall in the Phases I/II/III river channel.

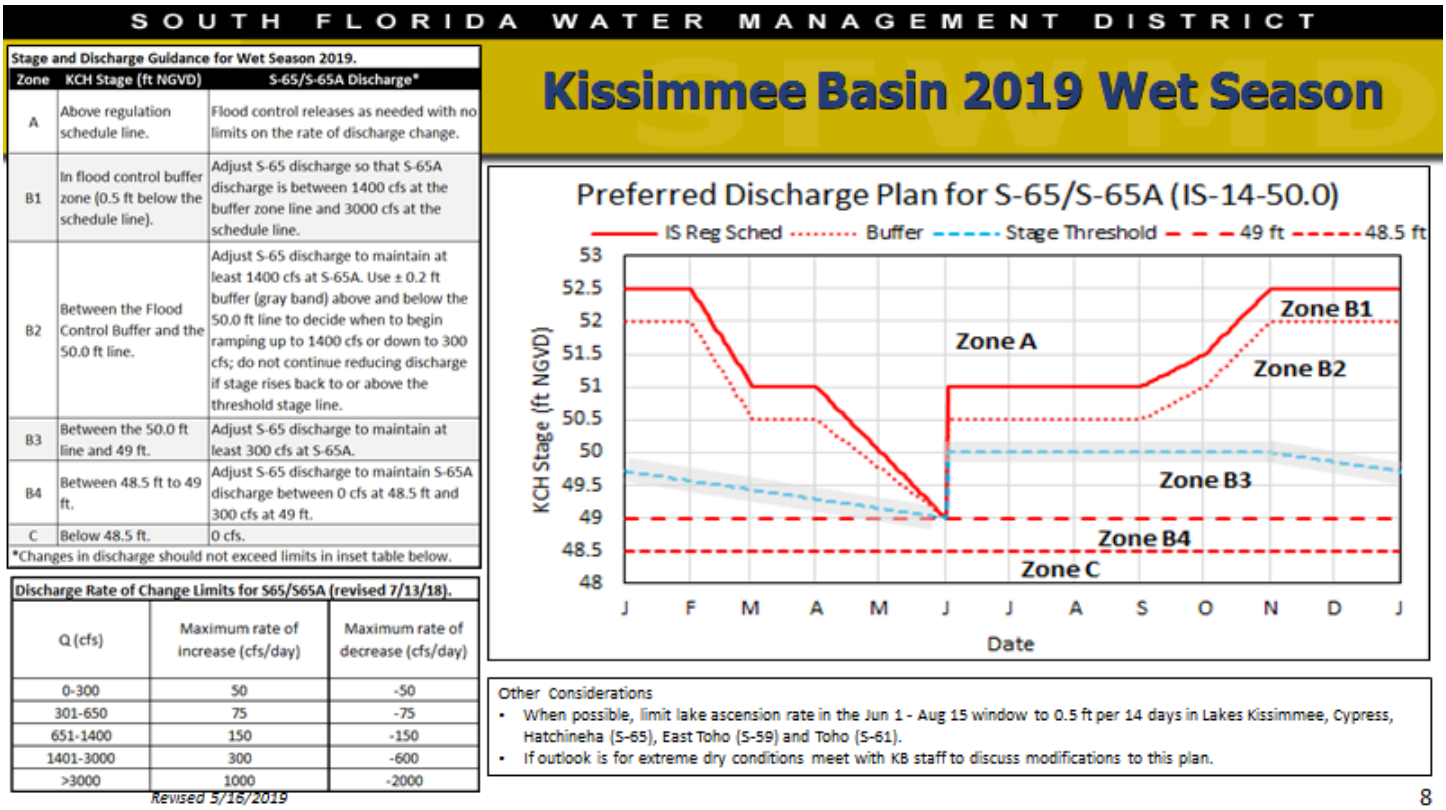


Figure 11. The 2019 Wet Season Discharge Plan for S-65/S-65A.

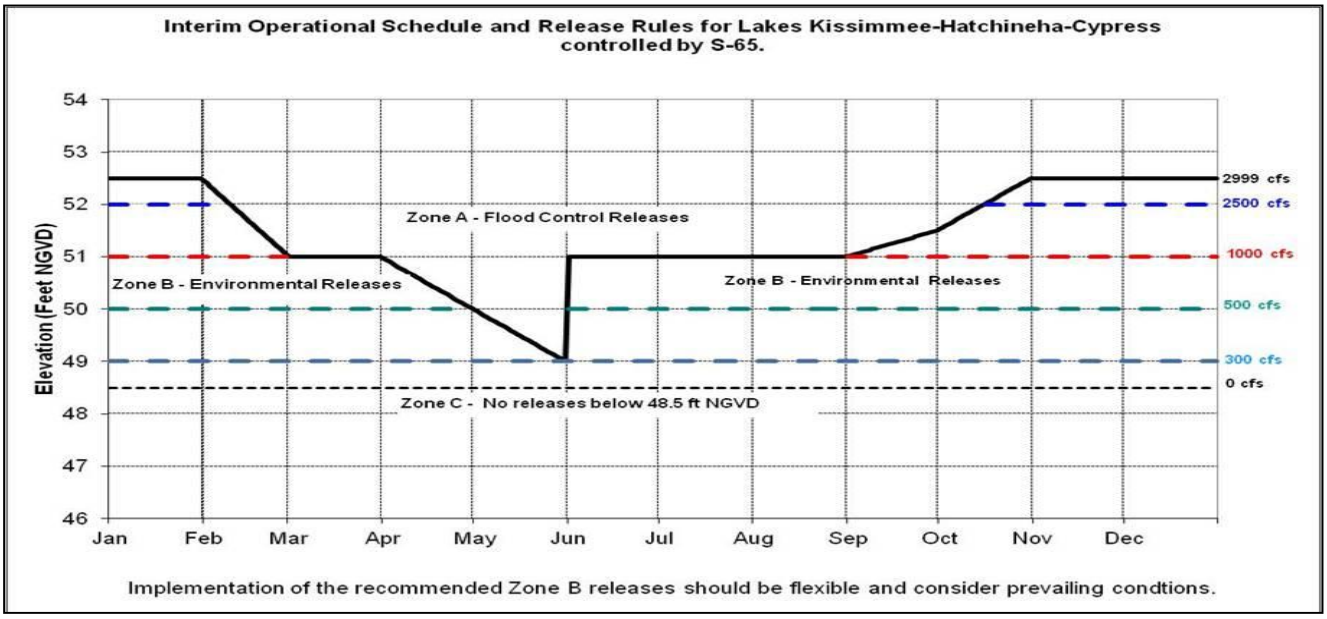


Figure 12. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.

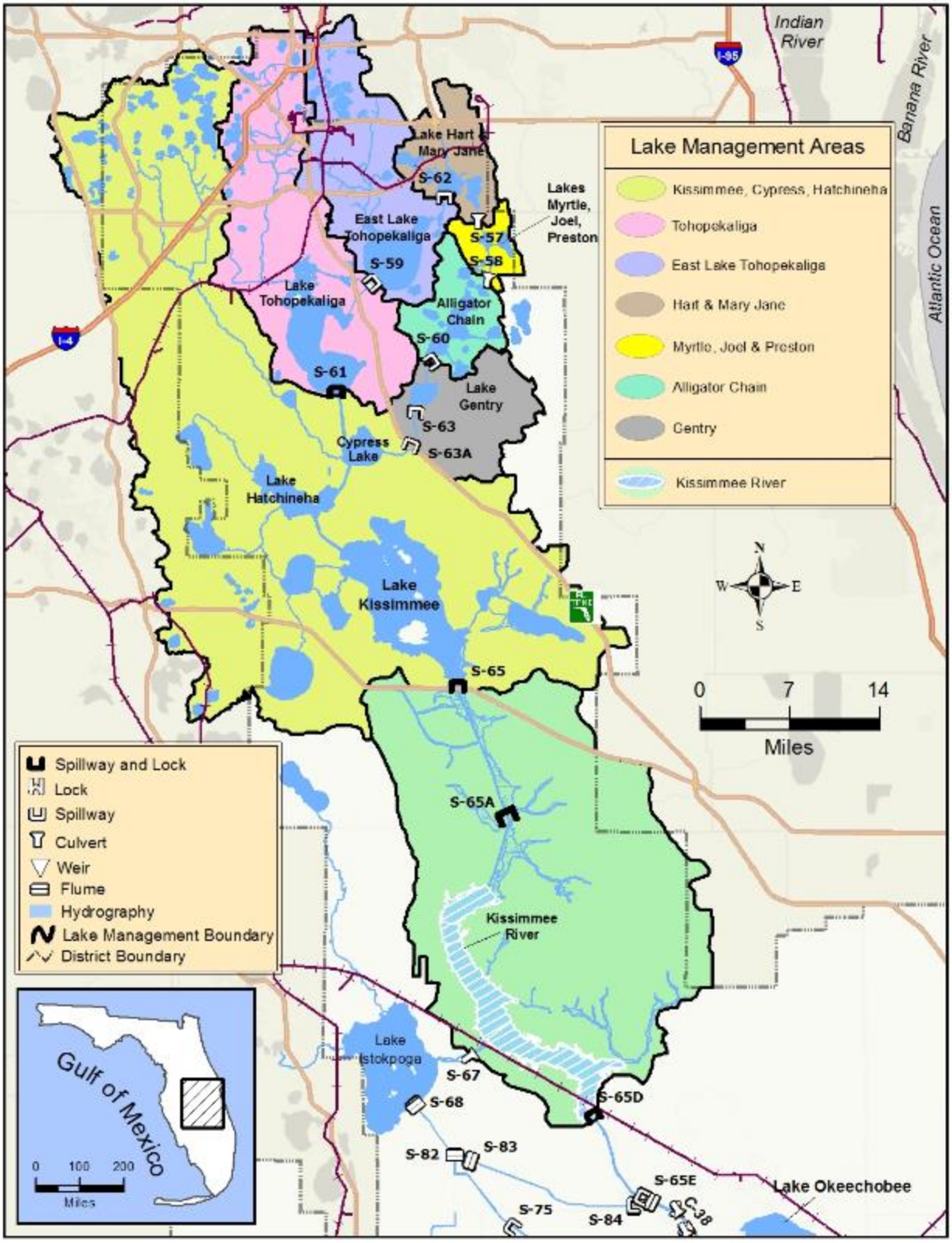


Figure 13. The Kissimmee Basin.

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee average daily lake stage is at 13.49 feet NGVD for October 28, 2019 decreasing 0.01 feet from the previous week. This value is based on the use of four interior lake stations (L001, L005, L006 and LZ40) and four perimeter stations (S-308, S-352, S-4 and S-133). The Lake is now 0.14 feet lower than a month ago and 0.27 feet lower than a year ago (Figure 1) when stages were below the bottom of the preferred ecological envelope (Figure 2). The Lake is currently 0.43 feet below the preferred ecological envelope. The Lake moved up into the Low sub-band on September 4, 2019 then moved back down into the Base Flow sub-band on September 11, 2019 where it has remained since (Figure 3). Following a steady decline from the start of September, lake stage has been hovering around 13 ½ feet for most of October (Figure 4). According to RAINDAR, during the week of October 22 to October 28, 2019, 0.59 inches of rain fell directly over the Lake, compared to 1.13 inches the previous week. Rainfall across the district was highly variable again, with northern/eastern regions receiving 1 and 3 inches, while many basins west of the Lake received less than half an inch (Figure 5).

The average daily inflows (minus rainfall) to the Lake increased slightly, from 475 cfs to 512 cfs. Three quarters of the inflow came from the Kissimmee River (S-65E & S-65EX1) which increased from 375 cfs to 383 cfs. No passive backflow from the L-8 Canal at Canal Point (via CLV10A) occurred this week, but S-308 exhibited a net inflow to the Lake due to heavy rainfall around the C-44 canal (Table 1).

Outflow (minus evapotranspiration) decreased from 681 cfs to 94 cfs. Flows through the L-8 Canal at Canal Point (via CLV10A) dropped from 62 cfs to 17 cfs, and releases west through S-77 decreased from 278 cfs to 76 cfs. There were no discharges south through the S-350 structures. The corrected average daily evapotranspiration value for the week based on the L006 and LZ40 weather platform solar radiation were higher than the previous week, increasing from 0.61 inches to 1.12 inches.

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 6 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.

The recent satellite imagery has been obscured by cloud cover, however the October 24, 2019 image using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data showed that bloom potential remains low in the lake, as the season for potential wide-spread algal blooms has likely ended (Figure 7).

Water Management Recommendations

Lake Okeechobee stage is 13.49 feet NGVD, almost identical to the previous week, but still 0.14 feet lower than last month. The lake moved up into the Low sub-band on September 4, 2019 then moved back down into the Base Flow sub-band on September 11, 2019 where it has remained since. After spending about 215 days below the ecological envelope (which varies seasonally from 12.5 – 15.5 feet NGVD +/- 0.5 feet) the lake moved back into it at the start of August. After 70 days within the envelope, the lake has now been below it again for 2 weeks and is currently 0.43 ft below the bottom of the envelope. Low lake stages continue to benefit recovering SAV communities, but also stress higher elevation marshes; areas with elevations greater than approximately 14 feet NGVD have now been dry for nearly a year. The latest estimate of cyanobacteria bloom potential (October 24, 2019) shows that bloom potential is low in the Lake, as the season for large-scale blooms has ended.

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	375	383	0.2
S-71 & S-72	64	30	0.0
S-84 & S-84X	15	39	0.0
Fisheating Creek	20	27	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	32	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			
Rainfall	2619	1371	0.6
Total	**3094**	**1884**	**0.8**

OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-77	278	76	0.0
S-308	0	-221	-0.1
S-351	0	0	0.0
S-352	0	0	0.0
S-354	341	0	0.0
L-8 Outflow	62	17	0.0
ET	1421	2605	1.1
Total	**2102**	**2478**	**1.1**

Provisional Data

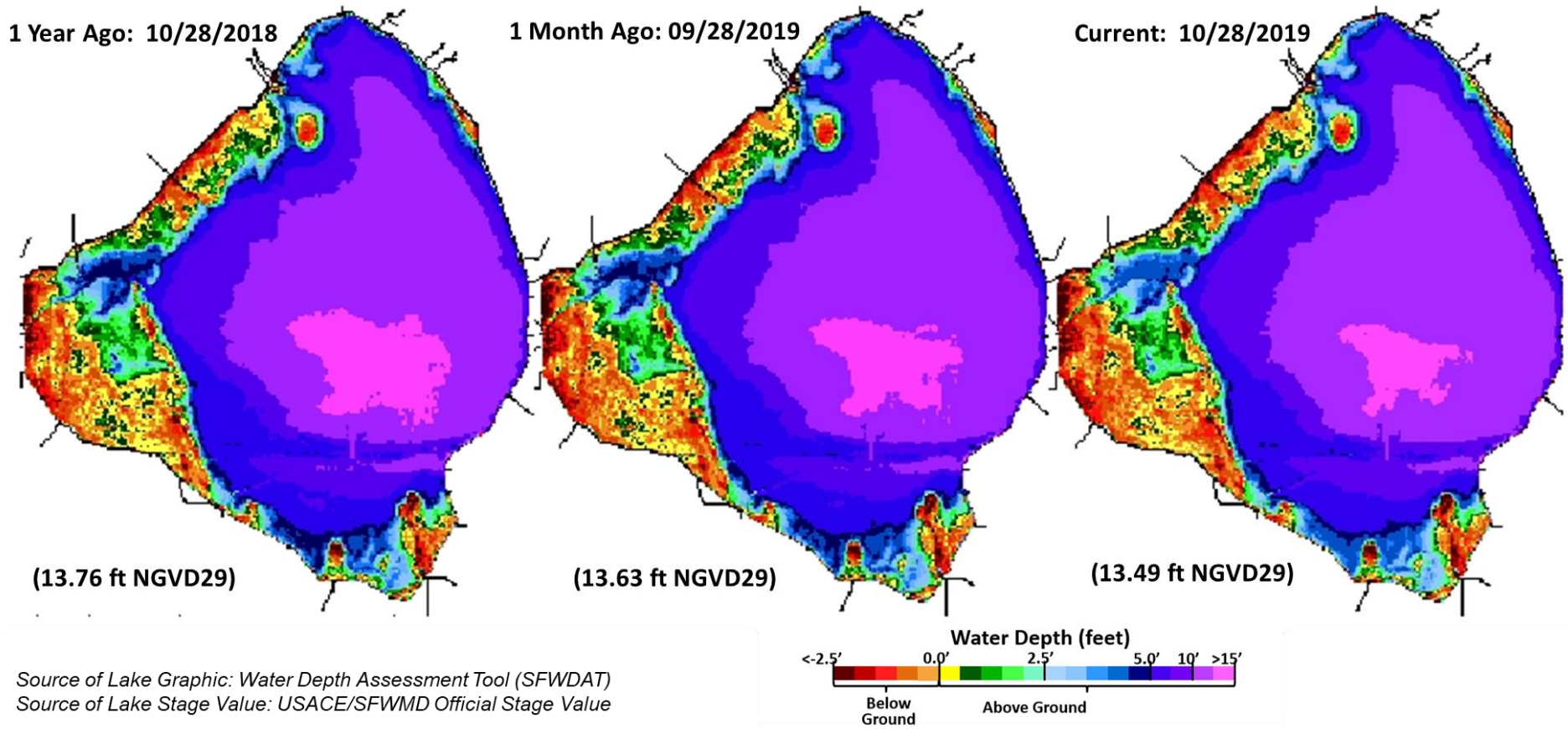


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

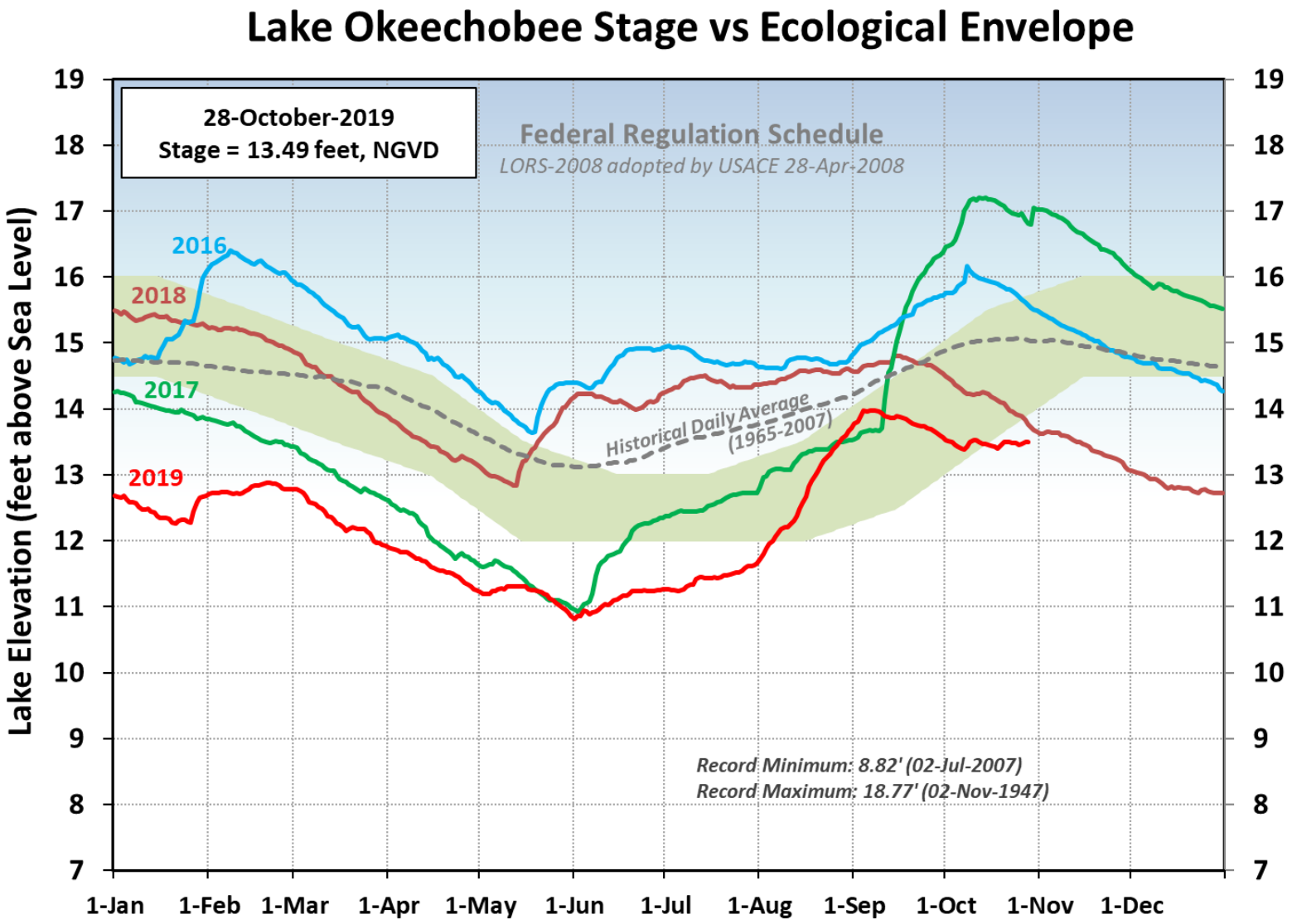


Figure 2. Select annual stage hydrographs for Lake Okeechobee in comparison to the Ecological Envelope.

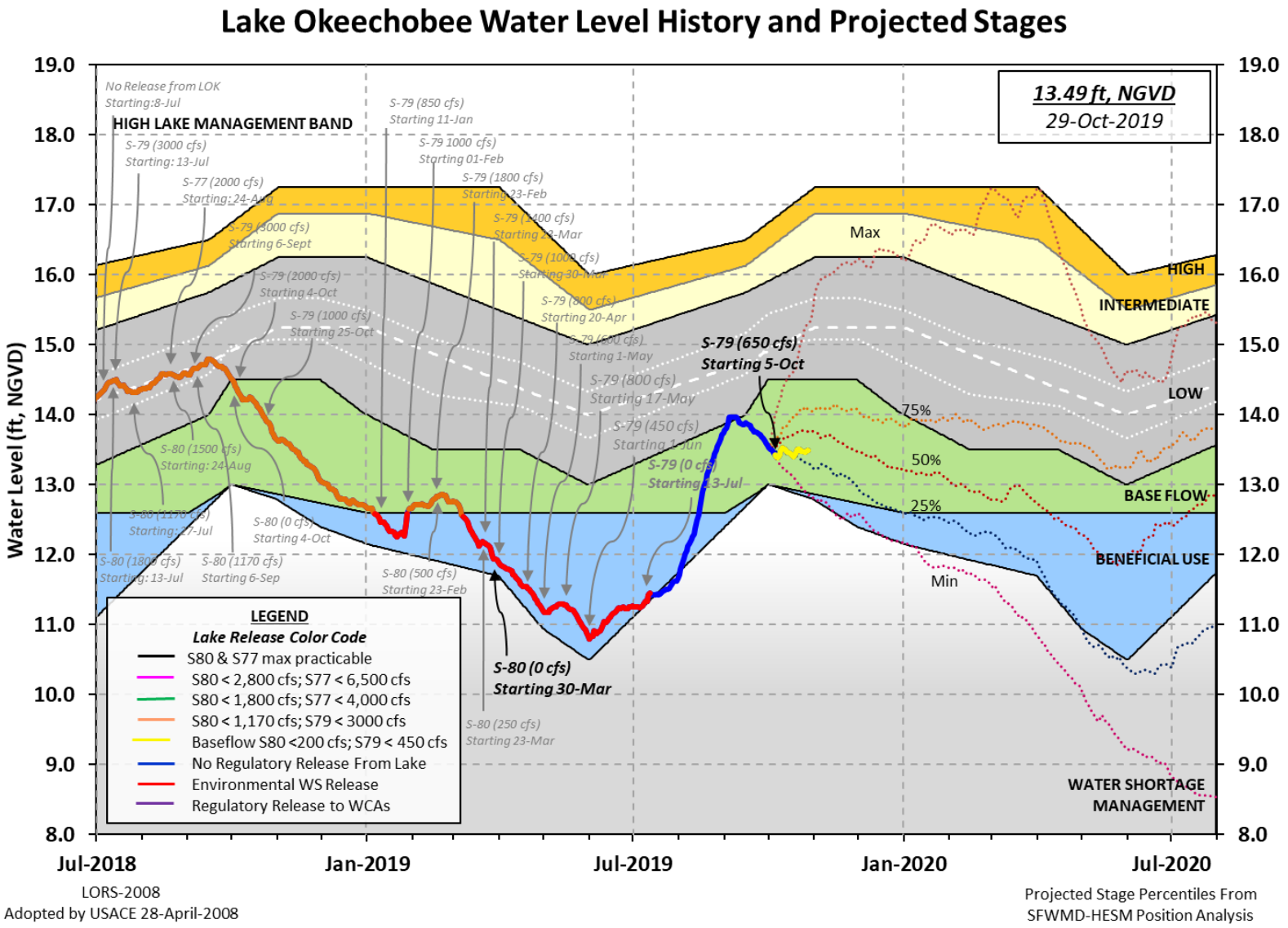


Figure 3. Recent Lake Okeechobee stage and releases, with projected stages based on a dynamic position analysis.

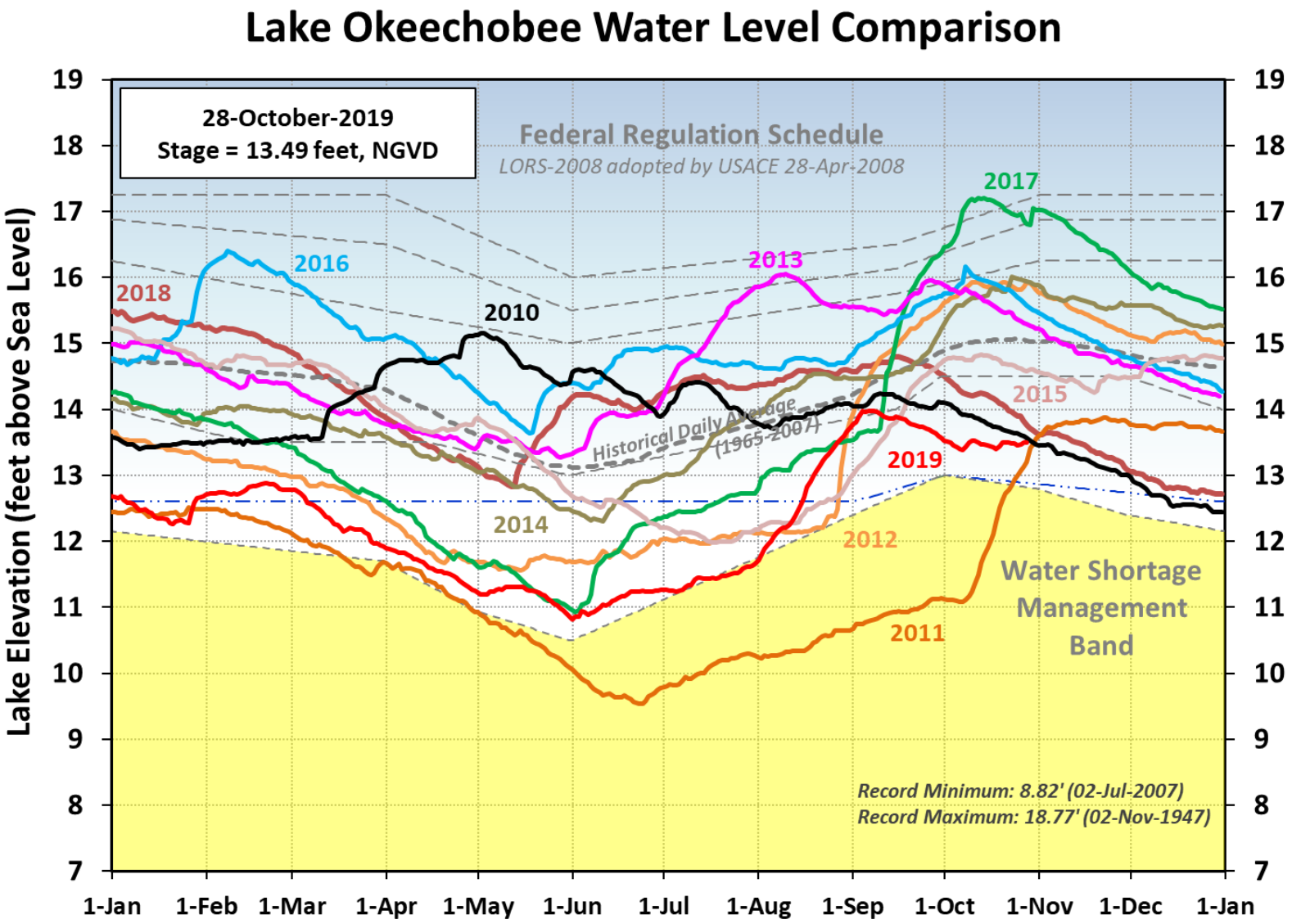


Figure 4. Select annual stage hydrographs for Lake Okeechobee from 2010 – 2019.

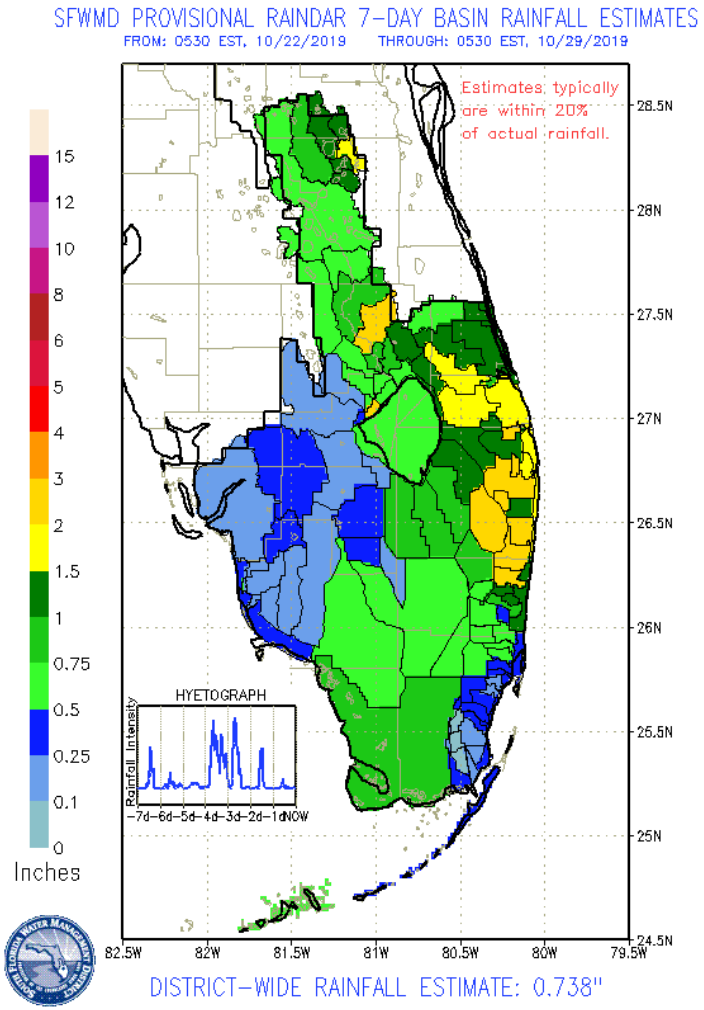


Figure 5. Rainfall estimates by basin.

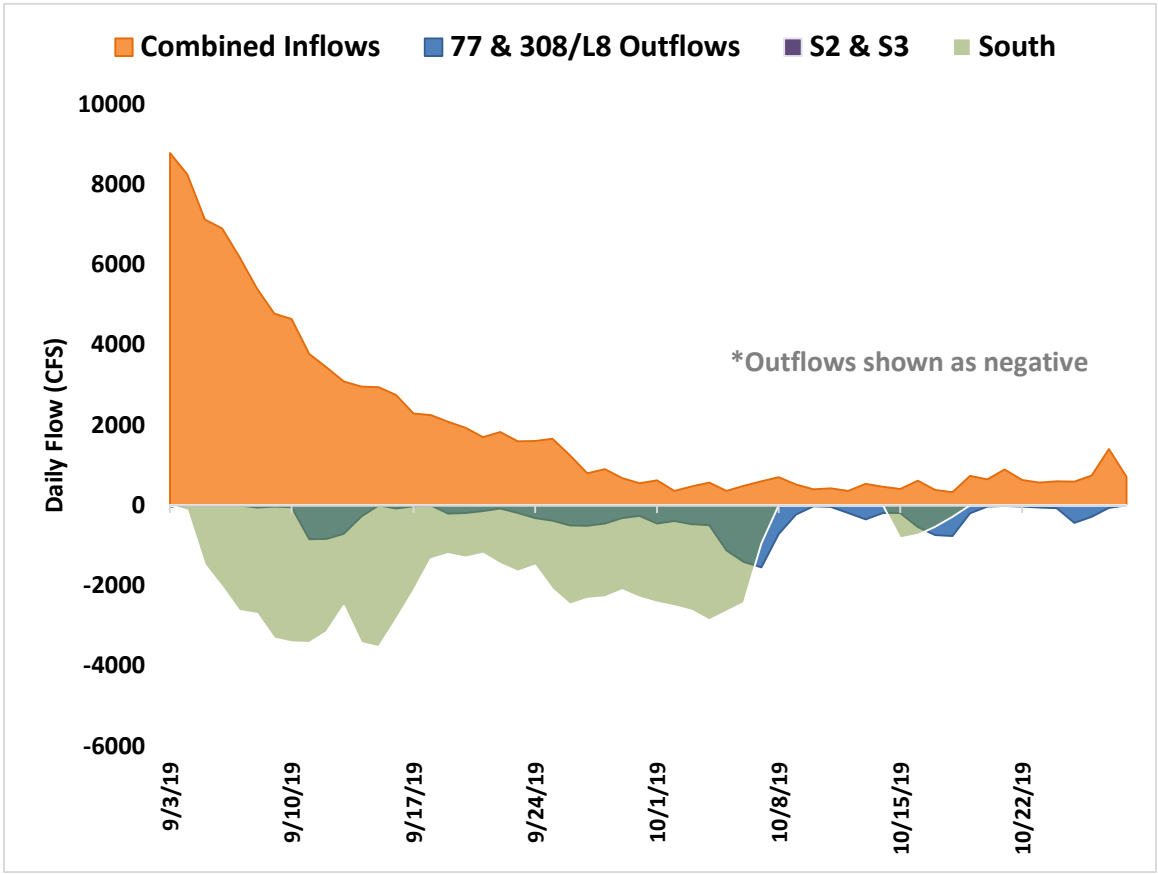


Figure 6. Major inflows (orange) and outflows (blue) of Lake Okeechobee, including the S-350 structures designated as South (green). The L-8 Canal flows through Culvert 10A are included as outflows when positive, and as inflows when backflowing into the lake. All inflows and outflows are shown as positive 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.

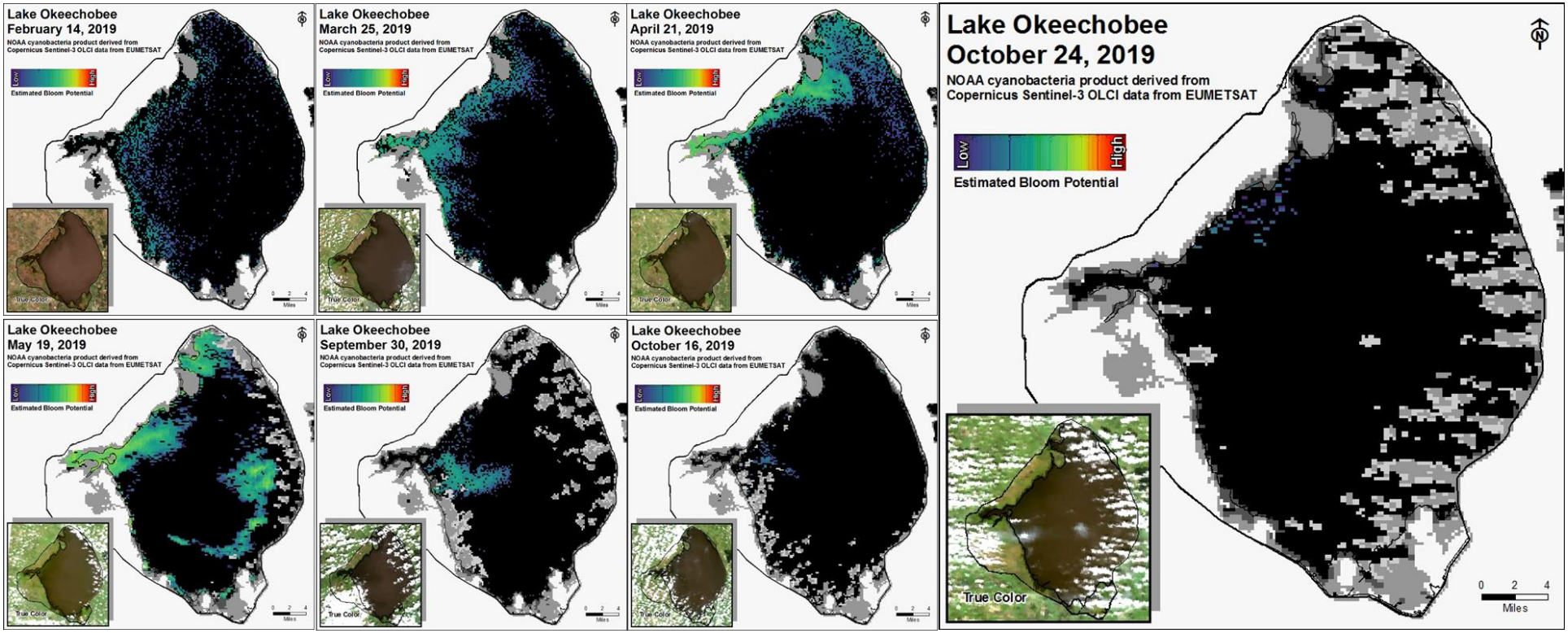


Figure 7. Potential for cyanobacterial blooms on Lake Okeechobee in 2019, based on NOAA's harmful algal bloom monitoring system derived from Copernicus Sentinel-3 OLCI data from EUMETSAT. Gray indicates cloud cover.

ESTUARIES

St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 619 cfs (Figures 1 and 2) and last month inflow averaged about 499 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	296
S-80	0
S-308	-195
S-49 on C-24	87
S-97 on C-23	101
Gordy Rd. structure on Ten Mile Creek	135

Over the past week, surface 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 17.6. 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)	**11.7** (11.5)	**15.5** (16.7)	NA[1]
US1 Bridge	**17.1** (16.7)	**18.1** (18.2)	10.0-26.0
A1A Bridge	**26.0** (23.8)	**28.6** (27.1)	NA[1]

[1]Envelope not applicable

Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 987 cfs (Figures 5 and 6) and last month inflow averaged about 792 cfs. Last week's provisional averaged inflows from the structures are shown in Table 3.

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

Location	Flow (cfs)
S-77	115
S-78	392
S-79	847
Tidal Basin Inflow	140

Over the past week, salinity decreased throughout the estuary (Table 4, Figures 7 & 8). The seven-day average salinity values within the good range for adult eastern oysters at Cape Coral and at Shell Point and in the fair range at Sanibel (Figure 9). The seven-day average salinities at Val I-75 and Ft. Myers (Table 4) are within good and fair range for Tape Grass respectively.

Table 4. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for associated sampling sites. This salinity range is based upon maintaining optimum regions of salinity of 0-10 in the upper estuary for *Vallisneria* habitat and salinity of 10-30 in the lower estuary for oyster habitat.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	**3.8** (5.0)	**3.8** (5.5)	NA[1]
Val I75	**4.6** (7.4)	**5.7** (9.3)	0.0-5.0[2]
Ft. Myers Yacht Basin	**11.5** (14.1)	**12.1** (14.7)	NA
Cape Coral	**19.2** (20.7)	**20.4** (22.0)	10.0-30.0
Shell Point	**29.8** (30.4)	**29.6** (30.5)	10.0-30.0
Sanibel	**32.4** (32.7)	**32.7** (32.8)	10.0-30.0

[1]Envelope not applicable and [2]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 4.2 to 8.5 at the end of the next two weeks for pulse release at S-79 ranging from 0 to 800 cfs and Tidal Basin inflows of 115 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 5.0 and 6.6 within two weeks which indicates the estuary would benefit from additional water.

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	115	8.5	6.6
B	300	115	7.5	6.3
C	450	115	5.9	5.6
D	650	115	4.4	5.1
E	800	115	4.2	5.0

Red tide

The Florida Fish and Wildlife Research Institute reported on October 25, 2019, that *Karenia brevis,* the Florida red tide dinoflagellate, was observed at very low to high concentrations in 21 samples collected from or offshore of Lee County. *Karenia brevis* was not observed in samples collected from or offshore of St. Lucie, Martin, or Palm Beach counties (no samples were analyzed this week from Broward or Miami-Dade counties). Respiratory irritation and several reports of fish kills were received in Lee County.

Water Management Recommendations

Lake stage is in the Base Flow sub-band. Tributary conditions are normal. The 30-day moving average of surface salinity at Val I-75 is predicted to exceed 5 over the next two weeks. SFWMD's Lake Okeechobee Adaptive Protocol's Release Guidance suggests up to 450 cfs @ S-79 and S-77 baseflow release to supplement as needed.

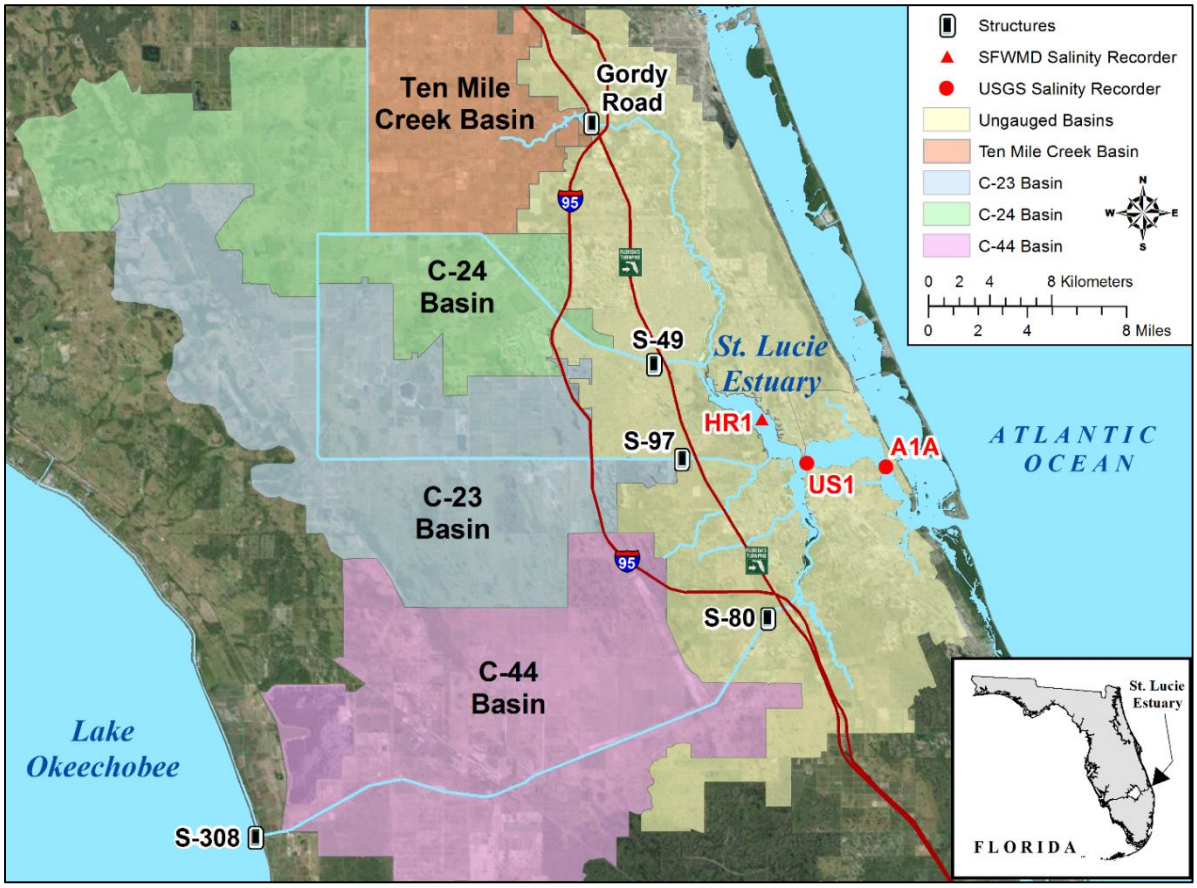


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

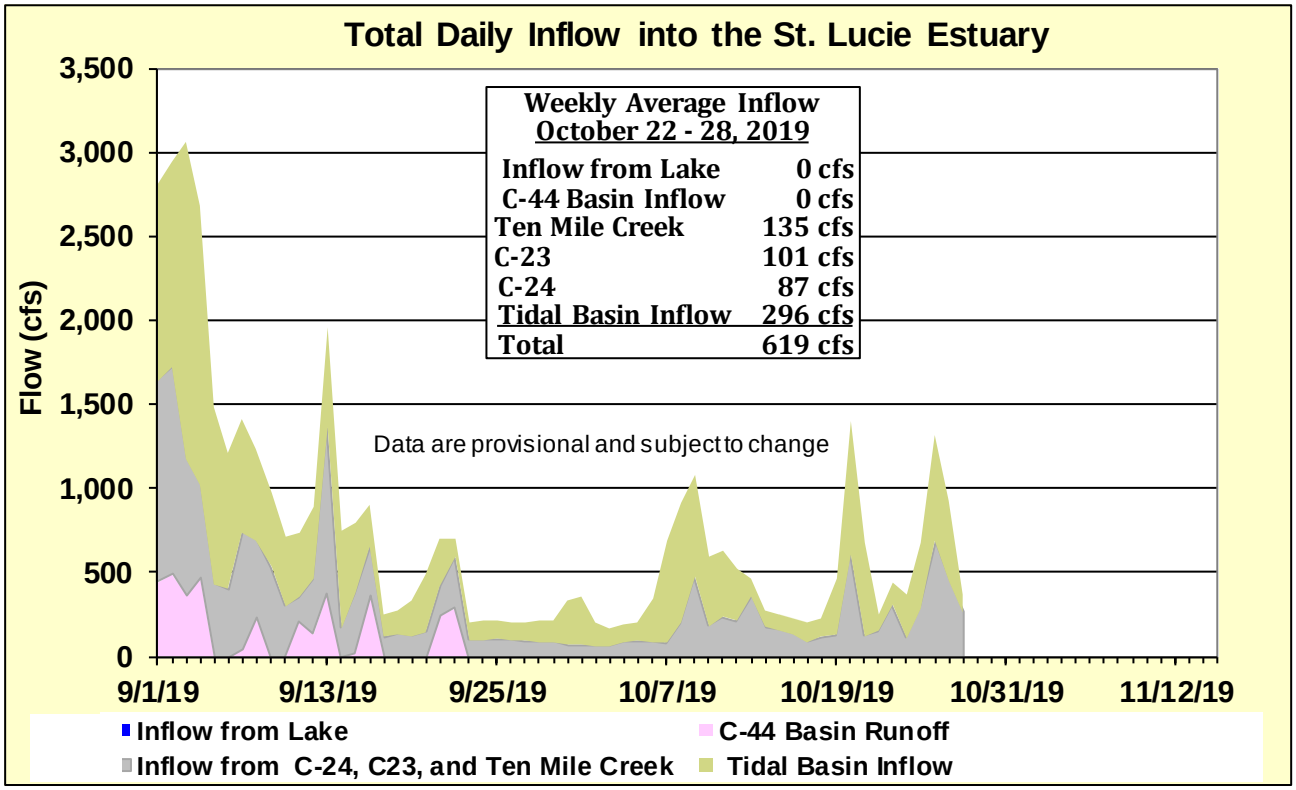


Figure 2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

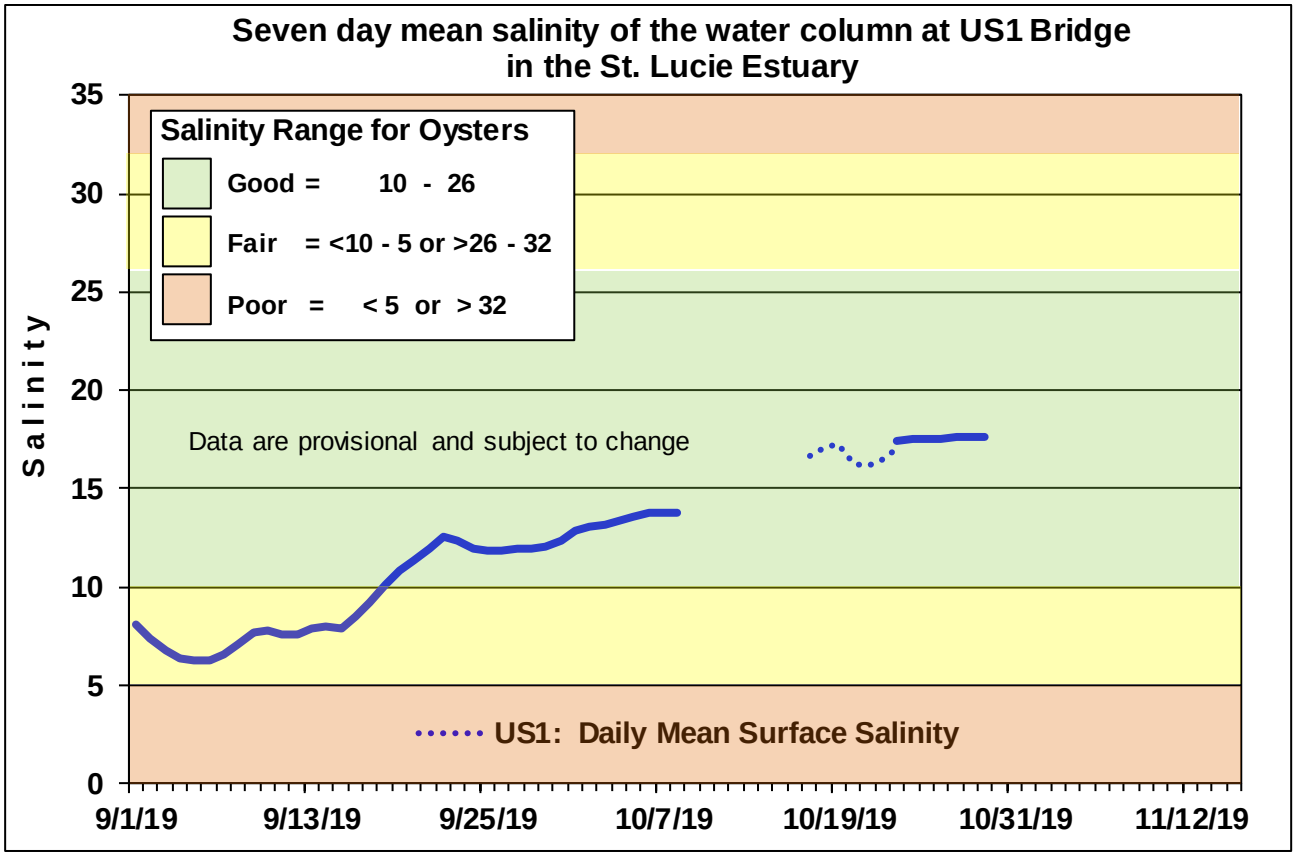


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

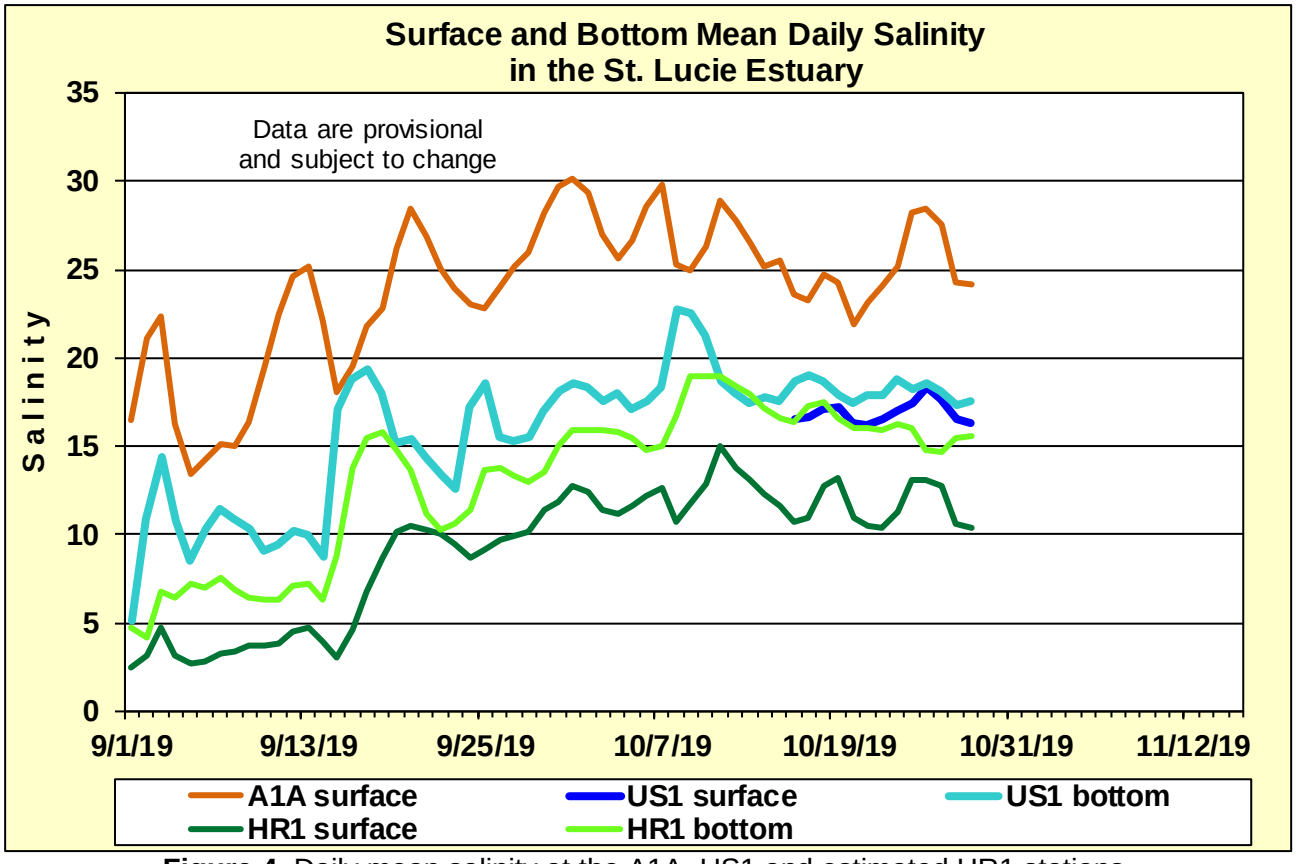


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

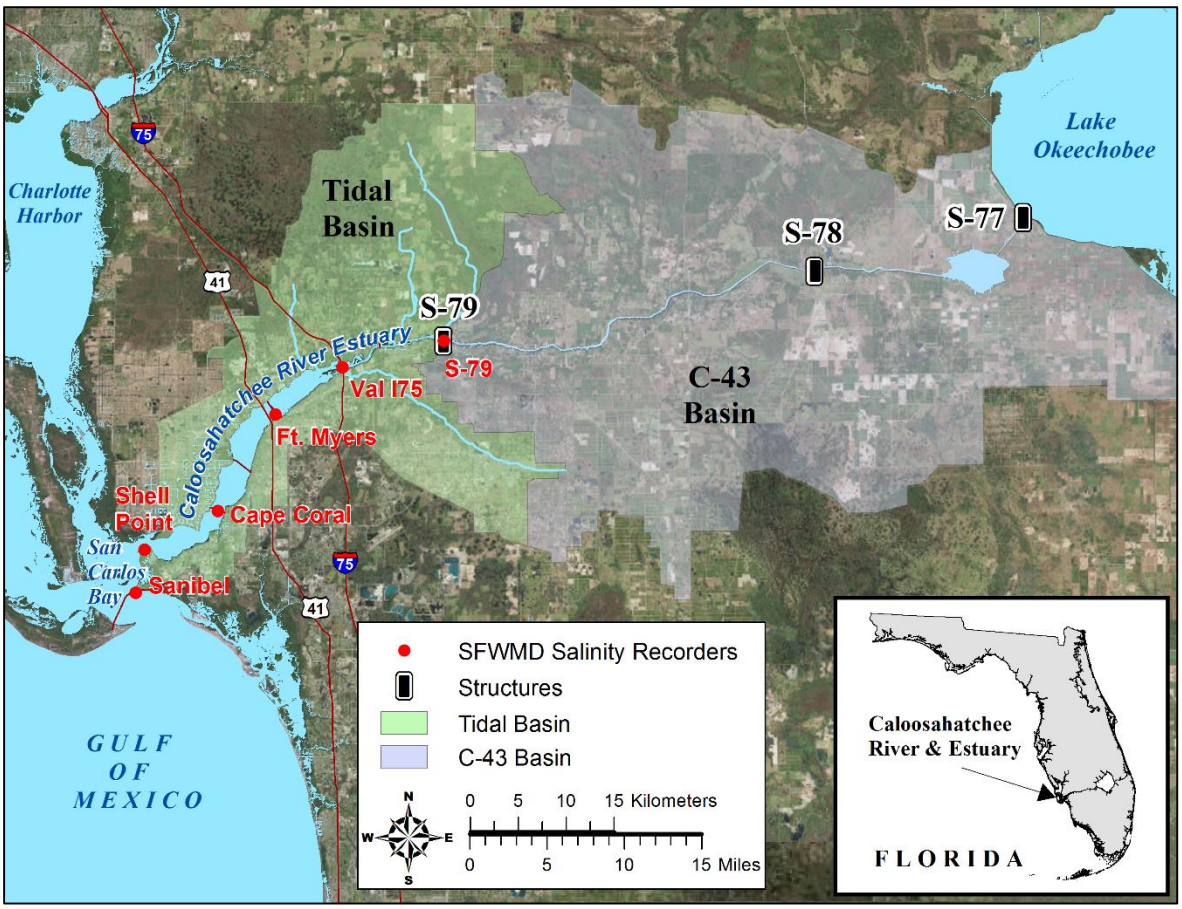


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

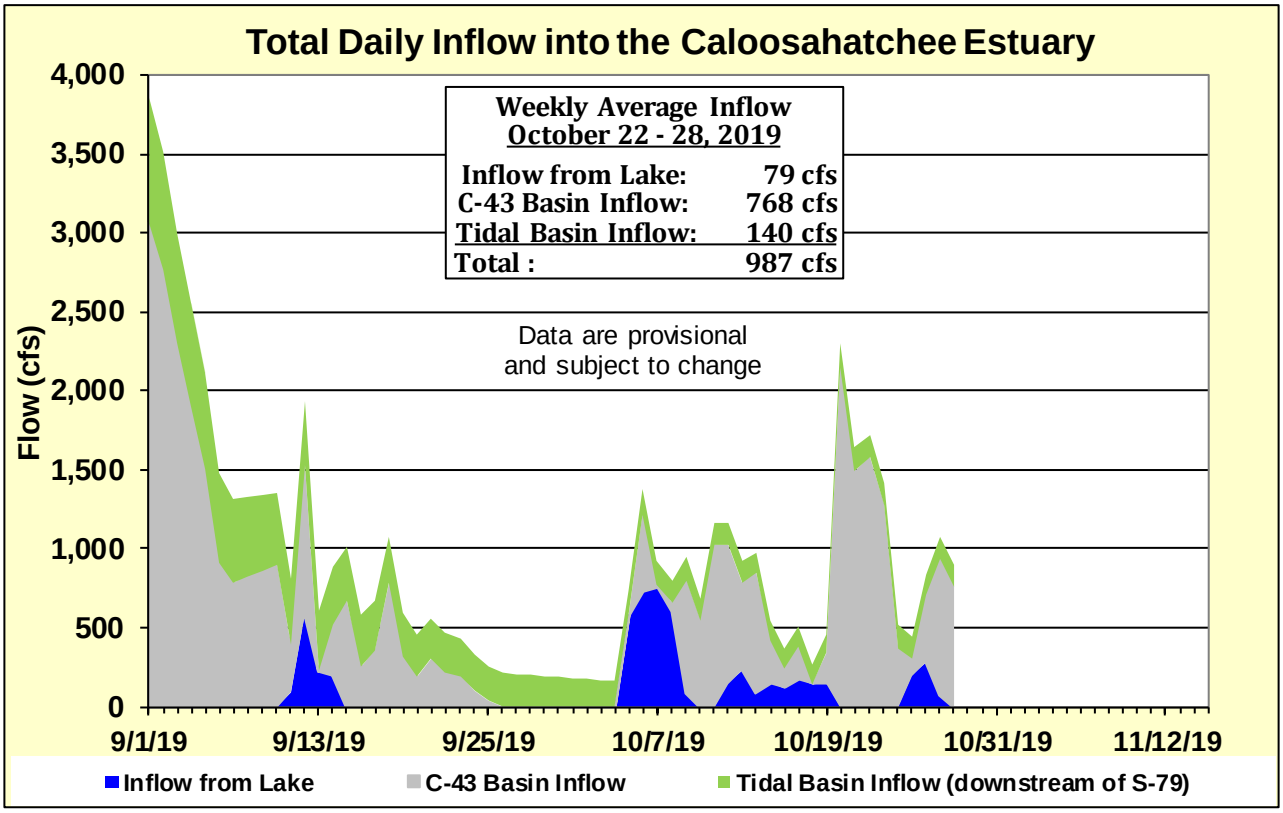


Figure 6. Total daily inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.

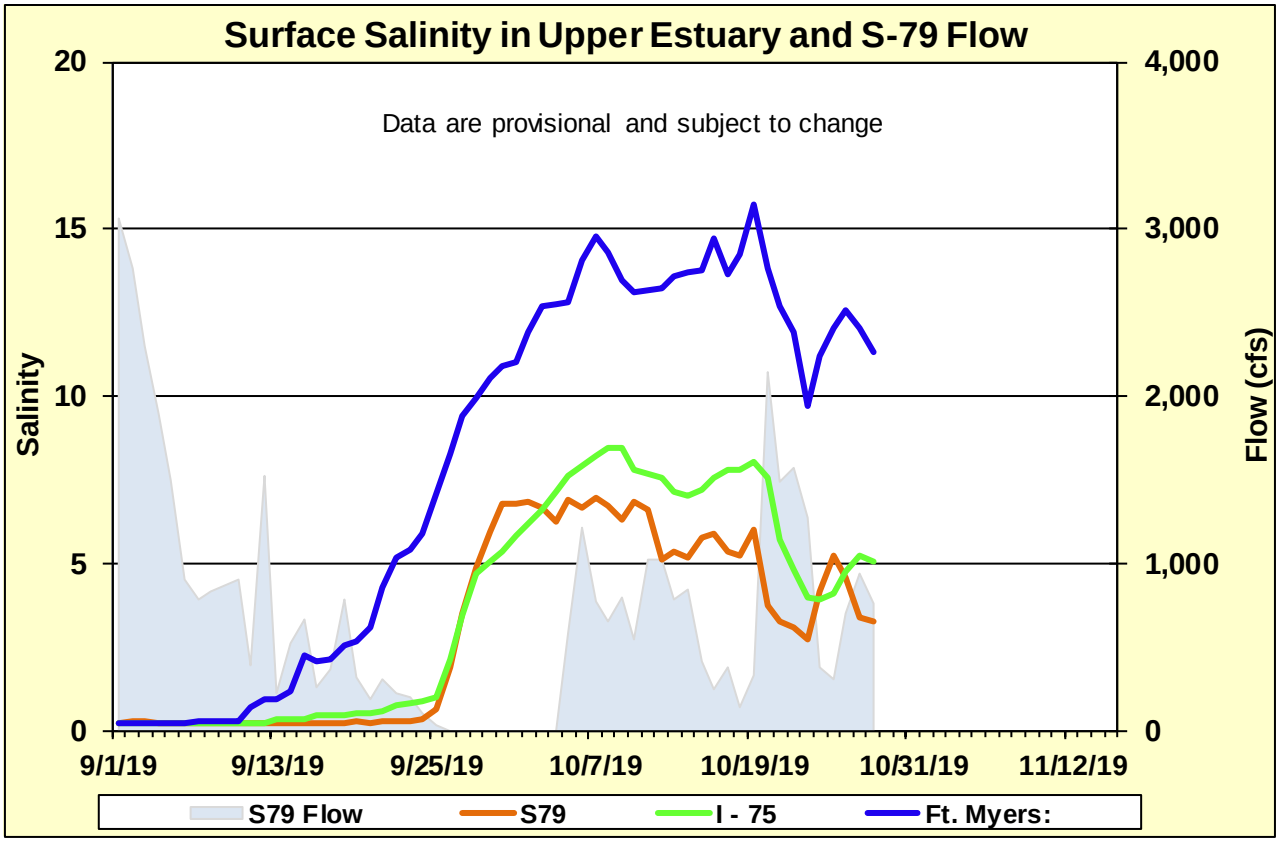


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

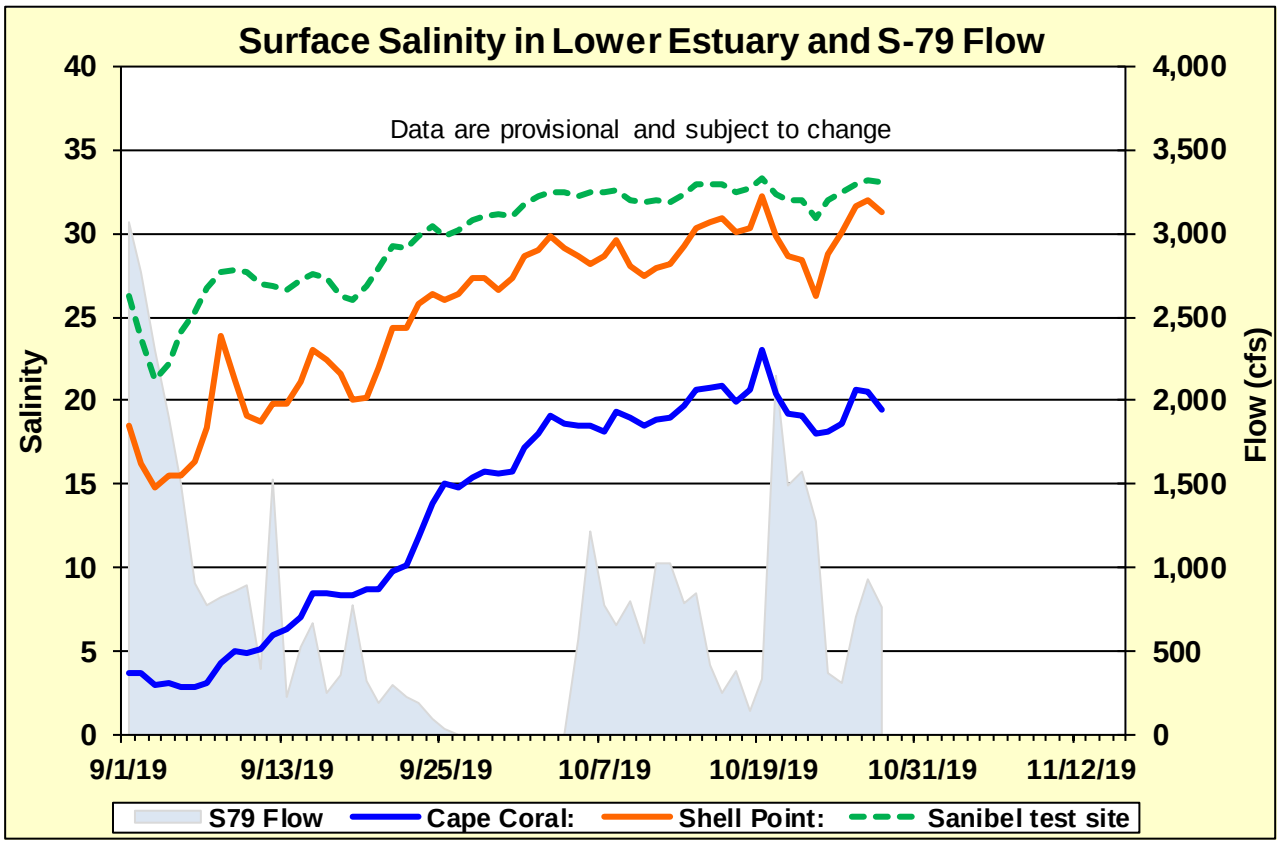


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

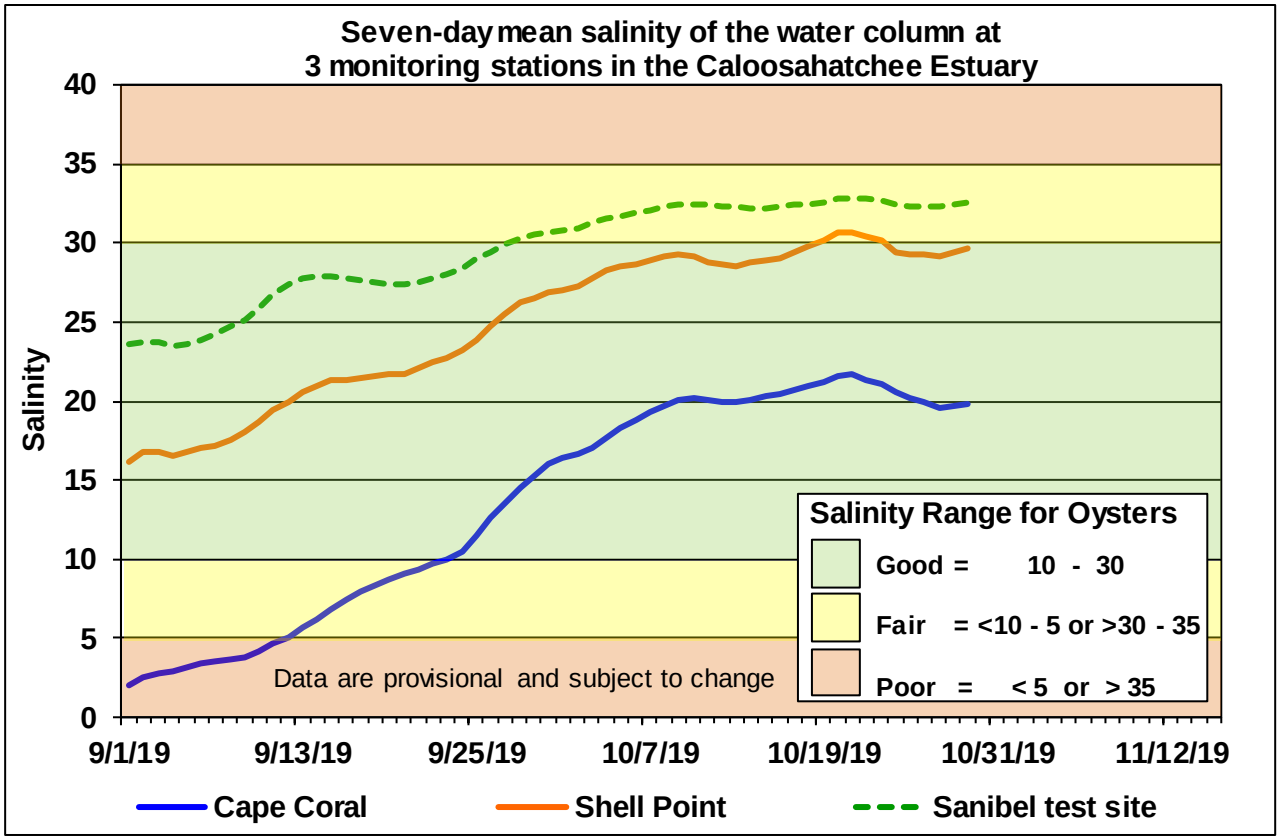


Figure 9. Seven-day mean salinity at Cape Coral, Shell Point, and Sanibel monitoring stations.

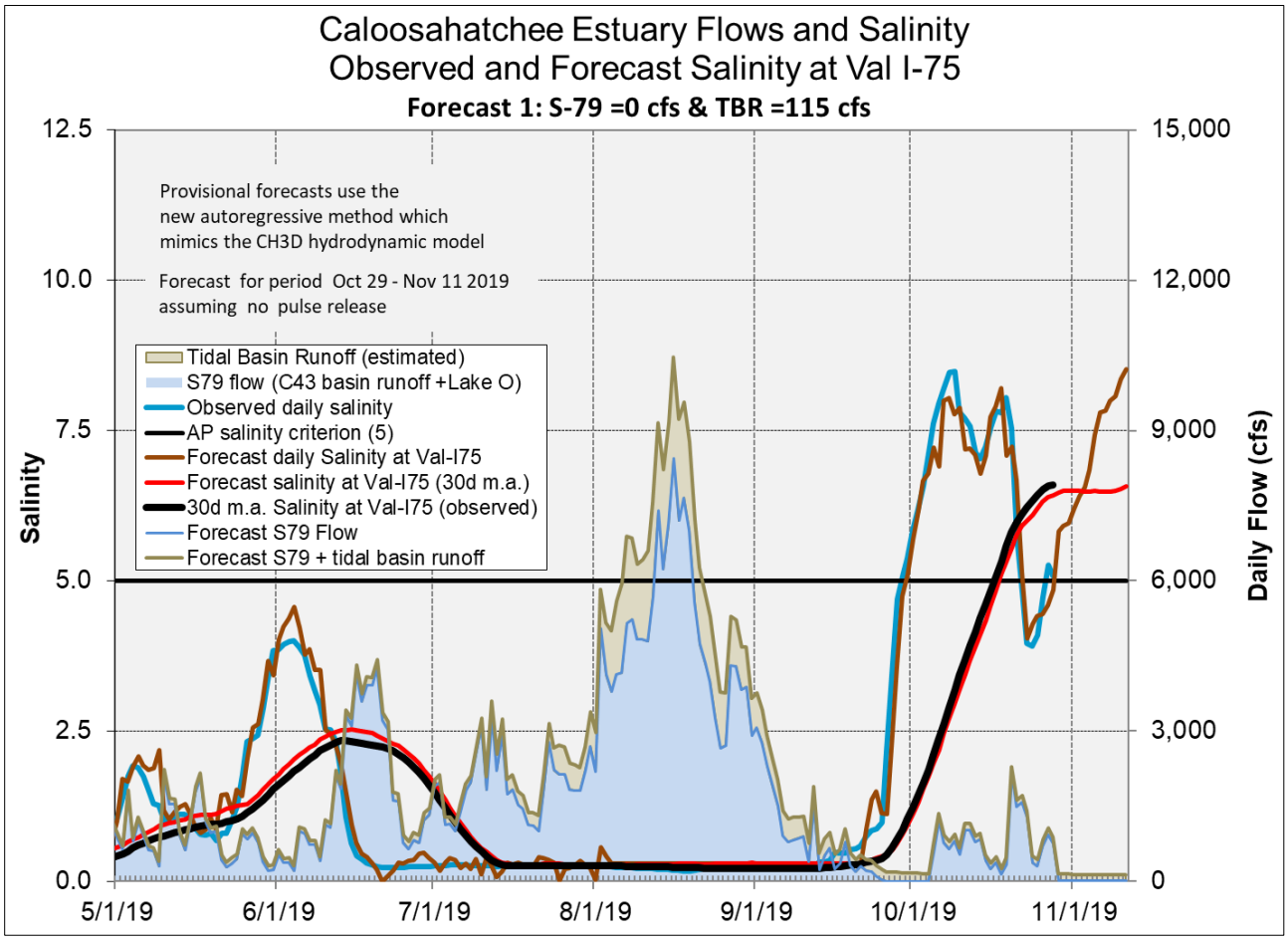
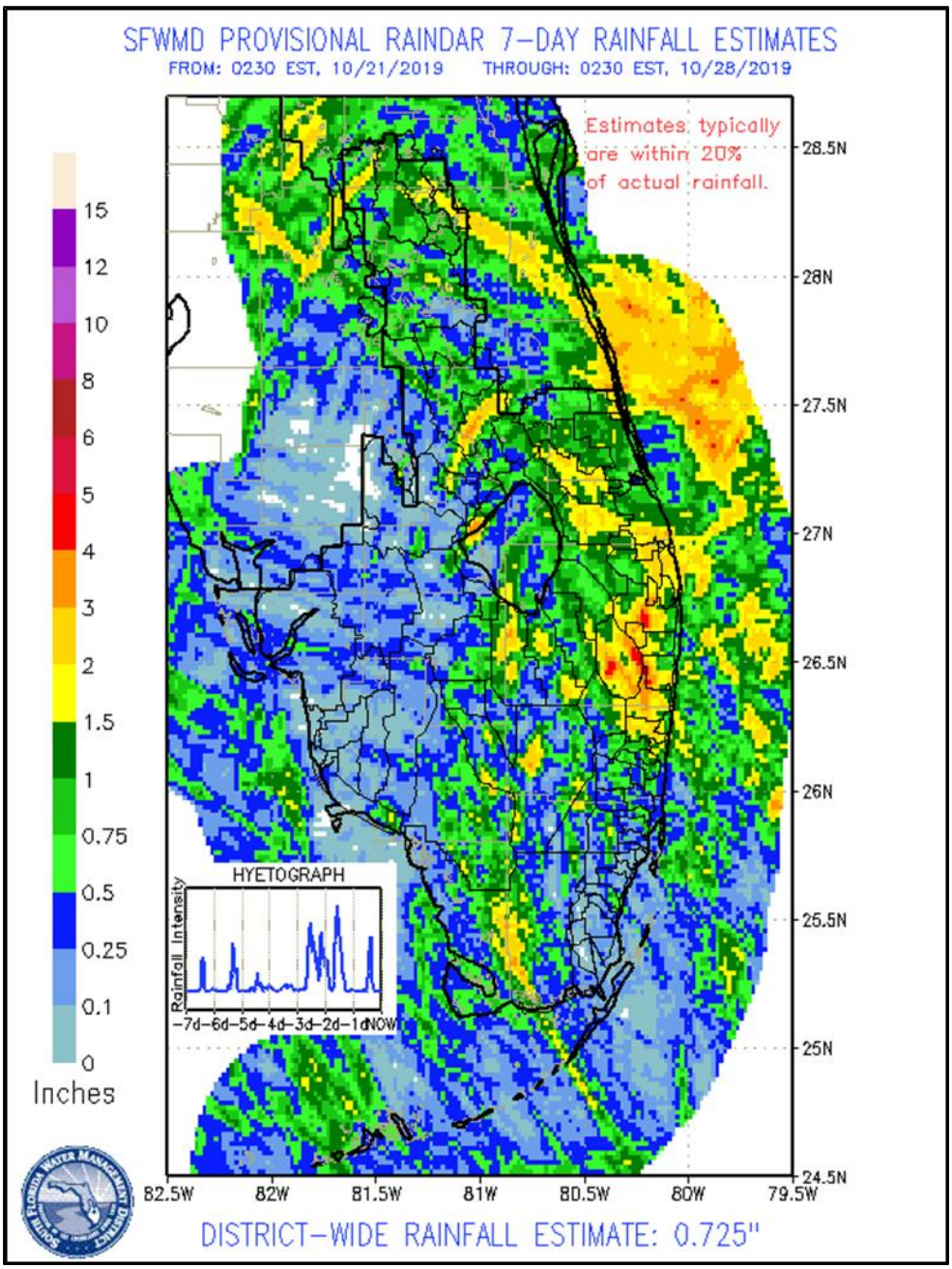


Figure 10. Forecasted Val I-75 surface salinity assuming no pulse release at S-79.

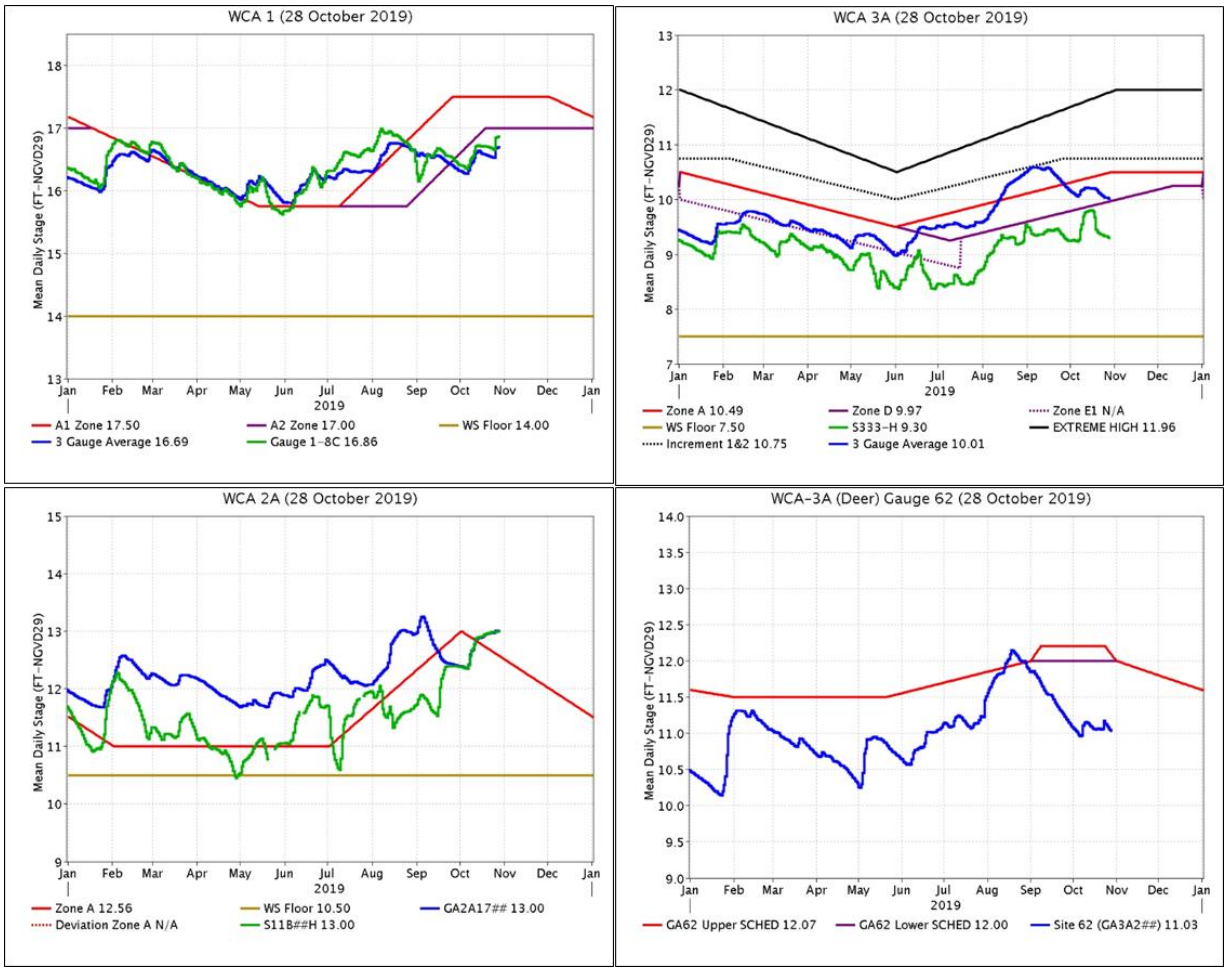
EVERGLADES

Above average precipitation fell in WCA-1 last week. Stages rose in the northern basins and northern Everglades National Park, but fell in NE, central and southern WCA-3A. Pan evaporation was estimated at 1.30 inches and the Rainfall Plan calls for a release of 538 cfs from WCA-3A (a 1000 cfs decrease from last week).

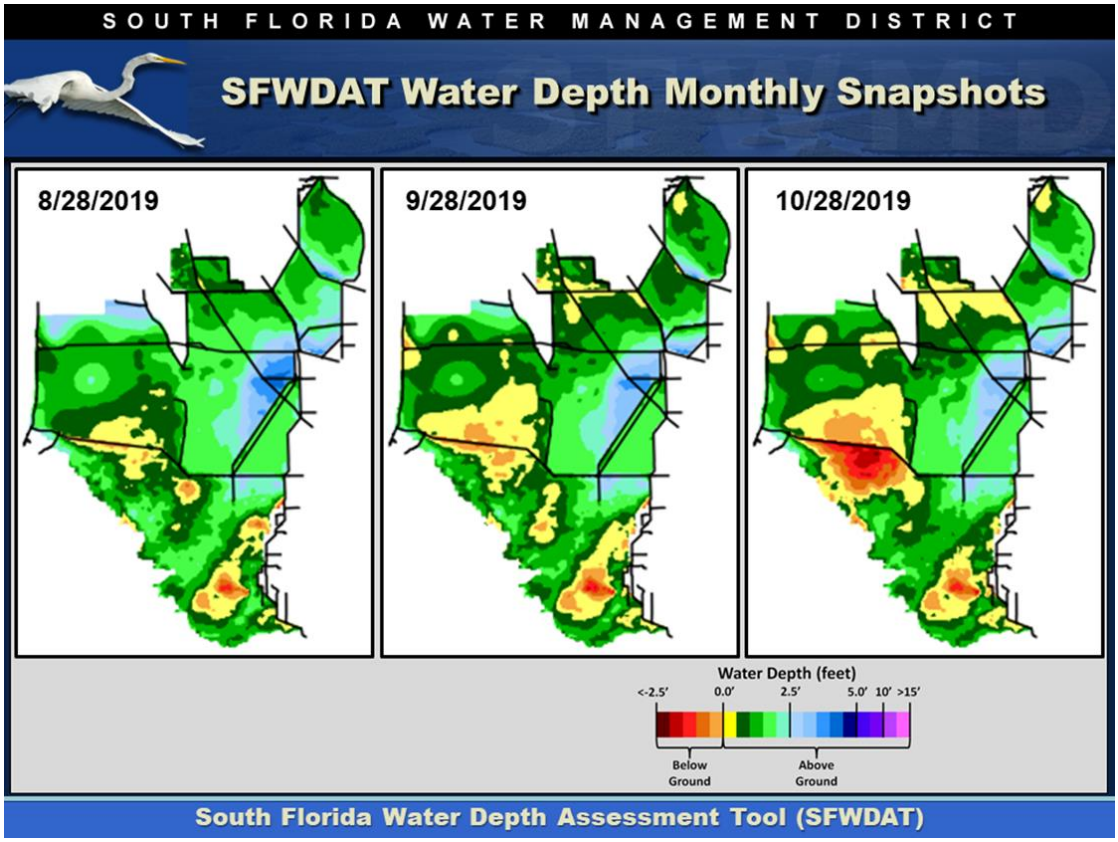
Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	2.42	+0.14
WCA-2A	0.97	+0.05
WCA-2B	0.59	−0.01
WCA-3A	0.68	−0.09
WCA-3B	0.63	−0.03
ENP	0.69	+0.16

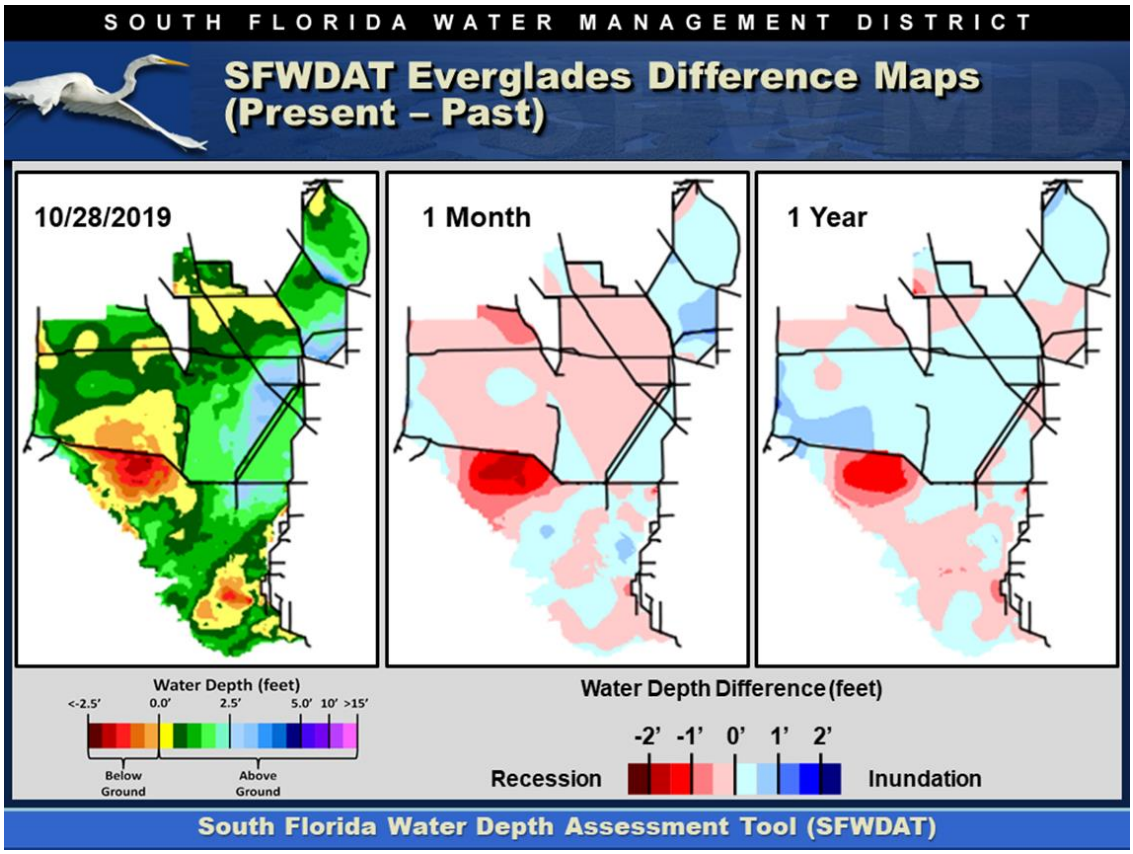


Regulation Schedules: WCA-1: The three-gauge average climbs towards the Zone A2 line, currently at 0.18 feet below. WCA-2A: Gauge 2A-17 continues to rise away from the falling Zone A regulation line now 0.44 above the falling line. WCA-3A: The three-gauge average stage remains in Zone D, currently 0.04 feet above that line. WCA-3A at gauge 62 (northwest corner): stage dropped 0.01 last week and remains well below the lower schedule, currently 0.97 feet below.



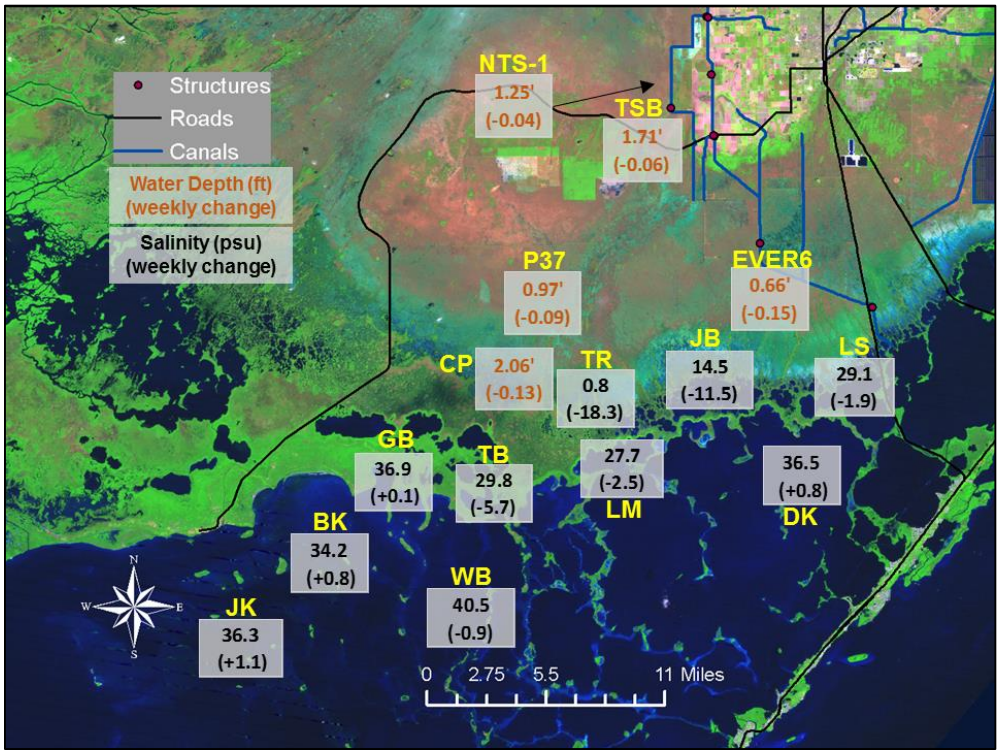
Water Depths and Changes: The WDAT tool for spatial interpolation of depth monthly snapshots indicates depths are at ground surface along the northern half of WCA-3A North and in the extreme north of WCA-1. The spatial extent of the ponding along the L-67 canal in WCA-3A has diminished. Hydrologic connectivity has diminished in Lostman's but remains in Shark River and Taylor Slough. The "bullseye" south of Tamiami Trail is due to sensor/network error. WDAT difference maps indicate that in general conditions are significantly deeper in stage within the eastern portion of WCA-2A compared to a month ago. Most of the change indicated is slight. Compared to one year ago, there is little significant difference in stage across the Everglades.

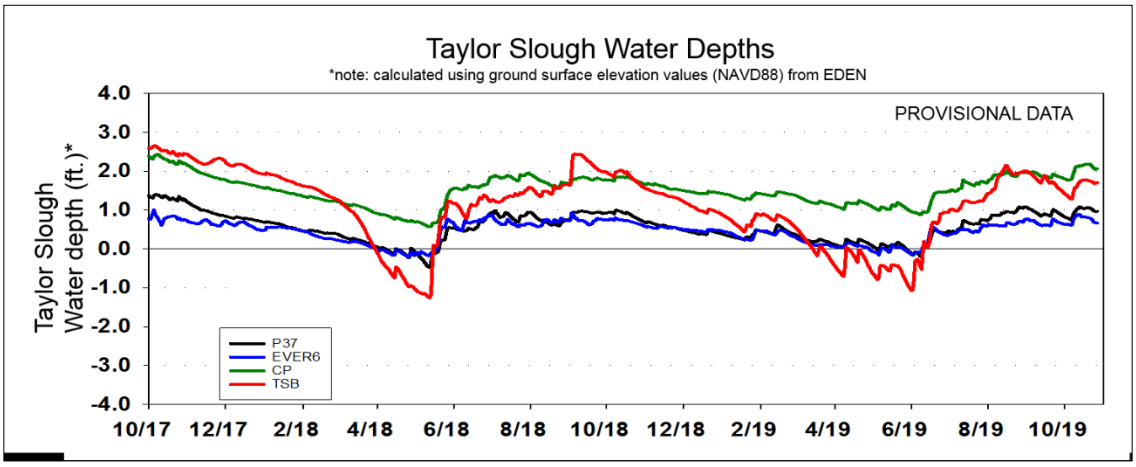

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SFWDAT Water Depth Monthly Snapshots
8/28/2019
9/28/2019
10/28/2019
Water Depth (feet)
<-2.5'
0.0'
2.5'
5.0'
10'
>15'
Below Ground
Above Ground
South Florida Water Depth Assessment Tool (SFWDAT)

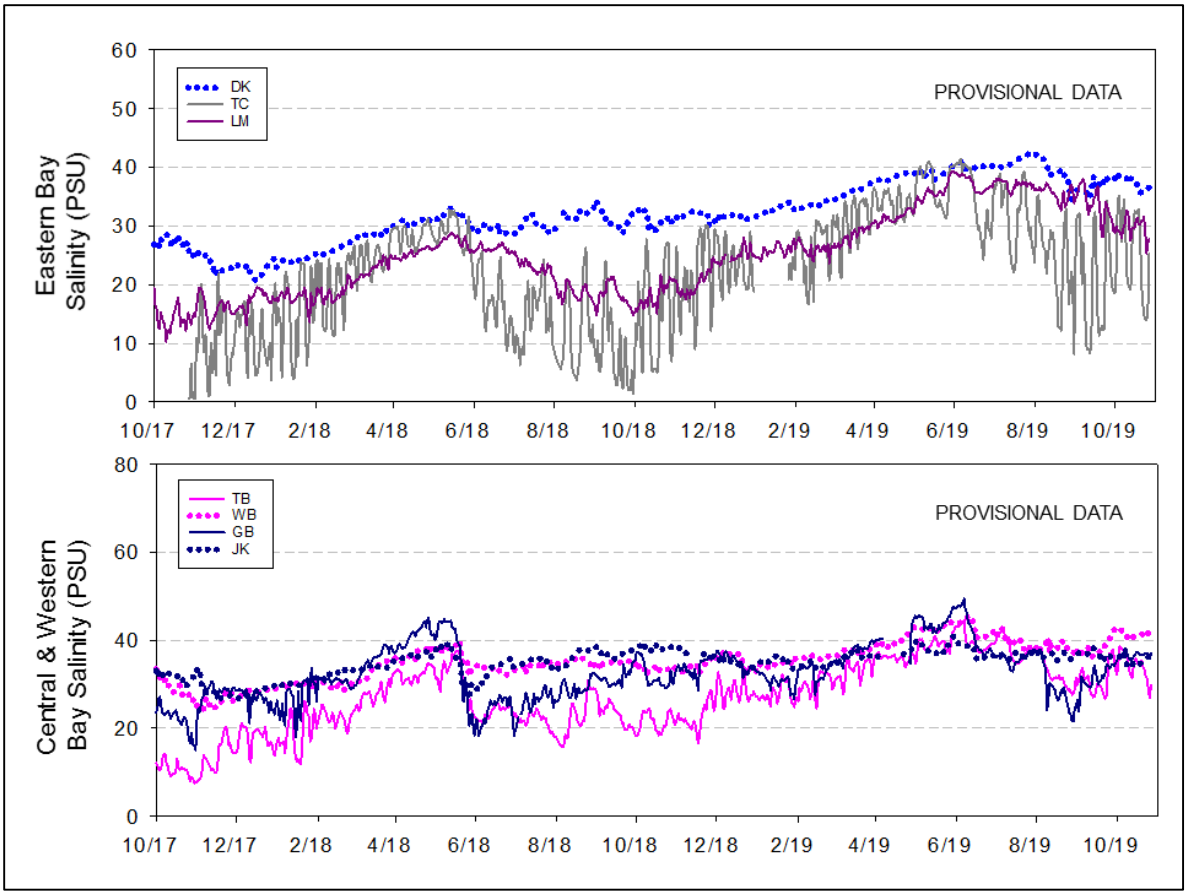

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SFWDAT Everglades Difference Maps
(Present – Past)
10/28/2019
1 Month
1 Year
Water Depth (feet)
<-2.5'
0.0'
2.5'
5.0'
10'
>15'
Below Ground
Above Ground
Water Depth Difference (feet)
-2'
-1'
0'
1'
2'
Recession
Inundation
South Florida Water Depth Assessment Tool (SFWDAT)

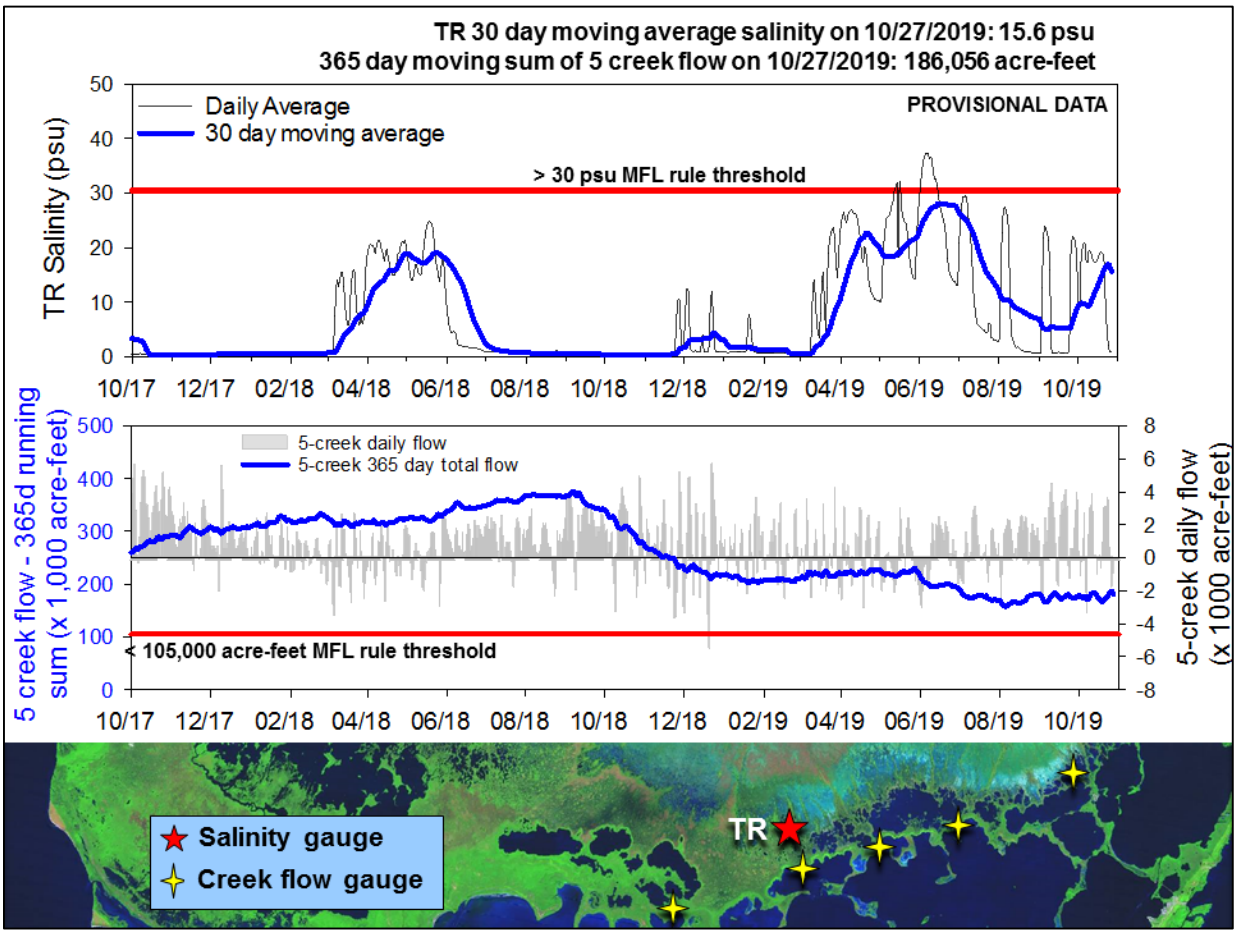
Taylor Slough Water Levels: Rainfall over Taylor Slough and Florida Bay this past week averaged 0.52 inches. Stages decreased an average of 0.09 feet throughout the area with individual stations changing −0.04 feet to −0.15 feet over the week. Stages remain 3 inches above the historical averages for this time of year.

Florida Bay Salinities: Average salinity in Florida Bay was 32 psu, 2 psu lower than last week. Largest changes were at the shoreline due to positive flow of low salinity water resuming. The average for the northern shoreline decreased 3 psu to end at 31 psu, still 12 psu higher than average. Elsewhere in the bay, conditions are still 9 psu above average for this time of year which is rebarbative (synonym for undesirable).






Eastern Bay Salinity (PSU)
DK
TC
LM
PROVISIONAL DATA
60
50
40
30
20
10
0
10/17
12/17
2/18
4/18
6/18
8/18
10/18
12/18
2/19
4/19
6/19
8/19
10/19
Central & Western Bay Salinity (PSU)
TB
WB
GB
JK
PROVISIONAL DATA
80
60
40
20
0


TR 30 day moving average salinity on 10/27/2019: 15.6 psu
365 day moving sum of 5 creek flow on 10/27/2019: 186,056 acre-feet
TR Salinity (psu)
Daily Average
30 day moving average
PROVISIONAL DATA
> 30 psu MFL rule threshold
50
40
30
20
10
0
10/17
12/17
02/18
04/18
06/18
08/18
10/18
12/18
02/19
04/19
06/19
08/19
10/19
5 creek flow - 365d running sum (x 1,000 acre-feet)
5-creek daily flow
5-creek 365 day total flow
< 105,000 acre-feet MFL rule threshold
500
400
300
200
100
0
8
6
4
2
0
-2
-4
-6
-8
5-creek daily flow (x 1000 acre-feet)
Salinity gauge
Creek flow gauge
TR

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) decreased 18 psu over the last week to end at 0.8 psu. The 30-day moving average ended 0.3 psu higher at 15.6 psu but is on a decreasing trend. Weekly flow from the 5 creeks identified by yellow stars on the map totaled about 15,000 acre-feet but negative flows started over the weekend. The 365-day moving sum of flow from the 5 creeks (tracked as part of the Florida Bay MFL criteria) increased roughly 10,500 acre-feet to 186,056 acre-feet and continues to hover under the 25th percentile (190,165 acre-feet). Creek flow are provisional USGS data.

Water Management Recommendations

As the climatological dry season begins, the ecology of the Everglades is eliciting concern, as current stages in the WCAs are low for this time of year and salinities are high in Florida Bay. WCA-3A North has a high potential for good wading bird foraging this year as a fire in that basin, near the Alley North colony, may have opened the sloughs making it easier for wading birds to forage for prey in that critical region but it is drying down early and rapidly. As WCA-2A is above schedule and WCA-3A North is dry, it may be an appropriate time to route water from WCA-2A to MCA-3A through the S-7/S-150 route that has been utilized in the past. Overall conserving water within the WCAs and moving low nutrient water south has water has many ecological benefits. 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. A potential indicator of stress in the Taylor Slough mangrove zone is the minimum that the 30-day moving average salinity reaches during the peak of the wet season; compared to salinities of one and two years ago current conditions are elevated. More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

SFWMD Everglades Ecological Recommendations, October 29th, 2019 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage increased by 0.14'	Conserving water in this basin has ecological benefit as we near the seasonal peak for water depths.	Protect tree islands, upstream/downstream habitat and wildlife.
WCA-2A	Stage decreased by 0.05'	Conserving water in this basin has ecological benefit as we near the seasonal peak for water depths.	Protect tree islands, upstream/downstream habitat and wildlife.
WCA-2B	Stage decreased by 0.01'	Conserving water in this basin has ecological benefit as we near the seasonal peak for water depths.	Protect tree islands, upstream/downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.10'	Conserving water in this basin has ecological benefit as we near the seasonal peak for water depths.	Protect tree islands, upstream/downstream habitat and wildlife.
WCA-3A NW	Stage decreased by 0.01'	Conserving water in this basin has ecological benefit as we near the seasonal peak for water depths.	
Central WCA-3A S	Stage decreased by 0.11'	Conserving water in this basin has ecological benefit as we near the seasonal peak for water depths. Moderating any stage change this week to less than + or - 0.25' this week would have ecological benefit	Protect tree islands, upstream/downstream habitat and wildlife.
Southern WCA-3A S	Stage decreased by 0.15'		
WCA-3B	Stage decreased by 0.03'	Conserving water in this basin has ecological benefit as we near the seasonal peak for water depths.	Protect tree islands, upstream/downstream habitat and wildlife.
ENP-SRS	Stage increased by 0.16'	Make discharges to the Park according to the 2012 WCP rainfall plan.	Protect upstream/downstream habitat and wildlife.
Taylor Slough	Stage changes ranged from −0.04 to −0.15'	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged −11.5 to +1.1 psu	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.