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, Chief, Engineering and Construction Bureau
Paul Linton, Administrator, Water Control Operations Section

FROM: SFWMD Staff Environmental Advisory Team

DATE: March 14, 2017

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Area weather is turning cool and dry. The tail end of a cold front will move through the southern portion of the District this morning with limited light shower activity. Drier and cooler conditions will then spread over the area and a reinforcing dry front will move through on Wednesday continuing the dry, cool conditions through the coming weekend. A second mostly dry front is forecast to move through the District Sunday. In the extended forecast, the next meaningful rainfall should be associated with a cold front by the end of next week.

Kissimmee

On Sunday, stage was 1.2 feet below regulation schedule in East Lake Toho and Lake Toho, and 1.0 feet below schedule in Kissimmee-Cypress-Hatchineha. Over the past week, discharge at S65, S65A, and S65E averaged 899, 705, and 737 cfs, respectively. Tuesday morning discharges were ~894 cfs, and 716 cfs, and 879 cfs respectively, at S65, S65A, and S65E. Dissolved oxygen data in the Kissimmee River averaged 9.3 mg/L over the past week. Kissimmee River mean floodplain depth on Sunday was 0.14 feet. There are no new recommendations.

Lake Okeechobee

As of midnight March 12, 2017, Lake stage was 13.08 feet NGVD and in the Base flow sub-band. The projected monthly recession rate of 0.80 feet is well above the recommended 0.50 feet per month or lower guideline. A too rapid decrease in Lake levels may jeopardize the upcoming nesting season by drying out foraging locations near the colonies and lowering water levels under nests and therefore allowing increased risk of predation. The goal should be to slow the current recession rate and maintain it at below 0.50 feet per month. Satellite imagery from a higher resolution sensor (OLCI) aboard the Sentinel 3a satellite is now available which would improve detection of algal bloom potential. The most recent imagery from this new OLCI sensor indicates low bloom potential.

Estuaries

Total discharge to the St. Lucie estuary averaged 133 cfs over the past week with no flow from Lake Okeechobee. Salinities throughout the estuary were similar to last week's values. The seven-day average salinity at the US1 Bridge is in the fair range for adult oysters. Total inflow to the Caloosahatchee estuary averaged 820 cfs over the past week with 581 cfs (71%) coming from the Lake. The 30-day average surface salinity at the Ft. Myers monitoring station is 9.7 PSUs and has been below 10 PSUs for the past 19 days. The 30-day average surface salinity at Val I-75 is 2.9 PSUs. Salinity conditions between Val I-75 and Ft. Myers are improving but when salinity is in excess of 10 psu there may be impacts to tape grass.

The next sampling is planned for this month. Salinity conditions are in the good range for adult oysters at the Cape Coral Bridge and Shellpoint, while in the fair range at the Sanibel Causeway. The 30-day moving average salinity at the I-75 Bridge is forecast to be 4.8 PSUs in the next two weeks if no flow comes through the S-79 structure; however, daily salinity is forecast to reach 7.0 PSUs. Therefore, it is recommended that runoff from the C-43 basin be supplemented with Lake Okeechobee water as a pulsed release of up to 650 cfs through S-79.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 5,400 acre-feet of Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2017 (since May 1, 2016) is approximately 197,400 acre-feet. Most STA cells are at or near target depths, except STA-5/6 emergent aquatic vegetation cells which are drying out. Operational restrictions are in place for structure repairs and vegetation rehabilitation in STA-1E and construction activities in STA-1W. This week, if Lake releases are sent to the WCAs and the conditions allow, releases will be sent to STA-2 and STA-3/4.

Everglades

Water levels across the Everglades decreased at a recession rate which, while categorized as "fair" based on general seasonal criteria, based on current water depths, suggest that faster than – 0.07 feet per week may dry out all areas before the end of the breeding season. Currently, tens of thousands of wading birds are nesting in the Everglades with large numbers of ibises and smaller herons expected to start in the next week or two. If the current inflows need to be reduced, it is recommended to continue flows into WCA-2A versus 3A. There are no other new recommendations; more specific recommendations are included in a table at the end of this report.

Florida Bay water levels decreased again this week, with the largest decrease in Northern Taylor Slough, as is typical for this time of year. Water levels range from -5 inches below average in Northern Taylor Slough to one inch above average in Southern Taylor Slough. The upstream flows started again last week causing salinities near the shoreline to increase 4 to 9 PSUs over the last week's values. Current salinities are +1 to +6 PSUs above average with the highest divergence in western nearshore area. The 365-day moving sum of flow from the five creeks decreased about 3,000 acre-feet to end at 241,486 acre-feet, which is below the long-term average of 257,628 acre-feet.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.12 inches of rainfall in the past week and the Lower Basin received 0.17 inches (SFWMD Daily Rainfall Report 03/13/2017).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in Table1.

Table 1. Departures from KCOL flood regulation (F) or temporary schedules (T, A, or S) (feet NGVD). Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **3/14/2017**

Water Body	Structure/Site	Discharge (cfs), week's average**	Stage Monitoring Site***	Lake Stage (feet)	Schedule*	Regulation (R) or Target (S or T) Stage (feet)	Daily Departure (feet)						
							3/12/17	3/5/17	2/26/17	2/19/17	2/12/17	2/5/17	1/29/17
Lakes Hart and Mary Jane	S62	0	LKMJ	60.6	R	61.0	**-0.4**	-0.4	-0.2	-0.2	0.0	-0.1	0.0
Lakes Myrtle, Preston, and Joel	S57	0	S57	60.9	R	60.9	**0.0**	0.0	0.0	0.0	0.0	0.0	-0.1
Alligator Chain	S60	0	ALLI	63.1	R	64.0	**-0.9**	-0.8	-0.7	-0.7	-0.7	-0.7	-0.6
Lake Gentry	S63	5	LKGT	61.1	R	61.5	**-0.4**	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1
East Lake Toho	S59	61	TOHOE	56.8	R	58.0	**-1.2**	-1.1	-0.8	-0.8	-0.5	-0.3	-0.1
Lake Toho	S61	168	TOHOW, S61	53.8	R	55.0	**-1.2**	-1.1	-0.8	-0.8	-0.6	-0.3	-0.1
Lakes Kissimmee, Cypress, and Hatchineha	S65	899	LKISSP, KUB011, LKIS5B	50.0	R	51.0	**-1.0**	-0.7	-0.8	-1.1	-1.4	-1.8	-2.0

* T = temporary schedule, R = USACE flood control schedule, S = temporary snail kite schedule, A = projected ascension line, N/A= not applicable or data not available.

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

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

DATA ARE PROVISIONAL

Lower Kissimmee Basin

Discharges and stages at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 12. Kissimmee River floodplain stages at selected stations are shown in Figure 13.

Table 2. Mean weekly discharge at S-65x structures, and mean weekly Phase I area river channel dissolved oxygen and floodplain mean water depth. Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **3/14/2017**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			3/12/17	3/5/17	2/26/17	2/19/17	2/12/17	2/5/17	1/29/17	1/22/17	1/15/17	1/8/17
Discharge (cfs)	S-65	891	**899**	877	732	710	507	482	465	473	475	487
Discharge (cfs)	S-65A	702	**705**	682	569	550	387	378	368	364	368	461
Discharge (cfs)	S-65D****	754	**685**	721	688	540	538	730	1274	1292	1268	1293
Discharge (cfs)	S-65E****	823	**737**	769	744	597	523	513	398	386	375	452
DO concentration (mg/L)***	Phase I river channel	10.73	**9.31**	8.05	7.66	8.26	8.96	8.54	8.13	7.97	7.94	7.12
Mean depth (feet)*	Phase I floodplain	0.14	**0.12**	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.07	0.07

* 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).

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

*** DO is the average for PC62 and PC33 .

**** S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2; S65E discharge combines S65E and S65EX1.

DATA ARE PROVISIONAL; N/A indicates that data were not available.

Water Management Recommendations

Kissimmee Basin Adaptive Recommendations and Operational Actions

Date	Recommendation	Purpose	Outcome	Source
3/14/2017	No new recommendations.			
3/7/2017	No new recommendations.			
2/22/2017	Increase discharge at S65 to establish and maintain a stage recession on KCH to reach low pool (49 ft) by May 1, as possible subject to rainfall and construction needs. Maintain 49 ft or lower for the month of May as possible.	Wet season storage, aquatic plant management.		KB Operations.
2/21/2017	No new recommendations.			
2/14/2017	Increase S65 and S65A discharge by 200 cfs.	Allow stage to decline in KCH.		SFWMD Water Management /KB Ops
2/7/2017	No new recommendations.			
1/25/2017	Make releases from East Lake Tohopekaliga and Lake Tohopekaliga to achieve a recession rate of 0.2 feet per week. Releases will not be made to compensate for direct rain on the lakes, but adjustments may be made for changes in inflow to maintain the 0.2 feet per week recession rate to the extent available capacity in Lake Kissimmee allows.	To prepare for the 2017 wet season, facilitate the ongoing Kissimmee River Restoration Construction (backfilling of the C-38), and provide more desirable recession rates for East Lake Tohopekaliga and Lake Tohopekaliga, the SFWMD will follow the below guiding criteria to the extent it does not conflict with other water related needs (e.g. Kissimmee River Flows, Kissimmee River Restoration Construction, and flood control).		SFWMD Water Management Section/KB Ops
1/24/2017	No new recommendations.			
1/17/2017	No new recommendations.			
1/10/2017	No new recommendations.			
12/2/2016-1/3/2017	Reduce discharge at S65 to minimum (300 cfs +/- 50 cfs) using the table in Figure 8a. Continue reducing headwater stage at S65C at a rate of ~1 ft/week through mid-January per request from USACE.	To facilitate KRRP construction in Pool BC.	Implemented	USACE/WCO/ KB Ops
12/20/2016	No new recommendations.			
12/13/2016	No new recommendations.			
12/6/2016	No new recommendations.			
11/29/2016	No new recommendations.			
11/22/2016	No new recommendations.			
11/15/2016	No new recommendations.			
11/8/2016	No new recommendations.			
10/25/2016	Allow S65C headwater stage to decline to approximately 33 feet NGVD over the next few days.	To help reduce stage in Pool C to facilitate MacArthur Ditch backfilling	Implemented	USACE/ KB Ops
10/24/2016	No new recommendations.			
10/17/2016	Temporarily reduce discharge at S65A to 700 cfs following the discharge rampdown schedule in Figure 8a.	To facilitate MacArthur Ditch backfilling over the next 2-3 weeks.	Implemented	KB Operations
10/10/2016	No new recommendations.			
10/3/2016	No new recommendations.			

KCOL Hydrographs (through Sunday midnight)

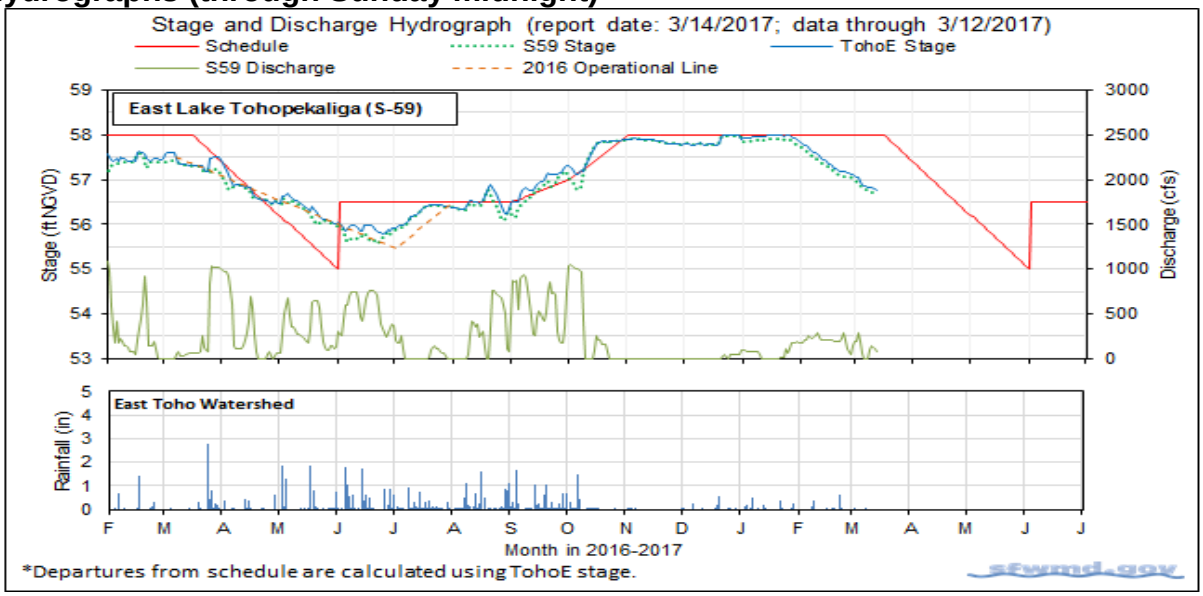


Figure 1.

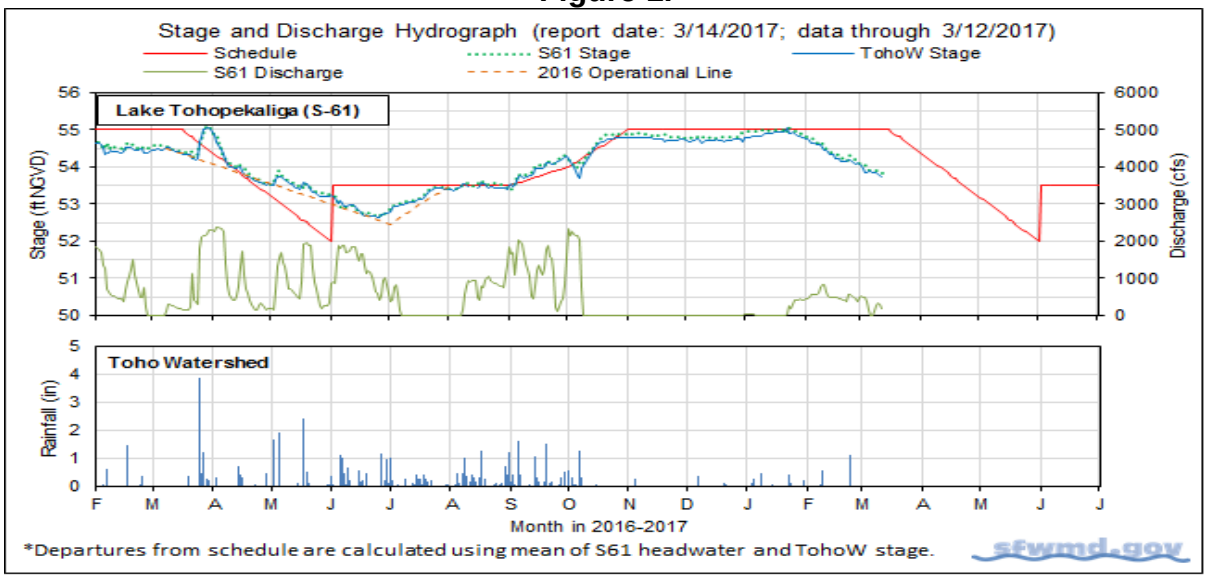
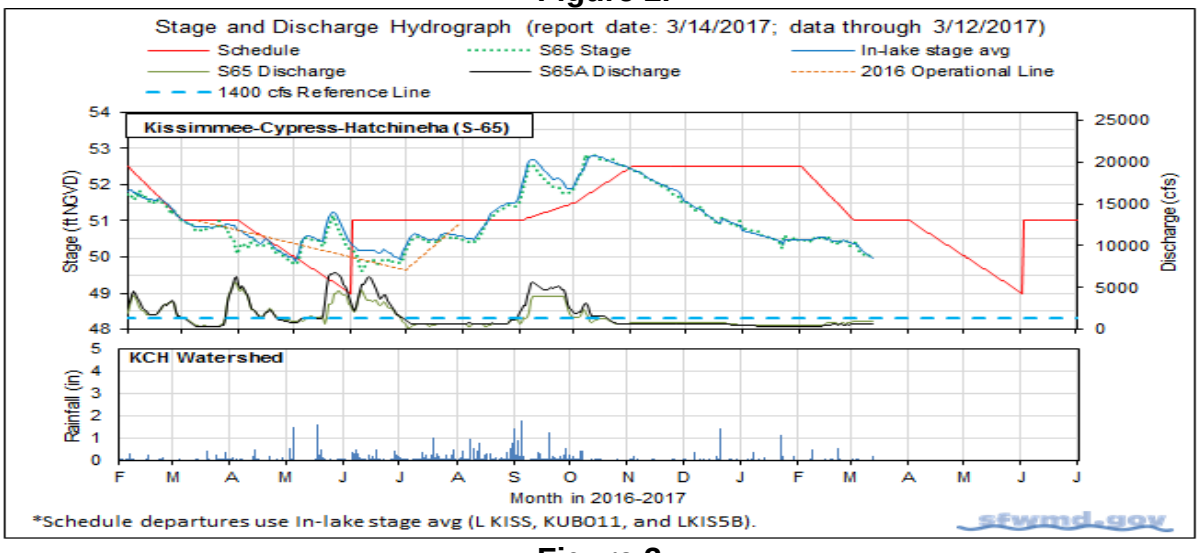


Figure 2.



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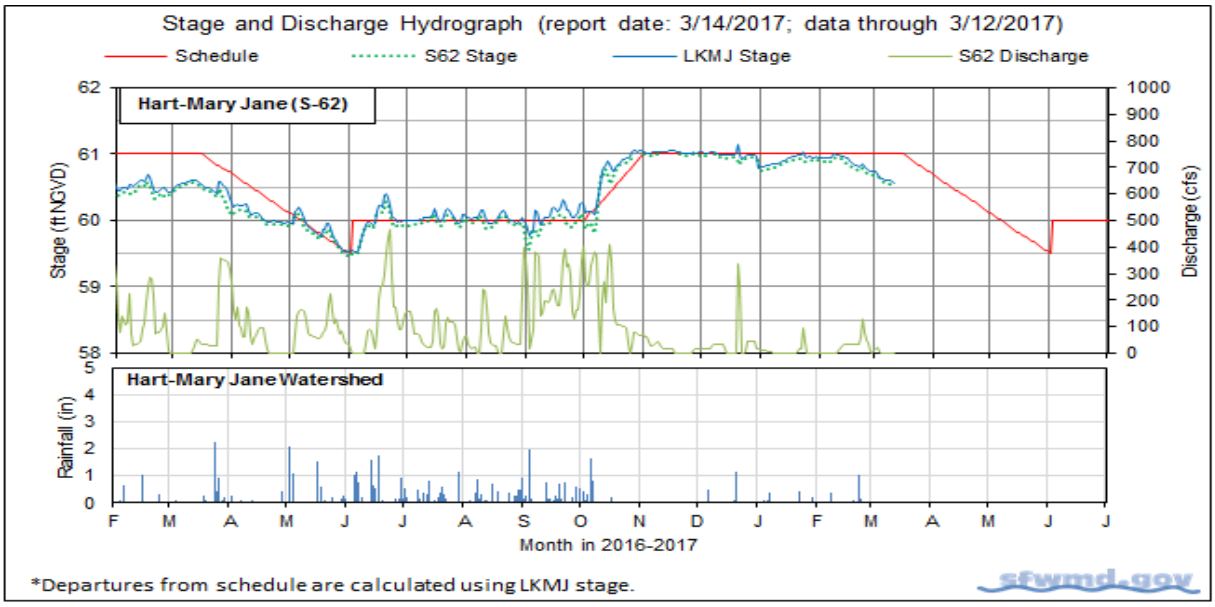


Figure 4.

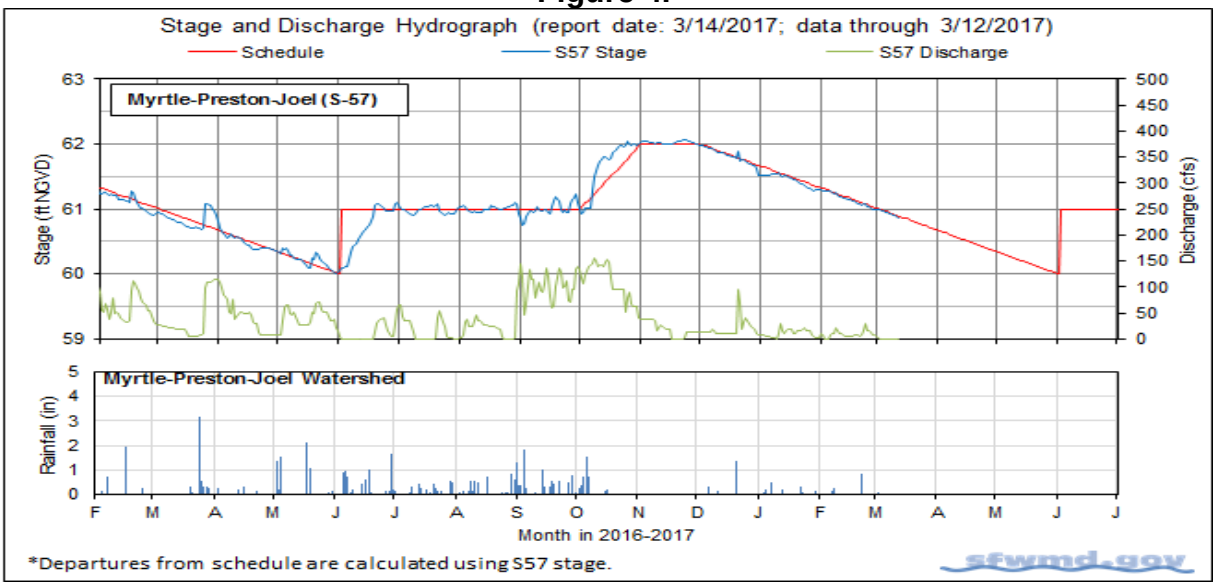


Figure 5.

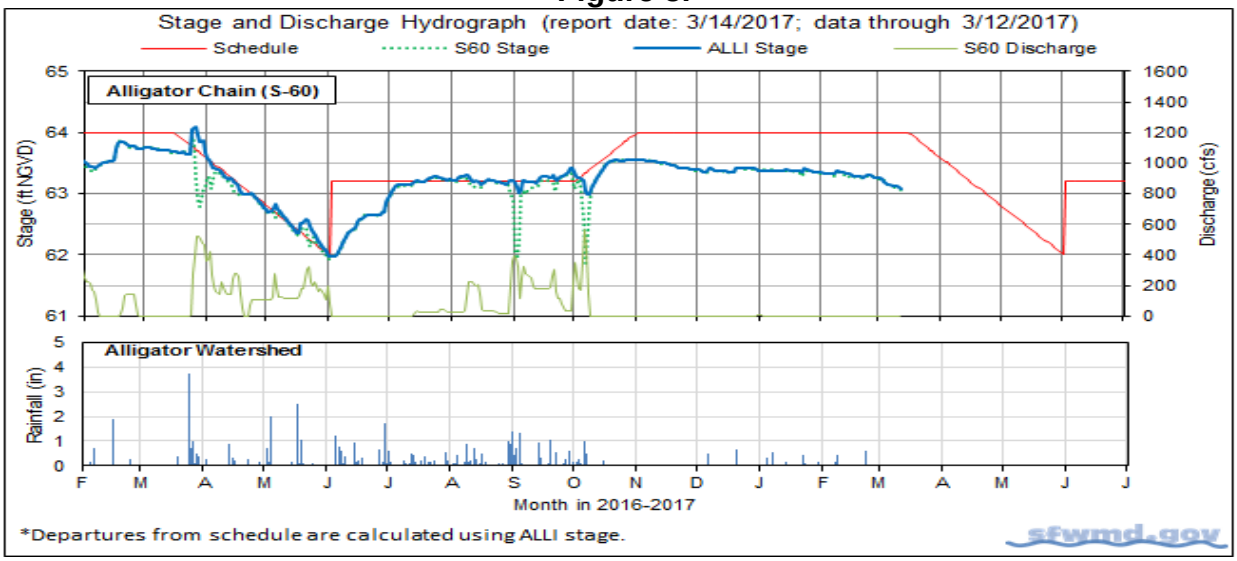


Figure 6.

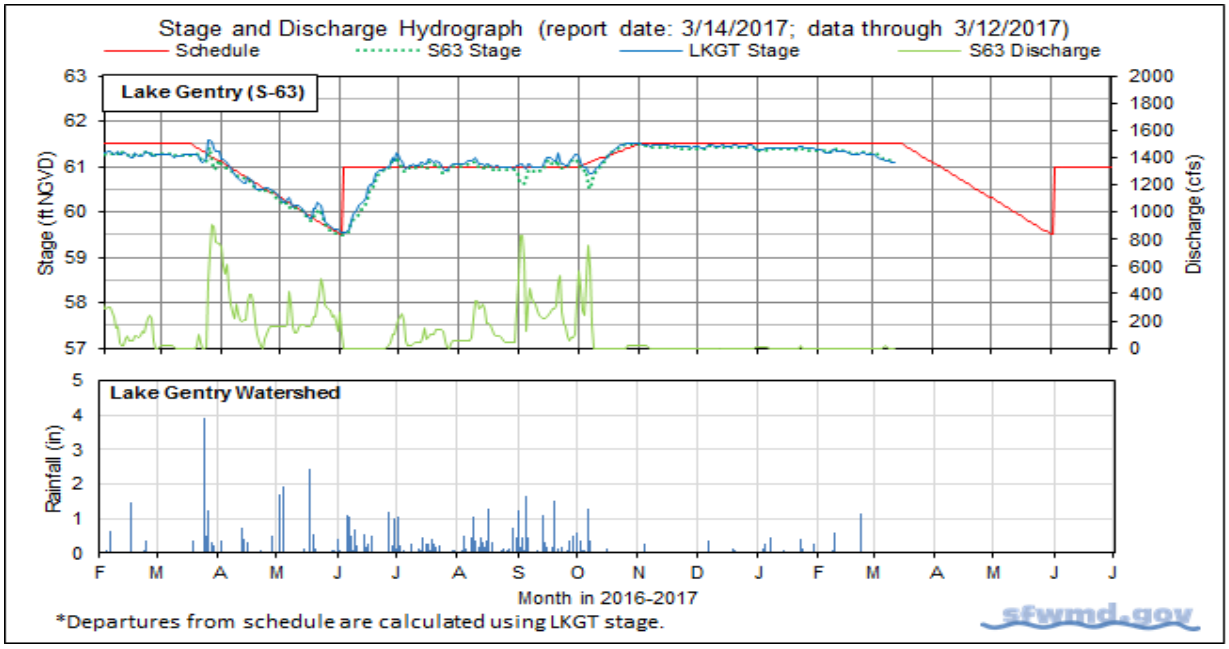


Figure 7.

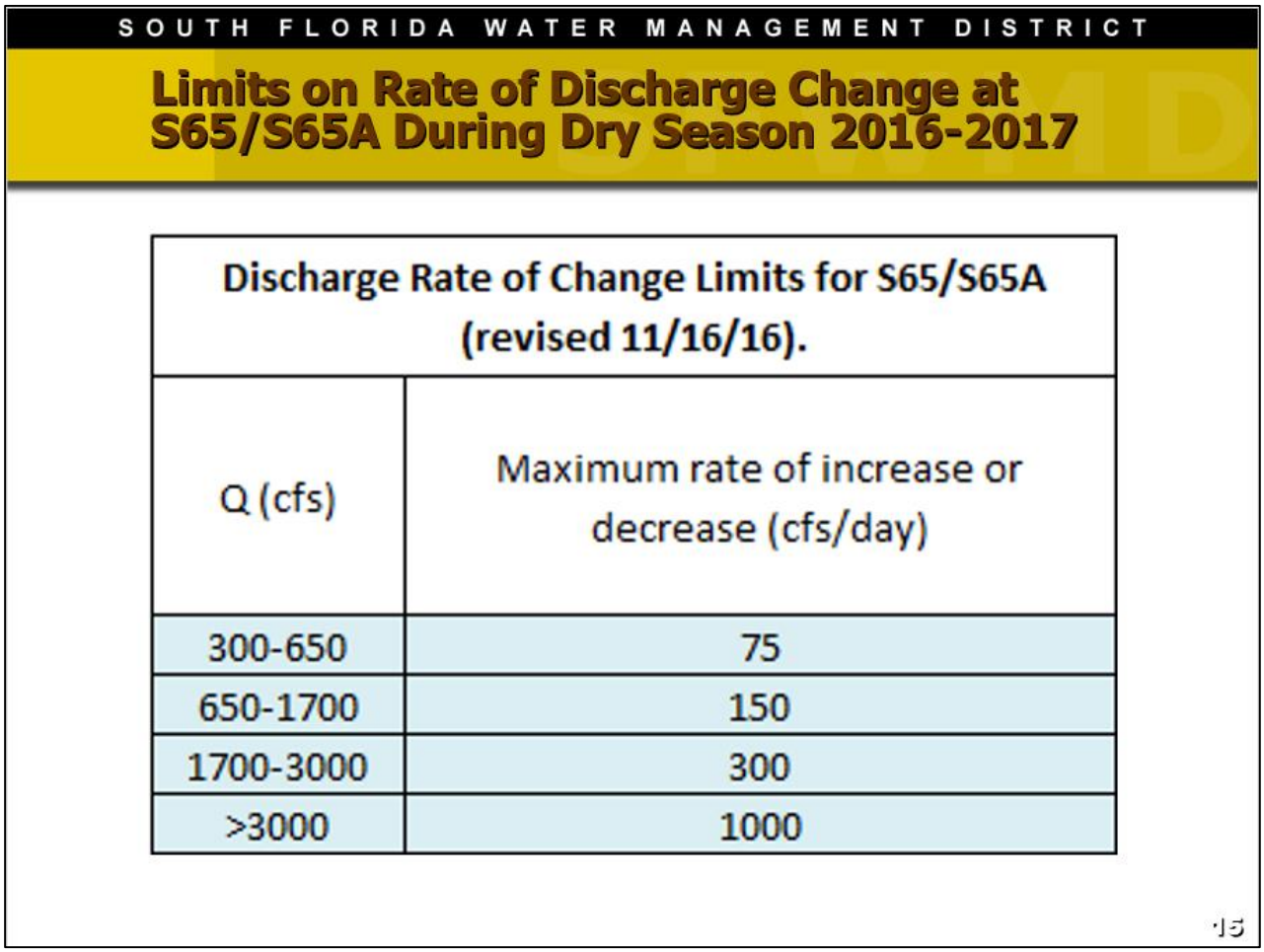


Figure 8. Limits on rate of discharge change at S65/S65A for the 2016-2017 Dry Season.

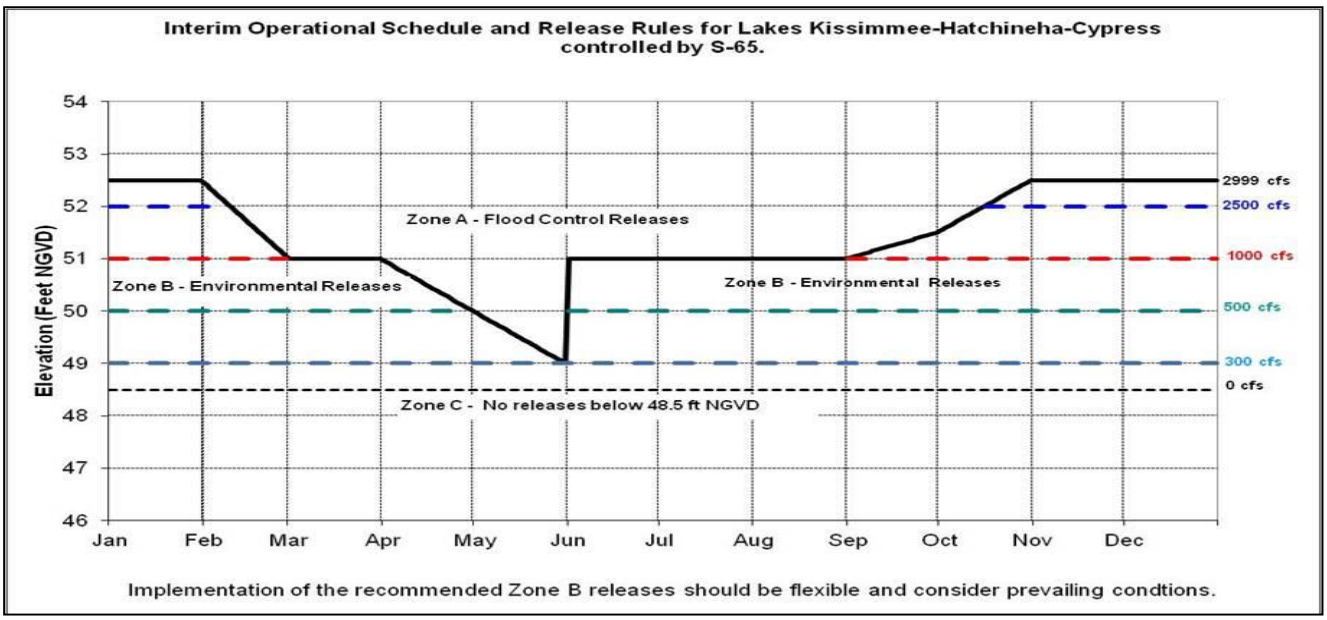


Figure 9. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

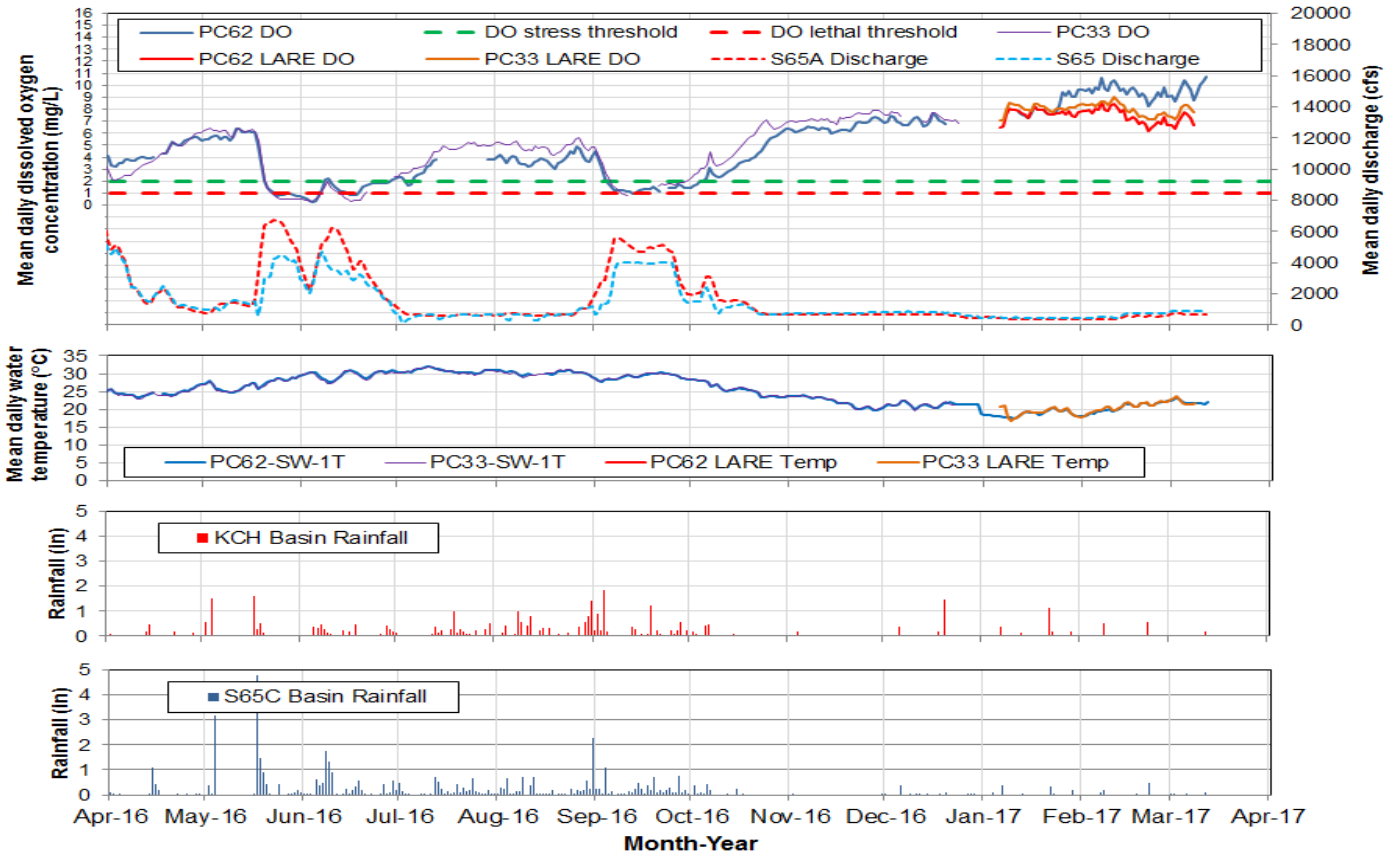


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

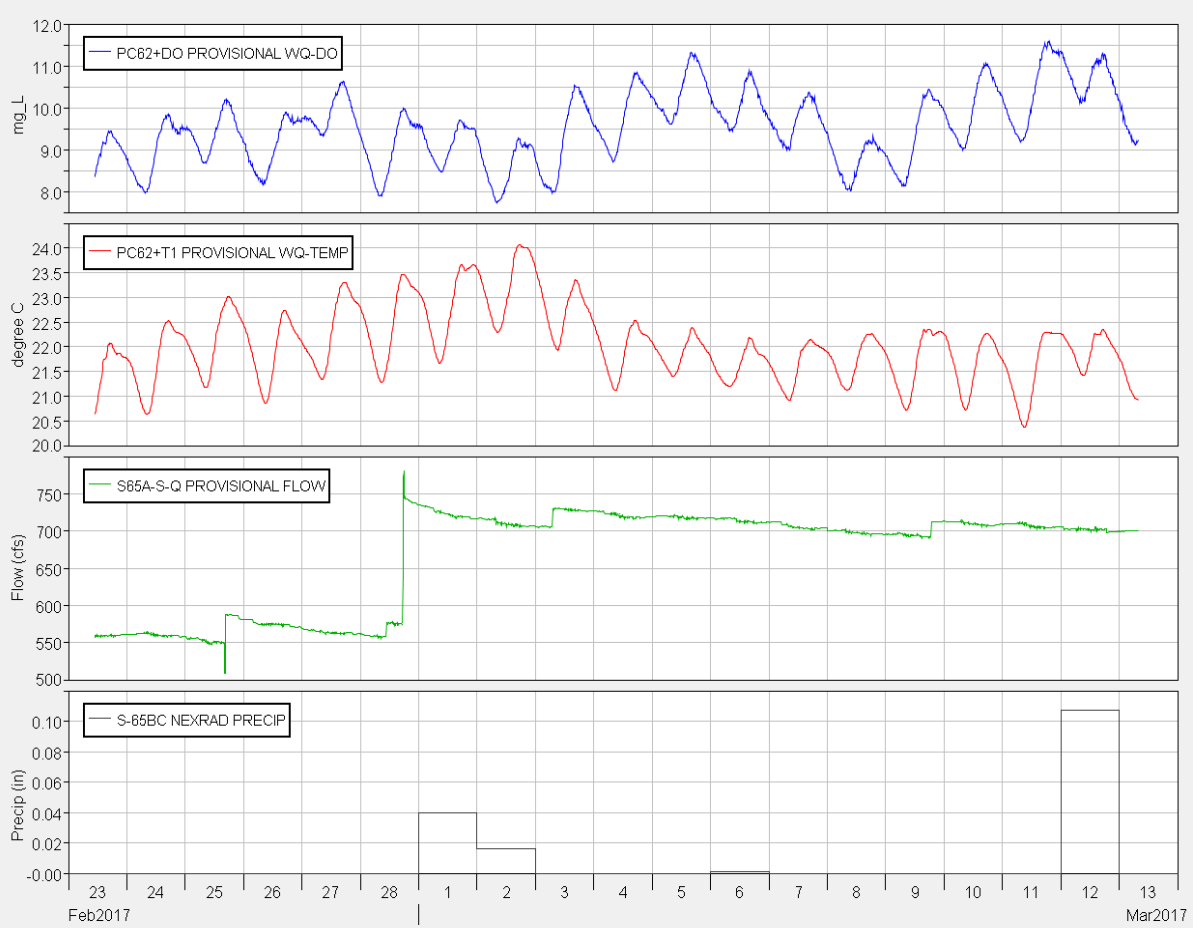


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

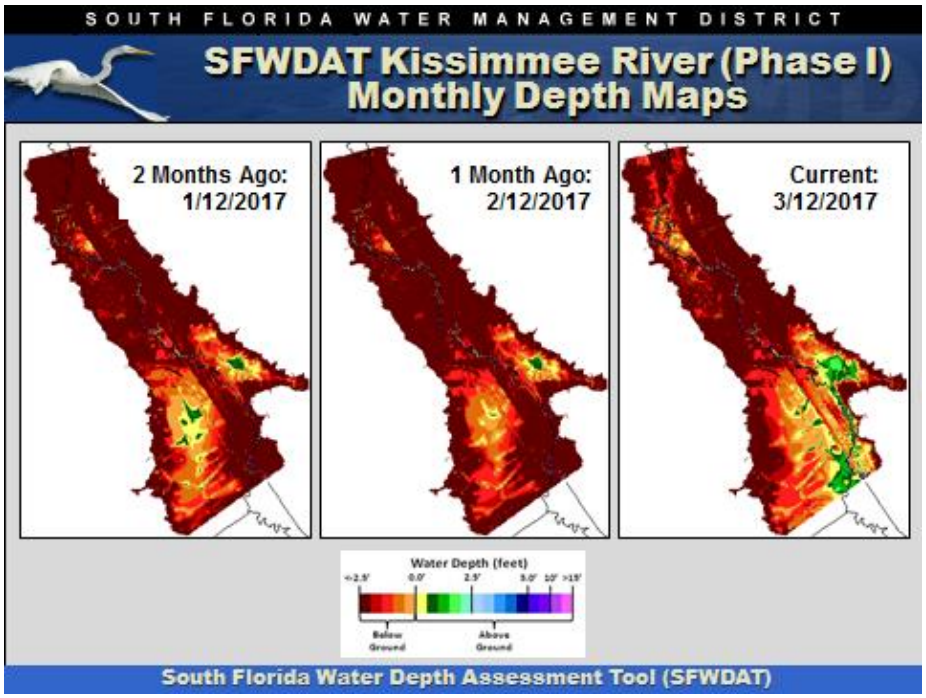
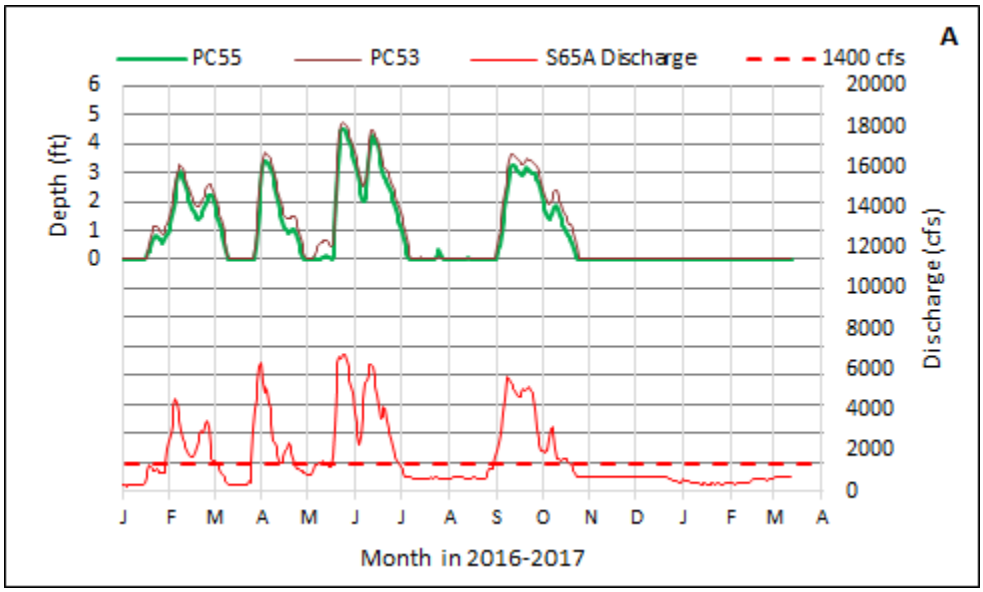
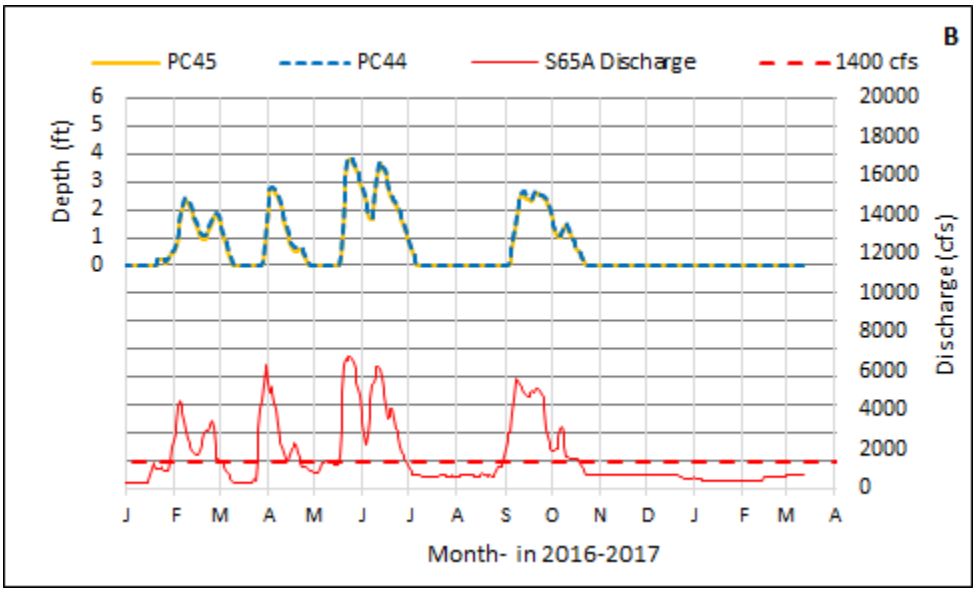


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.





Insert. Water depth at selected northern Kissimmee River floodplain sites on (A) the PC5's transect and (B) the PC4's transect, with S65A discharge.

Kissimmee River Hydrographs

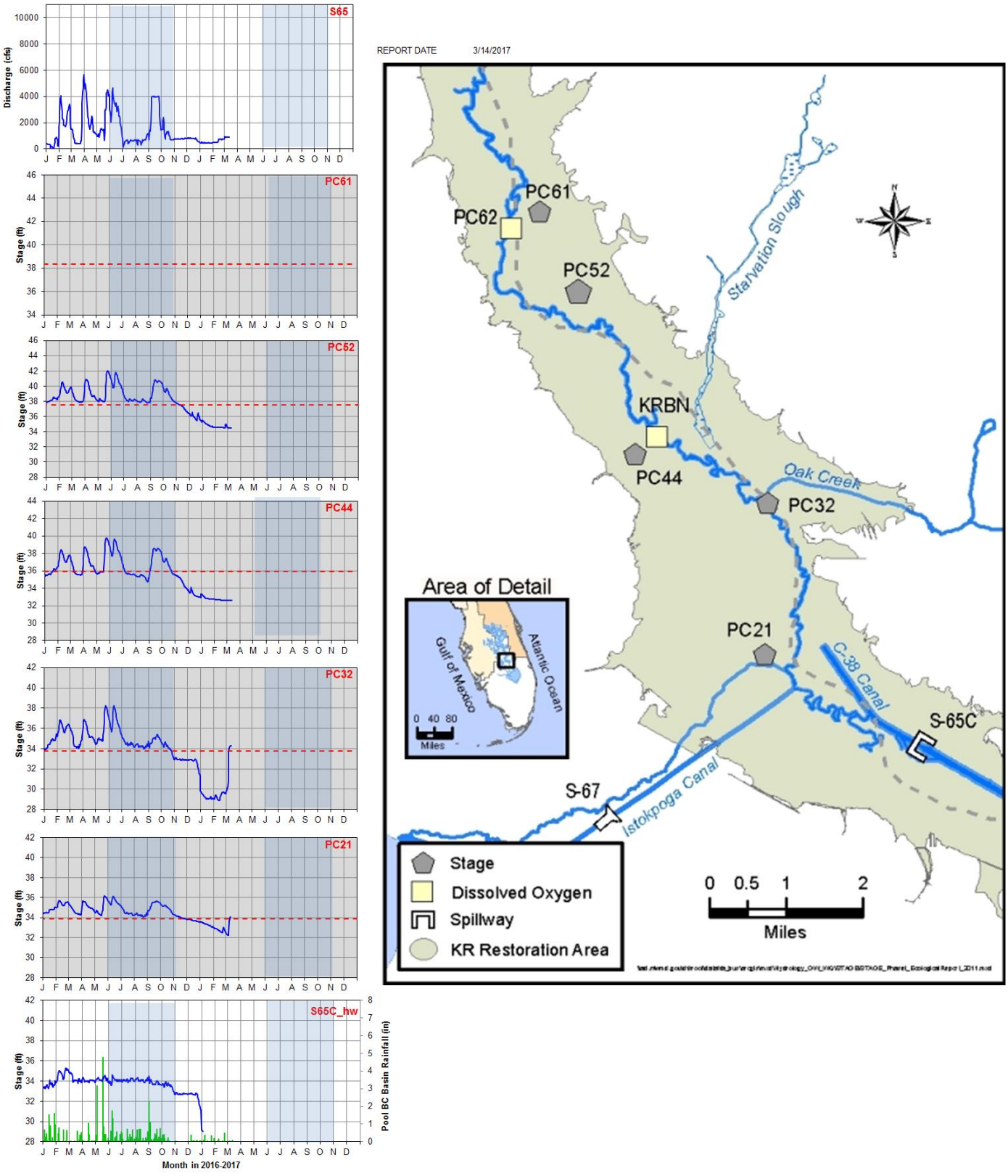


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated). Dashed lines are ground elevations.

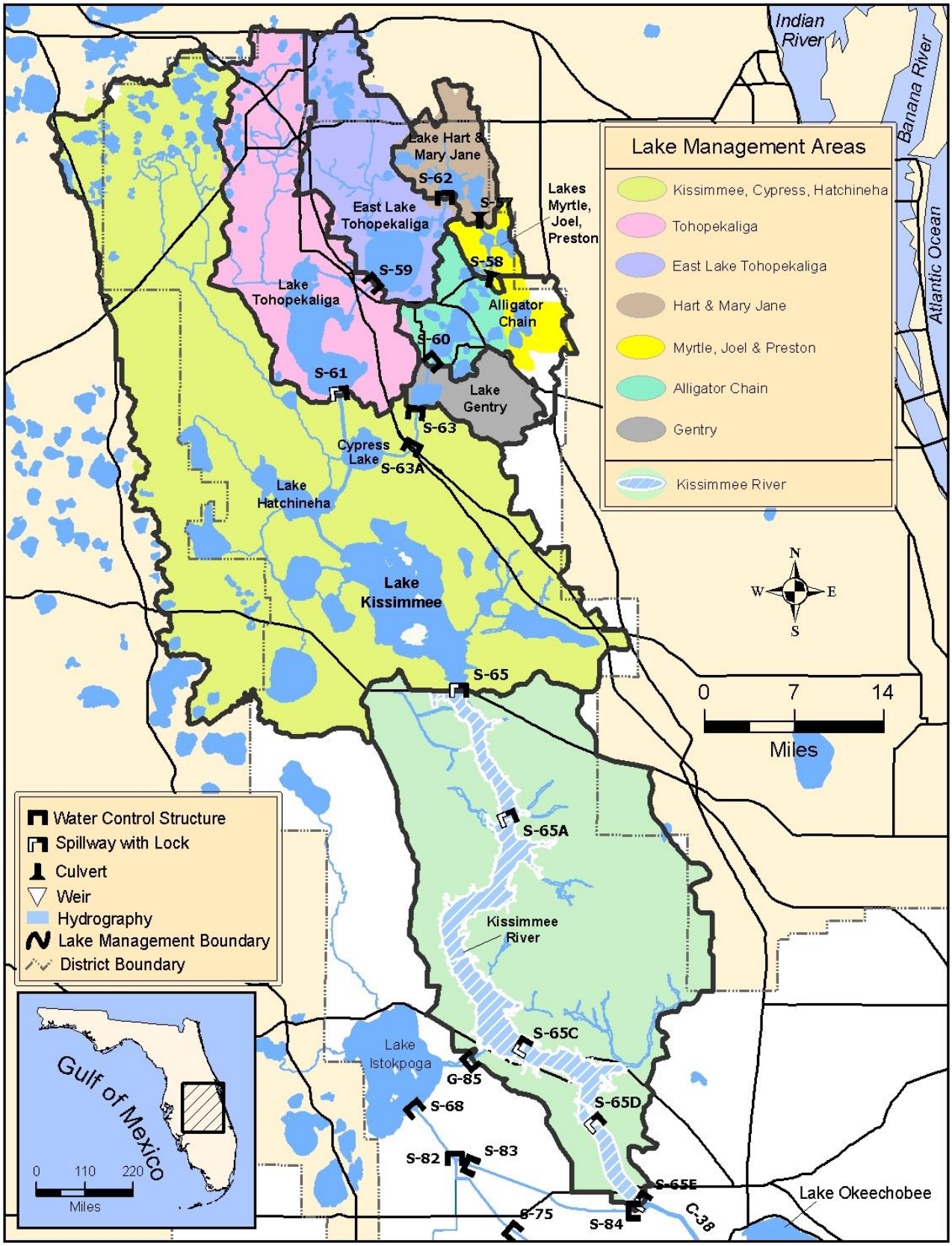


Figure 14. The Kissimmee Basin

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 13.08 feet NGVD for the period ending at midnight on March 12, 2017. This value is based on the use of four interior Lake stations (L001, L005, L006, and LZ40) and three perimeter stations (S352, S4 and S133). Lake stage decreased by 0.20 feet over the past week and is 0.66 feet lower than it was a month ago and 2.39 feet lower than it was a year ago (Figure 1). The Lake is currently in the Base flow sub-band (Figure 2). According to RAINDAR, 0.040 inches of rain fell directly over the Lake during the past seven days (Figure 3). Similar amounts of rain fell throughout the surrounding watershed with the exception of portions of the east coast which received greater amounts of rainfall.

Based on USACE reported values, current Lake inflow is approximately 673 cfs as detailed below.

Structure	Flow cfs
S65E	0
S65EX1	819
S154	0
S84 & 84X	0
S71	0
S72	0
C5 (Nicodemus slough dispersed storage)	-146
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	0
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Current Lake outflow is approximately 3,534 cfs with 1,344 cfs exiting at S77, 369 cfs exiting at S308 and 171 cfs exiting at the L8 canal through Culvert 10A. Approximately 1,650 cfs is being directed south through S351, S352 and S354. Corrected evapotranspiration value based on the L006 weather platform solar radiation data for this past week was 2,232 cfs.

Change in elevation equivalents and average weekly flows (midnight March 6, 2017 to midnight March 12, 2017) for major structures are presented in Figure 4. Weekly average values for S77 and S308 are based on USGS data for the below structure gauges.

Based on the Lake Okeechobee wading bird habitat suitability index, there are currently approximately 28,277 acres of suitable foraging habitat for long-legged birds and 12,982 acres for long and short-legged birds on the Lake (Figure 5). Currently, conditions are good for wading birds but a slower recession rate is needed to keep wading bird foraging areas hydrated and to help maintain water levels under wading bird nests in the upcoming nesting season thereby reducing the risk of predation by raccoons and other animals.

Satellite imagery from a higher resolution sensor (OLCI) aboard the Sentinel 3a satellite is now available. This sensor has increased spatial resolution (300 m compared to 1 km for MODIS) and more optimal spectral bands for increased detection of the phycocyanin pigments found in cyanobacteria. The most recent imagery from this new OLCI sensor (March 7 and March 11, 2017) indicates low bloom potential (Figure 6).

Water Management Recommendations

Lake stage is 13.08 feet NGVD and is in the Base flow sub-band. The current weekly recession rate of 0.20 feet equates to a projected monthly recession rate of 0.80 feet which is well above the recommended 0.50 feet per month or less guideline. A too rapid decrease in Lake levels may jeopardize the upcoming nesting season by drying out foraging locations near the colonies and lowering water levels under nests allowing for increased risk of predation.

The goal should be to slow the monthly recession rate to less than 0.50 feet per month. Actions which contribute to a slower recession are essential to protect critical components of the Lake's floral (bulrush and submerged aquatic vegetation and faunal (wading birds, snail kites and fish) communities.

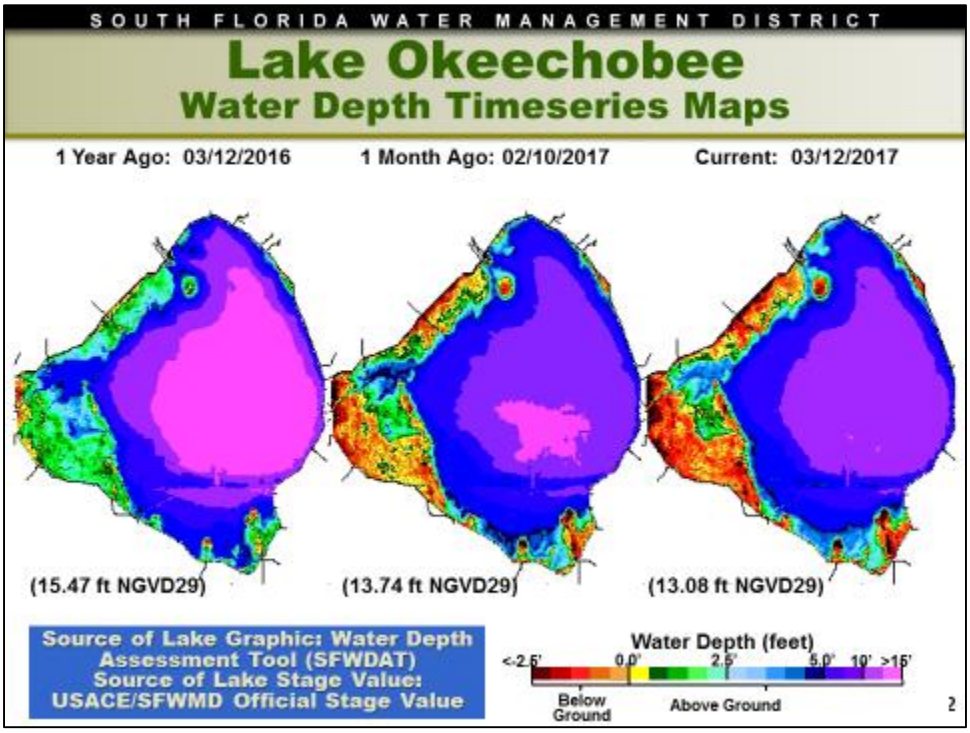


Figure 1

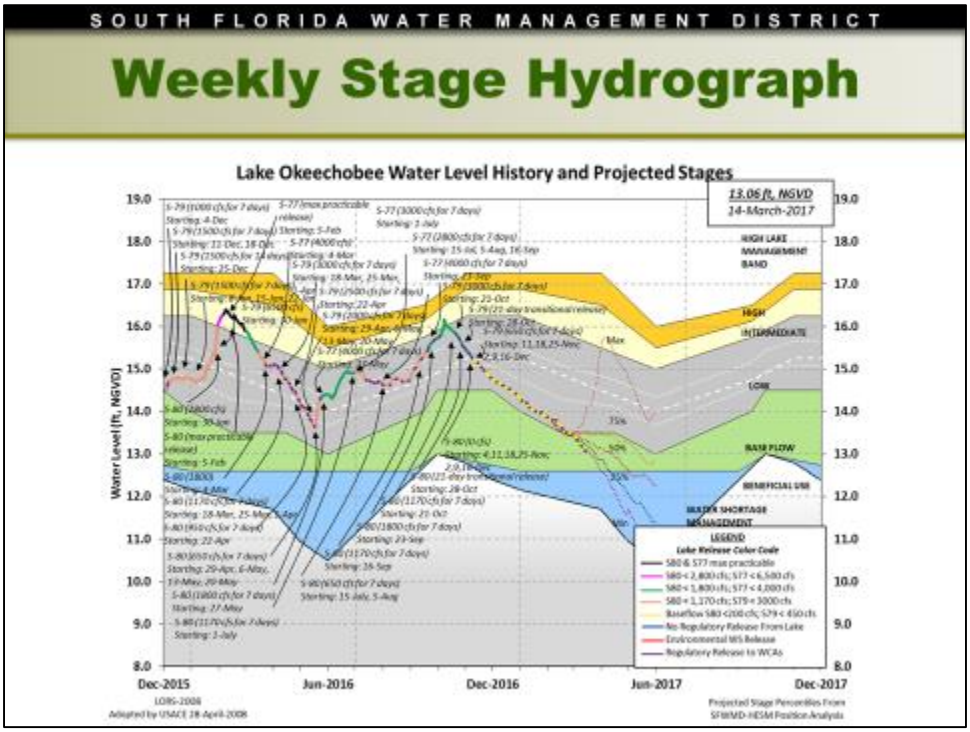

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Weekly Stage Hydrograph
Lake Okeechobee Water Level History and Projected Stages
13.06 ft, NGVD
14-March-2017
Water Level (ft., NGVD)
Dec-2015
Jun-2016
Dec-2016
Jun-2017
Dec-2017
HIGH LAKE MANAGEMENT BAND
HIGH
INTERMEDIATE
LOW
BASE FLOW
BENEFICIAL USE
WATER SHORTAGE MANAGEMENT
LEGEND
Lake Release Color Code
LORS-2008
Adopted by USACE 28 April 2008
Projected Stage Percentiles From SFWMD-HESM Position Analysis

Figure 2

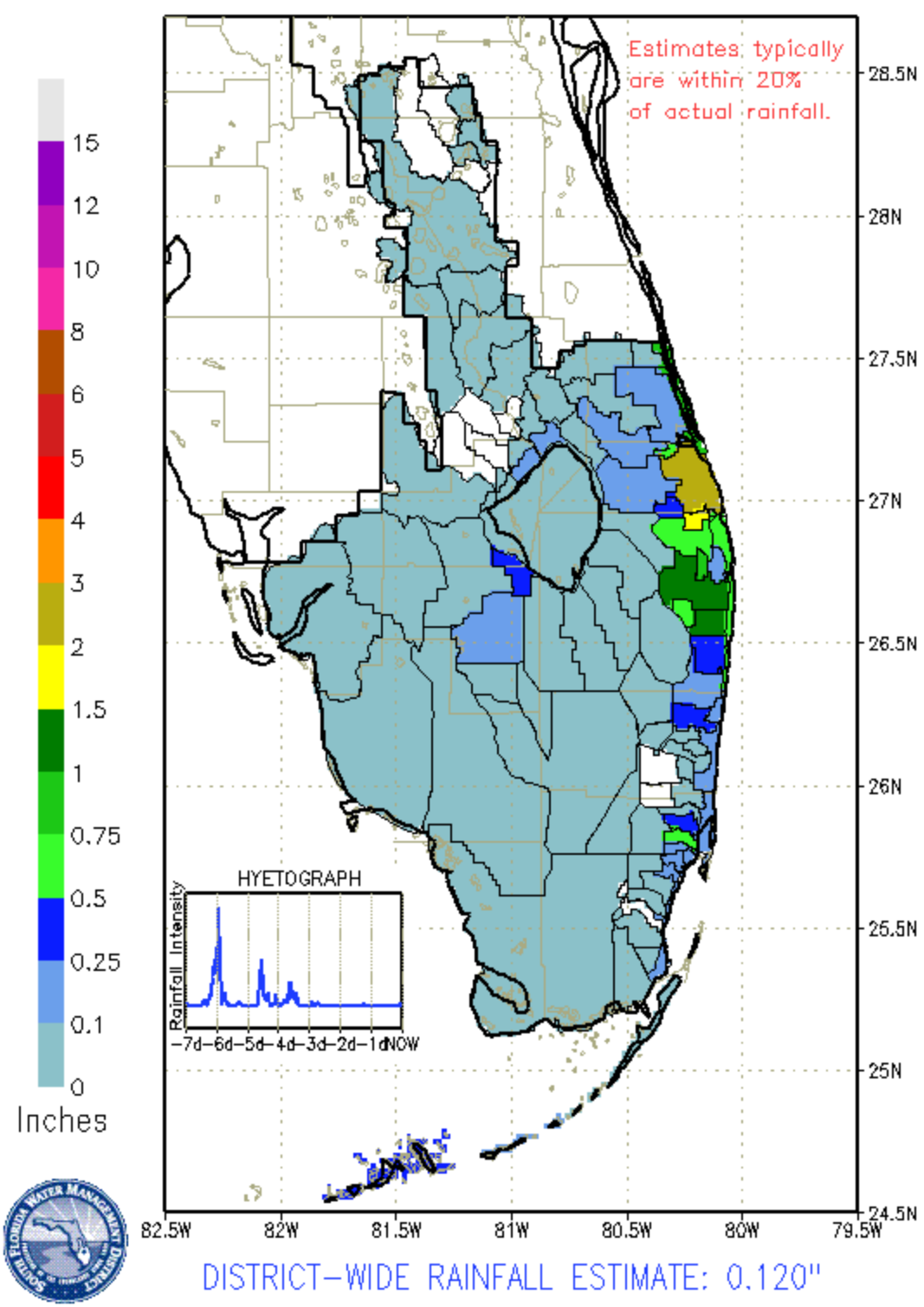

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES
FROM: 0615 EST, 02/27/2017 THROUGH: 0615 EST, 03/06/2017
Estimates typically are within 20% of actual rainfall.
15
12
10
8
6
5
4
3
2
1.5
1
0.75
0.5
0.25
0.1
0
Inches
HYETOGRAPH
Rainfall Intensity
-7d-6d-5d-4d-3d-2d-1dNOW
28.5N
28N
27.5N
27N
26.5N
26N
25.5N
25N
24.5N
82.5W
82W
81.5W
81W
80.5W
80W
79.5W
DISTRICT-WIDE RAINFALL ESTIMATE: 0.120"

Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E & S65EX1	727	0.026
S71 & 72	0	0.000
S84 & 84X	0	0.000
Fisheating Creek	34	0.001
Rainfall	N.A.	0.003
OUTFLOWS	**Average Daily Flow Past Week cfs**	**Feet of Change Past Week**
S77	1129	0.041
S308	300	0.011
S351	1003	0.036
S352	560	0.020
S354	802	0.029
L8	185	0.007
ET	2232	0.081

Figure 4

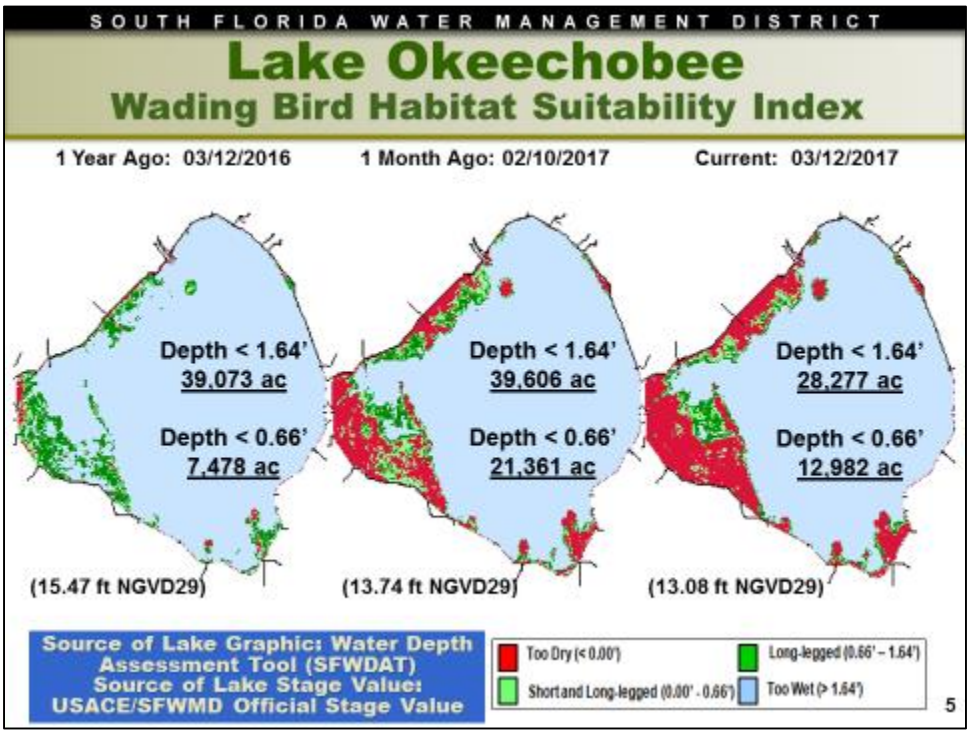


Figure 5

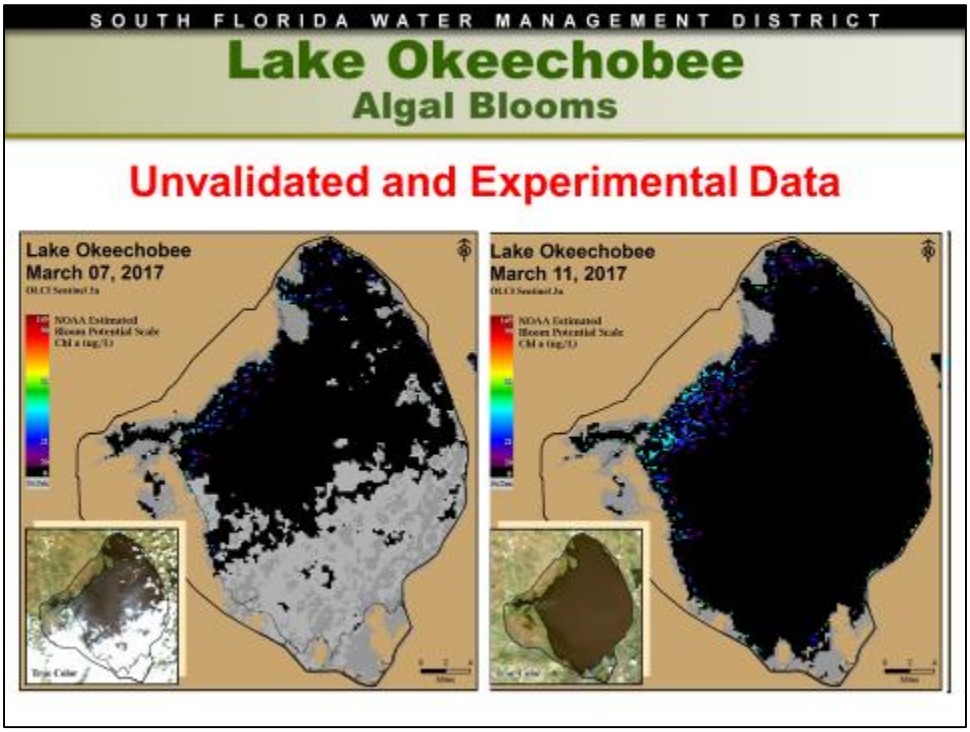


Figure 6

Lake Istokpoga

The Lake Istokpoga regulation schedule is at winter pool stage of 39.50 feet NGVD. Lake stage is 38.87 feet NGVD and is currently 0.63 feet below regulation stage (Figure 7). Average flows into the Lake from Arbuckle and Josephine creeks were 46 cfs and 11 cfs respectively, which is a decrease from last week's total flow. Average discharge from S68 and S68X this past week was 111 cfs, an increase from the previous week's flow. According to RAINDAR, 0.139 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

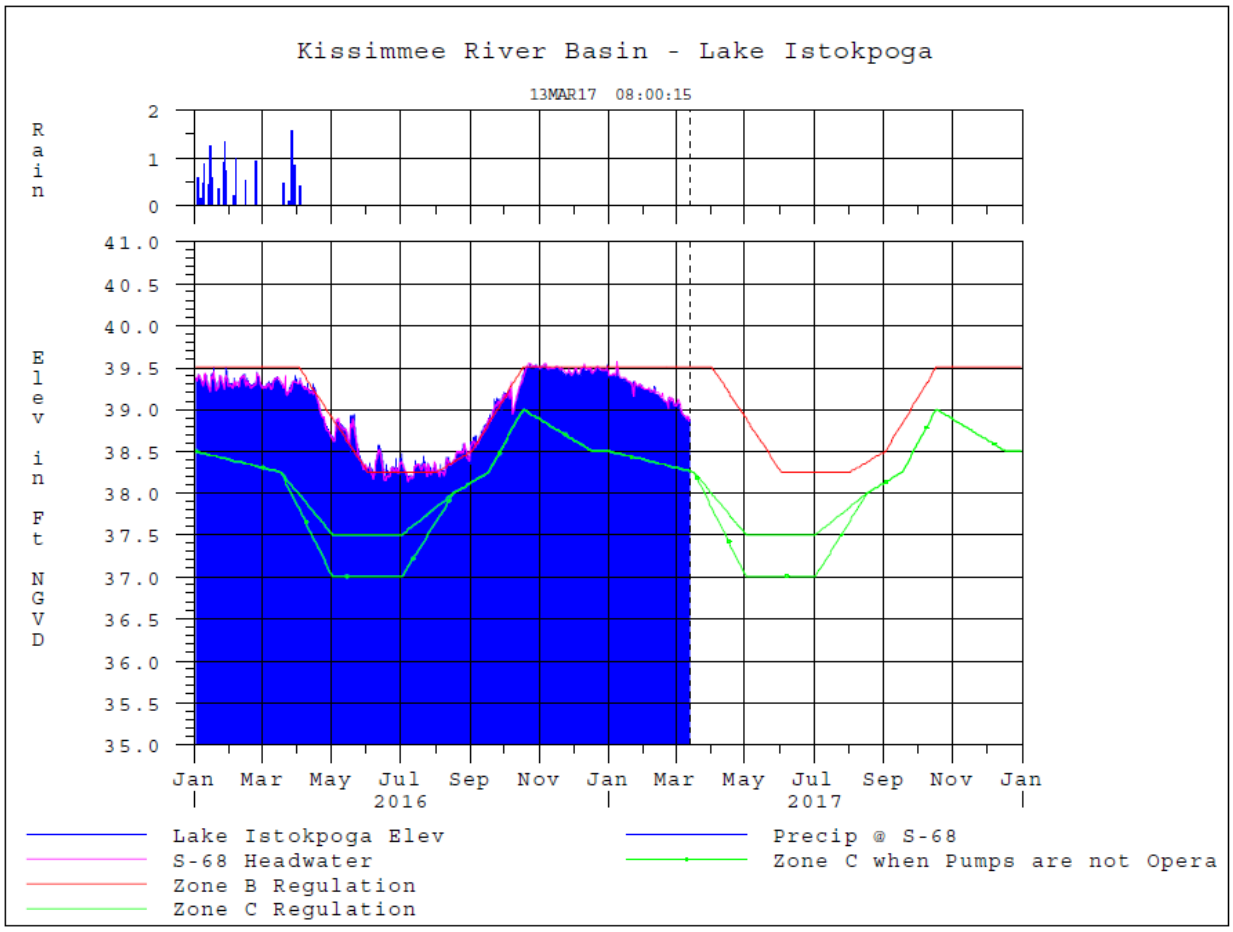


Figure 7

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 0 cfs at S-80, 262 cfs downstream of S-308, 0 cfs at S-49 on C-24, 0 cfs at S-97 on C-23, and 54 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 79 cfs (Figures 1 and 2). Total inflow averaged about 133 cfs last week and 161 cfs over last month.

Over the past week, salinity was about the same as last week throughout the estuary (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is about 26.4. Salinity conditions in the middle estuary are just outside the good range for the adult eastern oyster.

Table 1. Seven-day average salinity at three monitoring stations 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 (N. Fork)	**24.3** (25.2)	**25.4** (25.5)	NA[1]
US1 Bridge	**26.2** (25.7)	**26.6** (26.0)	10.0-26.0
A1A Bridge	**31.5** (31.1)	**32.5** (31.9)	NA

[1]Envelope not applicable

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 1,095 cfs downstream of S-77, 581 cfs at S-78, and 736 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 84 cfs (Figures 5 and 6). Total inflow averaged 820 cfs last week and 803 cfs over last month.

Over the past week, salinity increased throughout the estuary (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for adult oysters at Cape Coral and at Shell Point and in the fair range at Sanibel (Figure 9). The 30-day moving average surface salinity is 2.9 at Val I-75 and 9.7 at Ft. Myers. The 30-day moving average salinity at Ft. Myers has been below 10 for 19 consecutive days. Salinity conditions between Val I-75 and Ft. Myers are improving but when salinity is in excess of 10 psu there may be impacts to tape grass. Without discharges at S-79, the 30-day moving average salinity at Val I-75 is forecast be 4.8 within two weeks (Figure 10).

Table 2. 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 tape grass (*Vallisneria americana)* at Val I-75 and for adult eastern oysters (*Crassostrea virginica*) elsewhere.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	**2.8** (1.9)	**2.8** (2.0)	NA[1]
*Val I75	**3.5** (3.0)	**6.8** (3.8)	0.0-5.0[2]
Ft. Myers Yacht Basin	**10.5** (9.3)	**13.8** (10.2)	NA
Cape Coral	**17.5** (16.9)	**20.2** (18.0)	10.0-30.0
Shell Point	**27.8** (26.4)	**29.3** (27.7)	10.0-30.0
Sanibel	**32.8** (31.8)	**33.2** (32.3)	10.0-30.0

[1]Envelope not applicable, [2]Envelope is based on a 30-day average.
*Val I75 is temporarily offline due to site construction,
Salinity values are estimated using models developed for this site.

Monitoring data collected by the River, Estuary and Coastal Observing Network of Sanibel-Captiva Conservation Foundation using continuous sensors are summarized in Table 3 as concentration ranges of Chlorophyll *a* and dissolved oxygen at Beautiful Island, Ft. Myers, and Shell Point in the Caloosahatchee Estuary. Live Data will be unavailable until website upgrades are complete.

Table 3. Weekly ranges of Chlorophyll *a* (a measure of algal biomass) and dissolved oxygen concentrations at three monitoring stations maintained by the Sanibel-Captiva Conservation Foundation.

	RECON Monitoring Stations		
	Beautiful Island	**Ft. Myers**	**Shell Point**
Chlorophyll *a* (µg/l)	4.10 – 8.67	4.66 – 16.90	1.38 – 15.05 Spike to 53.7 (Mar10)
Dissolved Oxygen (mg/l)	6.46 – 9.87	4.49 – 8.62	No Data

The Florida Fish and Wildlife Research Institute reported on March 10, 2017, that *Karenia brevis*, the Florida red tide organism, persists in Southwest Florida from southern Pinellas to Lee counties. *Karenia brevis* was observed in background to low concentrations in six samples collected from Lee County.

<u>Water Management Recommendations</u>

Previously, salinity conditions in the upper portion of the Caloosahatchee estuary were improving. However, starting this week, salinity is increasing. While the 30-day average salinity at the I-75 Bridge is forecast to remain below 5 with no inflow at S-79, the daily salinity is forecast to reach 7.0 within two

weeks. Therefore, it is recommended that runoff from the C-43 basin be supplemented with Lake Okeechobee water as a pulsed release of up to 650 cfs through S-79.

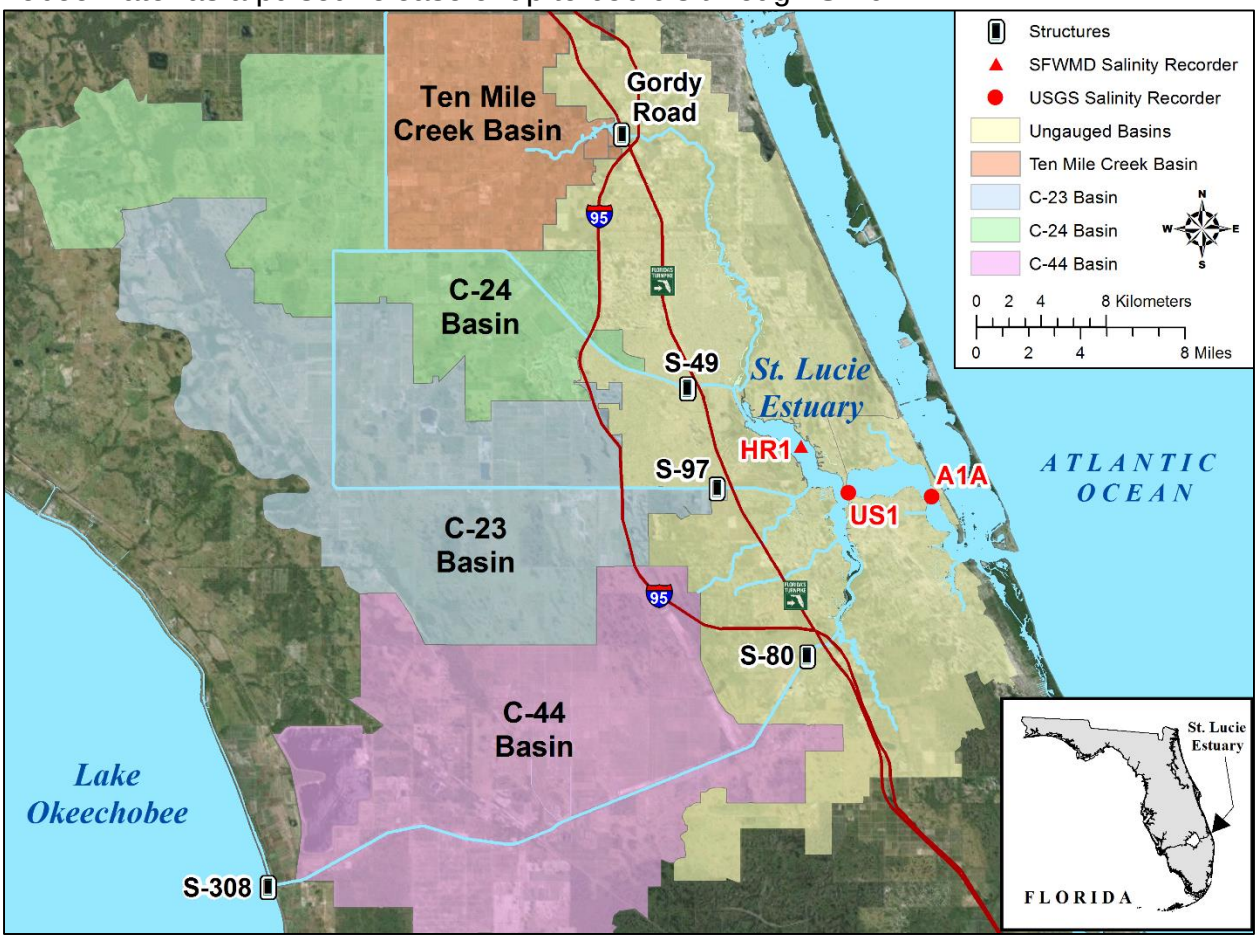


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

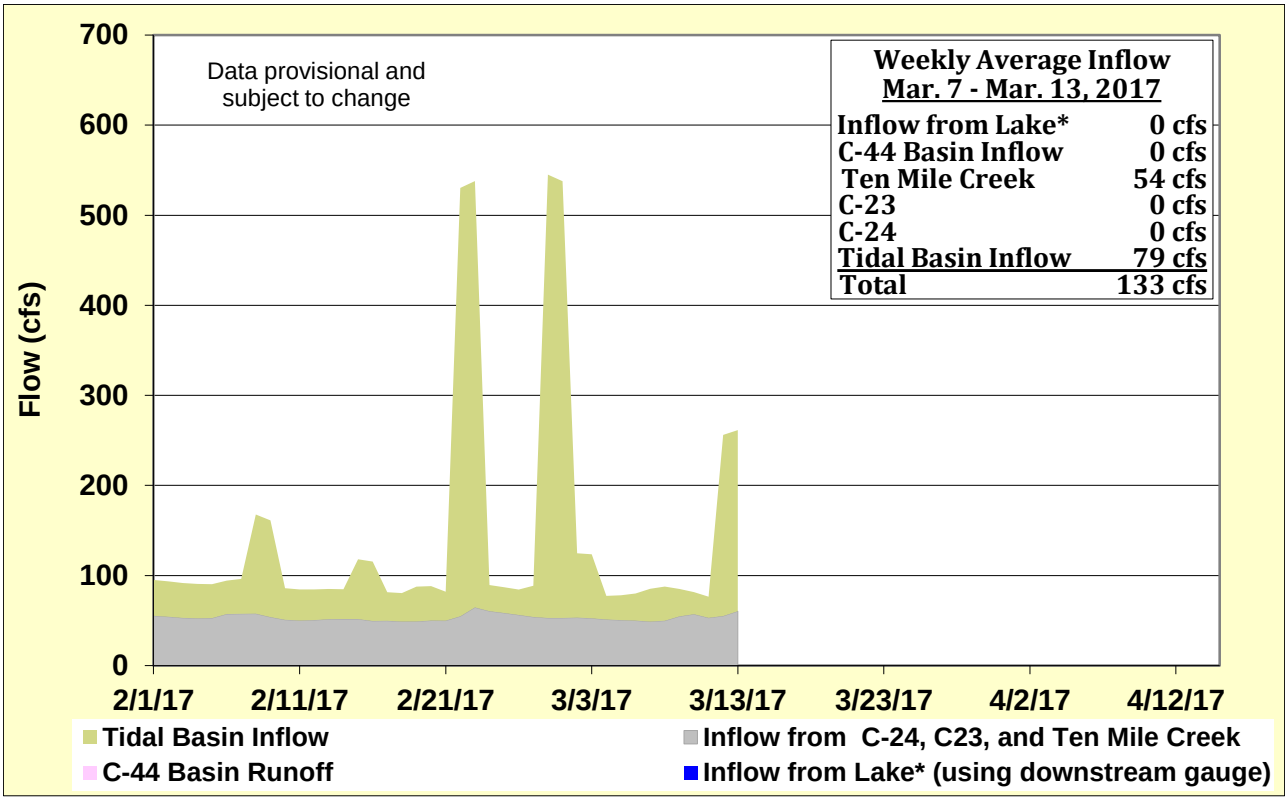


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

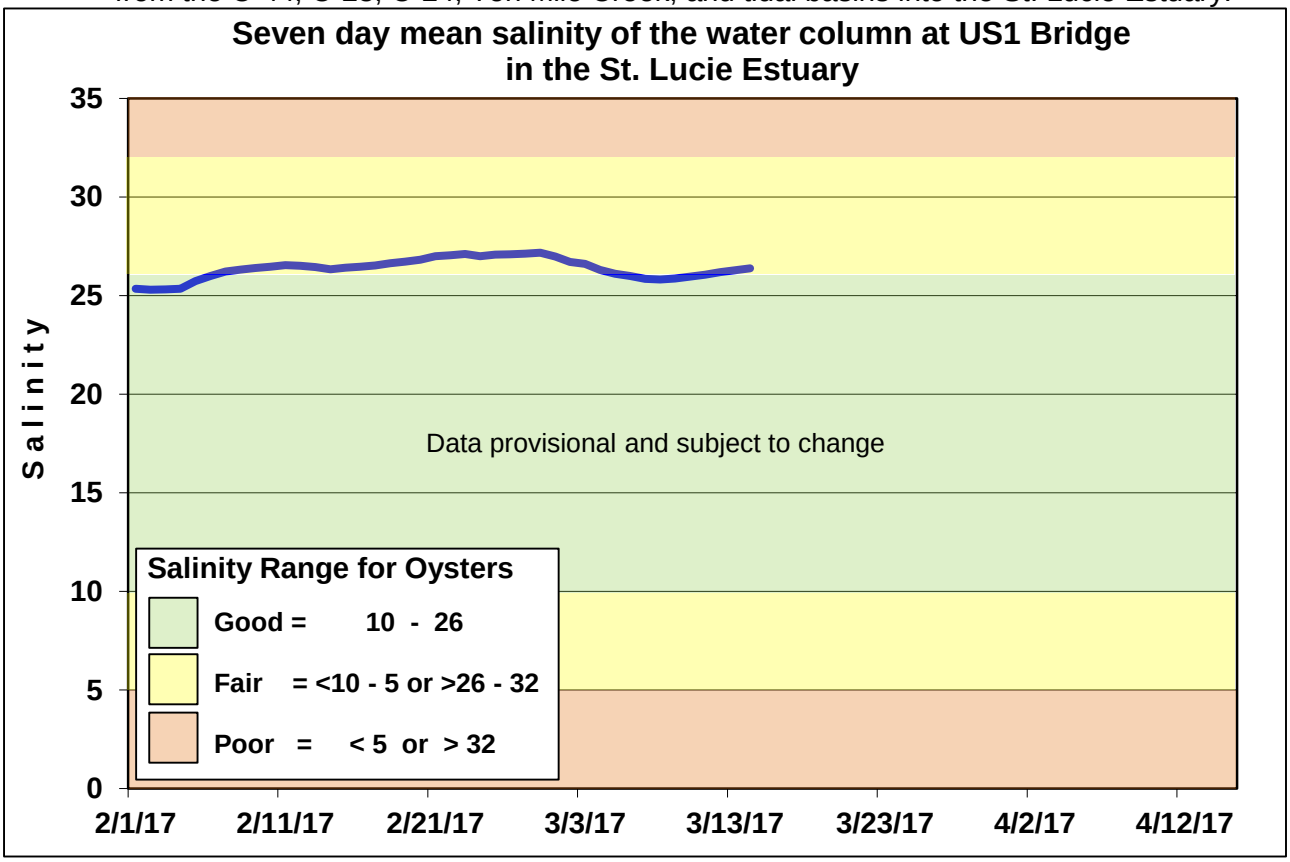


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

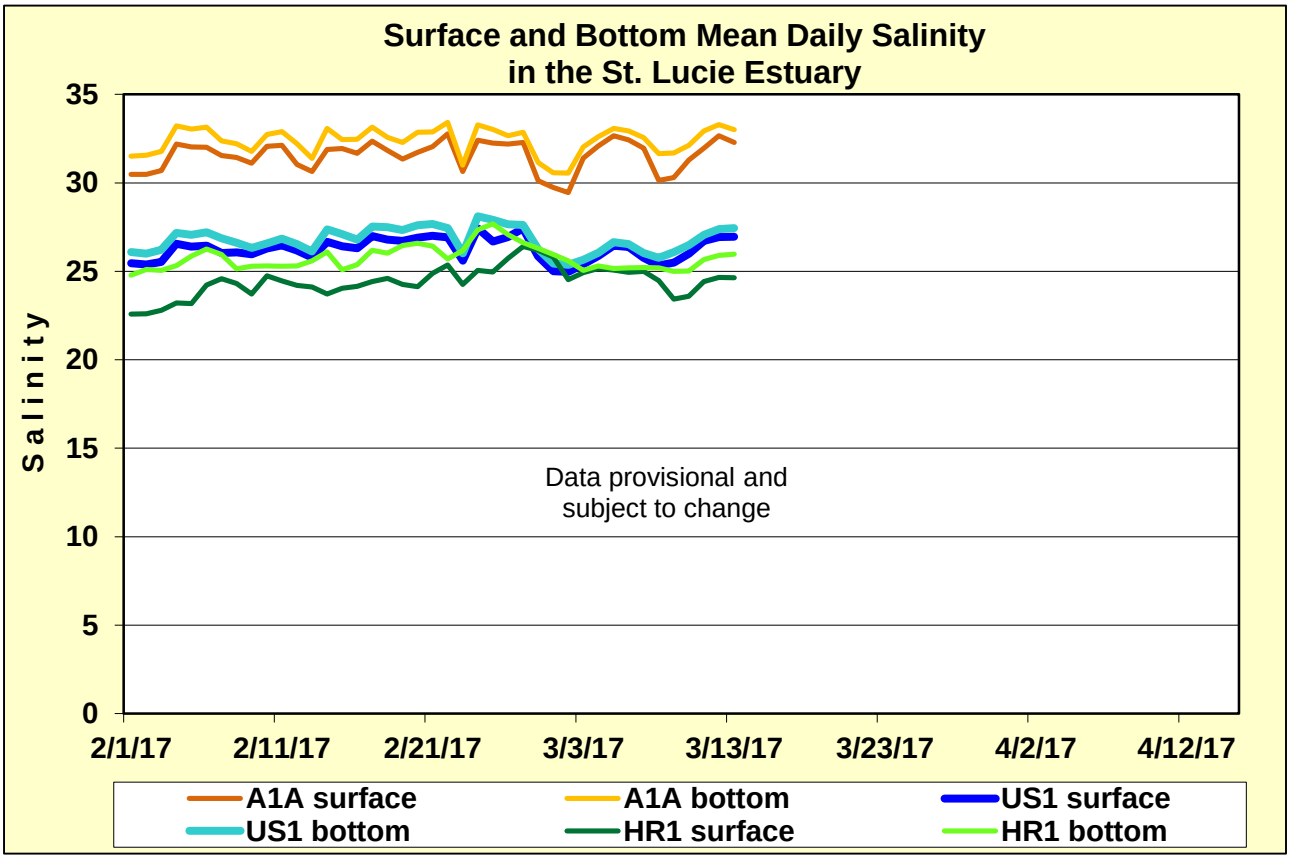


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

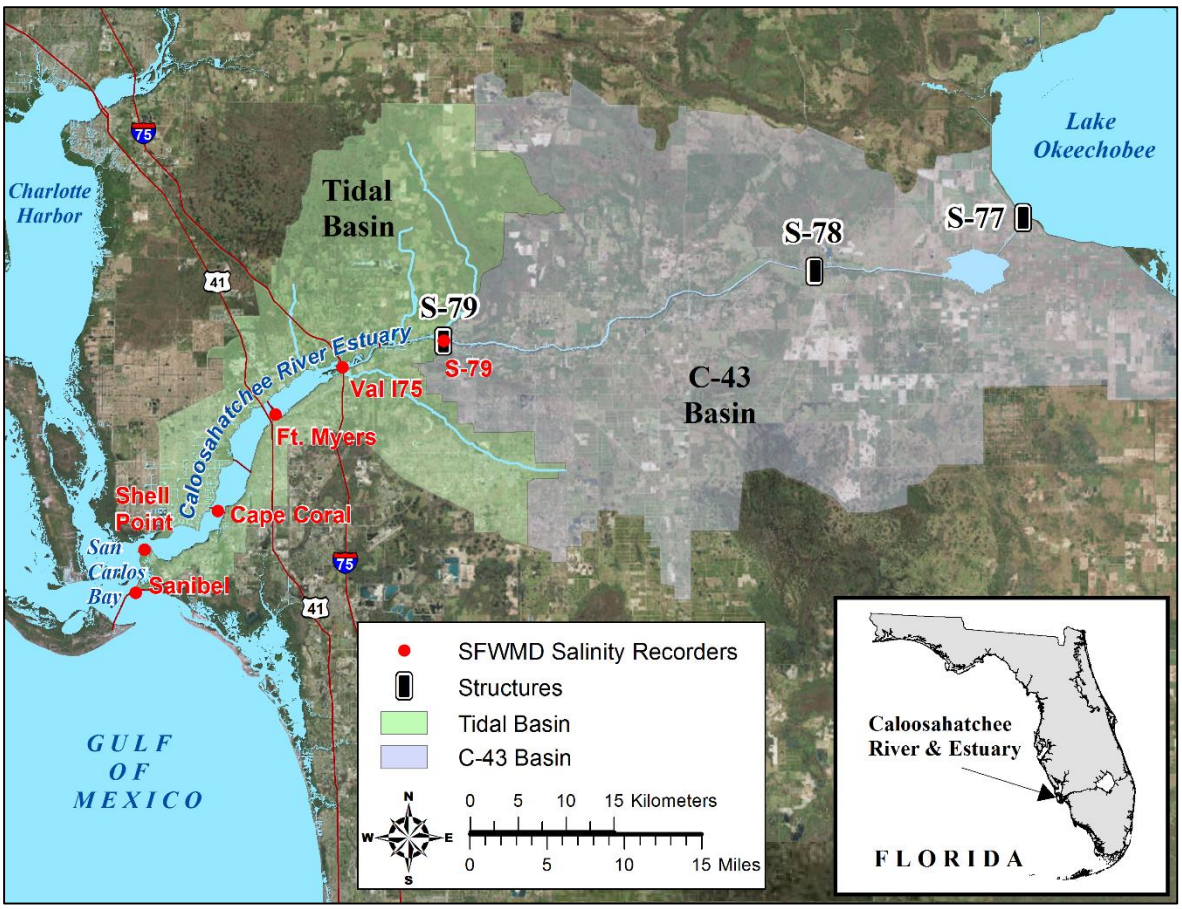


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

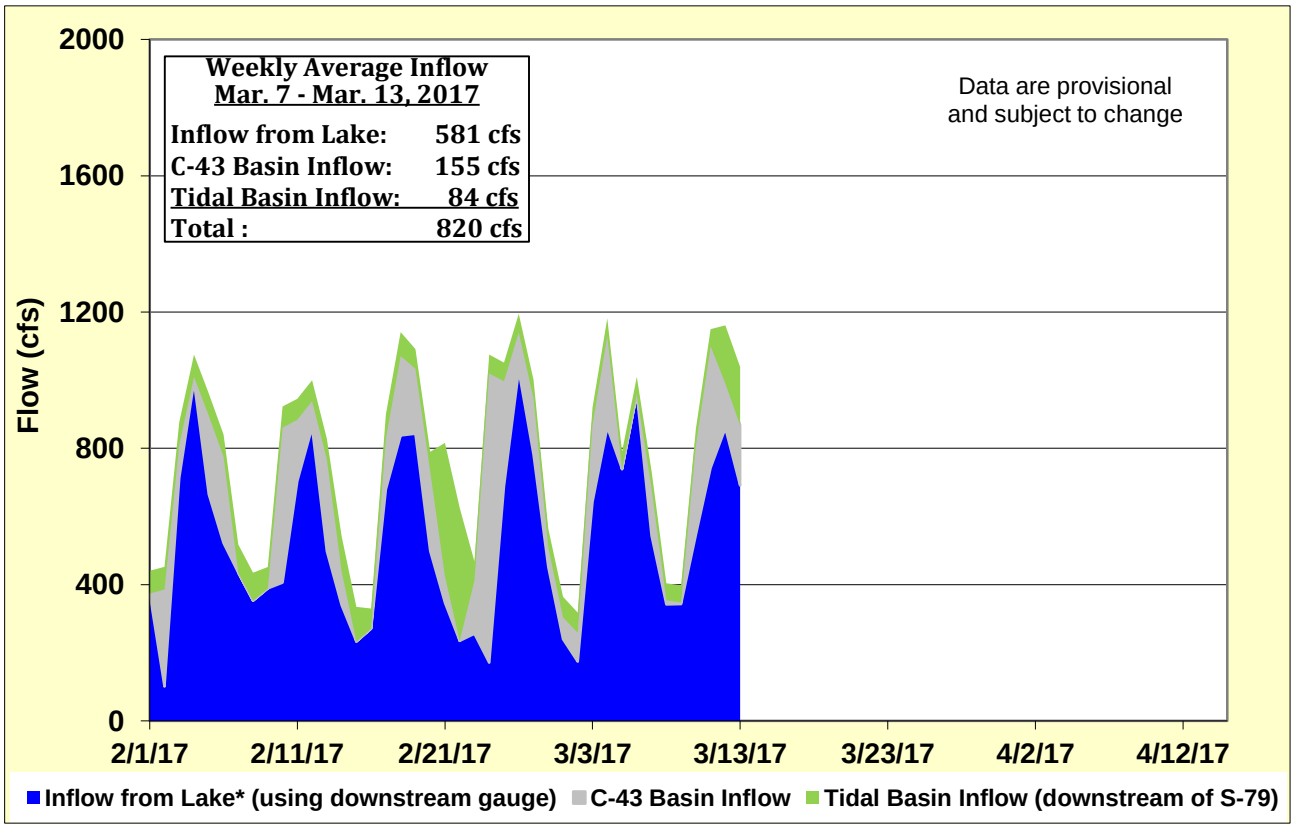
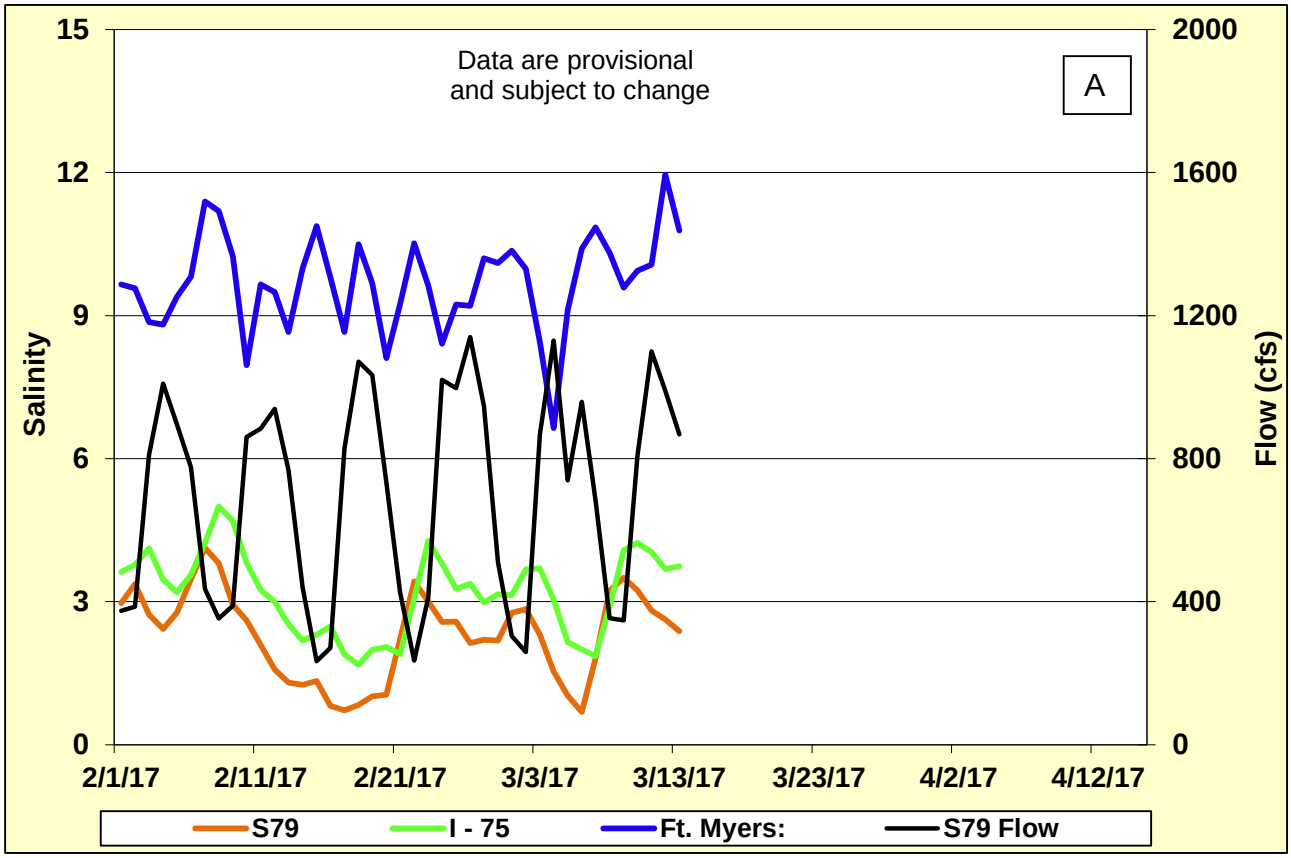


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



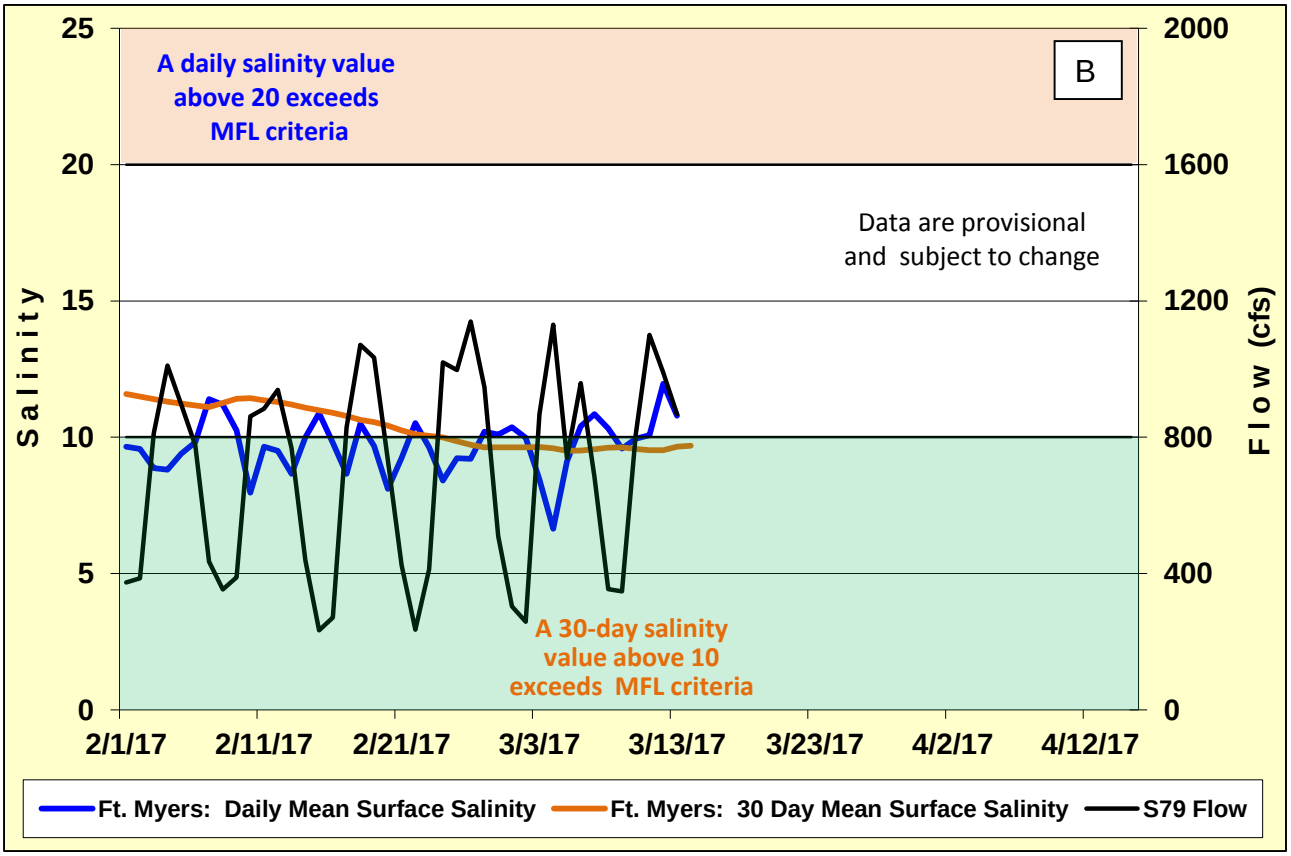


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

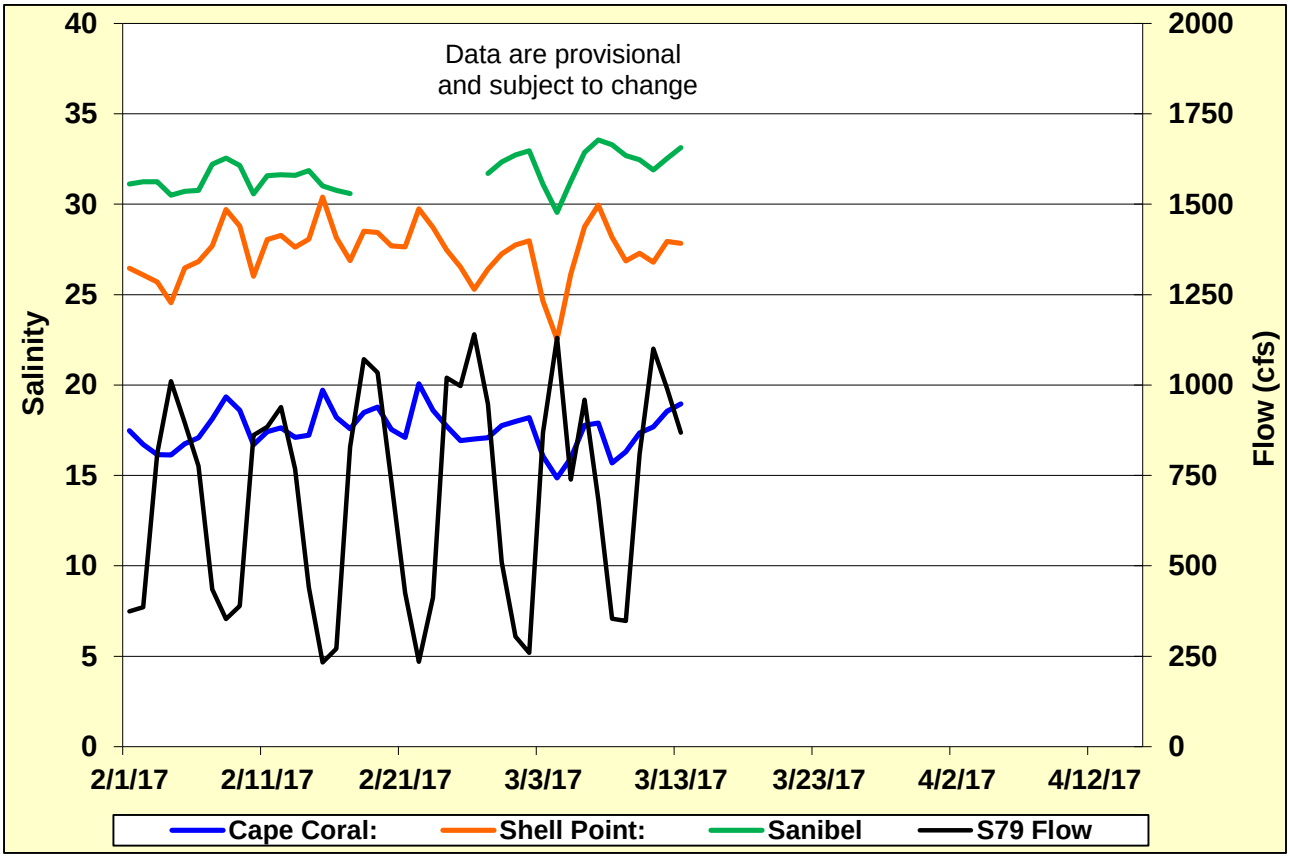


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

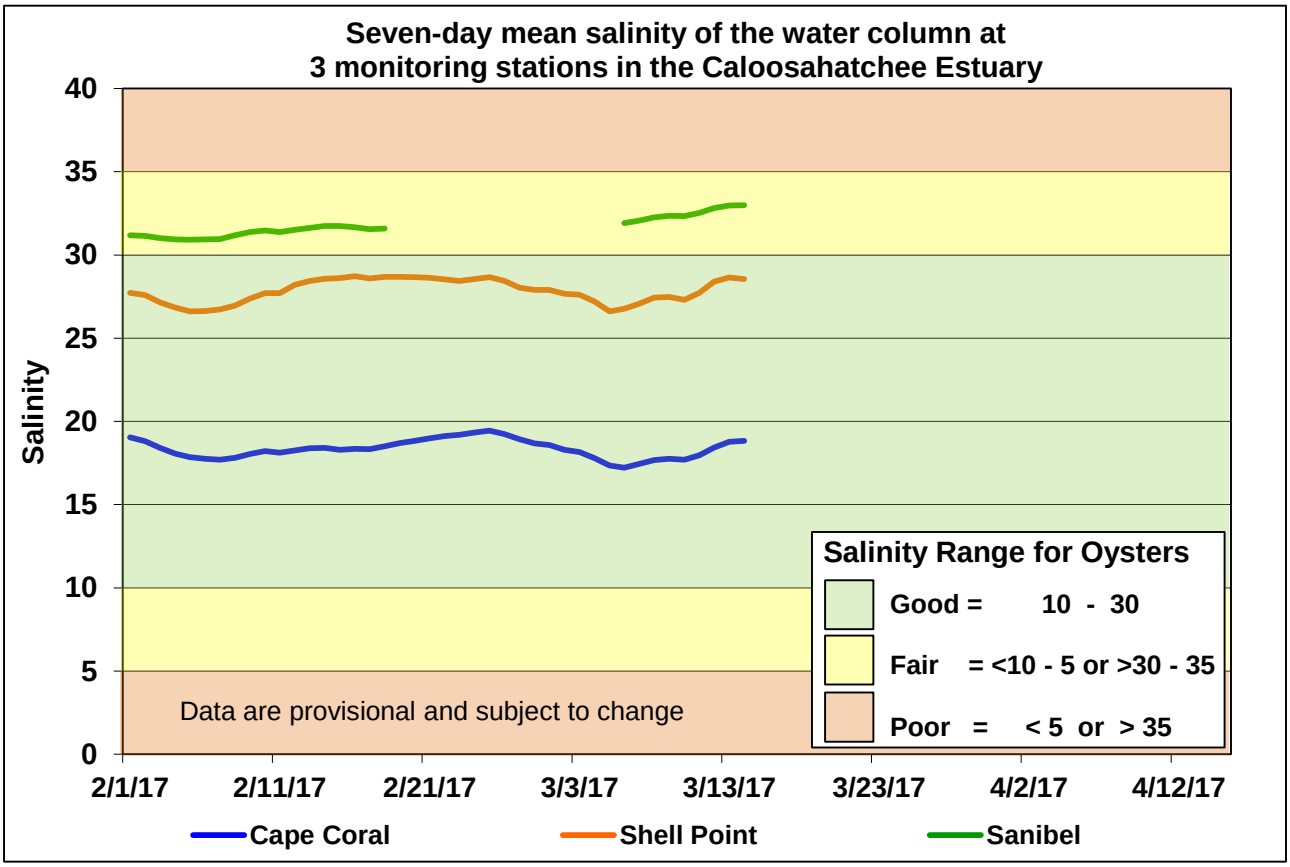


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

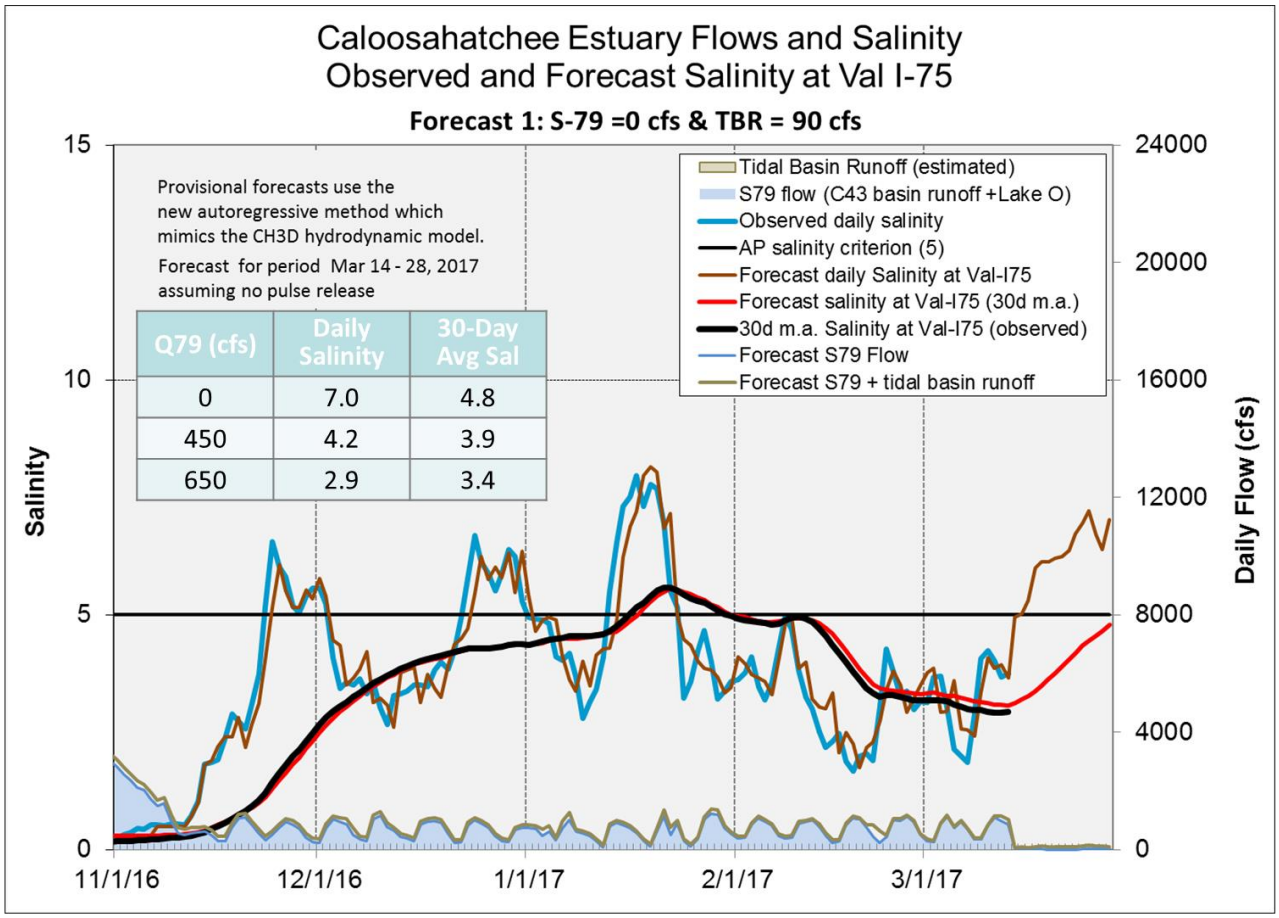


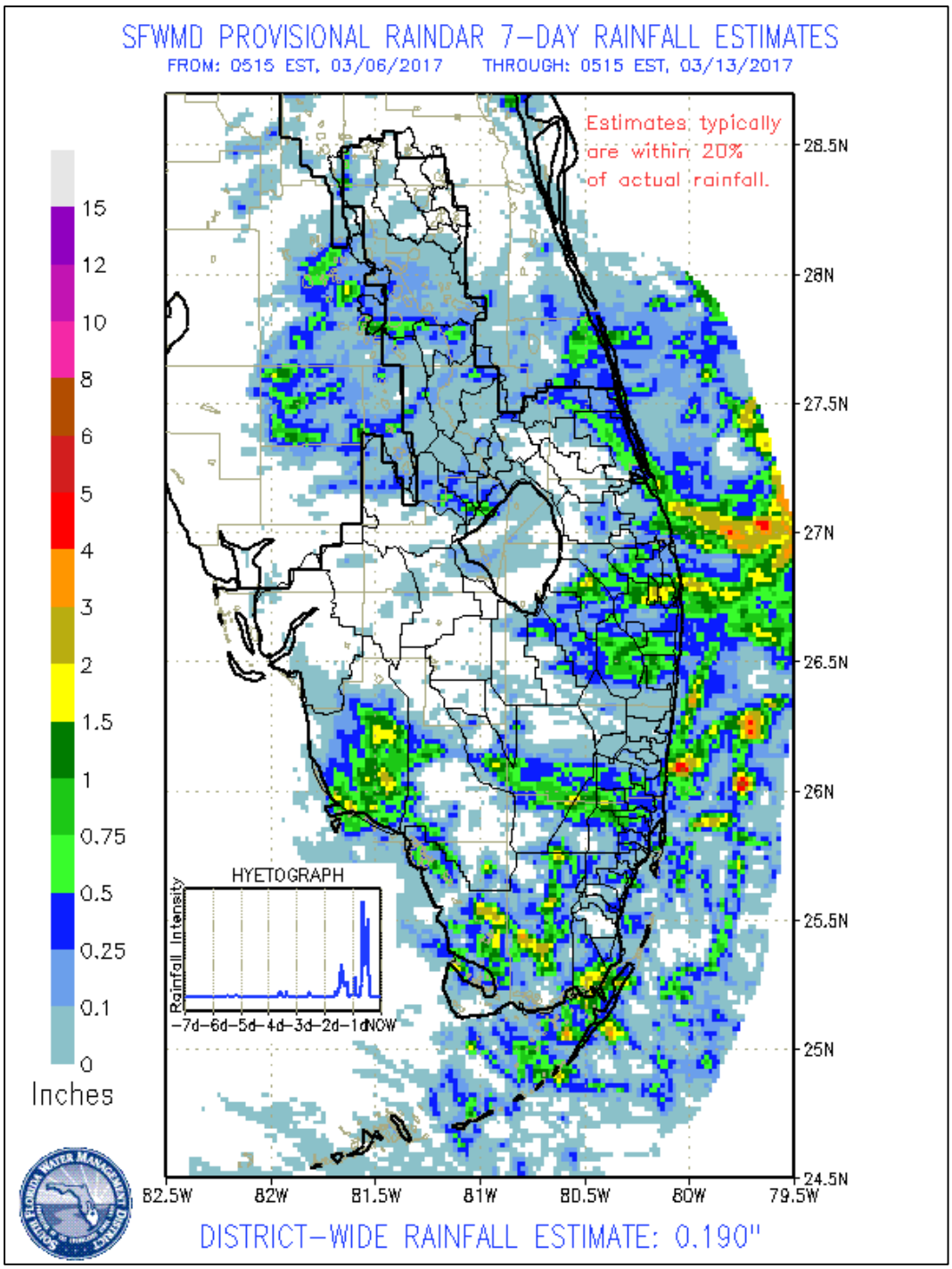
Figure 10. 14-day salinity forecast at Val I-75 assuming no releases at S-79.

GREATER EVERGLADES

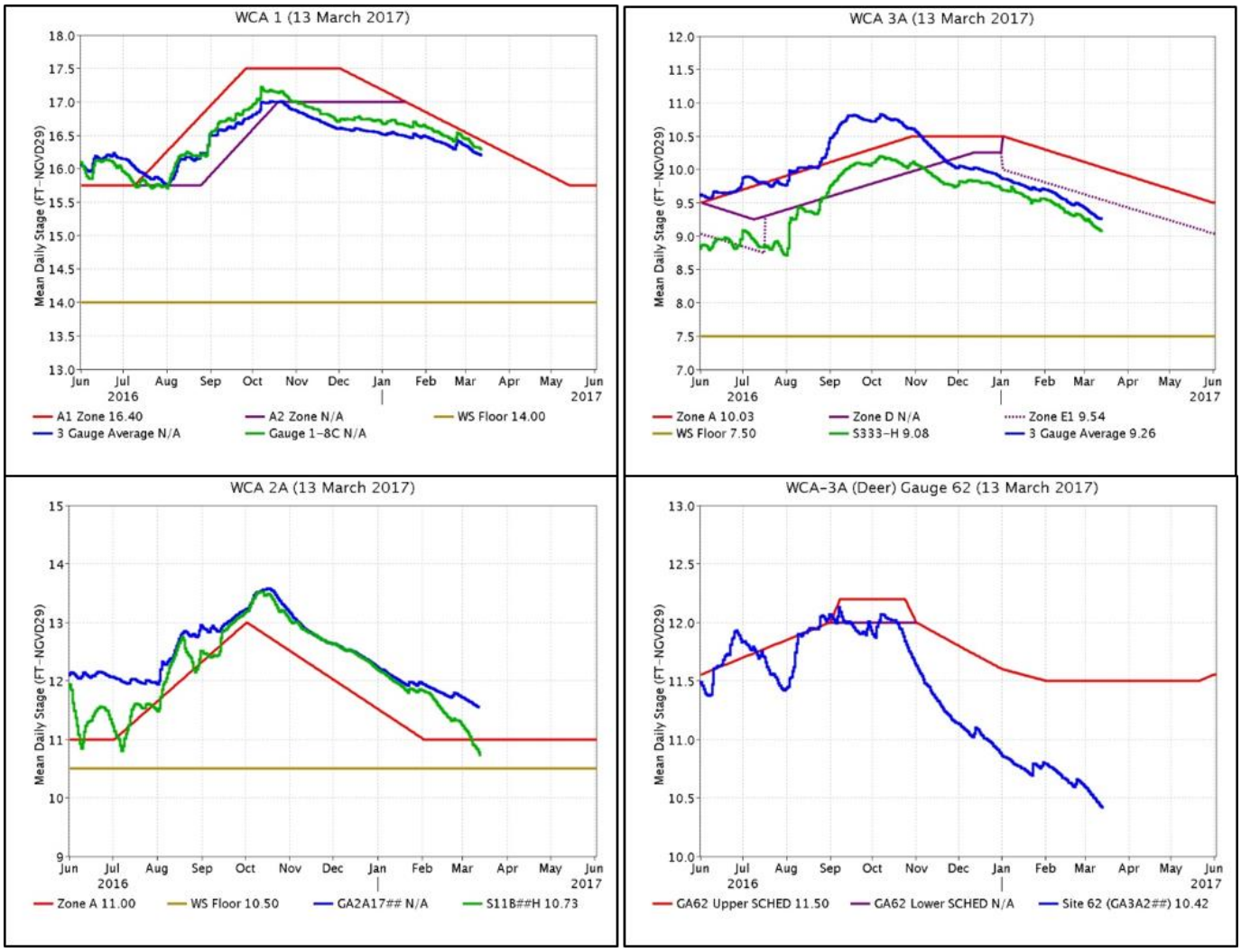
District-wide rainfall for the last week was scattered across the Everglades, with rainfall moderating recession in WCA-1. Within the WCAs and Northeast Everglades National Park (ENP) water levels decreased on average – 0.07 feet.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	0.56	-0.03
WCA-2A	0.07	-0.10
WCA-2B	0.05	-0.15
WCA-3A	0.26	-0.08
WCA-3B	0.49	-0.04
ENP	0.43	-0.07

Good
Fair
Poor



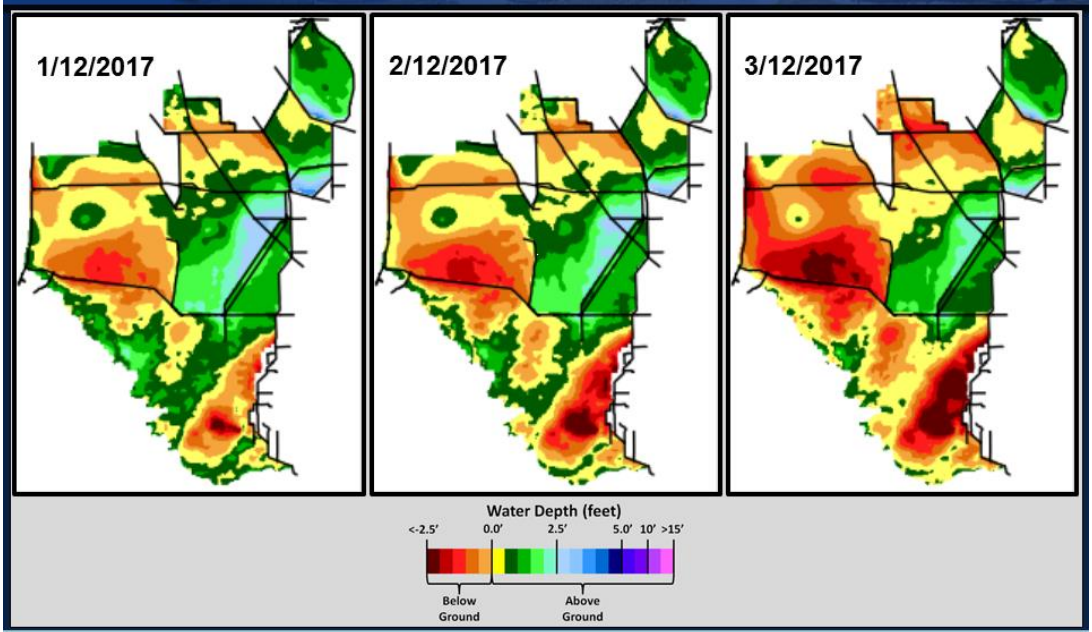
Regulation Schedules: The WCAs are generally just below schedule with the exception of WCA-3A at gauge 62 which is over one foot below schedule. The wetland stage within WCA-2A is now below Zone A.



Water Depths and Changes: This week's water depths at monitored gauges other than in WCA-2B range from 0.15 feet (northeast WCA-3A) to 1.80 feet (southern WCA-3A). Individual gauge changes ranged from 0.0 feet to −0.15 feet. Stages across the Everglades are for the most part lower than they were a week and month ago, and significantly lower than one year ago.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

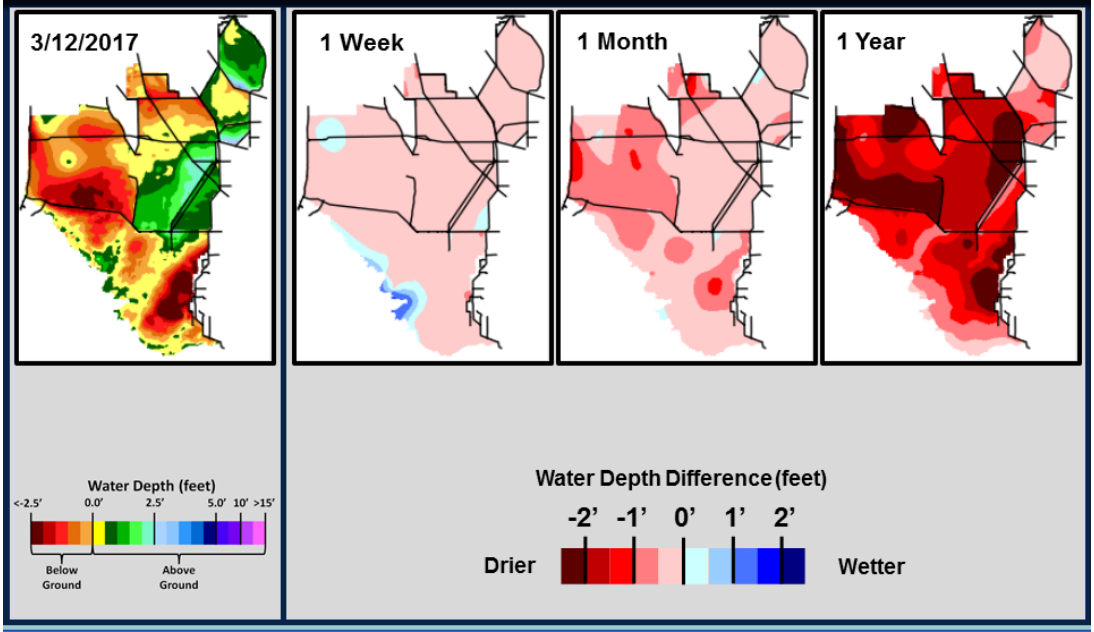
SFWDAT Water Depth Monthly Snapshots



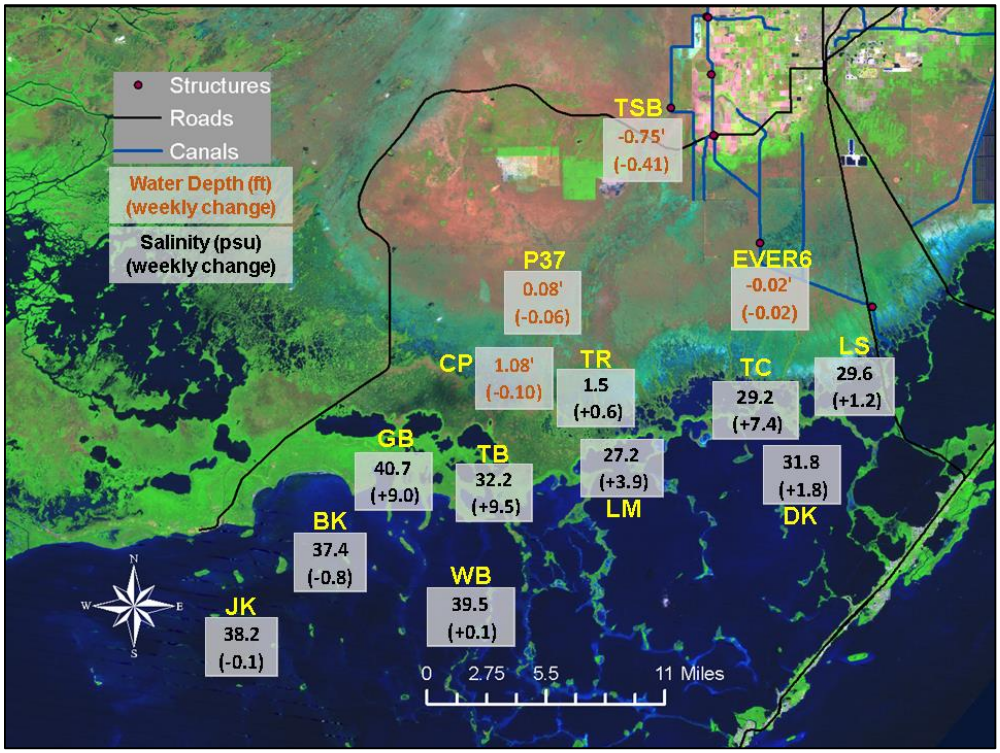
South Florida Water Depth Assessment Tool (SFWDAT)

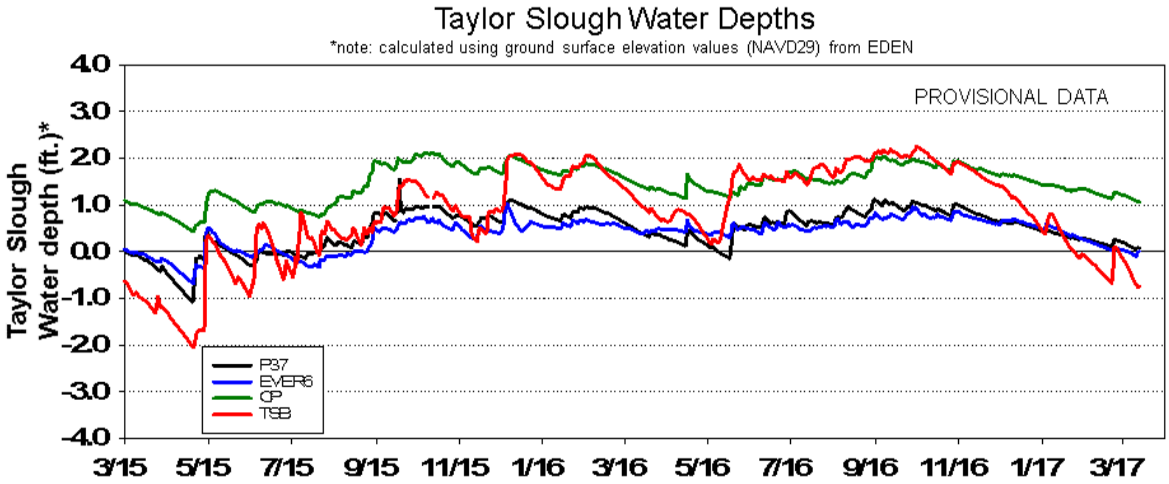
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

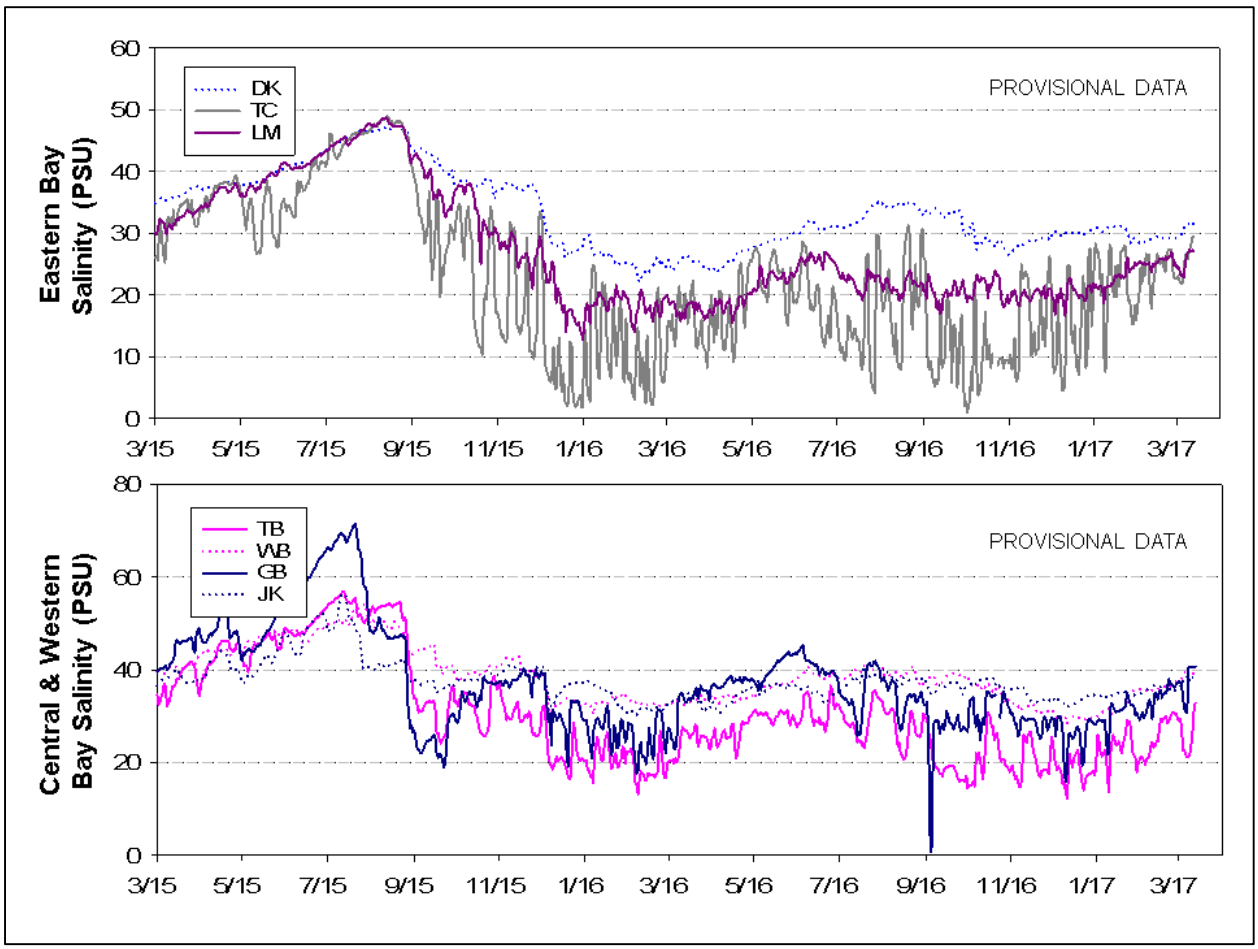
SFWDAT Everglades Difference Maps (Present – Past)



South Florida Water Depth Assessment Tool (SFWDAT)

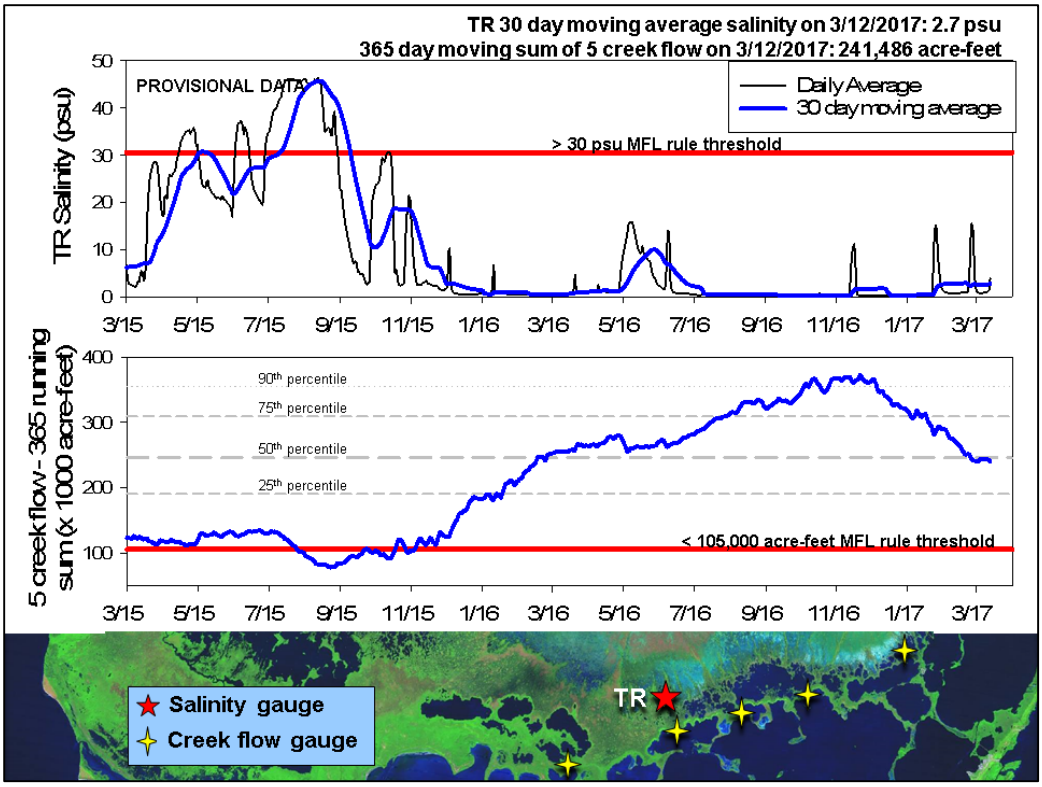

Structures
Roads
Canals
Water Depth (ft)
(weekly change)
Salinity (psu)
(weekly change)
TSB
-0.75'
(-0.41)
P37
0.08'
(-0.06)
EVER6
-0.02'
(-0.02)
CP
1.08'
(-0.10)
TR
1.5
(+0.6)
TC
29.2
(+7.4)
LS
29.6
(+1.2)
GB
40.7
(+9.0)
TB
32.2
(+9.5)
27.2
(+3.9)
LM
31.8
(+1.8)
DK
BK
37.4
(-0.8)
WB
39.5
(+0.1)
JK
38.2
(-0.1)
N
W
E
S
0 2.75 5.5 11 Miles


Taylor Slough Water Depths
*note: calculated using ground surface elevation values (NAVD29) from EDEN
PROVISIONAL DATA
Taylor Slough Water depth (ft.)*
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
3/15
5/15
7/15
9/15
11/15
1/16
3/16
5/16
7/16
9/16
11/16
1/17
3/17
P37
EVER6
CP
TSB



Florida Bay MFL: The daily average salinity at TR increased to 1.5 psu due to the negative flows. The 30-day moving average increased 0.1 to end the week at 2.7 psu. The weekly creek flow from the five creeks was roughly −1,800 acre-feet moving saline water upstream.

The 365-day moving sum of flow from the five creeks identified by stars on the map decreased about 3,000 acre-feet to end at 241,486 acre-feet (below the long-term average of 257,628 acre-feet).



Water Management Recommendations

- Water levels across the Everglades decreased at a recession rate while categorized as "fair" based on general seasonal criteria, stage conditions at this time and current water depths suggest that faster than – 0.07 feet per week may dry out all areas before the end of the breeding season. Currently tens of thousands of wading birds are currently nesting in the Everglades with large numbers of ibises and smaller herons expected to start in the next week or two. Wading birds will require slower recession rates in WCA-2A and WCA-3A if they are to nest successfully.

- The seasonal Multispecies Management Team (interagency group related to ERTP schedule) recommends retaining water to the extent possible to slow recessions everywhere in the Everglades. Recession rates need to be evaluated as a function of previous water depths. While a recession rate faster than -0.15 feet/week might have minimal effect in the very short term (a week or two), in the long term it may result in over drying in all but the wettest years.

- Expected upcoming drier than average conditions may result in suspension or curtailment of inflows into WCA-3A and WCA-2A. If the current inflows need to be reduced, we recommend continuing flows into WCA-2A versus 3A.

More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

Everglades Ecological Recommendations, Mar. 14th, 2017 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages decreased −0.02' to −0.04'	Rainfall, ET, management	Operate for dry season conditions and, when possible, restrict recession rates to -0.03' to -0.07' per week. Moderate reversals, when possible.	Retain water for the upcoming dry season while protecting habitat, including habitat, and wildlife and preparing for wading bird breeding season.
WCA-2A	Stages decreased −0.10'	Rainfall, ET, management	Maintain slower recession rates. Retain water and restrict recession rates to less than -0.09' per week.	Protect habitat and wildlife. Support nesting wading birds. Retain water to provide foraging habitat later in the breeding season.
WCA-2B	Stages decreased −0.15'	Rainfall, ET, management	Restrict recession rates to -0.05' to -0.09' per week.	Protect habitat and wildlife. Support nesting wading birds.
WCA-3A NE	Stages decreased −0.13'	Rainfall, ET, management	Restrict recession rates to -0.05' to -0.07' per week to prevent the area from drying out too early for wading bird nesting. Continue moving water through S-150 as possible. Water for northwestern 3A (via the G404) is also desired. Prioritize S-11C over S-11A to get water near the Alley North Colony.	Protect habitat and wildlife. Support nesting wading birds, particularly in Alley North colony. Reduce fire risk as season progresses. Recession rate at gauge 63 (location closest to Alley North wading bird colony) increases from −.07 to −.10 feet/week
WCA-3A NW	Stages decreased −0.10'	Rainfall, ET, management		
Central WCA-3A S	Stage unchanged	Rainfall, ET, management	Restrict recession rates to -0.05' to -0.09' per week. When flows are changed a gradual reduction is recommended (stepping down over several days).	Keeping depths below 2.5' at gauge 65 is important to allow tree island vegetation to recover from stress of the recent extended inundation duration. Protect habitat, wildlife and wading bird breeding.
Southern WCA-3A S	Stages decreased −0.10'	Rainfall, ET, management		
WCA-3B	Stages decreased −0.01' to− 0.07'	Rainfall, ET, management	Restrict recession rates to -0.05' to 0.-09' per week.	Protect habitat and wildlife and prepare for wading bird breeding season.
ENP-SRS	Stages decreased −0.07'	ET, rainfall, topography, management	Make discharges to the Park according to the ERTP rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities. Protect habitat and wildlife and prepare for wading bird breeding season.
ENP-CSSS habitats	S-12A, S-12B, S-344, S-343A, S-343B are closed. S-333 closed	Rainfall, ET, management	Follow rainfall plan for releases and current ERTP guidelines. Follow guidance in C-111 Western Spreader Canal Project operations manual. Care should be taken to avoid overdrying eastern subpopulations C and F.	Future operations need to continue to provide appropriate hydrological and habitat conditions for CSSS. Current and forcasted conditions are conducive for a successful sparrow breeding season. Dry conditions are expected for much of the sparrow breeding season.
Taylor Slough	Stages fell −0.02' to −0.41'	Rain, ET, inflows	Move water southward as possible	Provide freshwater buffer for ecosystems, maintain low salinity conditions downstream, and maintain slow recession rates.
FB- Salinity	+1 to +6 psu above average	Rain, ET, inflows, wind	Move water southward as possible	Maintain low salinity conditions and prevent early salinity increases.