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: January 31, 2017

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

A dry week. High pressure over the area will keep dry conditions over the District today and Wednesday. Some moisture will begin to return to the area Thursday and Friday allowing some widely scattered light showers to pop up south mainly over the Keys each day. The tail end of a cold front will move into north Florida Saturday and bring some widely scattered light showers north and east.

Kissimmee

On Sunday, stage was 0.1 feet below regulation schedule in East Lake Toho and Lake Toho, and 2.0 feet below schedule in Kissimmee-Cypress-Hatchineha. Over the past week, discharge at S65, S65A, and S65E averaged 498, 368, and 398 cfs, respectively. Tuesday morning discharges were ~487 cfs, ~377 cfs, and ~441 cfs, respectively at S65, S65A, and S65E. Dissolved oxygen data in the Kissimmee River averaged 8.71 mg/L over the past week. Kissimmee River mean floodplain depth on Sunday is not available. New recommendation: make releases from East Lake Toho and Lake Toho to achieve a recession rate of 0.2 feet per week. See full recommendation for additional details.

Lake Okeechobee

Lake stage is 13.86 feet NGVD and continues to fall. The current weekly recession rate of 0.09 feet equates to a monthly recession rate of 0.36 feet, which is within the preferred range. The goal should be to continue to lower Lake levels but at a rate of no more than 0.50 feet per month. Both nearshore and pelagic total phosphorus (TP) and total suspended solids (TSS) concentrations increased in January compared to the last two months most likely as a result of increased wind and wave action from cold fronts. The January chlorophyll data indicated no recent bloom activity and toxin levels were below the level of detection.

Estuaries

Total discharge to the St. Lucie estuary average 257 cfs over the past week with 0 cfs (0%) coming from Lake Okeechobee as the USACE has stopped flow through the S-80 structure for the foreseeable future. Salinities were about the same as last week throughout the estuary. The seven-day average salinity at the US1 Bridge is at the top of the good range for adult oysters. Total inflow to the Caloosahatchee estuary averaged 847 cfs over the past week with 540 cfs (64%) coming from the Lake. The 30-day average surface salinity at the Ft. Myers monitoring station reached 10 on January 2, 2017 and is now at 11.7 constituting 30 consecutive days of exceedance of the Caloosahatchee Minimum Flow and Level. The 30-day average surface salinity at Val I-75 is 5.0. Salinity conditions for tape grass in the upper estuary are deteriorating. Salinity conditions are good 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 forecasted to reach 6.1 in the next two weeks if no flow

comes through the S-79 structure. A flow of 650 cfs is forecast to keep salinity at the I-75 Bridge below five.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 4,900 acre-feet of Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2017 (since May 1, 2016) is approximately 167,000 acre-feet. Most STA cells are at or near target depths, except STA-5/6 emergent aquatic vegetation cells which are below target and many are drying out. Operational restrictions are in place for structure repairs and vegetation rehabilitation in STA-1E, as well as a Restoration Strategies Science Plan Study in STA-2 and STA-3/4. 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

With the exception of WCA-2B, depths increased slightly across the Everglades. Weekly stage changes ranged from 0.00 (WCA-2B) to +0.08 (WCA-2A) feet last week. While the WCAs and northeastern Everglades National Park (ENP) experienced a reversal of stage recession (thus the poor ratings in the table below), current low stage conditions suggest that at this time a minor reversal may help prolong wading bird foraging conditions. The 30-day moving average salinity at the Florida Bay MFL site increased to 2.6 psu. The five creek 365-day cumulative flow has remained basically unchanged from last week at 291,581 acre-feet.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.23 inches of rainfall in the past week and the Lower Basin received 0.21 inches (SFWMD Daily Rainfall Report 01/31/2017).

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: 1/31/2017

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)	Sunday Departure (feet)						
							1/29/17	1/22/17	1/15/17	1/8/17	1/1/17	12/25/16	12/18/16
Lakes Hart and Mary Jane	S62	21	LKMJ	61.0	R	61.0	**0.0**	0.0	-0.1	-0.1	-0.2	0.0	0.0
Lakes Myrtle, Preston, and Joel	S57	12	S57	61.3	R	61.4	**-0.1**	0.0	0.0	-0.1	-0.2	0.0	0.0
Alligator Chain	S60	0	ALLI	63.4	R	64.0	**-0.6**	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
Lake Gentry	S63	3	LKGT	61.4	R	61.5	**-0.1**	-0.1	-0.1	-0.1	-0.1	0.0	0.0
East Lake Toho	S59	143	TOHOE	57.9	R	58.0	**-0.1**	0.0	0.0	0.0	-0.1	0.0	-0.2
Lake Toho	S61	342	TOHOW, S61	54.9	R	55.0	**-0.1**	0.0	0.0	-0.1	-0.1	-0.2	-0.2
Lakes Kissimmee, Cypress, and Hatchineha	S65	498	LKISSP, KUB011, LKIS5B	50.5	R	52.5	**-2.0**	-2.1	-2.0	-1.9	-1.8	-1.6	-1.5

* 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: **1/31/2017**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			1/29/17	1/22/17	1/15/17	1/8/17	1/1/17	12/25/16	12/18/16	12/11/16	12/4/16	11/27/16
Discharge (cfs)	S-65	507	**498**	478	475	487	555	759	809	821	822	789
Discharge (cfs)	S-65A	377	**368**	364	368	461	497	639	700	699	698	693
Discharge (cfs)	S-65C	N/A	**N/A**	N/A	N/A	548	703	892	887	909	895	880
Headwater stage (feet NGVD)		N/A	**N/A**	N/A	N/A	29.0	30.8	32.5	32.7	32.8	32.7	32.7
Discharge (cfs)	S-65D****	1309	**1274**	1292	1268	1293	1411	1607	1638	1700	1610	1631
Discharge (cfs)	S-65E	407	**398**	386	375	452	626	774	779	773	781	800
DO concentration (mg/L)***	Phase I river channel	9.05	**8.71**	7.87	7.94	7.12	N/A	7.02	7.17	7.06	7.46	7.28
Mean depth (feet)*	Phase I floodplain	N/A	**N/A**	0.06	0.07	0.07	0.09	0.12	0.13	0.15	0.15	0.16

* 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 starting June 2.PC33 omitted for week of Aug16. DO for week of Sept 15-22 is for PC33 only.

**** S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2

DATA ARE PROVISIONAL

Water Management Recommendations

Kissimmee Basin Adaptive Recommendations and Operational Actions

Date	Recommendation	Purpose	Outcome	Source
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.			
9/27/2016	• Begin reducing discharge when Ops and management feel the time is right (could be now) • Use the discharge table below to ramp down to 1400 cfs; however, if stage should stop declining or start to rise during the rampdown, hold the current discharge unless stage begins to decline again • If KCH stage reaches ~50.5 ft, hold ~1400 cfs while KCH stage is at or above ~50.5 ft, then: • If KCH stage declines below ~50.5 ft, continue reducing discharge, potentially to minimum discharge. However, if stage stops declining or starts to rise during the rampdown, hold or increase current discharge until stage begins to decline again or until it rises to ~50.5 ft • If KCH stage rises or stays above ~50.5 ft, hold ~1400 cfs unless stage approaches ~0.25 ft below the regulation line. If stage continues to rise into this buffer zone, use the discharge table to ramp up in anticipation of flood control releases	To the extent possible, avoid repeated wet/dry cycles in the Kissimmee River floodplain and extend the period of continuous floodplain inundation without decreasing lake stage too much. The recommendation is similar to the discharge plan used last wet season that balanced the river, the KCOL, and downstream waterbodies.	TBD	KB Operations

KCOL Hydrographs (through Sunday midnight)

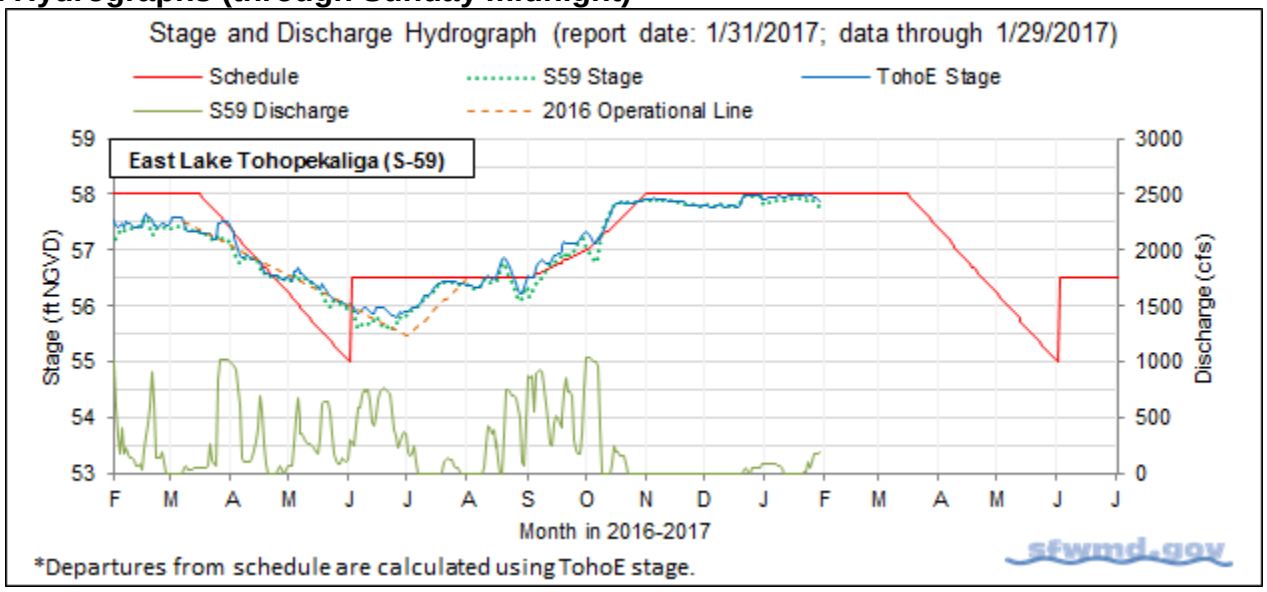


Figure 1.

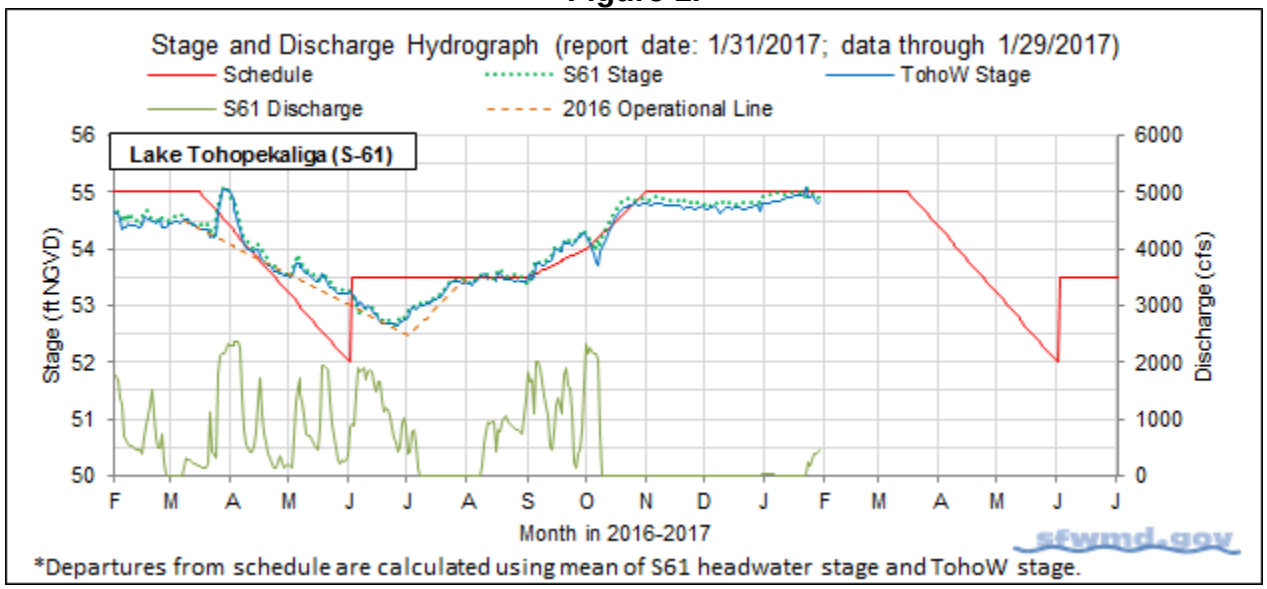


Figure 2.

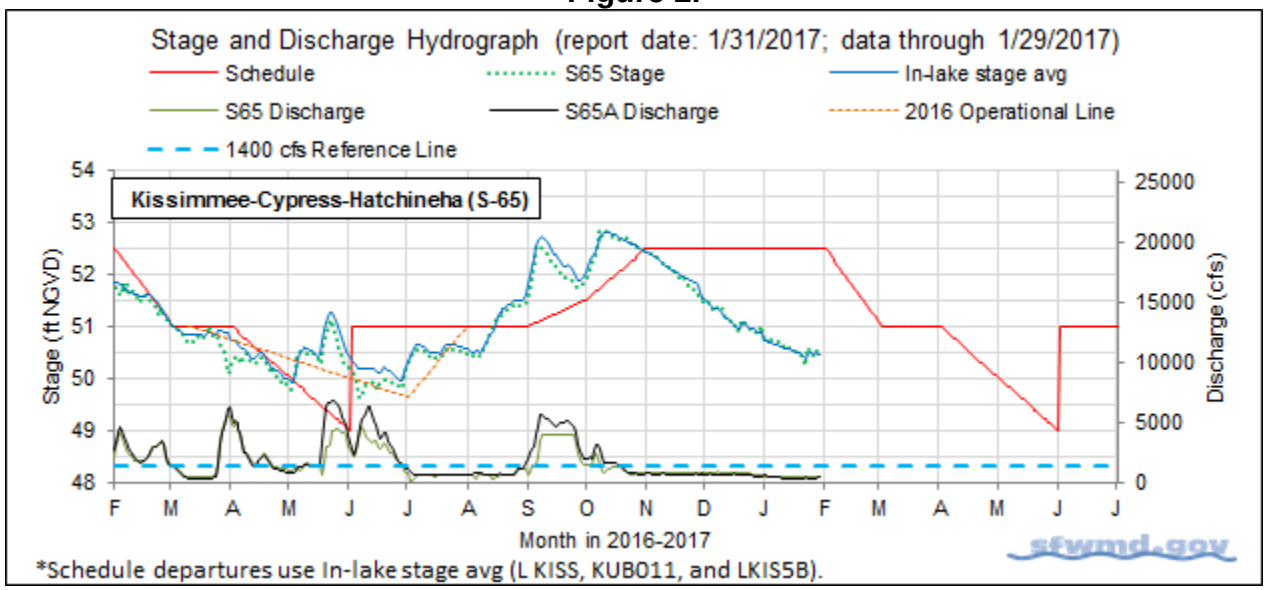


Figure 3.

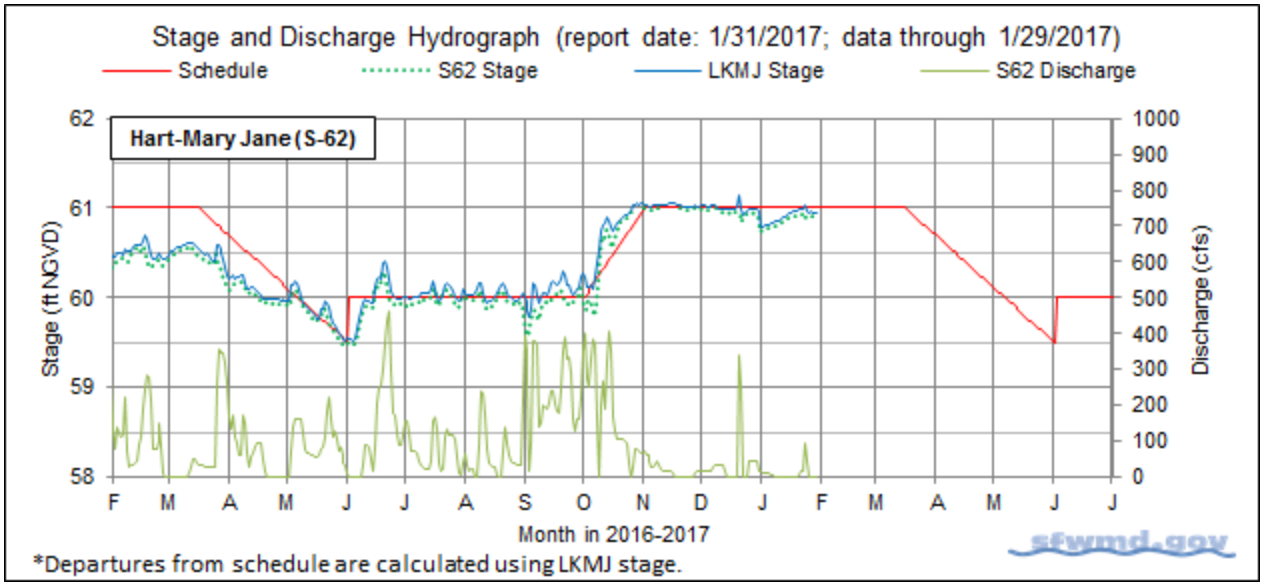


Figure 4.

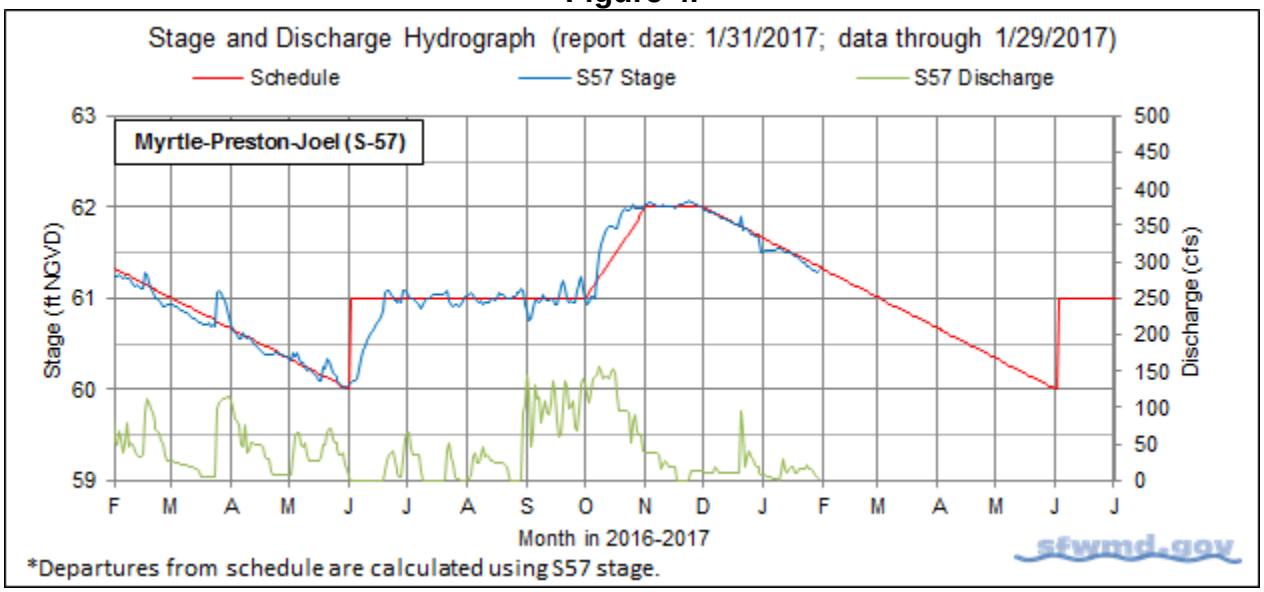


Figure 5.

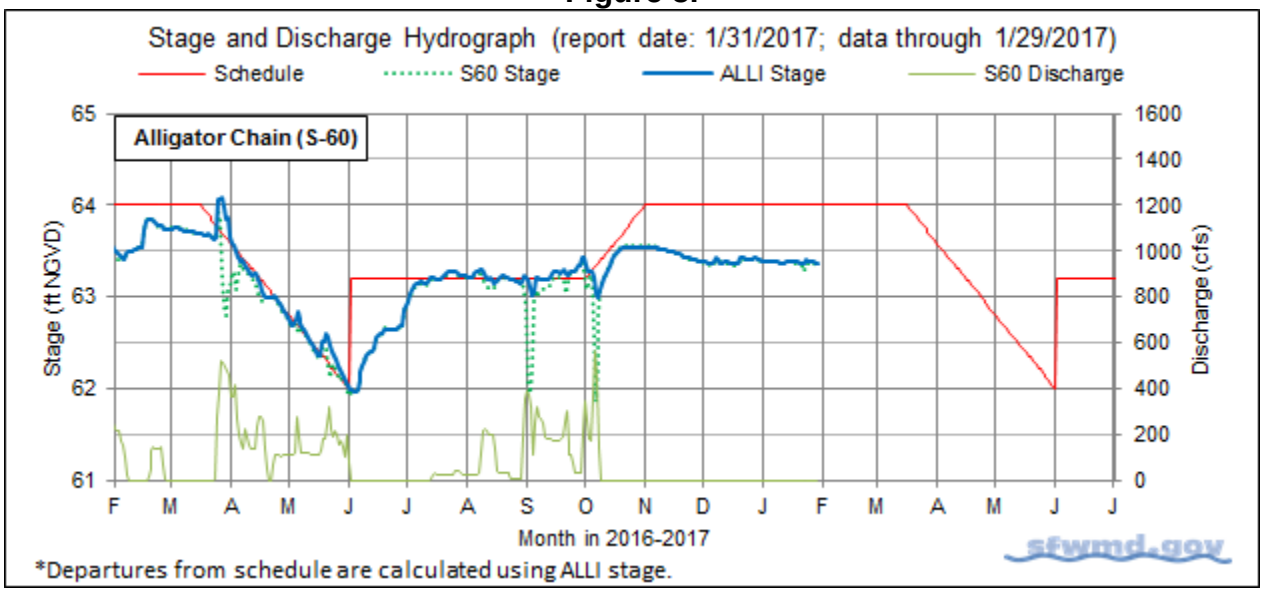


Figure 6.

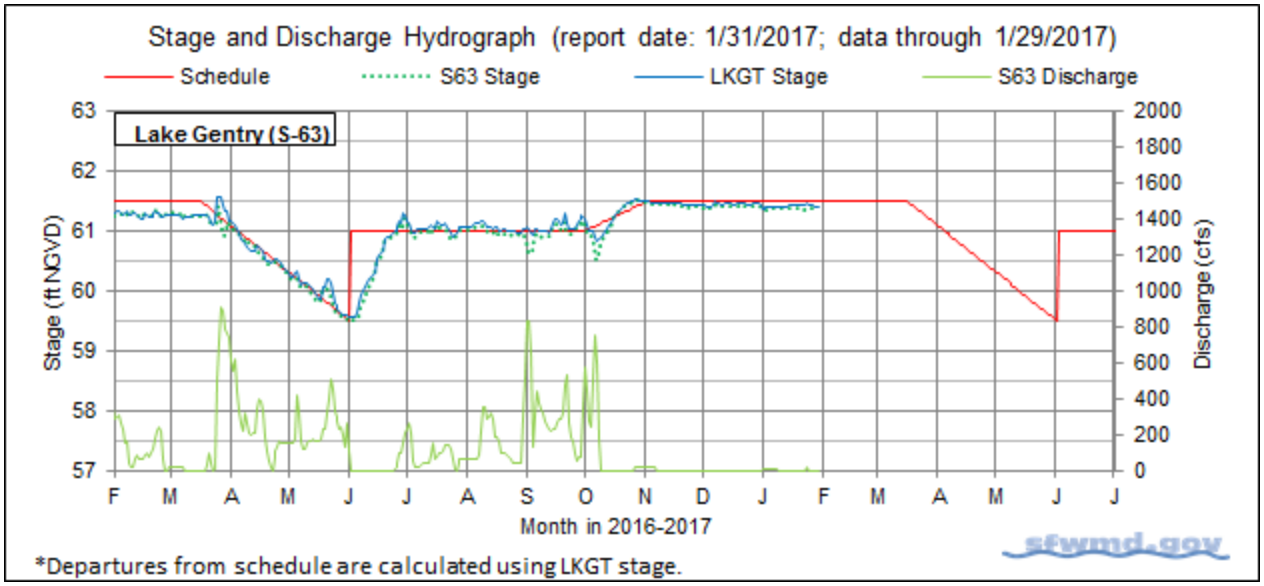


Figure 7.

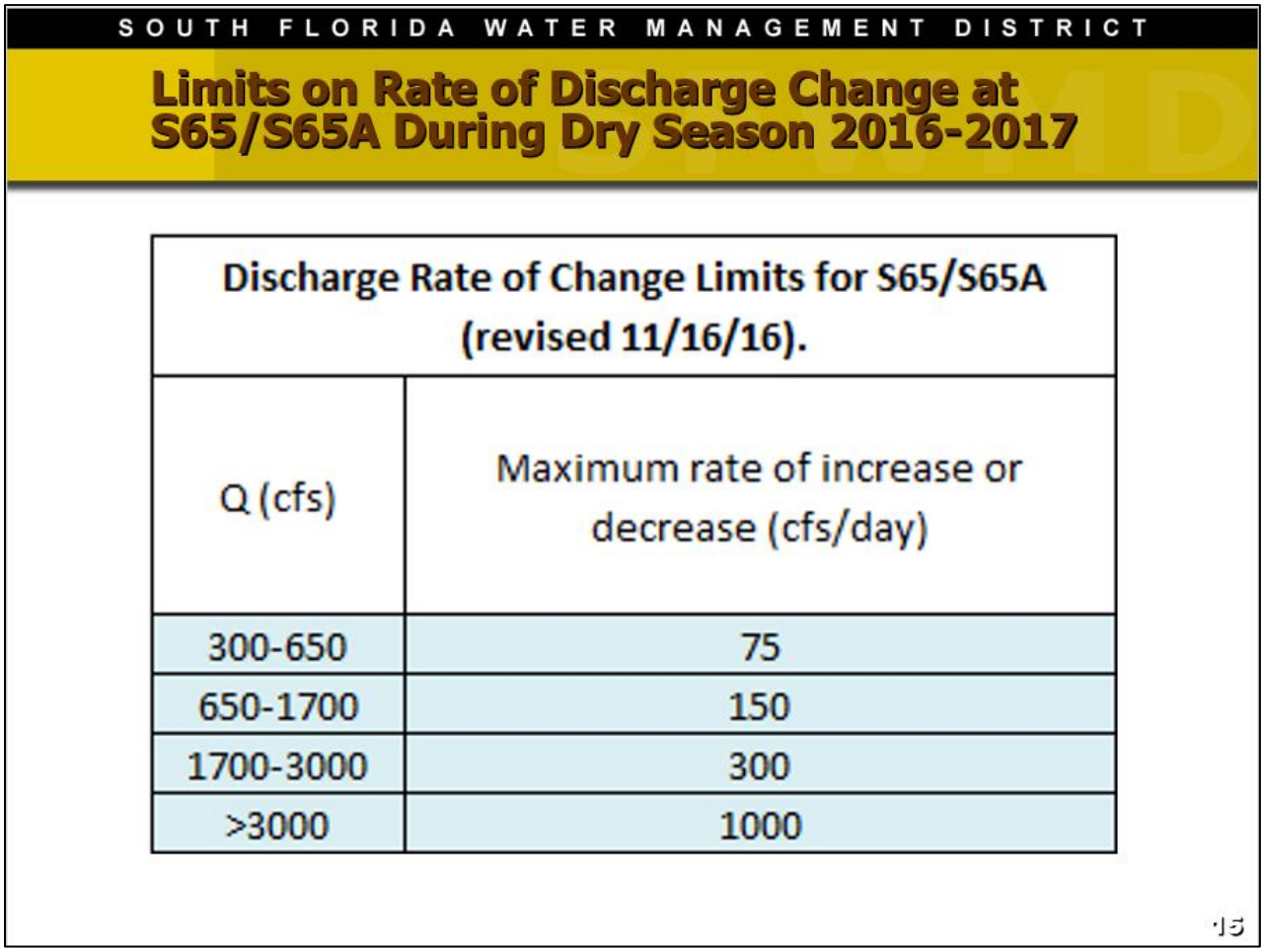


Figure 8a. Limits on rate of discharge change at S65/S65A for the 2016-2017 Dry Season.

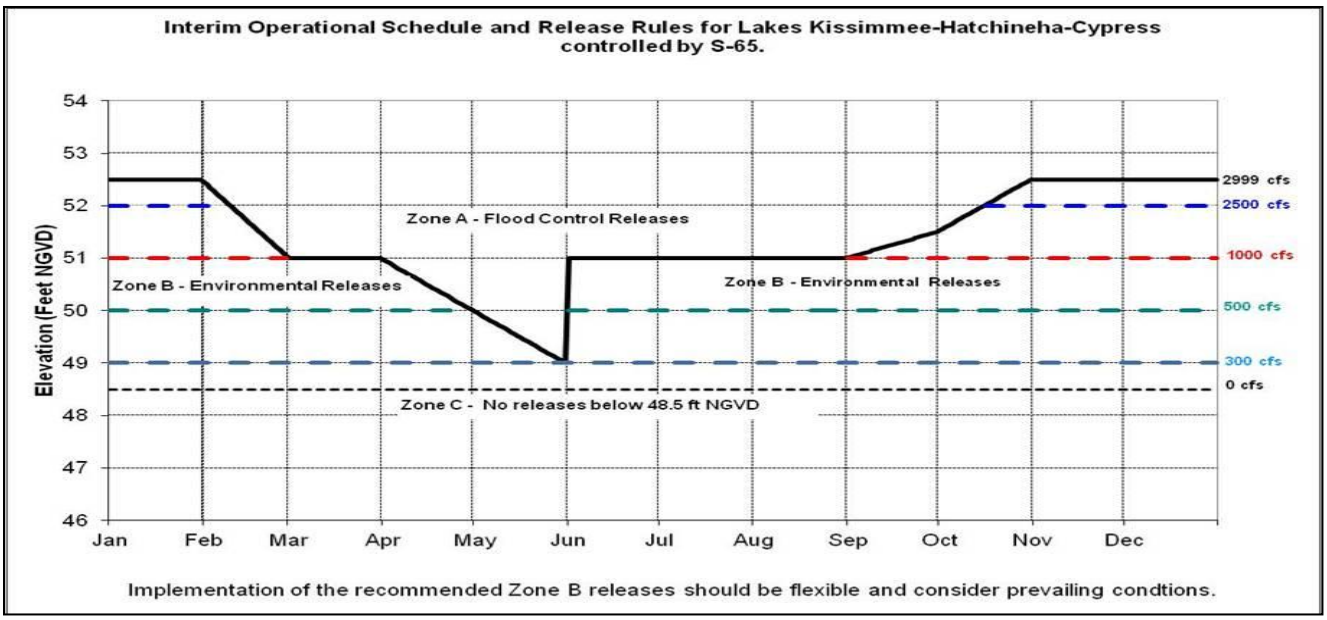


Figure 8b. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

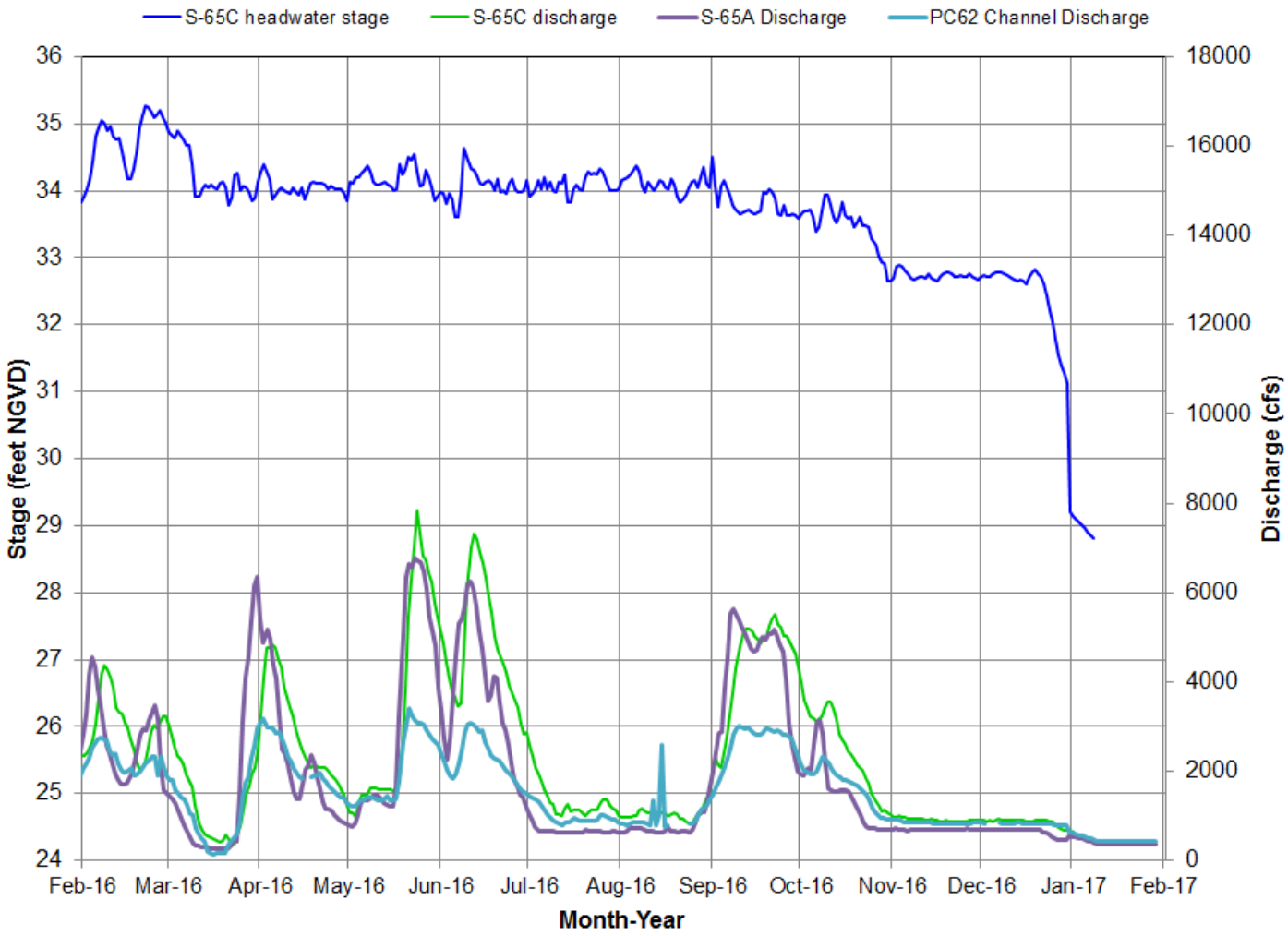


Figure 9. S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

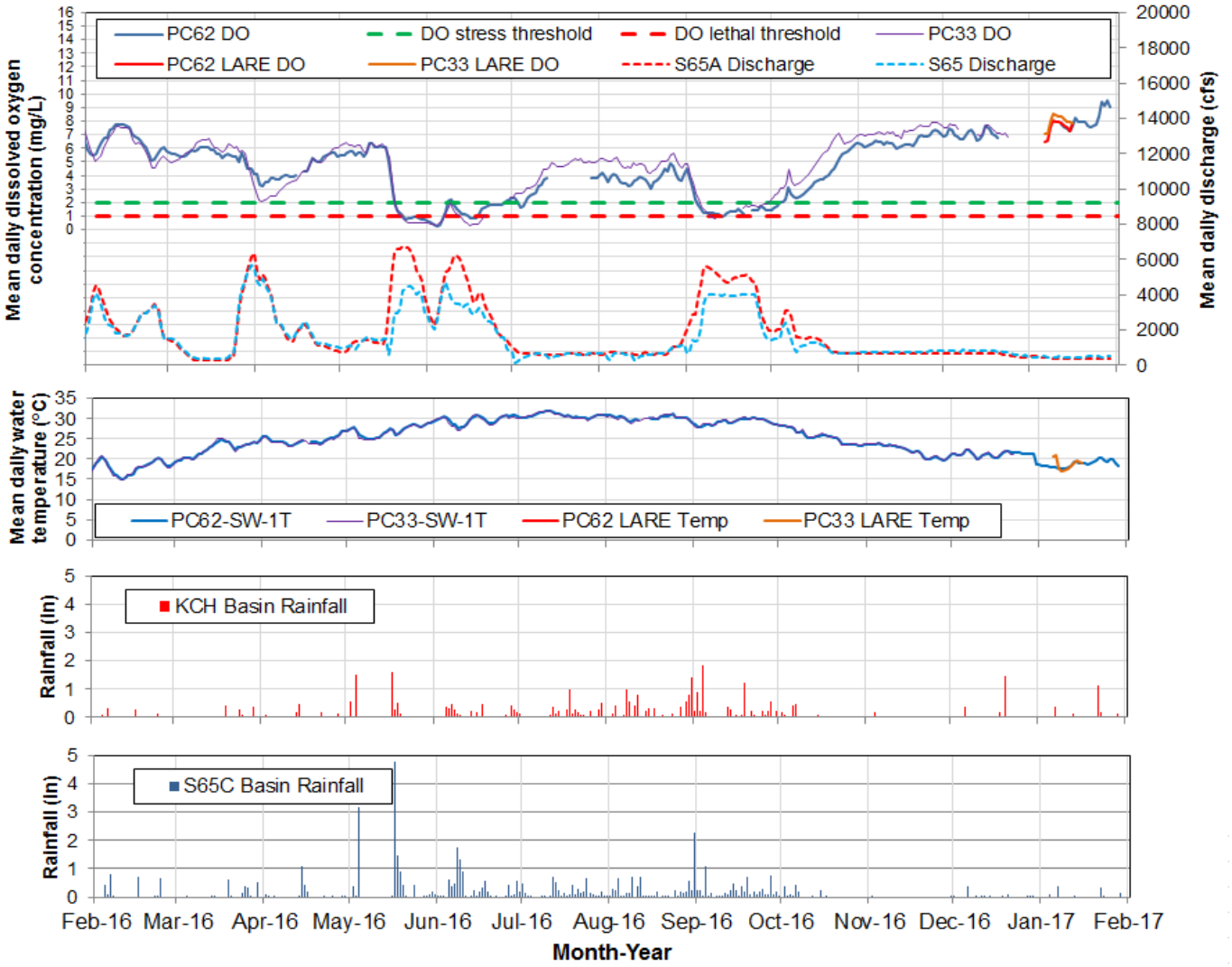


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

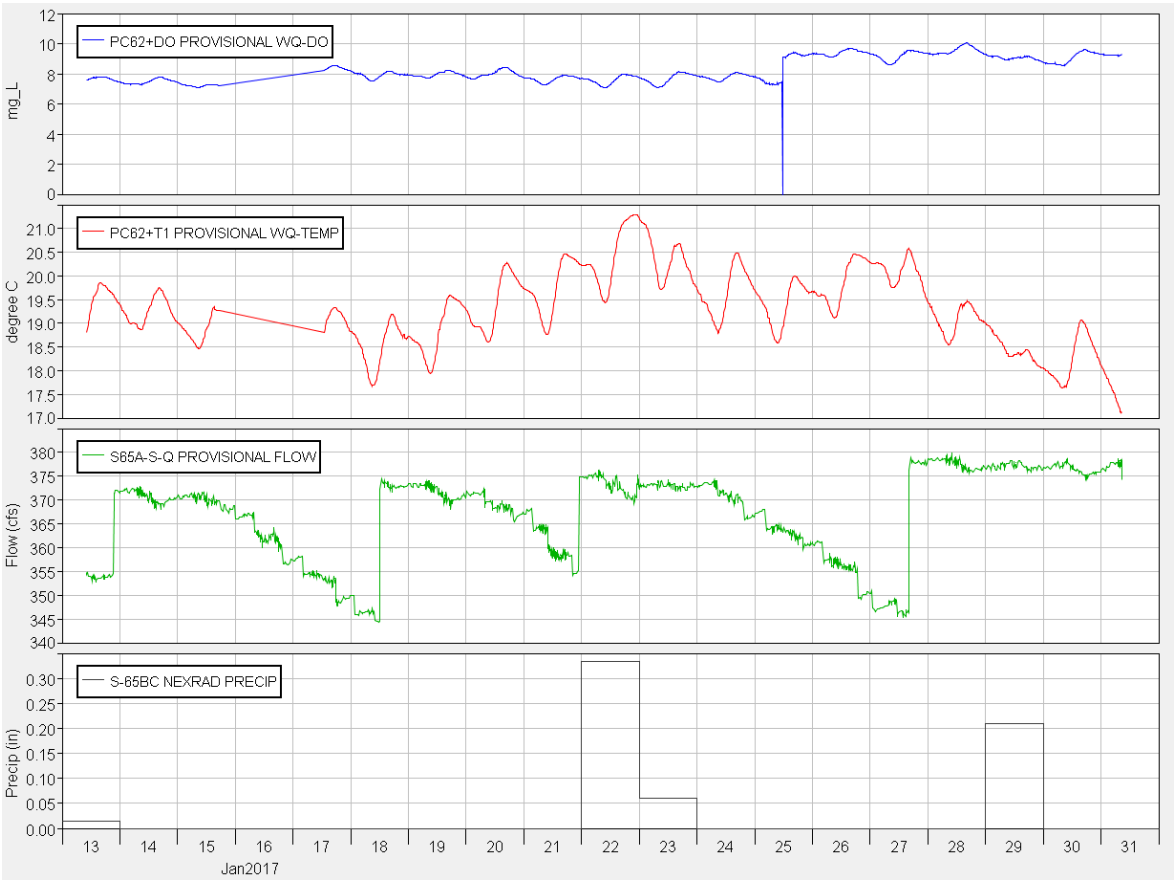


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

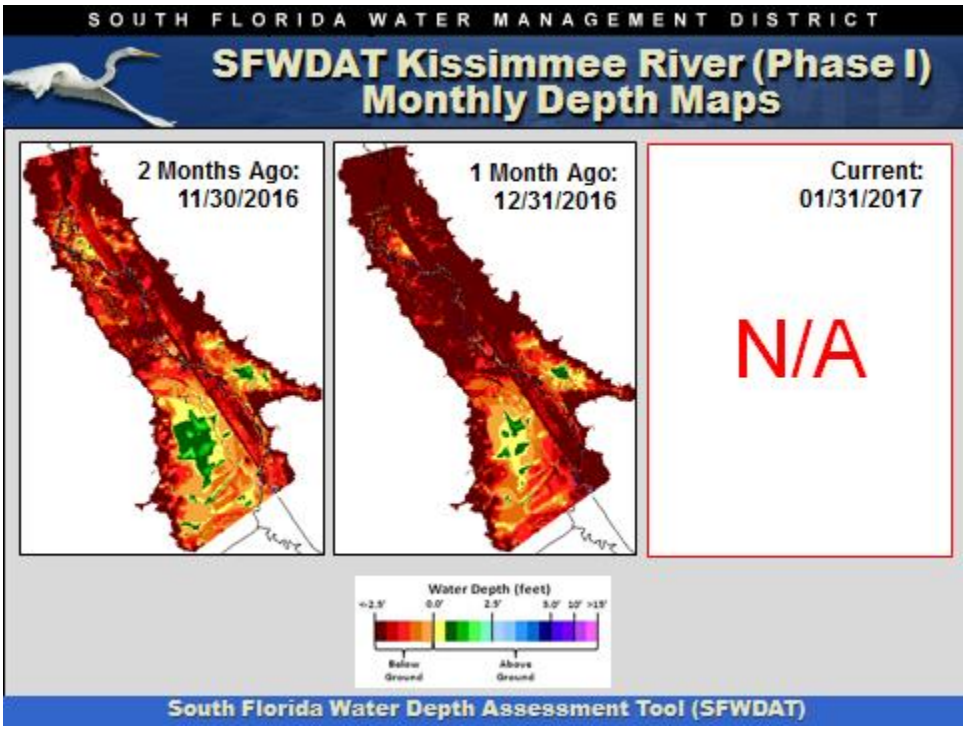
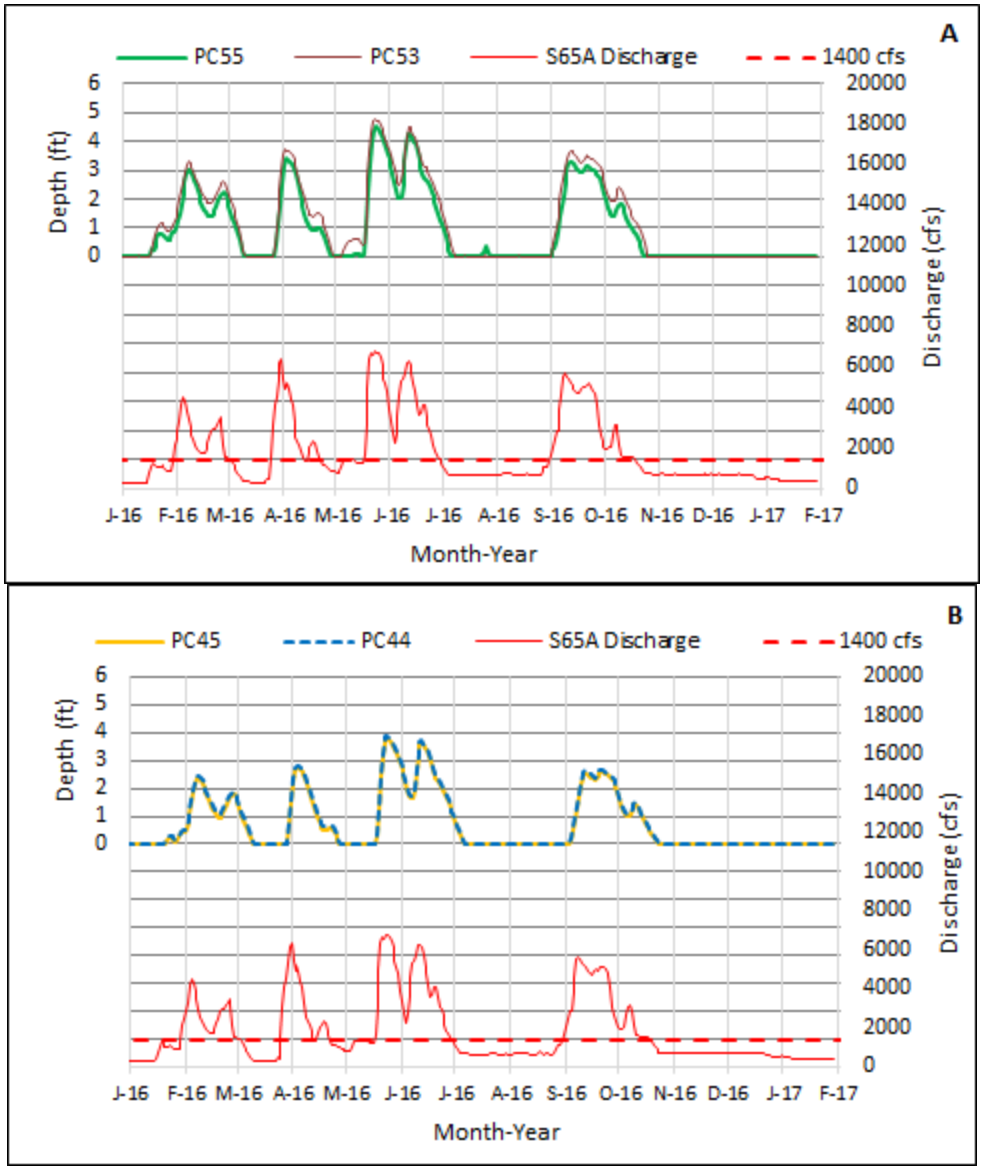


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.



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

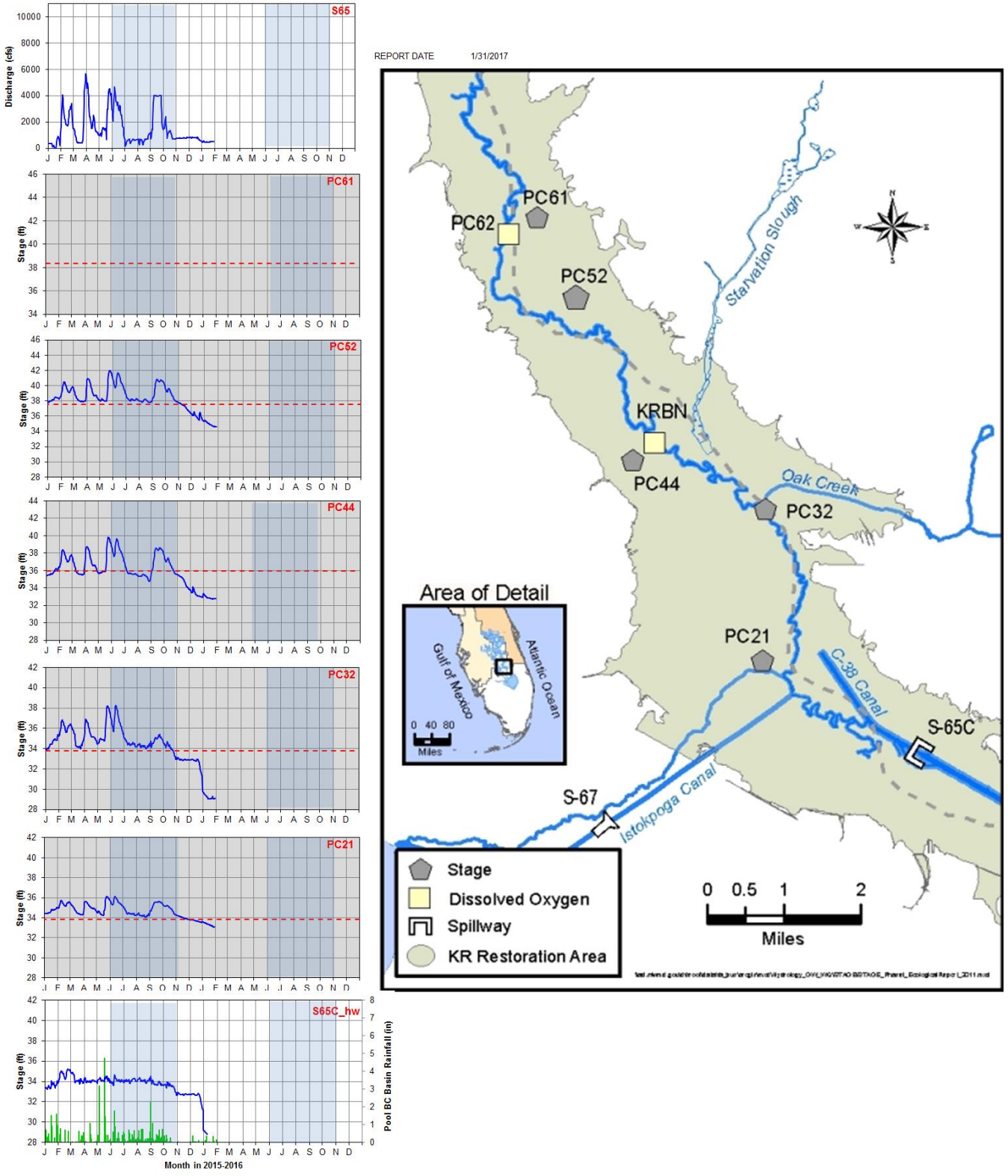


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated).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

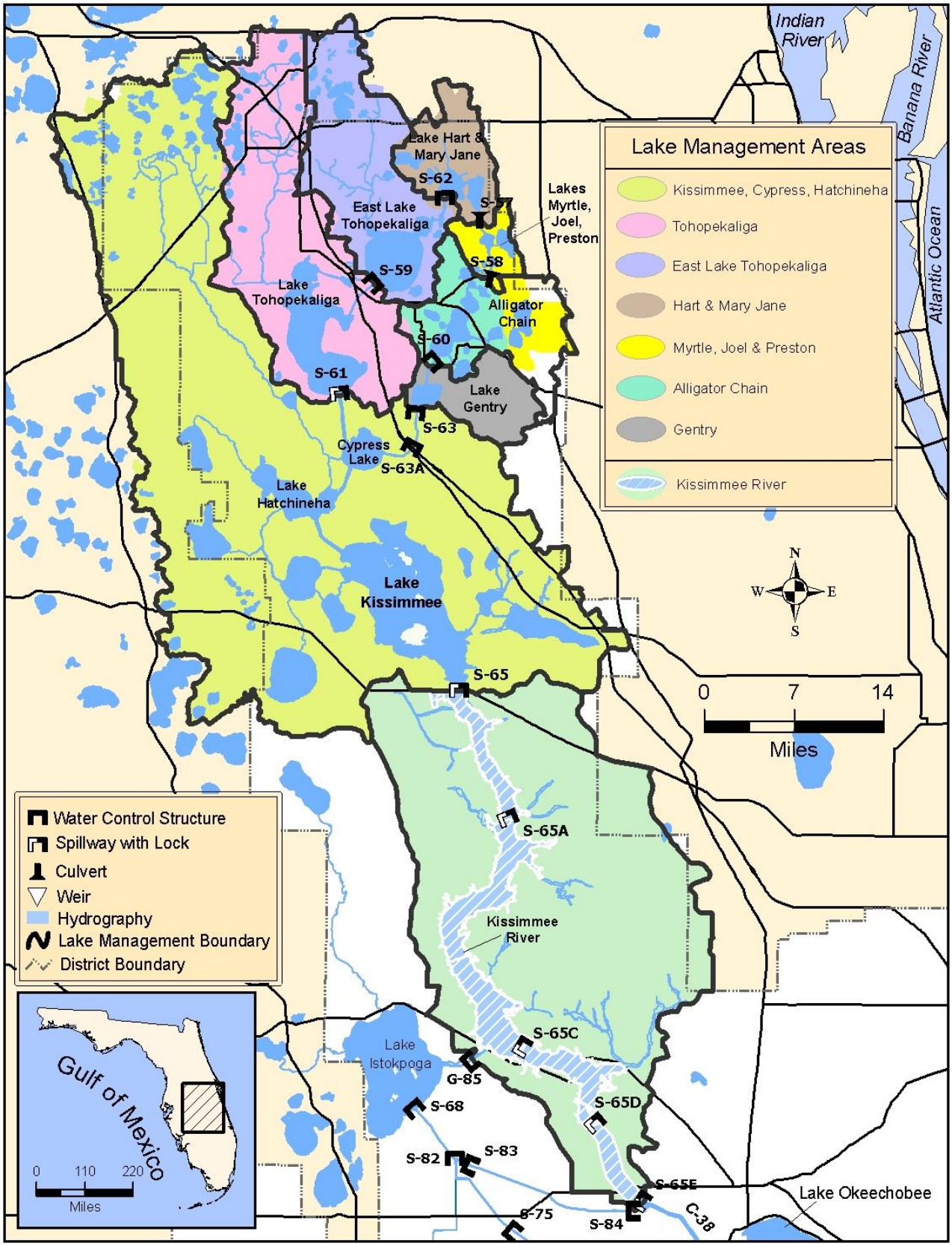


Figure 14. The Kissimmee Basin

LAKE OKEECHOBEE

According to the United States Army Corps of Engineers (USACE) web site, Lake Okeechobee stage is at 13.86 feet NGVD for the period ending at midnight on January 29, 2017. This value is based on the use of four interior Lake stations (L001, L005, L006, and LZ40) and four perimeter stations (S352, S4, S308 and S133). Lake stage decreased by 0.09 feet over the past week and is 0.43 feet lower than it was a month ago and 2.12 feet lower than it was a year ago (Figure 1). The Lake is currently in the Low sub-band (Figure 2). According to RAINDAR, 0.676 inches of rain fell directly over the Lake during the past seven days (Figure 3). Similar amounts fell to the south and east of the Lake but generally lesser amounts fell along the west coast and north of the Lake.

Based on USACE reported values, current Lake inflow is approximately 472 cfs as detailed below.

Structure	Flow cfs
S65E	407
S154	0
S84 & 84X	0
S71	157
S72	0
C5 (Nicodemus slough dispersed storage)	-94
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	2
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Current Lake outflow is approximately 1,168 cfs with 866 cfs exiting at S77 and 80 cfs exiting the L8 canal through Culvert 10A. Approximately 266 cfs is being directed south through S351, S352 and S354 and an additional 44 cfs is back flowing through S308. Corrected evapotranspiration value based on the L006 weather platform solar radiation data for this past week was 1,717 cfs.

Change in elevation equivalents and average weekly flows (midnight January 23, 2017 to midnight January 29, 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 42,579 acres of suitable foraging habitat for long-legged birds and 23,146 acres for long and short-legged birds on the Lake (Figure 5). Conditions are conducive to a good wading bird season assuming no major reversals occur over the next couple of months.

January chlorophyll data (collected on January 9 and 10, 2017) indicated the absence of bloom activity at the seventeen sites that were sampled (Figure 6). Additionally, none of the six routine microcystin sampling sites had values above the analytical limit of detection (0.20 ug/L). The two sites in Fisheating Bay (FEBIN and FEBOUT) were not sampled.

January Total Phosphorus (TP) and Total Suspended Solids (TSS) concentrations increased markedly in all regions compared to the previous month's data (Figure 7). Increases in water column nutrients and turbidity are typical for this time of year and probably reflect increased wind and wave activity due to the passage of arctic fronts.

The most recent available MODIS satellite images are not provided because of obstruction by extensive cloud cover.

Water Management Recommendations

Lake stage is 13.86 feet NGVD and continues to fall at a steady rate. The current weekly recession rate of 0.09 feet equates to a monthly recession rate of 0.36 feet, which is within the preferred range. A too rapid decrease in Lake levels may jeopardize the upcoming wading bird season by drying out foraging locations too early in the winter.

From an ecological perspective, high Lake levels over the past spring and summer resulted in a loss of SAV and increased cyanobacterial blooms and associated toxins. Near optimal Lake stages will be necessary this coming spring and summer to provide conditions conducive to the reestablishment of the SAV acreage lost this year due to high Lake stages.

The goal should be to continue to lower Lake levels but at a rate of no more than 0.50 feet per month. Actions which contribute to a continued steady but slow recession and avoid reversals are essential to protect critical components of the Lake's floral (bulrush and SAV) and faunal (wading birds, snail kites and fish) communities.

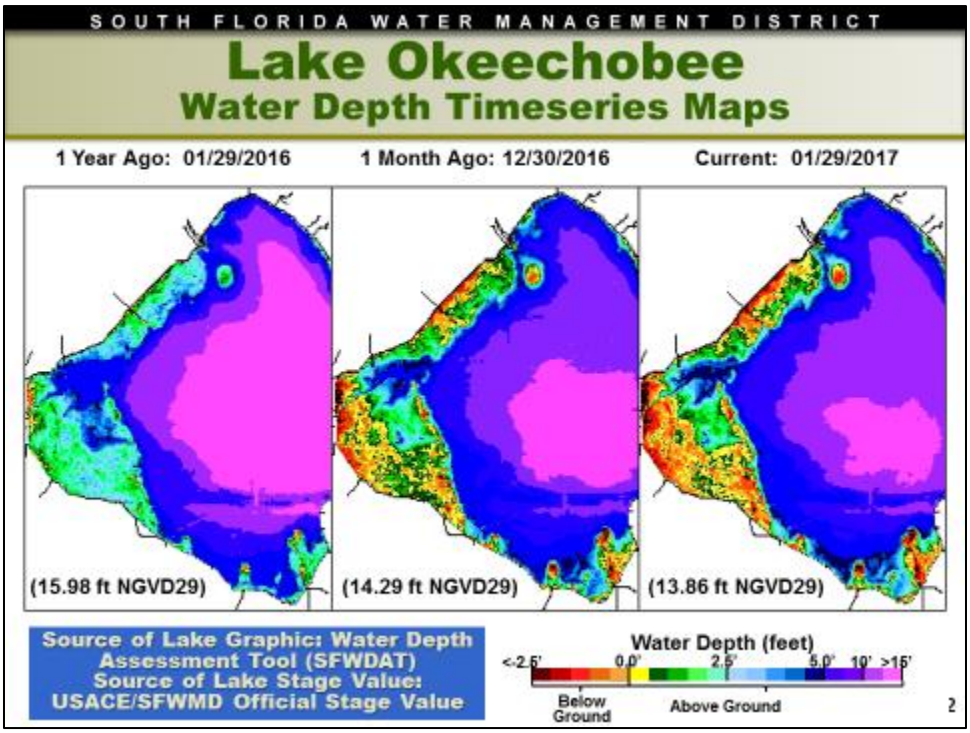


Figure 1

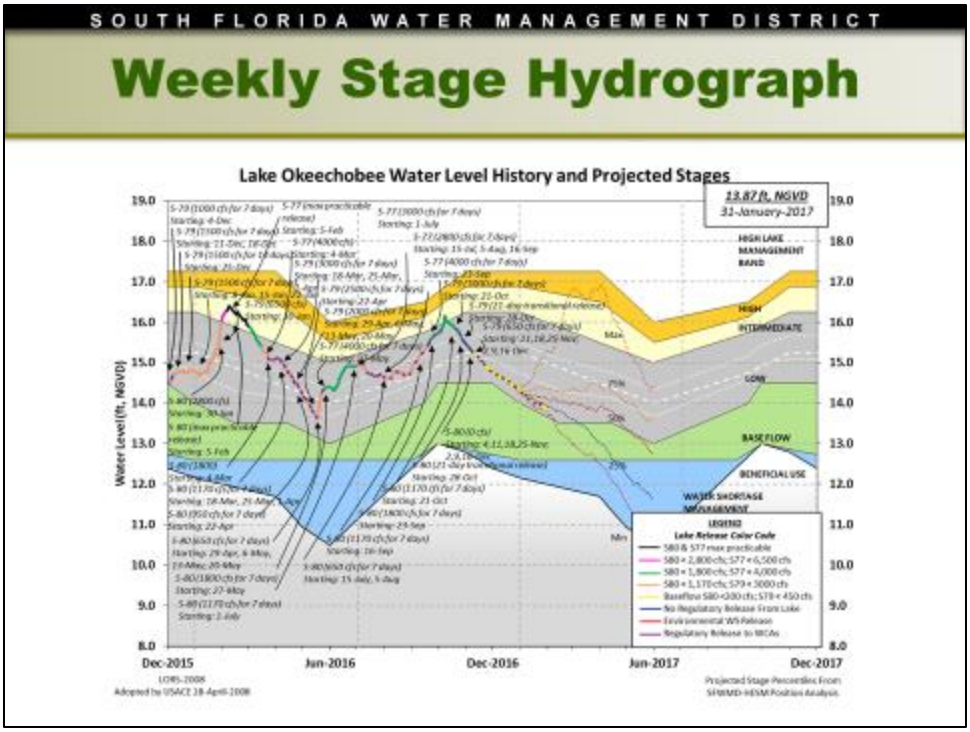

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Weekly Stage Hydrograph
Lake Okeechobee Water Level History and Projected Stages
13.87 ft, NGVD
31-January-2017
Water Level (ft, NGVD)
Dec-2015
Jun-2016
Dec-2016
Jun-2017
Dec-2017
HIGH LAKE MANAGEMENT BAND
HIGH
INTERMEDIATE
LOW
BASE FLOW
BENEFICIAL USE
WATER SHORTAGE MANAGEMENT
LEGEND
Lake Release Color Code
LOSOM-2008
Adopted by USACE 28-April-2008

Figure 2

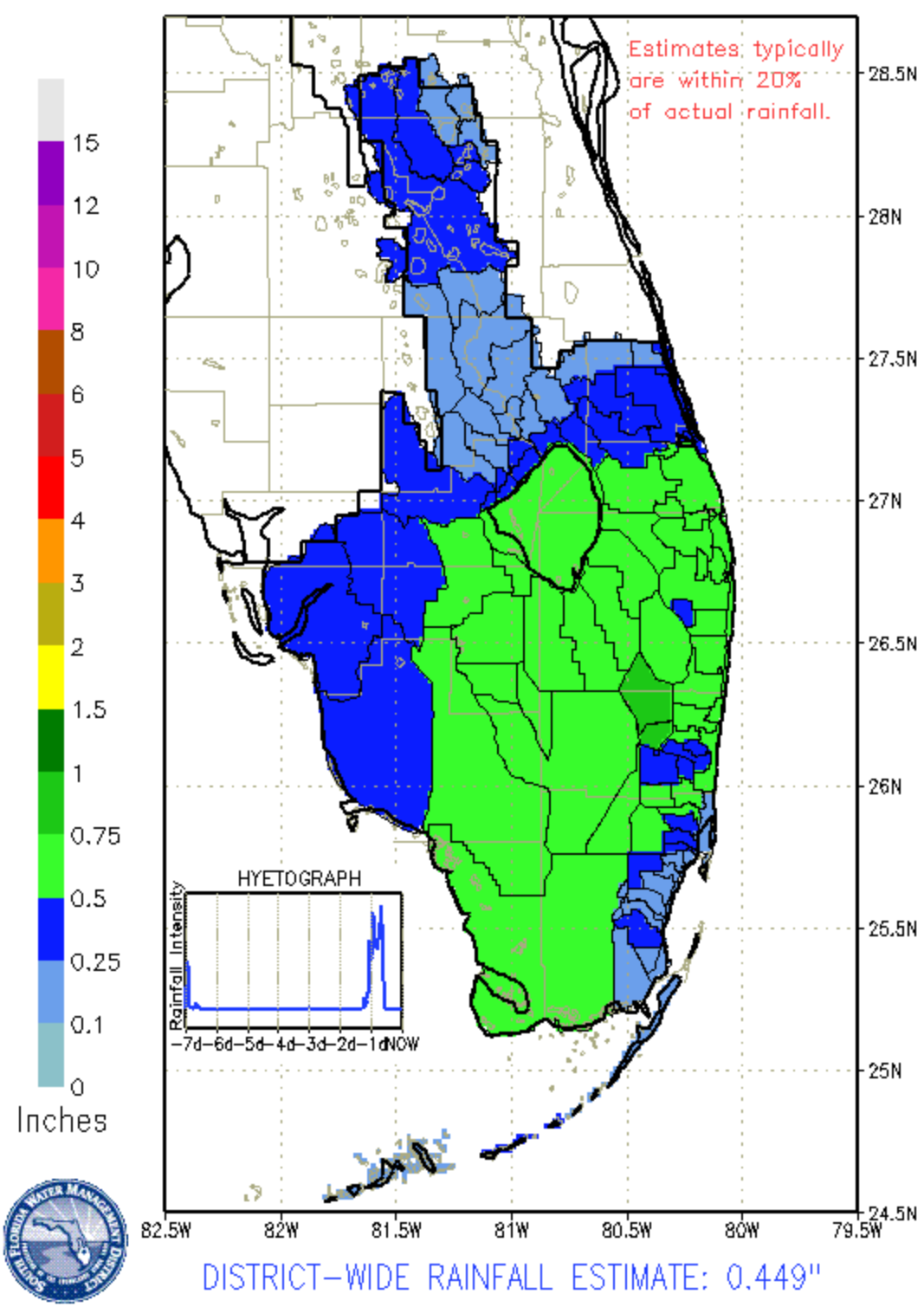

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES
FROM: 0615 EST, 01/23/2017 THROUGH: 0615 EST, 01/30/2017
Estimates typically are within 20% of actual rainfall.
15
12
10
8
6
5
4
3
2
1.5
1
0.75
0.5
0.25
0.1
0
Inches
HYETOGRAPH
Rainfall Intensity
-7d-6d-5d-4d-3d-2d-1d NOW
28.5N
28N
27.5N
27N
26.5N
26N
25.5N
25N
24.5N
82.5W
82W
81.5W
81W
80.5W
80W
79.5W
DISTRICT-WIDE RAINFALL ESTIMATE: 0.449"

Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E	398	0.014
S71 & 72	96	0.003
S84 & 84X	0	0.000
Fisheating Creek	-4	0.000
Rainfall	N.A.	0.056
OUTFLOWS	**Average Daily Flow Past Week cfs**	**Feet of Change Past Week**
S77	869	0.030
S308	-100	-0.003
S351	223	0.008
S352	0	0.000
S354	315	0.011
L8	184	0.006
ET	1717	0.060

Figure 4

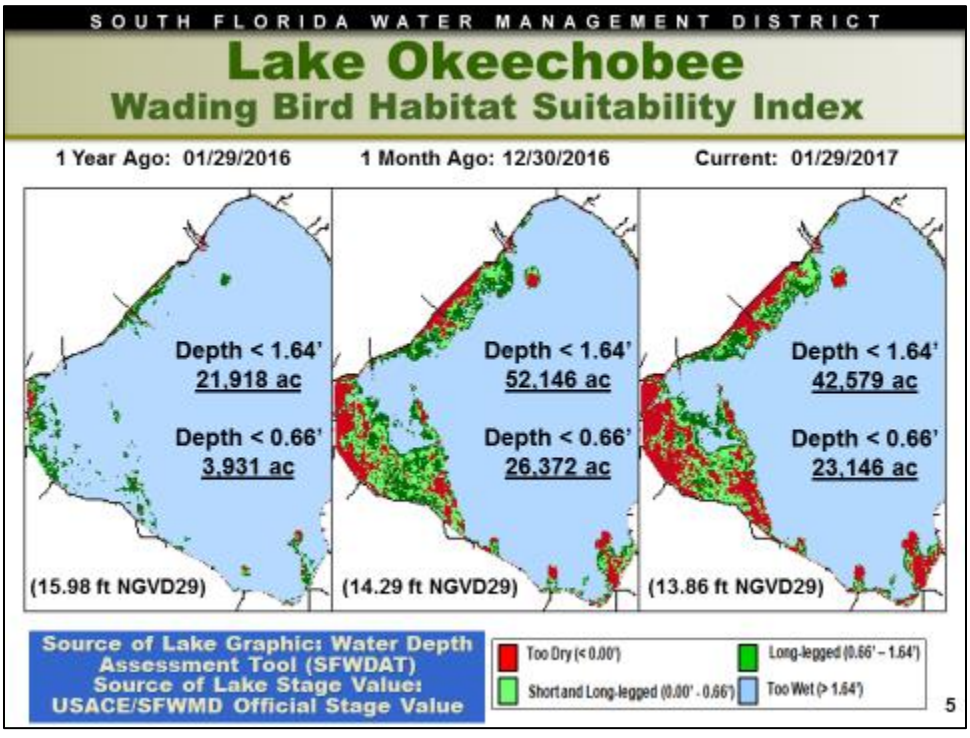


Figure 5

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Water Quality

Jan 9 to Jan 10, 2017		
Site	Chlorophyll *a* (ug/L)	Microcystin (ug/L)
Nearshore Stations		
FEBIN	Not Sampled	
FEBOUT	Not Sampled	
KISSR0.0	15.8	0.20
LZ2	14.0	0.20
LZ25A	10.8	
PALMOUT	37.1	
PELBAY3	9.6	
POLE3S	29.1	
POLESOUT	26.7	0.20
RITTAE2	18.5	
L001	15.3	
L004	7.4	
L005	21.8	0.20
L006	4.8	
L007	9.3	
L008	9.7	
LZ30	9.4	0.20
LZ40	10.0	
CLV10A	8.5	0.20

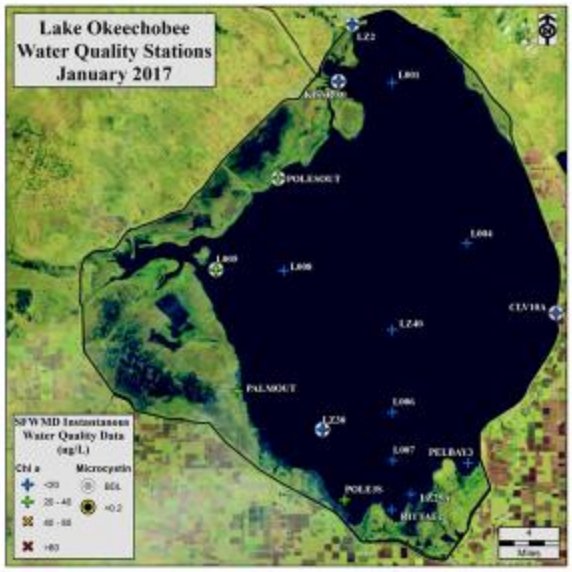


Figure 6

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Water Quality

Parameter		Nov 2016	Dec 2016	Jan 2017
TP (ppb)	Nearshore	87	77	153
	Pelagic	134	141	277
	Lakewide	109	107	218
TSS (ppm)	Nearshore	11	9	41
	Pelagic	32	26	111
	Lakewide	21	17	78

NOTE: The two Fisheating Bay sites (FEBIN and FEBOUT) were not sampled.

Figure 7

Lake Istokpoga

The Lake Istokpoga regulation schedule is at winter pool stage of 39.50 feet NGVD. Lake stage is 39.24 feet NGVD and is currently 0.26 feet below regulation stage (Figure 8). Average flows into the Lake from Arbuckle and Josephine creeks were 84 cfs and 20 cfs respectively, which is an increase from last week's total flow. Average discharge from S68 and S68X this past week was 53 cfs, which is

a decrease from the previous week's flow. According to RAINDAR, 0.207 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

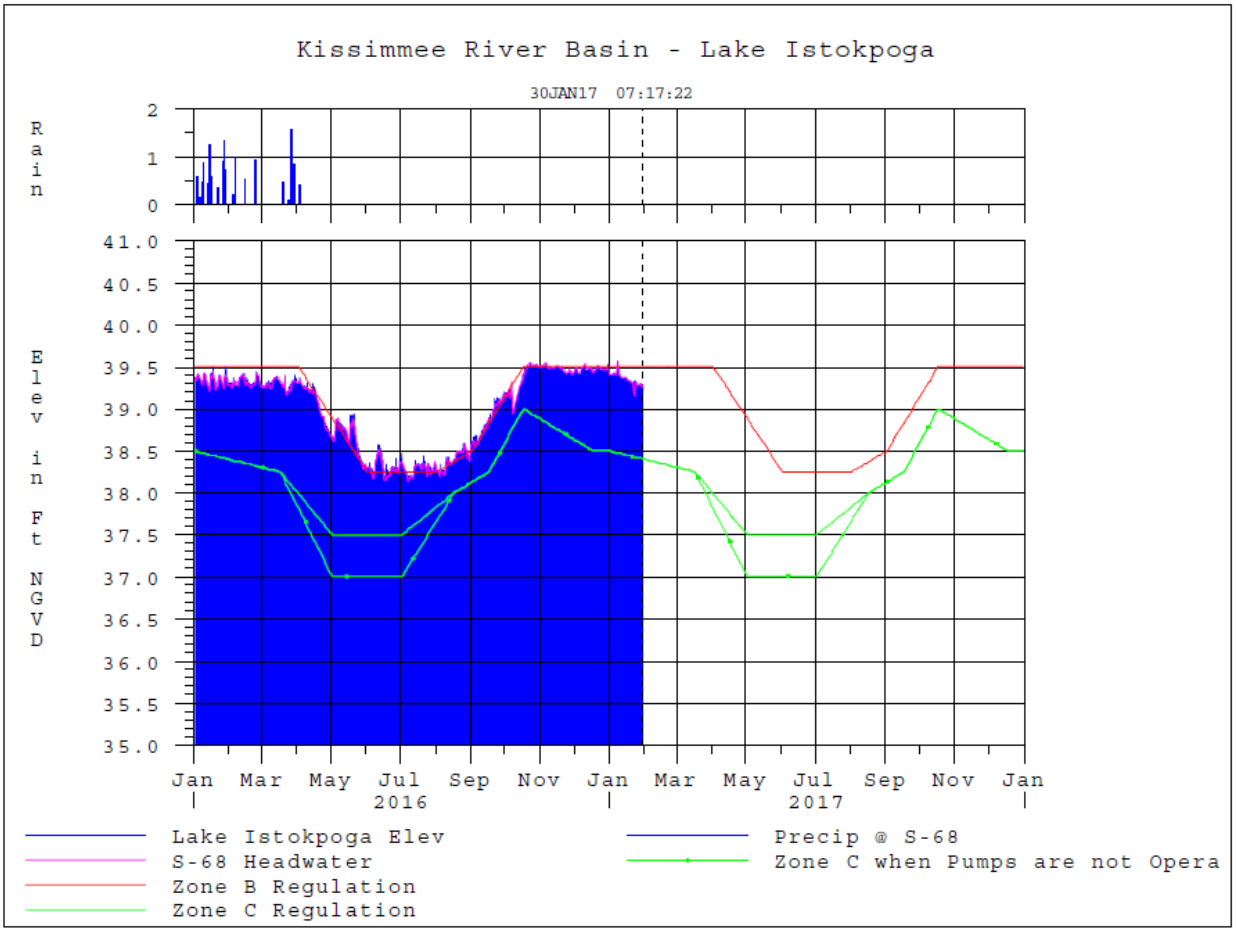


Figure 8

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 0 cfs at S-80, 61 cfs downstream of S-308 flowing into Lake Okeechobee, 0 cfs at S-49 on C-24, 0 cfs at S-97 on C-23, and 59 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 198 cfs (Figures 1 and 2). Total inflow averaged about 257 cfs last week and 177 cfs over last month.

Over the past week in the estuary, salinity increased at HR1 and decreased downstream (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is about 25.3. Salinity conditions in the middle estuary are in 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)	**21.9** (21.3)	**24.5** (23.8)	NA[1]
US1 Bridge	**25.0** (25.7)	**25.7** (26.4)	10.0-26.0
A1A Bridge	**30.7** (31.3)	**31.5** (32.4)	NA

[1]Envelope not applicable

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 935 cfs at S-77, 549 cfs at S-78, and 749 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 98 cfs (Figures 5 and 6). Total inflow averaged 847 cfs last week and 738 cfs over last month.

Over the past week, salinity decreased 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 5.0 at Val I-75 and 11.7 at Ft. Myers. The 30-day moving average salinity at Ft. Myers has been over 10 for 30 consecutive days. Salinity conditions between Val I-75 and Ft. Myers are likely to result in tape grass deterioration. Without discharges at S-79, the 30-day moving average salinity at Val I-75 is forecast to remain over 5 for the next 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** (5.3)	**2.8** (5.3)	NA[1]
*Val I75	**3.8** (6.9)	**6.0** (8.9)	0.0-5.0[2]
Ft. Myers Yacht Basin	**11.4** (13.1)	**12.0** (13.3)	NA
Cape Coral	**18.9** (19.6)	**19.6** (21.5)	10.0-30.0
Shell Point	**27.3** (29.0)	**28.4 (**29.9)	10.0-30.0
Sanibel	**31.2** (32.3)	**31.3** (32.9)	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)	3.19 – 6.07	5.21 – 18.44	1.93 – 15.24 one spike to 58.38
Dissolved Oxygen (mg/l)	6.78 – 8.08	4.30 – 8.73	Negative Readings

The Florida Fish and Wildlife Research Institute reported on January 27, 2017, that *Karenia brevis*, the Florida red tide organism, was observed in background to low concentrations in five samples collected from Lee County.

<u>Water Management Recommendations</u>

Given the current estuarine conditions, it is recommended that runoff from the C-43 basin be supplemented with Lake Okeechobee water as a pulsed release of 650 cfs through S-79 as per the Adaptive Protocols.

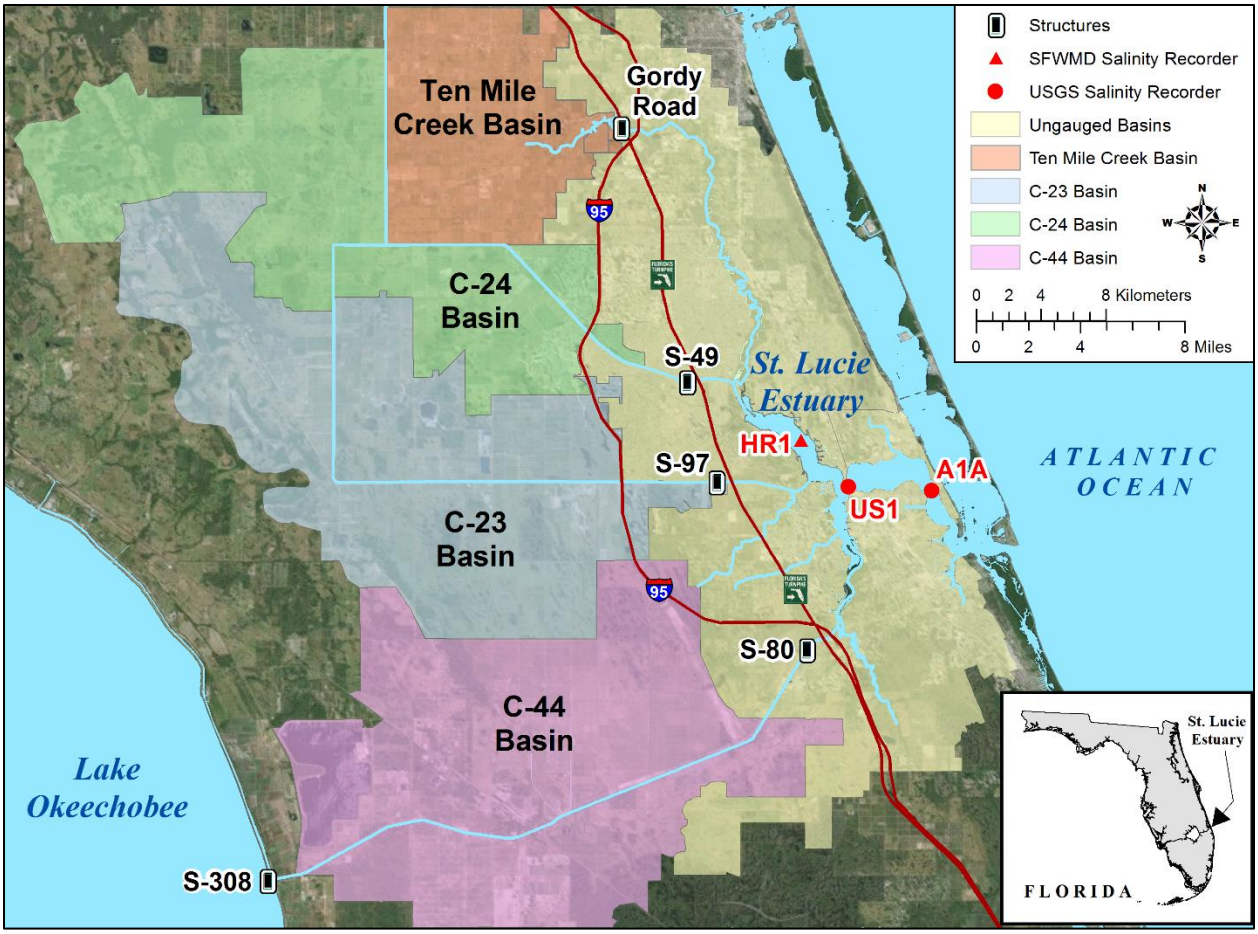


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

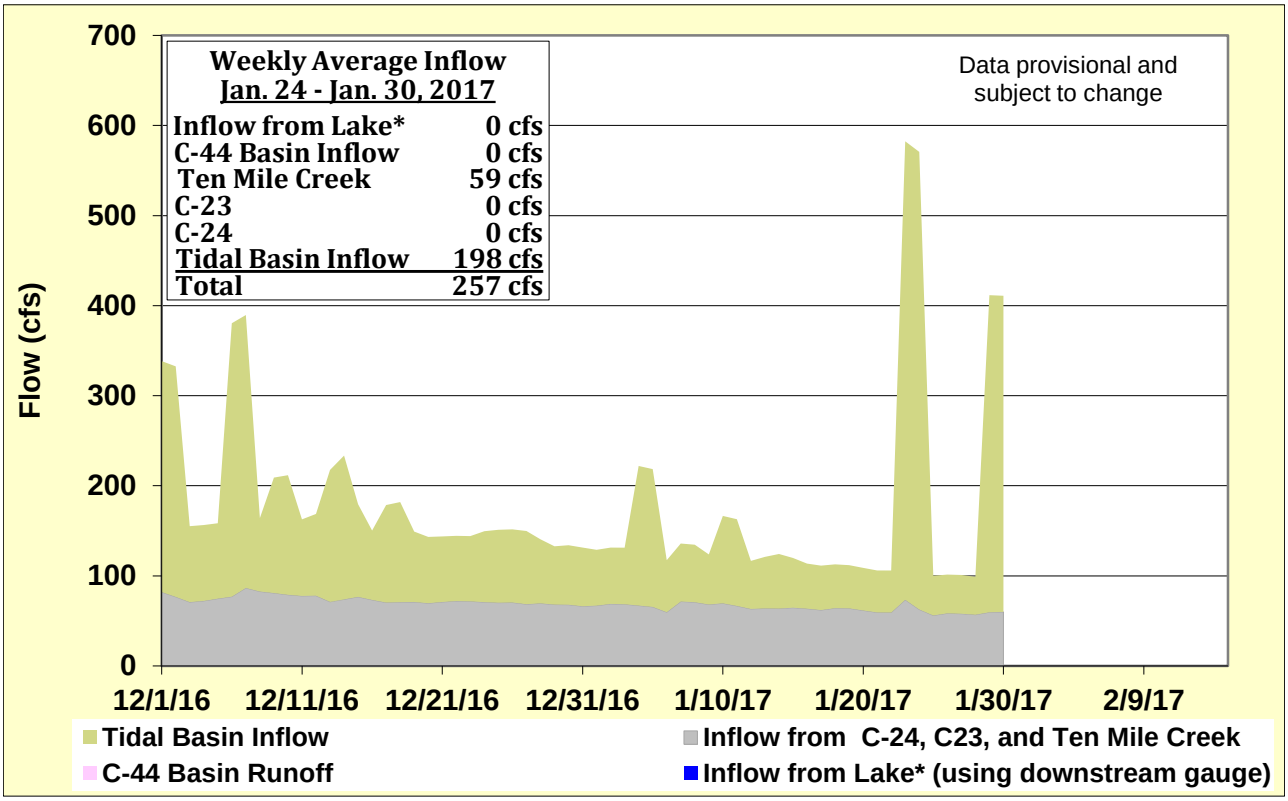


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

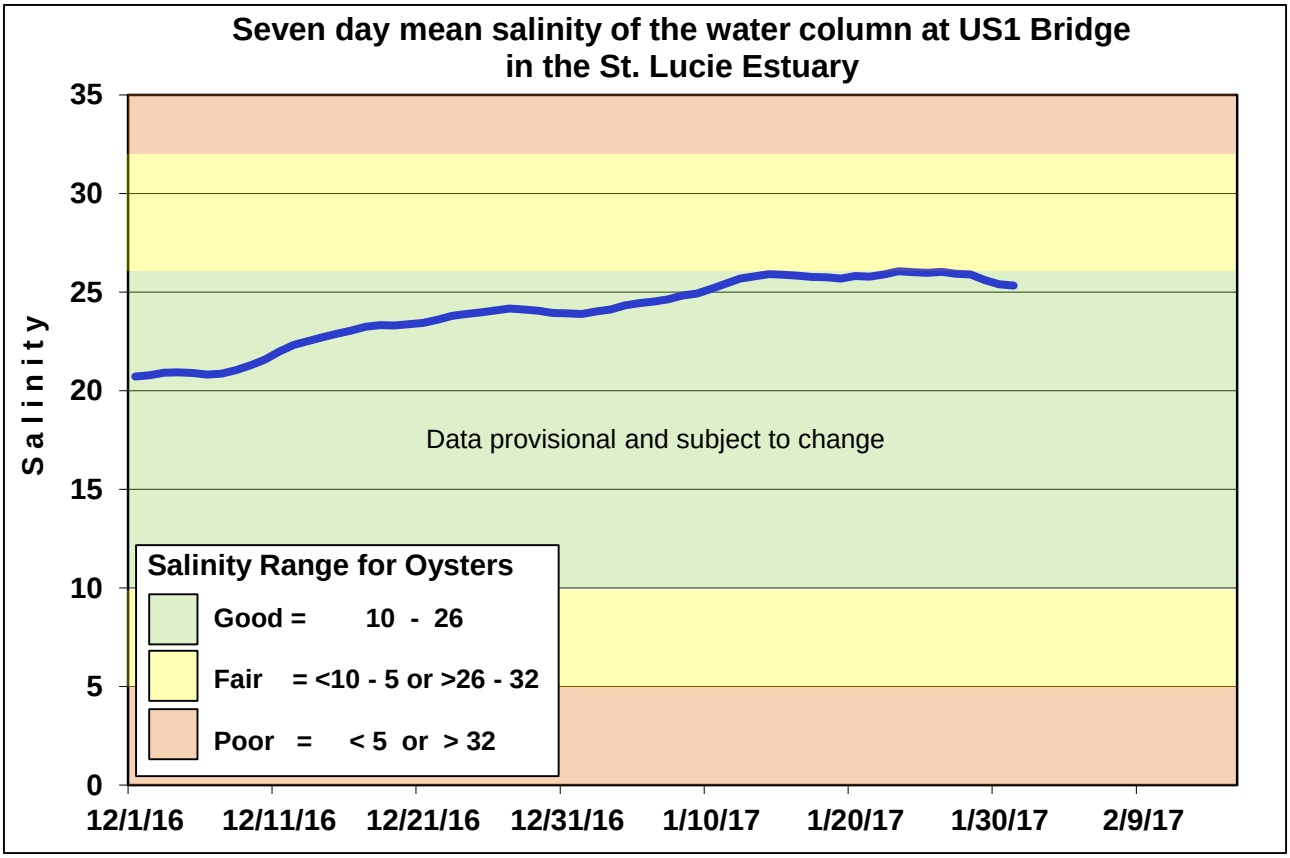


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

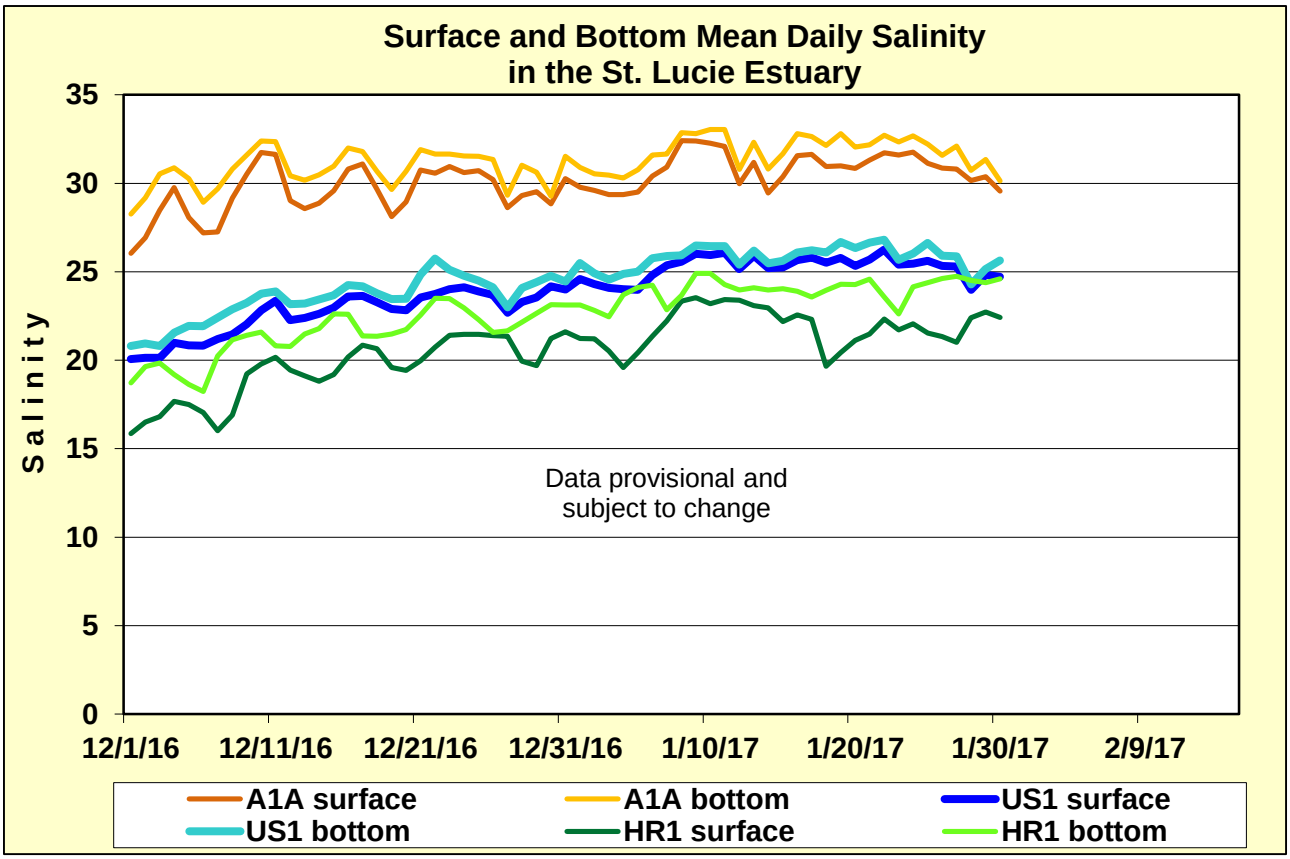


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

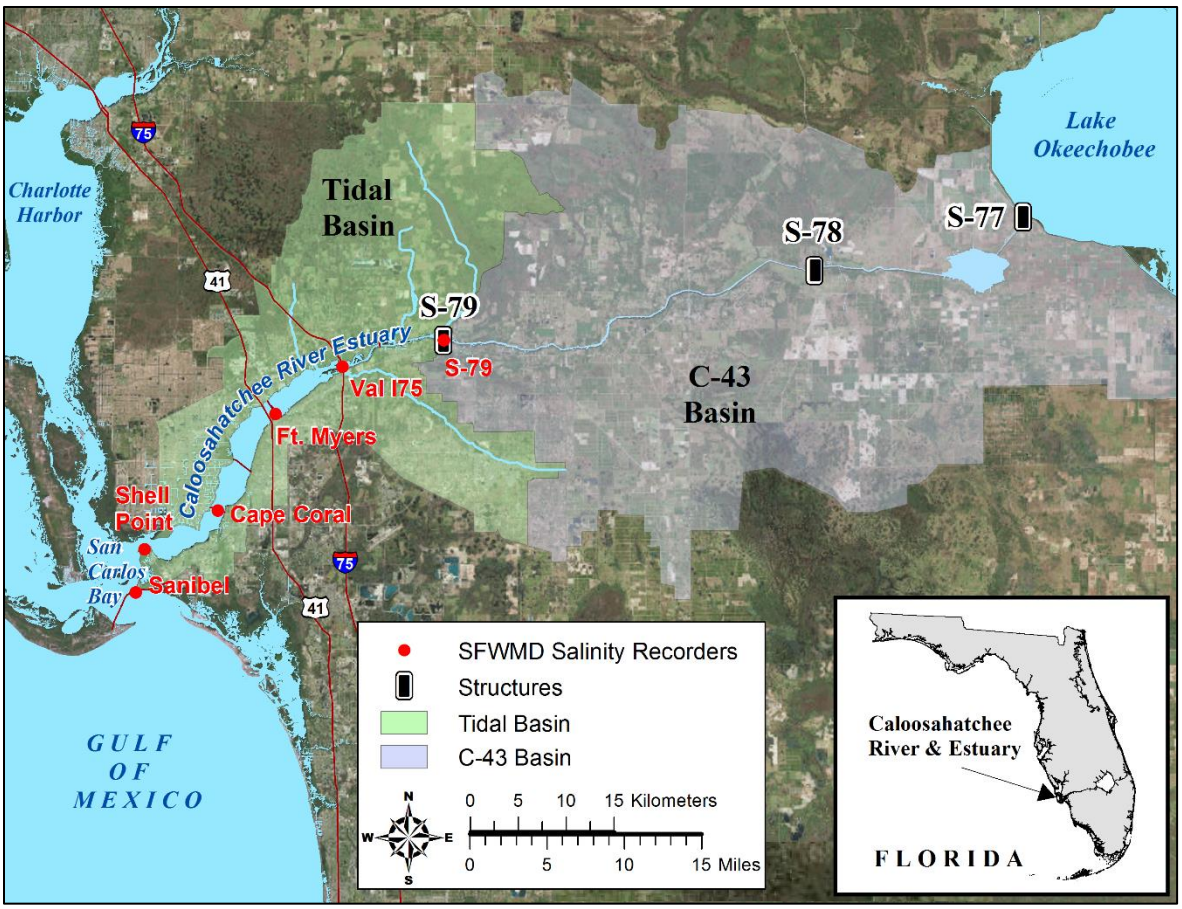


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

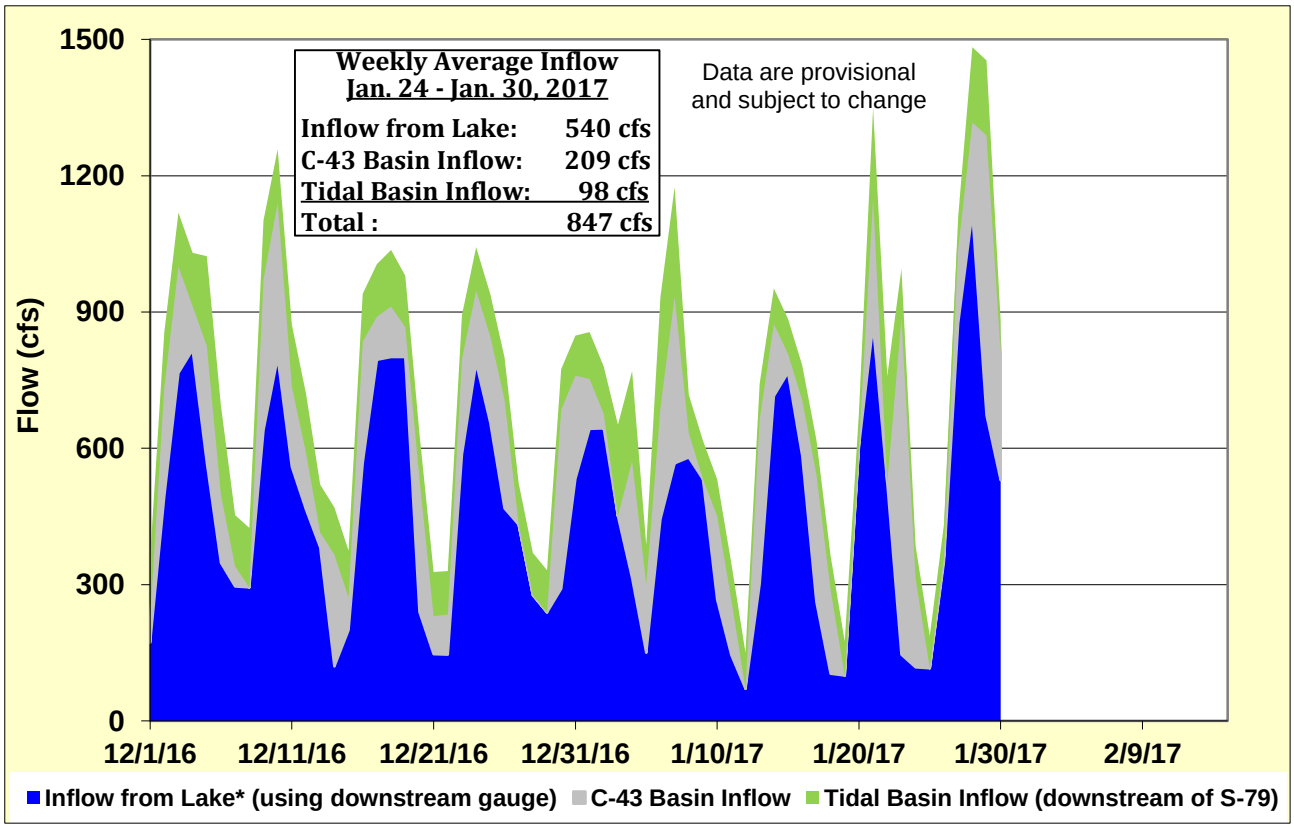
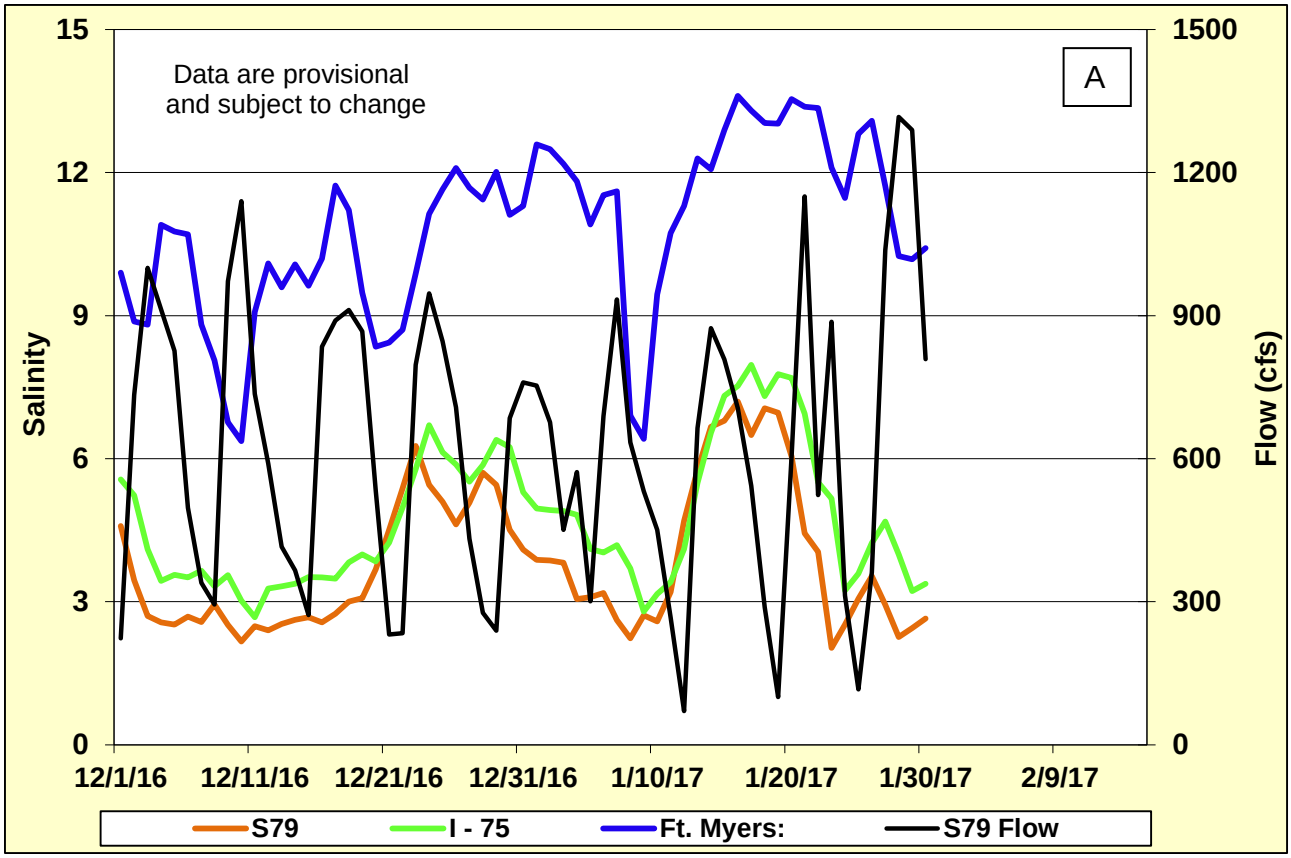


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



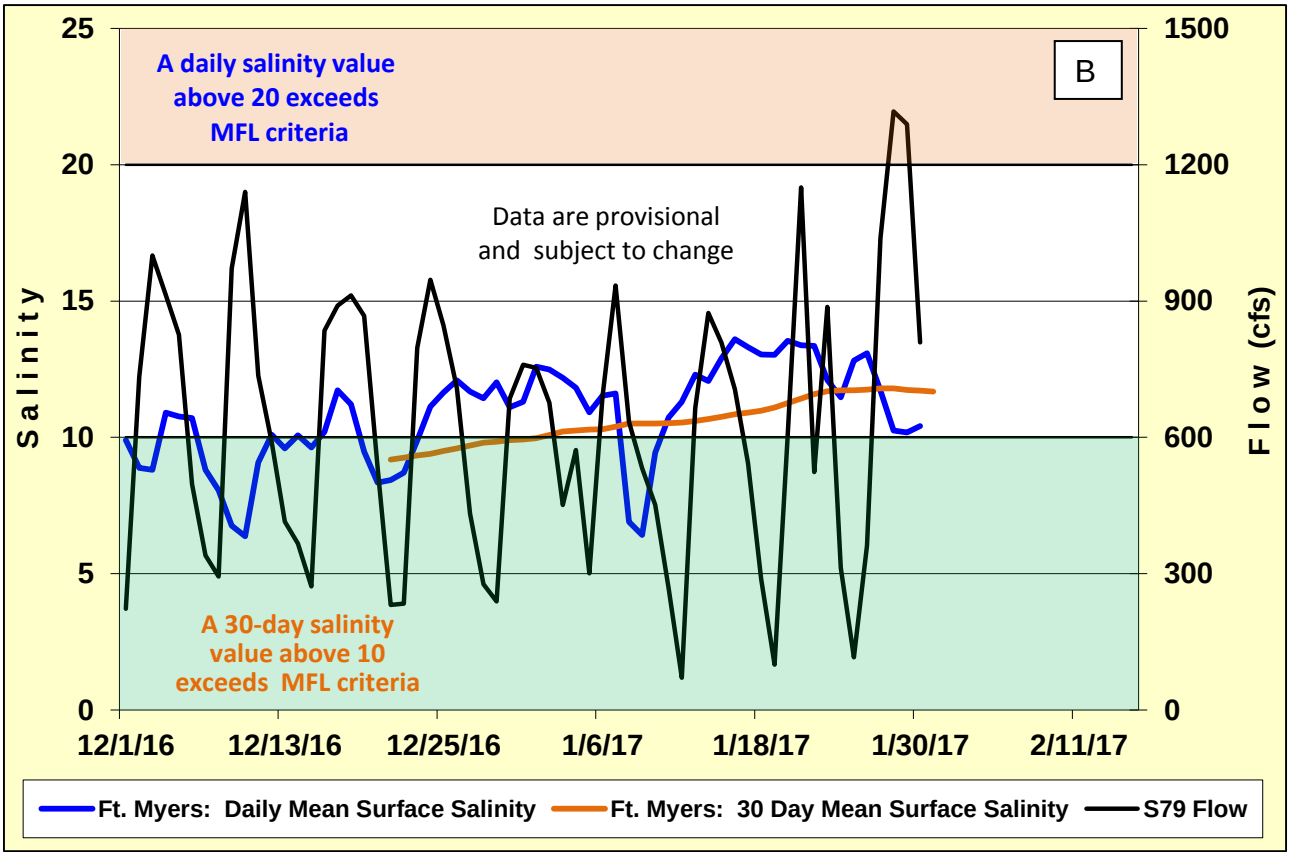


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

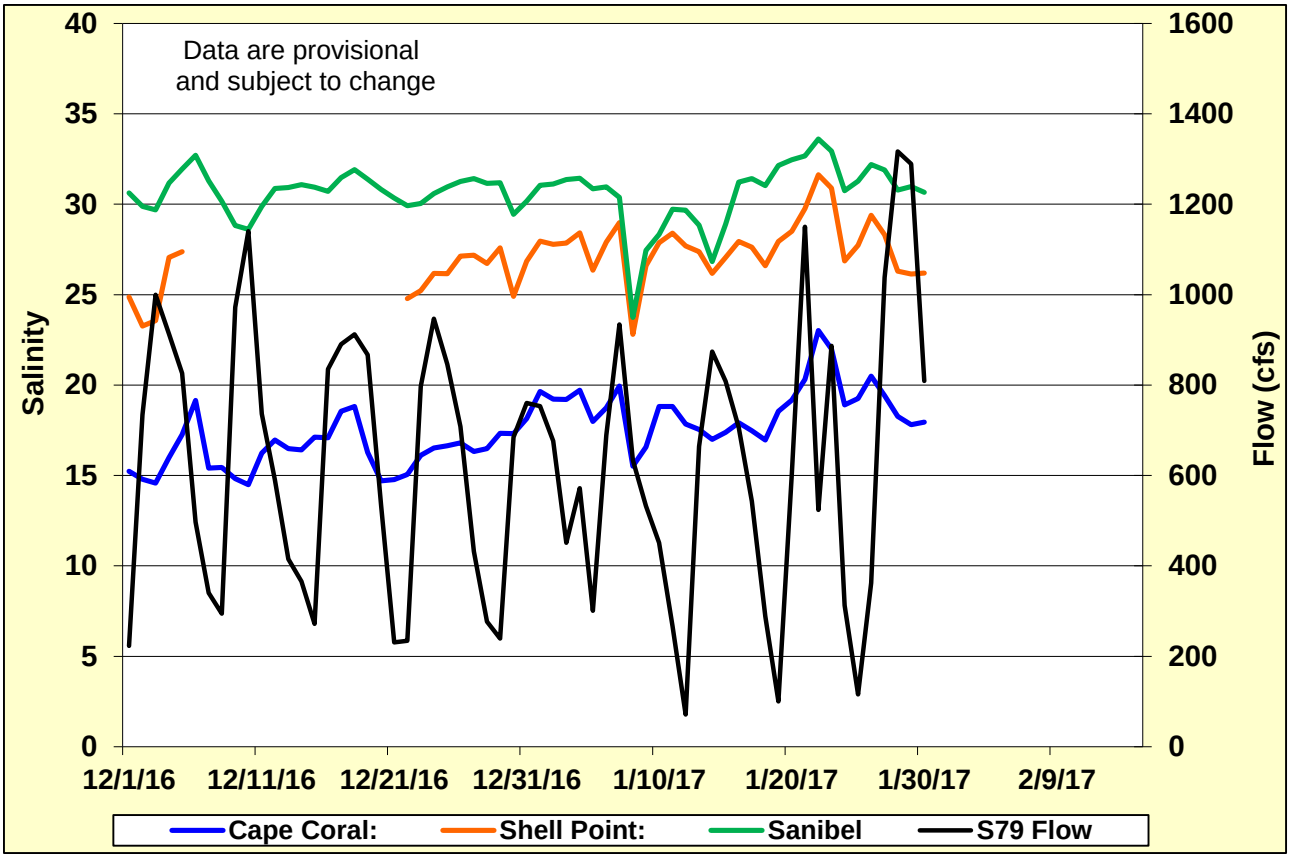


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

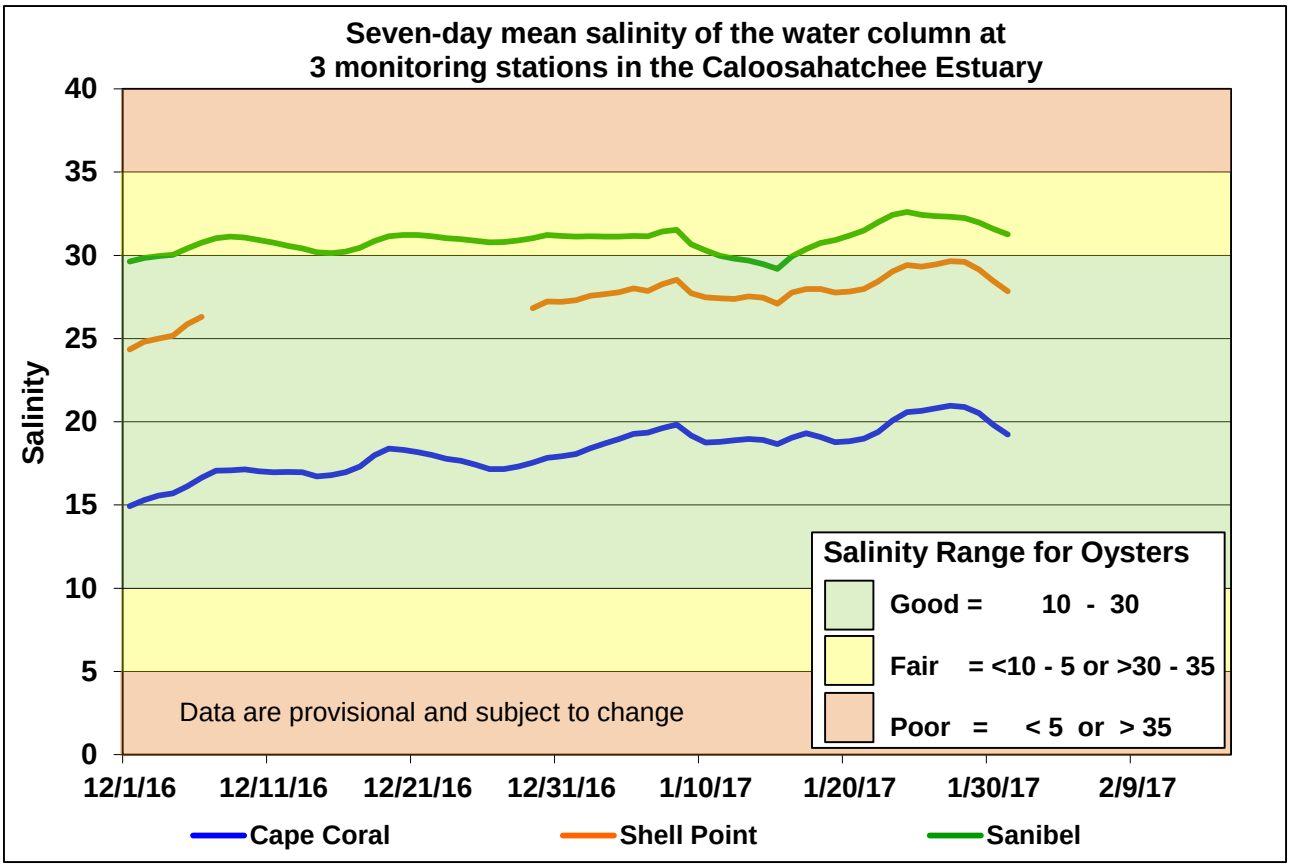


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

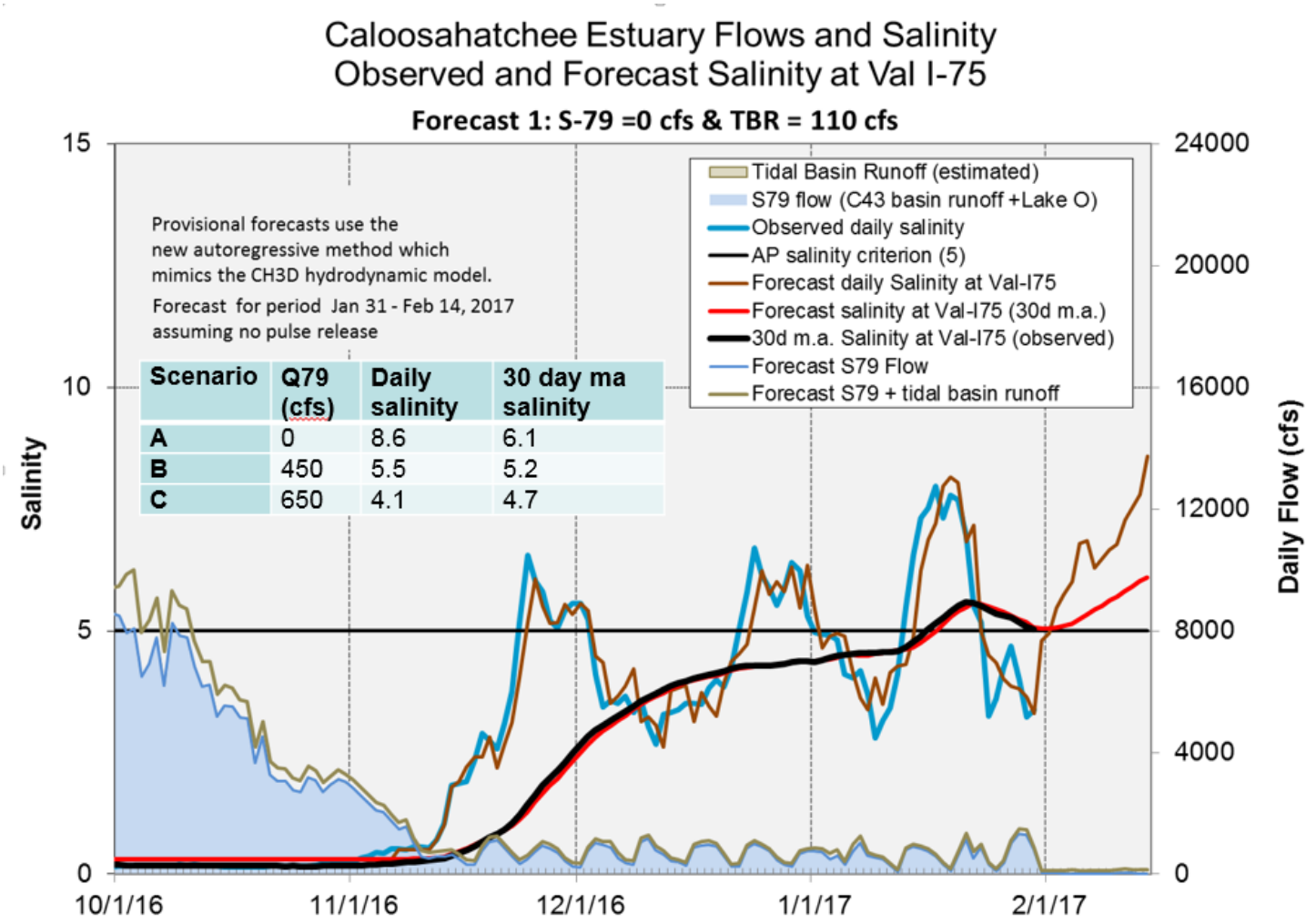


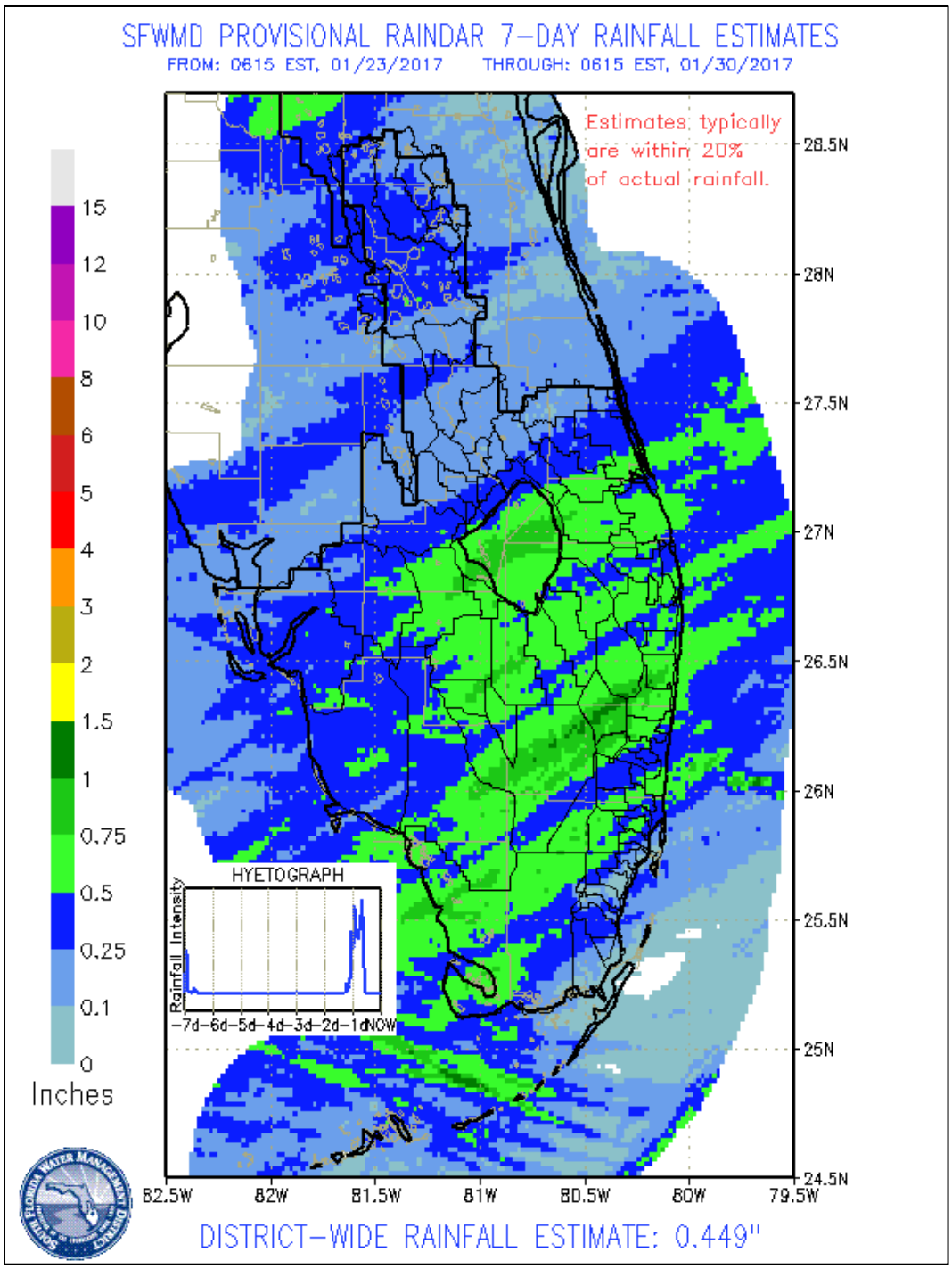
Figure 10. 14-day salinity forecast at Val I-75 assuming no releases at S-79.

GREATER EVERGLADES

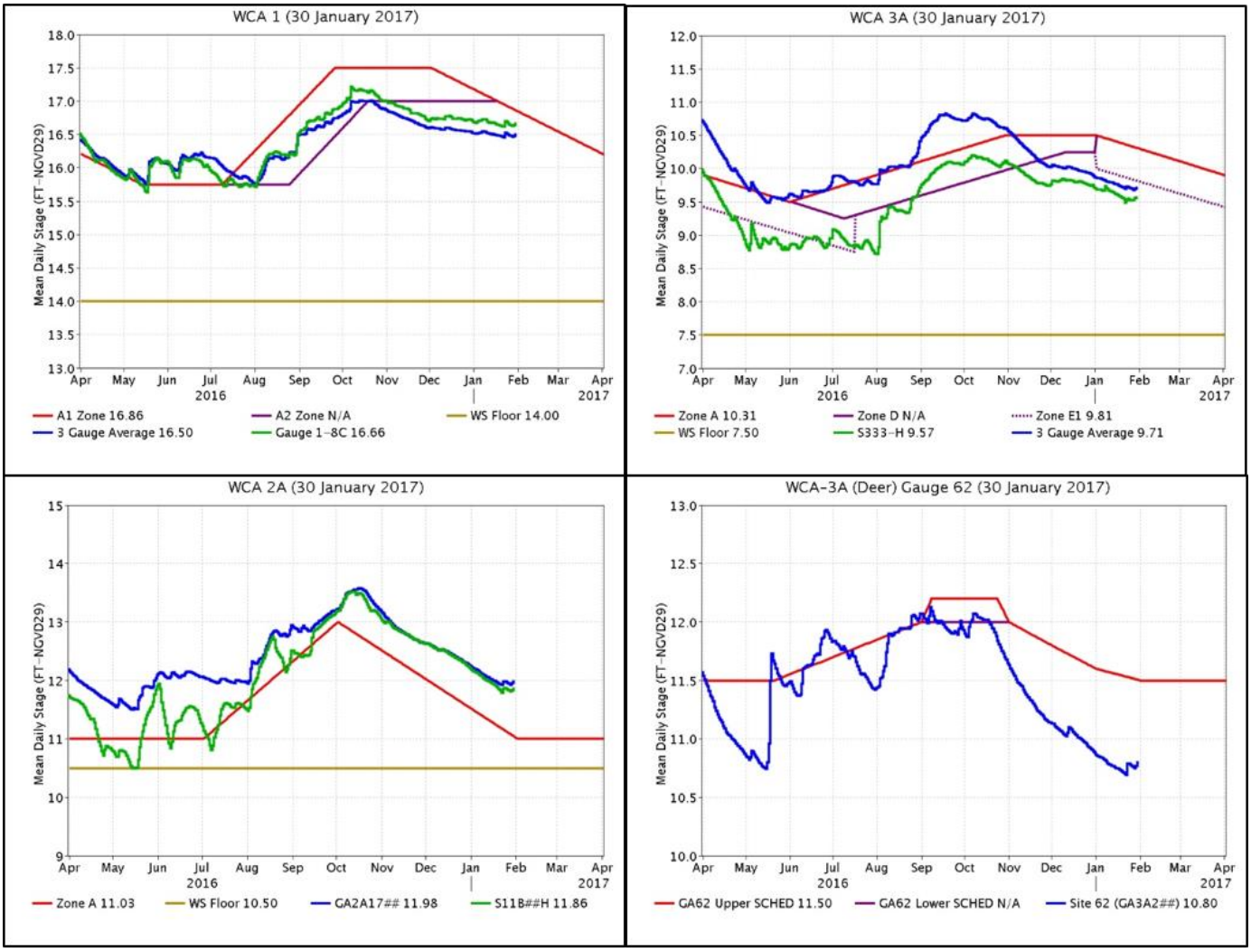
Rainfall in the WCAs and ENP ranged from 0.57 inches to 0.83 inches with the highest amount falling in WCA-2A. Water levels increased in all the WCAs (WCA-2B remained unchanged) and northeastern ENP.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	0.61	0.05
WCA-2A	0.83	0.08
WCA-2B	0.79	0.00
WCA-3A	0.66	0.05
WCA-3B	0.59	0.01
ENP	0.57	0.03

Good
Fair
Poor

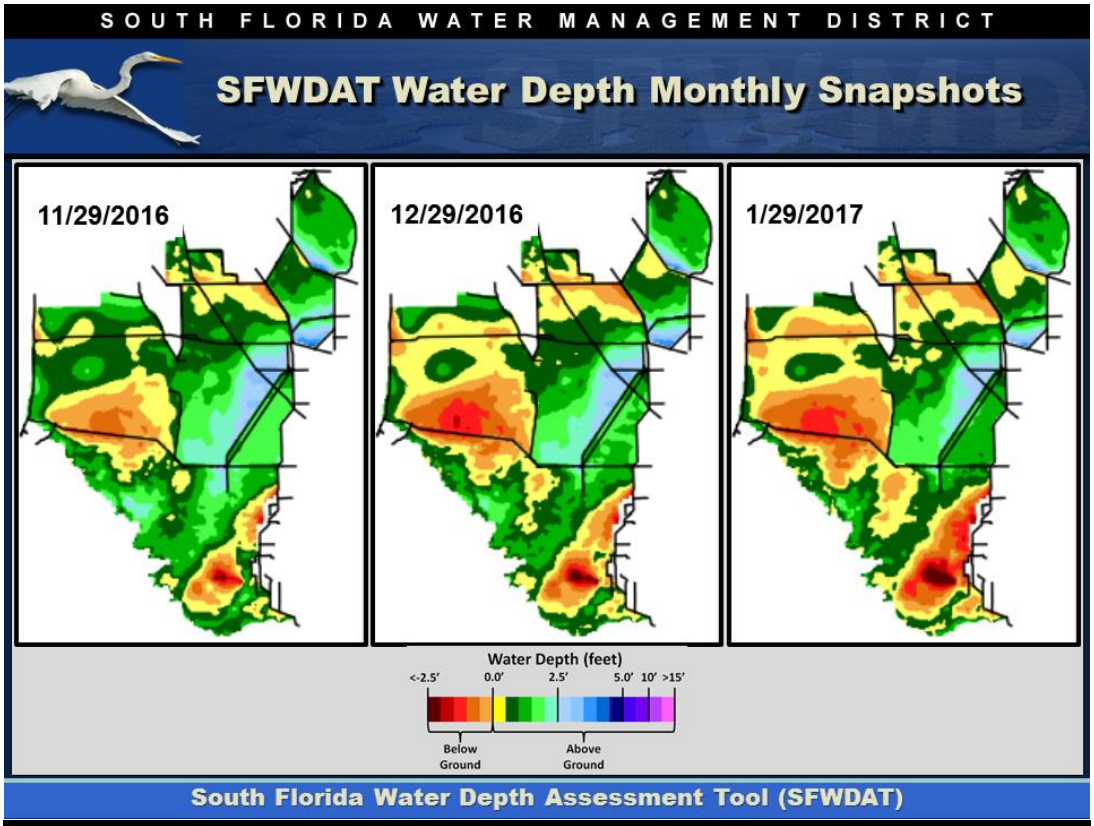


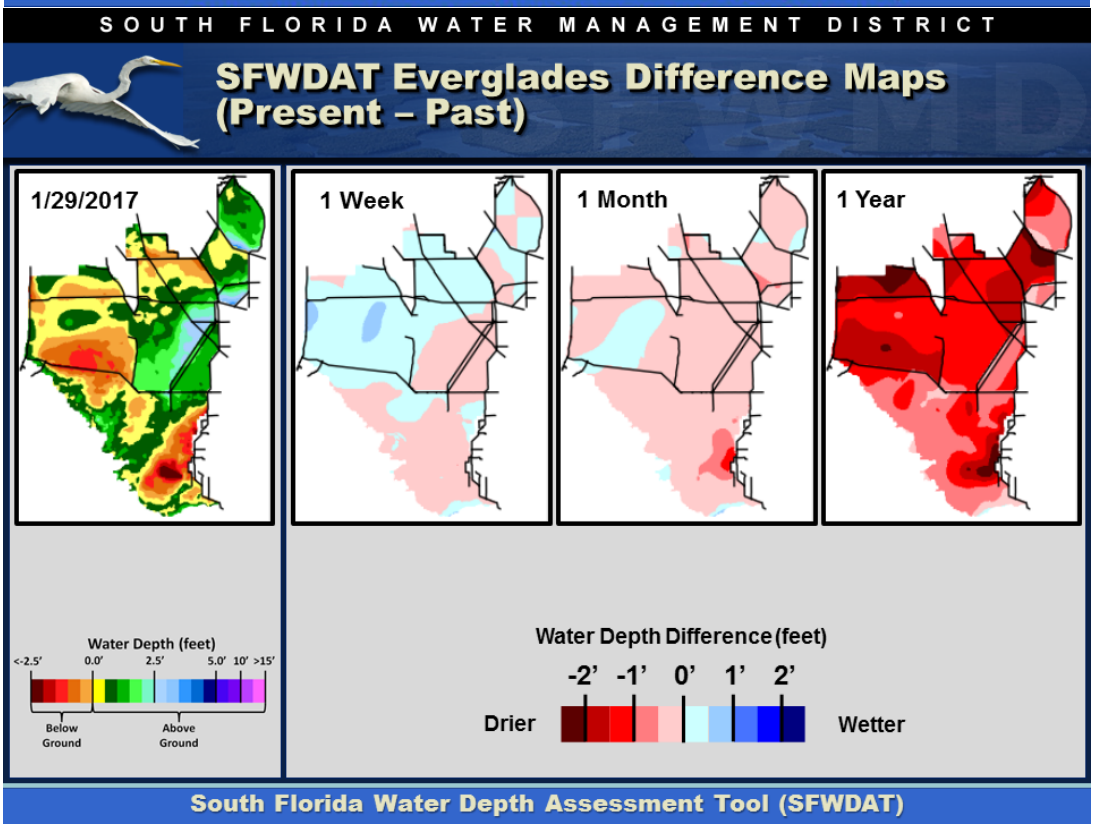
Regulation Schedules: Stages are below regulation for three of the four areas. The WCA-1 three-gauge average is −0.36 feet below zone A1, the northwestern WCA-3A gauge stage (gauge 62) is −0.70 feet below the upper schedule, and the WCA-3A three-gauge average stage is still -0.10 feet below zone E1. The WCA-2A stage remains above regulation by 0.95 feet, the rate of change is tracking the regulation schedule but is too rapid for optimal wading bird foraging.



Water Depths and Changes: Water levels increased slightly this week. Water levels remain lower than they were one and two months ago. This week's water depths at monitored gauges other than in WCA-2B range from 0.58 feet (northwest WCA-3A) to 2.24 feet (southern WCA-3A).

Stages were decreasing this past week. Individual gauge changes ranged from −0.01 feet to +0.13 feet. Stages are mostly lower than a month ago and a year ago.



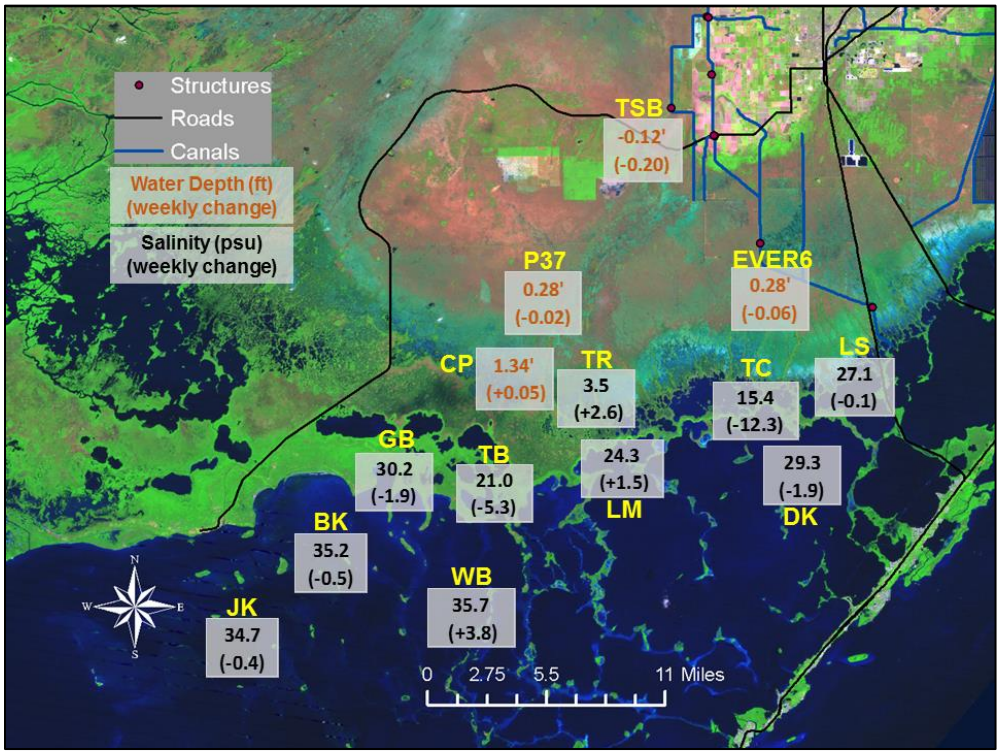


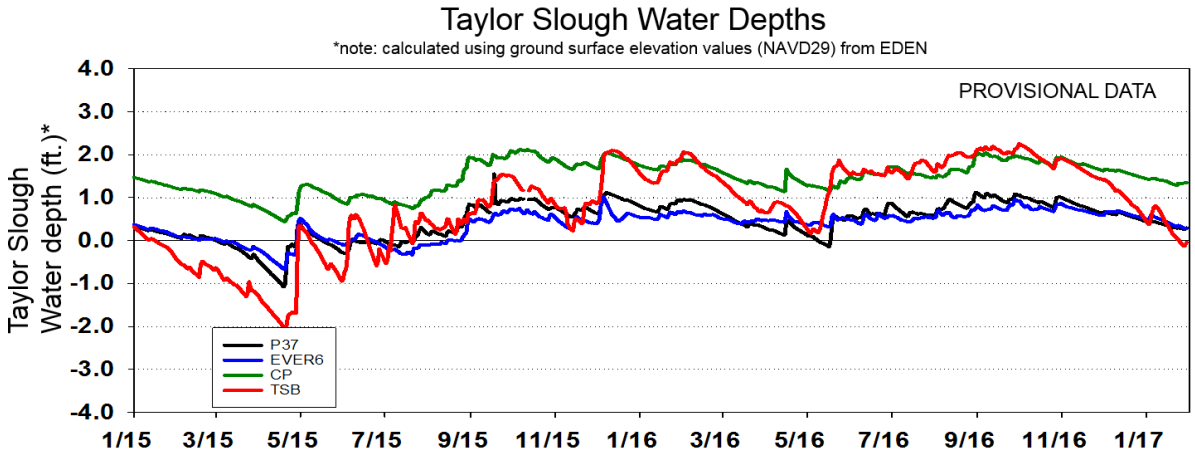
Wading Birds: A wading bird foraging survey of the northern Everglades was conducted on January 30, 2017. Despite the recent reversals, at least 1,767 birds were foraging in northern WCA-1 and a few large flocks have started to feed in central WCA-2A. The water depth measured in a slough adjacent to the Alley North colony was approximately seven inches (water depth at nearby gauge 63 over the last four weeks: 0.77, 0.70, 0.62, 0.70 feet). Rapidly declining water levels and current dry

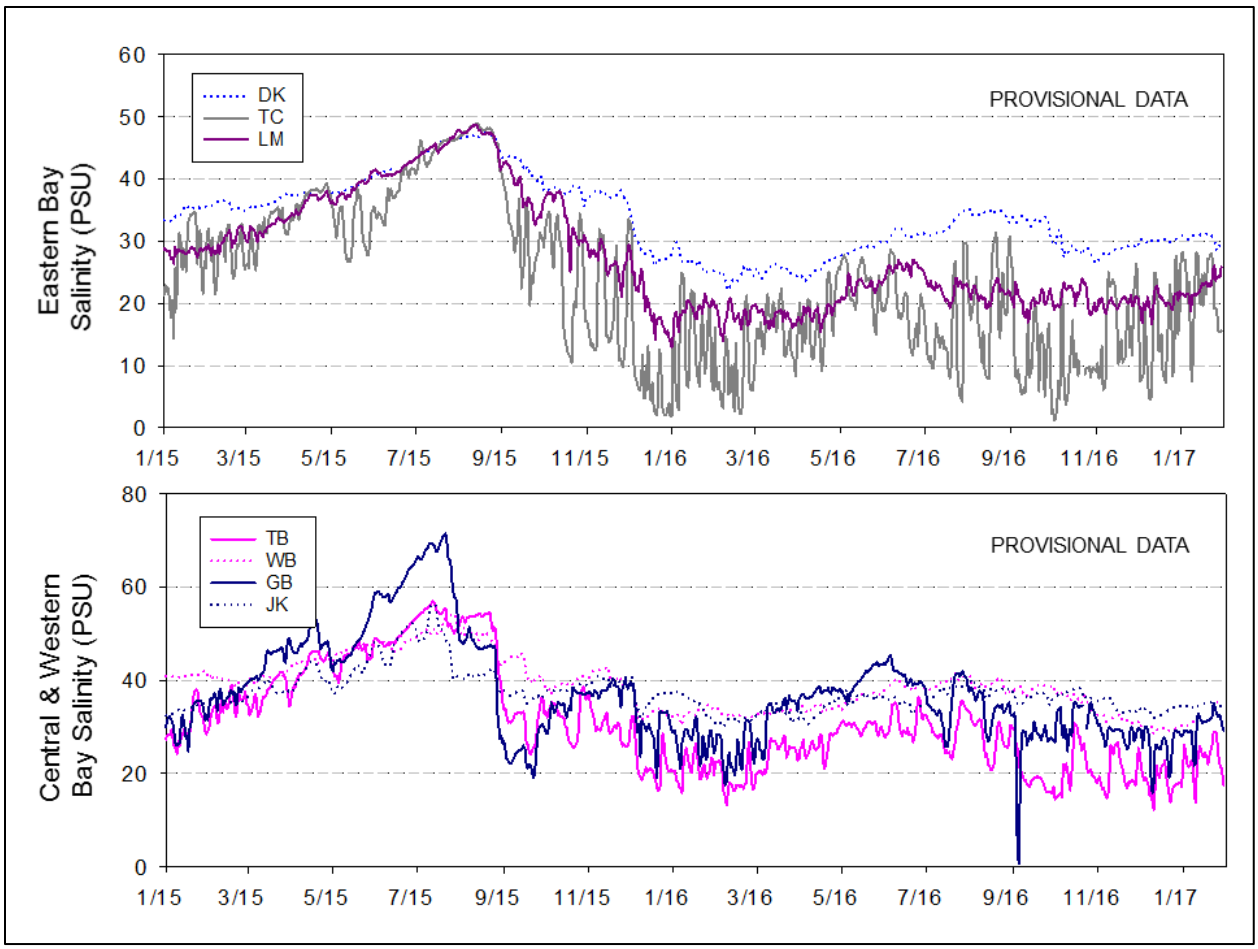
conditions have raised concerns about fledging success this year due to potential for starvation and predation during the latter part of the season.

Taylor Slough and Florida Bay: Water level changes this past week ranged from −0.20 feet in northern Taylor Slough to +0.05 feet in southwestern Taylor Slough. Water levels range from four inches below average for this time of year at TSB to three inches above average in the ENP panhandle. Water levels have gone below ground at TSB and the timing of this matches an average year.

Salinities mostly decreased this week as the pressure that had pushed saline water upstream relaxed. There is still sufficient freshwater to push the saline water back downstream. Salinities are −4 psu below average at TC to +4 psu above average at LM (both in the northeast).

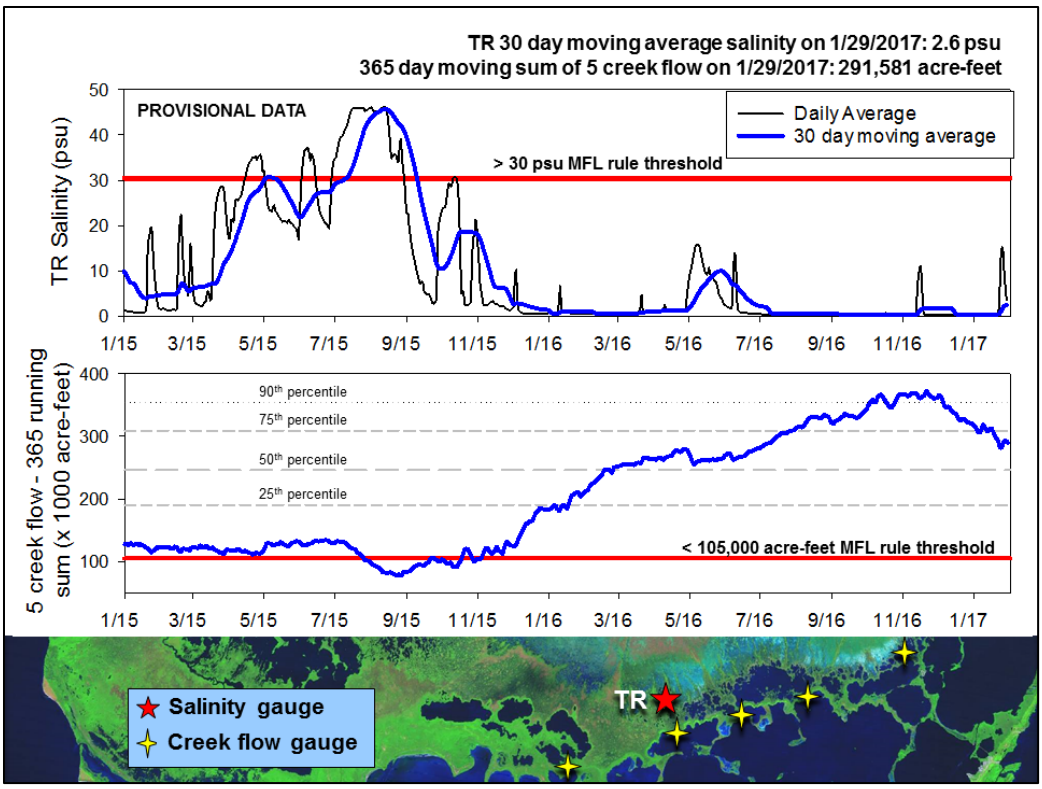






Florida Bay MFL: The daily average salinity at TR peaked at 15 psu on Wednesday as a result of last week's upstream surge of saline water before decreasing to four. The 30-day moving average rose 2.6 psu.

The 365-day moving sum of flow from the five creeks identified by stars on the map stayed fairly steady this past week and is at 291,581 acre-feet (still above the average of 257,628 acre-feet). The weekly creek flow from the five creeks was 7,600 acre-feet, which countered the negative flows from the previous week. Creek flow is provisional data from the USGS and is highly variable.



Water Management Recommendations

- The current recommended recession rates throughout the regions should be slowed to maximum of – 0.07 feet per week to provide good foraging for wading birds throughout their breeding season. The current low stage and drier than average conditions suggest that the slower recession rate the less risk to foraging conditions later in the season. Areas of particular importance in slowing recession rates are northern WCA-3A and WCA-1.

- Water should be moved into northern WCA-3A because current dry conditions and recession rates threaten conditions for wading bird foraging and increase fire risk for later in the season.

- Water depths in southern WCA-3A should stay below 2.5 feet throughout the dry season to protect tree island forests from further high water conditions like those experienced in 2016.

- The seasonal Multispecies Management Team (interagency group related to the Everglades Restoration Transition Plan regulation schedule) is concerned that water levels in the WCAs are too low at the start of the breeding season. Water should continue to move into the WCAs and ENP, and future rainfall should be retained to improve hydrologic conditions.

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

Everglades Ecological Recommendations, Jan. 31, 2017 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages increased +0.03' to +0.06'	Rainfall, ET, management	Operate for dry season conditions and, when possible, restrict recession rates to -0.03' to -0.07' per week.	Retain water for the upcoming dry season while protecting habitat and wildlife and preparing for wading bird breeding season.
WCA-2A	Stages increased +0.08'	Rainfall, ET, management	Maintain slower recession rates. When possible, retain water and restrict recession rates to less than -0.09' per week.	Protect habitat and wildlife and prepare for wading bird breeding season.
WCA-2B	Stages changed from +0.02' to −0.01'	Rainfall, ET, management	When possible, restrict recession rates to -0.05' to -0.09' per week.	Protect habitat and wildlife and prepare for wading bird breeding season.
WCA-3A NE	Stage increased +0.08'	Rainfall, ET, management	When possible, 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. Multispecies group requests prioritization of S-11C over S-11A to get water near the Alley North Colony.	Protect habitat and wildlife and prepare for wading bird breeding season, particularly in Alley North colony. Reduce fire risk as season progresses.
WCA-3A NW	Stage increased +0.13'	Rainfall, ET, management		
Central WCA-3A S	Stage unchanged	Rainfall, ET, management	When possible, 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 and wildlife and wading bird breeding season.
Southern WCA-3A S	Stage fell −0.01'	Rainfall, ET, management		
WCA-3B	Stages increased +0.01 to +0.03'	Rainfall, ET, management	When possible, restrict recession rates to -0.05' to 0.-09' per week.	Protect habitat and wildlife and prepare for wading bird breeding season.
ENP-SRS	Stage increased +0.03'	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. Stage decreased an ave. -0.08'/week. Depth range +0.47 to -1.02'	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 changed −0.20' to +0.05'	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	−4 psu below to +4 psu above average	Rain, ET, inflows, wind	Move water southward as possible	Maintain low salinity conditions and prevent early salinity increases.