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: February 7, 2017

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Fast moving strong thunderstorms probable north after midnight. A complex weather pattern should yield two distinct batches of rain for us today. The first and easier batch to forecast is likely to unfold this afternoon with some showers and isolated thunderstorms focused around the Lake northward through Martin/St. Lucie until sunset. A quiet evening should be followed by a thunderstorm complex over northern Florida accelerating southeastward through central Florida after midnight through 5am. Not confident in how far south into the District the complex will progress before exiting the east coast, but this forecast includes the Kissimmee Valley and Martin/St. Lucie. Minor rains are likely north tomorrow, then south on Thursday with a frontal passage before dry and cooler weather arrives Friday.

Kissimmee

On Sunday, stage in East Lake Toho and Lake Toho was 0.3 feet below regulation schedule and Kissimmee-Cypress-Hatchineha was 1.8 feet below schedule. Over the past week, discharge at S65, S65A, and S65E averaged 480, 378, and 513 cfs, respectively. Tuesday morning discharges were ~526 cfs, ~398 cfs, and ~651 cfs, respectively at S65, S65A, and S65E. Dissolved oxygen data in the Kissimmee River averaged 9.24 mg/L over the past week. Kissimmee River mean floodplain depth on Sunday is not available. No new recommendations.

Lake Okeechobee

Lake stage is 13.79 feet NGVD and continues to fall. The current weekly recession rate of 0.07 feet equates to a monthly recession rate of 0.28 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. The most recent wading bird foraging survey, conducted on Wednesday, February 1, 2017, reported approximately 3,450 birds in 21 flocks, which is similar to last month's surveys. Conditions are considerably better than last year when Lake levels were over 2.50 feet higher and the foraging wading bird numbers were low. Current conditions are similar to the 2014 wading bird season which was considered a good year in terms of wading bird utilization of the Lake.

Estuaries

Total discharge to the St. Lucie estuary average 93 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 increased throughout the estuary. The seven-day average salinity at the US1 Bridge is in the fair range for adult oysters. Total inflow to the Caloosahatchee estuary averaged 792 cfs over the past week with 560 cfs (71%) 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 11.1 constituting 37 consecutive days of exceedance of the Caloosahatchee Minimum Flow and Level. The 30-day average surface

salinity at Val I-75 is 4.8. Tape grass in the upper estuary are deteriorating due to salinity conditions. 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 forecast to reach 5.3 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 5.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 4,700 acre-feet of Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2017 (since May 1, 2016) is approximately 171,500 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

Over the last week depths decreased across the Everglades. Weekly stage changes ranged from – 0.03 (WCA-3A) to – 0.12 (WCA-2B) feet last week. Last week's recession rate in WCA-2A and 2B (– 0.10 and – 0.12 feet, respectively) was faster than the recommended rates of between – 0.05 and – 0.09 feet per week. The daily average salinity at TR has returned to 0.8 psu after peaking at 15 more than a week ago. The 30-day moving average rose 2.8 psu this week (up 0.2 from last week). The 365-day moving sum of flow from the five creeks decreased about 11,000 acre-feet to end at 279,891 acre-feet (still above the average of 257,628-acre feet).

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper and Lower Kissimmee Basins received 0.00 inches of rainfall in the past week (SFWMD Daily Rainfall Report 02/06/2017).

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: **2/7/2017**

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)						
							2/5/17	1/29/17	1/22/17	1/15/17	1/8/17	1/1/17	12/25/16
Lakes Hart and Mary Jane	S62	0	LKMJ	60.9	R	61.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	0.0
Lakes Myrtle, Preston, and Joel	S57	4	S57	61.3	R	61.3	0.0	-0.1	0.0	0.0	-0.1	-0.2	0.0
Alligator Chain	S60	0	ALLI	63.3	R	64.0	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
Lake Gentry	S63	0	LKGT	61.3	R	61.5	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0.0
East Lake Toho	S59	204	TOHOE	57.7	R	58.0	-0.3	-0.1	0.0	0.0	0.0	-0.1	0.0
Lake Toho	S61	478	TOHOW, S61	54.7	R	55.0	-0.3	-0.1	0.0	0.0	-0.1	-0.1	-0.2
Lakes Kissimmee, Cypress, and Hatchineha	S65	480	LKISSP, KUB011, LKIS5B	50.5	R	52.3	-1.8	-2.0	-2.1	-2.0	-1.9	-1.8	-1.6

* 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: 2/7/2017

Metric	Location	Sunday's 1-day average	Weekly Average**								
			2/5/17	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
Discharge (cfs)	S-65	500	480	465	473	475	487	555	759	809	821	822
Discharge (cfs)	S-65A	401	378	368	364	368	461	497	639	700	699	698
Discharge (cfs)	S-65C	N/A	N/A	N/A	N/A	514	469	703	892	887	909	895
Headwater stage (feet NGVD)		N/A	N/A	N/A	28.7	28.8	29.0	30.8	32.5	32.7	32.8	32.7
Discharge (cfs)	S-65D****	717	730	1274	1292	1268	1293	1411	1607	1638	1700	1610
Discharge (cfs)	S-65E	704	513	398	386	375	452	626	774	779	773	781
DO concentration (mg/L)***	Phase I river channel	9.79	9.24	8.13	7.97	7.94	7.12	N/A	7.02	7.17	7.06	7.46
Mean depth (feet)*	Phase I floodplain	N/A	N/A	N/A	0.06	0.07	0.07	0.09	0.12	0.13	0.15	0.15

* 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.

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
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.			
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)

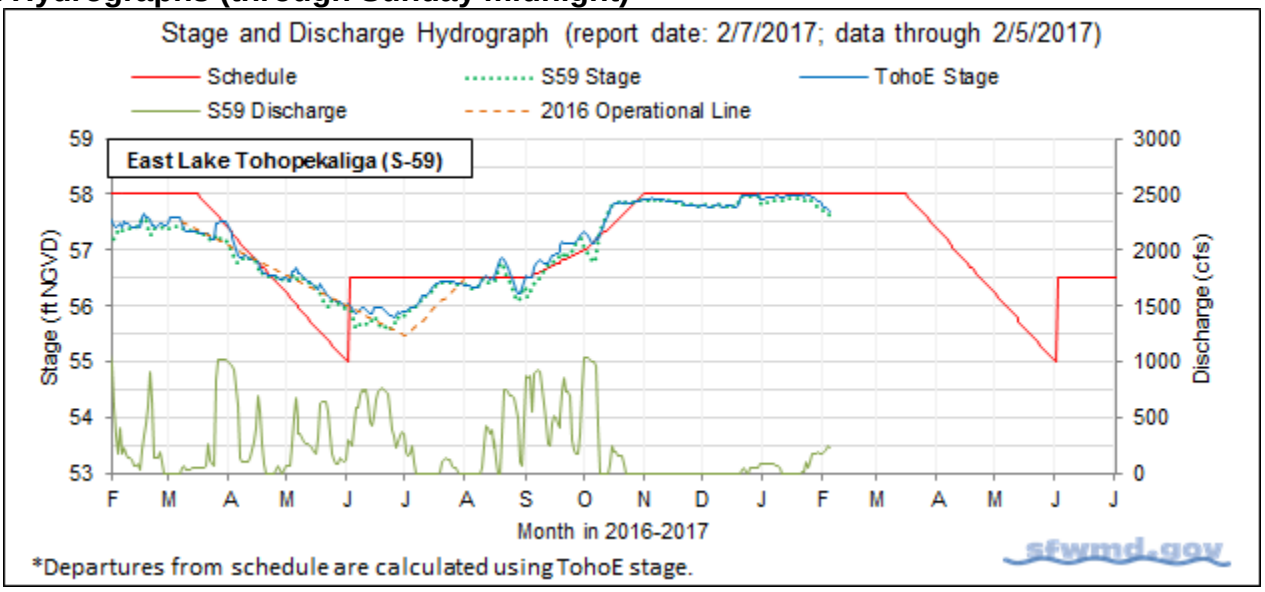


Figure 1.

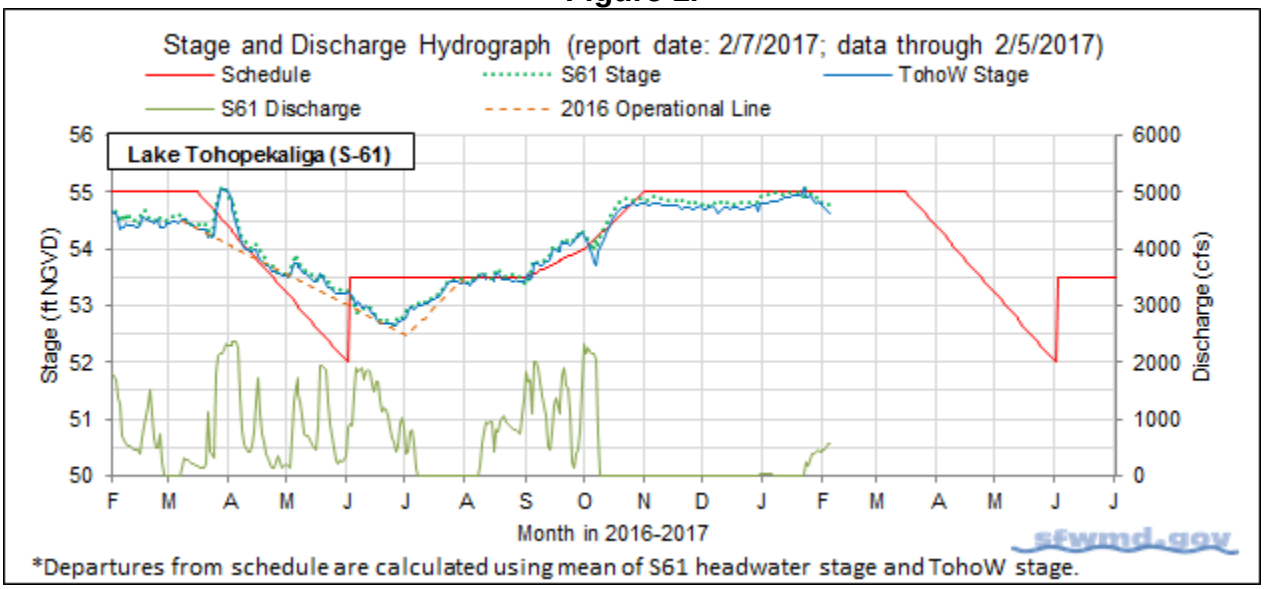


Figure 2.

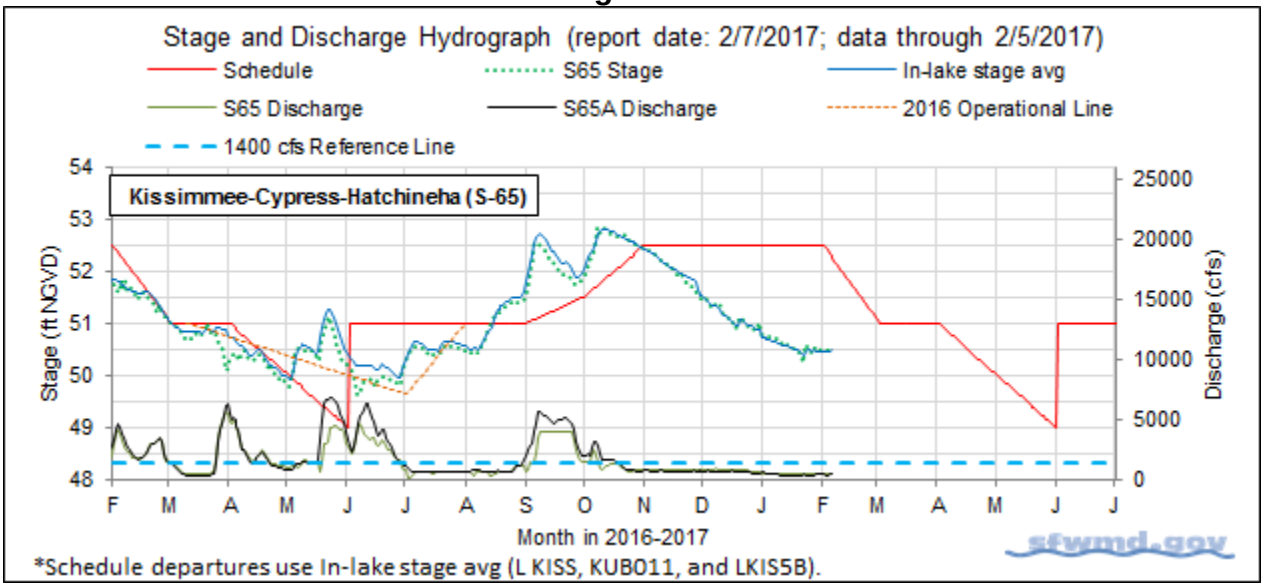


Figure 3.

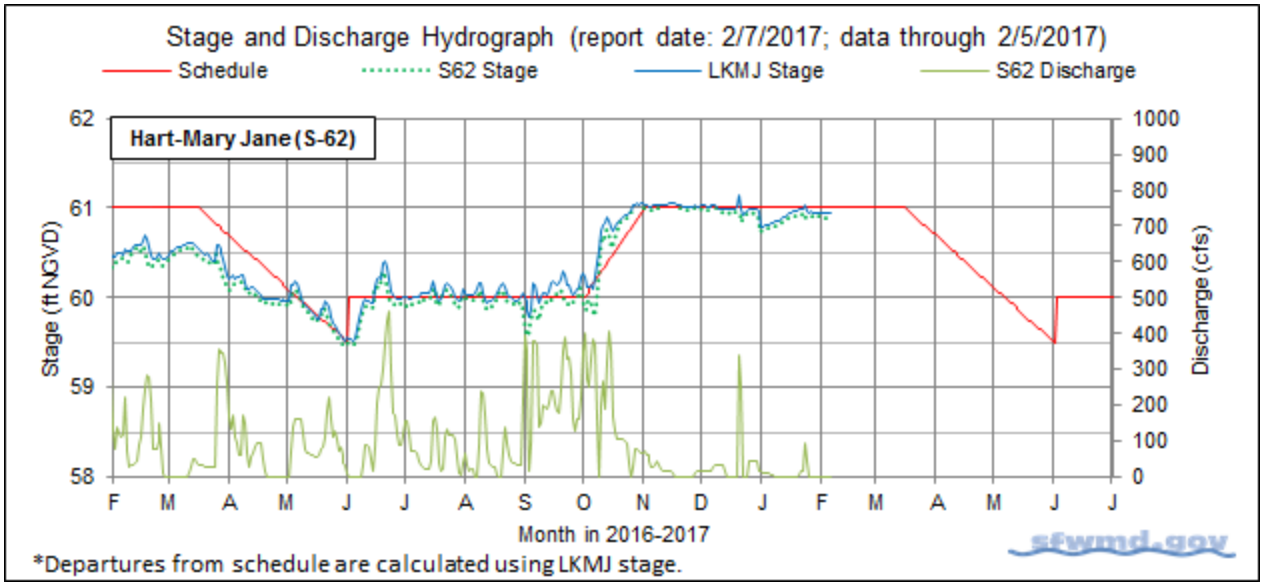


Figure 4.

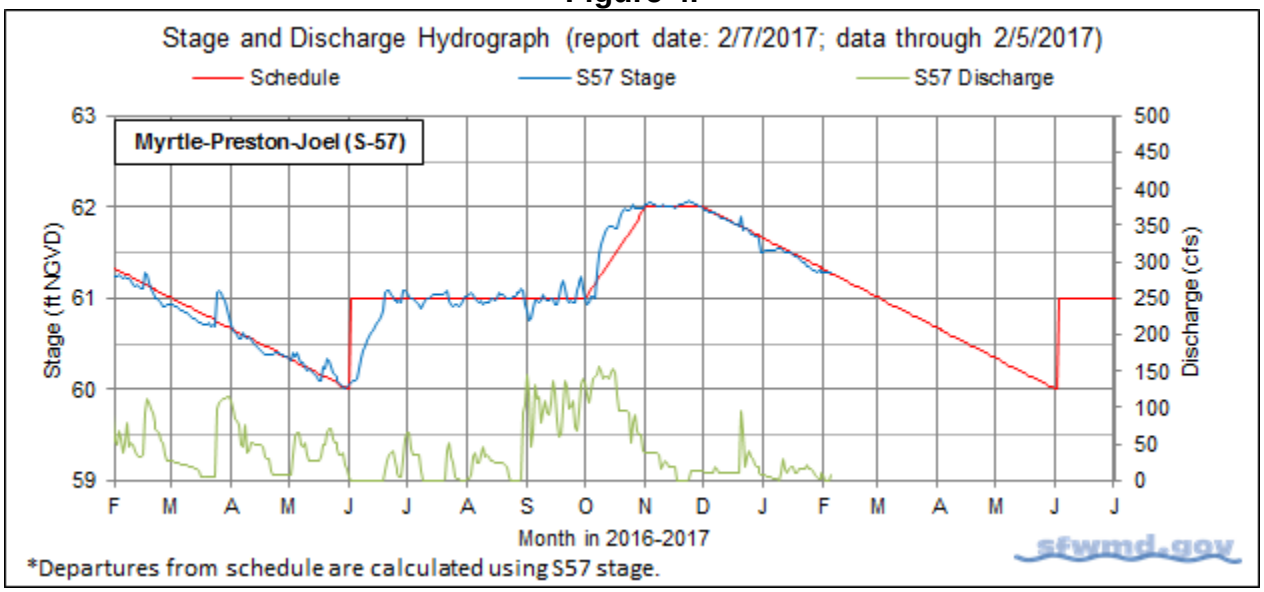


Figure 5.

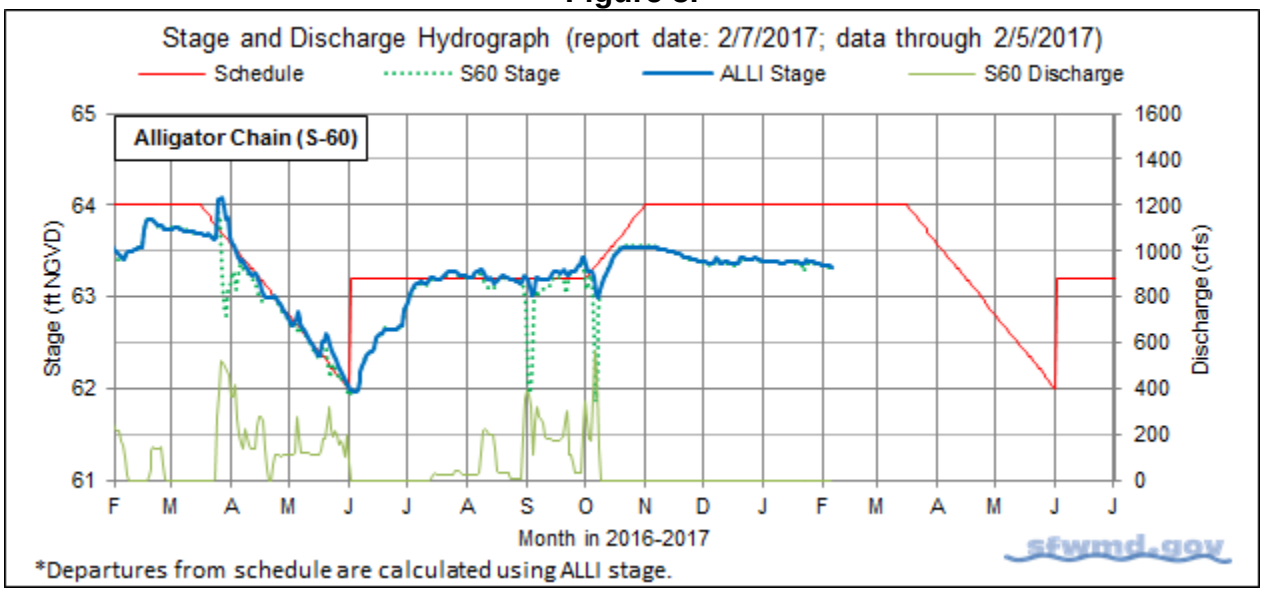


Figure 6.

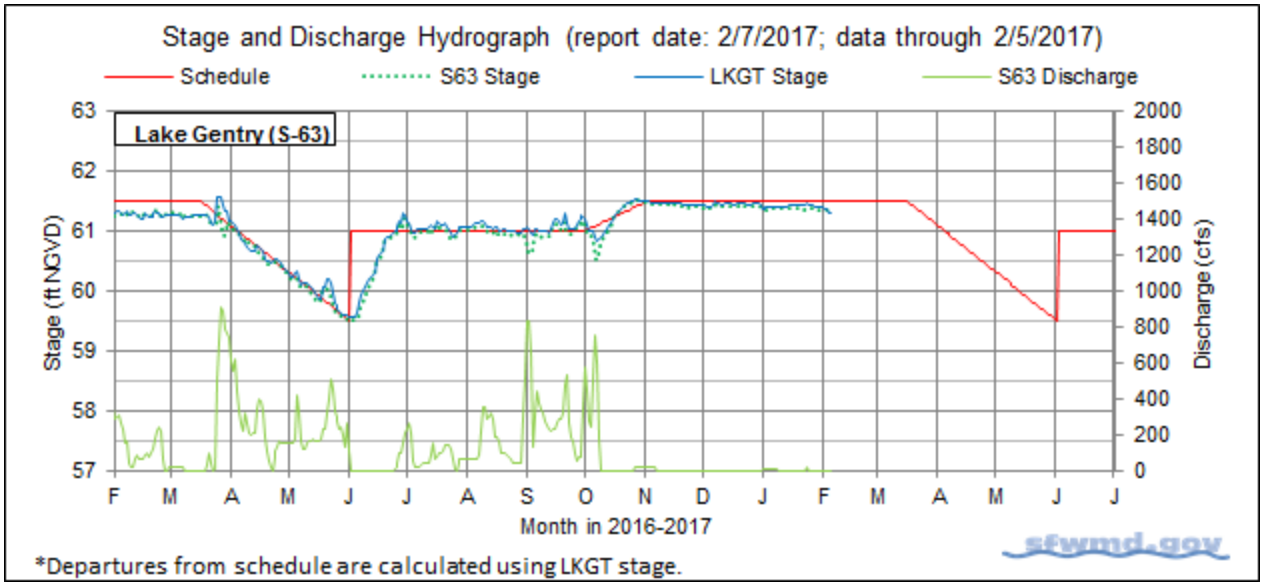


Figure 7.

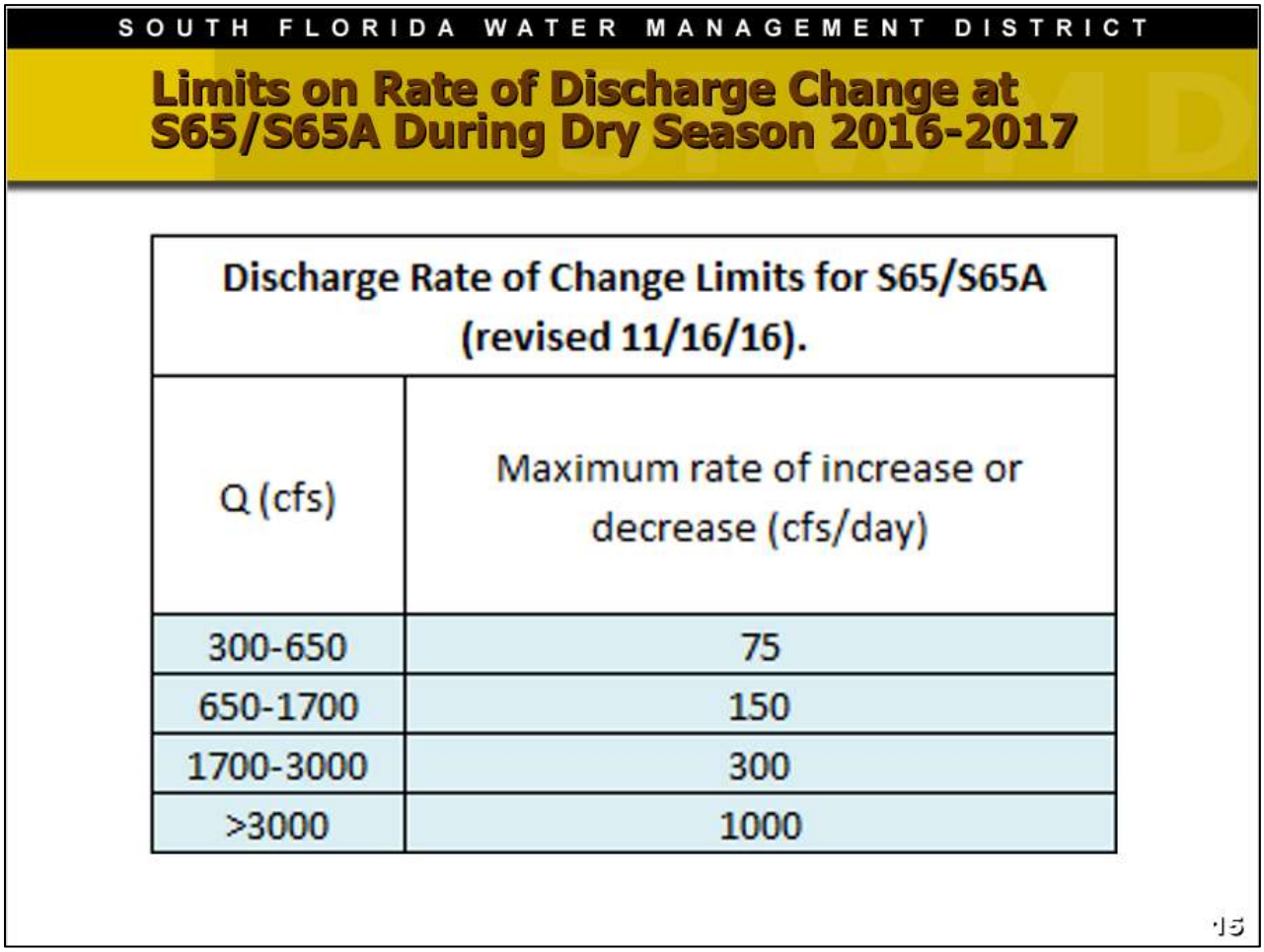


Figure 8a. Limits on rate of discharge change at S65/S65A for the 2016-2017 Dry Season.

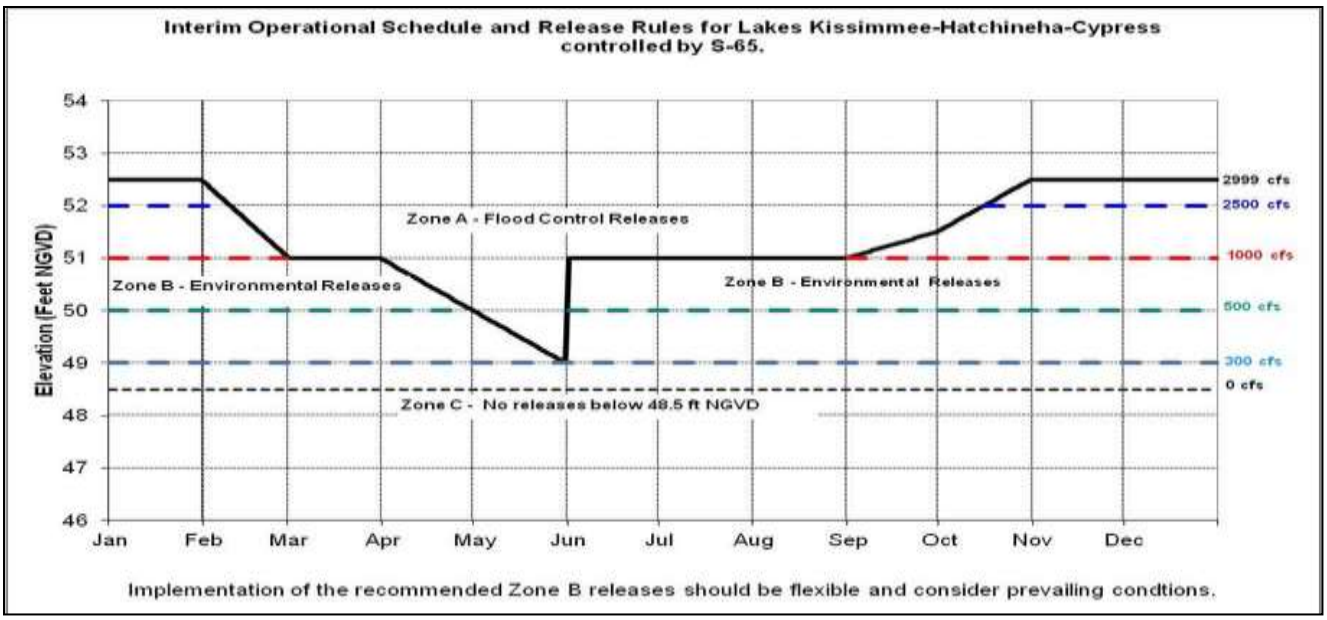


Figure 8b. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

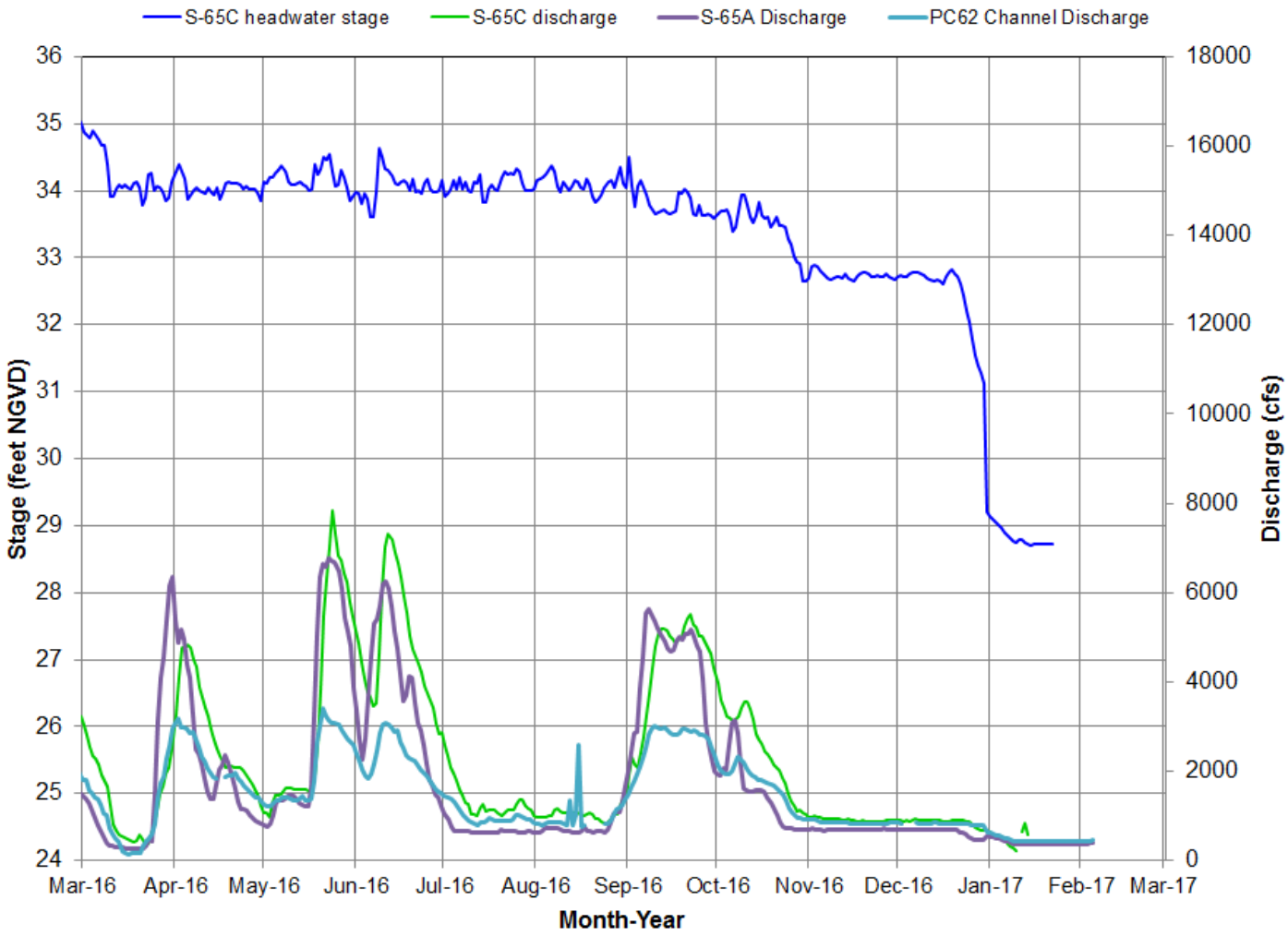


Figure 9. S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

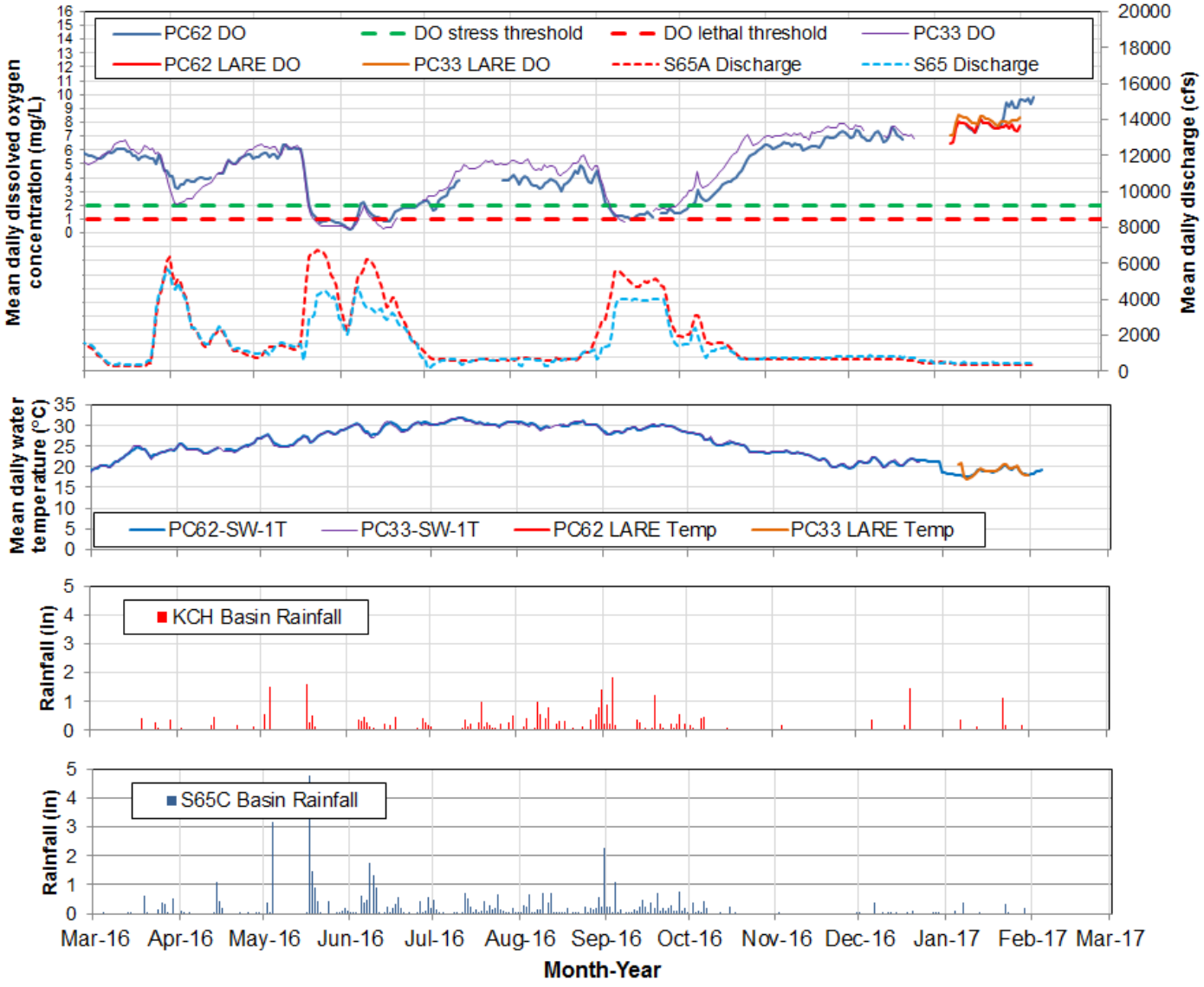


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

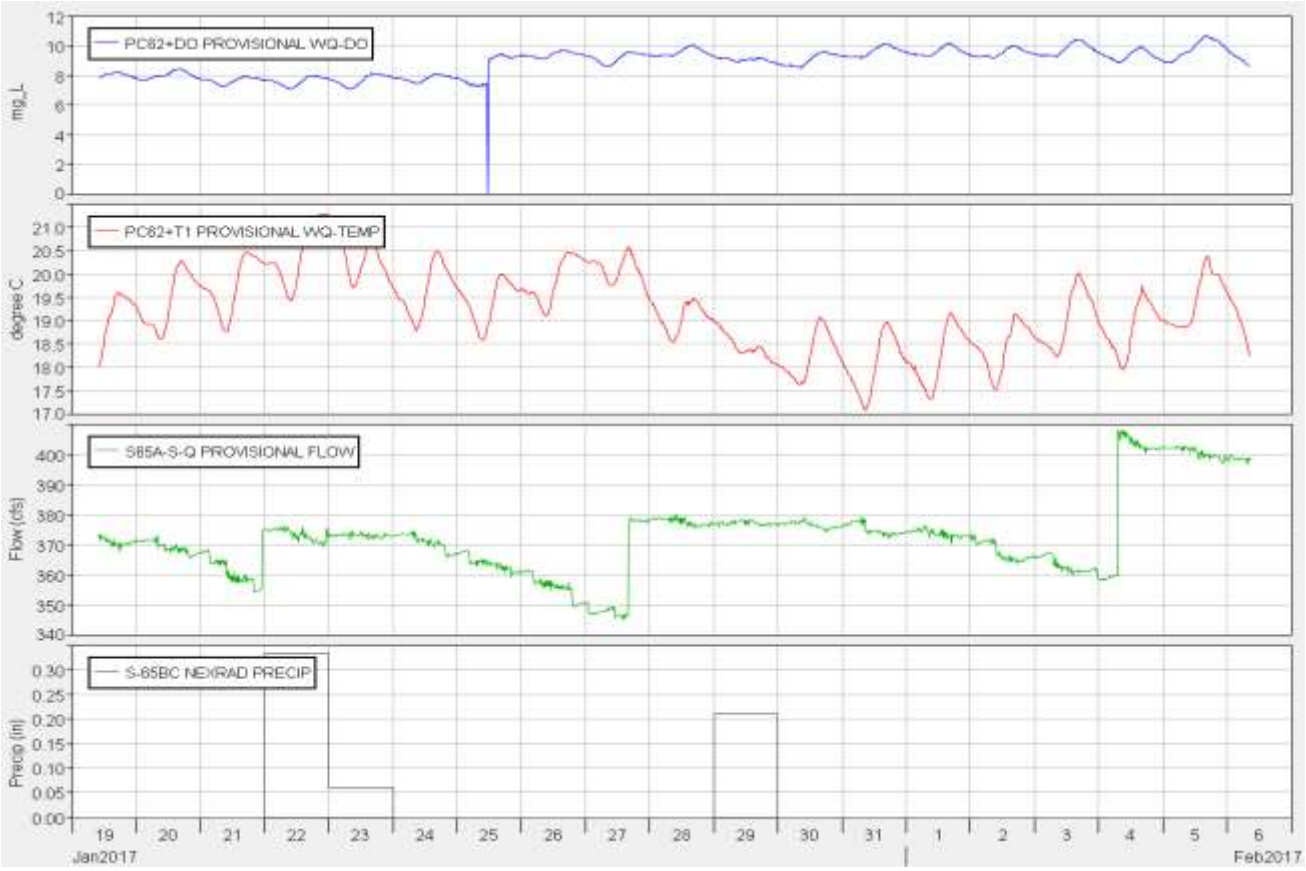


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

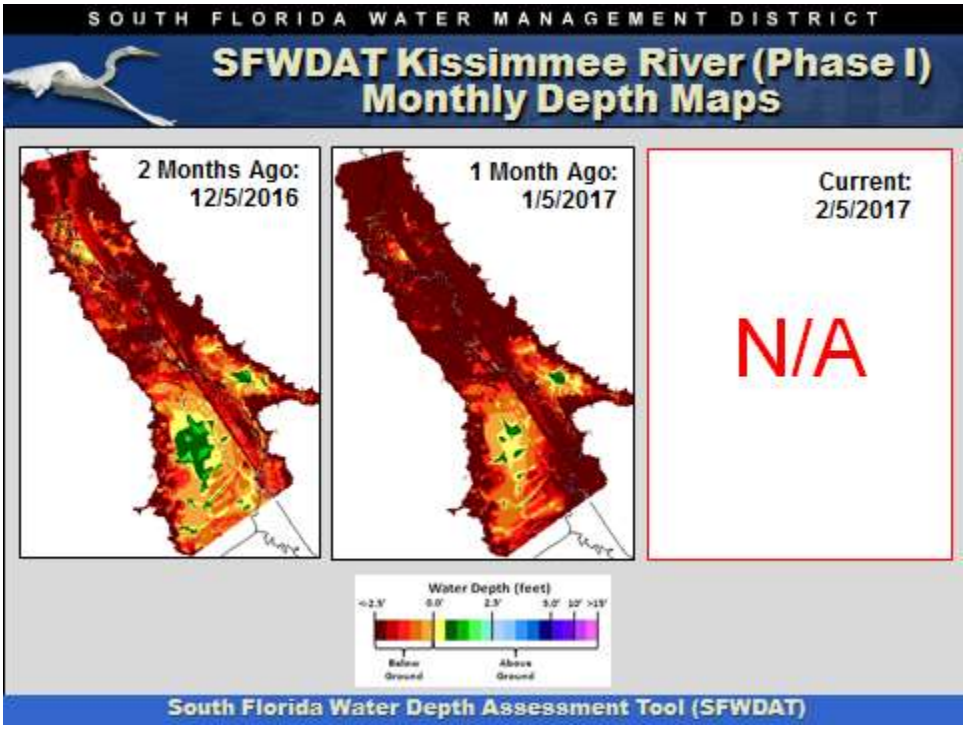
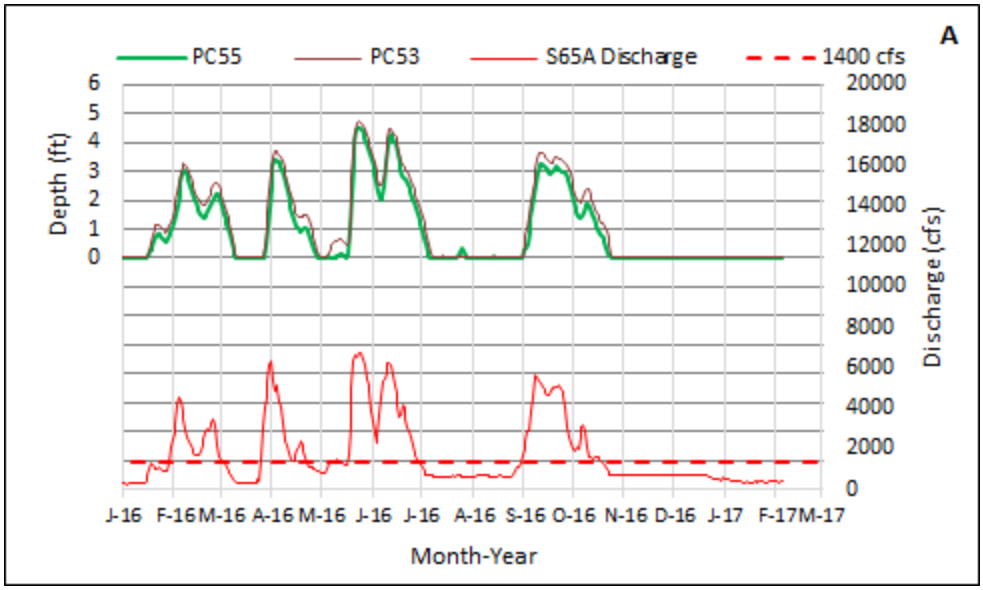
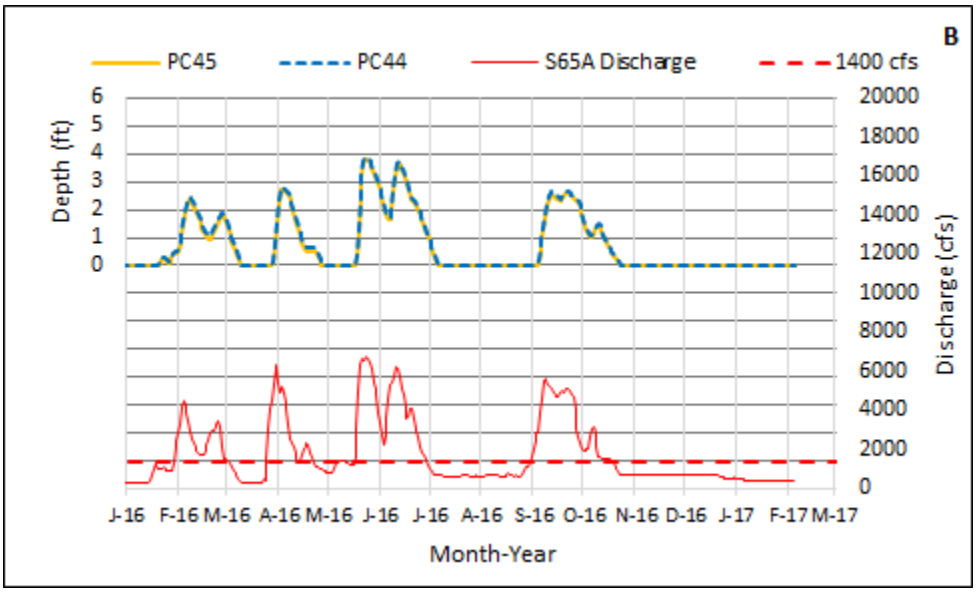


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.





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

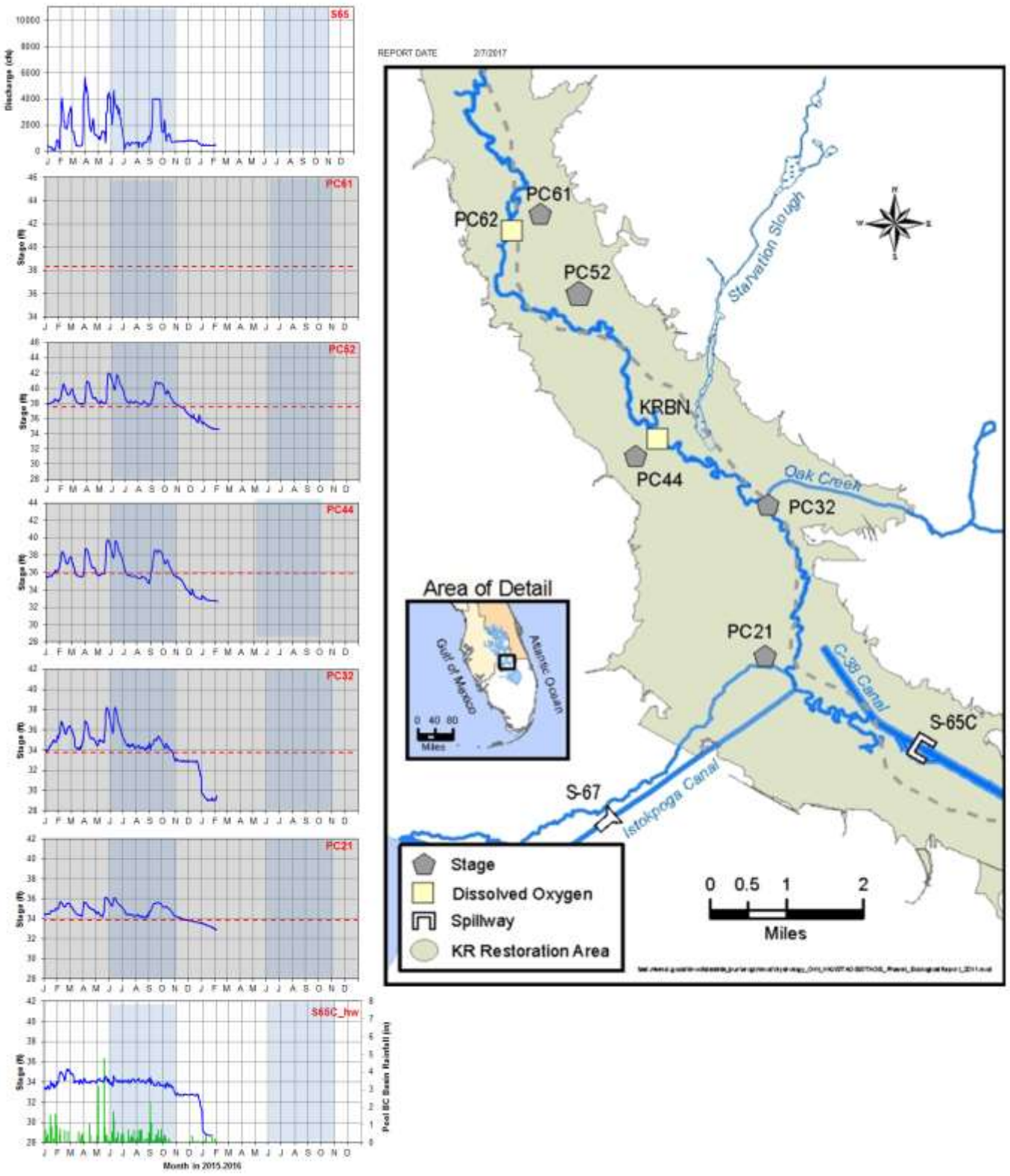


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated).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

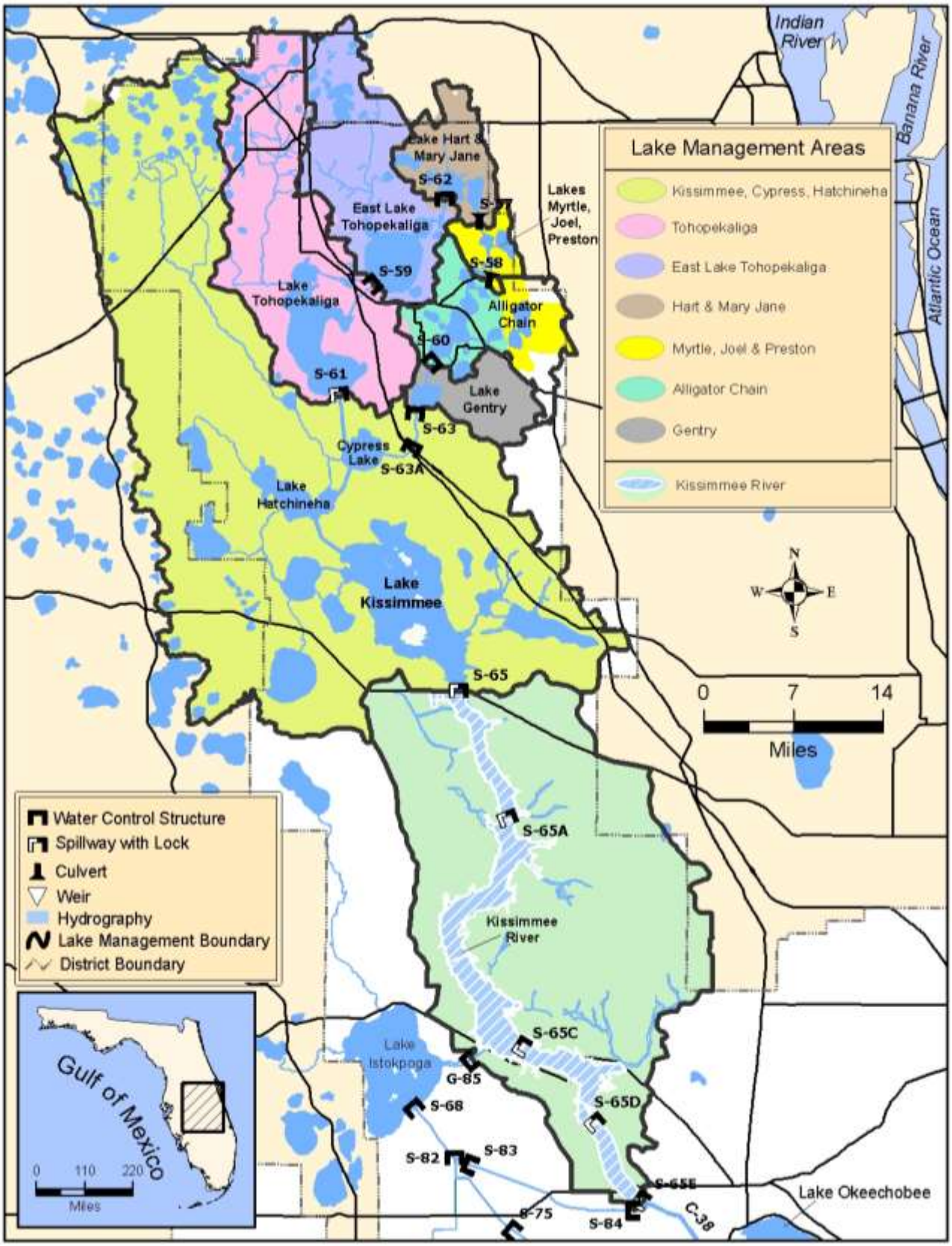


Figure 14. The Kissimmee Basin

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 13.79 feet NGVD for the period ending at midnight on February 5, 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 0.07 feet over the past week and is 0.42 feet lower than it was a month ago and 2.51 feet lower than it was a year ago (Figure 1). The Lake is currently in the Low Sub-band (Figure 2). According to RAINDAR, no rain fell directly over the Lake during the past seven days (Figure 3). The lower east coast is the only region in the watershed to receive any rainfall.

Based on USACE reported values, current Lake inflow is approximately 583 cfs as detailed below.

Structure	Flow cfs
S65E	703
S154	0
S84 & 84X	0
S71	0
S72	0
C5 (Nicodemus slough dispersed storage)	-122
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	1
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Current Lake outflow is approximately 2,035 cfs with 1,173 cfs exiting at S77, 30 cfs exiting at S308 and 162 cfs exiting at the L8 canal through Culvert 10A. Approximately 677 cfs is being directed south through S351, S352 and S354 and an additional 7 cfs is back flowing through Culvert S127. Corrected evapotranspiration value based on the L006 weather platform solar radiation data for this past week was 2,045 cfs.

Change in elevation equivalents and average weekly flows (midnight January 30, 2017 to midnight February 5, 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 40,910 acres of suitable foraging habitat for long-legged birds and 22,165 acres for long and short-legged birds on the Lake (Figure 5). The most recent wading bird foraging survey, conducted on Wednesday, February 1, 2017, reported approximately 3,450 birds in 21 flocks, which is similar to last month's surveys (Figure 6). Conditions are considerably better than last year when Lake levels were over 2.50 feet higher and the foraging wading bird numbers were low. Current conditions are similar to the 2014 wading bird season which was considered a good year in terms of wading bird utilization of the Lake.

The most recent available MODIS satellite images (February 3 and 4, 2017) indicate low bloom potential (Figure 7).

Water Management Recommendations

Lake stage is 13.79 feet NGVD and continues to fall at a steady rate. The current weekly recession rate of 0.07 feet equates to a monthly recession rate of 0.28 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 submerged aquatic vegetation (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.

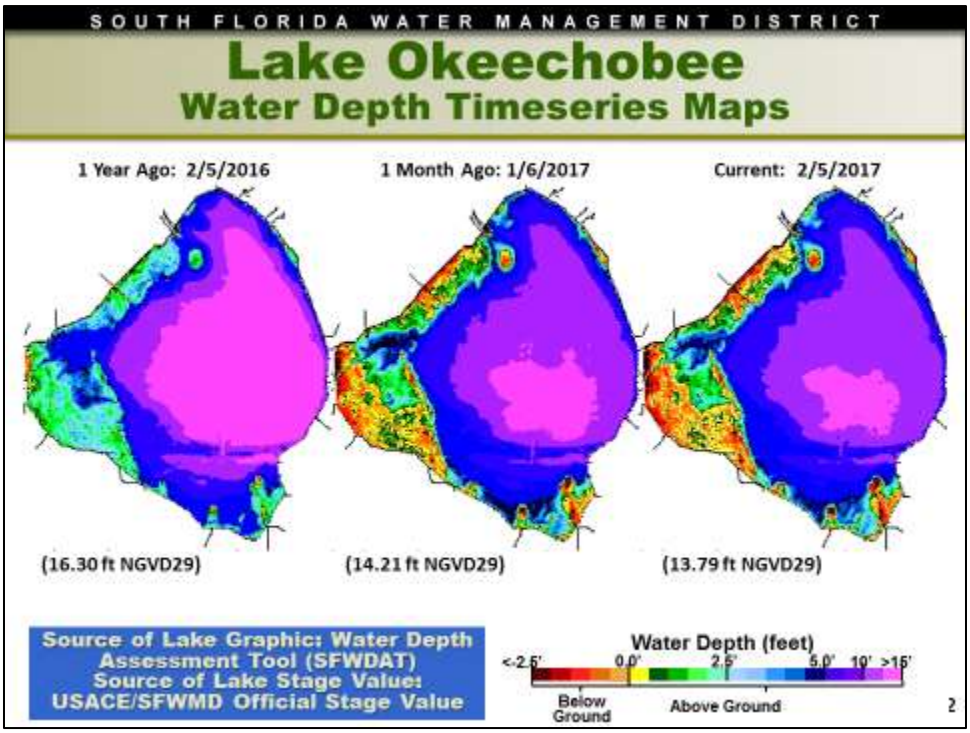


Figure 1

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Weekly Stage Hydrograph

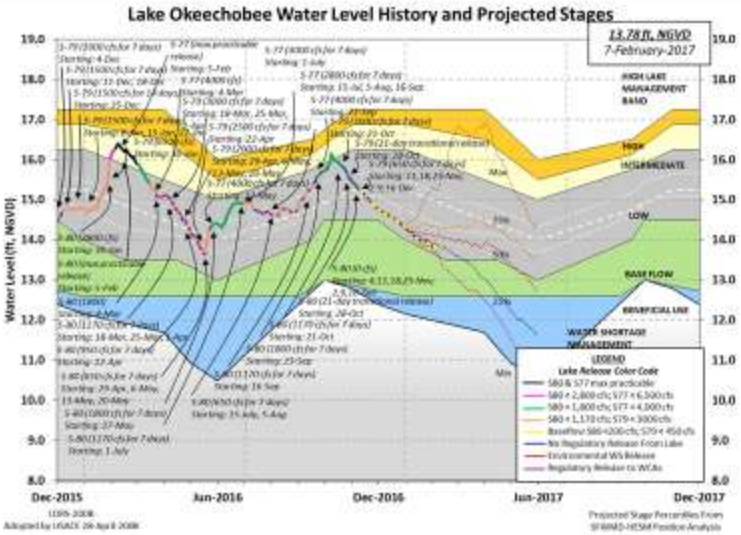


Figure 2

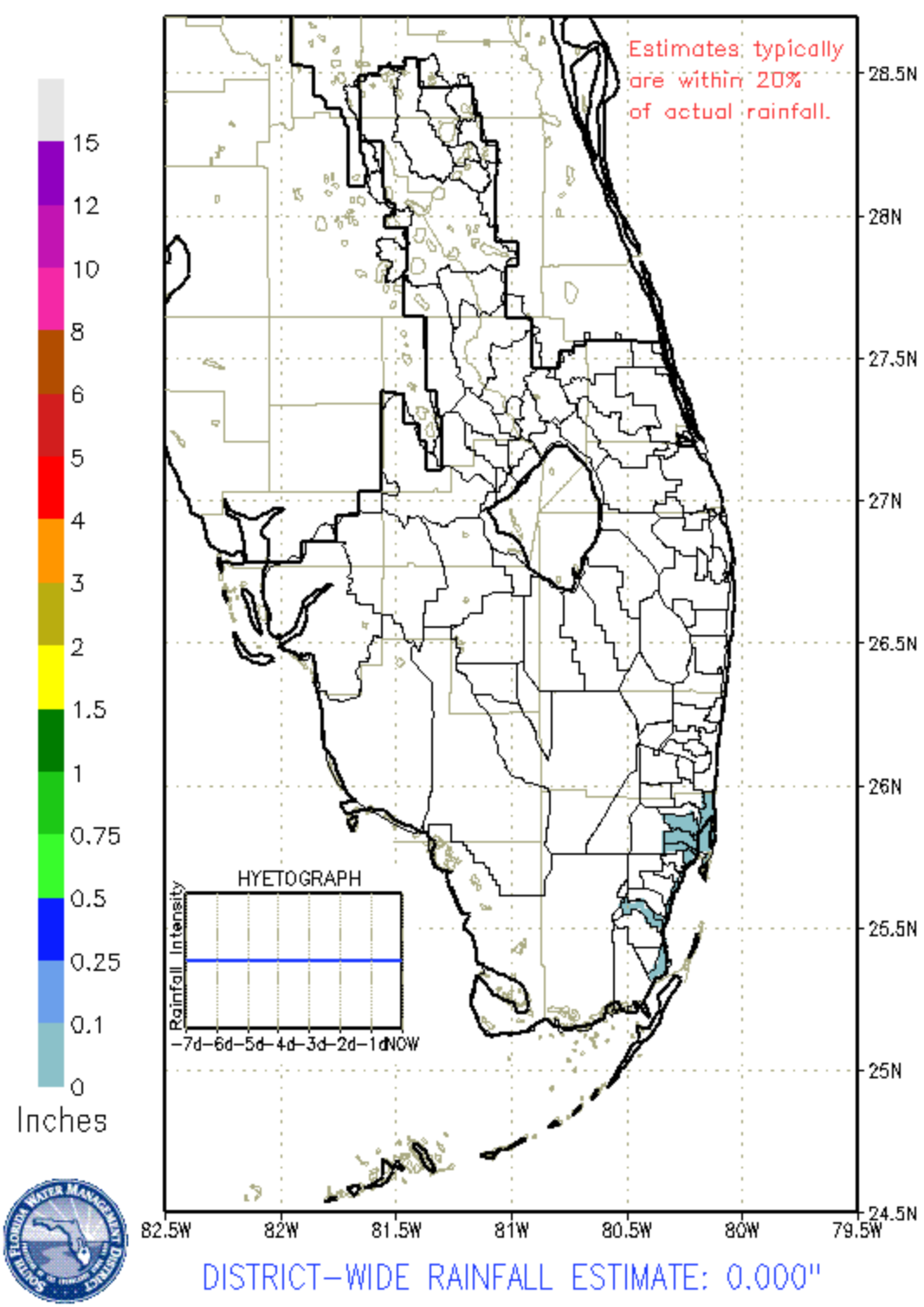

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES
FROM: 1515 EST, 01/30/2017 THROUGH: 1515 EST, 02/06/2017
Estimates typically are within 20% of actual rainfall.
15
12
10
8
6
5
4
3
2
1.5
1
0.75
0.5
0.25
0.1
0
Inches
HYETOGRAPH
Rainfall Intensity
-7d-6d-5d-4d-3d-2d-1dNOW
28.5N
28N
27.5N
27N
26.5N
26N
25.5N
25N
24.5N
82.5W
82W
81.5W
81W
80.5W
80W
79.5W
DISTRICT-WIDE RAINFALL ESTIMATE: 0.000"

Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E	468	0.016
S71 & 72	0	0.000
S84 & 84X	0	0.000
Fisheating Creek	31	0.001
Rainfall	N.A.	0.000
OUTFLOWS	**Average Daily Flow Past Week cfs**	**Feet of Change Past Week**
S77	885	0.031
S308	20	0.001
S351	235	0.008
S352	87	0.003
S354	473	0.016
L8	159	0.006
ET	2045	0.071

Figure 4

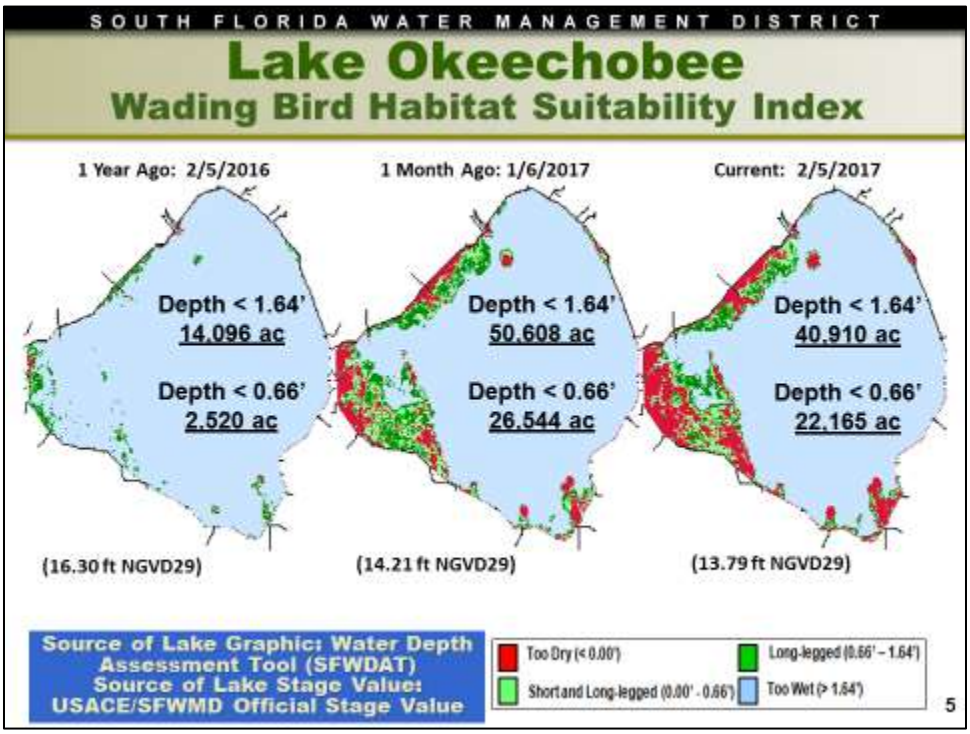


Figure 5

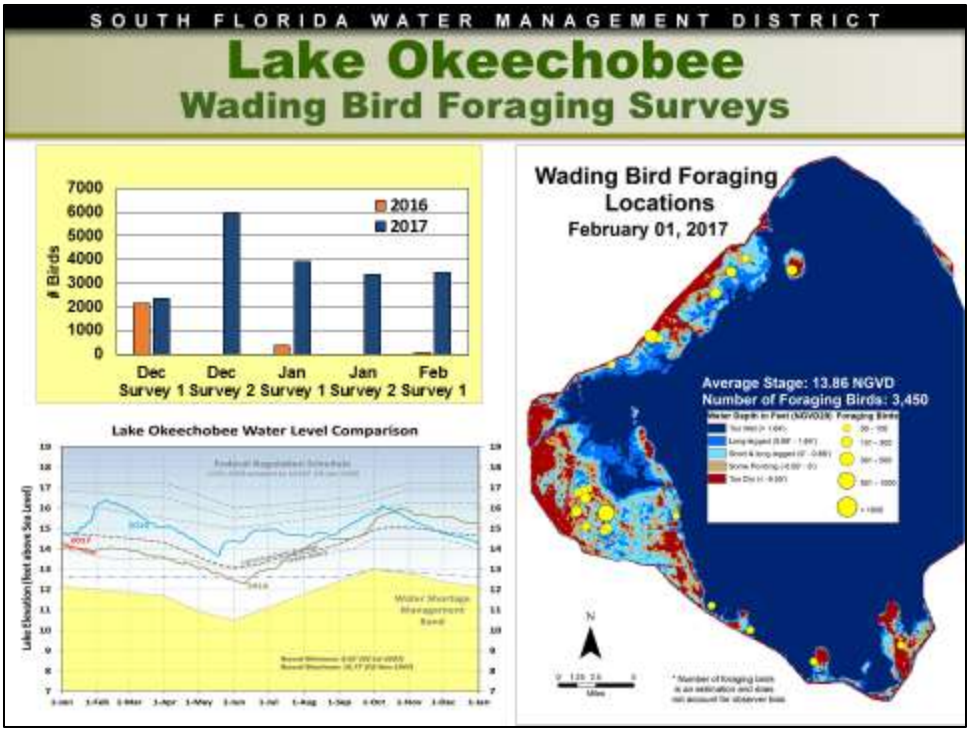


Figure 6

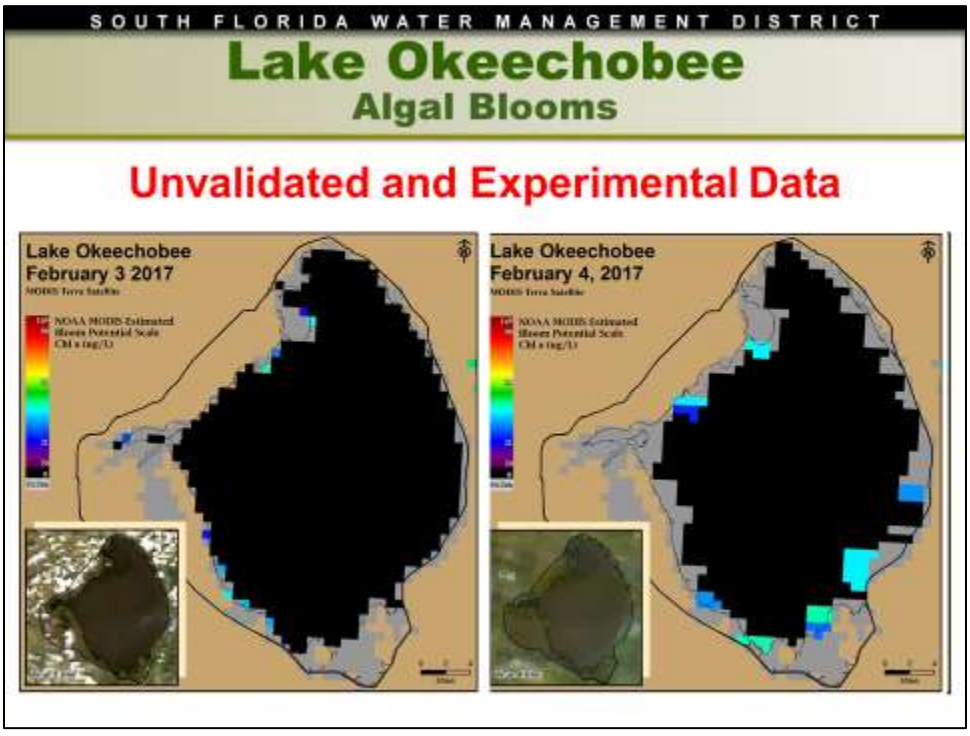


Figure 7

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 113 cfs and 17 cfs respectively, which is an increase from last week's total flow. Average discharge from S68 and S68X this past week was 69 cfs, which is

also an increase from the previous week's flow. According to RAINDAR, no rain fell in the Lake Istokpoga watershed during the past seven days.

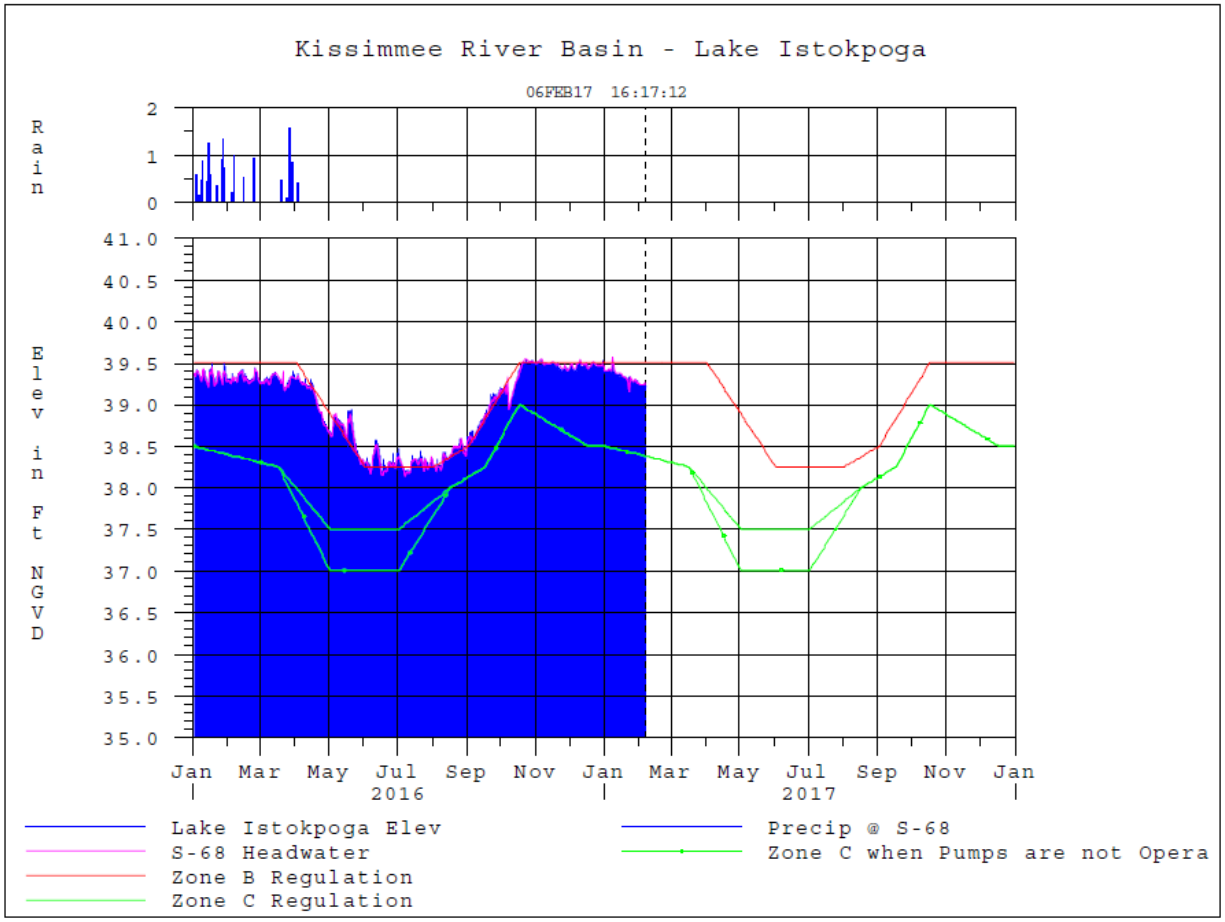


Figure 8

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 0 cfs at S-80, 52 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 39 cfs (Figures 1 and 2). Total inflow averaged about 93 cfs last week and 162 cfs over last month.

Over the past week, salinity increased 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 26.2. Salinity conditions in the middle estuary are in the fair 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)	**23.0** (21.9)	**25.3** (24.5)	NA[1]
US1 Bridge	**25.9** (25.0)	**26.6** (25.7)	10.0-26.0
A1A Bridge	**31.2** (30.7)	**32.3** (31.5)	NA

[1]Envelope not applicable

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 910 cfs at S-77, 567 cfs at S-78, and 725 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 67 cfs (Figures 5 and 6). Total inflow averaged 792 cfs last week and 724 cfs over last month.

Over the past week in the estuary, surface salinity decreased at and downstream of the I-75 Bridge (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 4.8 at Val I-75 and 11.1 at Ft. Myers. The 30-day moving average salinity at Ft. Myers has been over 10 for 37 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)	**2.9** (2.8)	**2.9** (2.8)	NA[1]
*Val I75	**3.6** (3.8)	**6.0** (6.0)	0.0-5.0[2]
Ft. Myers Yacht Basin	**9.4** (11.4)	**12.6** (12.0)	NA
Cape Coral	**16.8** (18.9)	**18.5** (19.6)	10.0-30.0
Shell Point	**26.0** (27.3)	**27.5 (**28.4)	10.0-30.0
Sanibel	**>30** (31.2)	**31.1** (31.3)	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)	3.73 – 13.51	4.80 – 12.71	1.53 – 7.73 spikes to 26 & 74
Dissolved Oxygen (mg/l)	6.82 – 8.37	5.20 – 8.68	No Data

The Florida Fish and Wildlife Research Institute reported on February 3, 2017, that *Karenia brevis*, the Florida red tide organism, persists in Southwest Florida from southern Pinellas to northern Collier counties. *Karenia brevis* was observed in background to high concentrations in twenty-six samples collected from Lee County. The highest near-shore sampling was a medium concentration near Boca Grande Pass.

Water Management Recommendations

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.

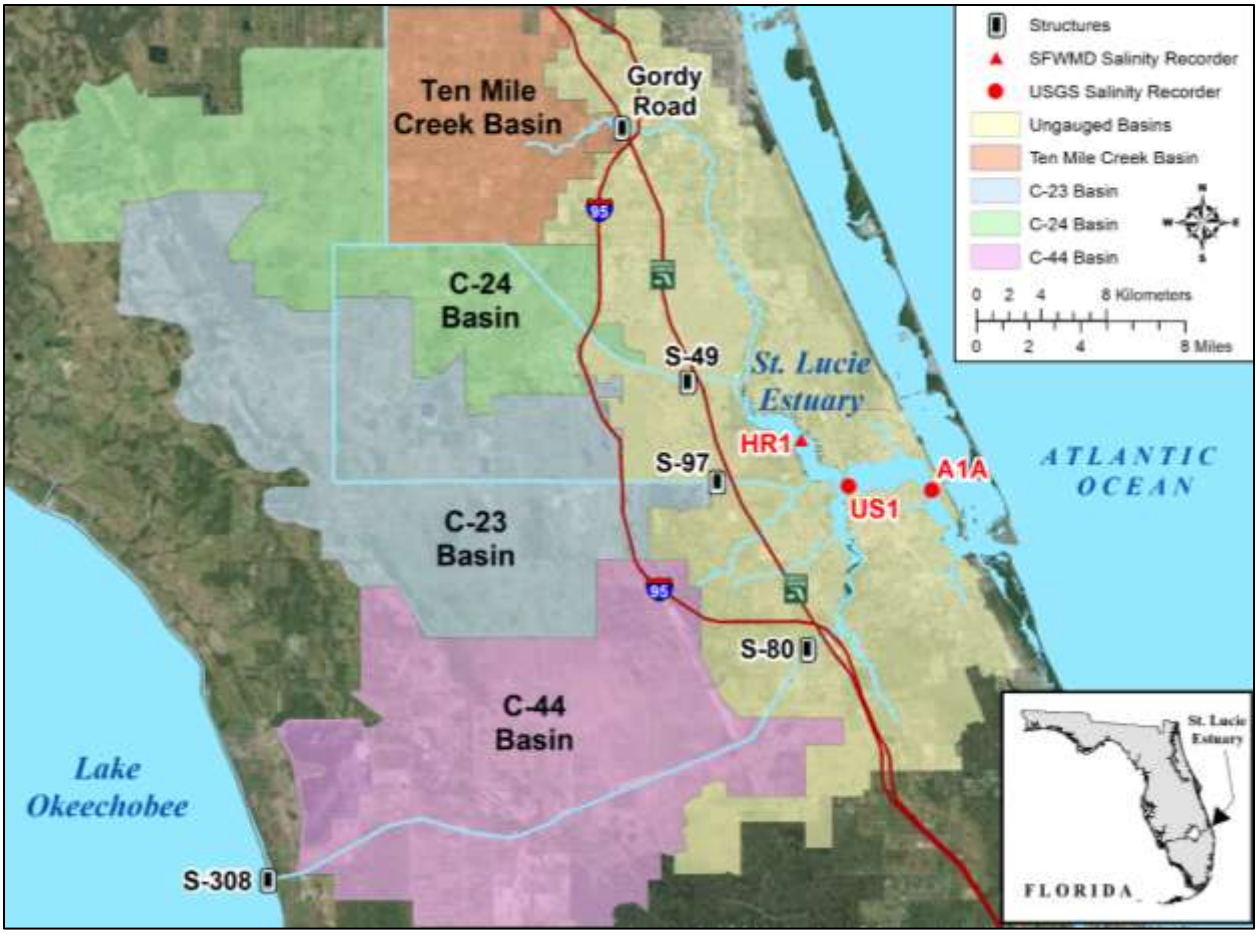


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

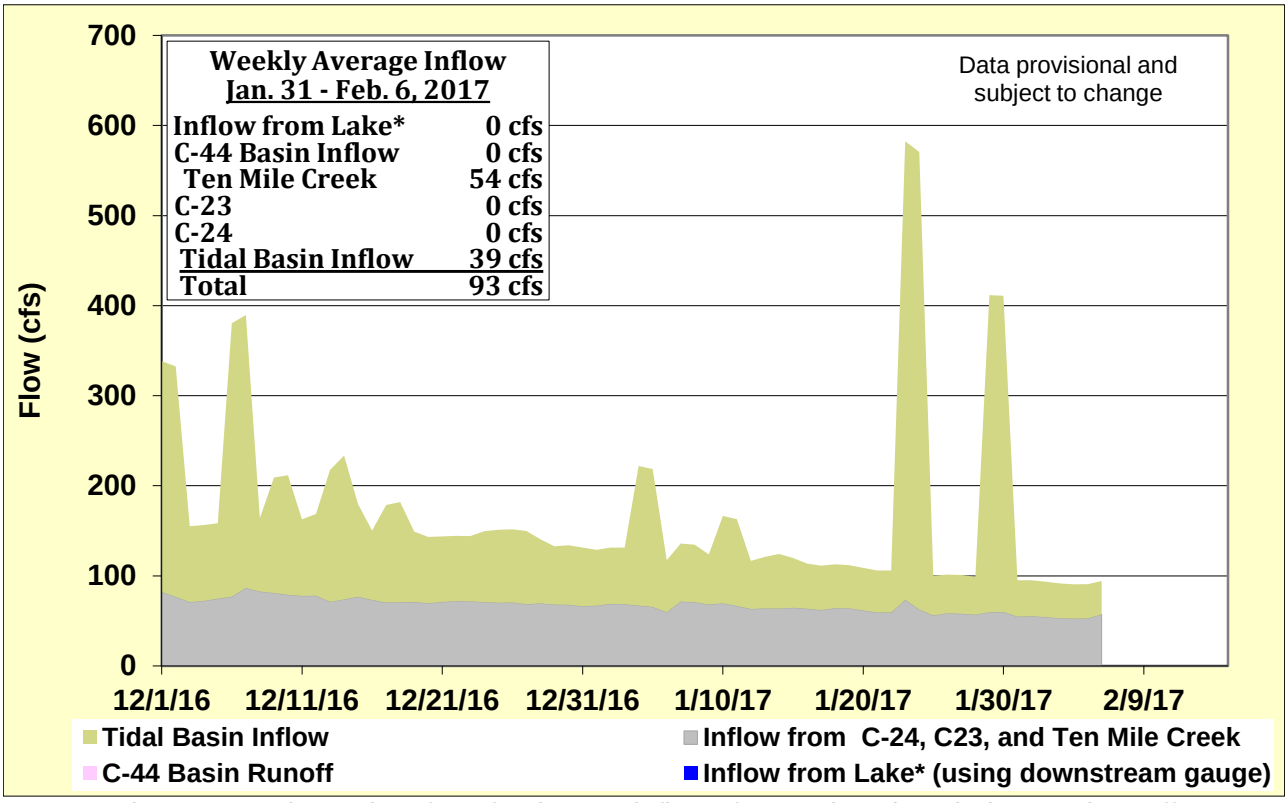


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

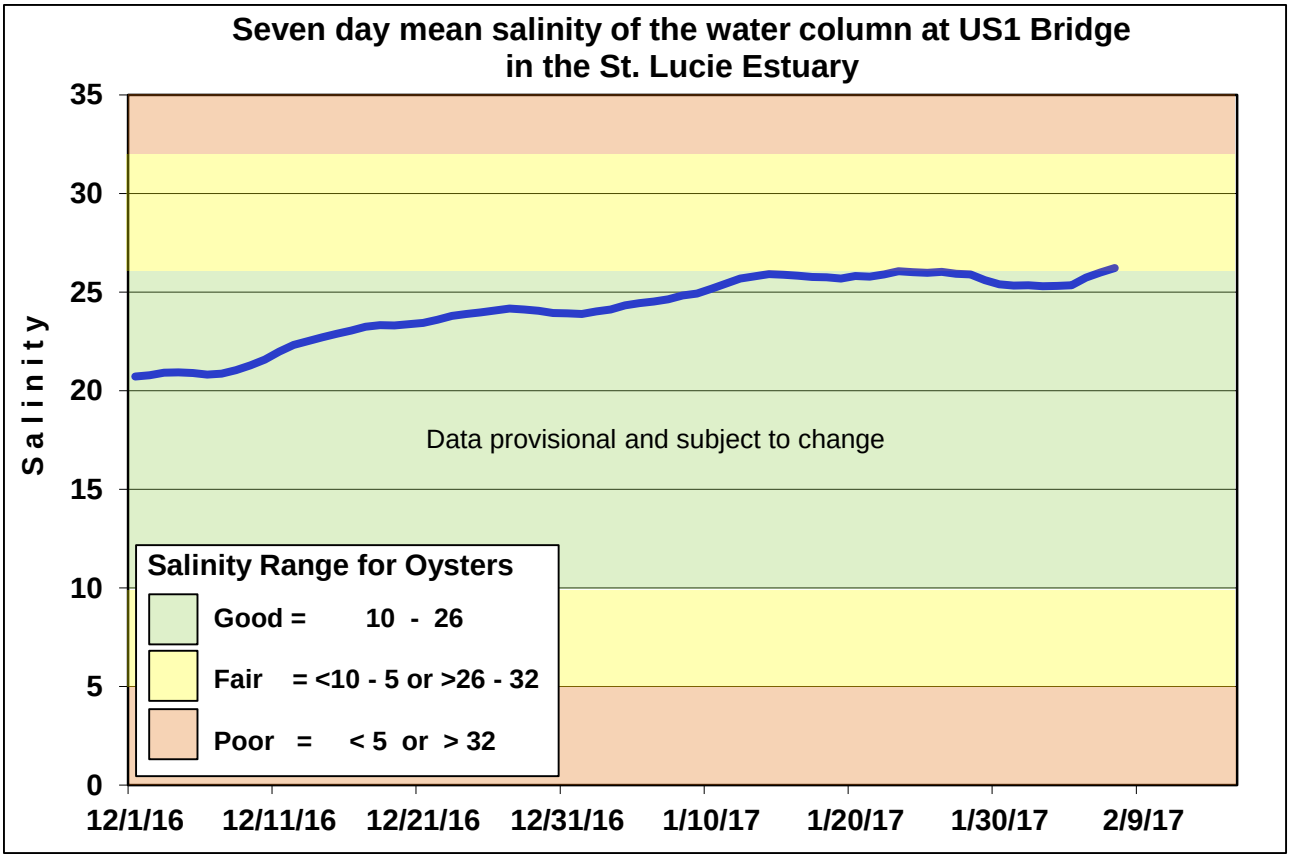


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

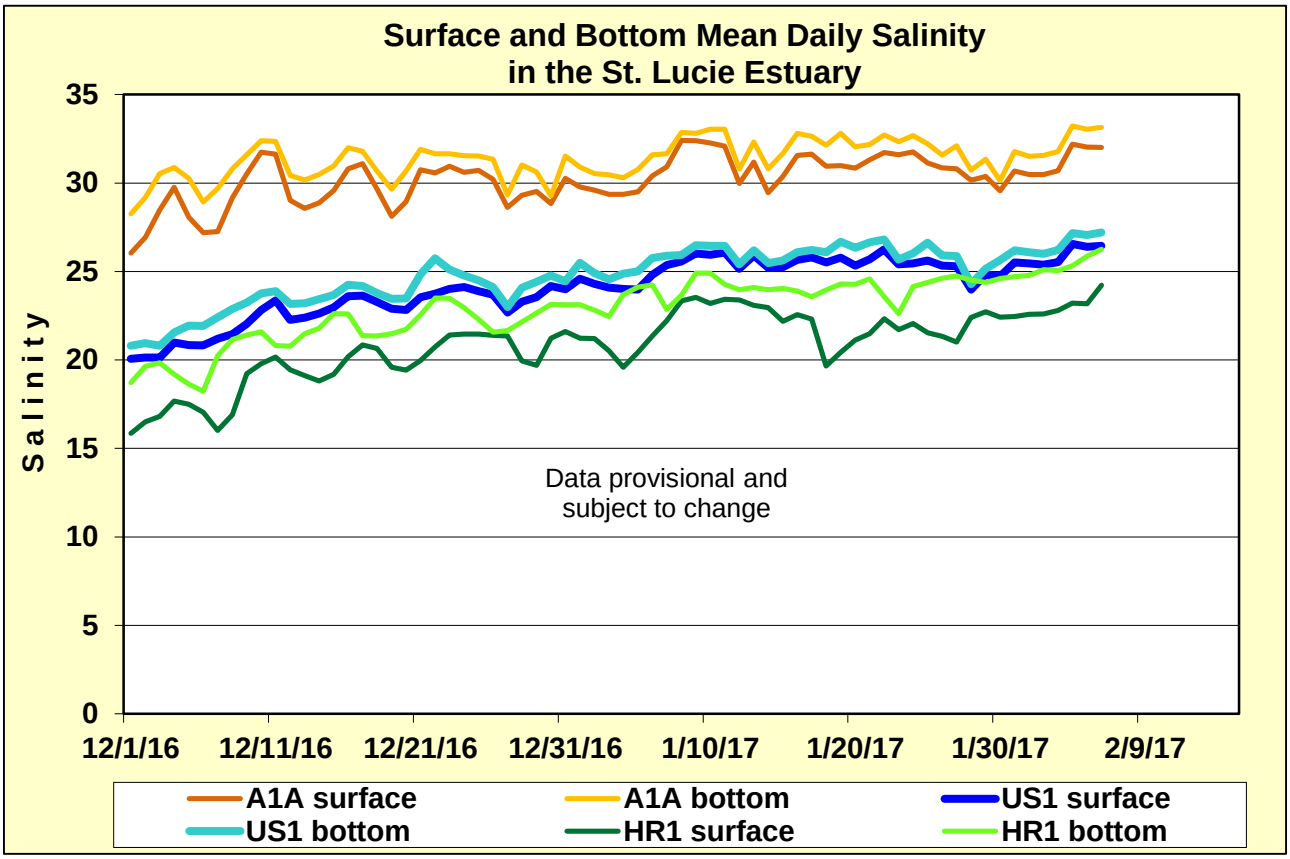


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

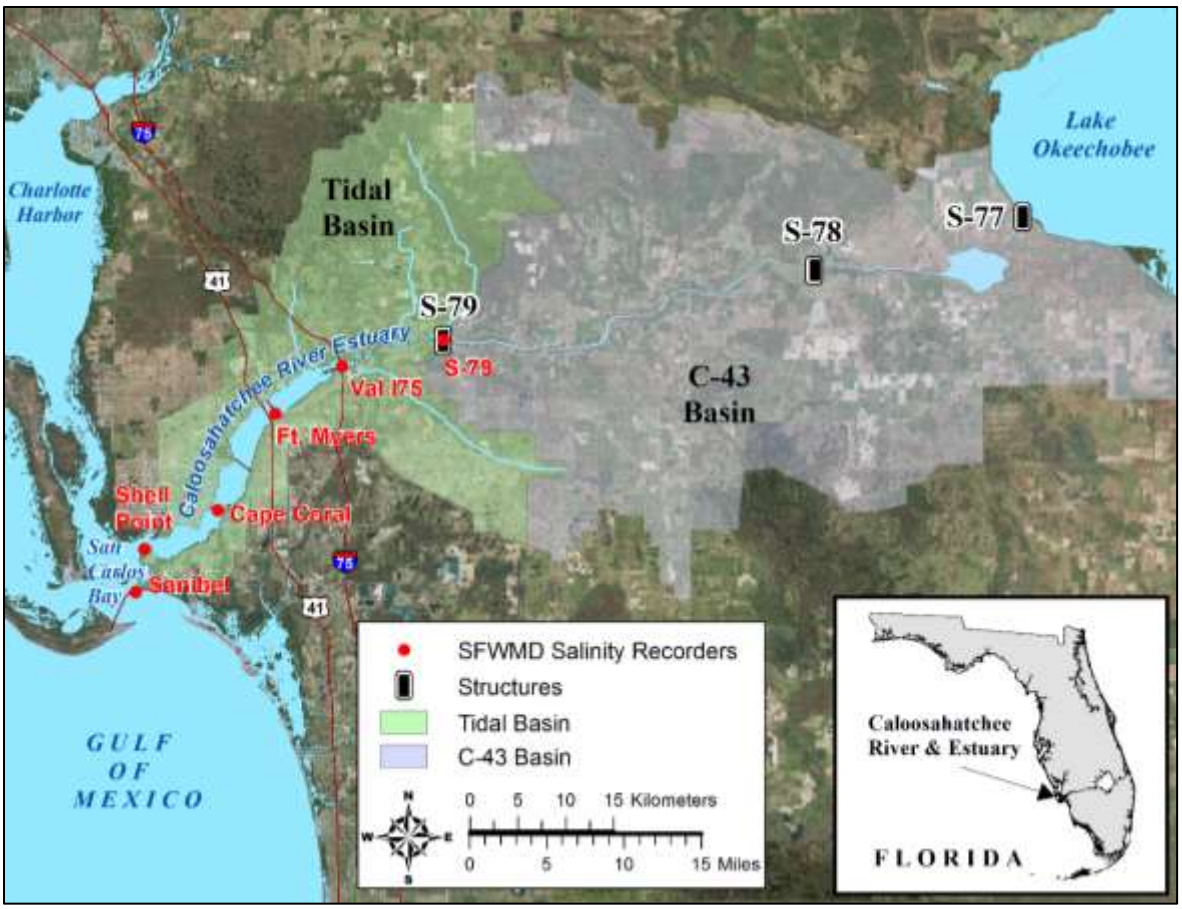


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

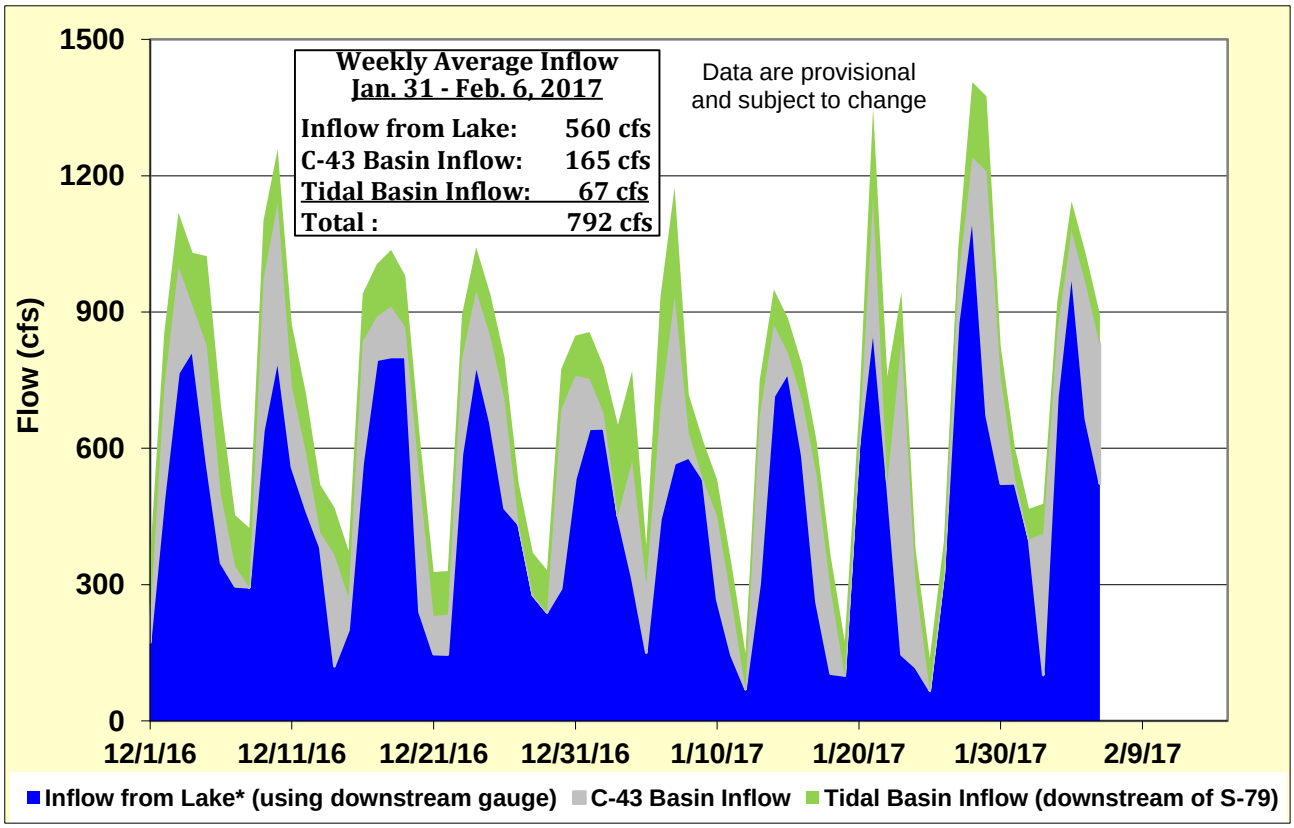
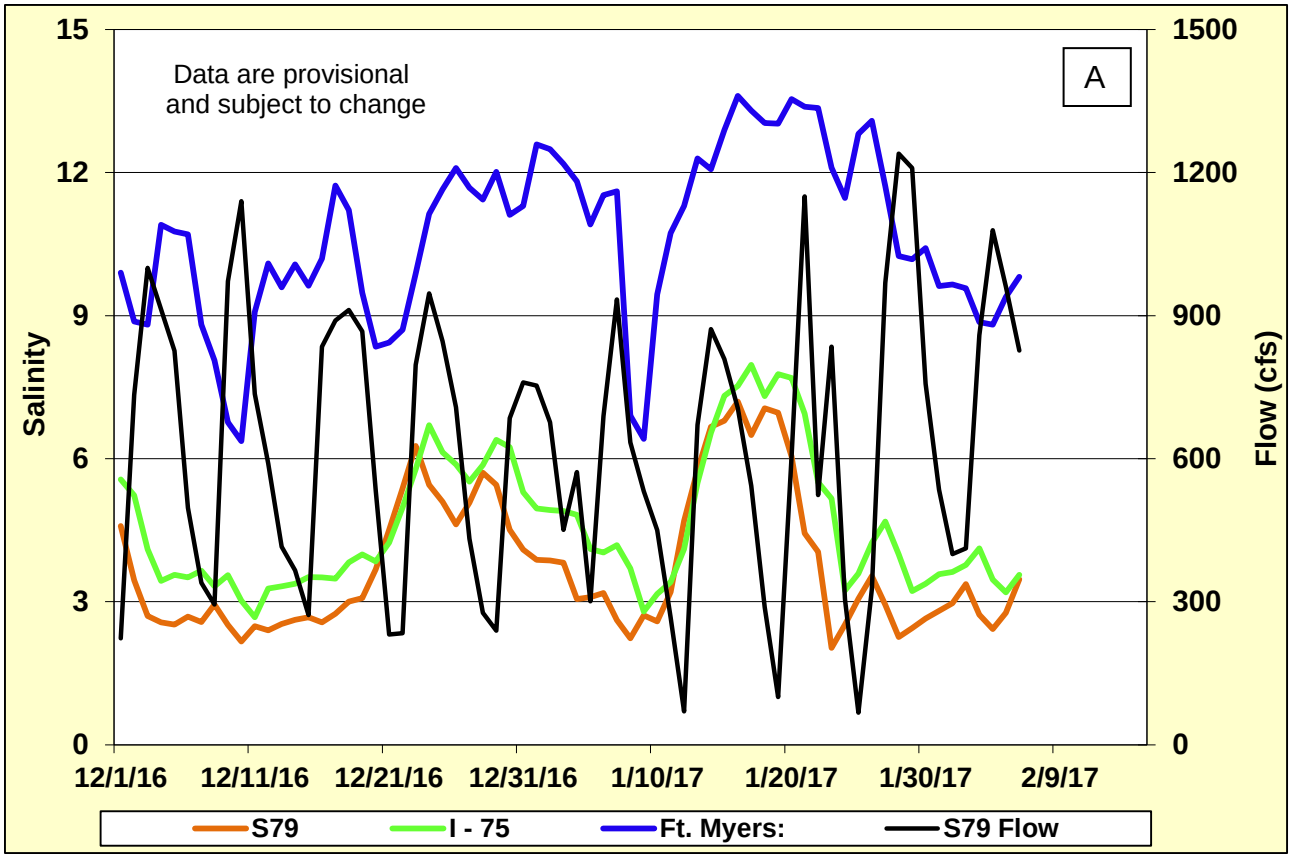


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



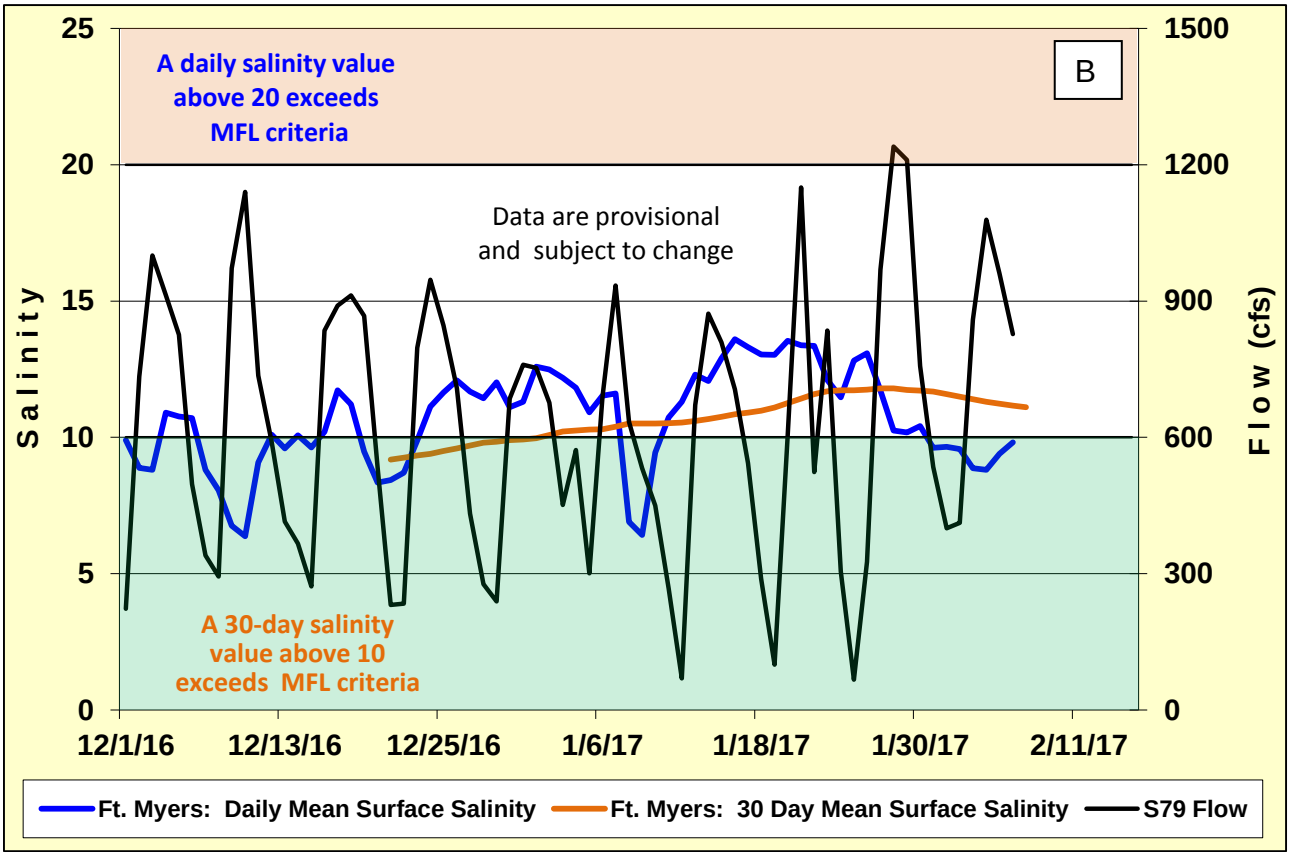


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

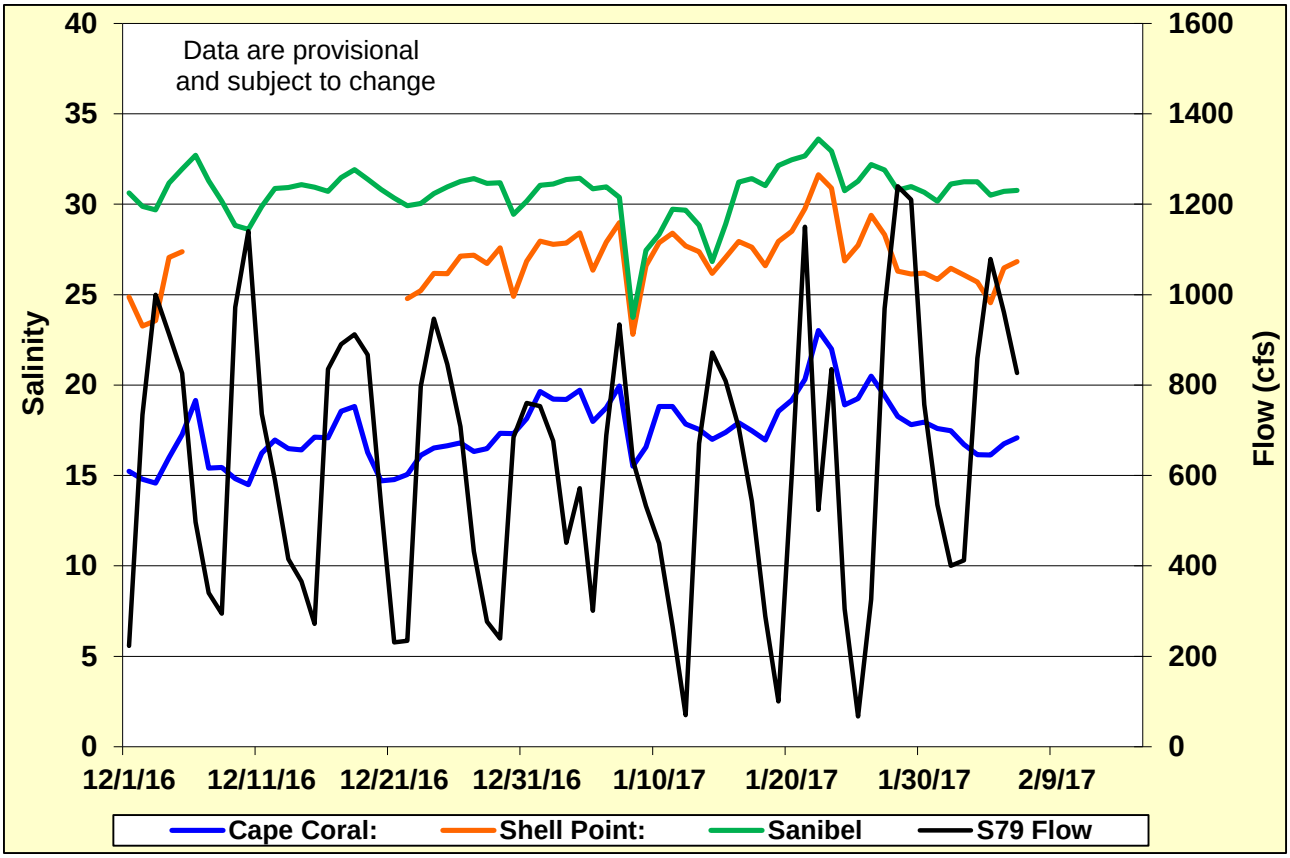


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

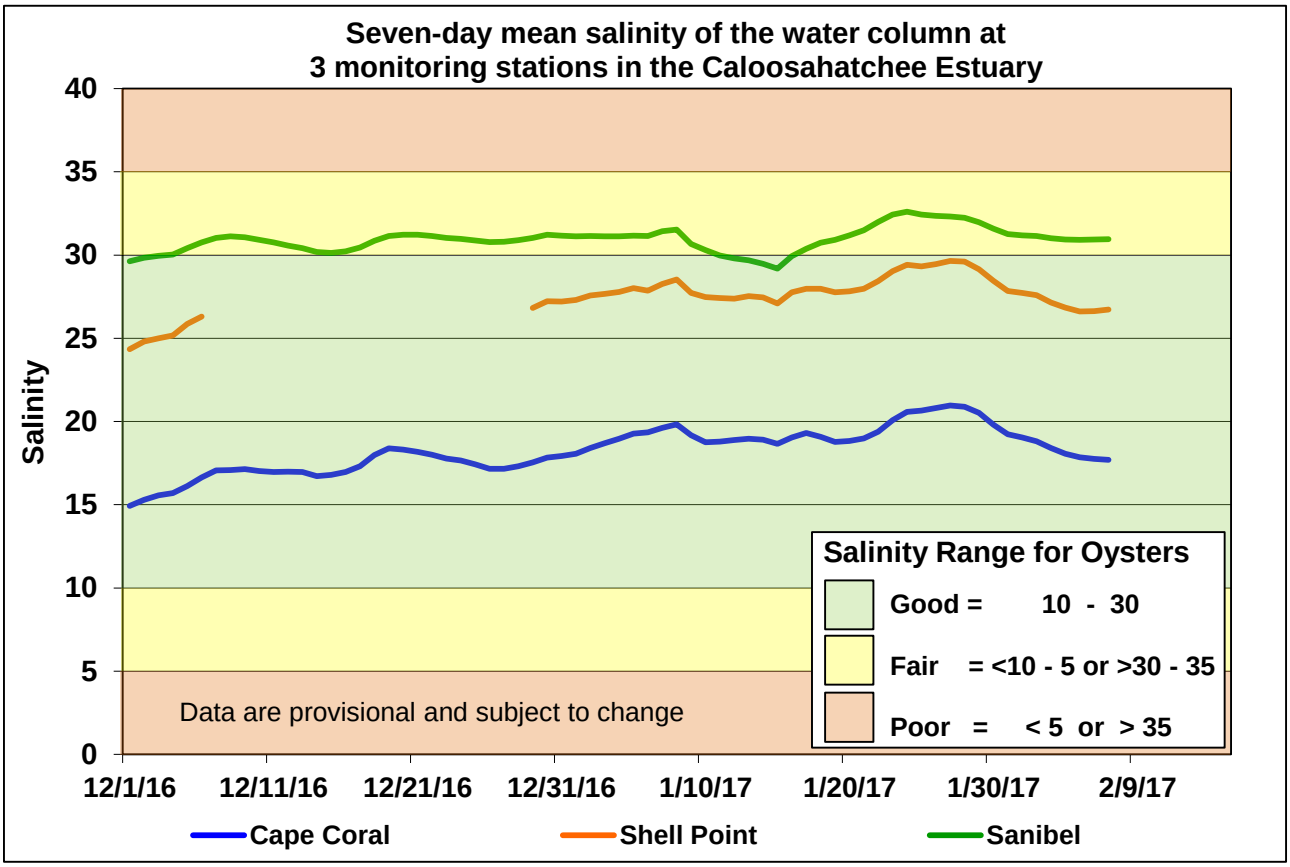


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

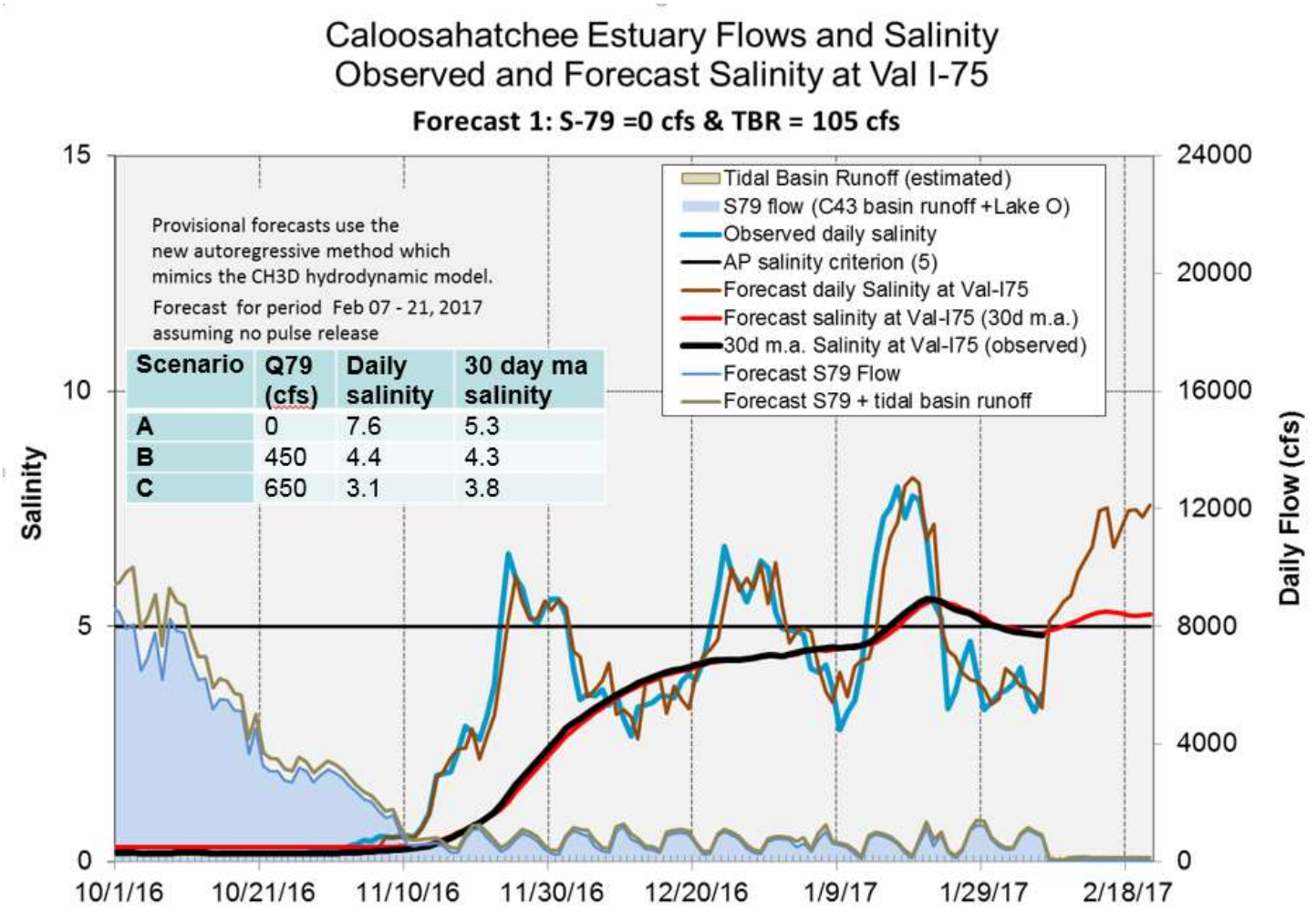


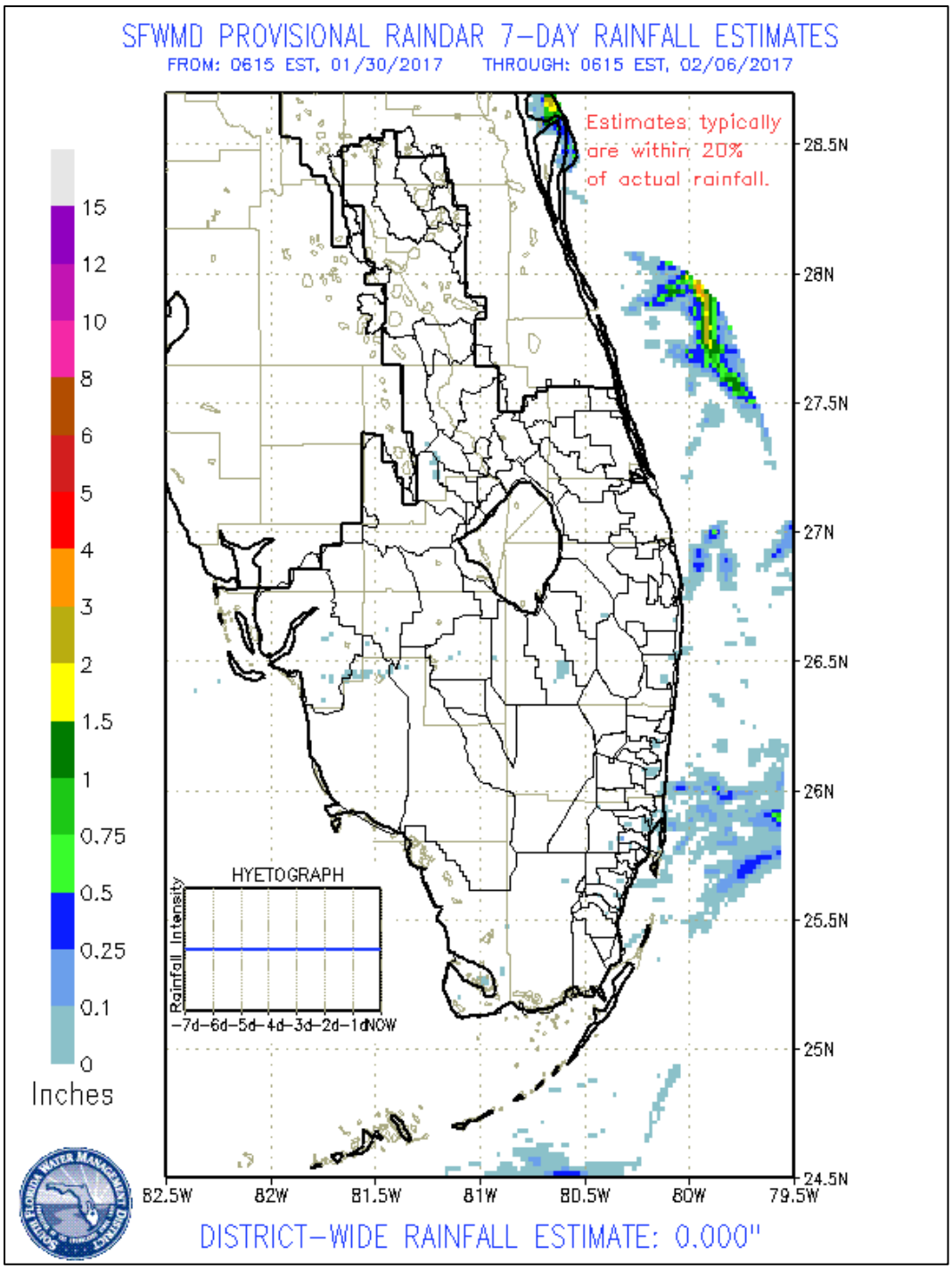
Figure 10. 14-day salinity forecast at Val I-75 assuming no releases at S-79.

GREATER EVERGLADES

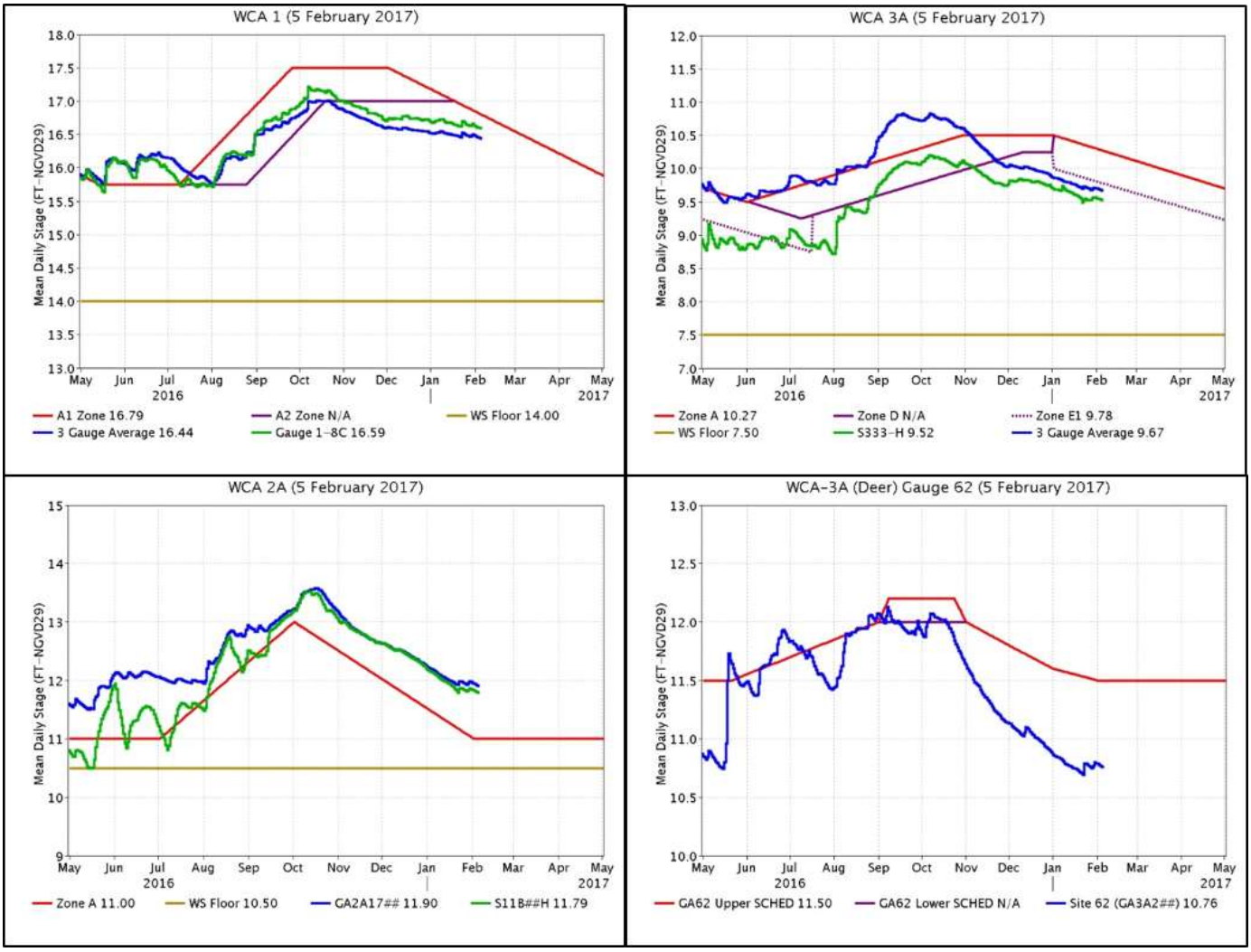
Rainfall was absent within the WCAs and Everglades National Park (ENP). Water levels decreased in all the WCAs and northeastern ENP. With the exception of WCA-2A and 2B, the rate of stage change within all the WCAs and the ENP fell within the "good" range.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	0.00	-0.07
WCA-2A	0.00	-0.10
WCA-2B	0.00	-0.12
WCA-3A	0.00	-0.05
WCA-3B	0.00	-0.05
ENP	0.00	-0.09

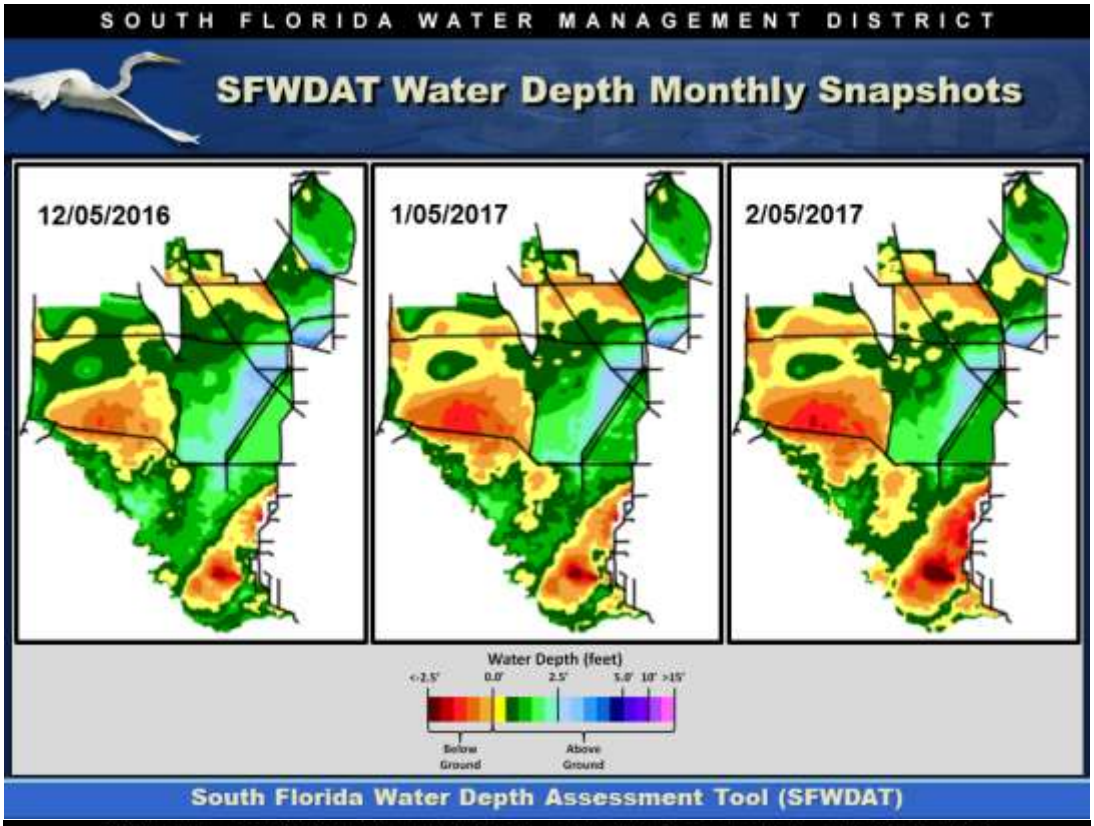
Good
Fair
Poor

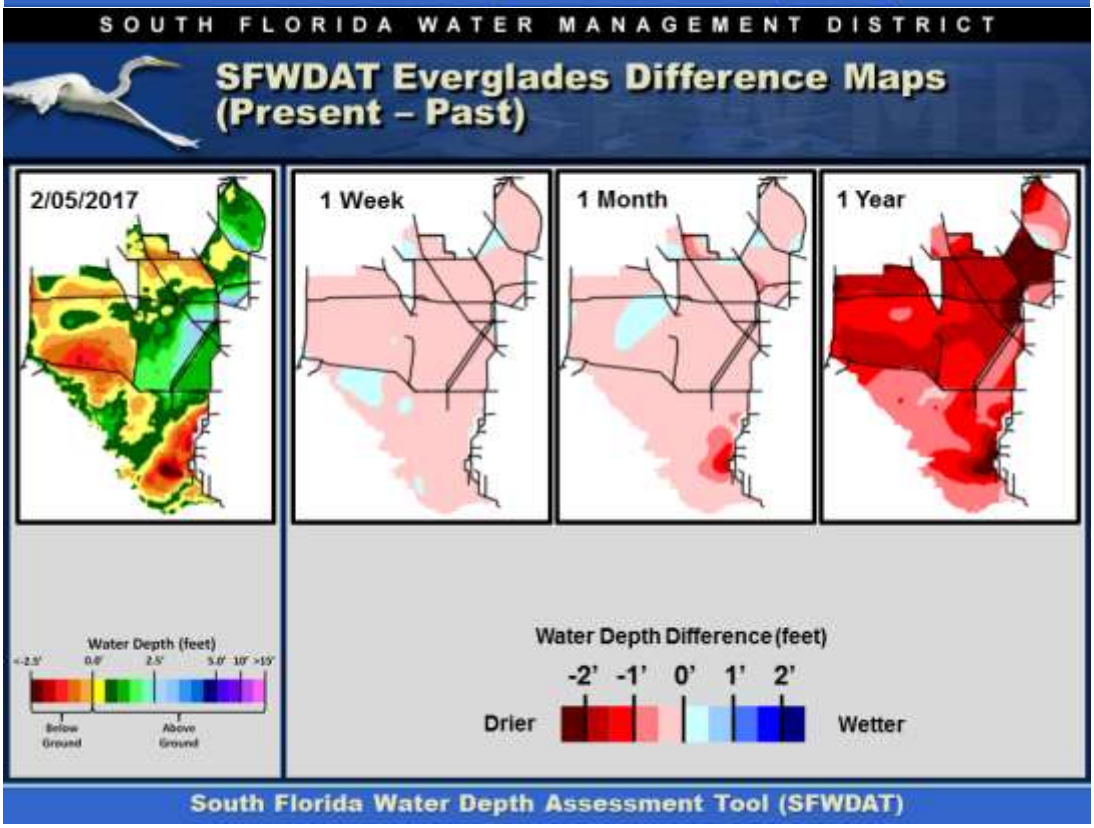


Regulation Schedules: Stages are below regulation for three of the four areas. The WCA-1 three-gauge average is −0.35 feet below zone A1, the northwestern WCA-3A gauge stage (gauge 62) is −0.74 feet below the upper schedule, and the WCA-3A three-gauge average stage is still -0.11 feet below zone E1. The WCA-2A stage remains above regulation by 0.79 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 decreased this week. Water levels generally remain lower than they were one week, one month and one year ago. This week's water depths at monitored gauges other than in WCA-2B range from 0.63 feet (northeast WCA-3A) to 2.20 feet (southern WCA-3A). Individual gauge changes ranged from −0.03 feet to −0.12 feet.



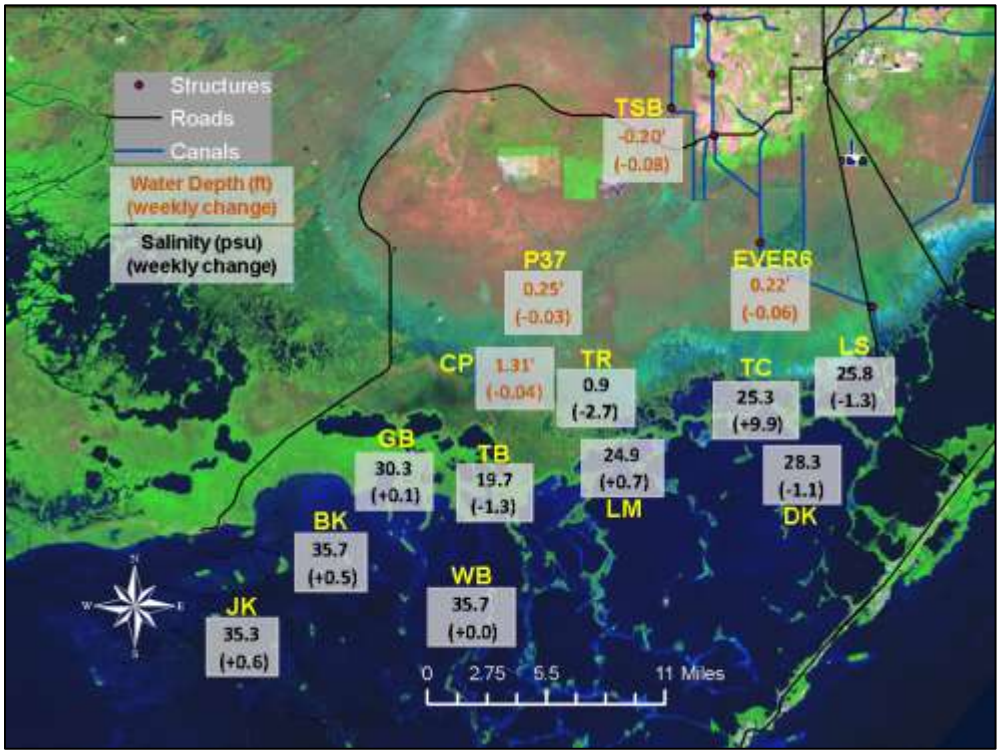


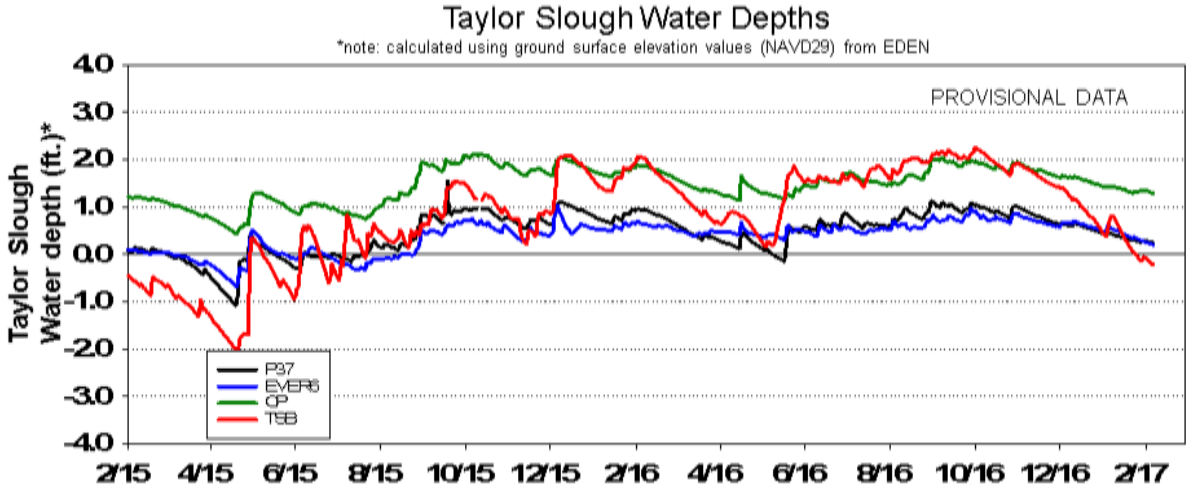
Wading Birds: The Districted conducted a wading bird foraging survey of the northern Everglades on Feb 6, 2017. Similar to last week, about 1,700 birds (mainly White Ibis but also Great Egret and Little Blue Herons) were foraging in northern and central WCA-1. A few large flocks continue to feed in central WCA-2A and a few large flocks of White Ibis, Great Egrets and Wood Storks are foraging in northern WCA-3A South. No birds were noted in WCA-3A North.

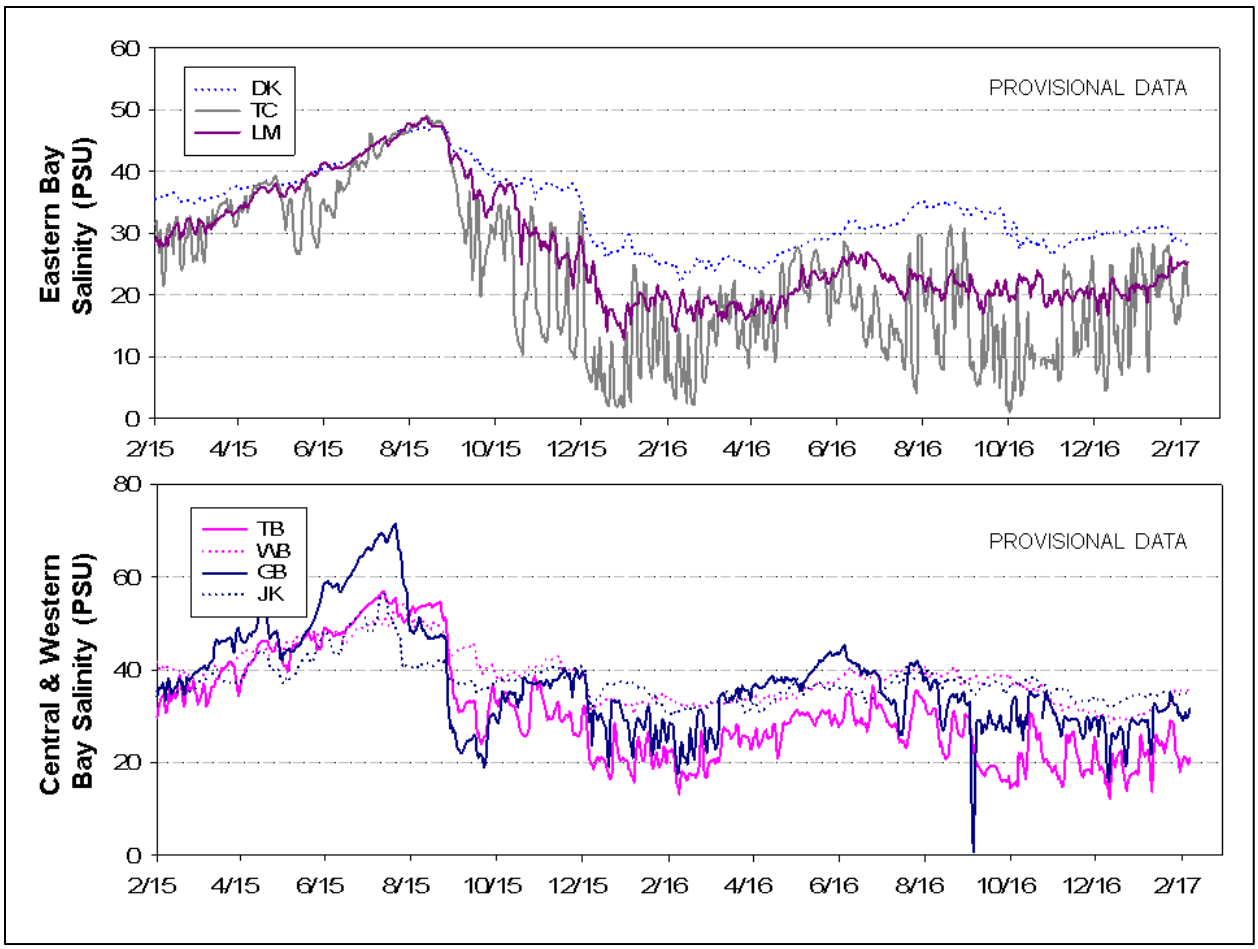
The District conducted a Wading bird colony survey on February 2, 2017. Numbers of Wood Stork nests at the two jetport colonies have grown from about 30 nests on January 5 to a current total of 280 nests. Large numbers of non-mated pairs suggest that further nesting there is imminent. Currently there are no stork nests at the Tamiami colonies but storks are beginning to pair up at Tamiami West. Great Egrets are nesting in quite large numbers at Alley N (about 900 nests), Hidden and 6th Bridge colonies in WCA3A and at colony 99 in the WCA1. Roseate Spoonbills are nesting at Alley N, Jetport South and 6th Bridge colonies.

Water levels fell this past week from −0.03 feet in central Taylor Slough to −0.08 feet in northern Taylor Slough. Water levels range from −5 inches below average for this time of year at TSB to +1 inch above average in southern Taylor Slough.

Salinities changes were mostly less than 1.3 psu this past week. Salinities are −3 psu below average at TB to +6 psu above average at TC (both along the shoreline). The central and western areas are 2 to 3 psu above average for this time of year.

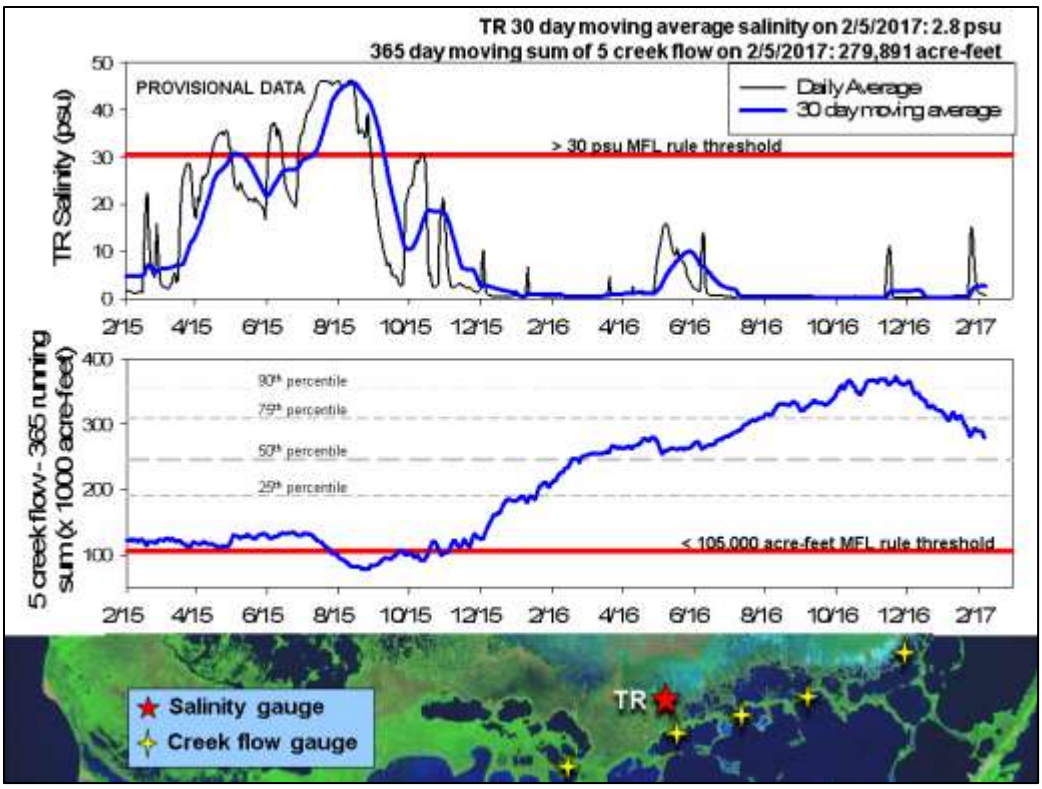






Florida Bay MFL: The daily average salinity at TR has returned to 0.8 psu after peaking at 15 more than a week ago. The 30-day moving average rose 2.8 psu this week (up 0.2 from last week).

The 365-day moving sum of flow from the five creeks identified by stars on the map decreased about 11,000 acre-feet to end at 279,891 acre-feet (still above the average of 257,628 acre-feet). The weekly creek flow from the five creeks was around 4,200 acre-feet with small positive flows continuing all week.



Water Management Recommendations

- The seasonal Multispecies Management Team (interagency group related to ERTP schedule) remains concerned that water levels in WCA-1 and WCA-3 are too low going into the breeding season, which could result in deteriorating foraging conditions later in the nesting season. It is important to keep water moving into the WCAs and ENP and to hold water and improve hydrologic conditions.

- 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.

- Recession rates in WCA-2A should be slowed if possible to maintain suitable wading bird foraging conditions throughout the wading bird nesting 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.

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

Everglades Ecological Recommendations, Feb. 6th, 2017 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages decreased −0.05' to −0.08'	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 decreased −0.10'	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. Retain water to provide foraging habitat later in the breeding season.
WCA-2B	Stages decreased −0.12'	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	Stages decreased −0.07'	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	Stages decreased −0.06'	Rainfall, ET, management		
Central WCA-3A S	Stages decreased −0.06'	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, wildlife and wading bird breeding season.
Southern WCA-3A S	Stages decreased −0.03'	Rainfall, ET, management		
WCA-3B	Stages decreased −0.04' to −0.07'	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	Stages decreased −0.09'	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. 100 cfs discharge from S-333	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 −0.03' to −0.08'	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	−3 psu below to +6 psu above average	Rain, ET, inflows, wind	Move water southward as possible	Maintain low salinity conditions and prevent early salinity increases.