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, Operations, Engineering and Construction Bureau
Paul Linton, Chief, Operations Section

FROM: SFWMD Staff Environmental Advisory Team

DATE: July 18, 2017

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Above average rains likely each day through Friday. An anomalous mid to upper level pattern will unfold over Florida through the weekend as a trough with low pressure drops southward over northern Florida. Energy and moisture will be higher than typical for late July with resulting enhanced seabreeze activity each day. Southerly flow will maintain both seabreeze fronts near their respective coasts today before more dominant activity focuses showers/storms generally west through north of the Lake tomorrow through Friday.

Kissimmee

On Sunday, stage was 0.4 feet below regulation schedule in East Lake Toho, 0.1 feet below regulation schedule in Lake Toho, and 0.8 feet below schedule in Kissimmee-Cypress-Hatchineha. Over the past week, discharge at S65, S65A, and S65E averaged 160 cfs, 575 cfs, and 886 cfs, respectively. Tuesday morning discharges were ~435 cfs, 638 cfs, and 1,230 cfs respectively at S65, S65A, and S65E. Dissolved oxygen concentration in the Kissimmee River averaged 3.3 mg/L for the week. Kissimmee River mean floodplain depth on Sunday was 0.64 feet. Recommendations:(7/16/2017) Reduce S65A flow to ~600-650 cfs. As Pool A runoff diminishes keep S65A around 650 +/- 50 cfs by using flow from S65 to maintain moderate discharge to the Kissimmee River while maintaining S65A headwater within its operating range.

Lake Okeechobee

Lake stage is 12.56 feet NGVD having increased by 0.12 feet over the past week and 0.63 feet over the past month. Ascension rates over the past three weeks were much slower than they were throughout most of June. Conditions continue to be favorable for algal blooms in northern portions of the Lake based on satellite imagery from early to mid-July, with the first blooms and microcystin detections reported in late June's water quality samples.

Estuaries

Total discharge to the St. Lucie estuary averaged 1,310 cfs over the past week with no Lake Okeechobee releases. Salinities were about the same compared to last week. The seven-day average salinity at the US1 Bridge is now in the good range for adult oysters. Total inflow to the Caloosahatchee estuary averaged 2,807 cfs over the past week with no Lake releases. The 30-day average surface salinity at the Ft. Myers monitoring station is 0.5 and 0.3 at Val I-75. Salinity conditions between Val I-75 and Ft. Myers are good for tapegrass. Salinity conditions are in the fair range for adult oysters at the Cape Coral Bridge, and in the good range at Shellpoint and the Sanibel Causeway.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 1,000 acre-feet of Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2018 (since May 1, 2017) is approximately 16,400 acre-feet. Most STA cells are at or above target depths. Operational restrictions are in place for vegetation rehabilitation in STA-1E. The nest of an Endangered Species Act protected species has been observed in STA-1E and STA-5/6. Due to last month's basin runoff, it is recommended that no Lake releases be sent to the STAs/FEBs this week.

Everglades

Water levels remain elevated in all WCAs, ranging from 0.5 to 1.9 feet above schedule. Keeping depths below 2.5 feet at gauge 65 is important to moderate the stress to tree islands caused by flooding when durations last longer than 60-90 days. Depth on July 16 at that location was 3.34 feet, and had exceeded 2.5 feet for 31 days.

Salinities in Florida Bay are generally decreasing, but all areas remain 3 to 13 psu above average. Salinities currently range from 29 psu in the eastern nearshore to 46 in the western bay. Johnson Key, the westernmost station monitored for this report, was the lone site where salinities increased, +0.6 psu to end at 46.2 psu.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 1.49 inches of rainfall in the past week and the Lower Basin received 1.83 inches (SFWMD Daily Rainfall Report 7/17/2017).

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: **7/18/2017**

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)						
							7/16/17	7/9/17	7/2/17	6/25/17	6/18/17	6/11/17	6/4/17
Lakes Hart and Mary Jane	S62	20	LKMJ	60.0	R	60.0	**0.0**	0.0	0.1	0.0	-0.1	0.1	-0.4
Lakes Myrtle, Preston, and Joel	S57	9	S57	61.0	R	61.0	**0.0**	0.0	0.0	-0.1	0.0	-0.5	-1.1
Alligator Chain	S60	0	ALLI	62.7	R	63.2	**-0.5**	-0.5	-0.4	-0.5	-0.6	-0.9	-1.1
Lake Gentry	S63	0	LKGT	60.6	R	61.0	**-0.4**	-0.6	-0.5	-0.7	-0.9	-1.2	-1.3
East Lake Toho	S59	6	TOHOE	56.1	R	56.5	**-0.4**	-0.5	-0.5	-0.6	-0.5	-0.8	-1.2
Lake Toho	S61	109	TOHOW, S61	53.4	R	53.5	**-0.1**	-0.3	-0.3	-0.6	-0.5	-0.8	-1.1
Lakes Kissimmee, Cypress, and Hatchineha	S65	160	KUB011, LKIS5B	50.2	R	51.0	**-0.8**	-1.0	-1.0	-1.3	-1.6	-2.3	-2.6

* 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: **7/18/2017**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			7/16/17	7/9/17	7/2/17	6/25/17	6/18/17	6/11/17	6/4/17	5/28/17	5/21/17	5/14/17
Discharge (cfs)	S-65	87	**160**	392	407	455	20	37	145	190	237	234
Discharge (cfs)	S-65A	609	**575**	393	564	1291	477	175	126	121	160	167
Discharge (cfs)	S-65D****	1047	**838**	875	1715	1426	584	307	174	157	182	198
Discharge (cfs)	S-65E****	1083	**886**	915	1698	1462	643	350	161	159	182	173
DO concentration (mg/L)***	Phase I river channel	2.4	**3.3**	3.3	0.7	0.5	3.5	5.2	7.2	7.9	7.7	8.0
Mean depth (feet)*	Phase I floodplain	0.64	**0.45**	0.37	0.99	0.90	0.27	0.13	0.05	0.05	0.05	0.05

* 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 manual sondes at PC62 and PC33; telemetry sondes have been taken offline.

**** 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
7/16/2017	Reduce S65A flow to ~600-650 cfs. As Pool A runoff diminishes keep S65A around 650 +/- 50 cfs by increasing flow from S65.	Maintain moderate discharge to the Kissimmee River from S65A while maintaining S65A headwater within its operating range using flow from S65.	Implemented	SFWMD Water Mgt, KB Ops
7/6/2017	Hold 450 cfs at S65A due to reduced forecast.	Reduced-rainfall forecast led to decision to hold 450 cfs at S65A rather than continuing to ramp up.	Implemented	KB Ops
7/5/2017	Increase S65A flow by 150 cfs today to 450 cfs and by another 150 cfs tomorrow.	Control stage in KCH and Pool A in anticipation of forecast significant rainfall; begin discharge rampup in anticipation of forecast rainfall.	Implemented	KB Ops
6/28/2017	Reduce S65A discharge by a maximum of 150 cfs per day until 300 cfs is reached.	Allow KCH stage to rise before transitioning to 2017 Wet Season discharge plan; facilitate DO recovery in the Kissimmee River by reducing depth in the river channel.	Implemented	KB Ops
6/26/2017	Hold 800 cfs at S65A until further notice.	Maintain reduced discharge to allow stages in KRR project area to decline to facilitate DO recovery.	Implemented	KB Ops
6/22/2017	Reduce discharge by 150 cfs each day on Thursday 6/22, Friday 6/23, Saturday 6/24, and Sunday 6/25. After the Sunday reduction hold at approximately 800 cfs through Monday when new DO data should be available to help guide next steps.	Attempt to allow Kissimmee River dissolved oxygen concentration to rise.	Implemented	KB Ops
6/20/2017	Maintain 1400 cfs at S65A as KCH stage continues to rise. Supplement declining S65A basin runoff by increasing discharge at S65 as needed.	Transition from current operations to 2017 Wet Season discharge plan.	Implemented	KB Ops, SFWMD Water Management
6/15/2017	Attempt to slow the rates of stage rise in Lakes Toho and East Toho by increasing discharge from S59 into Toho and S61 into KCH.	Slow rates of rise in Lakes Toho and East Toho.	Implemented	KB Ops, SFWMD Water Management
6/15/2017	Increase discharge from S65A as necessary using the discharge rates of change table in Figure 8a.	Lower stage in Pool A following rainfall directly over the S65A Basin.	Implemented	SFWMD Water Management, KB Ops
6/13/2017	No new recommendations.			
6/6/2017	No new recommendations.			
5/30/2017	No new recommendations.			
5/22/2017	No new recommendations.			
5/15/2017	Reduce discharge at S65/S65A by 40-50 cfs	Reduce rate of stage decline in KCH while maintaining discharge to the Kissimmee River.	Implemented	KB Ops
5/9/2017	No new recommendations.			
5/3/2017	Reduce discharge at S65/S65A by 50 cfs	Reduce rate of stage decline in KCH		SFWMD Water Management/KB Ops
4/25/2017	Reduce discharge at S65/S65A by 50 cfs	Reduce rate of stage decline in KCH	Implemented	SFWMD Water Management/KB Ops
4/17/2017	No new recommendations.			
4/11/2017	No new recommendations.			
3/30/2017	Reduce discharge at S-59 and S-61 so that stage in these lakes declines to respective low pools on May 31; reduce discharge at S-65 to 300 cfs.	Reduce rate of stage decline in East Toho, Toho, and KCH.	Implemented	SFWMD Water Management/KB Ops
3/23/2017	Reduce S-65 discharge by 75 cfs per day through 3/25 for a target discharge of ~500 cfs.	Reduce rate of stage decline in KCH.	Implemented	SFWMD Water Management/KB Ops

KCOL Hydrographs (through Sunday midnight)

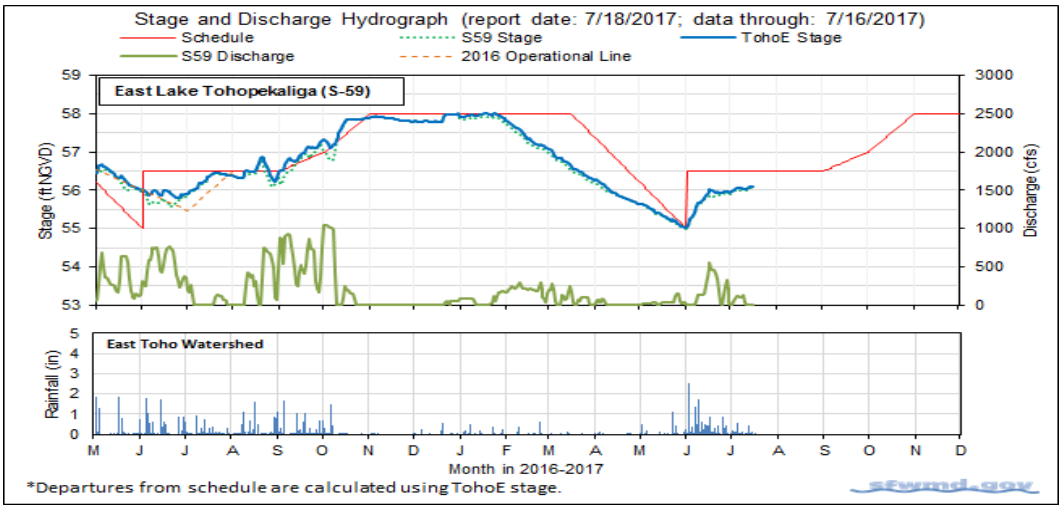


Figure 1.

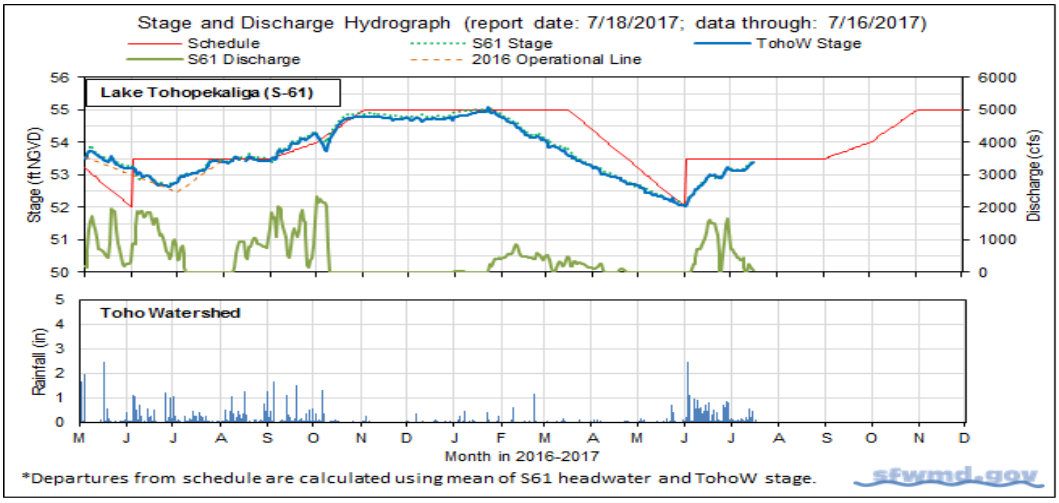
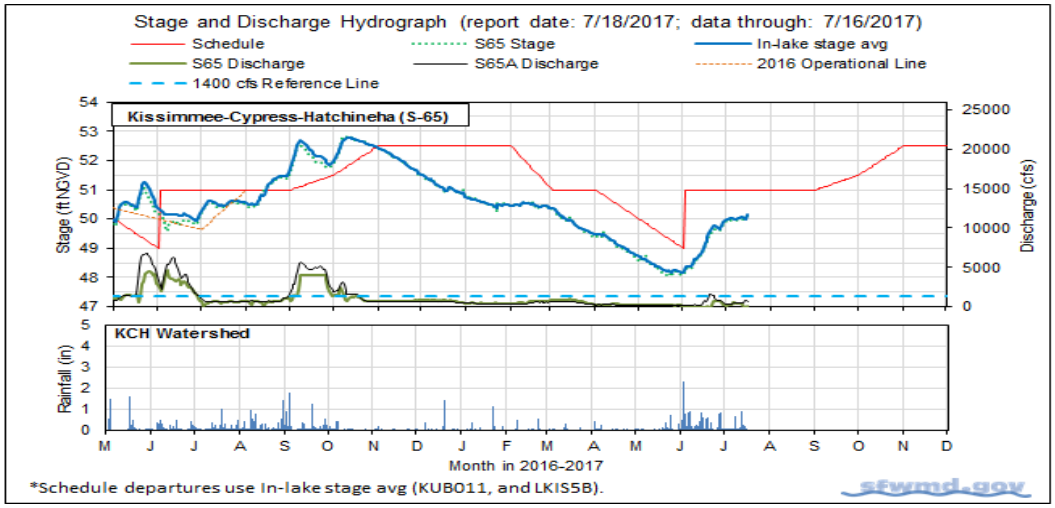


Figure 2.



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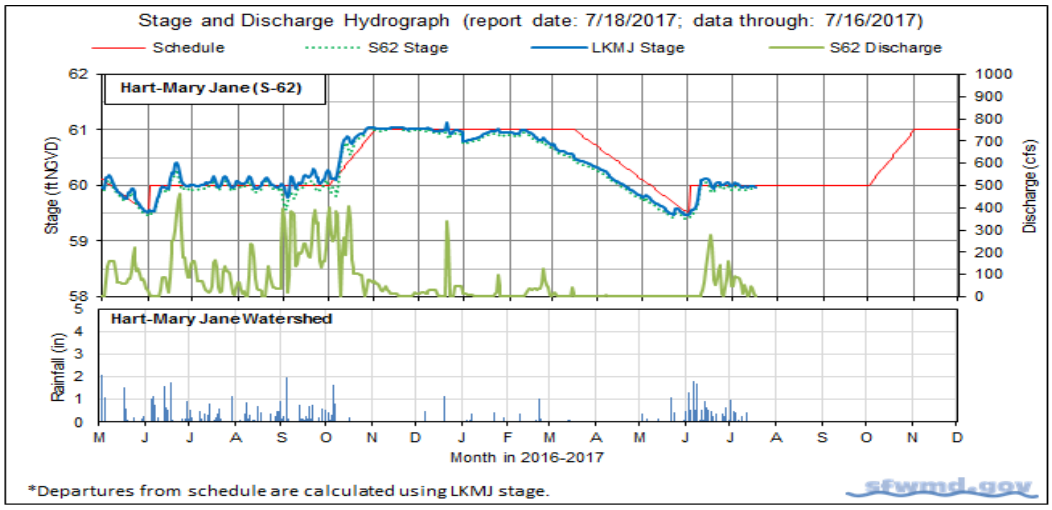


Figure 4.

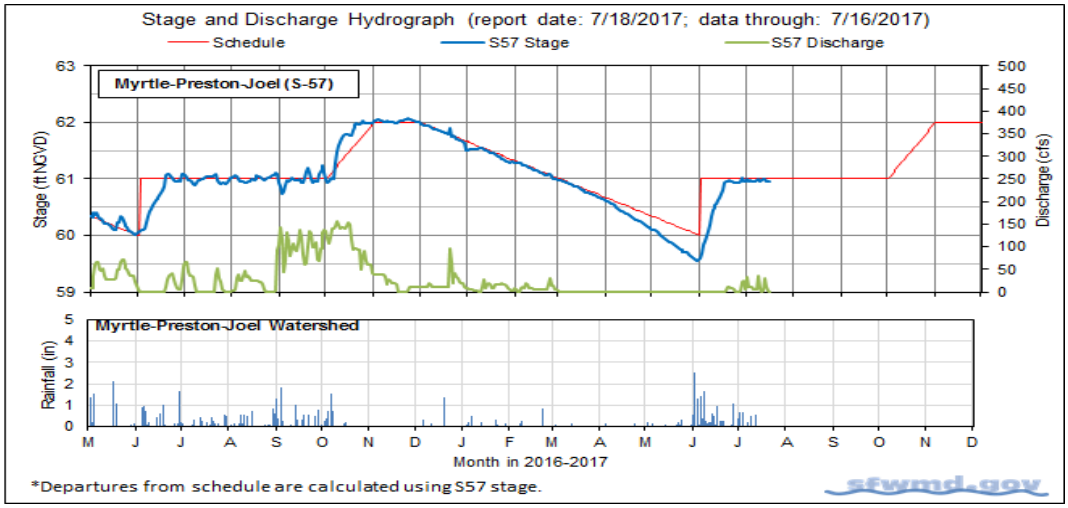
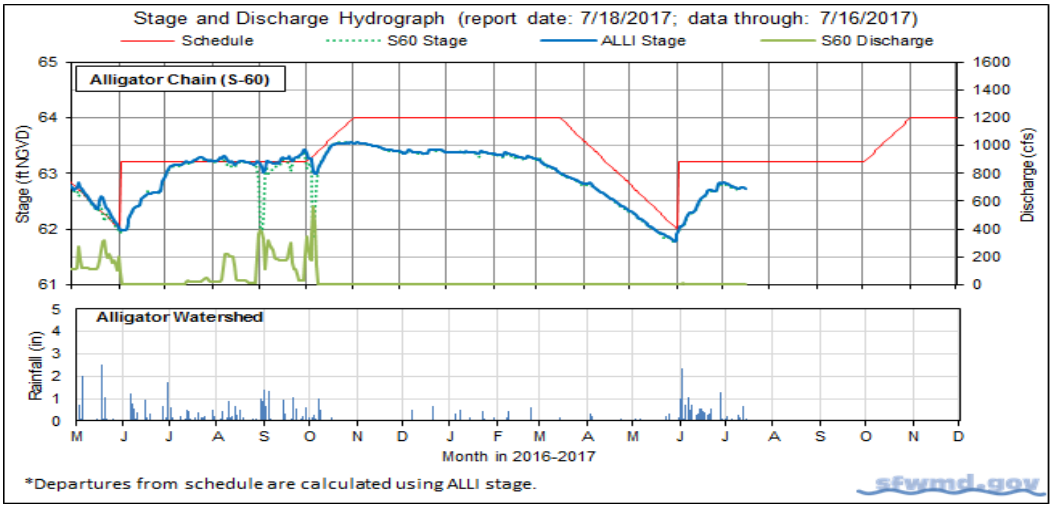


Figure 5.



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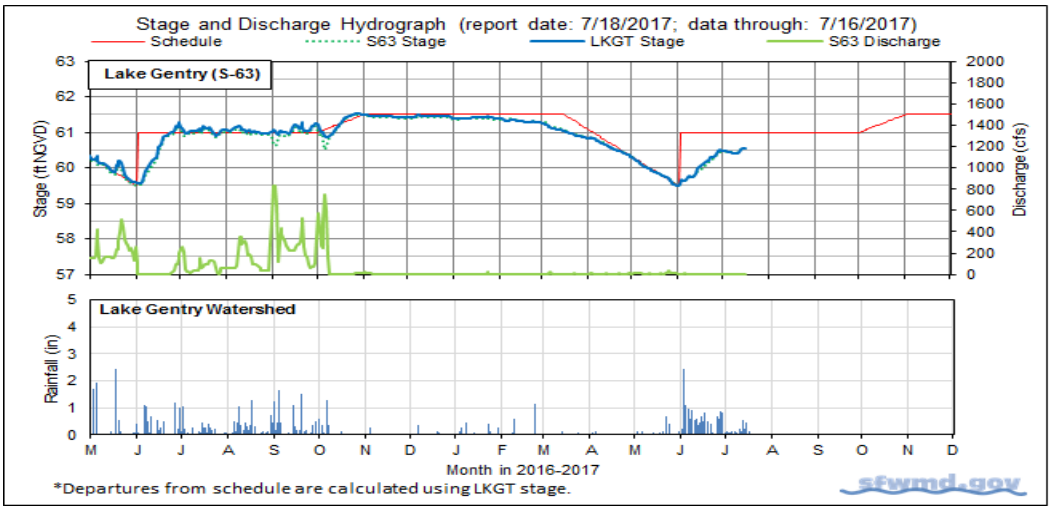

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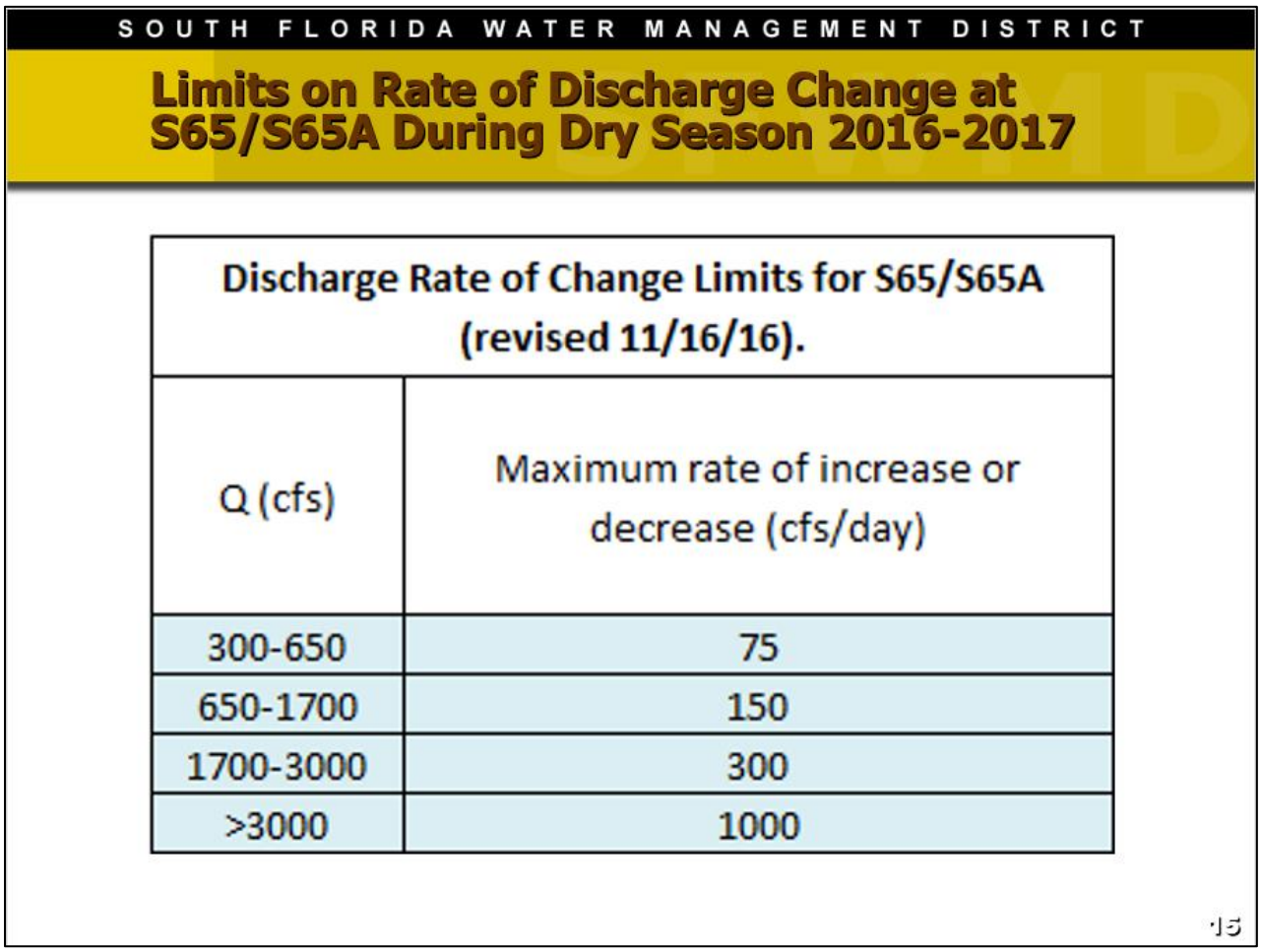


Figure 8. Limits on rate of discharge change at S65/S65A for the 2016-2017 Dry Season.

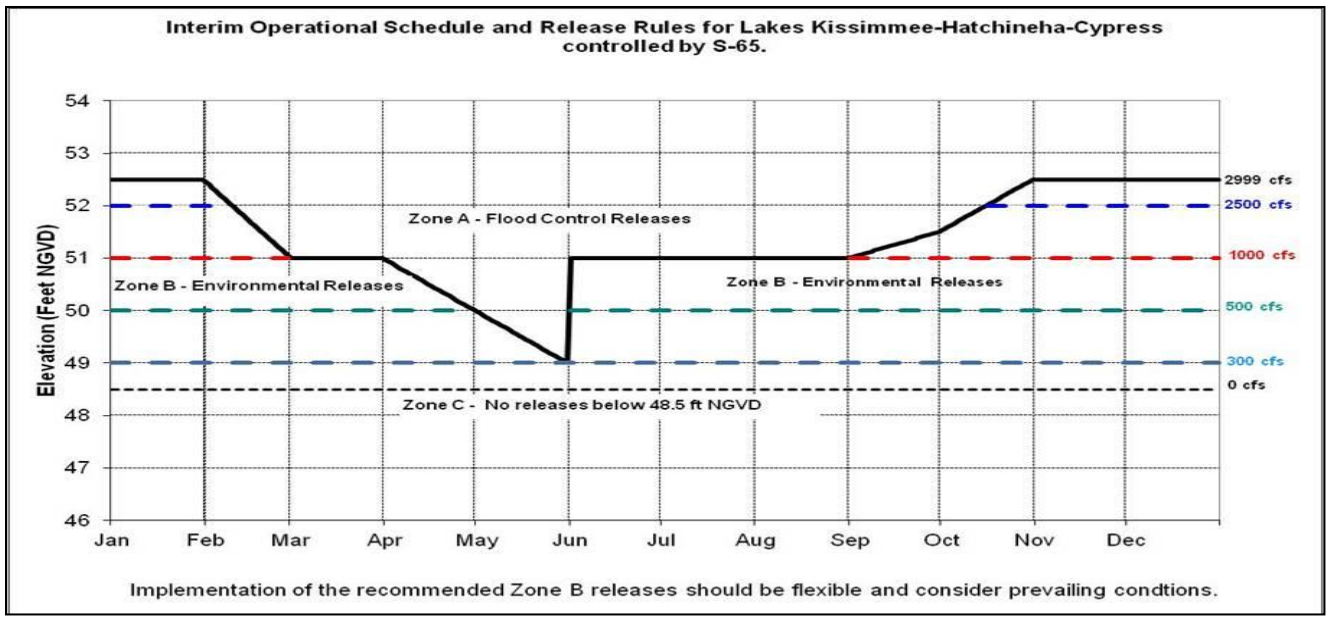


Figure 9. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

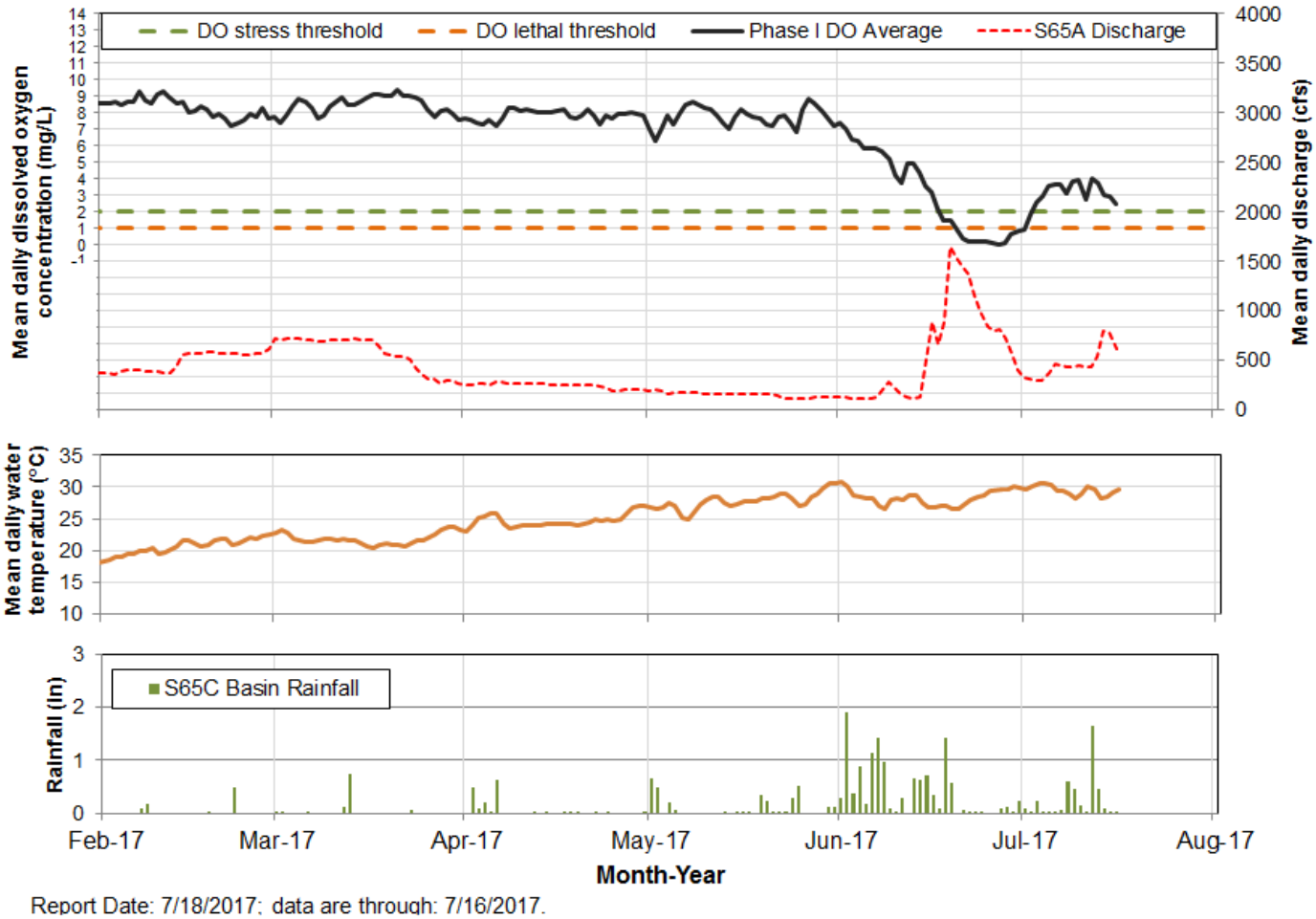


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

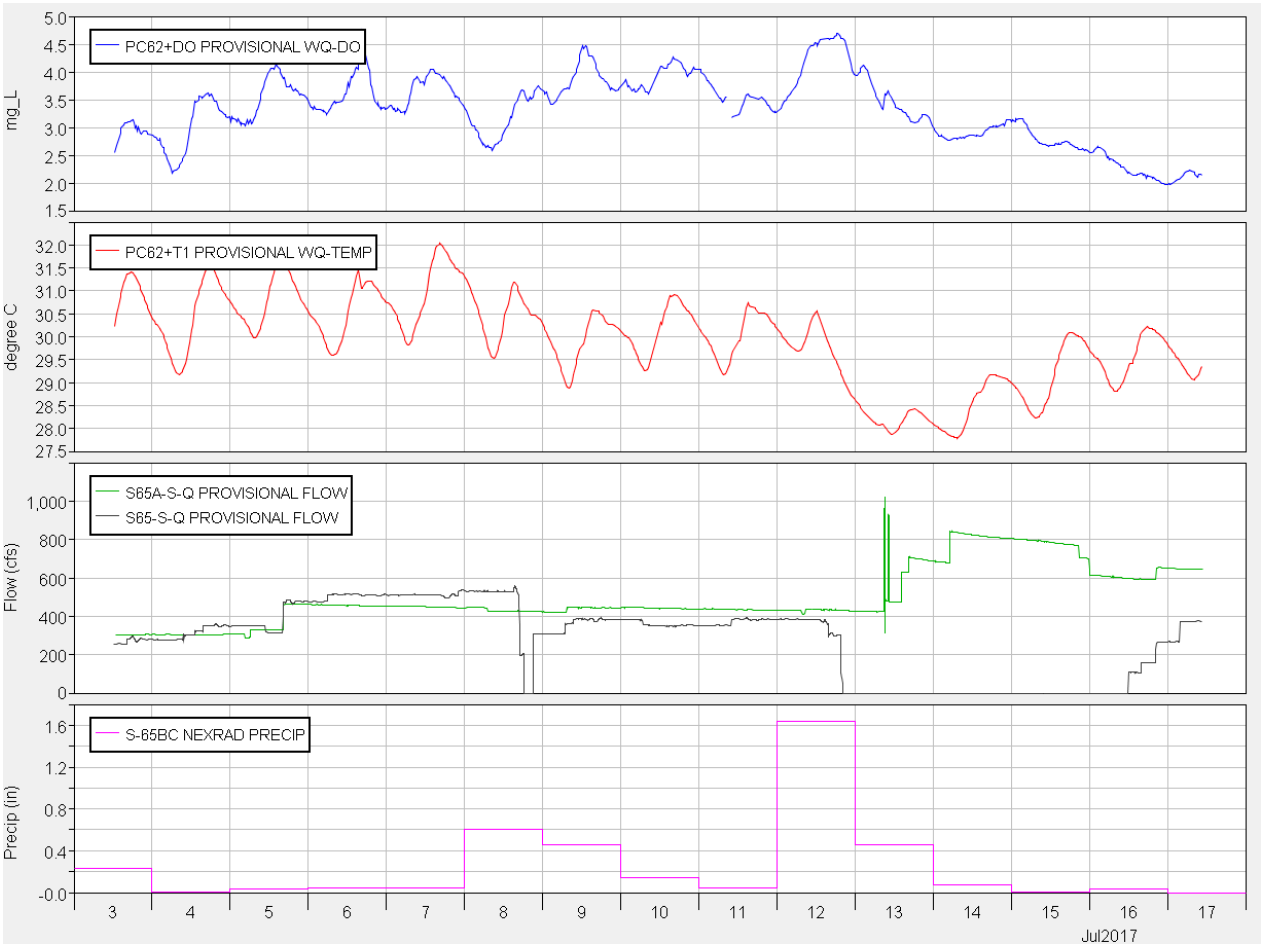


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

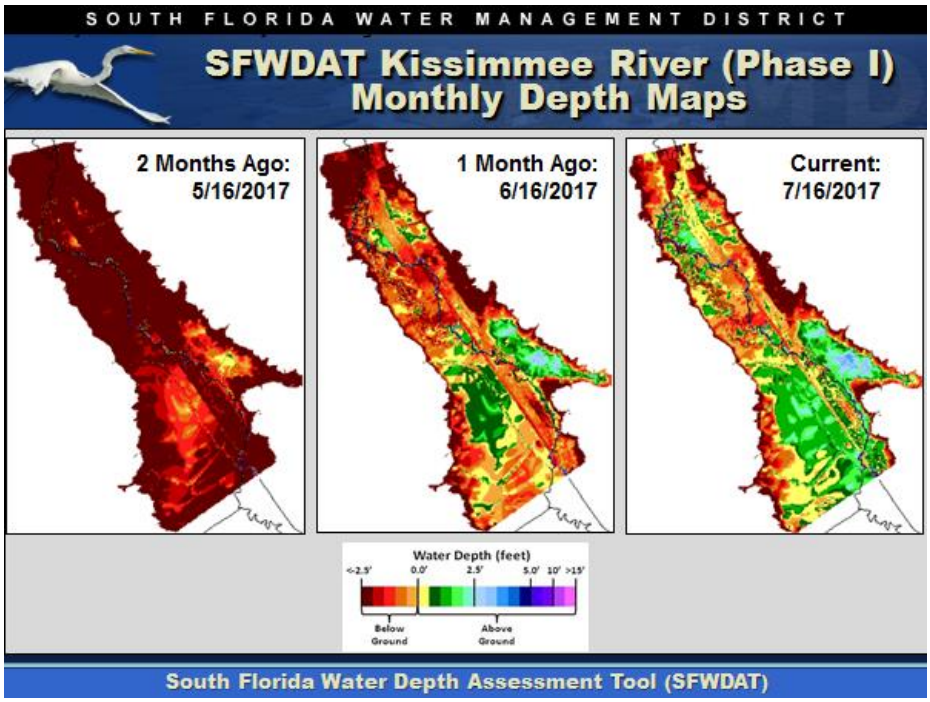
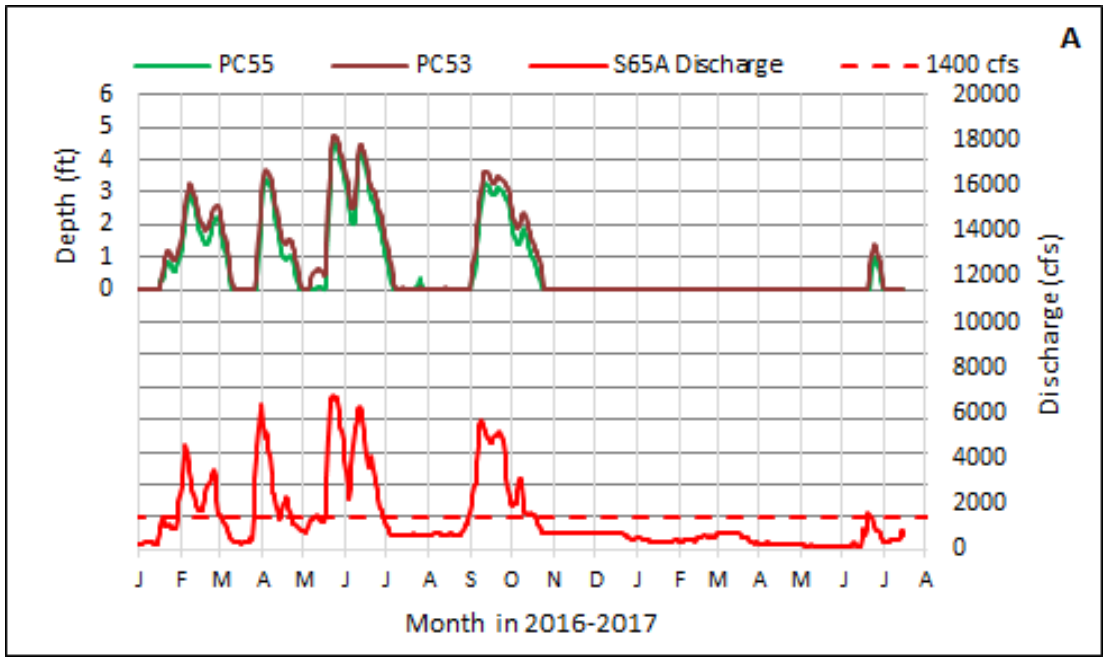
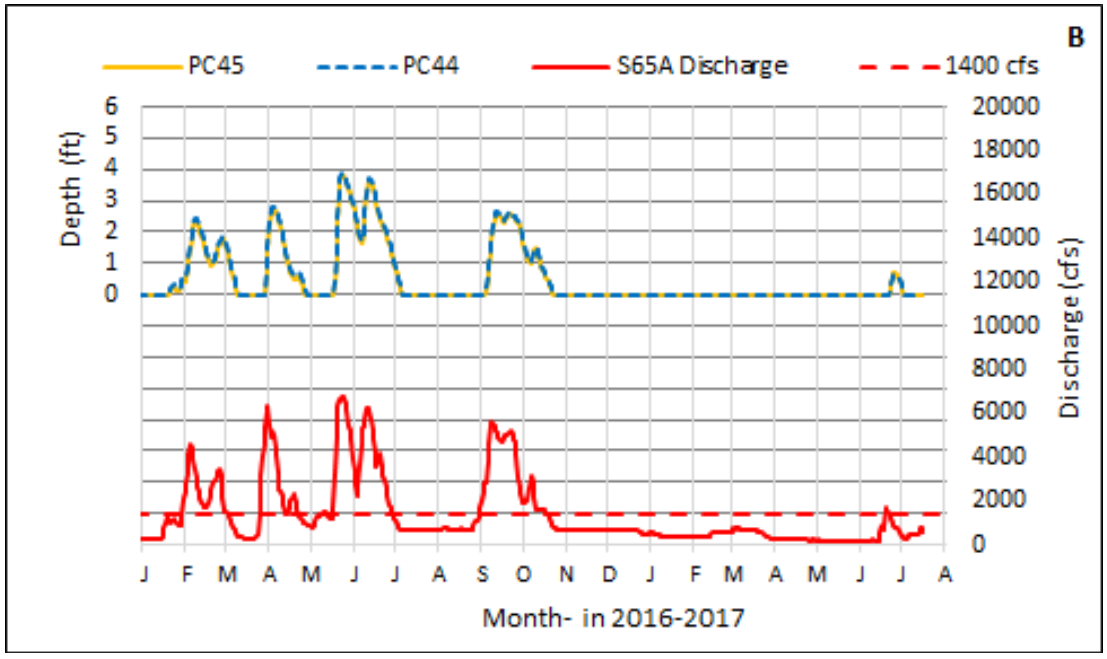


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.





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

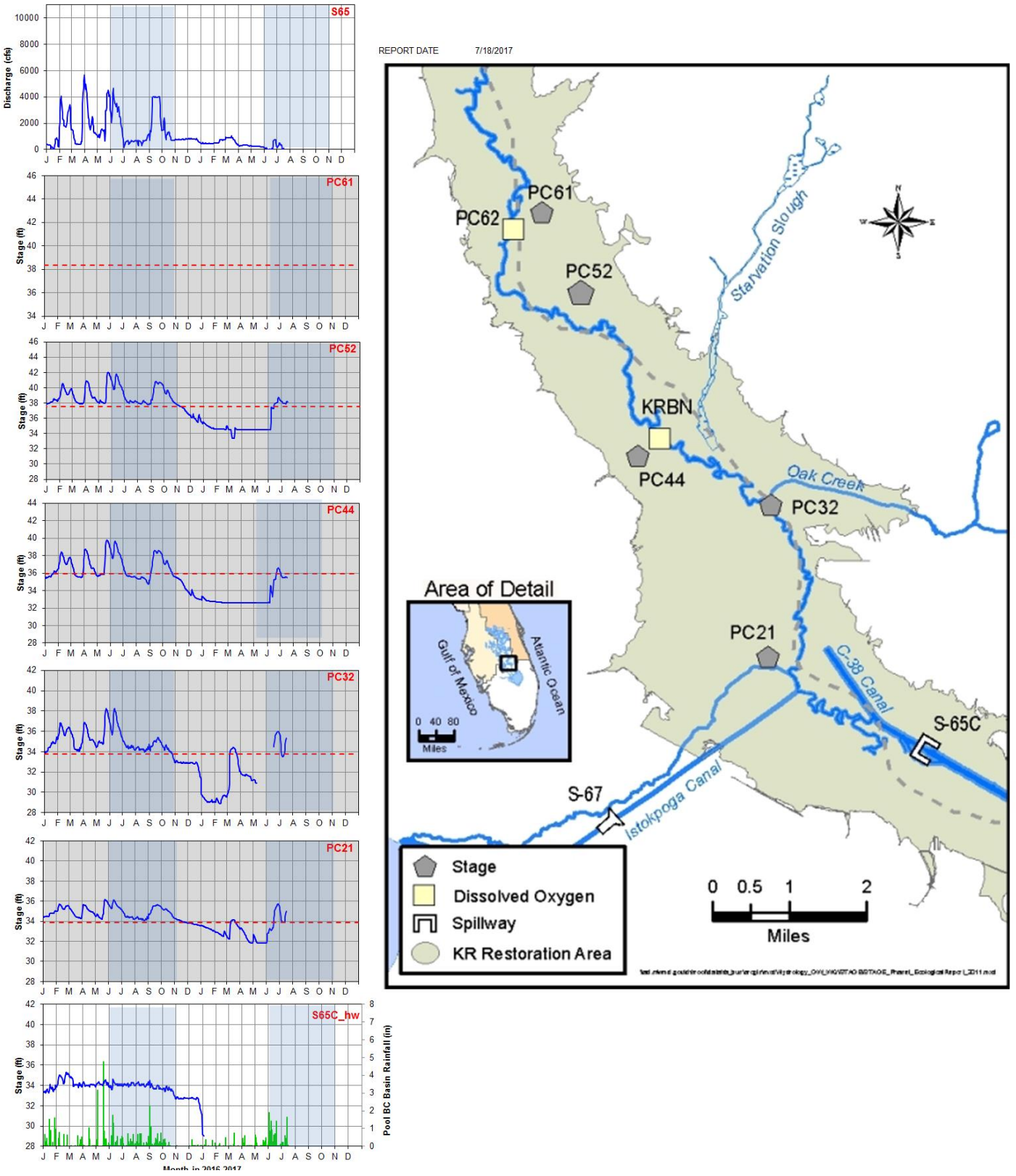


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated).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

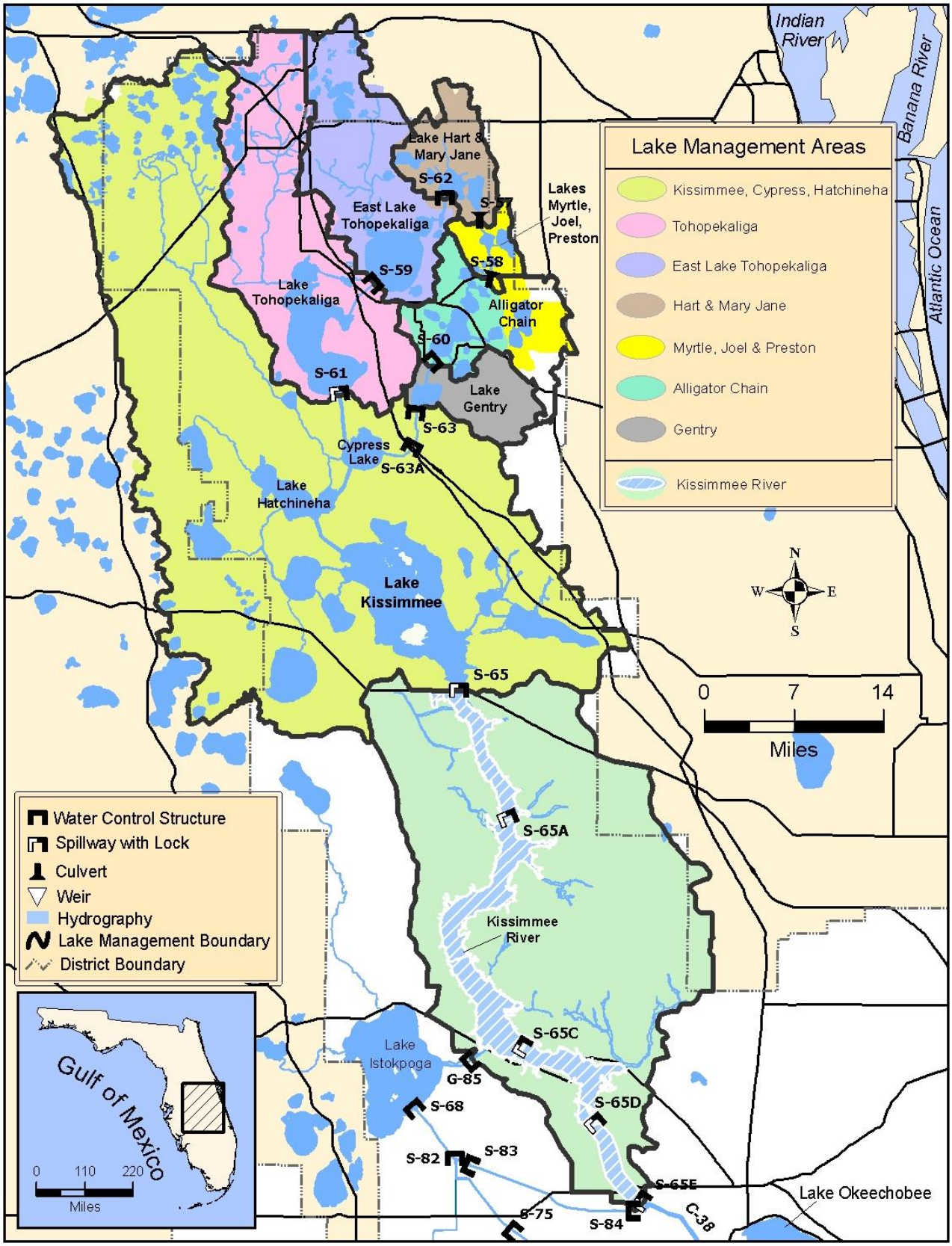


Figure 14. The Kissimmee Basin

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 12.56 feet NGVD for the period ending at midnight on July 16, 2017. This value is based on the use of four interior Lake stations (L001, L005, L006 and LZ40) and four perimeter stations (S308, S352, S4 and S133). Lake stage increased by 0.12 feet over the past week and is 0.63 feet higher than it was a month ago and 2.15 feet lower than it was a year ago (Figure 1). The Lake is currently in the Beneficial Use sub-band but is only a few hundredths of a foot from the Baseflow sub-band (Figure 2). According to RAINDAR, 1.52 inches of rain fell directly over the Lake during the week July 10-16 (Figure 3). Most of the surrounding watershed had greater amounts of rainfall, with a few exceptions in Taylor Creek/Nubbin Slough, Fisheating Creek, and the L8 basins, that had similar or less rainfall than the Lake.

Average daily inflows and outflows for the last week are detailed below.

INFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S65E & S65EX1	886	0.4
S71 & 72	96	0.0
S84 & 84X	550	0.2
Fisheating Creek	446	0.2
S154	0	0.0
S191	38	0.0
S133 P	0	0.0
S127 P	0	0.0
S129 P	0	0.0
S131 P	1	0.0
S135 P	49	0.0
S2 P	6	0.0
S3 P	5	0.0
S4 P	5	0.0
C5	0	0.0
Rainfall	4189	1.5
Total	**6269**	**2.5**

OUTFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S77 DS	-26	0.0
S308 DS	-347	-0.2
S351	0	0.0
S352	108	0.0
S354	0	0.0
L8 (C10A)	-316	-0.1
ET	2149	1.0
Total	**1568**	**0.7**

Average daily outflows for the Lake have been negative since the beginning of June, and continued that trend this past week; a total of -689 average daily cfs flowed back into the Lake, primarily through S308 (-347 cfs) and the L8 canal through Culvert 10A (-316 cfs), with just -26 cfs through S77. Average daily flows of 108 cfs were directed south through S352. The corrected evapotranspiration value based on the L006 weather platform solar radiation data decreased slightly from 1.23 inches the previous week to 0.78 inches for this past week.

The approximate change in Lake stage from each structure's total weekly flows (midnight July 10, 2017 to midnight July 16, 2017) for major structures are also presented in the above table.

The most recent satellite imagery (July 9 and July 16) indicates that the bloom potential seems to be further intensifying in the northern portion of the Lake in general, with the northeastern and western regions, but now also the central portion of the Lake, with potentially elevated chlorophyll values (Figure 4).

Water Management Recommendations

The Lake is 12.56 feet NGVD having increased by 0.12 feet over the past week due primarily to rainfall. Ascension rates have remained slower over the past three weeks (0.09 feet/week average) than they were throughout most of June (>0.25 feet/week average).

The submerged and emergent vegetation communities in the nearshore region have likely benefited from low water levels this dry season, helping to offset impacts from high water levels in February and October of 2016. Slow-to-moderate ascension rates will enable this new growth to keep up with rising water levels.

Activities that maintain a moderate ascension rate (<0.5 feet per month) in Lake Okeechobee would be ecologically beneficial at this time and would be protective of the Lake's emergent wetland and submerged aquatic flora and its associated fauna.

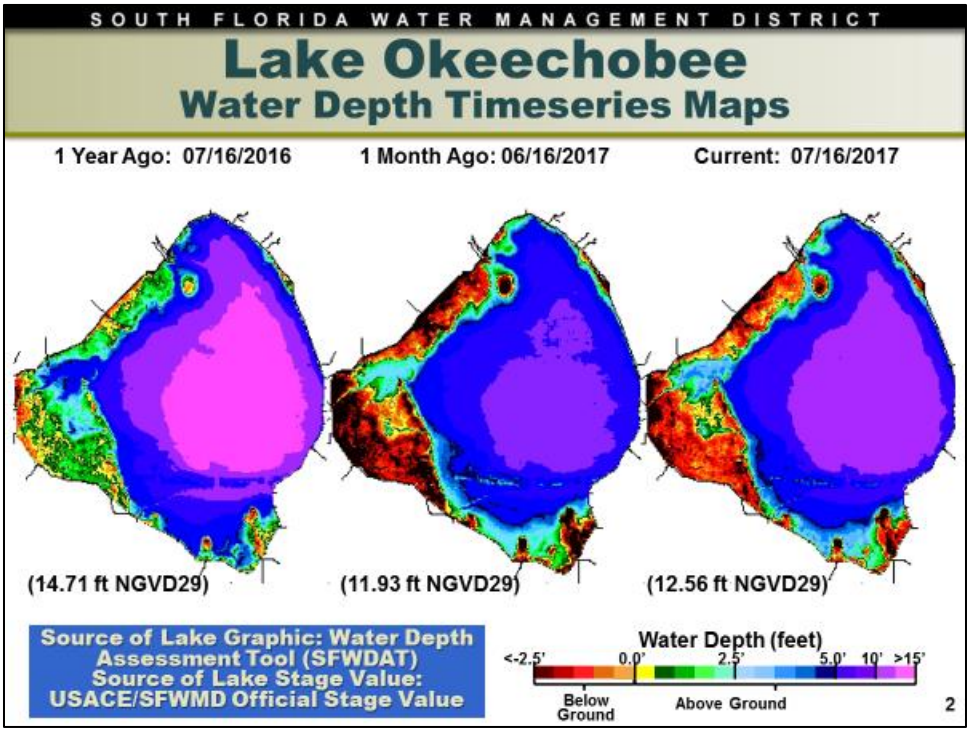


Figure 1

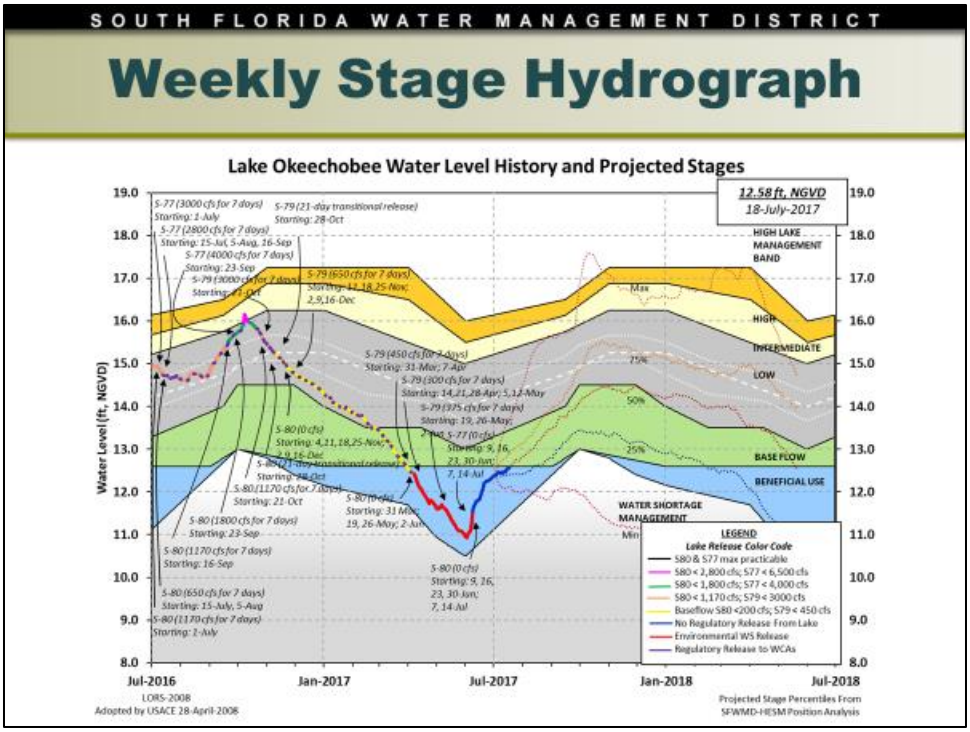


Figure 2

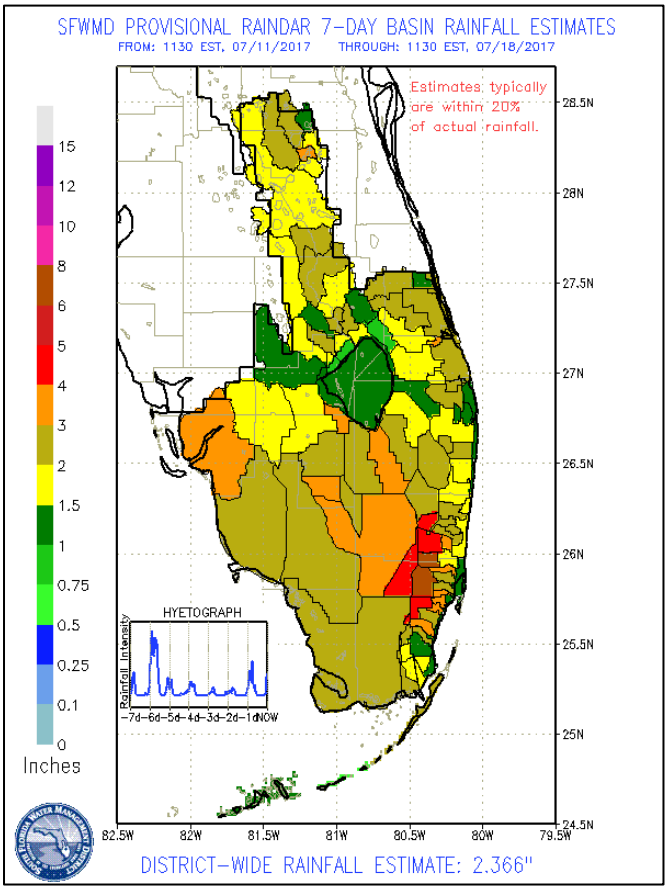


Figure 3

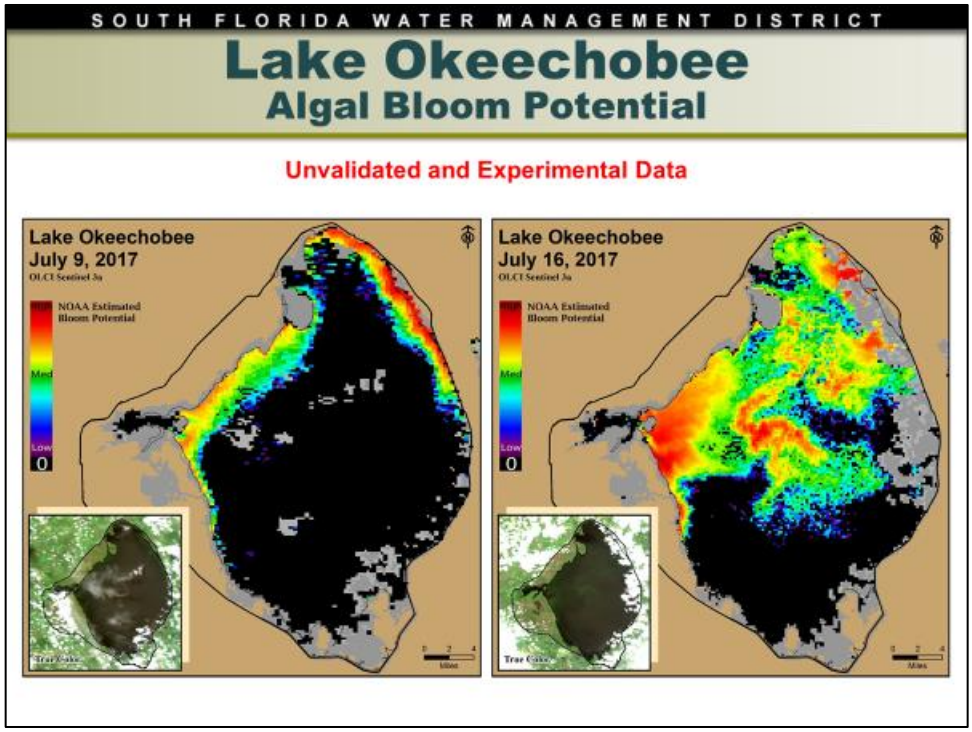


Figure 4

Lake Istokpoga

Lake Istokpoga stage is 38.22 feet NGVD as of midnight July 16, 2017 and is currently 0.03 feet below its low pool regulation schedule of 38.25 feet NGVD (Figure 5). Average flows into the Lake from Josephine creek over the past week was 69 cfs, but no data were reported for Arbuckle creek. Average discharge from S68 and S68X this past week was up to 635 cfs, an increase from the previous week's flow of 360 cfs. According to RAINDAR, 1.85 inches of rain fell in the Lake Istokpoga basin during the past seven days.

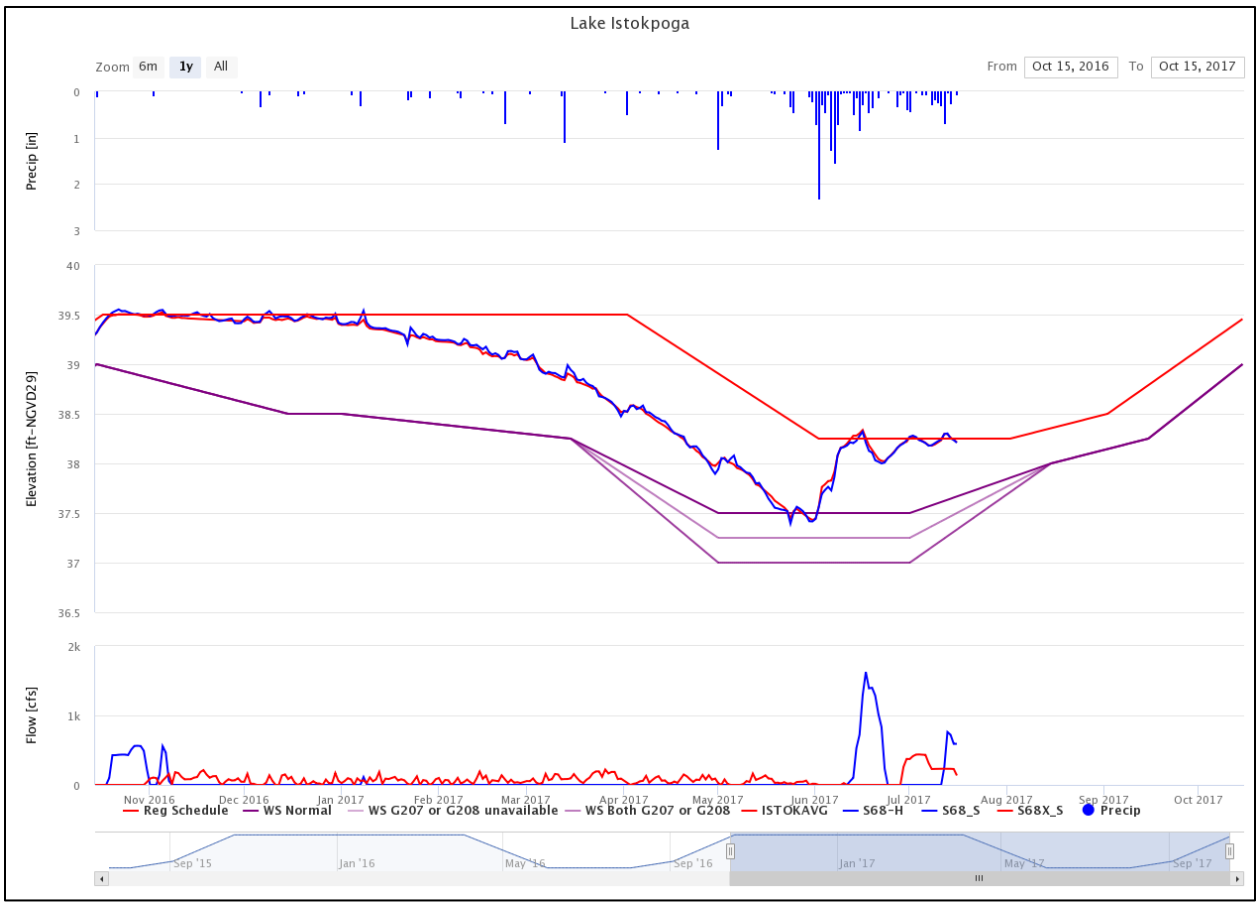


Figure 5

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 0 cfs at S-80, 328 cfs downstream of S-308 flowing into Lake Okeechobee, 305 cfs at S-49 on C-24, 234 cfs at S-97 on C-23, and 246 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 525 cfs (Figures 1 and 2). Total inflow averaged about 1,310 cfs last week and 1,330 cfs over last month.

Over the past week, salinity remained about the same 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 10.5. Salinity conditions in the middle estuary are in the good range for the adult eastern oysters.

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)	**3.9** (3.8)	**8.8** (9.4)	NA[1]
US1 Bridge	**9.7** (10.0)	**11.2** (13.0)	10.0-26.0
A1A Bridge	**23.9** (24.1)	**25.8** (26.0)	NA[1]

[1]Envelope not applicable

Continuous monitoring of water quality is conducted at HR1 in the North Fork. Weekly dissolved oxygen data are summarized in Table 2.

Table 2. Weekly dissolved oxygen conditions at HR1 in the North Fork of the St. Lucie Estuary.

Sampling Location	Average DO (mg/l)	Minimum DO (mg/l)	Maximum DO (mg/l)
HR1-Surface	5.43	0.21	9.53
HR1-Bottom	1.09	0.00	8.19

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 0 cfs at S-77, 455 cfs at S-78, and 1,346 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 1,461 cfs (Figures 5 & 6). Total inflow averaged 2,807 cfs last week and 3,431 cfs over last month.

Over the past week, salinity remained the same throughout the estuary (Table 3, Figures 7 and 8). The seven-day average salinity values are within the fair range for adult oysters at Cape Coral, and within the good range at Shell Point and at Sanibel (Figure 9). The 30-day moving average surface salinity is 0.3 at Val I-75 and 0.5 at Ft. Myers. Salinity conditions between Val I-75 and Ft. Myers are good for tapegrass.

Table 3. 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)	**0.3** (0.3)	**0.3** (0.3)	NA[1]
*Val I75	**0.3** (0.3)	**0.4** (0.3)	0.0-5.0[2]
Ft. Myers Yacht Basin	**1.0** (0.4)	**1.4** (0.5)	NA
Cape Coral	**5.9** (5.2)	**8.3** (6.8)	10.0-30.0
Shell Point	**17.7** (17.7)	**19.0** (19.1)	10.0-30.0
Sanibel	**27.3** (27.2)	**EM**[3] (EM)	10.0-30.0

[1]Envelope not applicable, [2]Envelope is based on a 30-day average, and [3]Equipment Malfunction.
*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 4 as concentration ranges of Chlorophyll *a* and dissolved oxygen at Beautiful Island, Ft. Myers, and Shell Point in the Caloosahatchee Estuary.

Table 4. 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)	Down for maintenance	5.86 – 20.06	1.93 – 14.66
Dissolved Oxygen (mg/l)	Down for maintenance	1.89 – 5.33	No Data

The Florida Fish and Wildlife Research Institute reported on July 14, 2017, that *Karenia brevis*, the Florida red tide organism, was present at background concentrations in one sample collected from Lee County.

Water Management Recommendations

Lake stage is in the Beneficial Use sub-band of 2008 LORS. The 2008 LORS does not specify Lake releases in the Beneficial Use sub-band. The Adaptive Protocols for Lake Okeechobee Operations does not recommend any S-77 releases unless the Governing Board recommends otherwise. Given the current estuarine conditions, there are no ecological benefits associated with freshwater releases from Lake Okeechobee.

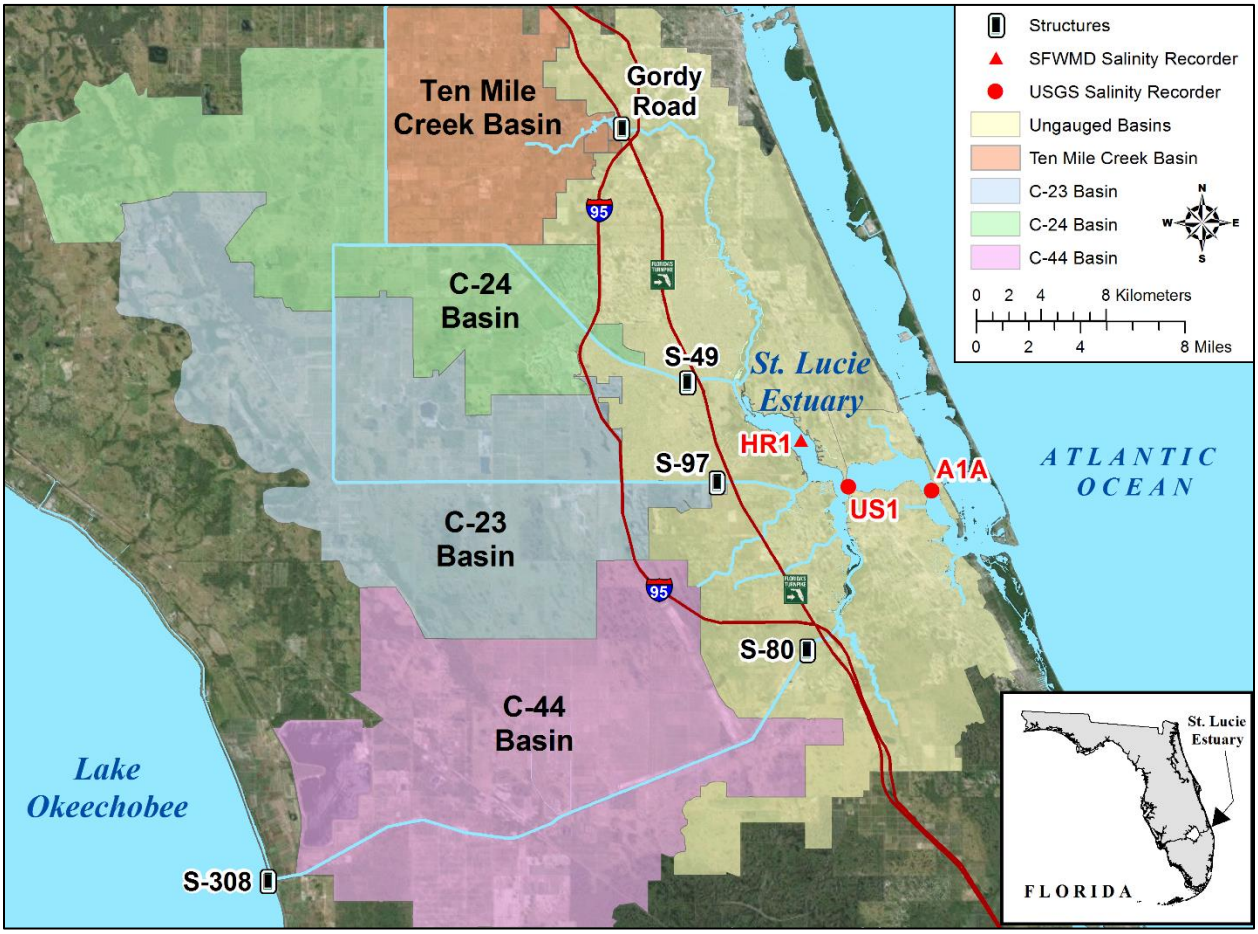


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

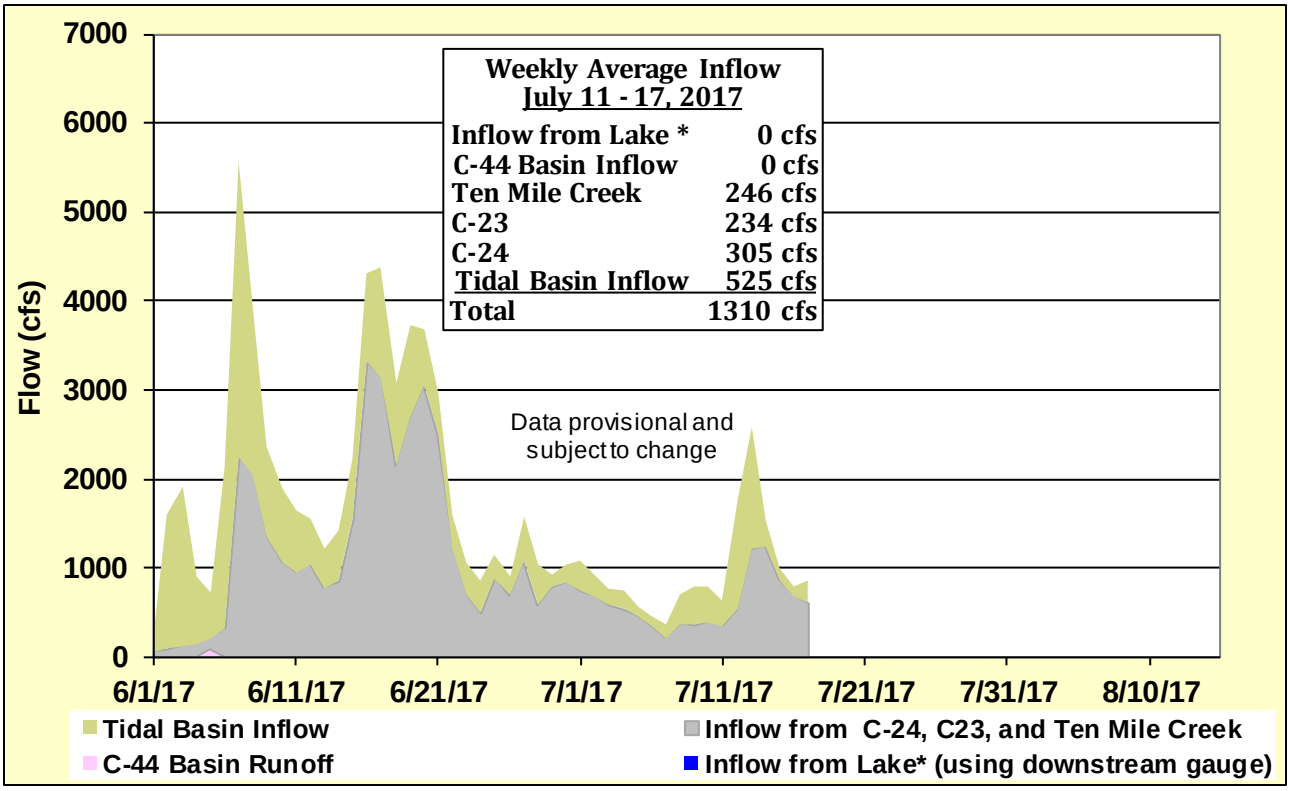


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

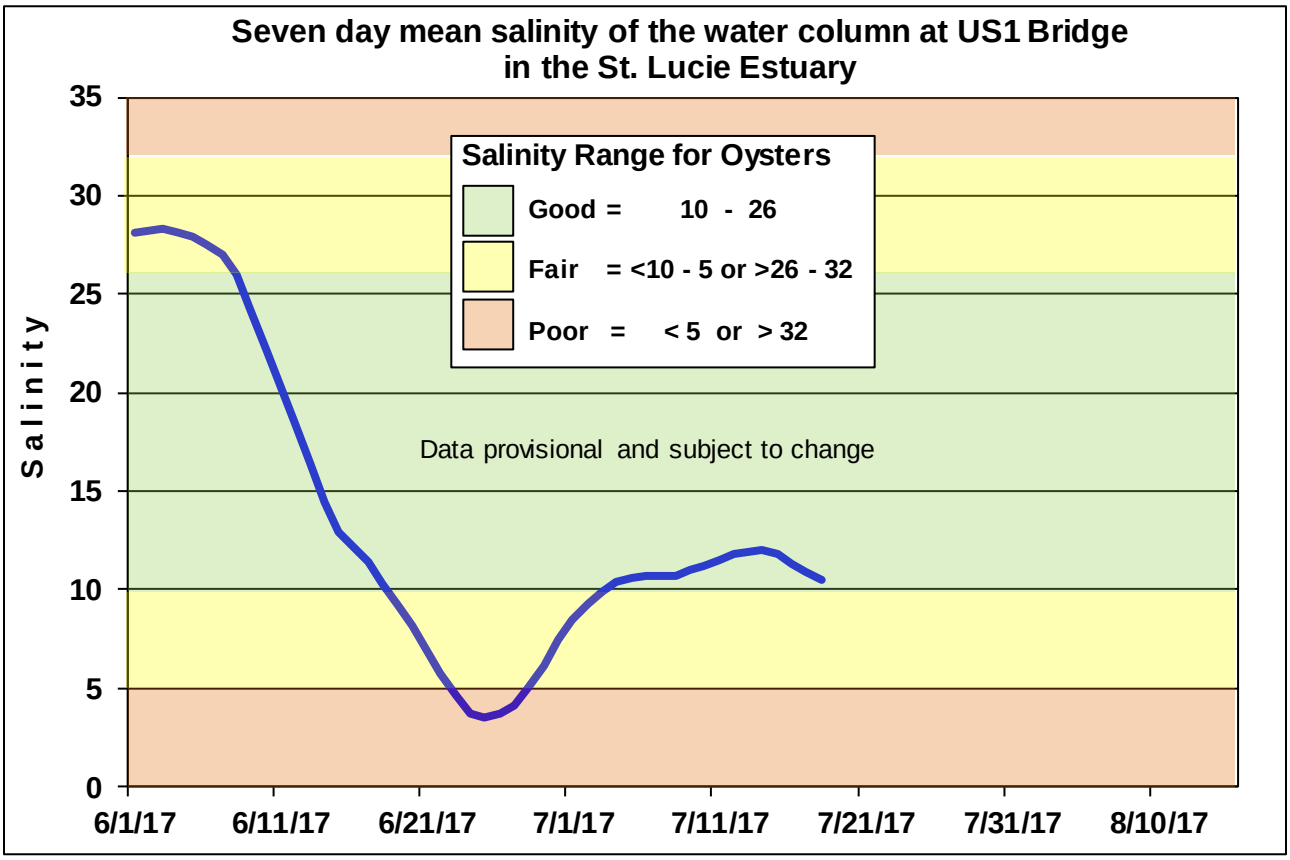


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

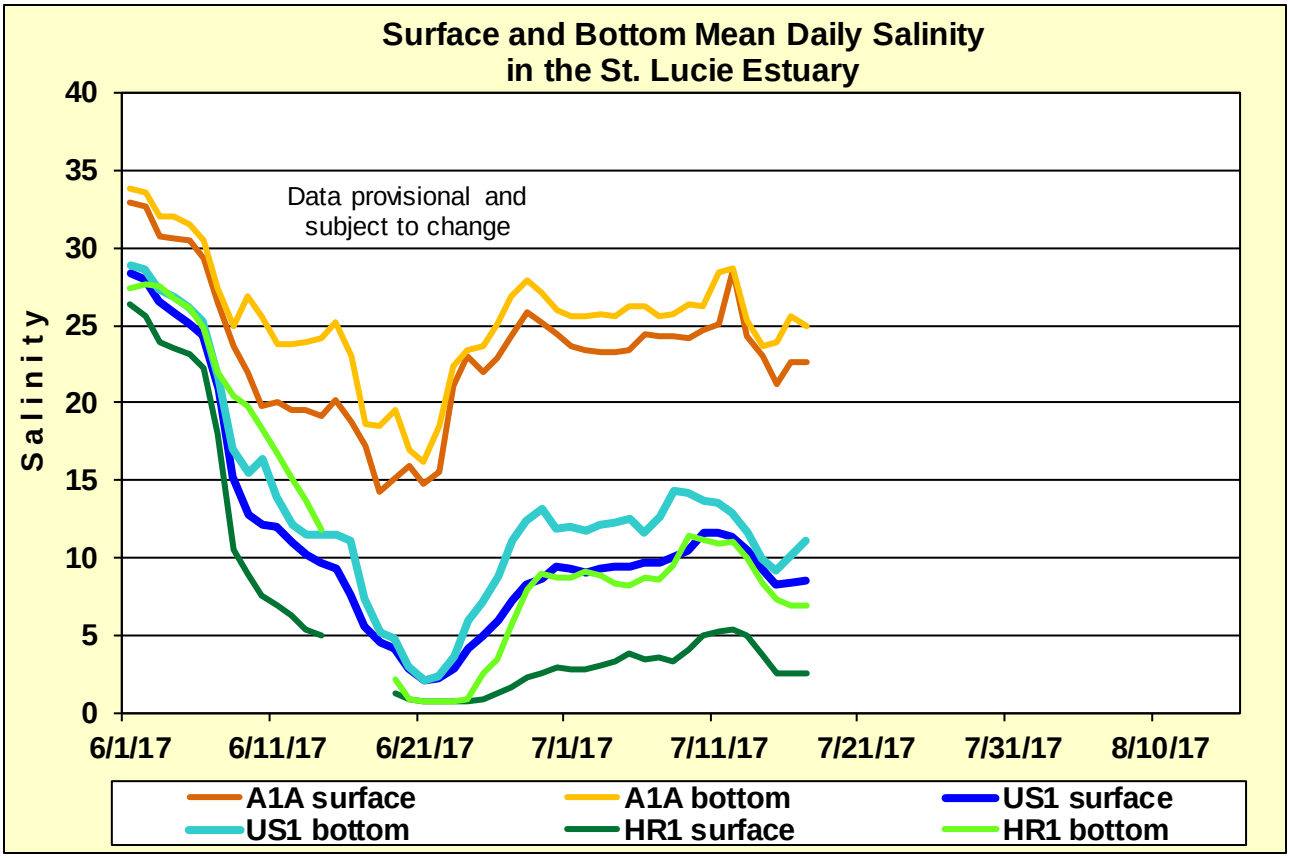


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

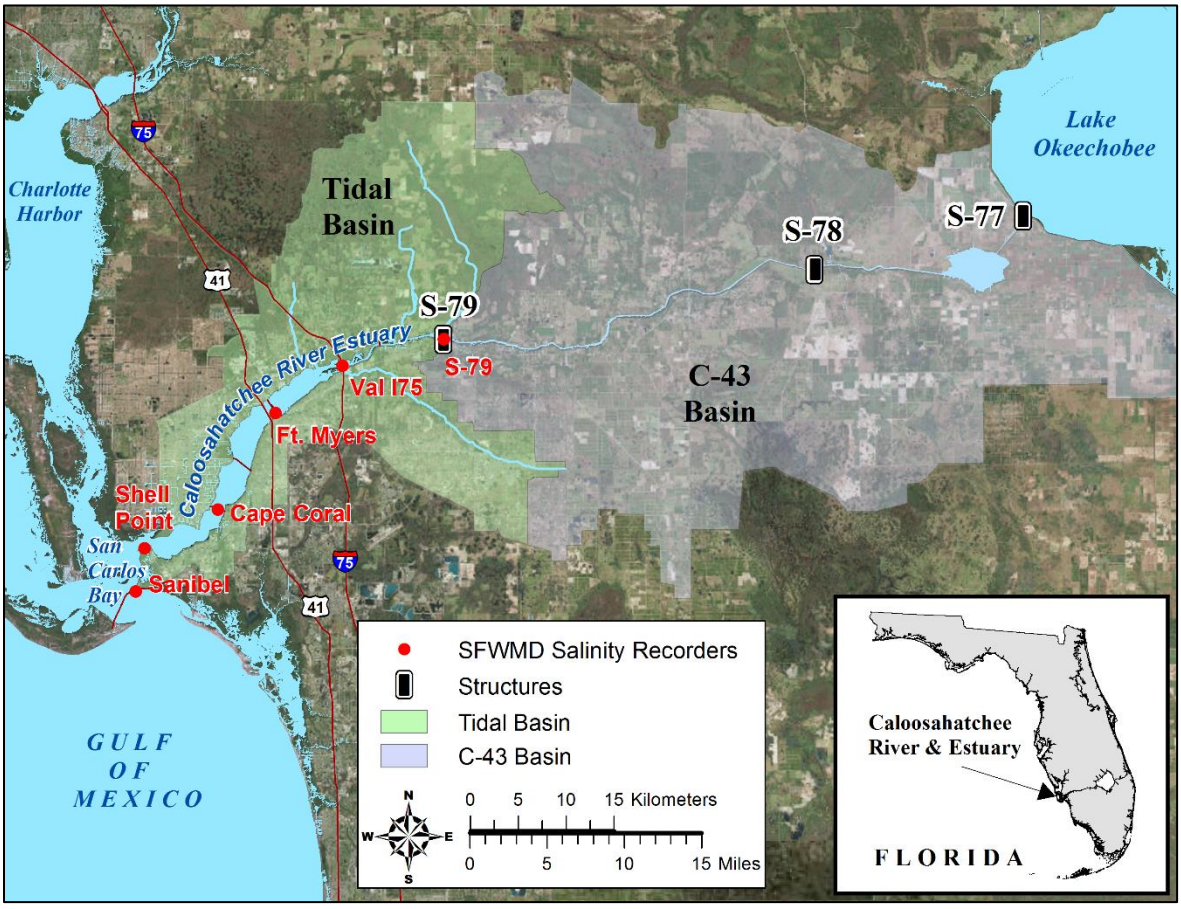


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

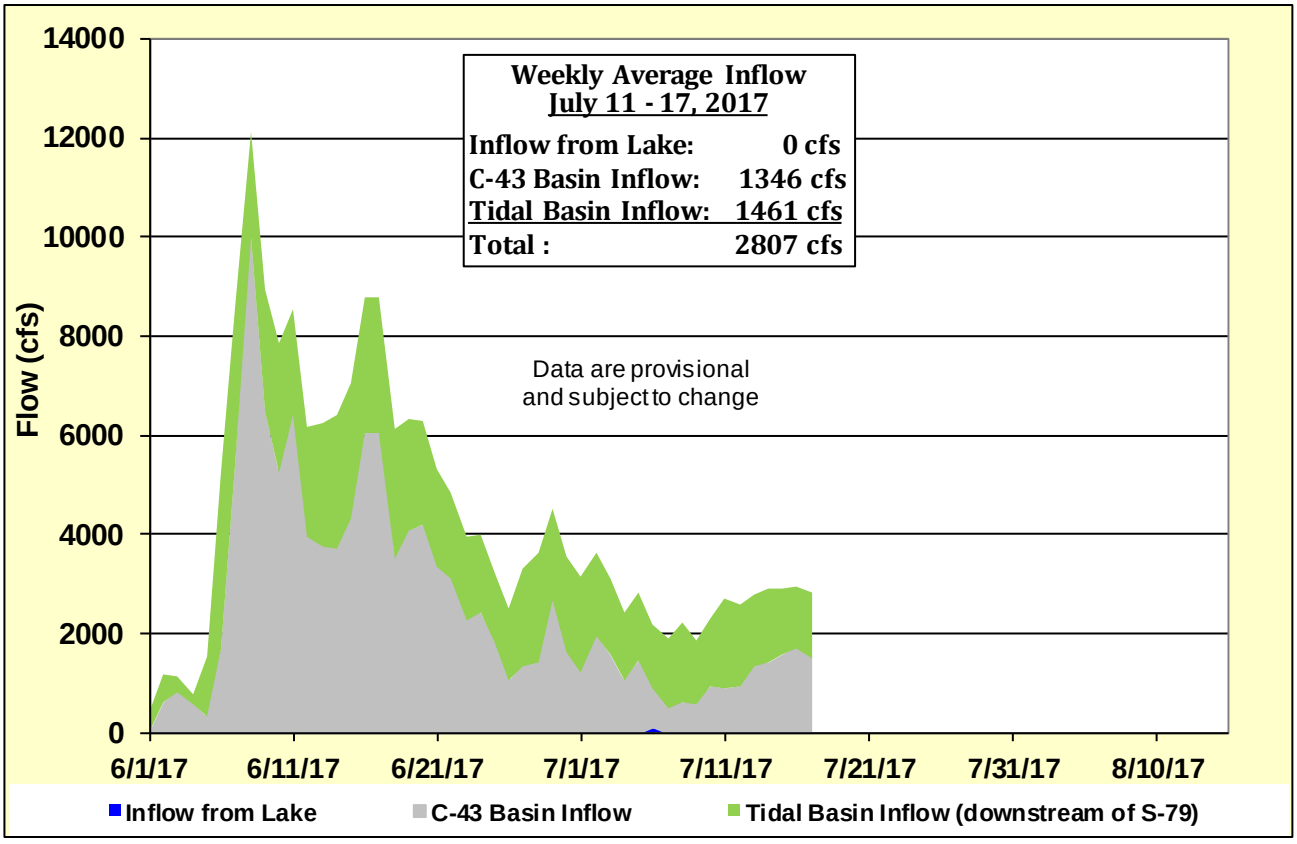
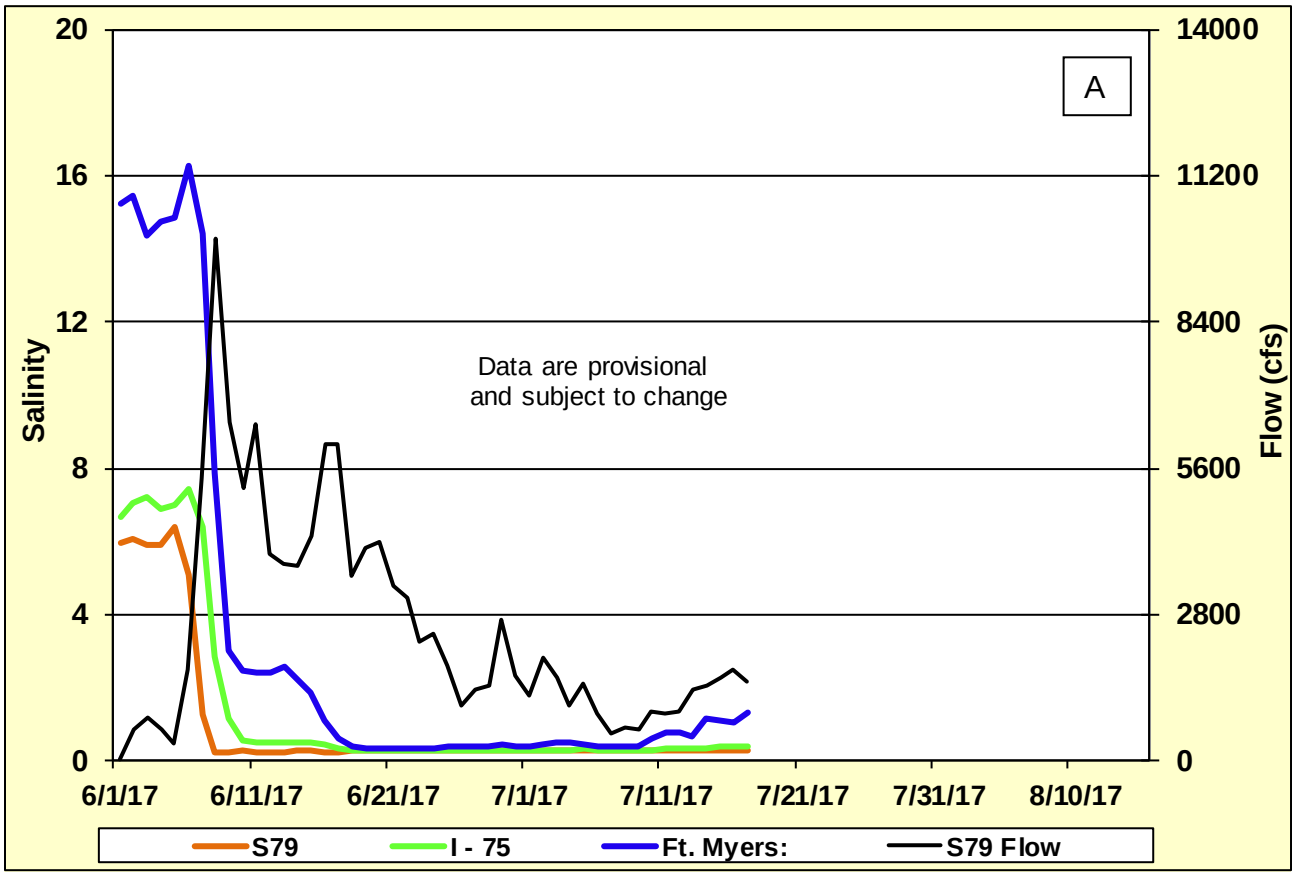


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



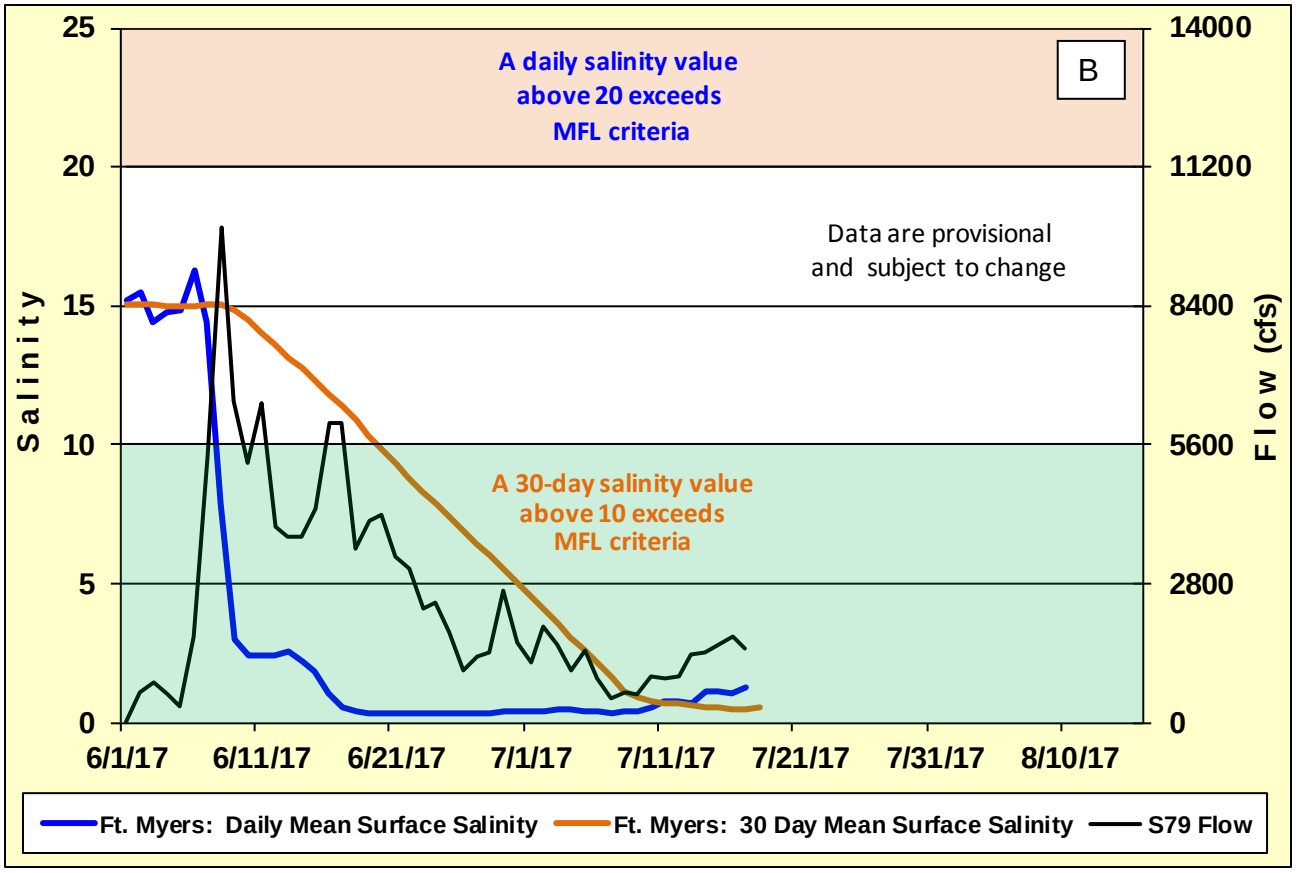


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

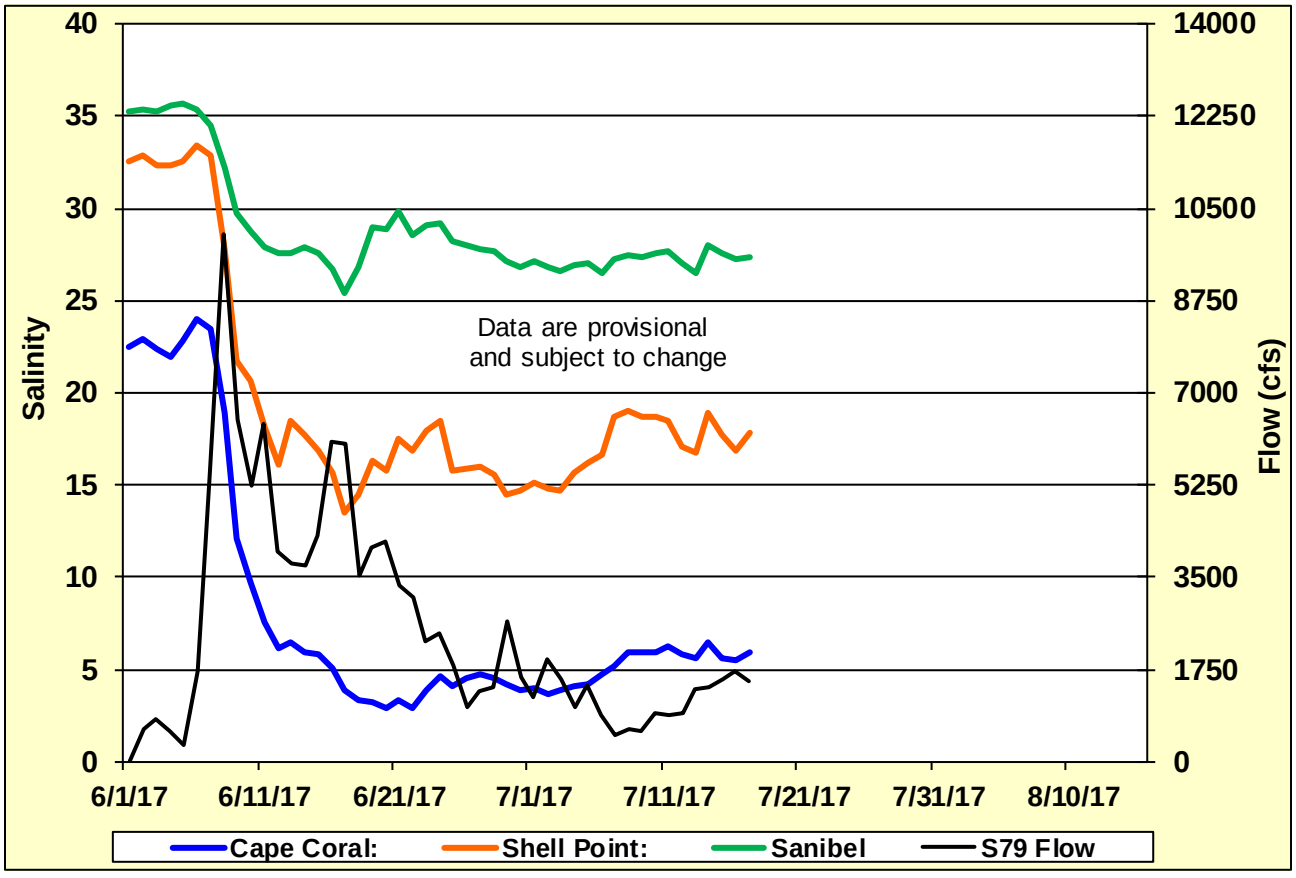


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

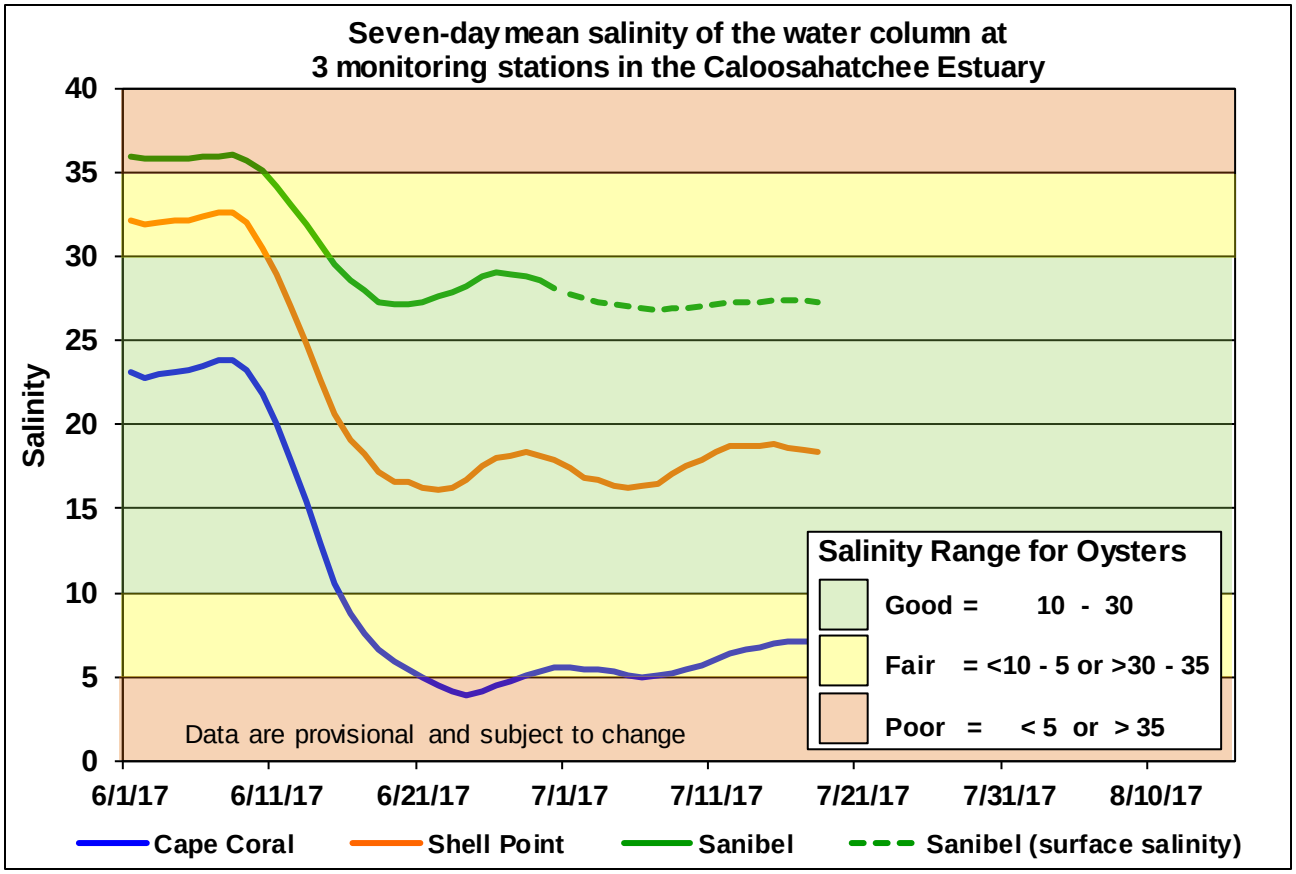
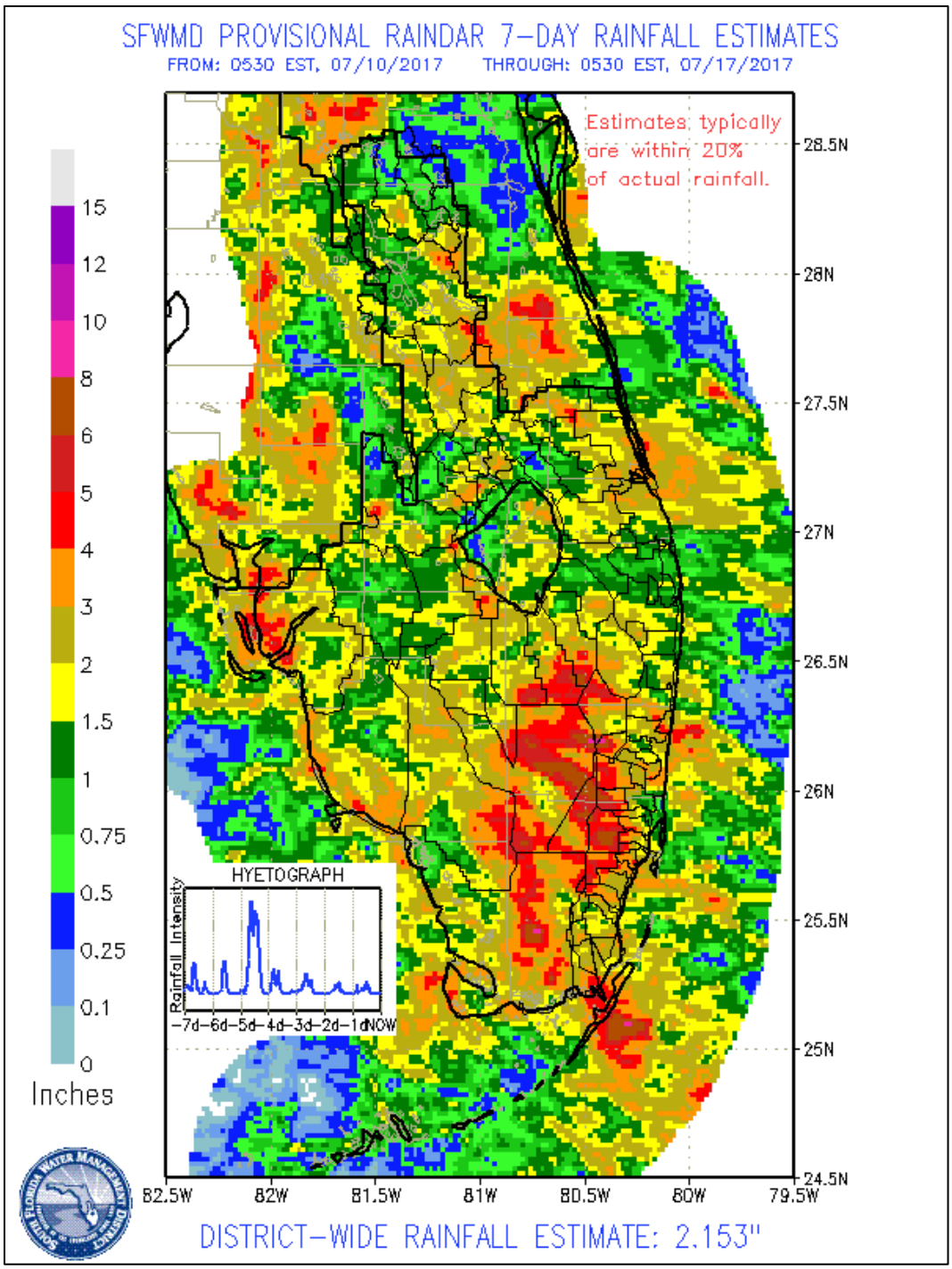


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

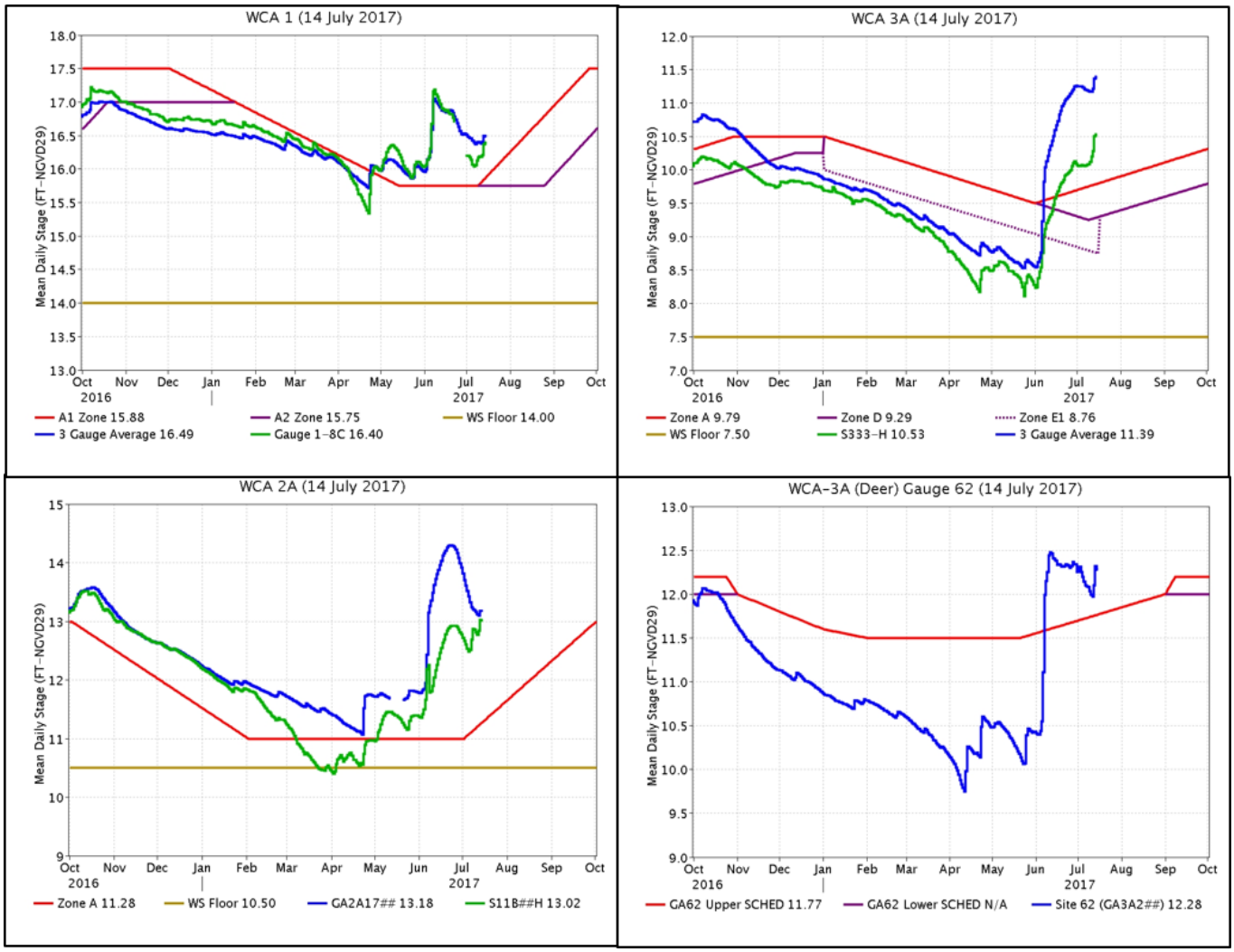
EVERGLADES

Rainfall was heaviest within the central basins. Stages increased or remain unchanged for all the gauge locations monitored for this report. All reported stage increases fell below the maximum rate of ascension recommended for this time of year (less than 0.25 feet/week).

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	2.24	+0.06
WCA-2A	3.57	+0.07
WCA-2B	4.49	+0.22
WCA-3A	3.87	+0.19
WCA-3B	4.50	+0.14
ENP	2.73	+0.25

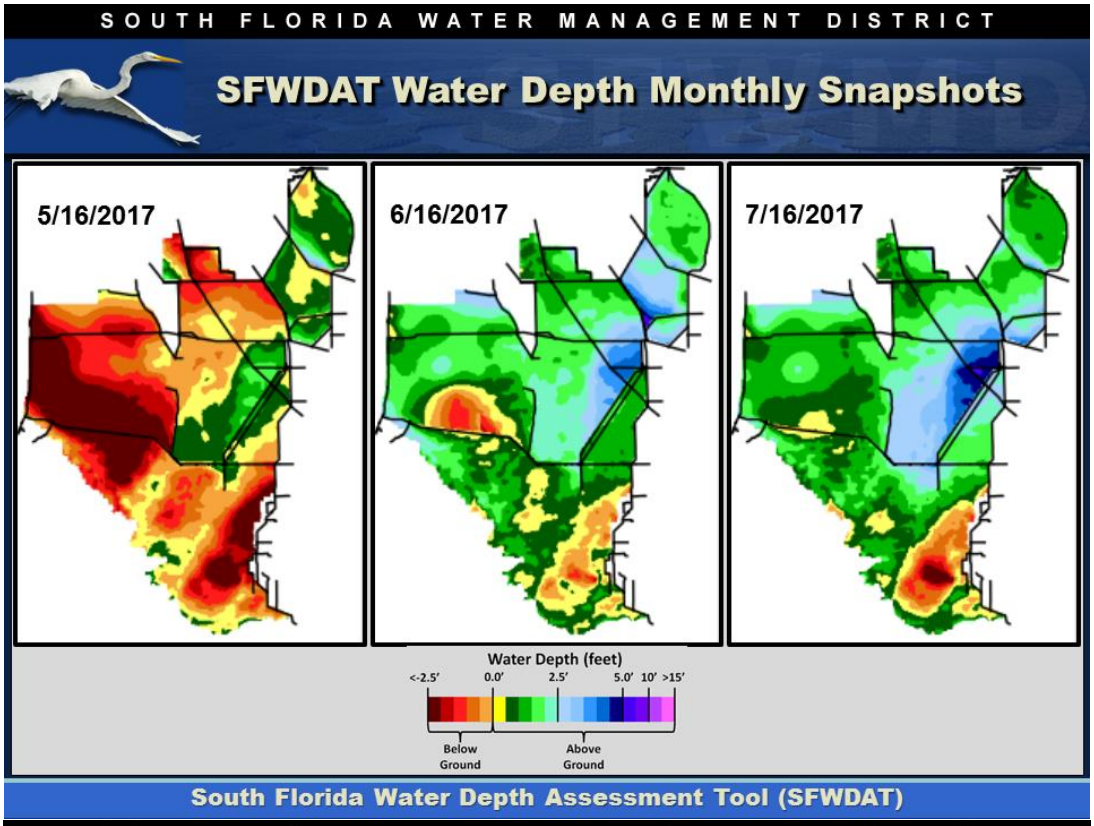


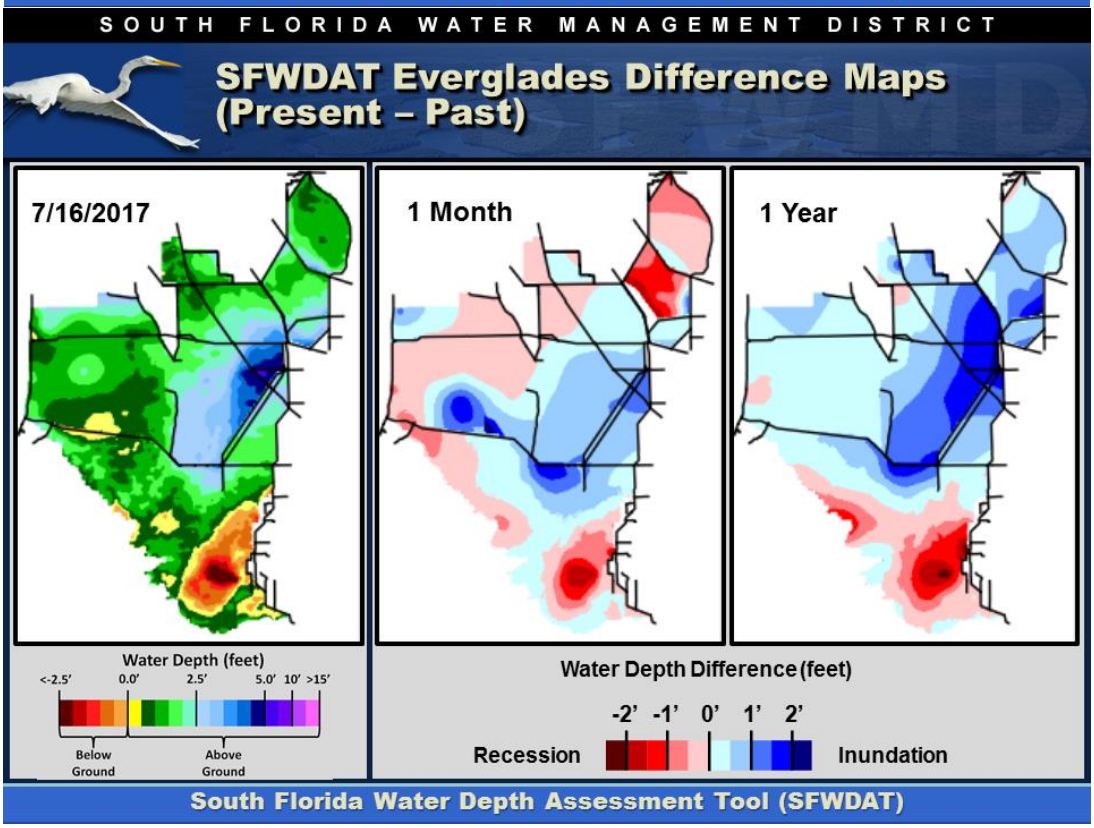
Regulation Schedules: WCA-1 stage is 0.61 feet above Zone A, and stage difference between the marsh and the canal is minimal. WCA-2A marsh stage at gauge GA2A17 is currently 1.9 feet above zone A (0.2 foot decrease from last week). WCA-3A three-gauge average is 1.6 feet above zone A, and .86 higher than canal stage. WCA-3A at gauge 62 (Northwest corner) is 0.51 feet above schedule.



Blue – wetlands
Green – canals

Water Depths and Changes: This week's range of water depths at monitored gauges other than in WCA-2B ranged from 1.23 feet (WCA-1) to 3.34 feet (WCA-3A gauge 65). Over the last week individual gauge changes ranged from 0.00 feet (WCA-1 & 2A) to +0.65 feet (WCA-3B). Pan evaporation was estimated to be 1.81 inches which is higher than the pre-project estimate 1.45 inches.

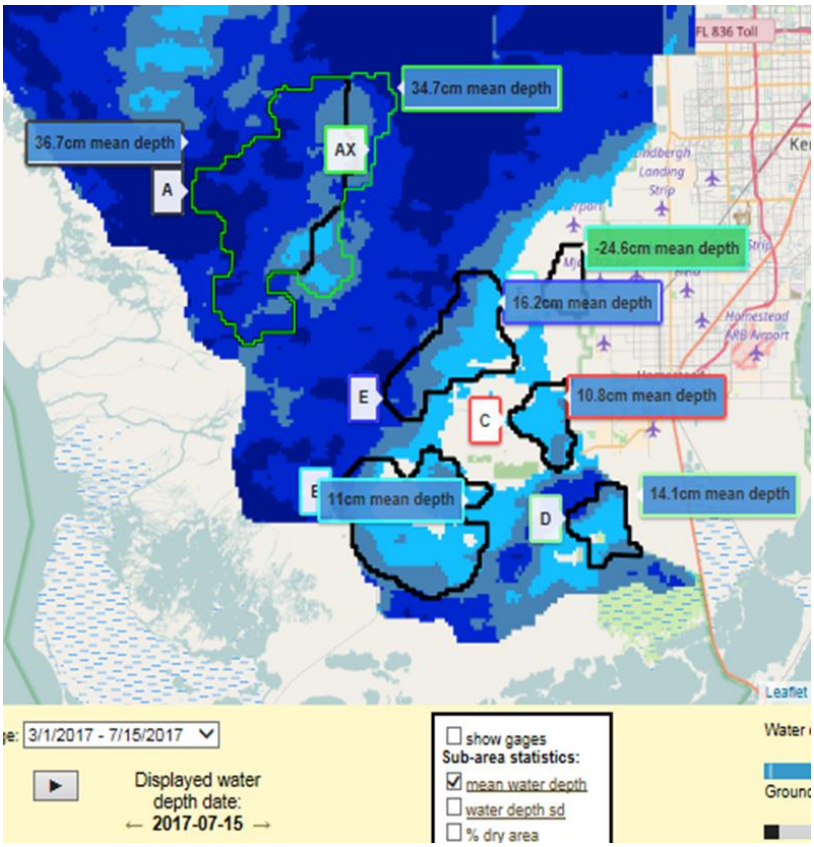




Wildlife update: Five Everglades snail kites were found nesting in WCA-3A, four remain active as of July 6. Spotlight surveys conducting by Fish and Wildlife Commission (FWC) are showing increased signs of deer activity on levees and browsing on tree islands. These observations are typical when terrestrial animals are stressed by high water conditions in the Everglades.

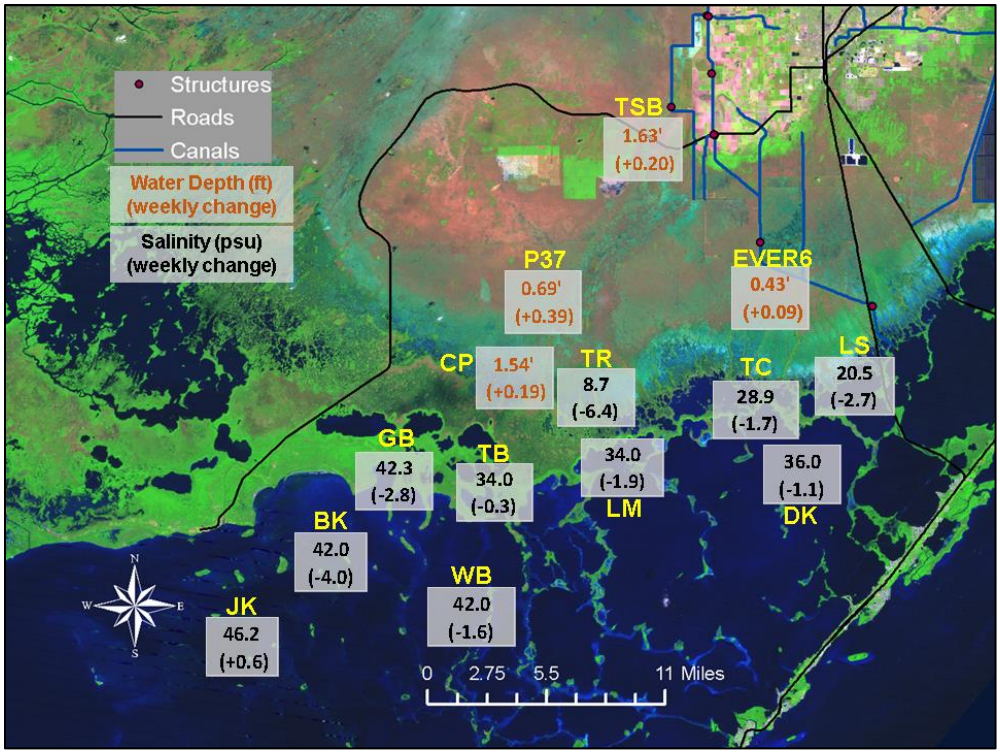
Weekly Cape Sable Seaside Sparrow Report 8 – 14 July 2017

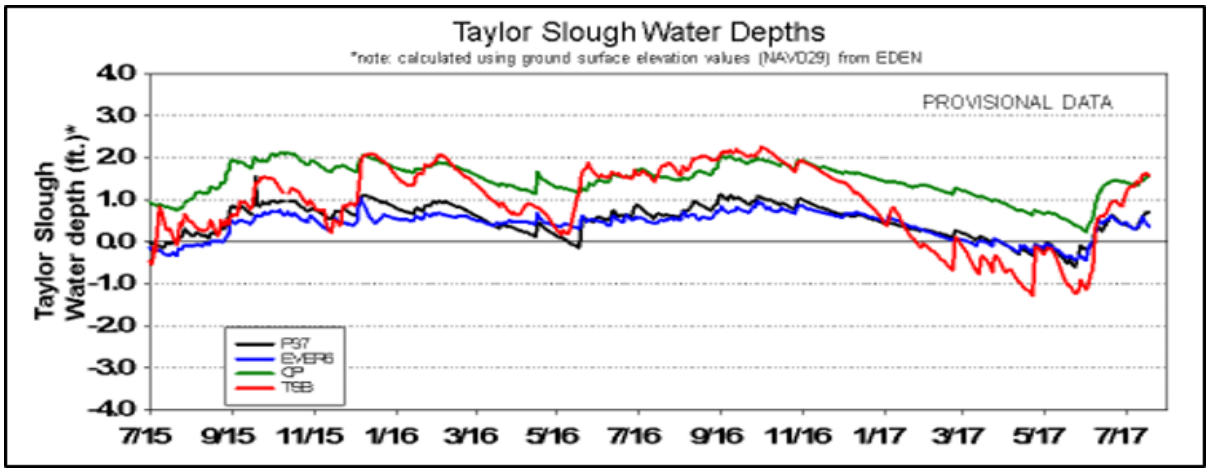
Sparrows are still found on breeding territories in all subpopulations being monitored (A, B, C). Again, as in last week's report, the only currently active nests were found in subpopulation B.

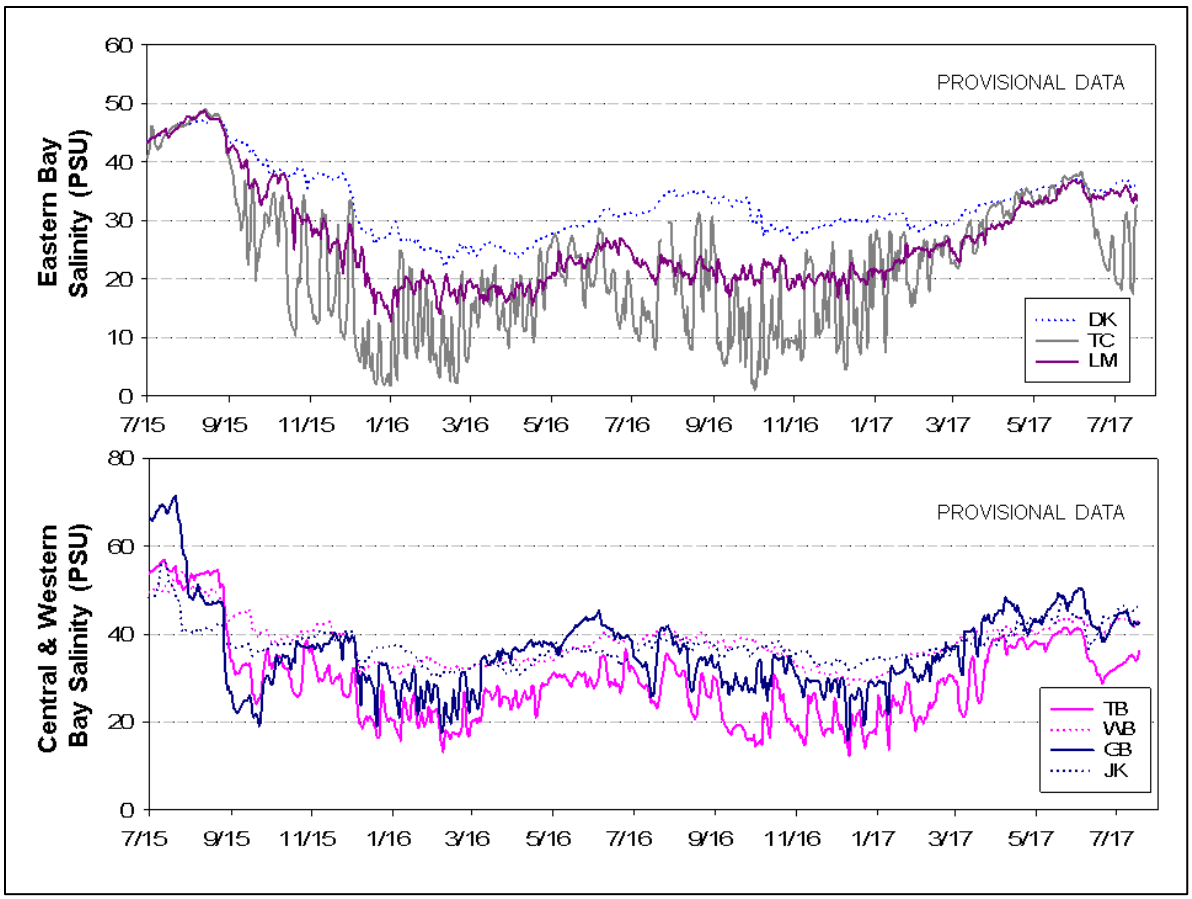


Taylor Slough stages: Water levels in Taylor Slough increased at least 0.09 feet this past week with central Taylor Slough showing the largest change of 0.39 feet. All areas are now at least 1.5 inches higher than the historic averages.

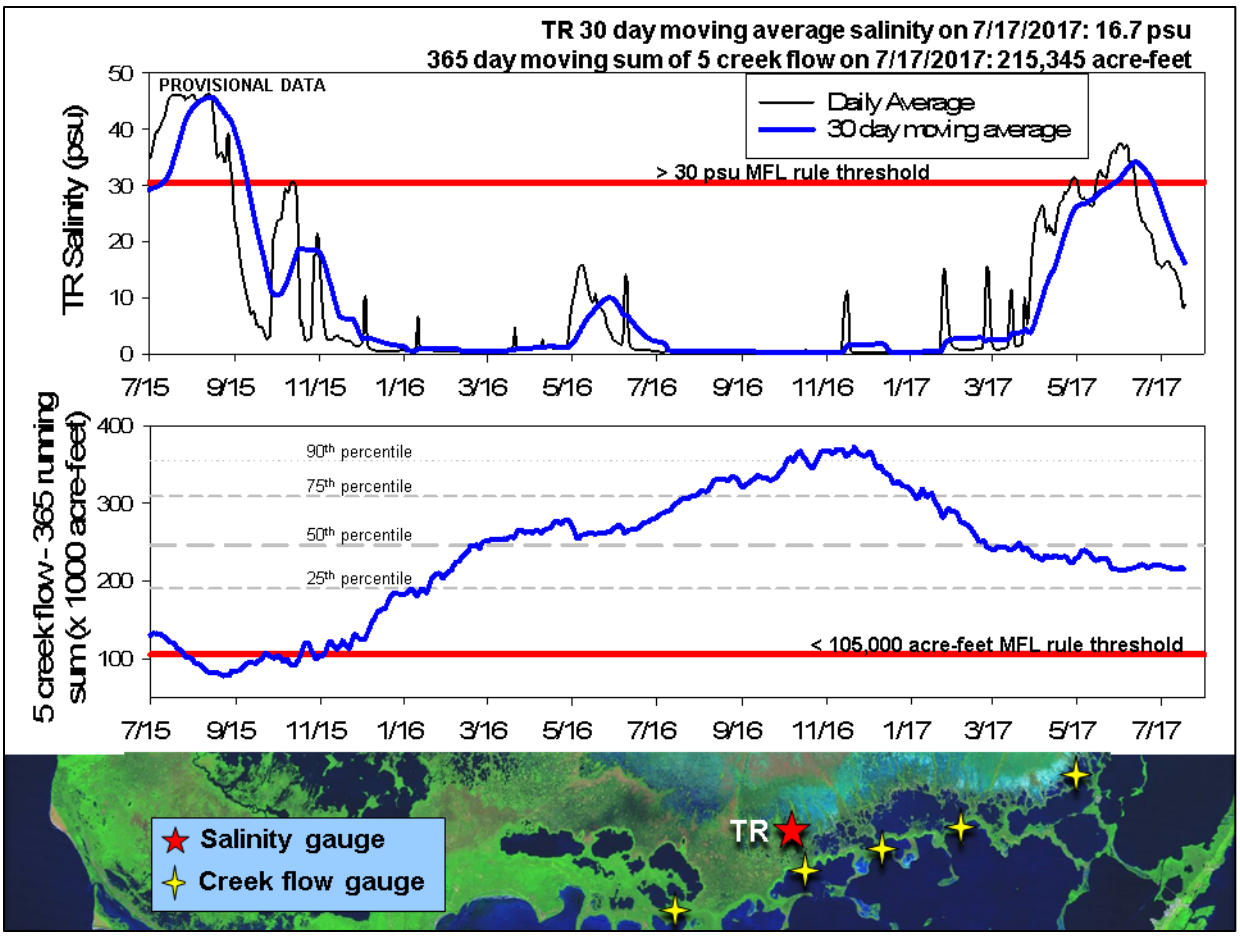
Florida Bay salinity: Salinities are decreasing, but all areas remain 3 to 13 psu above average. Salinities currently range from 29 psu in the eastern nearshore to 46 in the western bay.


Structures
Roads
Canals
Water Depth (ft) (weekly change)
Salinity (psu) (weekly change)
TSB
1.63'
(+0.20)
P37
0.69'
(+0.39)
EVER6
0.43'
(+0.09)
CP
1.54'
(+0.19)
TR
8.7
(-6.4)
TC
28.9
(-1.7)
LS
20.5
(-2.7)
GB
42.3
(-2.8)
TB
34.0
(-0.3)
34.0
(-1.9)
LM
36.0
(-1.1)
DK
BK
42.0
(-4.0)
WB
42.0
(-1.6)
JK
46.2
(+0.6)
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
7/15
9/15
11/15
1/16
3/16
5/16
7/16
9/16
11/16
1/17
3/17
5/17
7/17
P37
EVER6
CP
TSB



Florida Bay MFL: Mangrove zone daily average salinity dropped 6 psu over the last week to reach 9 psu. The 30-day moving average decreased by 4.2 to end the week at 16.7 psu. The cumulative weekly flow from the five creeks identified by the stars on the map was approximately 4,800 acre-feet which is 68% of the historic average for this time of year. The 365-day moving sum of flow from the five creeks identified by stars on the map increased by 103 acre-feet to 215,345 acre-feet (still below the long-term average of 257,628 acre-feet). Creek flow is provisional data from the USGS and is highly variable.



Water Management Recommendations

The rate of stage change should be moderated as possible in all the WCAs, as apple snail production can be negatively affected by rapid changes in water depth. Limiting ascensions to 0.25 feet/week will help to avoid drowning of apple snail egg clusters.

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

Everglades Ecological Recommendations, July 18th, 2017 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages increased from 0.00' to +0.15'	Rainfall, ET, management	Moderate ascension rates as possible. Releasing inflows through S-10s to moderate ascension is recommended. Maintaining water levels a minimum of 0.1 ft above WRS until early July is also recommended. Moderating flow rates through structures to 500 cfs steps is recommended.	Achieve high water targets (17.5 ft) to protect habitat and facilitate invasive plant treatments.
WCA-2A	Stages increased +0.07	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-2B	Stages increased from 0.00' to +0.43'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-3A NE	Stages increased +0.09'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-3A NW	Stages increased +0.15'	Rainfall, ET, management		
Central WCA-3A S	Stages increased +0.23'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
Southern WCA-3A S	Stages increased +0.28'	Rainfall, ET, management		
WCA-3B	Stages increased from +0.43' to +0.65'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
ENP-SRS	Stages increased +0.27'	ET, rainfall, topography, management	Make discharges to the Park according to the 2012 WCP rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities. Protect habitat and wildlife, including apple snail reproduction.
ENP-CSSS habitats		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 near term forcasted conditions are conducive for continuation of a successful sparrow breeding season.
Taylor Slough	Stage changes ranged +0.09' to +0.39'	Rain, ET, inflows	Move water southward as possible	When available provide freshwater buffer for ecosystems and slow recession rates.
FB- Salinity	Salinity changes ranged −4 to +1 psu.	Rain, ET, inflows, wind	Move water southward as possible	When available provide freshwwater to buffer hypersalinity conditions.