

Disclaimer: Information contained in the report addresses environmental conditions only and is not the official South Florida Water Management District operations recommendation or decision.

MEMORANDUM

TO: John Mitnik, Chief, Engineering and Construction Bureau
Paul Linton, Administrator, Water Control Operations Section

FROM: SFWMD Staff Environmental Advisory Team

DATE: August 30, 2016

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Numerous heavy showers/storms through tonight. Strong low to mid-level convergence associated with TD 9 within the highest moisture we have seen this year will combine with favorable upper level winds to generate widespread heavy rainfall today. Heavy rains can occur anywhere, but the two most favored regions appear to be Palm Beach County this afternoon and Lee County overnight. The least likely area to receive heavy rains should be Miami-Dade. As TD 9 moves northward and northeastward tonight and tomorrow, heaviest rains should shift north of the District on Wednesday; but, areas of heavy rainfall are still likely west through north of the Lake tomorrow. Some enhanced rains north of the Lake should follow on Thursday as TD 9 moves inland across north Florida.

Kissimmee

On Sunday, stage in East Lake Toho was 0.3 feet below schedule, Lake Toho was at schedule, and Kissimmee-Cypress-Hatchineha was above schedule by 0.5 feet. Over the past week, discharge at S65, S65A, and S65E averaged 841, 808, and 910 cfs, respectively. Tuesday morning discharges were ~974 cfs, ~1,110 cfs, ~1,397 cfs, and ~1,344 cfs, respectively at S65, S65A, S65C, and S65E. Dissolved oxygen in the Kissimmee River averaged 4.75 mg/L over the past week and 4.60 mg/L on Sunday. Kissimmee River mean floodplain depth on Sunday was 0.31 feet. As discharge is ramped up or down at S65/S65A we recommend using the rampup/rampdown schedule shown in Figure 8a.

Lake Okeechobee

Lake Okeechobee is at 14.73 feet NGVD having increased by 0.03 feet over the past week. The Lake remains in the Low Flow Sub-band. Lake stage has been above optimal levels since the February rain event resulting in the loss of submerged aquatic vegetation.

Estuaries

Total discharge to the St. Lucie estuary average 1,562 over the past week with 269 cfs (17%) coming from Lake Okeechobee. Salinity at the US1 Bridge is in the fair range for oysters. Total inflow to the Caloosahatchee estuary averaged 2,709 cfs over the past week with 801 cfs (30%) coming from the Lake. Salinity conditions are good for tape grass in the upper estuary. Salinity conditions are good for oysters at the Sanibel Causeway and Shellpoint, but in the fair range at the Cape Coral Bridge.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 2,400 acre-feet of Lake regulatory releases. The total amount of Lake regulatory releases sent to the STAs/FEBs in WY2017 (since May 1, 2016) is approximately 61,000 acre-feet. All STA cells are at or above target depths. Operational restrictions are in place for vegetation rehabilitation in STA-1E and STA-5/6 and structure repairs are

underway in STA-1E. In addition, nests of Endangered Species Act (ESA) protected species have been observed in STA-5/6. This week, as conditions allow, Lake releases will be sent to STA-1E and STA-1W.

Everglades

Rainfall was moderate last week, ranging from 1.27 inches to 2.29 inches. Stage changes were mixed but all but two gauges were higher than the week before. The 30-day moving average salinity at the Florida Bay MFL site remains 0.6 psu and the cumulative 365-day inflow from the five creeks into Florida Bay increased slightly to 333,004 acre-feet.

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.52 inches of rainfall in the past week and the Lower Basin received 0.92 inches (SFWMD Daily Rainfall Report 08/29/2016).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in Table 1.

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: **8/30/2016**

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)						
							8/28/16	8/21/16	8/14/16	8/7/16	7/31/16	7/24/16	7/17/16
Lakes Hart and Mary Jane	S62	49	LKMJ	60.0	R	60.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0
Lakes Myrtle, Preston, and Joel	S57	1	S57	61.1	R	61.0	0.1	0.0	0.0	0.0	0.0	-0.1	0.1
Alligator Chain	S60	17	ALLI	63.2	R	63.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0
Lake Gentry	S63	47	LKGT	61.0	R	61.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.2
East Lake Toho	S59	665	TOHOE	56.2	R	56.5	-0.3	0.3	0.0	-0.2	-0.1	-0.1	-0.1
Lake Toho	S61	852	TOHOW, S61	53.5	R	53.5	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3
Lakes Kissimmee, Cypress, and Hatchineha	S65	841	LKISSP, KUB011, LKISSB	51.5	R	51.0	0.5	0.4	-0.1	-0.5	-0.4	-0.4	-0.5

* 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: 8/30/2016

Metric	Location	Sunday's 1-day average	Weekly Average**									
			8/28/16	8/21/16	8/14/16	8/7/16	7/31/16	7/24/16	7/17/16	7/10/16	7/3/16	6/26/16
Discharge (cfs)	S-65	1114	841	624	532	579	643	642	545	552	857	2431
Discharge (cfs)	S-65A	1087	808	666	661	694	638	660	633	660	1211	2890
Discharge (cfs)	S-65C	1035	928	1024	1081	1000	1219	1091	1119	1489	2741	4168
Headwater stage (feet NGVD)		34.2	34.1	34.0	34.1	34.3	34.1	34.0	34.1	34.2	34.0	34.1
Discharge (cfs)	S-65D****	1170	1181	1140	1142	1037	1284	1263	1272	1835	3108	4552
Discharge (cfs)	S-65E	936	910	1061	1137	986	1158	1181	1147	1755	2991	4458
DO concentration (mg/L)***	Phase I river channel	4.60	4.75	4.04	4.09	4.58	4.76	4.91	4.40	2.74	2.21	1.66
Mean depth (feet)*	Phase I floodplain	0.31	0.28	0.39	0.36	0.44	0.63	0.62	1.18	1.93	2.33	3.12

* 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
8/30/2016	Use figure 8a as possible for discharge rampup/rampdown at S65/S65A.			
8/23/2016	No new recommendations.			
8/16/2016	No new recommendations.			
8/9/2016	No new recommendations.			
8/2/2016	No new recommendations.			
7/26/2016	No new recommendations.			
7/19/2016	No new recommendations.			
7/12/2016	No new recommendations.			
6/30/2016	Ramp down S65/S65A discharge by 150 cfs per day to 650 cfs and hold at 650 cfs until lake stage rises to Zone A of the schedule. When stage enters Zone A, ramp up S65 discharge to 1,400 cfs as stage rises from 0.0 to 0.6 feet above the regulation line unless there is a large rainfall event. This ramp up schedule will be reevaluated when the regulation schedule reaches 52.0 feet NGVD.	The ramp down in S65/S65A discharge is intended to lessen the impact of Lake Okeechobee releases on naturally occurring algal blooms. Holding discharge at 650 cfs reflects consideration for the Snail Kites nesting in the Kissimmee River floodplain.	Implemented	SFWMD Operations Control
6/28/2016	No new recommendations.			
6/21/2016	No new recommendations.			
6/14/2016	No new recommendations.			
6/7/2016	No new recommendations.			
5/31/2016	No new recommendations.			
5/24/2016	No new recommendations.			
5/17/2016	No new recommendations.			
5/10/2016	No new recommendations.			
5/3/2016	No new recommendations.			
4/26/2016	No new recommendations.			
4/19/2016	No new recommendations.			
4/12/2016	No new recommendations.			
4/5/2016	No new recommendations.			
3/29/2016	No new recommendations.			
3/22/2016	No new recommendations.			
3/15/2016	No new recommendations.			
3/8/2016	No new recommendations.			
3/1/2016	No new recommendations.			
2/23/2016	No new recommendations.			
2/16/2016	No new recommendations.			
2/9/2016	No new recommendations.			
2/1/2016	Begin F&W recessions in East Toho, Toho, and KCH per the requested recession lines shown in the 2015-16 Dry Season Standing Recommendation (SR). Use Table 2 for guidance on rates of change in discharge to control departures from the line in KCH, and the reversal guidelines shown in the SR for Toho and East.	Initiate and manage lake stage recessions in East Toho, Toho, and KCH for the benefit of fish and wildlife, while avoiding harm to the Kissimmee River	TBD	KB Tech Team

KCOL Hydrographs (through Sunday midnight)

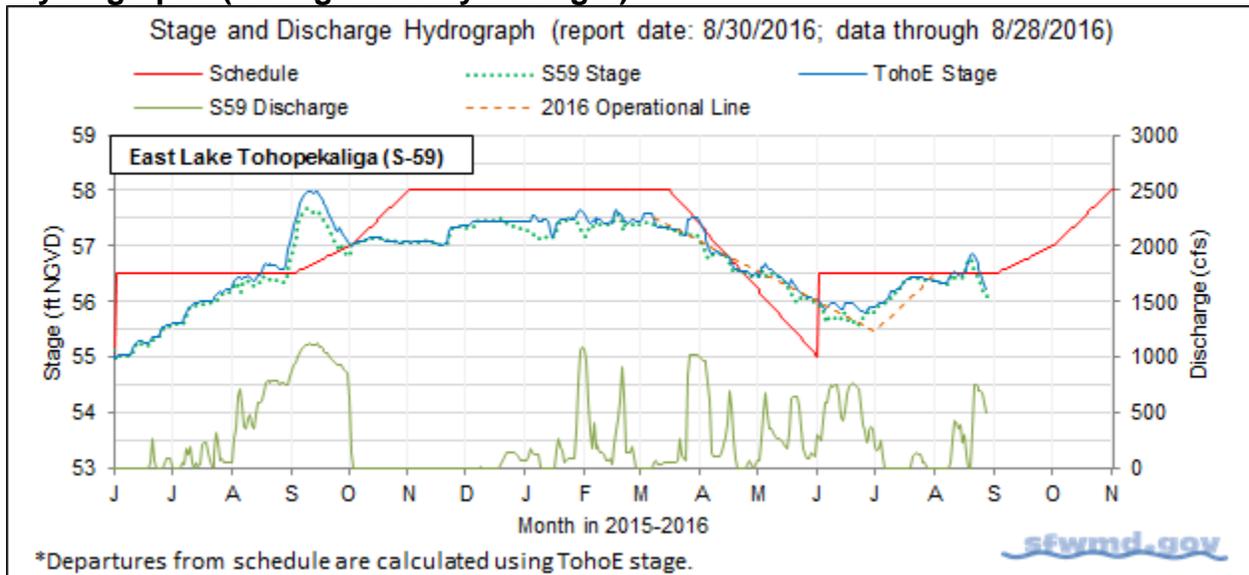


Figure 1.

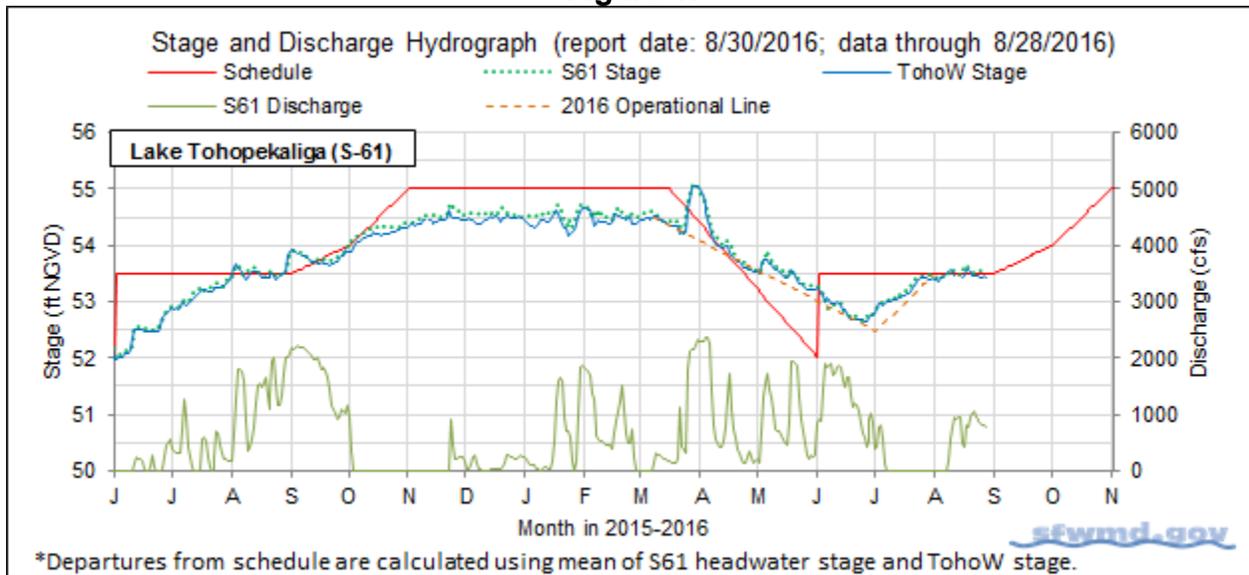


Figure 2.

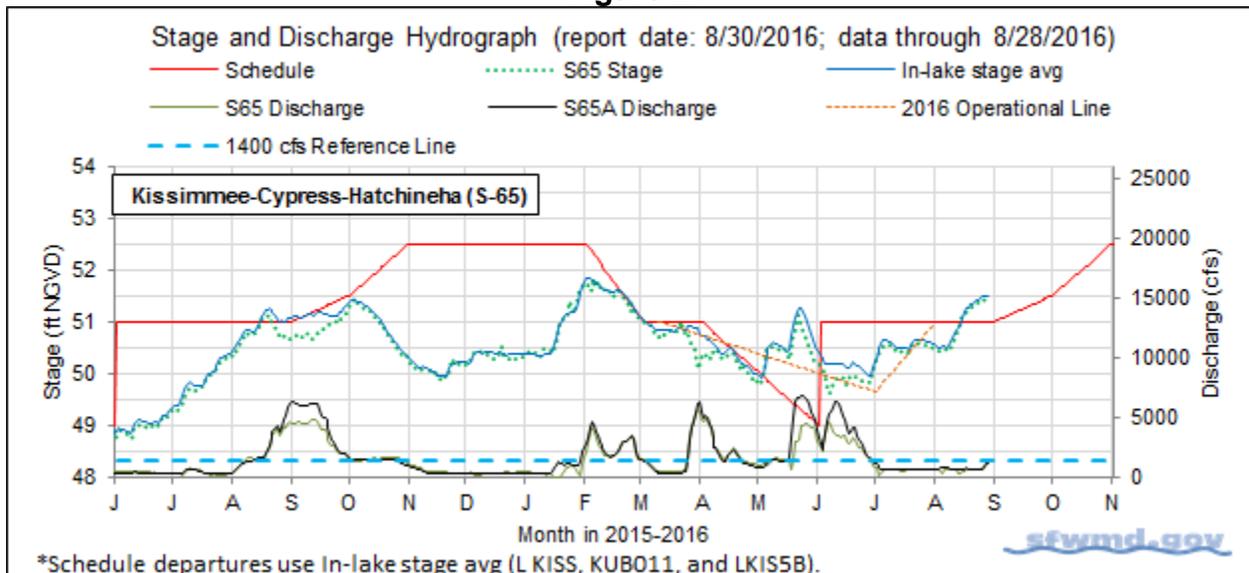


Figure 3.

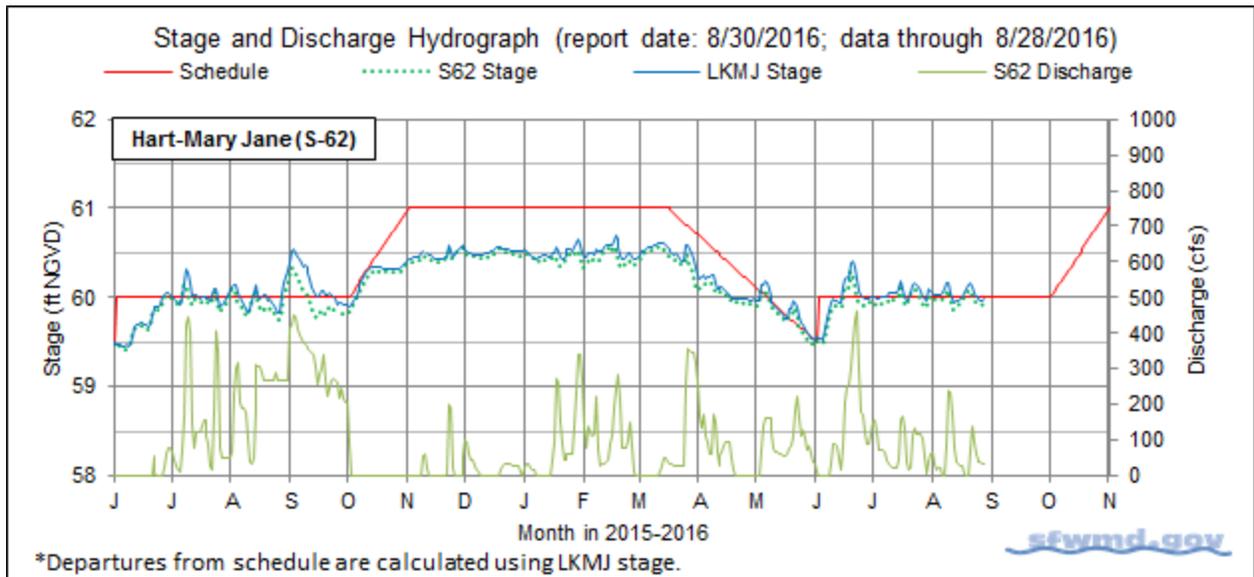


Figure 4.

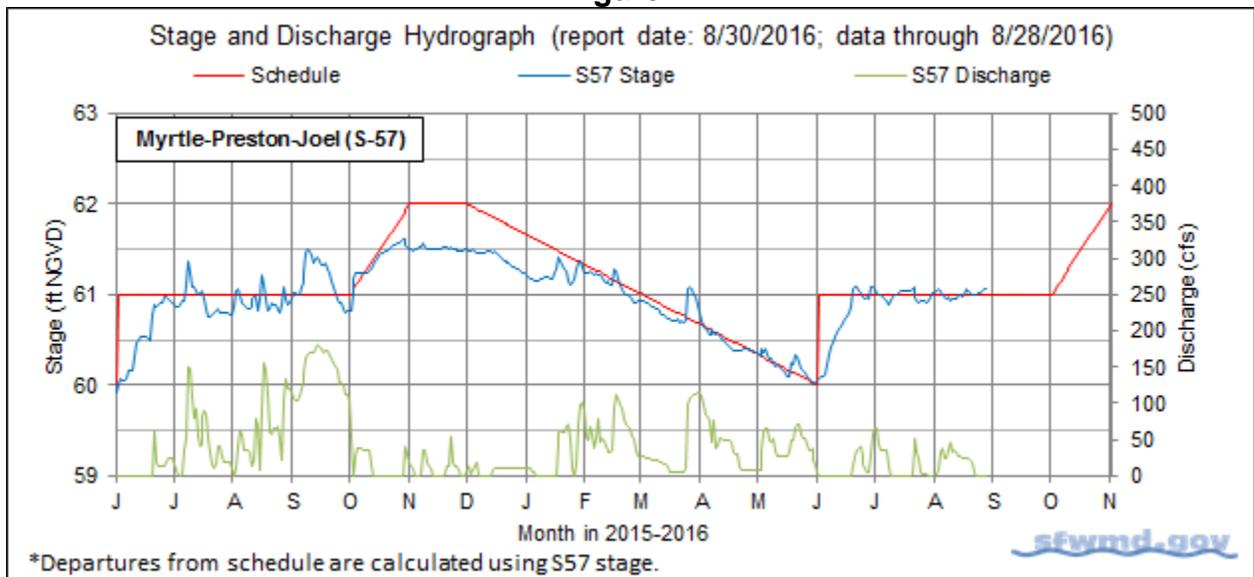


Figure 5.

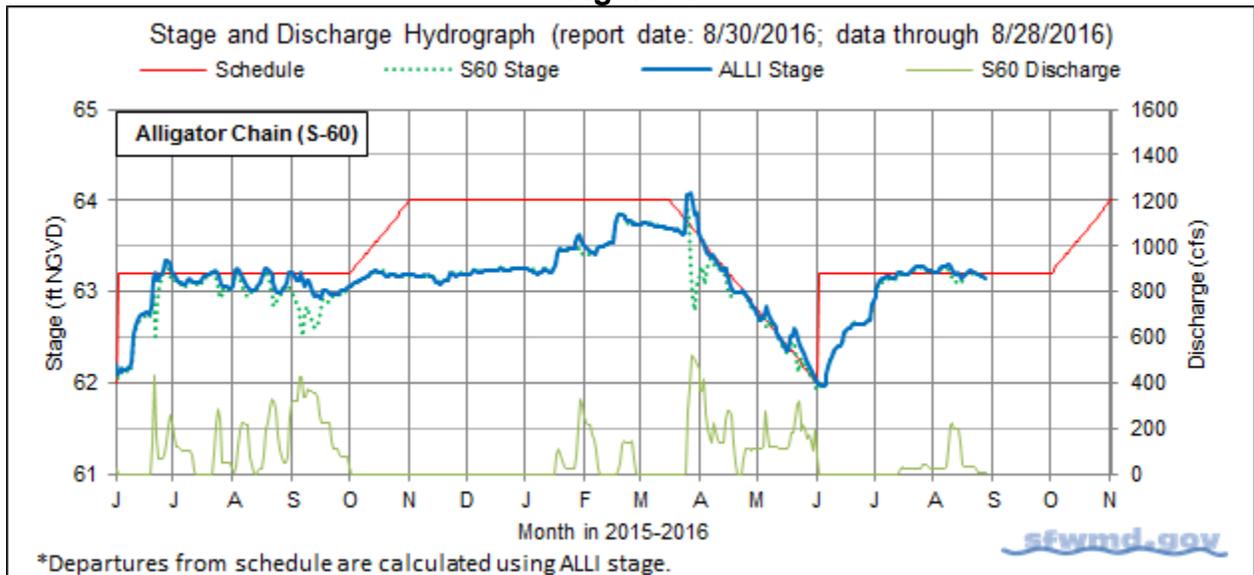


Figure 6.

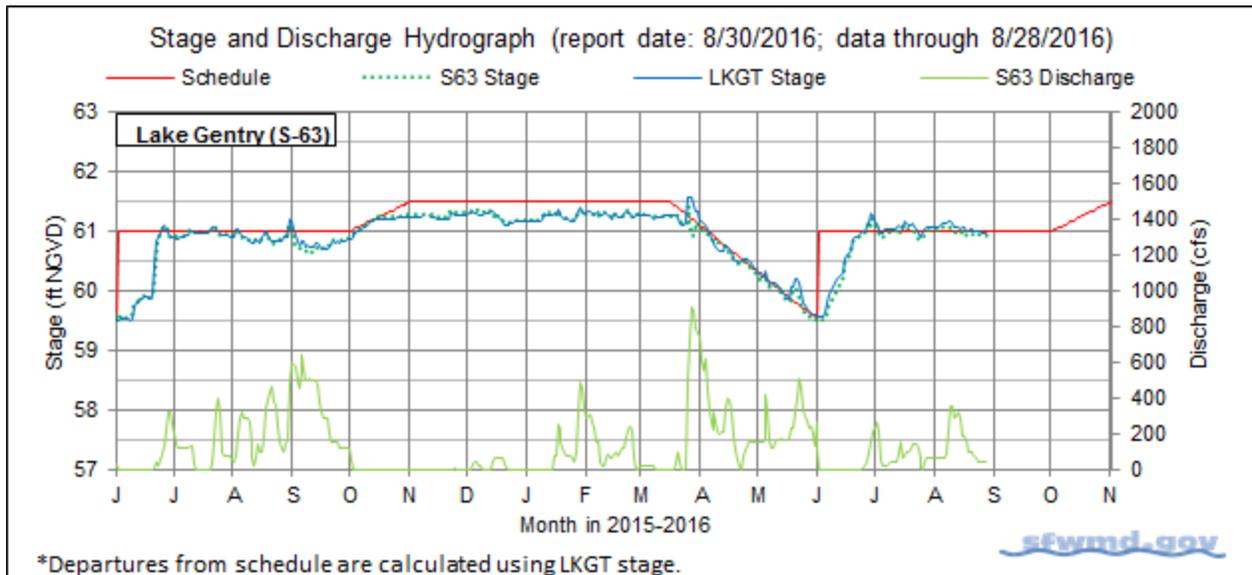


Figure 7.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Limits on Rate of Discharge Change at S65/S65A During Wet Season 2016

Discharge Rate of Change Limits for S65/S65A (revised 6/30/16).		
Q (cfs)	Maximum rate of increase (cfs/day)	Maximum rate of decrease (cfs/day)
650-1450	150	-150
1450-1700	250	-250
1700-2600	300	-300
2600-3000	400	-400
>3000	1000	-1000

13

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

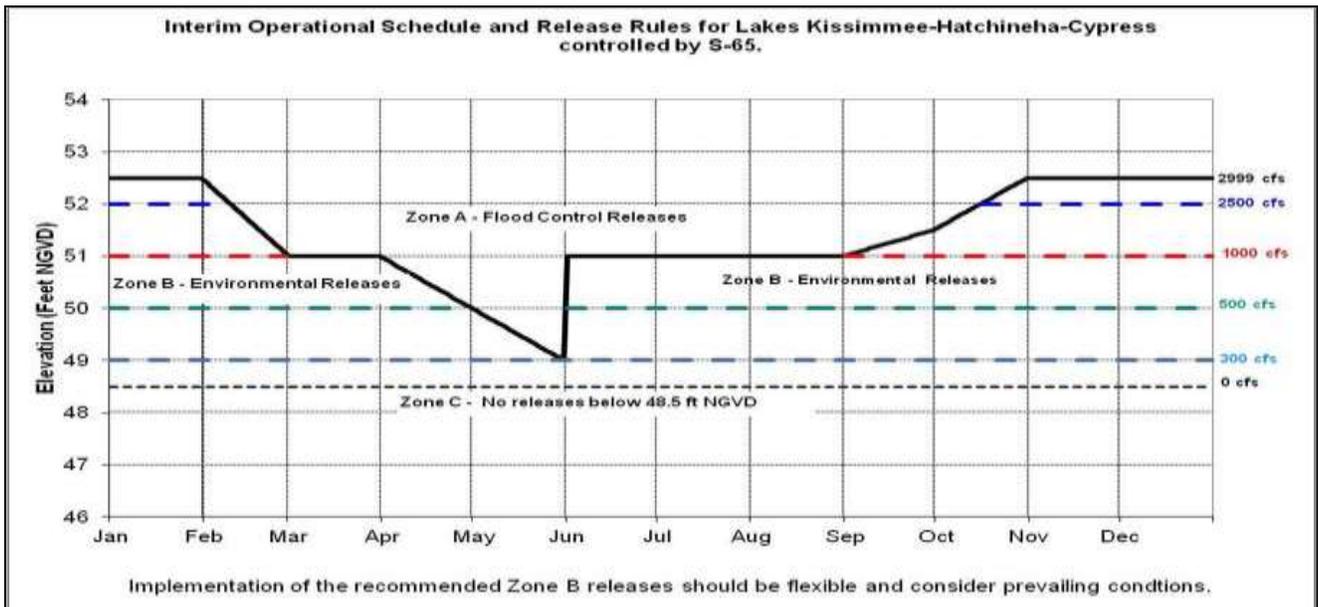


Figure 8b. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

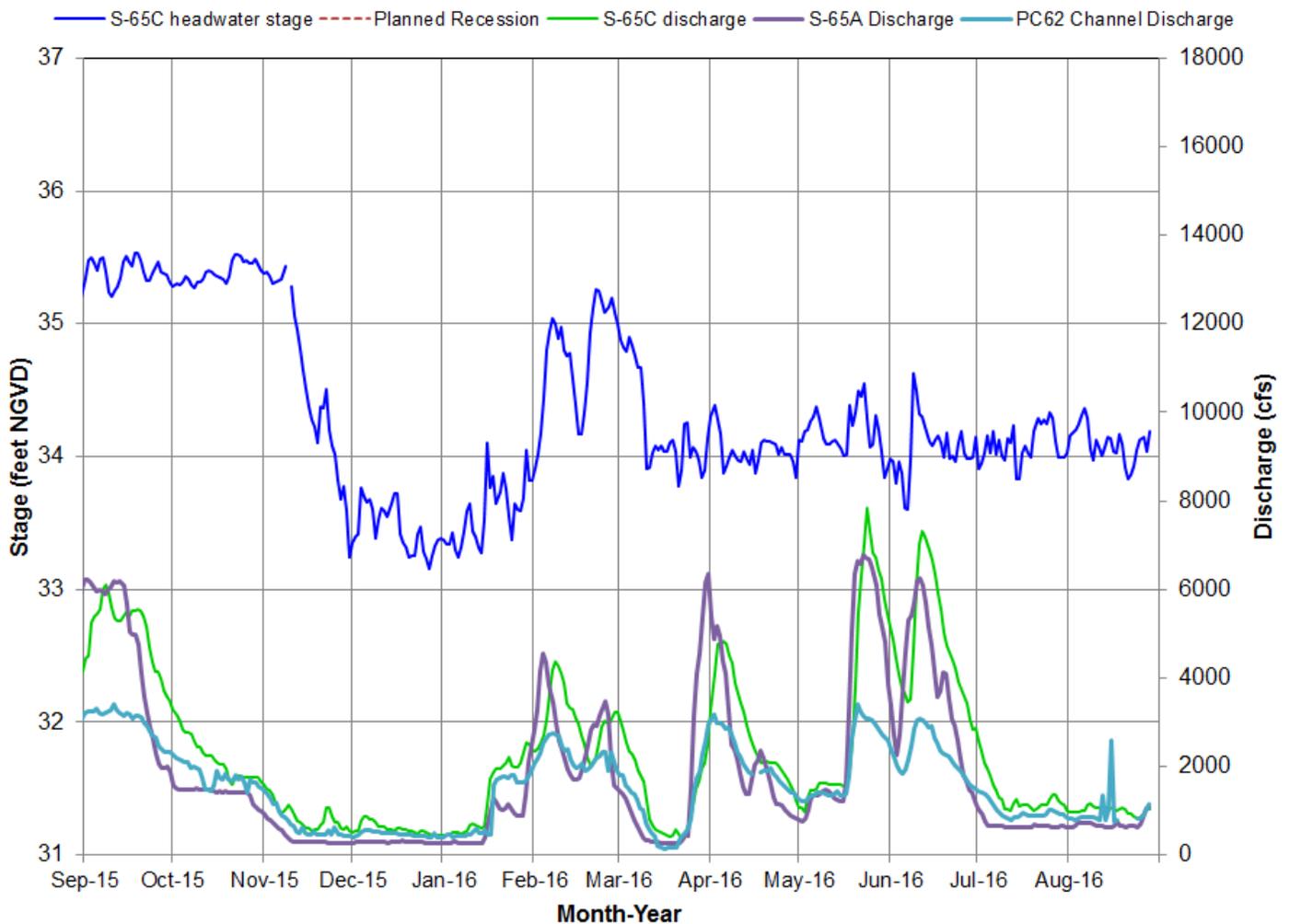


Figure 9. S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

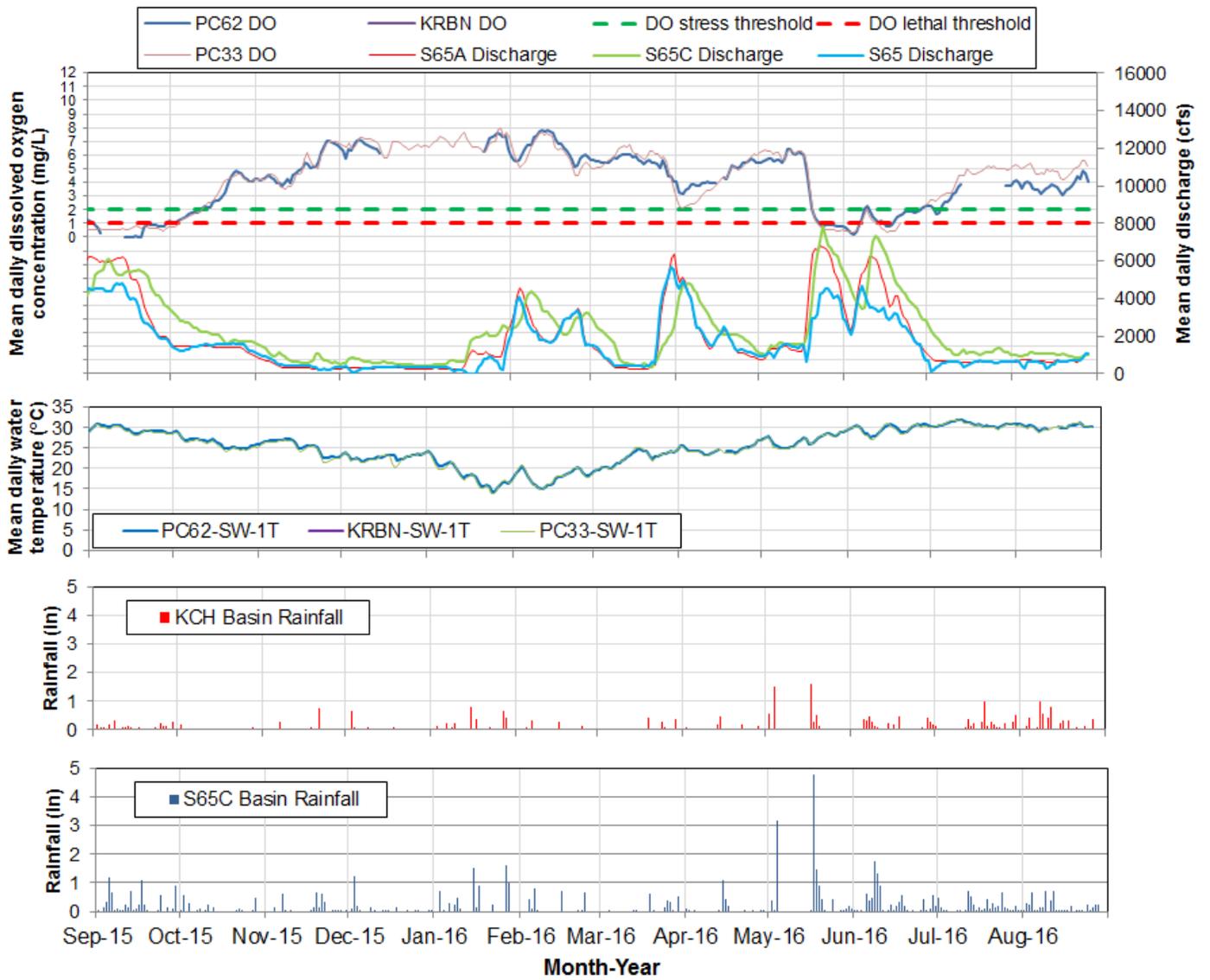


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

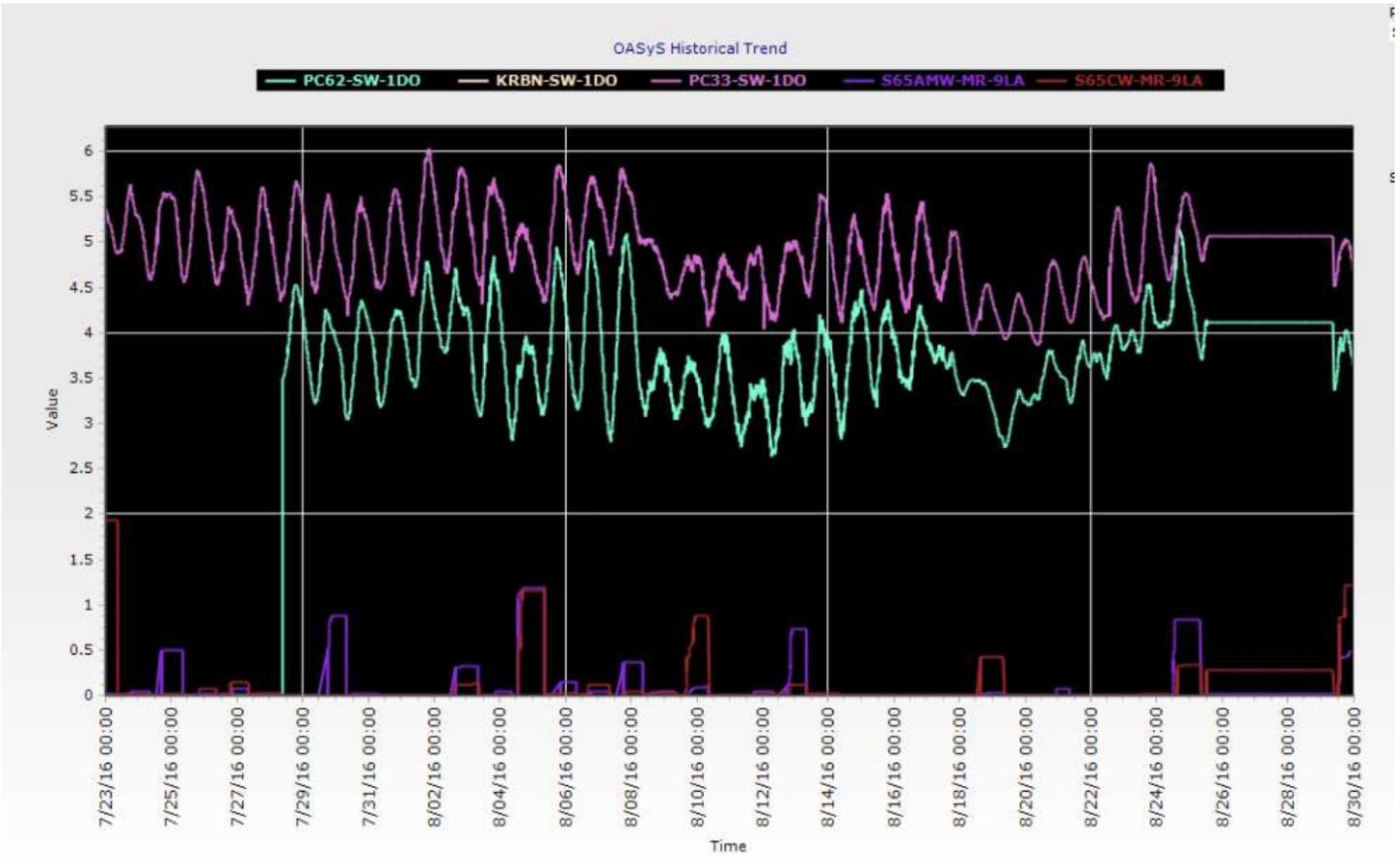


Figure 11. Phase I river channel dissolved oxygen (measured at 15 minute intervals) and rainfall at S65A and S65C.

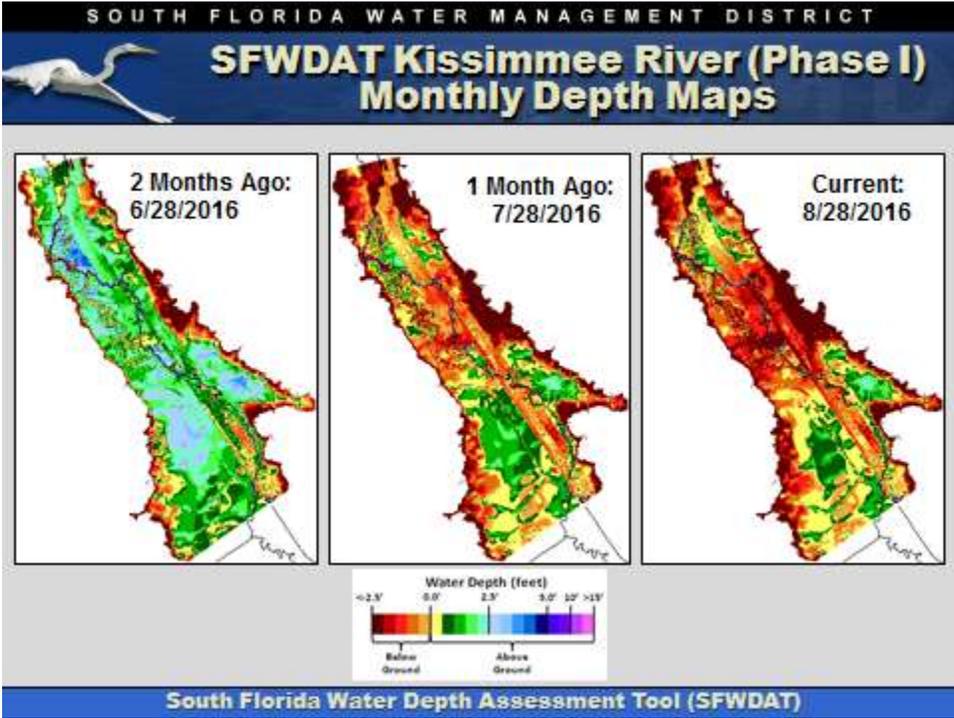
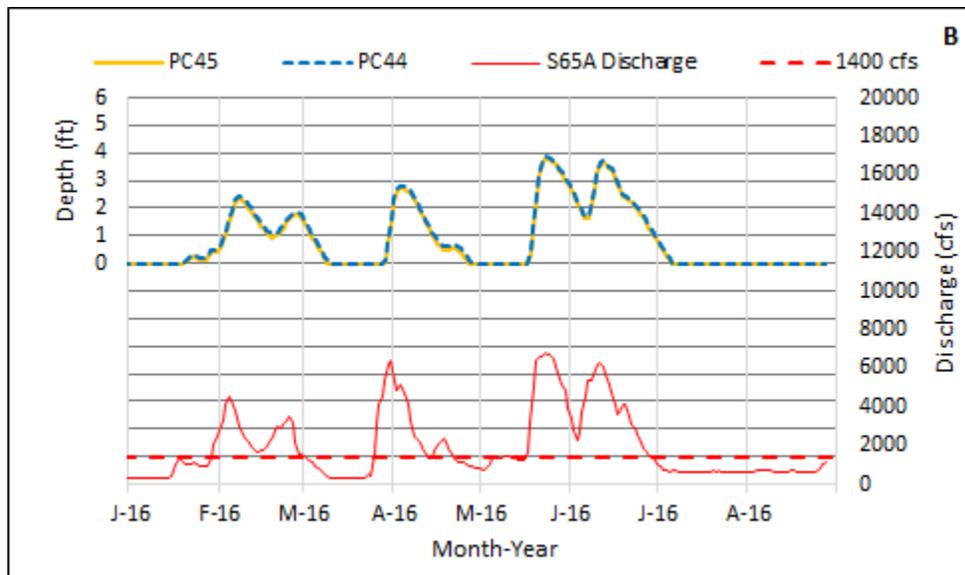
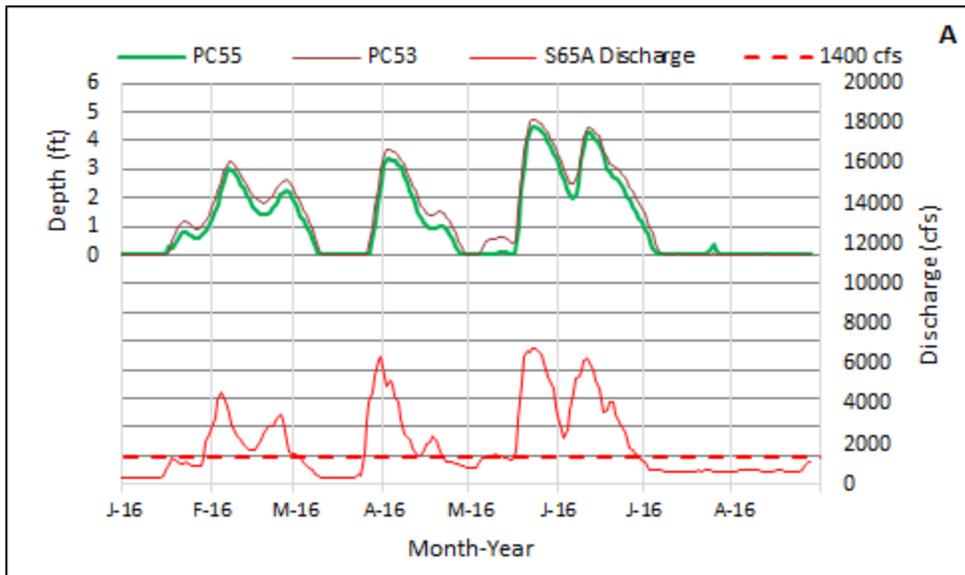


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.



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

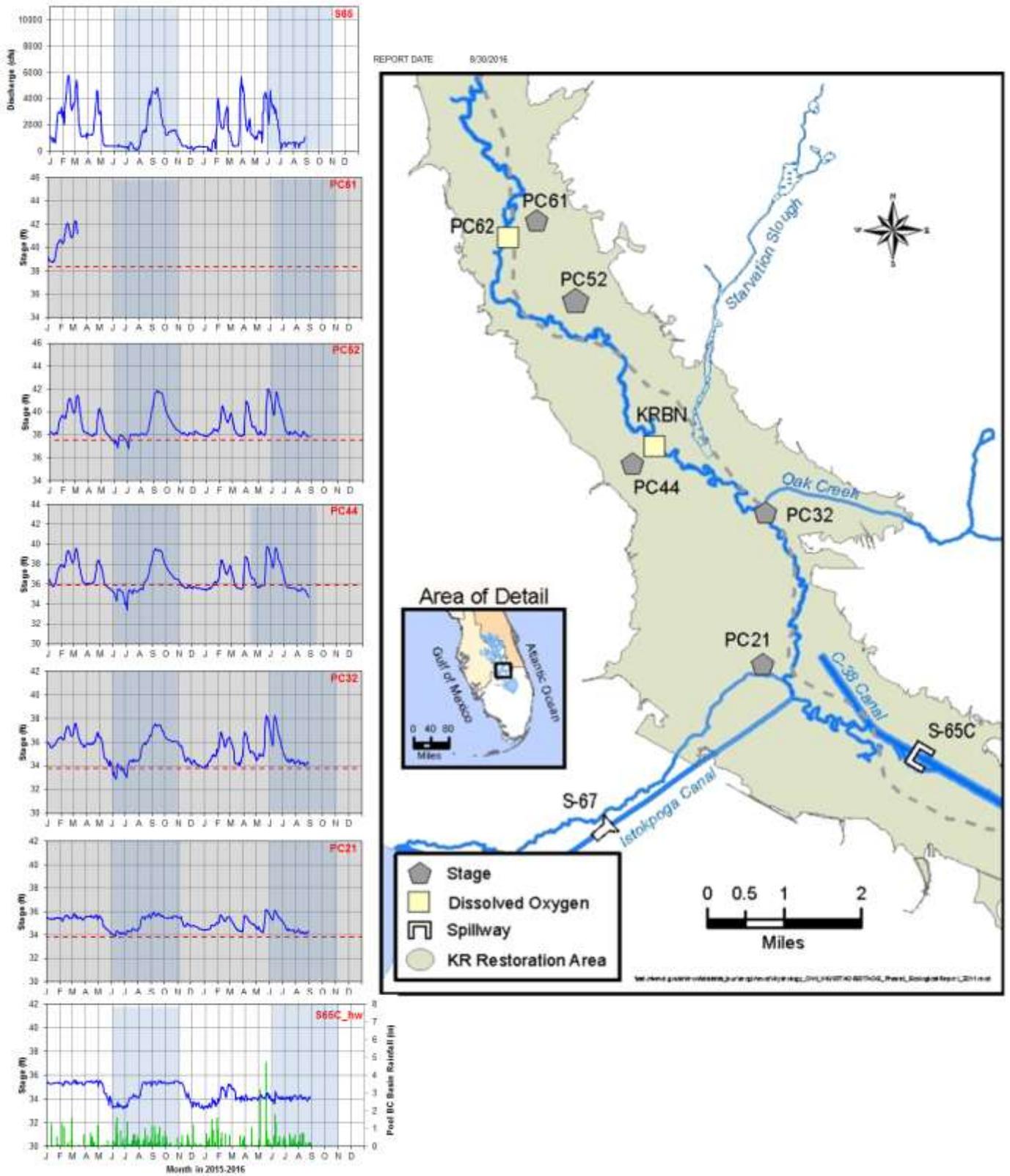


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated).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

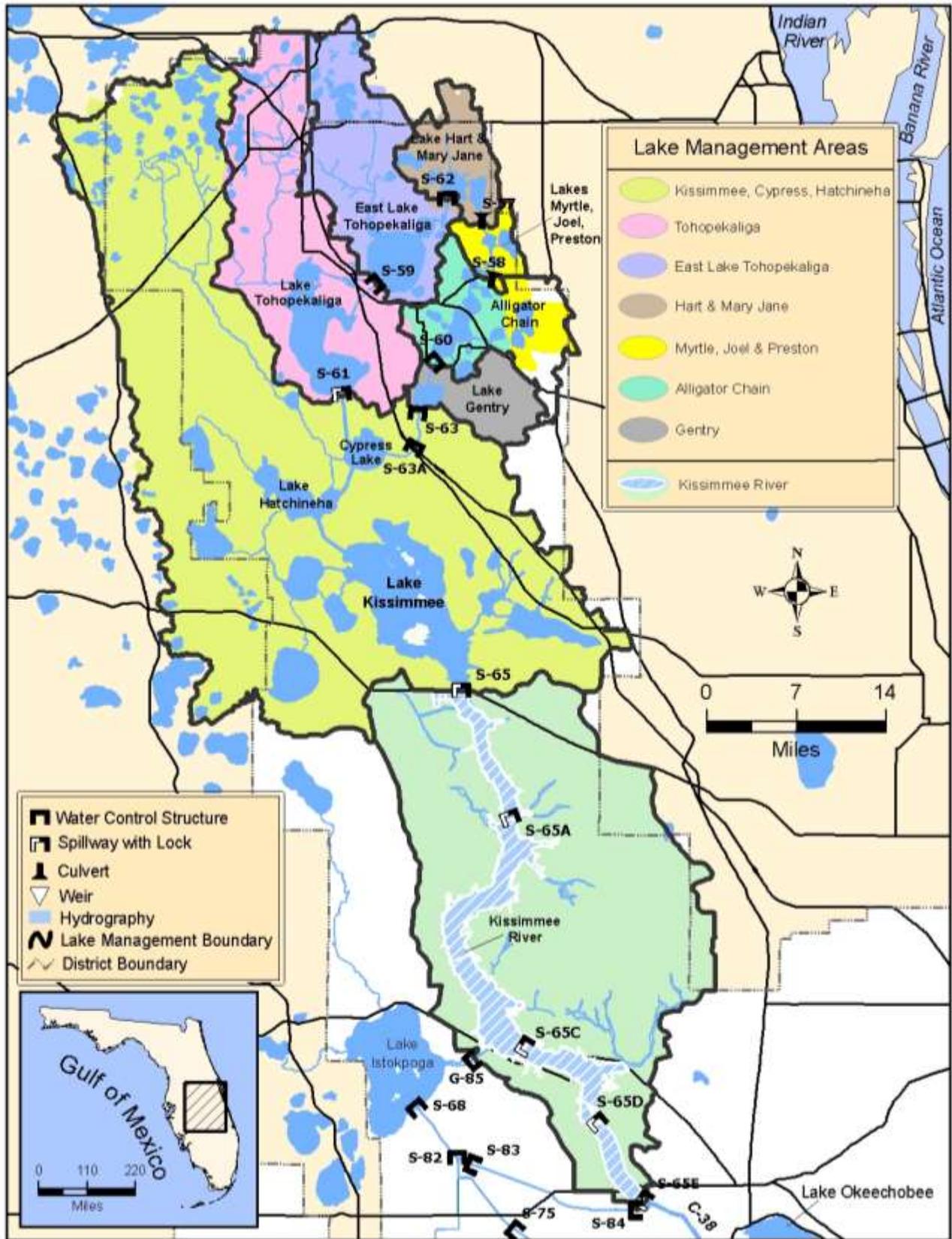


Figure 14. The Kissimmee Basin.

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 14.73 feet NGVD for the period ending at midnight on August 29, 2016. This value is based on the use of four interior Lake stations (L001, L005, L006, and LZ40) and three perimeter stations (S352, S4 and S133). Stage data for S308 are not available at this time. Lake stage increased by 0.03 feet over the past week and is 0.08 feet higher than it was a month ago and 1.86 feet higher than it was a year ago (Figure 1). The Lake is in the Low Flow Sub-band (Figure 2). According to RAINDAR, 2.03 inches of rain fell directly over the Lake during the past seven days. The surrounding watershed experienced similar rainfall amounts to the east and south but lower amounts to the north and west (Figure 3).

Based on USACE reported values, current Lake inflow is approximately 2,931 cfs as detailed below.

Structure	Flow cfs
S65E	1263
S154	18
S84 & 84X	1012
S71	45
S72	0
C5 (Nicodemus slough dispersed storage)	-78
S191	387
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	177
Fisheating Creek	106
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Current Lake outflow is approximately 1,503 cfs exiting at S77 (477 cfs), S308 (514 cfs) and to the L8 canal through Culvert 10A (6 cfs). Additionally, approximately 506 cfs exited through S352 and no water exited through S351 or S354. Corrected evapotranspiration value based on the L006 weather platform solar radiation data for this past week was 2,816 cfs, down from last week's value of 2,971 cfs.

Change in elevation equivalents and average weekly flows 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.

August water quality indicated a decrease in total phosphorus in both the nearshore and pelagic zones and overall (Figure 5). No major change occurred in either nearshore or pelagic zone total suspended solids concentrations.

Effects of cloud cover over most of the Lake precludes interpretation of the past weeks satellite images.

Water Management Recommendations

Although Lake stage has remained essentially static over the past two months, it increased slightly over the past week and is almost two feet higher than it was relative to this date last year. From an ecological

perspective, Lake stage has been above optimal levels since the February rain event resulting in the loss of submerged aquatic vegetation and an increase in the occurrence of cyanobacterial blooms relative to recent years. Future short-term recommendations are highly dependent on near-term rainfall patterns and amounts. The goal should be to limit the rate of Lake stage increase to avoid exceeding the top of the preferred stage envelope (15.5 feet NGVD) during the wet season.

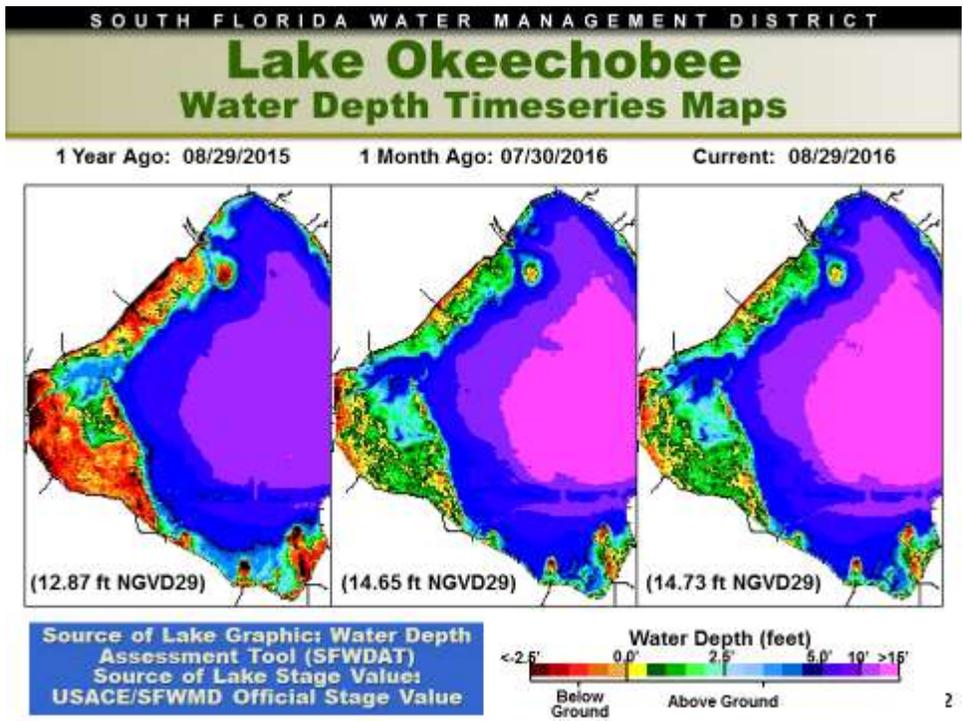


Figure 1

Lake Okeechobee Water Level History and Projected Stages

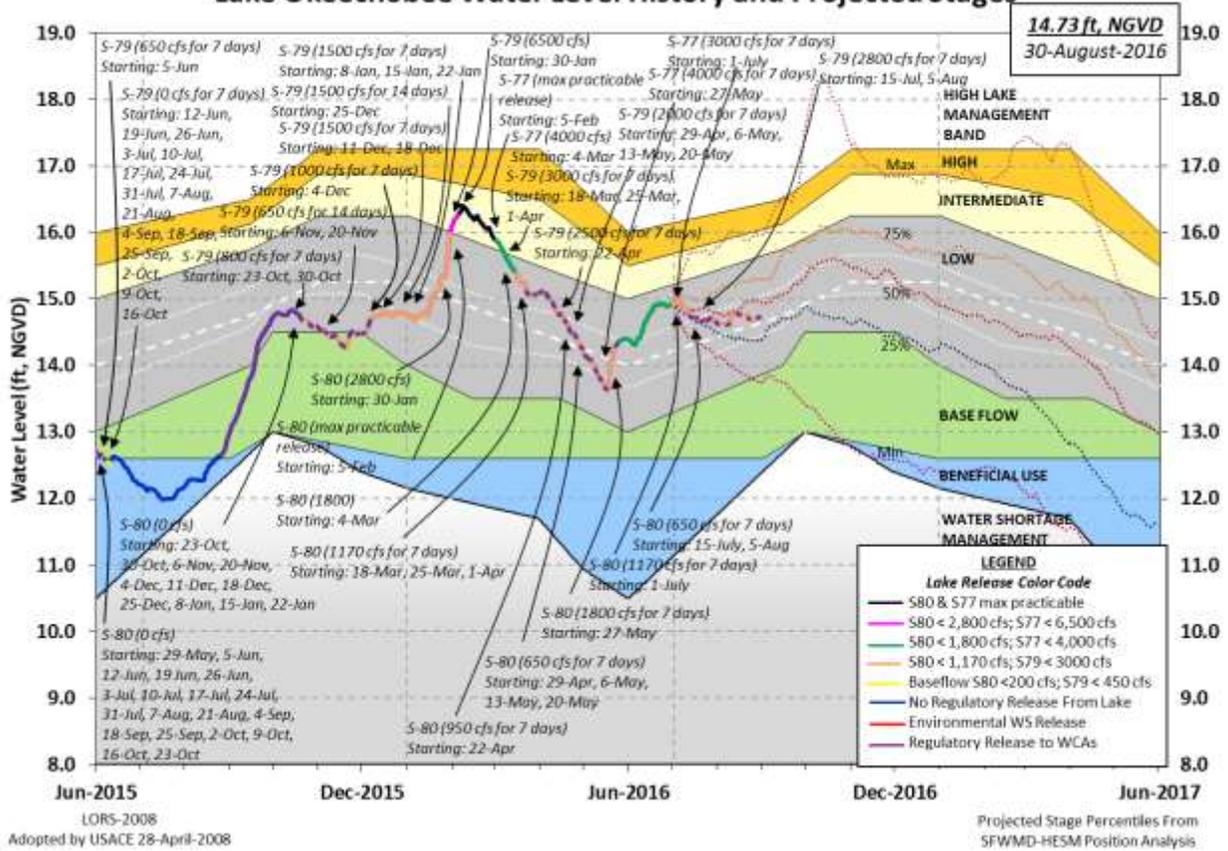
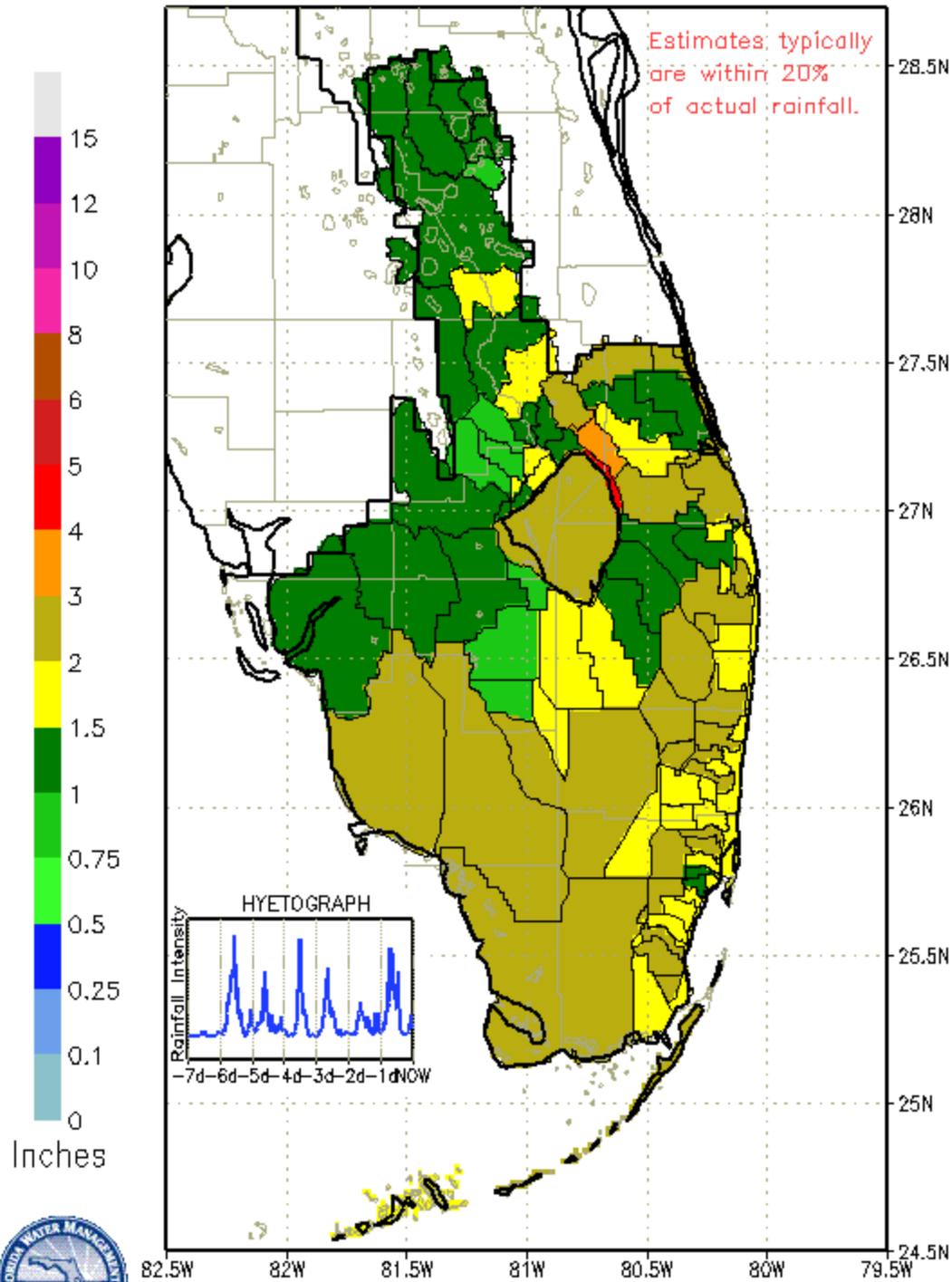


Figure 2

SFWMD PROVISIONAL RAINFAR 7-DAY BASIN RAINFALL ESTIMATES

FROM: 0530 EST, 08/23/2016 THROUGH: 0530 EST, 08/30/2016



DISTRICT-WIDE RAINFALL ESTIMATE: 1.731"

Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E	914	0.030
S71 & 72	151	0.005
S84 & 84X	788	0.026
Fisheating Creek	386	0.013
Rainfall	N.A.	0.169
OUTFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S77	801	0.027
S308	269	0.009
S351	185	0.006
S352	194	0.006
S354	90	0.003
L8	67	0.002
ET	2816	0.094

Figure 4

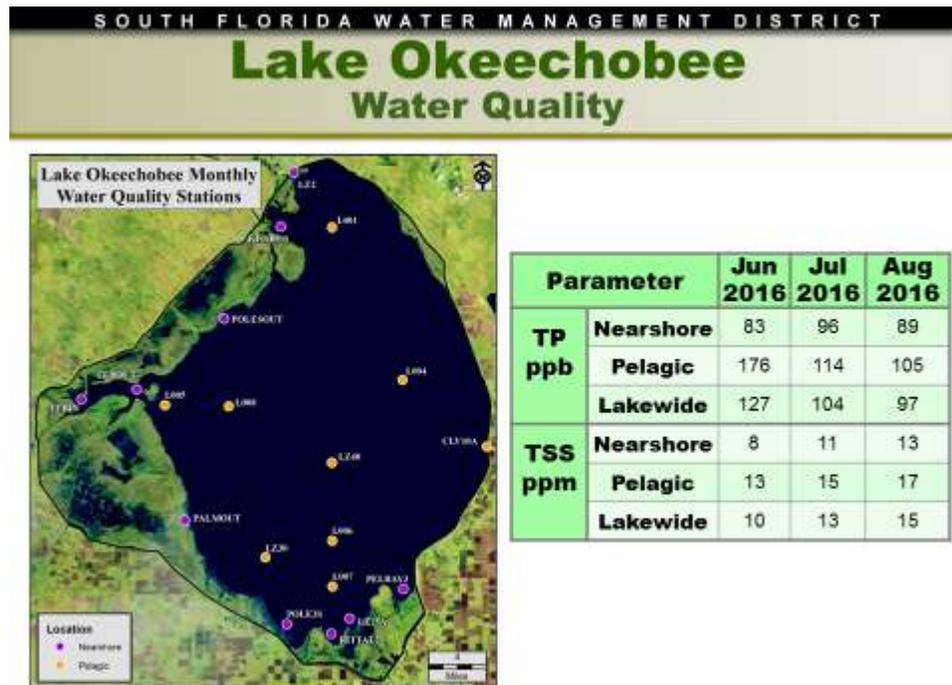


Figure 5

Lake Istokpoga

The Lake Istokpoga regulation schedule began its ascension towards winter pool stage of 39.50 feet NGVD on August 2, 2016. Lake stage is 38.41 feet NGVD and is currently 0.07 feet below its regulation stage of 38.48 feet NGVD (Figure 6). Average flows into the Lake from Arbuckle and Josephine creeks were 560 cfs and 91 cfs, respectively. Average discharge from S68 and S68X this past week was 848

cfs, an increase from the preceding week. According to RAINDAR, 1.18 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

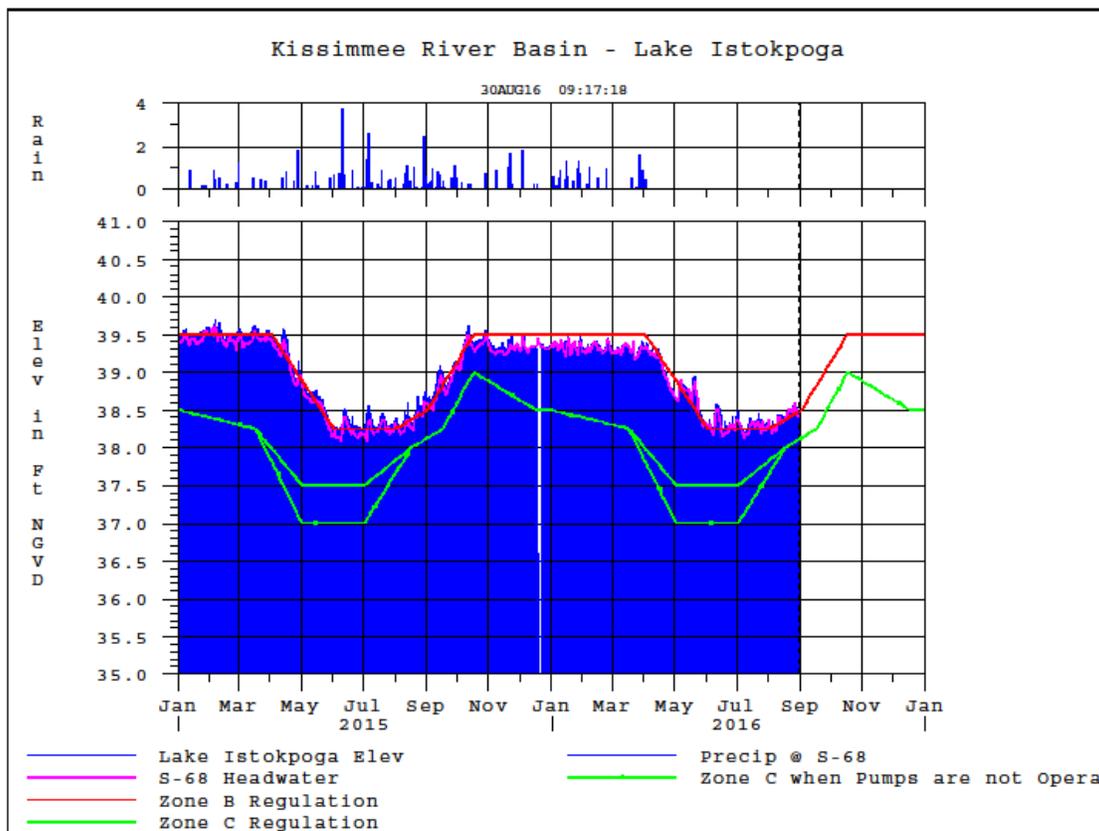


Figure 6

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 577 cfs at S-80, 269 cfs downstream of S-308, 95 cfs at S-49 on C-24, 297 cfs at S-97 on C-23, and 52 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 541 cfs (Figures 1 and 2). Total inflow averaged about 1,562 cfs last week and 1,754 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 9.9. Salinity conditions in the middle estuary are just within 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)	5.5 (1.9)	8.1 (5.0)	NA ¹
US1 Bridge	8.4 (6.0)	11.4 (9.4)	10.0-26.0
A1A Bridge	25.5 (21.4)	25.6 (24.0)	NA

¹Envelope not applicable

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 801 cfs downstream of S-77, 1,113 cfs at S-78, and 2,111 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 598 cfs (Figures 5 and 6). Total inflow averaged 2,709 cfs last week and 3,910 cfs over last month.

Over the past week in the estuary, salinity remained about fresh to Cape Coral Bridge and increased downstream (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for adult oysters at Shell Point and at Sanibel and in the fair range at Cape Coral (Figure 9). The 30-day moving average surface salinity is 0.2 at Val I-75 and 0.3 at Ft. Myers. Salinity conditions at Val I-75 are in the good range for tape grass.

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)	0.2 (0.2)	0.2 (0.2)	NA ¹
Val I75	0.2 (0.2*)	0.3* (0.2*)	0.0-5.0 ²
Ft. Myers Yacht Basin	0.5 (0.2)	0.8 (0.2)	NA
Cape Coral	4.5 (3.3)	6.8 (5.1)	10.0-30.0
Shell Point	16.2 (14.3)	19.4 (18.6)	10.0-30.0
Sanibel	26.9 (25.8)	28.3 (EM ³)	10.0-30.0

¹Envelope not applicable, ²Envelope is based on a 30-day average, ³Equipment Malfunction. Sanibel surface salinity is a 4-day average. *Val I75 is temporarily offline due to bridge 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.

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 <i>a</i> (µg/l)	5.22 – 5.92	4.9 – 6.2	1.3 – 5.7
Dissolved Oxygen (mg/l)	3.7 – 5.9	5.1 – 6.9	4.0 – 6.7

The Florida Fish and Wildlife Research Institute reported on August 26, 2016, that *Karenia brevis*, the Florida red tide organism, was not detected in samples collected from Lee County.

Water Management Recommendations

Given the current estuarine conditions, there are no ecological benefits associated with additional releases from Lake Okeechobee.

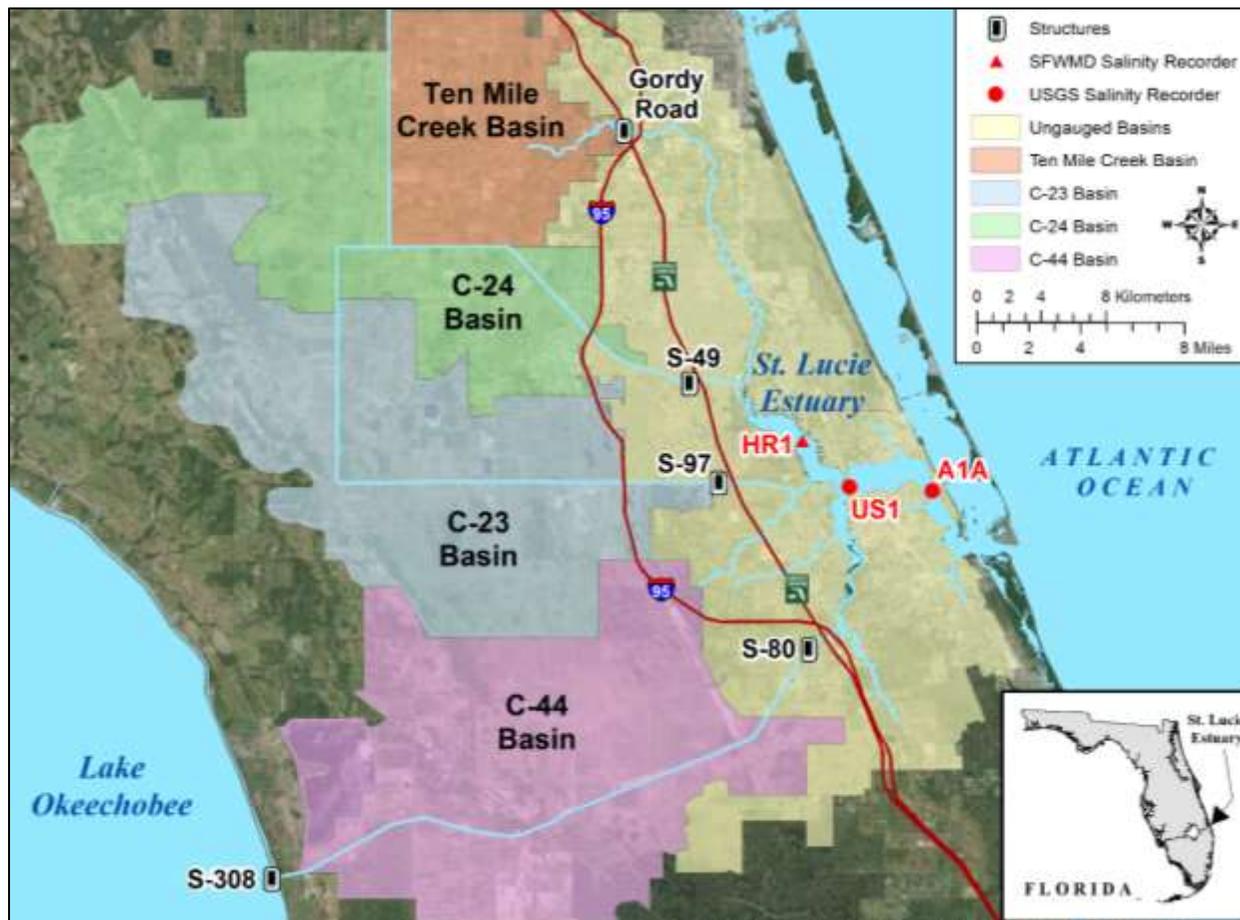


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

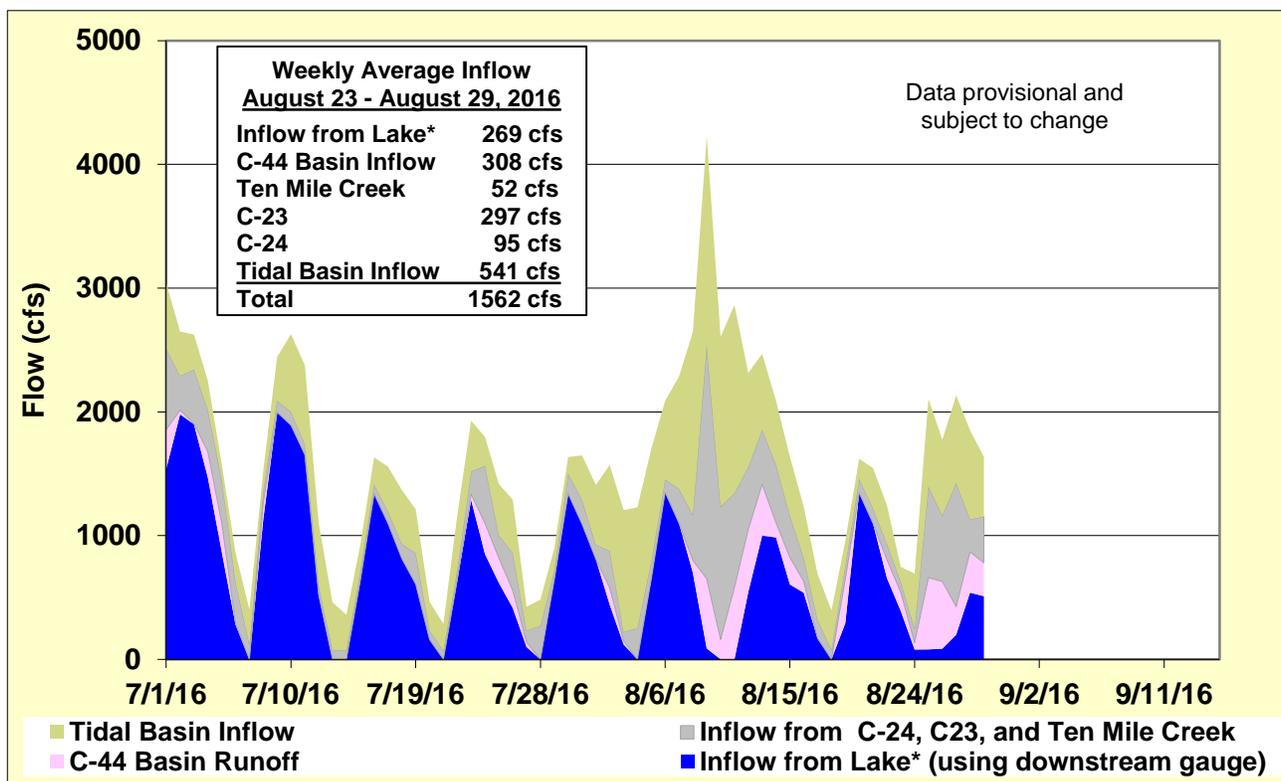


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

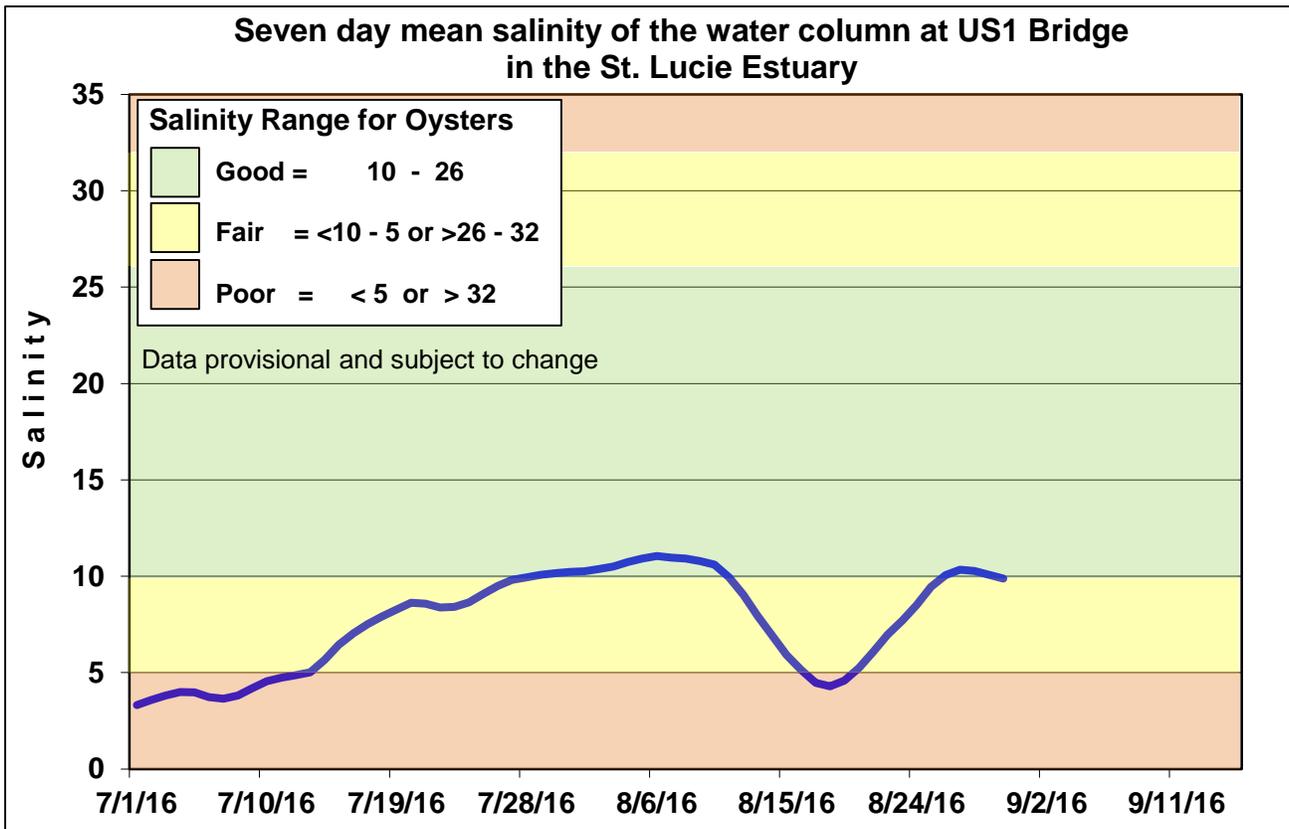


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

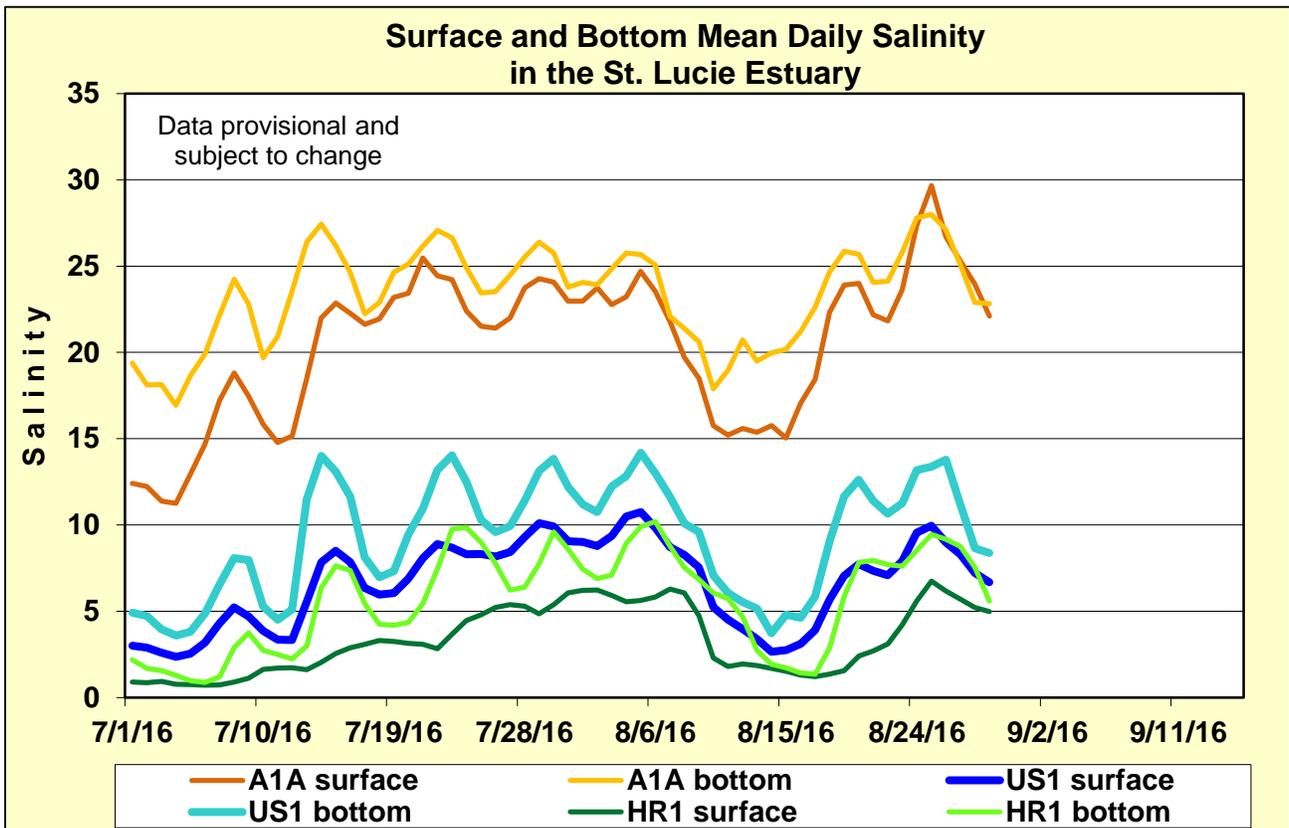


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

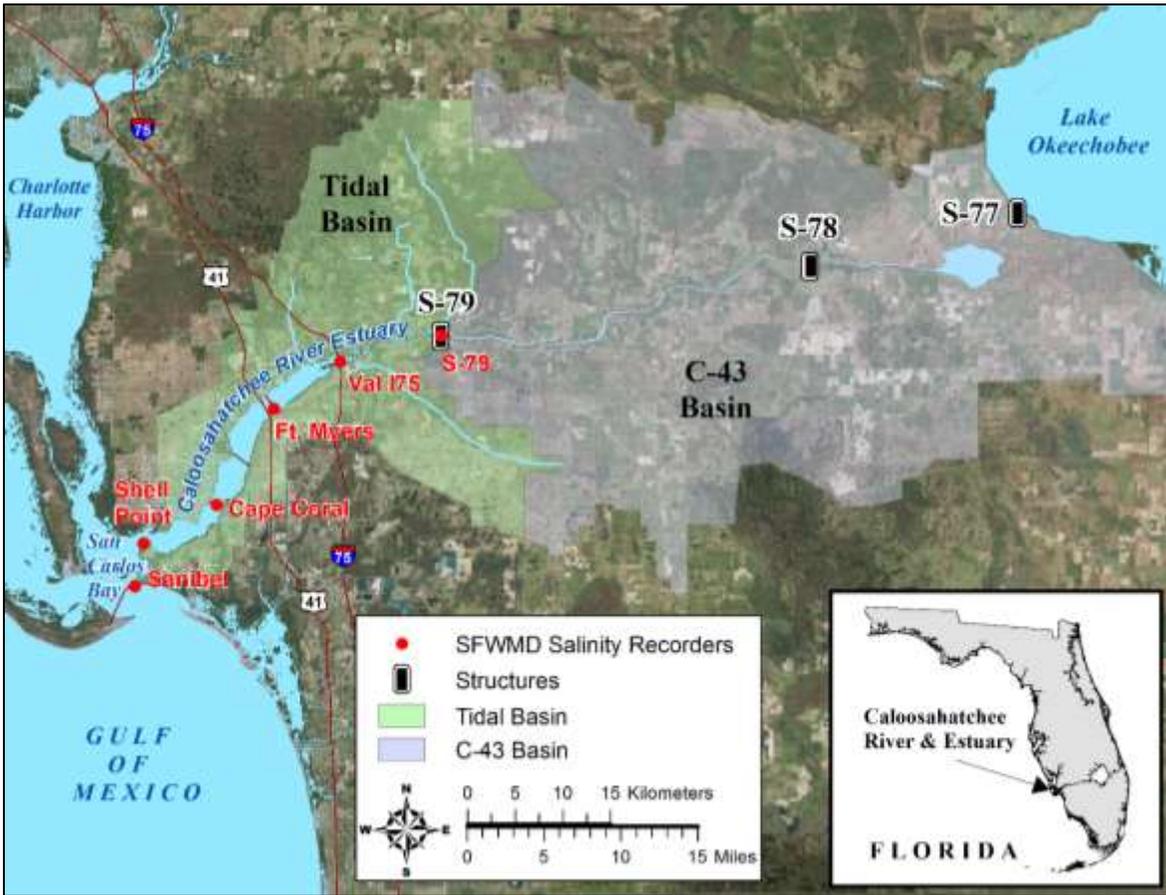


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

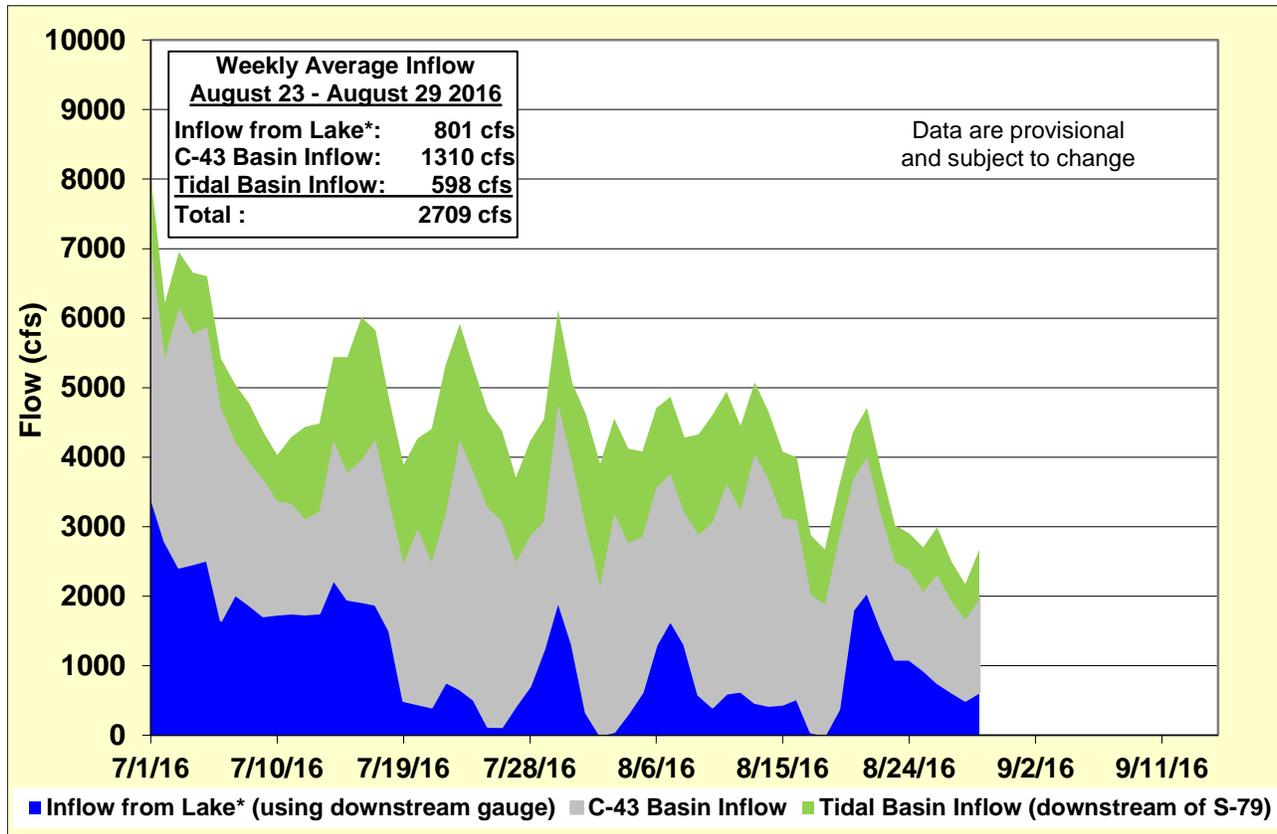


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.

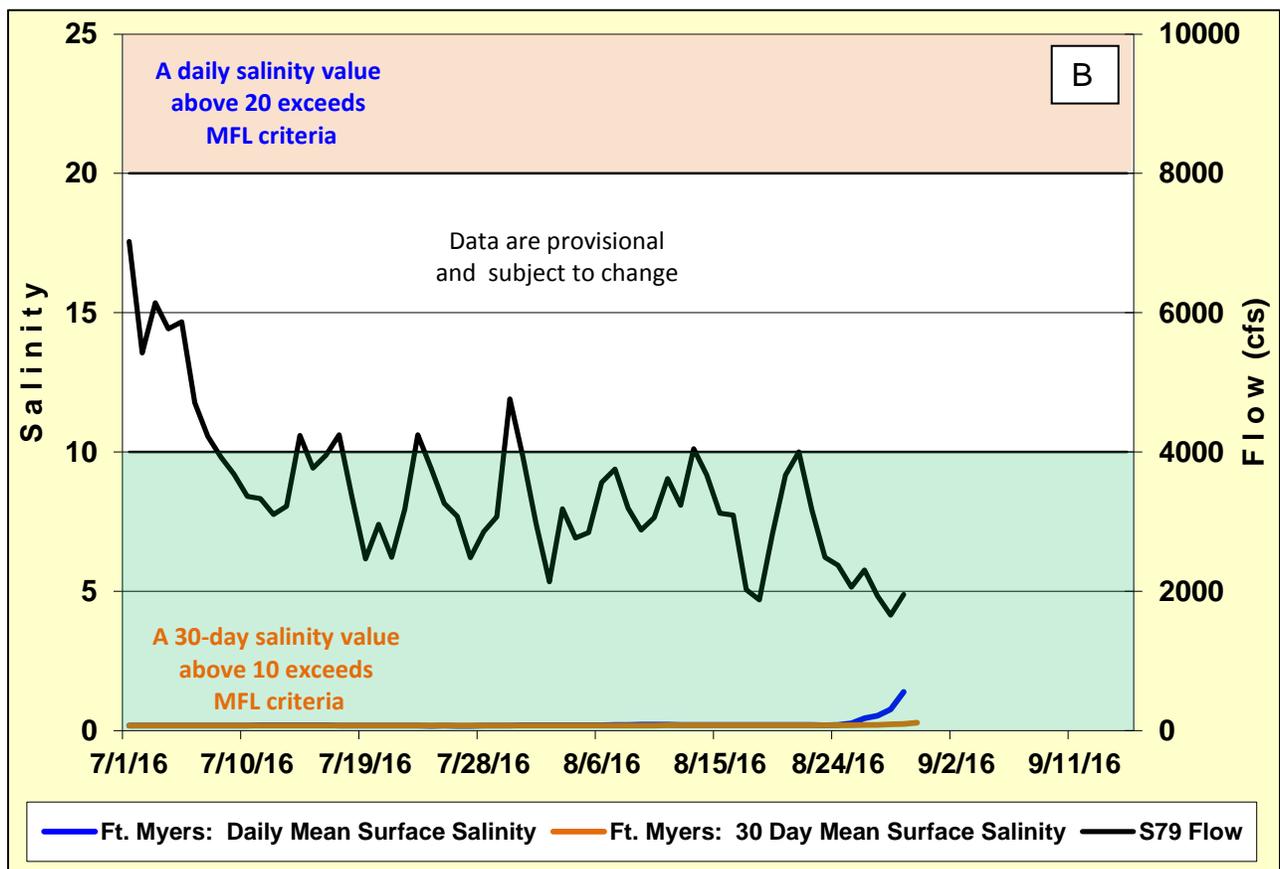
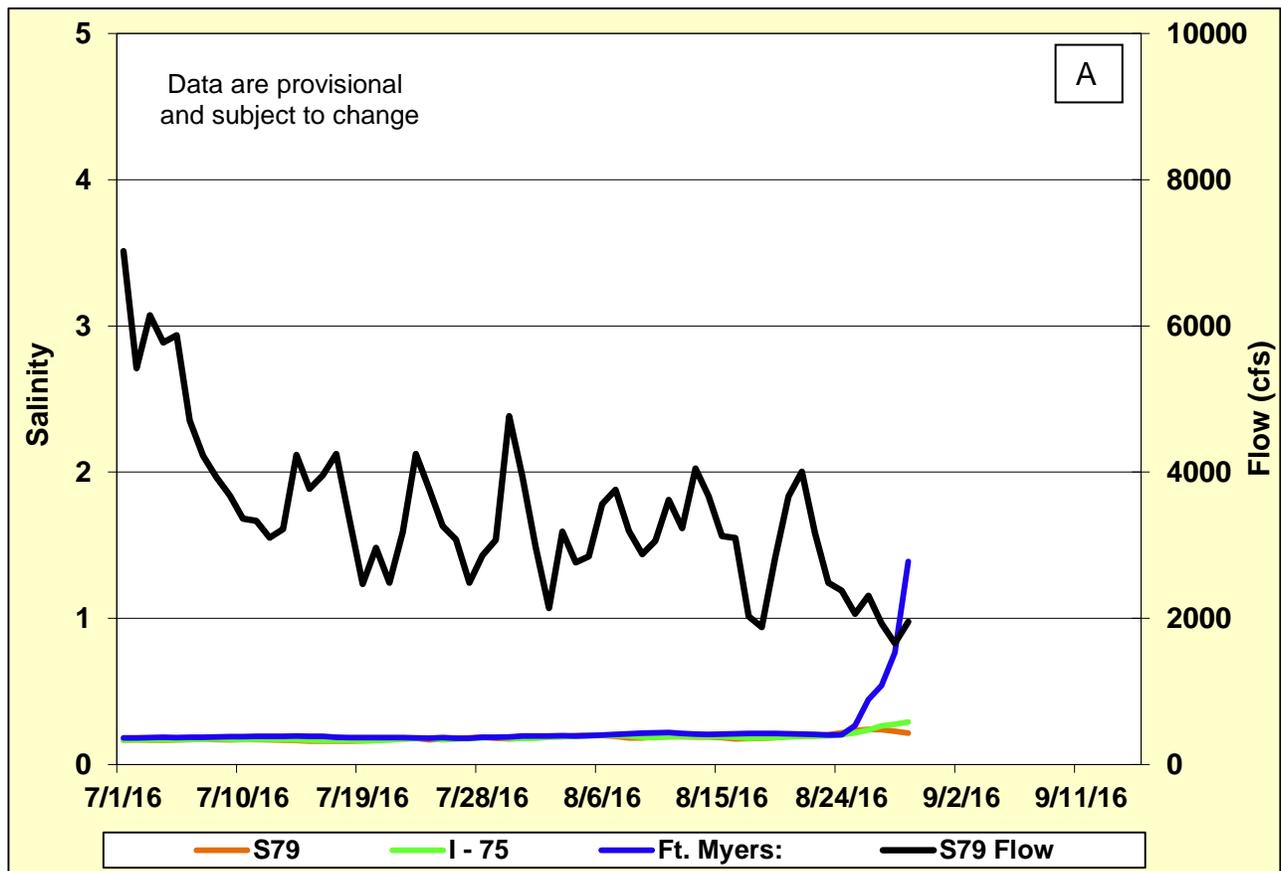


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

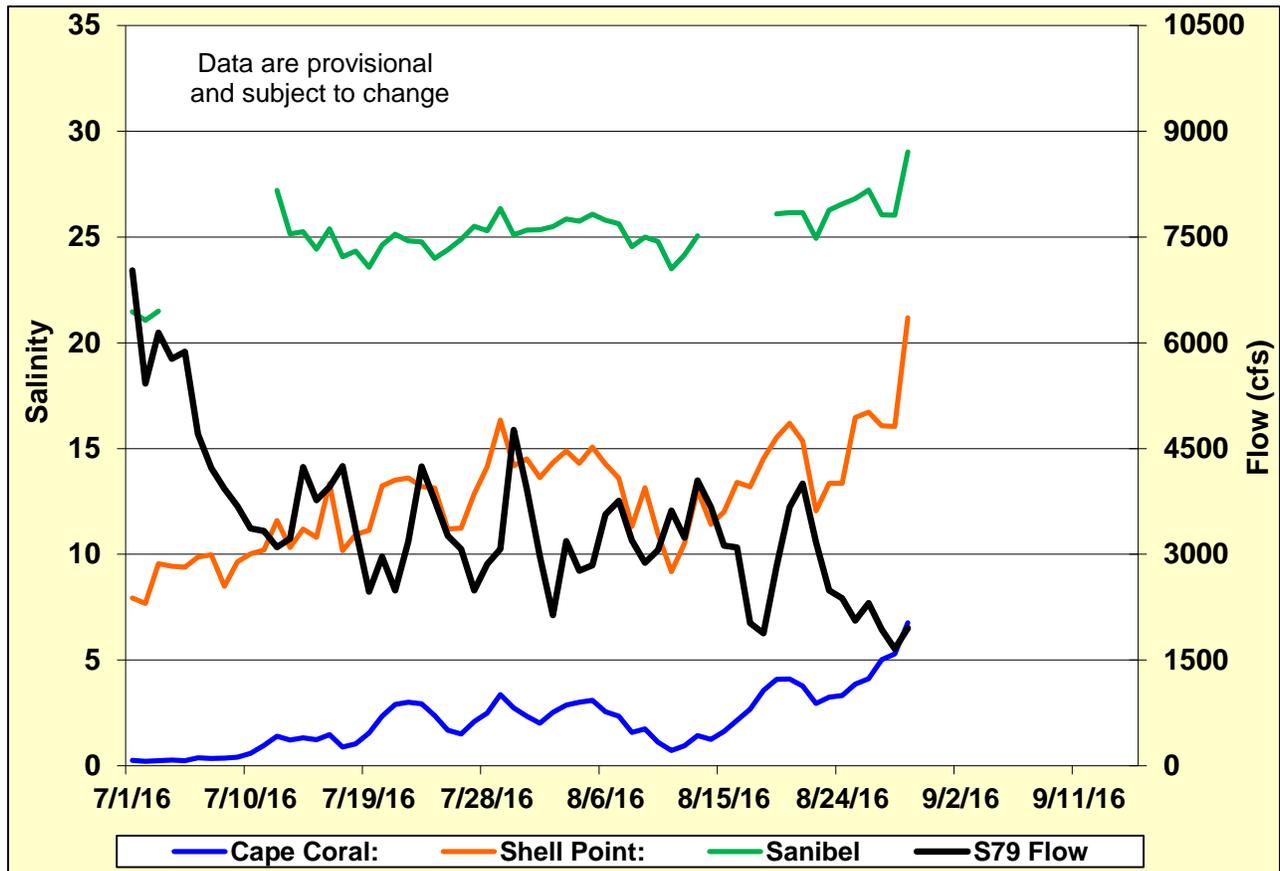


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

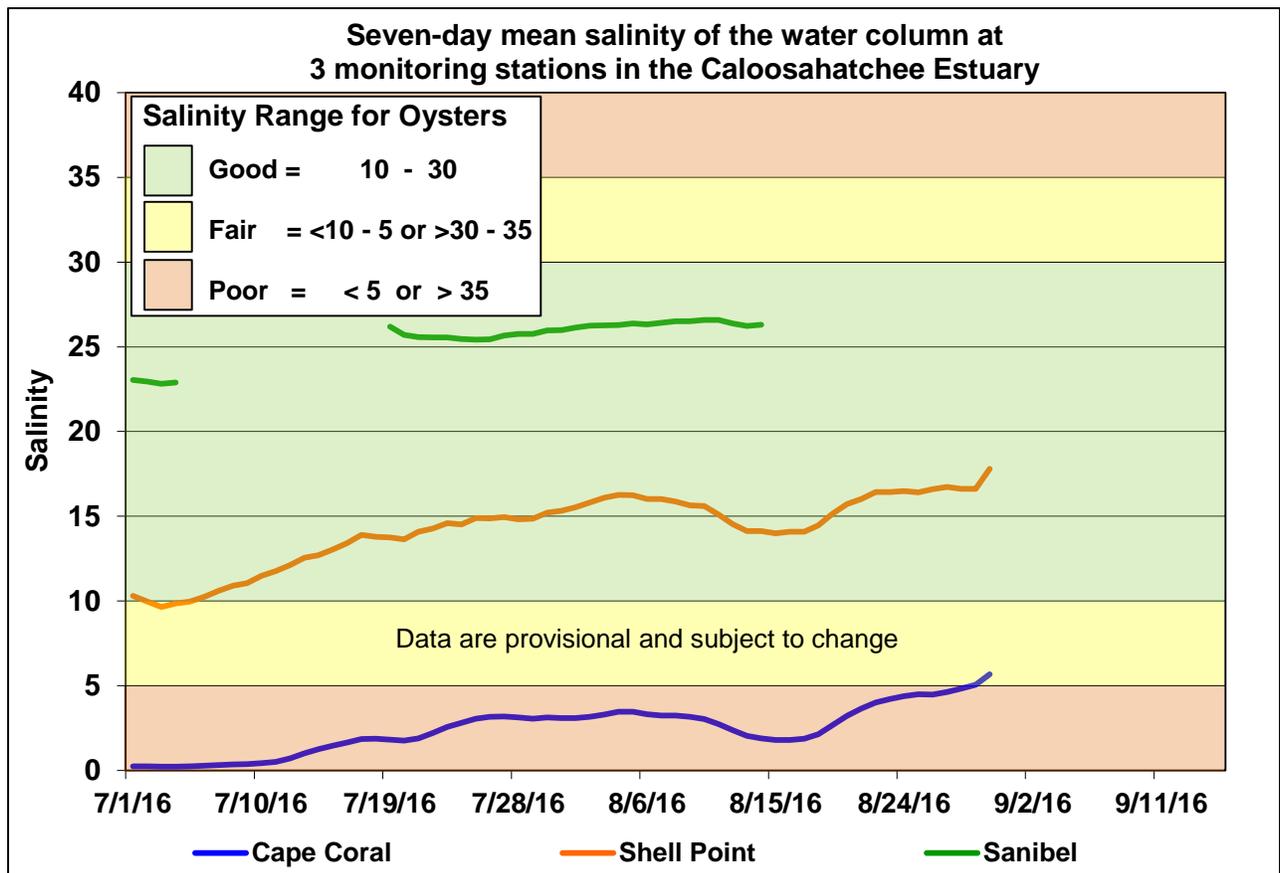


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

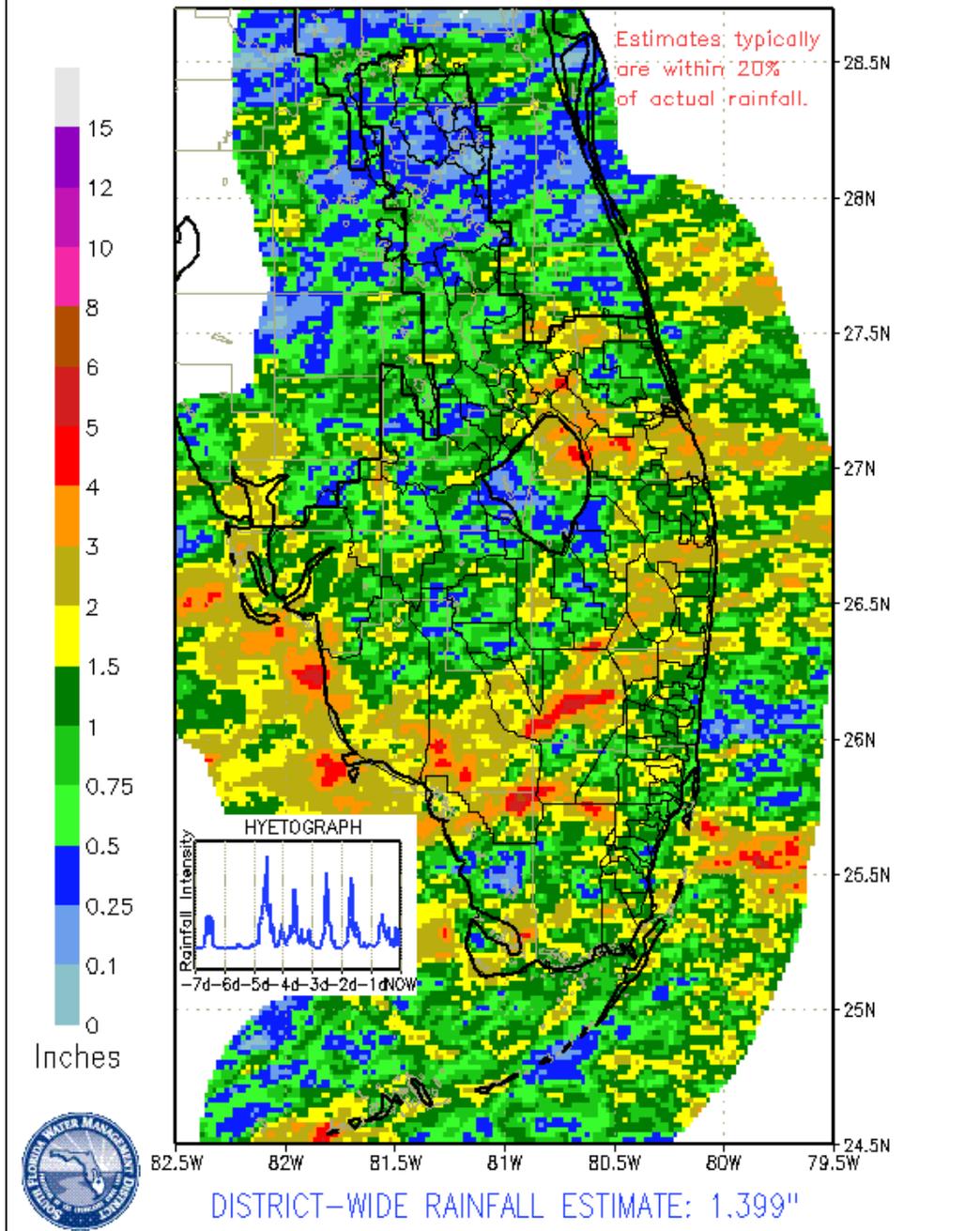
GREATER EVERGLADES

Rainfall was moderate last week throughout the region, with basin-wide averages 1.47 inches to 2.29 inches. The highest local rainfall of 5.90 inches occurred in WCA-3A. Pan evaporation was 1.66 inches, 22 percent above the pre-project average of 1.36 inches.

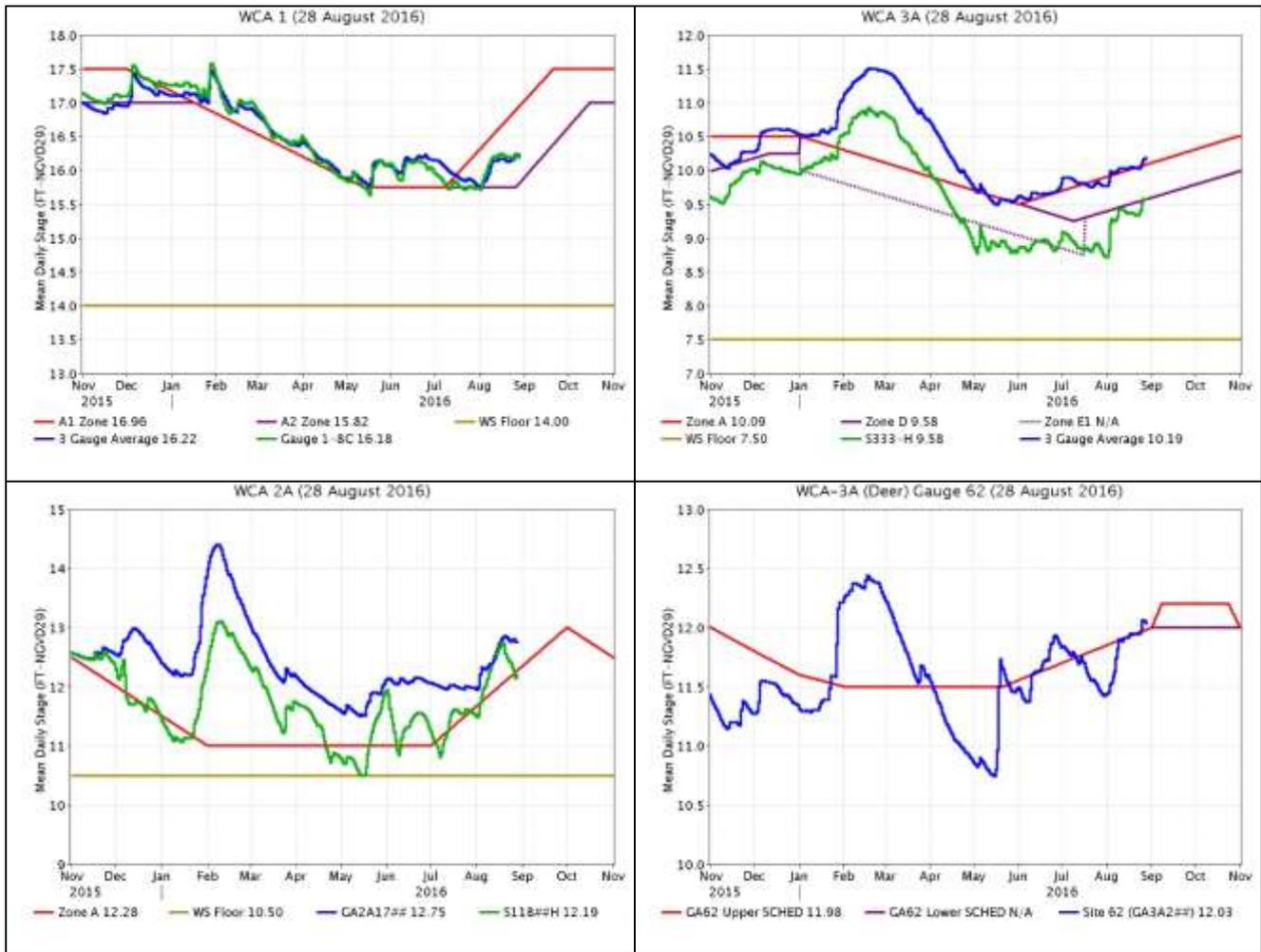
Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	2.22	0.07
WCA-2A	2.21	-0.04
WCA-2B	1.49	0.04
WCA-3A	2.29	0.16
WCA-3B	1.27	0.01
ENP	1.47	0.18

SFWMD PROVISIONAL RAINDAR 7-DAY RAINFALL ESTIMATES

FROM: 0530 EST, 08/22/2016 THROUGH: 0530 EST, 08/29/2016

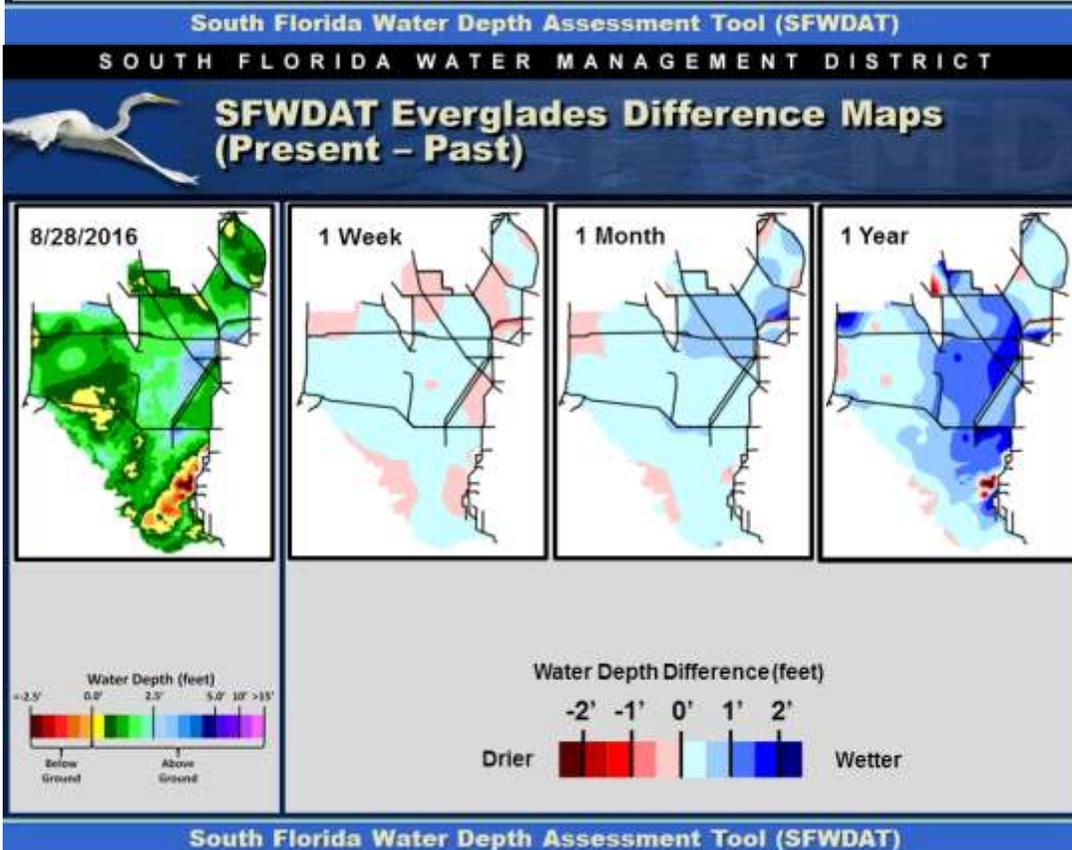
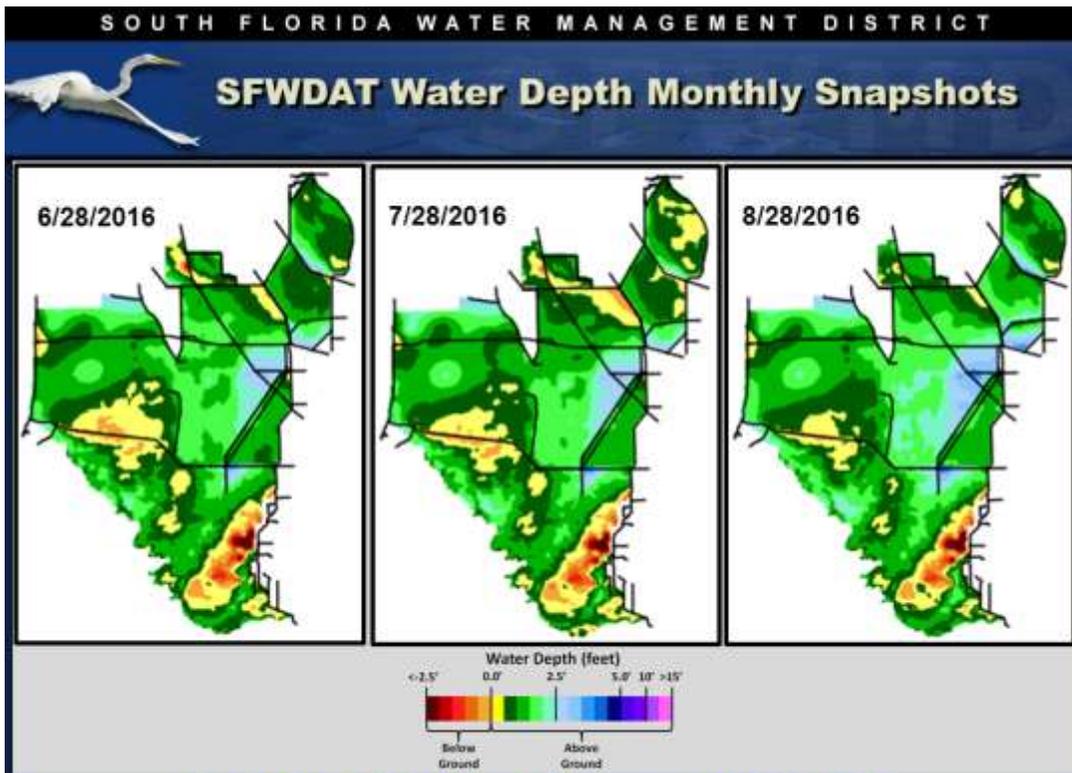


Regulation Schedules: Stages are above regulation for three of the four areas. The WCA-1 three-gauge average is below regulation by 0.74 feet. The other three are above schedule: WCA-2A stage is 0.47 feet above regulation; the WCA-3A three-gauge average stage is 0.10 feet above regulation; and, the northwestern WCA-3A gauge stage (gauge 62) is 0.05 feet above the upper schedule.



Water Depths and Changes: Water levels are higher than those in late July and June. Water depths at monitored gauges other than in WCA-2B range from 1.08 feet to 2.32 feet.

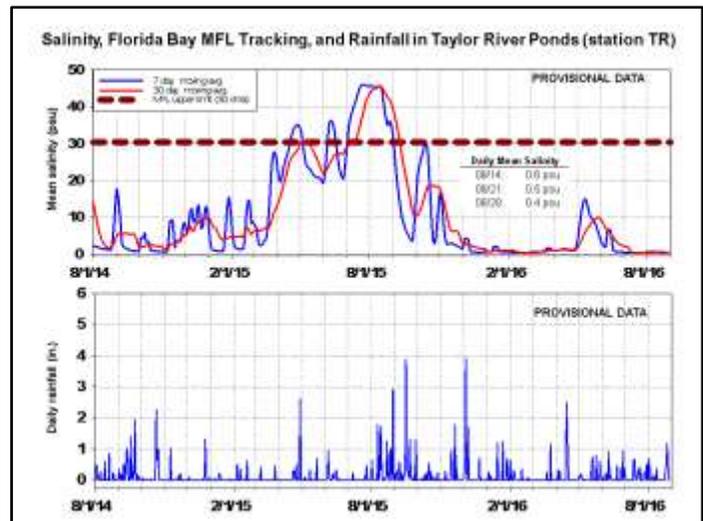
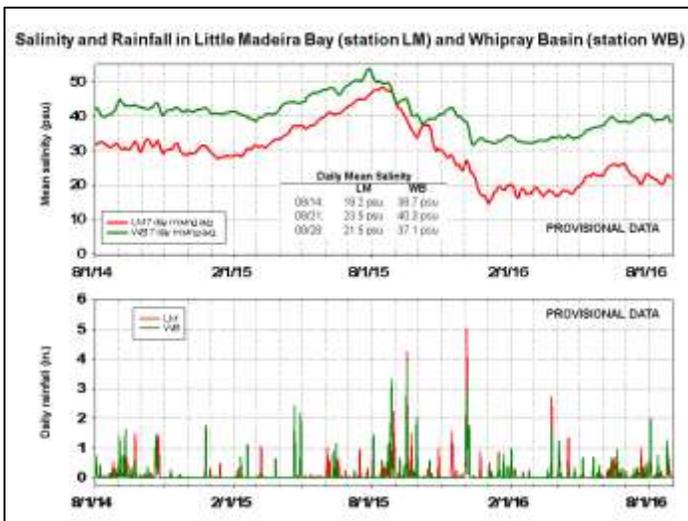
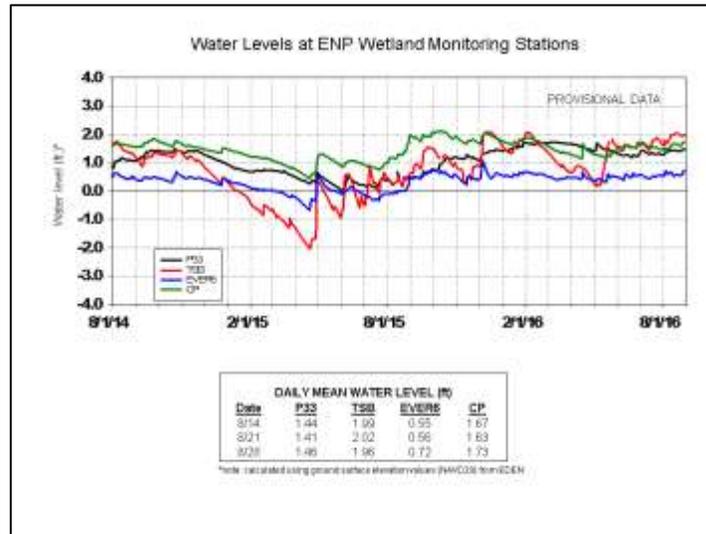
Stage changes were generally higher last week but lower in some areas. Individual gauge changes ranged from -0.06 feet (WCA-3B) to 0.32 feet (WCA-3A). Stages are higher than a month ago and higher to much higher than a year ago.



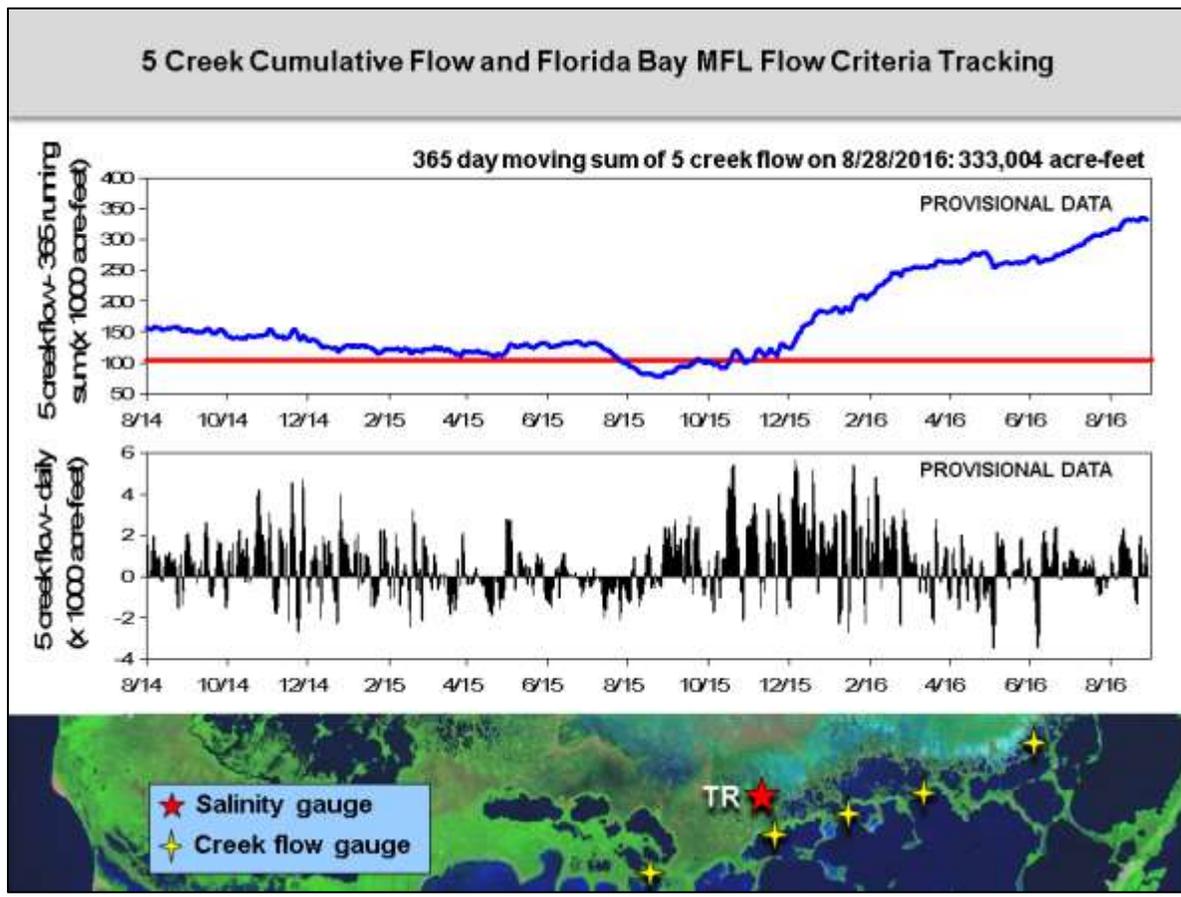
Everglades National Park (ENP) and Florida Bay: Stage changes were mixed last week. Most areas increased, while northern Taylor Slough decreased. Water levels in all areas are higher than a month ago and are average to four inches above average.

Salinities across Florida Bay are average to 6 psu above average. Daily average salinities still range from 18 to 38 psu with the highest salinity remaining in central Florida Bay.

The MFL sentinel site TR in the mangrove zone remains near fresh at 0.4 psu, and the 30-day moving average salinity at TR is also at a seasonal 0.6 psu.



The 365-day running sum of the cumulative flow from the five creeks feeding Florida Bay has increased again to 333,004 acre-feet (above the average of 257,628-acre feet). Creek flow is provisional data from the USGS and is highly variable.



Water Management Recommendations

- We recommend keeping water depths in southern WCA-3A below 2.5 feet throughout the wet season to protect tree island forests. The depth at gauge 65 is 2.32 feet.
- Ascension rates need to remain under 0.25 feet per week to protect habitat and wildlife, including apple snails, prey of the endangered snail kite.

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

Everglades Ecological Recommendations, Aug. 30, 2016 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages rose 0.02' to 0.15'	Rainfall, ET, management	Provide additional water to WCA-1. Limit ascension rates to a maximum of 0.25 ft/week.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
WCA-2A	Stage decreased - 0.04'	Rainfall, ET, management	Maintain ascension rates <0.25 ft/week.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails, prey for endangered snail kites.
WCA-2B	Stages rose 0.01' to 0.08'	Rainfall, ET, management	Follow normal seasonal practices. Limit ascension rates to extent possible with a maximum of 0.25 ft/week.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
WCA-3A NE	Stage rose 0.32'	Rainfall, ET, management	Increase inflow into northeastern WCA-3A. Increase ascension rates to extent possible with a maximum of 0.25 ft/week.	Ascension rates not exceeding 0.25'/week will protect habitat and wildlife including reproducing apple snails.
WCA-3A NW	Stage rose 0.07'	Rainfall, ET, management		
Central WCA-3A S	Stage rose 0.09'	Rainfall, ET, management	Limit ascension rates to extent possible with a maximum of 0.25 ft/week. Water depths at gauge 65 should remain below 2.5 feet over this upcoming wet season. 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. Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
Southern WCA-3A S	Stage rose 0.15'	Rainfall, ET, management		
WCA-3B	Stages changed - 0.06' to 0.06'	Rainfall, ET, management	Follow normal seasonal practices. Limit ascension rates to extent possible with a maximum of 0.25 ft/week.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
ENP-SRS	Stage rose 0.18'	ET, rainfall, topography, management	Make discharges to the Park according to the E RTP rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities.
ENP-CSSS habitats	S-12A and S-12B have been opened.	Rainfall, ET, management	Follow rainfall plan for releases. Gradual reduction in flows through S333, and the S-12 structures when they decrease is recommended (stepping down over several days). Follow guidance in C-111 western spreader canal project operations manual.	Sparrows have ceased breeding for 2016. Future operations need to continue to provide appropriate hydrological and habitat conditions for breeding in subpopulation A.
Taylor Slough	Average to 4 inches above average	Rain, ET, inflows	Move water southward as needed	Provide freshwater buffer for ecosystems and maintain low salinity conditions downstream
FB- Salinity	Average to 6 psu above average	Rain, ET, inflows, wind	Move water southward as needed	Maintain lower salinity levels.