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, Assistant Executive Director, Executive Office Staff

FROM: SFWMD Staff Environmental Advisory Team

DATE: August 31, 2022

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Dry conditions are expected on Wednesday over south and central Florida. A low amplitude tropical wave will move into the area, increasing moisture levels slightly, but total SFMWD rainfall will be below normal for this time of the year. Even drier conditions are possible on Sunday and Monday when a subtropical ridge restrengthens over the area and the moisture retreats west. A predominately easterly flow from the subtropical ridge will result in very dry conditions in the east this week, with wetter conditions in the west where there is enhanced surface convergence along the sea breeze boundary. Thus much, much below normal weekly rainfall is expected for the 7-day period ending next Tuesday morning.

Kissimmee

Stage in East Lake Toho has almost risen to the regulation schedule; flow at S-61 is being adjusted to hold stage in Lake Toho at the regulation schedule. Flow at S-65 remained at 0 cfs to allow KCH stage to rise slowly; S-65A discharge was increased to 1,100 cfs briefly to control a rainfall-driven stage rise in Pool A. With S-65A discharge remaining below bankfull, water depth on the Kissimmee River floodplain was steady over the week, with a mean depth of 0.14 feet on August 28, 2022. The concentration of dissolved oxygen in the Kissimmee River decreased over the week to 2.2 mg/L.

Lake Okeechobee

Lake Okeechobee stage was 12.59 feet NGVD on August 28, 2022, with water levels 0.41 feet lower than a month ago. Lake stage was in the Beneficial Use sub-band and in the ecological envelope, and less than half a foot above the Water Shortage Management band. Average daily inflows (excluding rainfall) and outflows (excluding evapotranspiration) increased from the previous week**.** The most recent satellite image (August 28, 2022) from NOAA's Harmful Algal Bloom Monitoring System showed that bloom potential is medium to high in all (except for southwestern) nearshore areas of the Lake. The August 15-17 routine phytoplankton monitoring survey on the Lake revealed that 44% of the sites had chlorophyll *a* concentration above 40 µg/L, with the highest

value (127 µg/L) recorded at the KBARSE. All sites had total microcystins concentration below detection limit. Cylindrospermopsin was detected at four locations with the highest concentration detected at NES135 (0.33 µg/L). All values were below the U.S.EPA standard for recreational waters (15 µg/L). Communities at 66% of the sites were mixed, at 22% of the sites were dominated by *Microcystis aeruginosa*, at 6% of sites by *Cylindrospermopsis raciborskii*, and at 3% of the sites they were co-dominated by *C. raciborskii* and *Dolichospermum circinale.*

Estuaries

Total inflow to the St. Lucie Estuary averaged 362 cfs over the past week with no flow coming from Lake Okeechobee. Mean salinities increased at all sites in the estuary over the past week. Salinity in the middle estuary was within the optimal range (10-25) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 1,452 cfs over the past week with 114 cfs coming from the Lake. Mean surface salinities increased at all sites in the estuary over the past week. Salinities were in the optimal range (0-10) for tape grass in the upper estuary. Salinities were in the optimal range (10-25) for adult eastern oysters at Cape Coral and in the stressed range at Shell Point and Sanibel (>25).

Stormwater Treatment Areas

For the week ending Sunday, August 28, 2022, no Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2023 (since May 1, 2022) is approximately 12,400 ac-feet. The total amount of inflows to the STAs in WY2023 is approximately 423,000 ac-feet. Most STA cells are near or below target-stage. STA-1E Western Flow-way is offline for post-construction vegetation grow in. Additionally, STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown and STA-2 Flow-way 2 is offline for construction activities. Operational restrictions are in effect in STA-1E Central and Eastern Flow-ways, STA-1W Eastern, Western, and Northern Flow-ways, and STA-2 Flow-ways 3 and 4 for vegetation management activities. This week, there is no capacity for Lake releases in the STAs.

Everglades

Rates of stage change moved into the “fair” or “good” category in many regions of the EPA. However, dry conditions dominate the northern portions of all the WCAs, and WCA-3A NE ecology remains in the poor category. Recently reported wildfire in south-central WCA-3B, details are emerging, but the fire was unlikely to damage peat soils as surface water was present. Taylor slough stages were stable last week and remain just above average. Salinities remain above average across Florida Bay and continue to rise. A continuation of dry conditions (La Nina) could result in undesirable future salinity conditions.

Biscayne Bay

Total inflow to Biscayne Bay averaged 140 cfs and the previous 30-day mean inflow averaged 228 cfs. The seven-day mean salinity was 32.7 at BBCW8, below the preferred maximum salinity of 35, and 35.3 at BBCW10, which slightly exceeds the preferred maximum salinity of 35. Salinity data provided as a courtesy by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On August 28, 2022, lake stages were 56.4 feet NGVD (0.1 feet below schedule) in East Lake Toho, 53.7 feet NGVD (0.2 feet above schedule) in Lake Toho, and 50.3 feet NGVD (0.7 feet below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**).

Lower Kissimmee

Discharges to the Kissimmee River were reduced to 0 cfs at S-65 and S-65A on Wednesday June 22, 2022 to slow the rate of stage decline in KCH. On August 28, 2022, discharge at S-65 was still 0 cfs; discharge at S-65A was declining after being increased briefly to 1,100 cfs to control the rise in S-65A headwater stage. Discharges from the Kissimmee River were 760 cfs at S-65D and 660 cfs at S-65E (**Table KB-2**). Headwater stages were 47.0 feet NGVD at S-65A and 26.2 feet NGVD at S-65D on August 28, 2022. Over the week ending August 28, 2022, 3.9 inches of rainfall fell over the S-65A basin; S-65A discharge was increased to 1,100 cfs to manage rising stage in Pool A.With the increase in discharge and local runoff, mean river channel stage in the Kissimmee River increased by 3.6 ft NGVD (**Figure KB-4**). With S-65A discharge below bankfull, water depth on the Kissimmee River floodplain remained steady over the week, with a mean depth of 0.14 feet on August 28, 2022 (**Figure KB-5**). The concentration of dissolved oxygen in the Kissimmee River decreased over the last week to 2.2 mg/L (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Encourage stage in KCH to rise gradually by continuing 0 cfs discharge at S-65 and S-65A except when S-65A flow can be increased to manage stage in Pool A. Note general guidance for discharge and maximum rates of change in discharge (**Figure KB-7**).

Table KB-1. Average discharge for the preceding seven days and Sunday's average daily stage and departures from KCL flood regulation or temporary schedules. All data are provisional.

Water Body	Structure	Stage Monitoring Site	7-Day Average Discharge (cfs)	Lake Stage (feet NGVD)[a]	Schedule Type[b]	Schedule Stage (feet NGVD)	Departure from Regulation (feet)	
							8/21/22	*8/14/22*
Lakes Hart and Mary Jane	S-62	LKMJ	230	60.0	R	60.0	0.0	0.1
Lakes Myrtle, Preston and Joel	S-57	S-57	48	61.1	R	61.0	0.1	0.0
Alligator Chain	S-60	ALLI	0	62.8	R	63.2	-0.4	-0.6
Lake Gentry	S-63	LKGT	0	60.5	R	61.0	-0.5	-0.9
East Lake Toho	S-59	TOHOE	7	56.4	R	56.5	-0.1	-0.6
Lake Toho	S-61	TOHOW S-61	570	53.7	R	53.5	0.2	0.1
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	0	50.3	R	51.0	-0.7	-1.2

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

b. A: projected recession line; R: USACE regulation schedule; S: temporary recession target line; T: temporary schedule; NA: not applicable or not available.

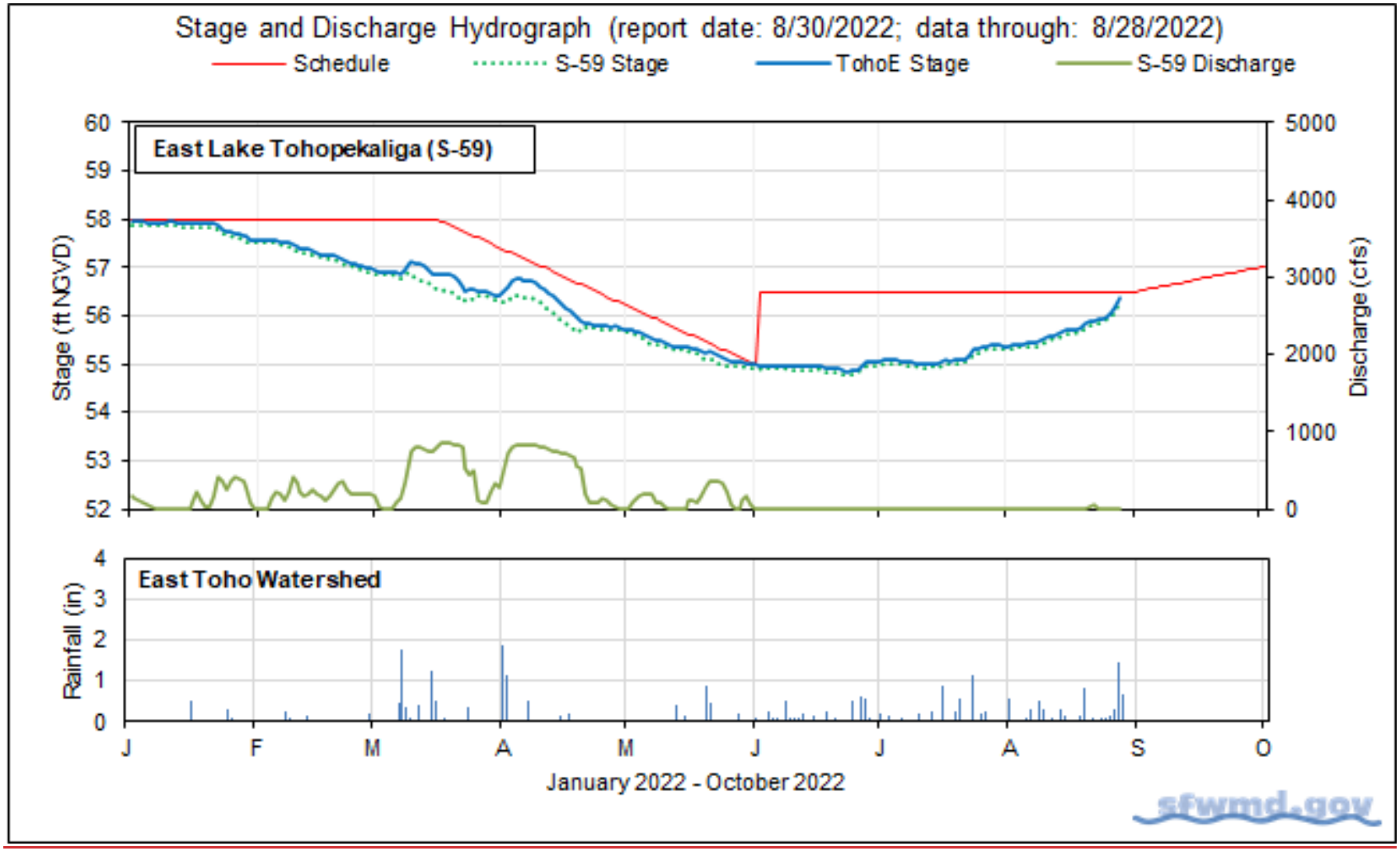


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

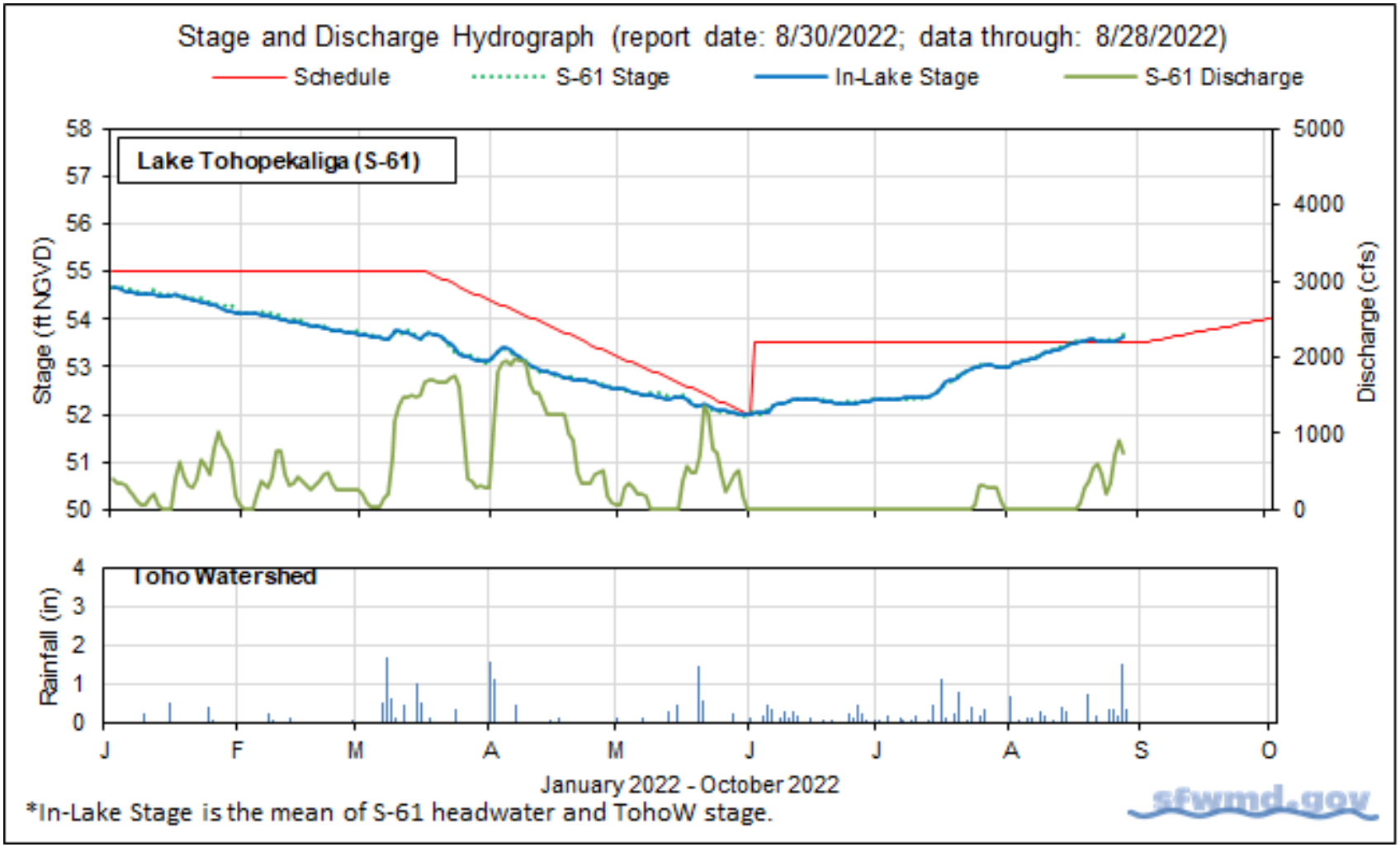


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

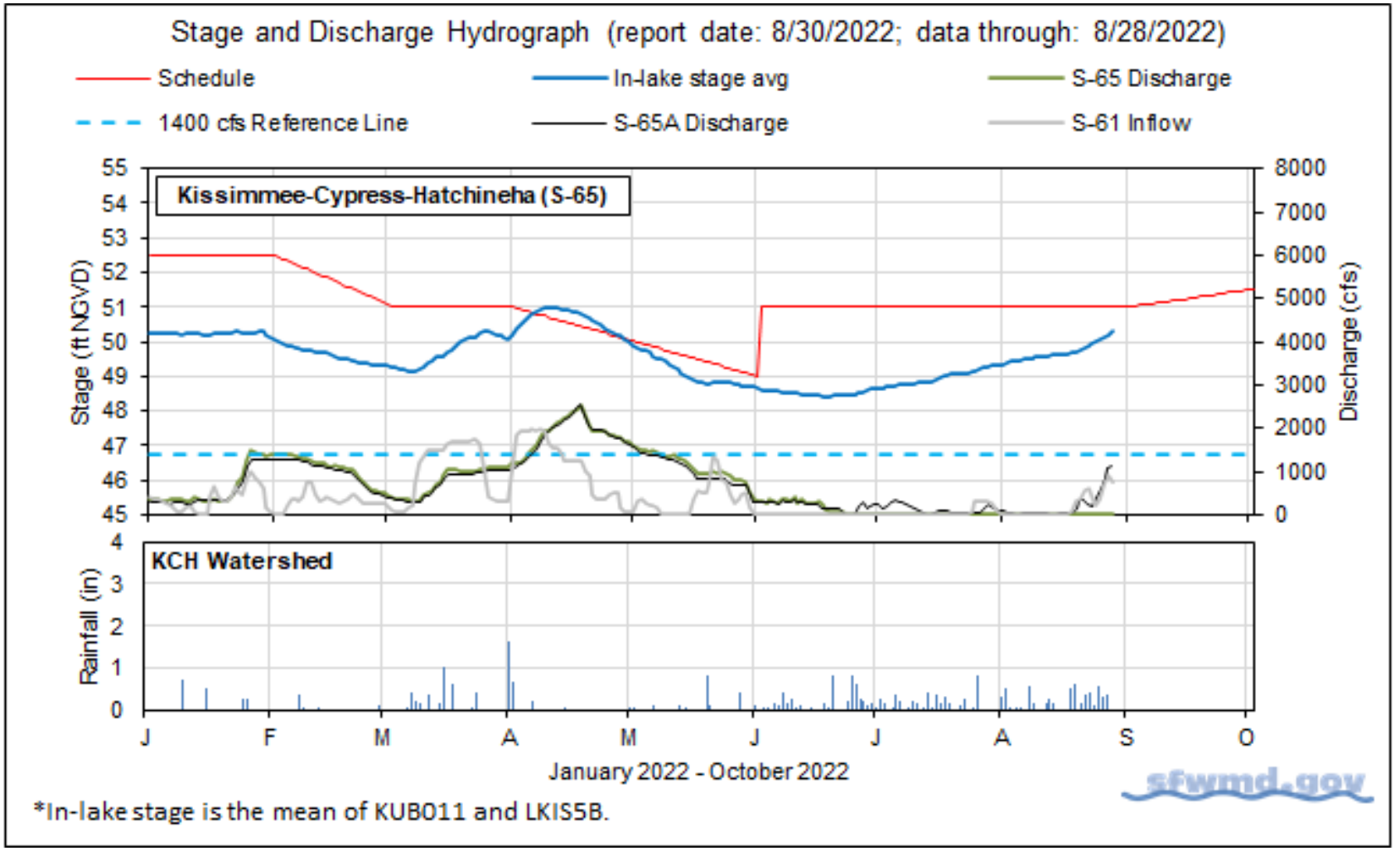


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

Table KB-2. One- and seven-day average discharge and stage at Lower Kissimmee basin structures, river channel dissolved oxygen concentrations and water depths in the Phase I area floodplain. All data are provisional.

Metric	Location	Daily Average	Average for Previous Seven Day Periods			
		8/28/22	8/28/22	8/21/22	8/14/22	8/7/22
Discharge	S-65	0	0	0	0	0
Discharge	S-65A[a]	1,100	630	130	29	32
Headwater Stage (feet NGVD)	S-65A	47.0	47.0	46.5	46.4	46.6
Discharge	S-65D[b]	760	400	80	80	160
Headwater Stage (feet NGVD)	S-65D[c]	26.2	26.2	26.2	26.2	26.2
Discharge (cfs)	S-65E[d]	660	380	86	86	150
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	2.2	3.2	3.6	3.5	3.4
Mean depth (feet) [f]	Phase I floodplain	0.14	0.14	0.15	0.14	0.13

a. Combined discharge from main and auxiliary structures.

b. Combined discharge from S-65D, S-65DX1 and S-65DX2.

c. Average stage from S-65D and S-65DX1.

d. Combined discharge from S-65E and S-65EX1.

e. Dissolved oxygen is the average of values from sondes KRBN, PC62, PC33, PD62R and PD42R.

f. One-day spatial average obtained from the South Florida Water Depth Assessment Tool (SFWDAT).

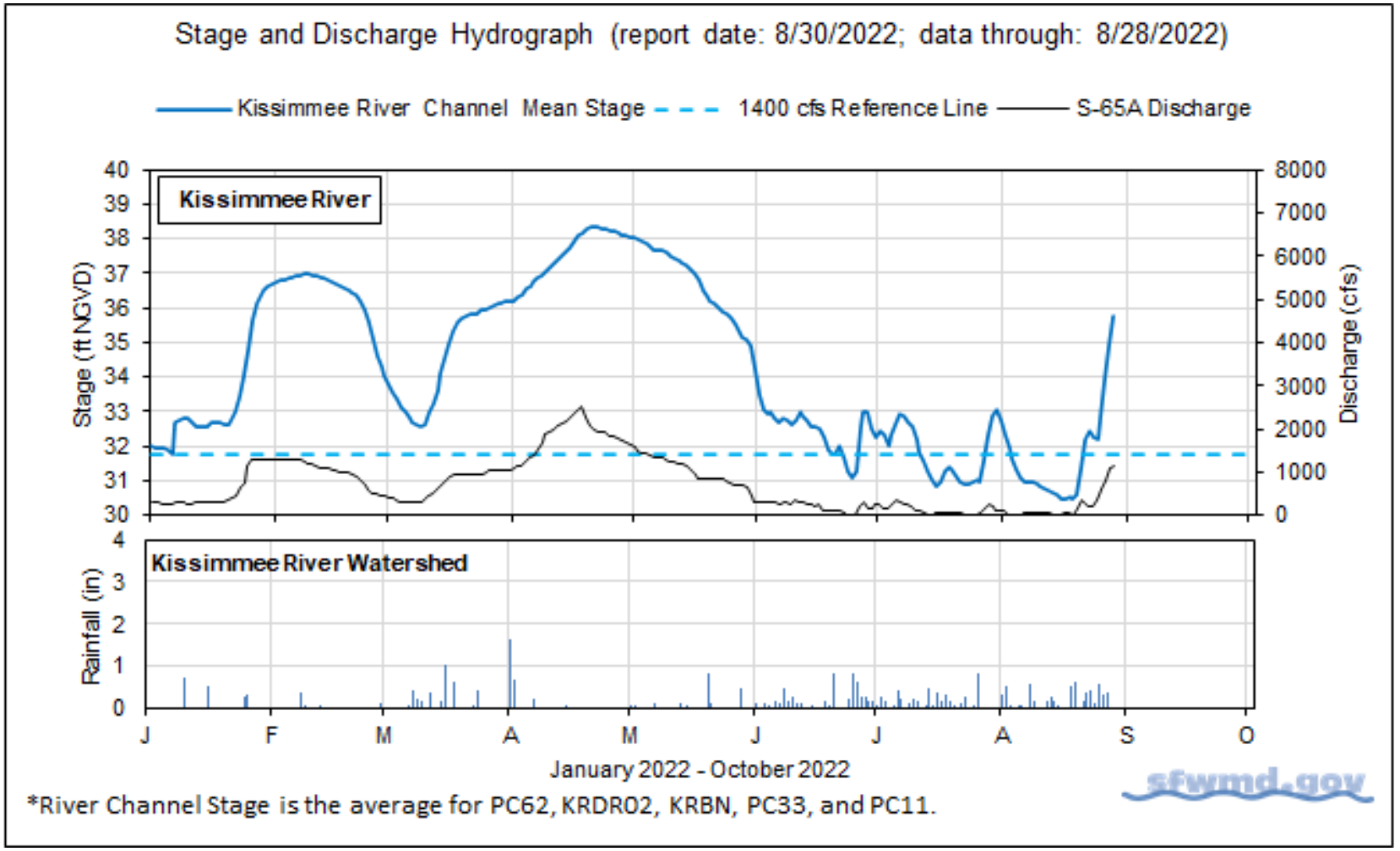


Figure KB-4. Kissimmee River stage, discharge and rainfall.

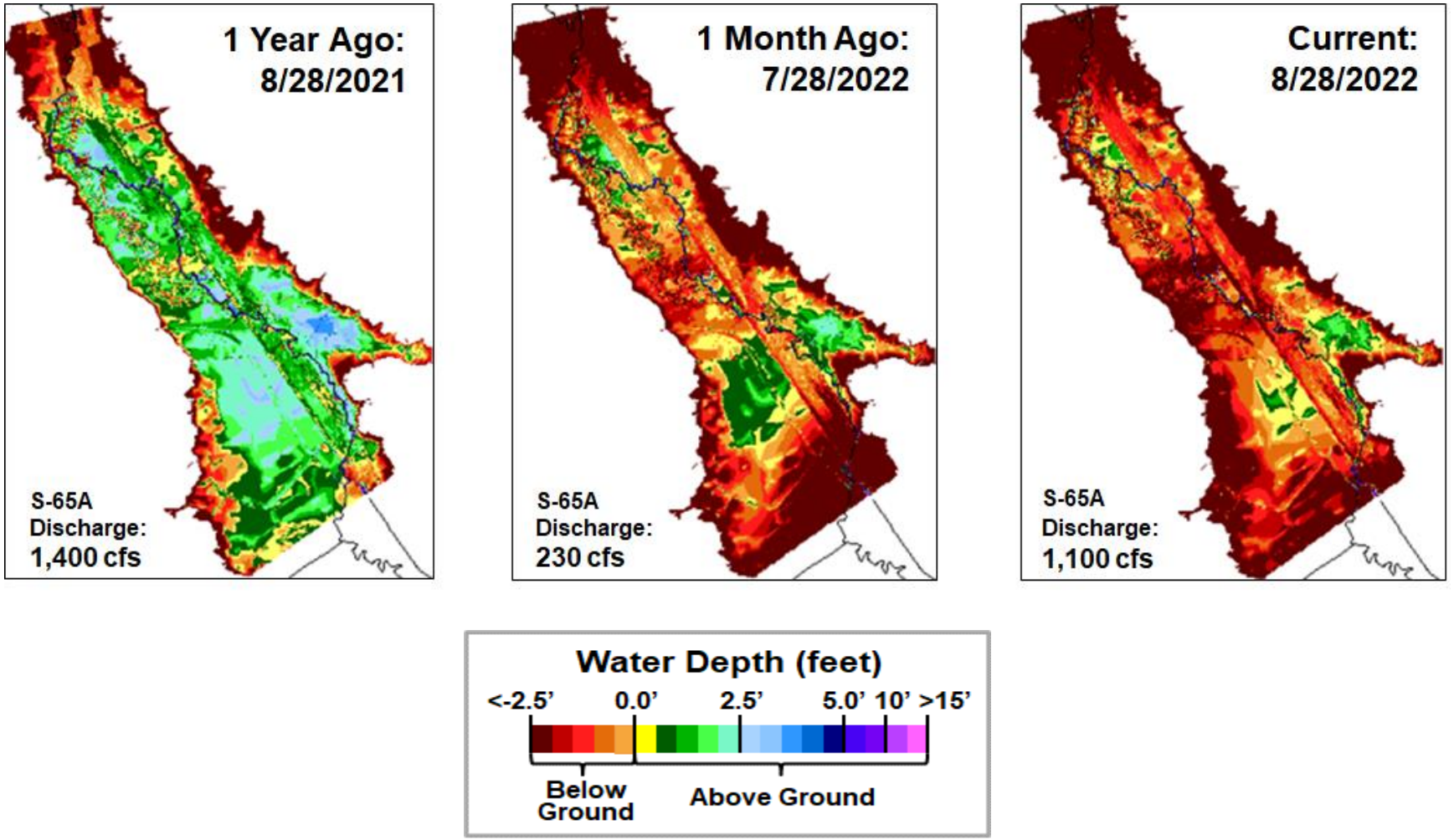


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

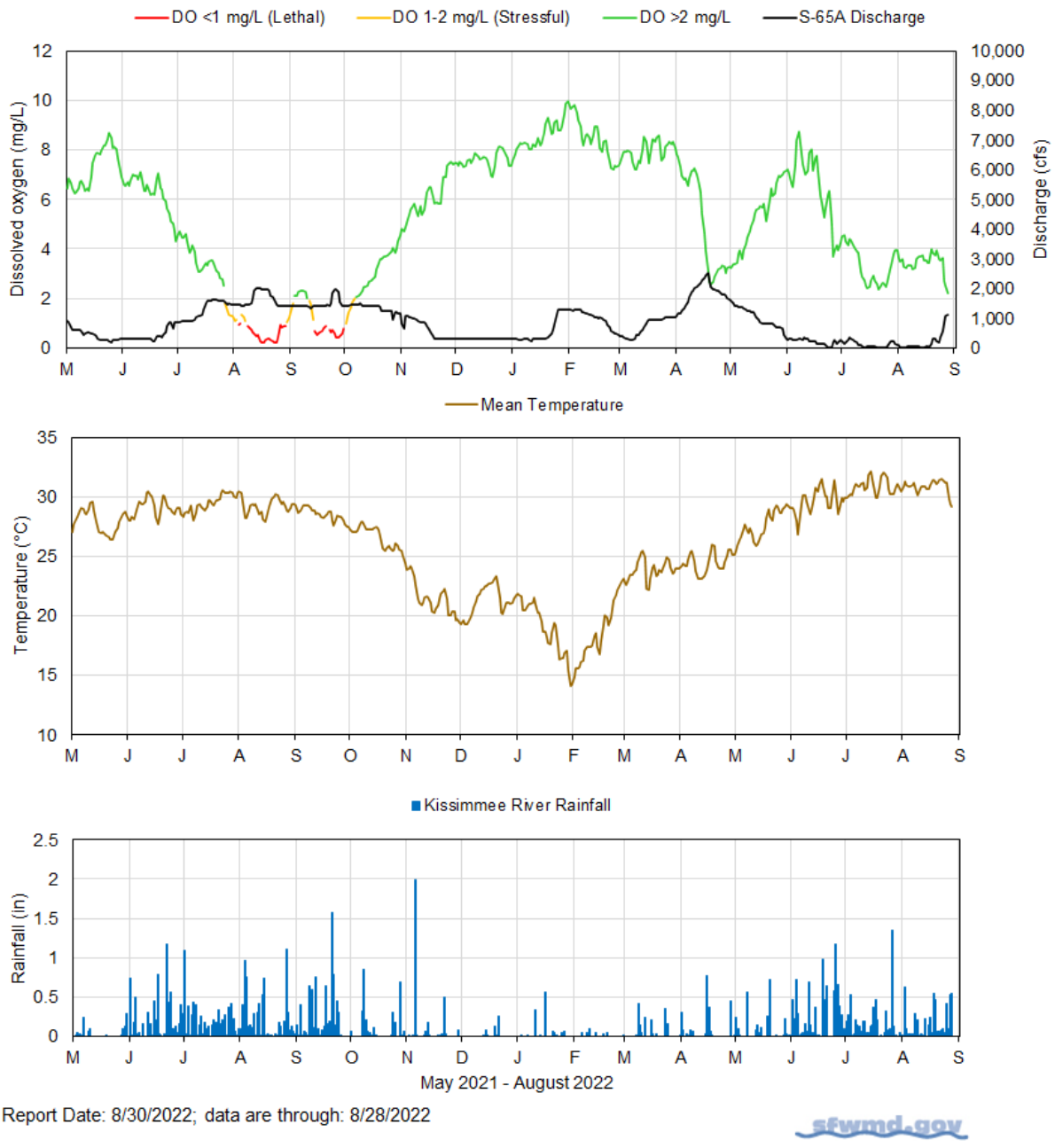


Figure KB-6. Restored Kissimmee river channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of four stations reporting this week. Rainfall values are daily totals for Kissimmee River (Pool BCD) AHED watershed.

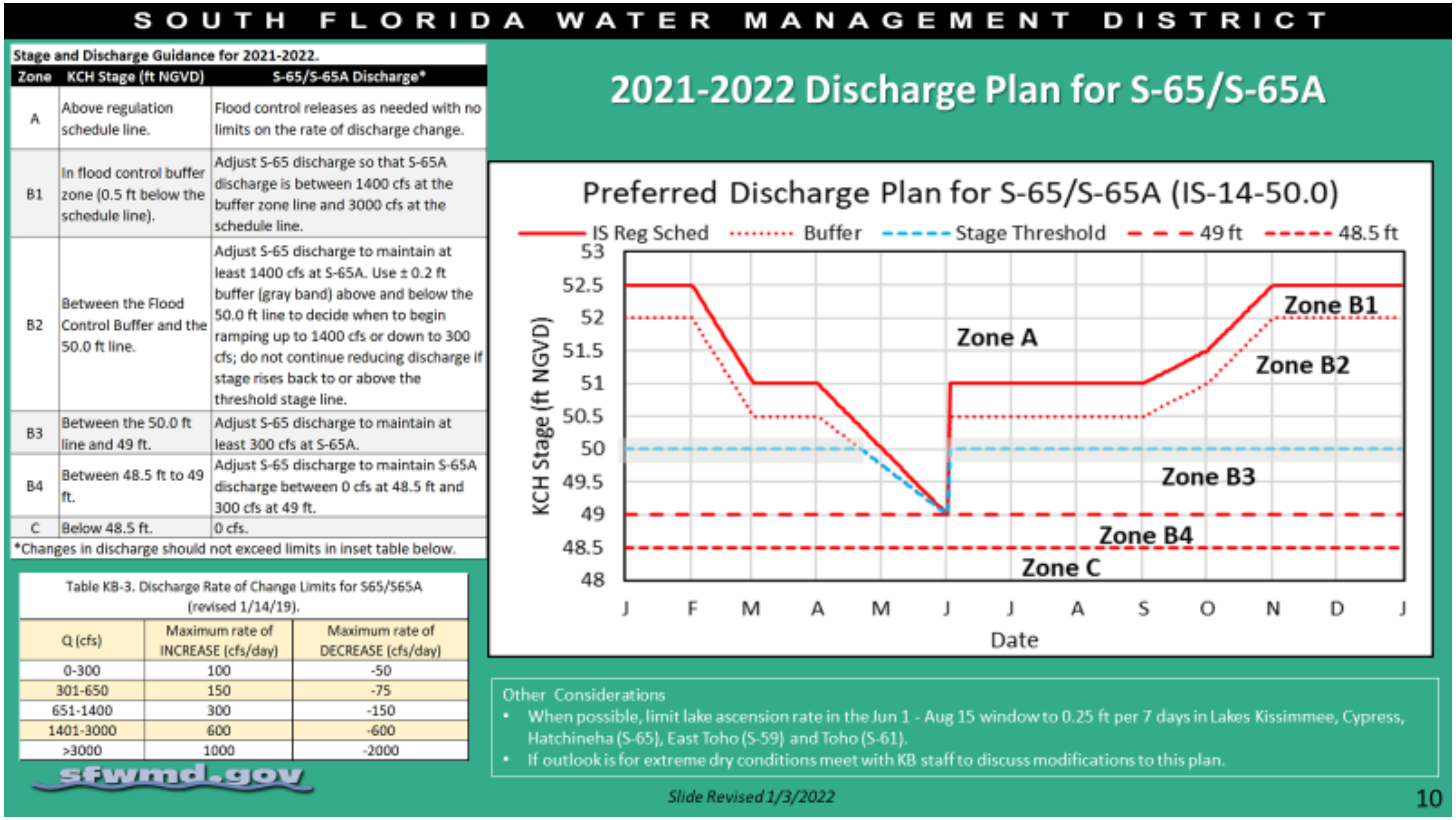


Figure KB-7. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 12.59 feet NGVD on August 28, 2022, with water levels 0.41 feet lower than a month ago (**Figure LO-1**). Lake stage was in the Beneficial Use sub-band (**Figure LO-2**) and less than half a foot above the Water Shortage Management band. Lake stage remained within the ecological envelope where it has been for more than 90% of 2022 (**Figure LO-3**). According to NEXRAD, 0.86 inches of rain fell directly on the Lake last week.

Average daily inflows (excluding rainfall) increased from the previous week, going from 247 cfs to 465 cfs. Average daily outflows (excluding evapotranspiration) increased, going from 932 cfs to 1,144 cfs. The highest inflow came from the Kissimmee River/C-38 Canal via the S-65E and S-65EX1 structures (375 cfs). Outflows to the west via the S-77 into the C-43 Canal averaged 114 cfs, to the southeast via the S-271 into the L-8 Canal was 132 cfs, and to the south via S-350 structures was 898 cfs. There was no outflow to the east via the S-308 structure. **Figures LO-4 and LO-5** show the combined average daily inflows and outflows for the Lake over the past eight weeks, and average inflows and outflows last week, respectively. These data are provisional and are subject to change.

The most recent satellite image (August 28, 2022) from NOAA's Harmful Algal Bloom Monitoring System showed that bloom potential was medium to high in the northern region, and western and southwestern nearshore areas of the Lake (**Figure LO-6**). The bloom potential in the northern region of the Lake decreased last week compared to the previous week. Prevailing winds were from the western, eastern, and southeastern directions. The August 15-17 routine phytoplankton monitoring survey on the Lake revealed that 44% of the sites had chlorophyll *a* concentration above 40 µg/L. The highest value (127 µg/L) was recorded at the KBARSE location in the northwestern part of the Lake. Communities at 66% of the sites were mixed, at 22% of the sites were dominated by *Microcystis aeruginosa*, at 6% of sites by *Cylindrospermopsis raciborskii*, and at 3% of the sites they were co-dominated by *C. raciborskii* and *Dolichospermum circinale*. All sites had total microcystins concentration below detection limit (**Figure LO-7)**. Cylindrospermopsin toxin was detected at the four locations in the northeastern and northwestern nearshore areas of the Lake. The highest concentration of cylindrospermopsin was detected at NES135 (0.33 µg/L). All values were below the U.S.EPA standard for recreational waters (15 µg/L).

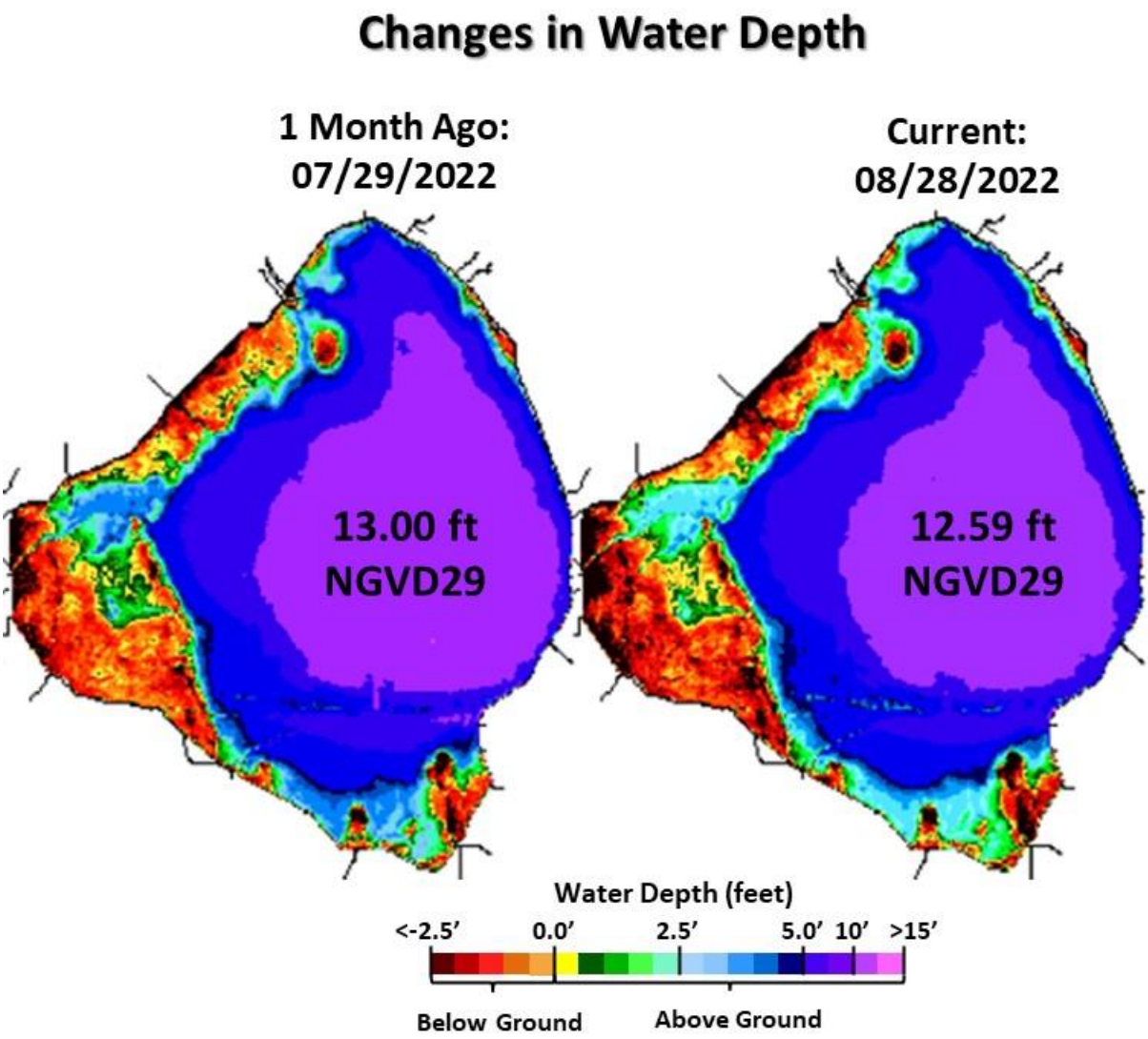


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

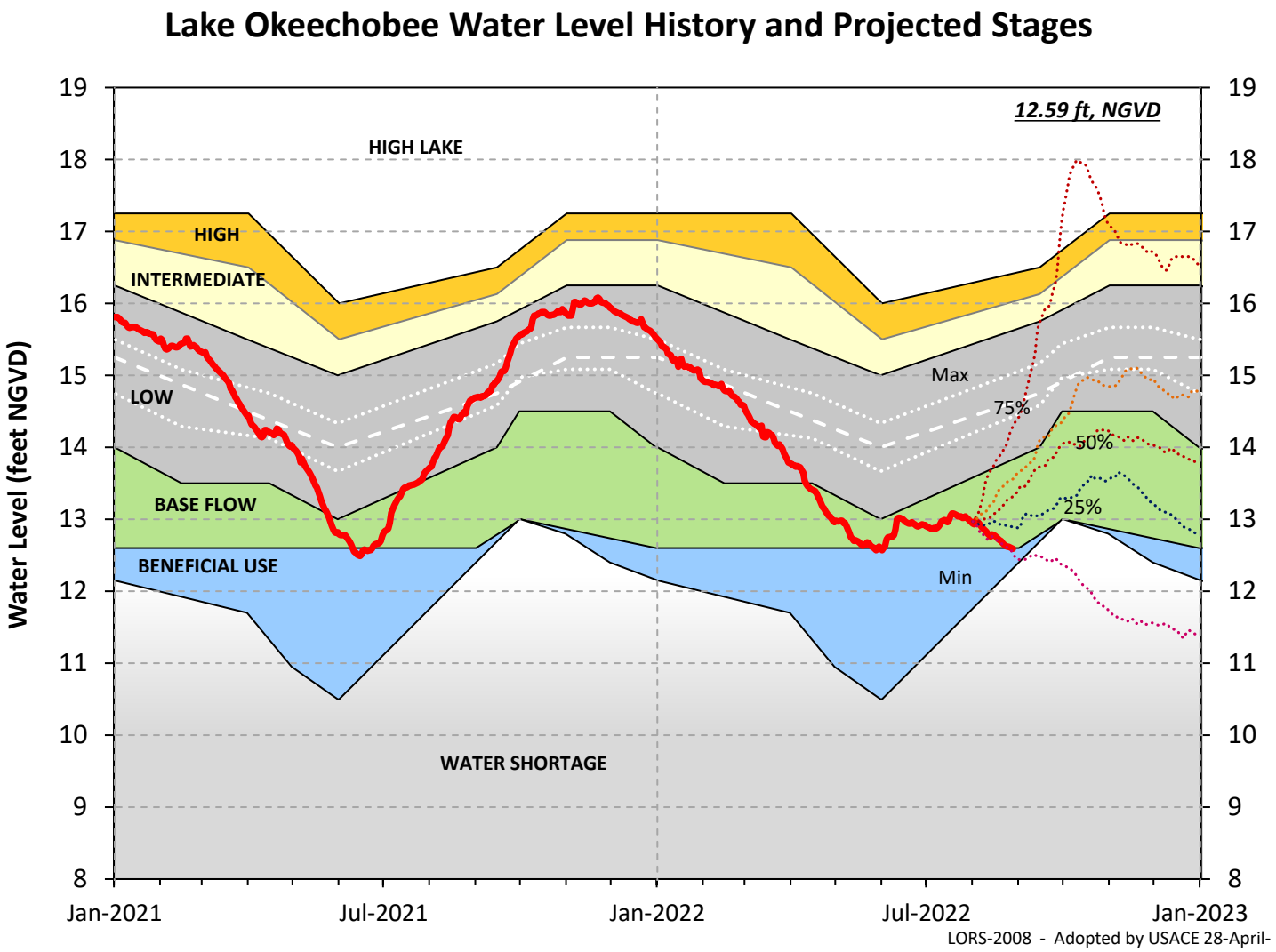


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis.

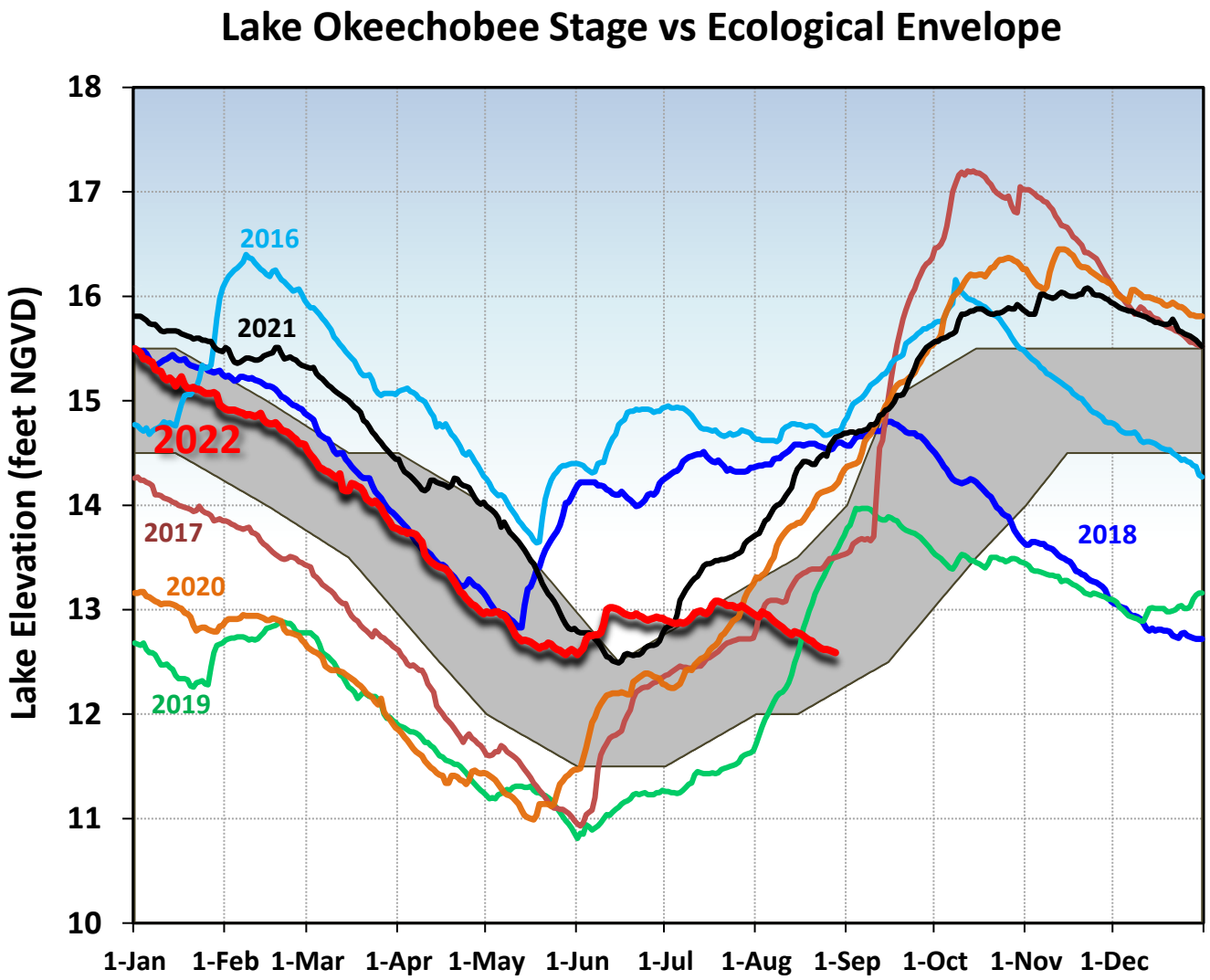


Figure LO-3. The prior six years of annual stage hydrographs for Lake Okeechobee in comparison to the ecological envelope.

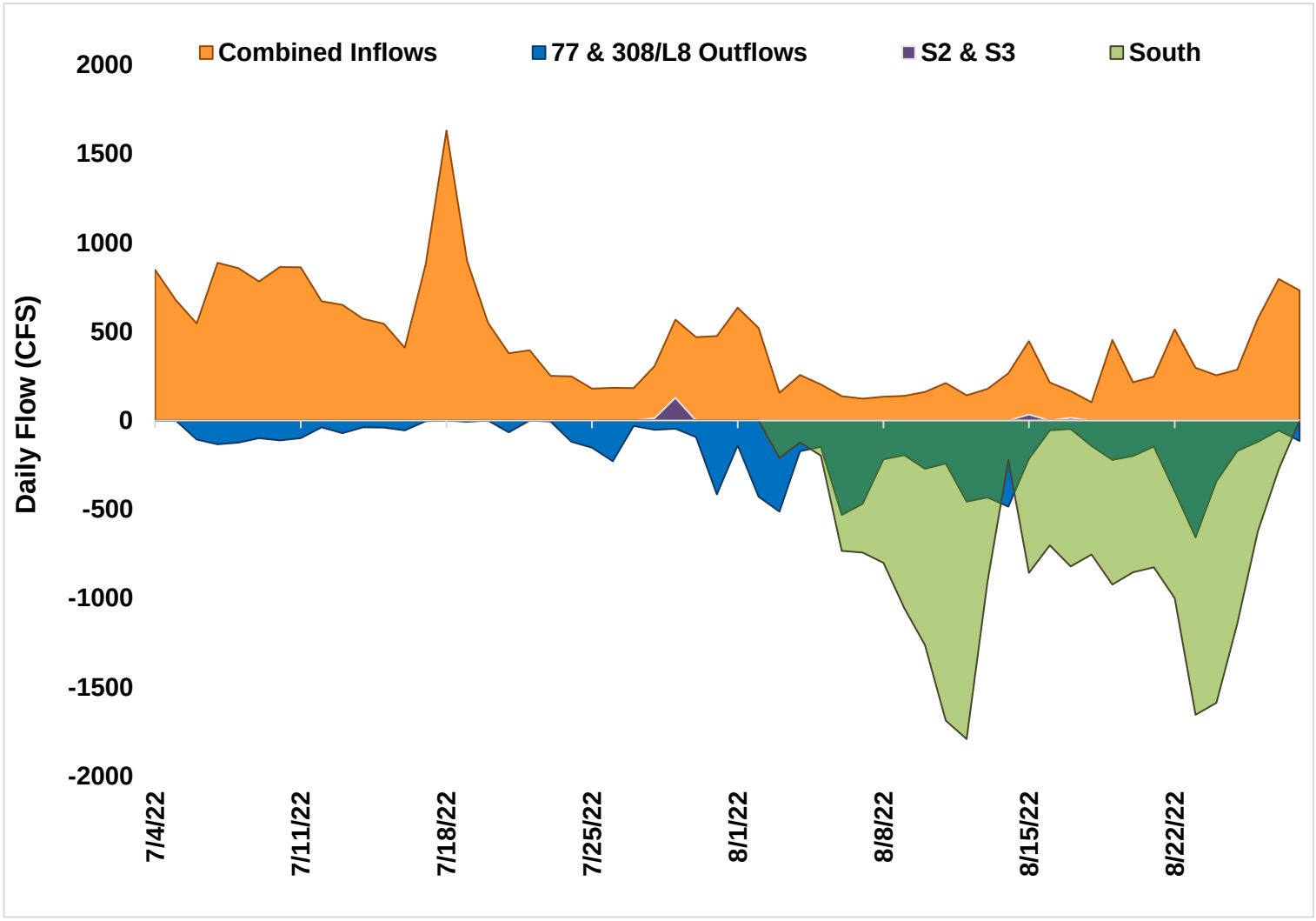


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from Lake Okeechobee into the L-8 or C-44 canals are included with outflows. Inflows are shown as positive values; outflows are negative. Outflows through the S-77 (Caloosahatchee) and S-308 (C-44 Canal) structures are based on downstream gauges to include flows to lock openings for navigation.

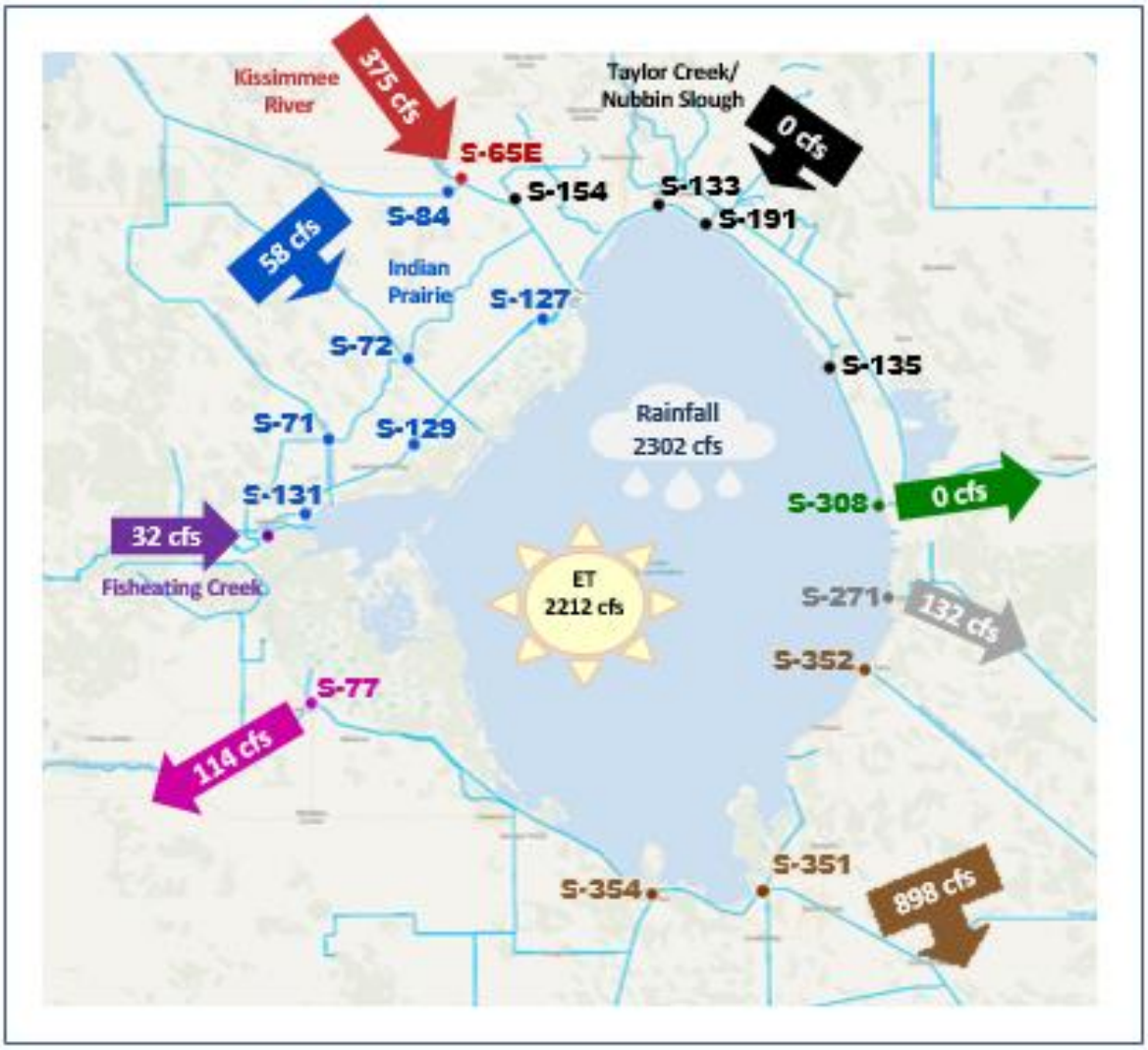


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of August 22-28, 2022.

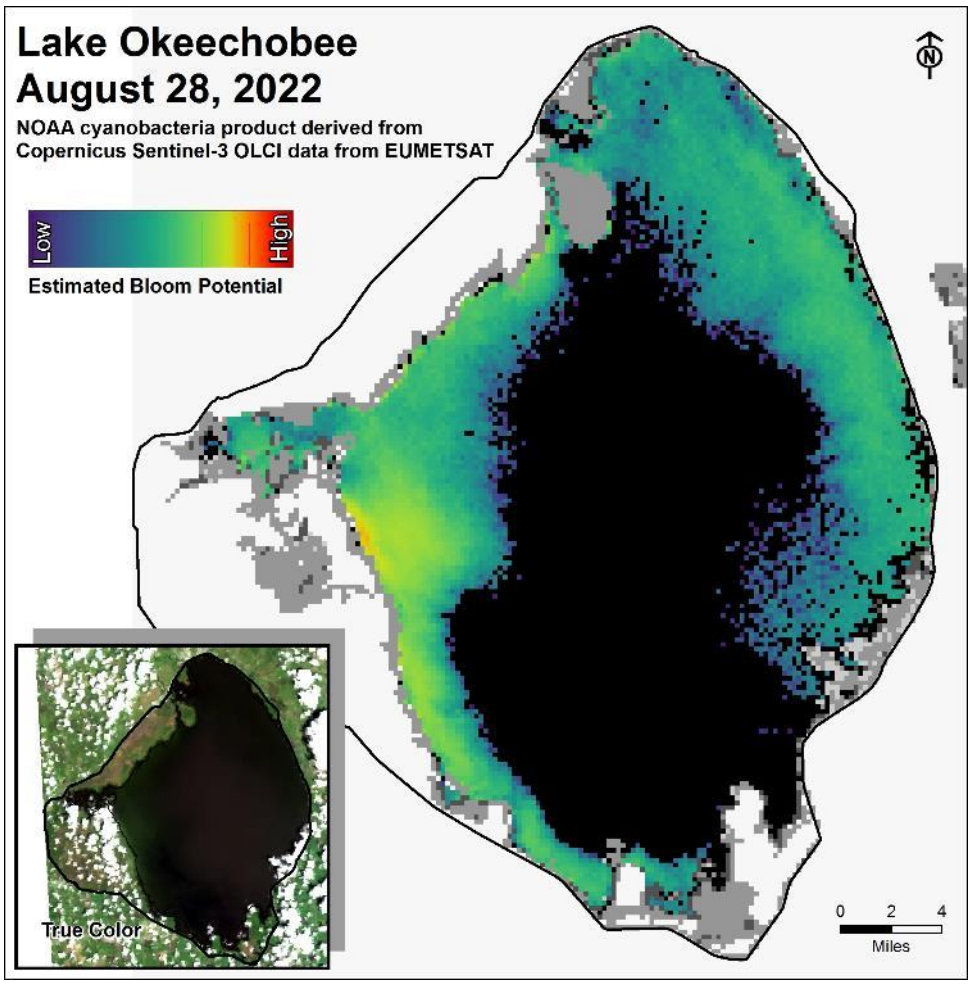


Figure LO-6. Cyanobacteria bloom potential on August 28, 2022 based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

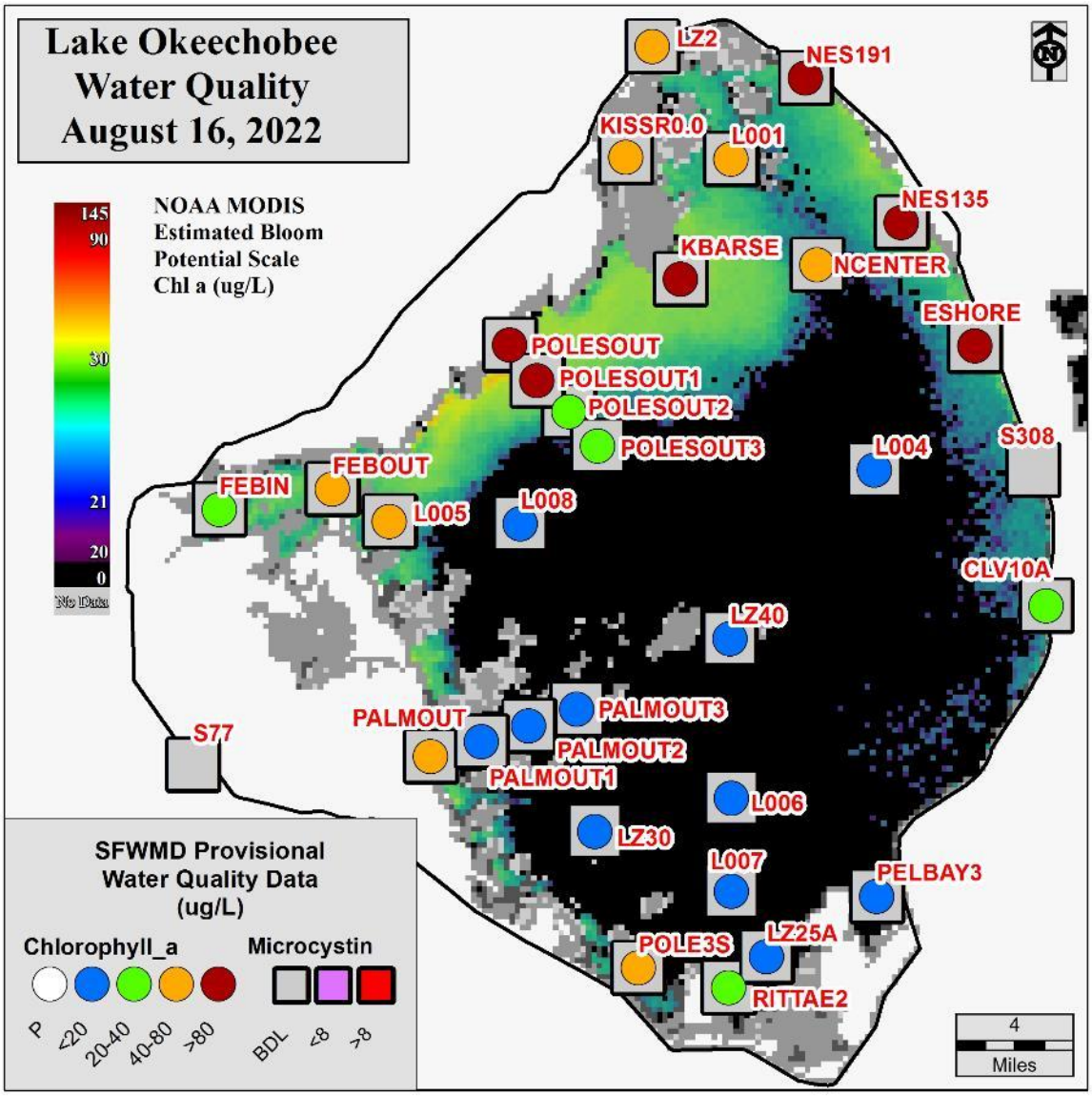


Figure LO-7. Expanded monitoring network and provisional chlorophyll *a* (µg/L) and total microcystins (µg/L) concentrations results from samples collected August 15-17, 2022.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 362 cfs (**Figures ES-1** and **ES-2**) and the previous 30-day mean inflow was 281 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, salinities increased slightly at all sites in the estuary (**Table ES-1** and **Figure ES-3**). The seven-day moving average of the surface and bottom salinities at the US1 Bridge was 22.6. Salinity conditions in the middle estuary were estimated to be within the optimal range for adult eastern oysters (**Figure ES-4**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute was 2.4 spat/shell in July (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 1,452 cfs (**Figures ES-6** and **ES-7**) and the previous 30-day mean inflow was 1,188 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, salinities increased slightly at all sites in the estuary (**Table ES-2** and **Figures ES-8** and **ES-9**). The seven-day mean salinities (**Table ES-2**) were in the optimal range (0-10) for tape grass in the upper estuary. The seven-day mean salinity values were within the optimal range for adult eastern oysters at Cape Coral, but in the stressed range at Shell Point and Sanibel (**Figure ES-10**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute was 4.5 spat/shell at Iona Cove and 17.9 spat/shell at Bird Island in July (**Figures ES-11 and ES-12**).

Surface salinity at Val I-75 was forecasted for the next two weeks, using an autoregression model (Qiu and Wan, 2013[1]) coupled with a linear reservoir model for the tidal basin. Model scenarios included pulse releases at S-79 ranging from 0 to 1500 cfs, and a steady release at 2,000 cfs with estimated tidal basin inflows of 1260 cfs. Model results from all scenarios predict daily salinity to be 5.0 or lower and the 30-day moving average surface salinity to be 2.5 or lower at Val I-75 at the end of the two-week period (**Table ES-3** and **Figure ES-13**). This keeps predicted salinities in the upper estuary within the optimal salinity range (0-10) for tape grass.

[1] Qui, C., and Y. Wan. 2013. Time series modeling and prediction of salinity in the Caloosahatchee River Estuary. *Water Resources Research* 49:5804-5816.

Red Tide

The Florida Fish and Wildlife Research Institute reported on August 26, 2022, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in any samples collected within the District region. On the east coast, red tide was not observed in samples from St. Lucie and Martin counties.

Water Management Recommendations

Lake stage is in the Beneficial Use Sub-Band. Tributary conditions are dry. The LORS2008 release guidance suggests no lake releases to the Caloosahatchee River Estuary or the St. Lucie Estuary to manage Lake stages.

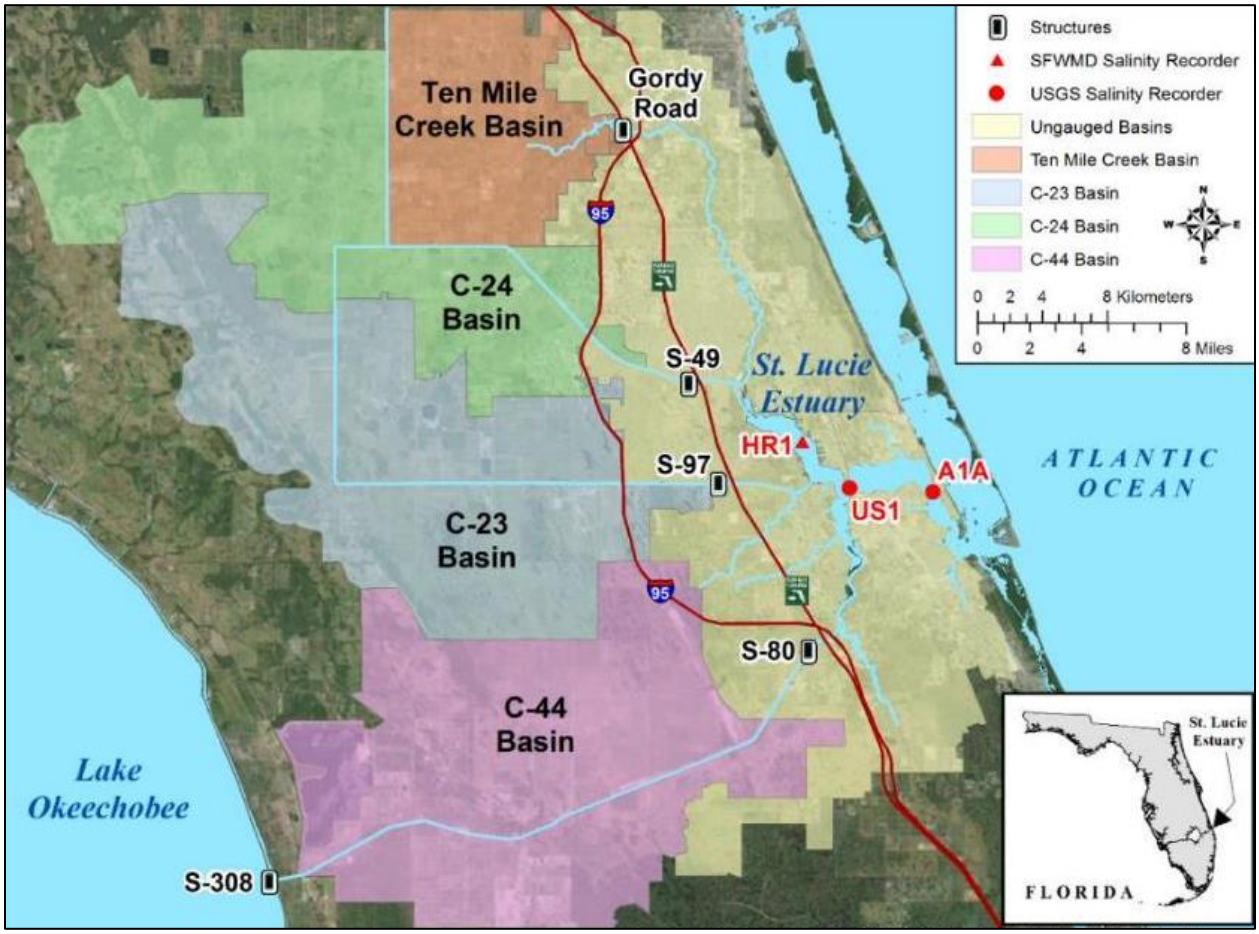


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

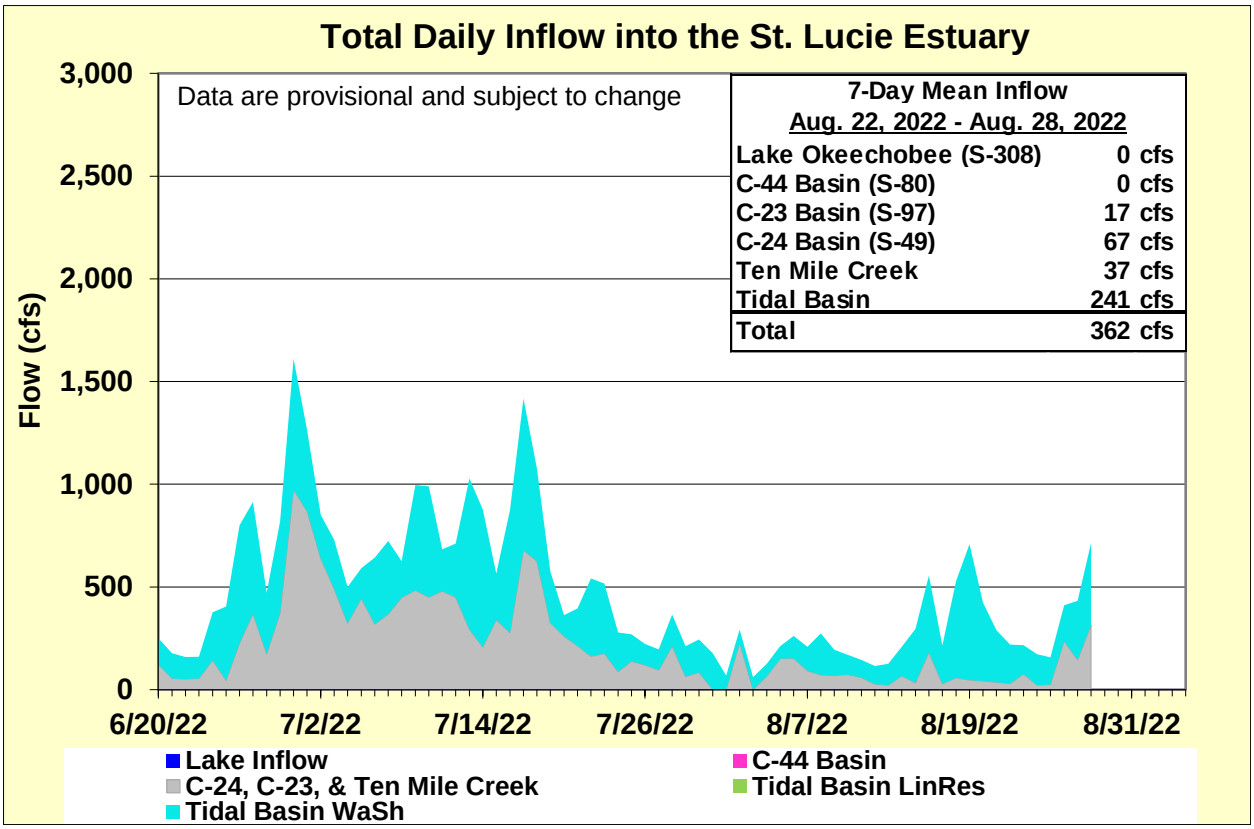


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

Table ES-1. Seven-day mean salinity at oyster monitoring sites in the St. Lucie Estuary. Current means are in bold font; previous week's means are in parentheses. The envelope reflects the optimum salinity range for adult eastern oysters (*Crassostrea virginica*) in the estuary. Data are provisional.

Sampling Site	Surface	Bottom	Optimum Envelope
HR1 (North Fork)	**17.0** (16.3)	**19.8** (19.2)	10.0 – 25.0
US1 Bridge	**22.3** (21.7)	**23.0** (22.7)	10.0 – 25.0
A1A Bridge	**28.9** (28.6)	**30.3** (30.0)	10.0 – 25.0

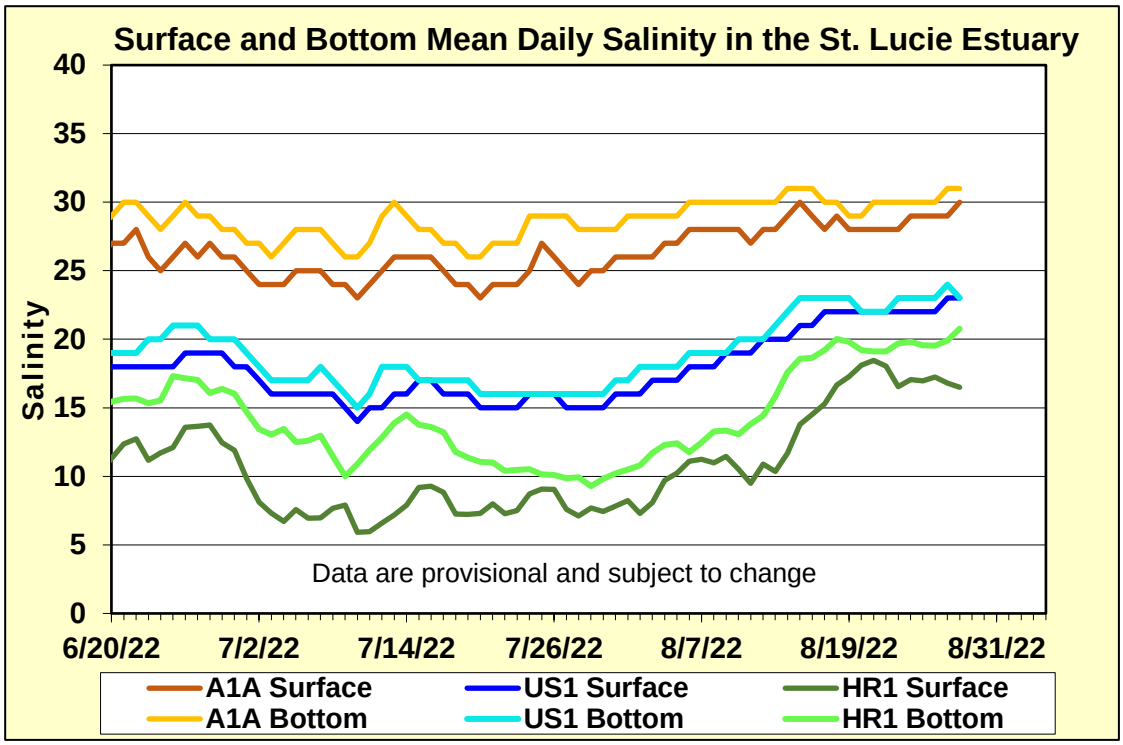


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

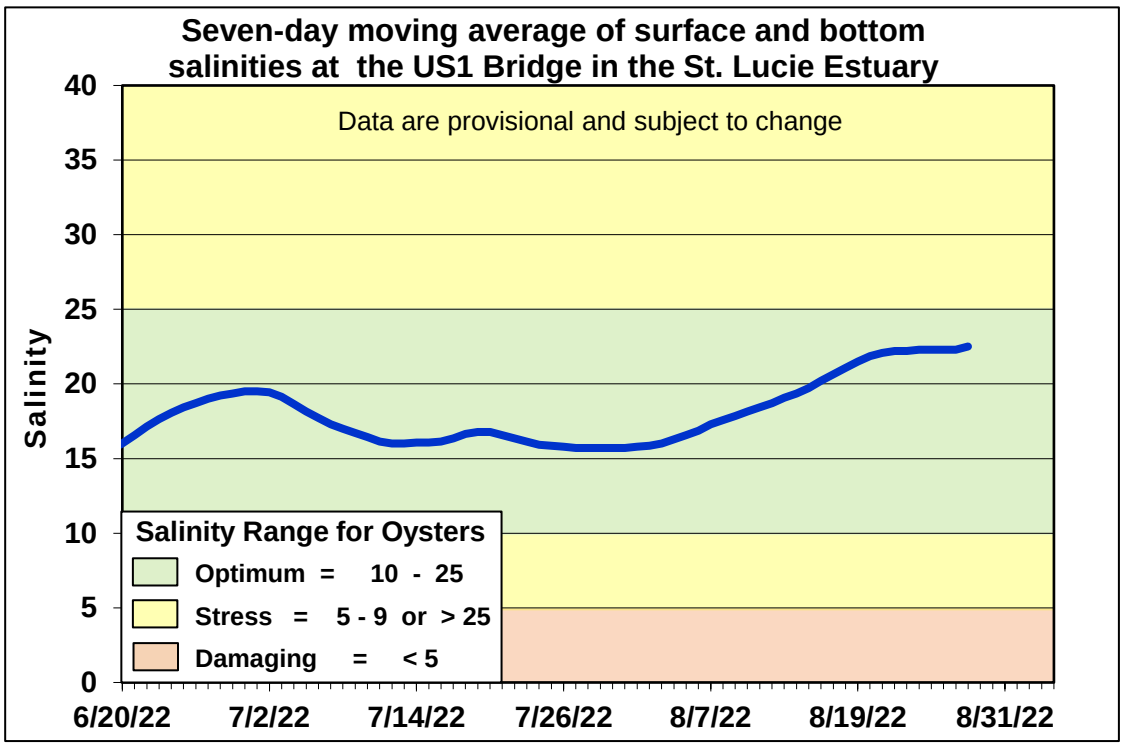


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

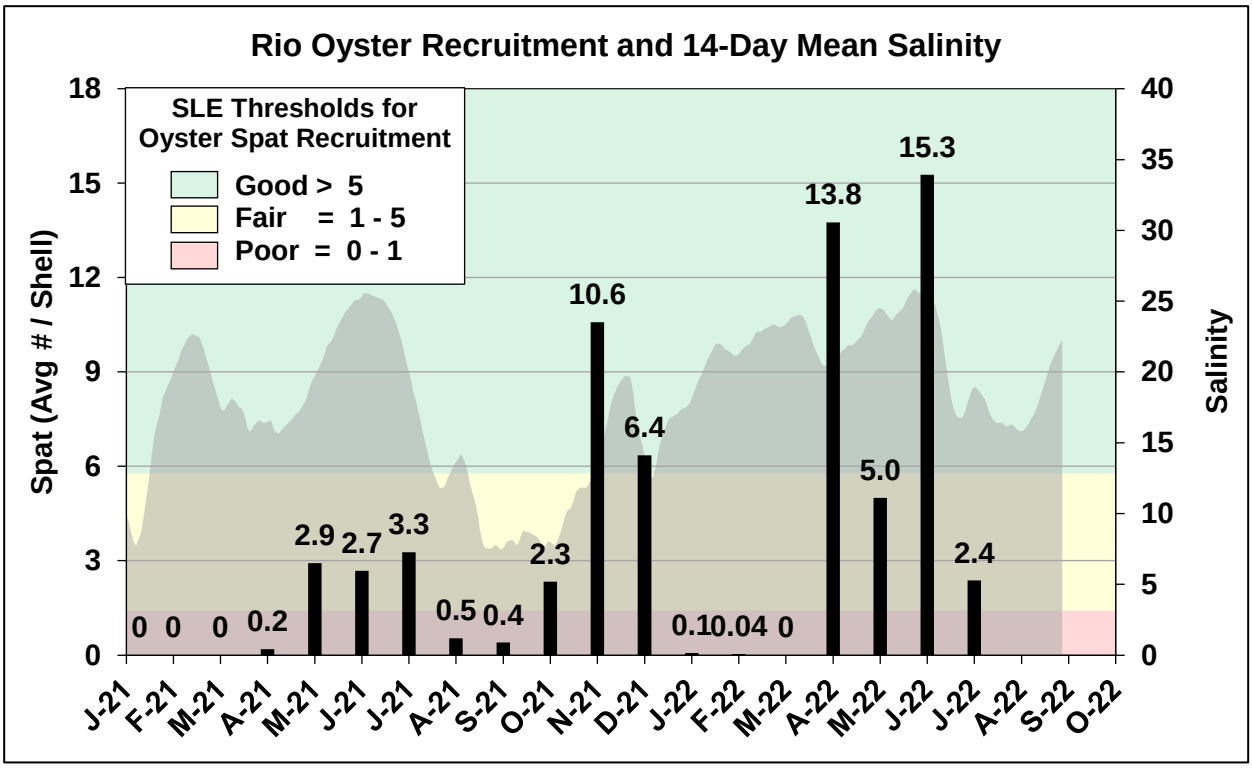


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

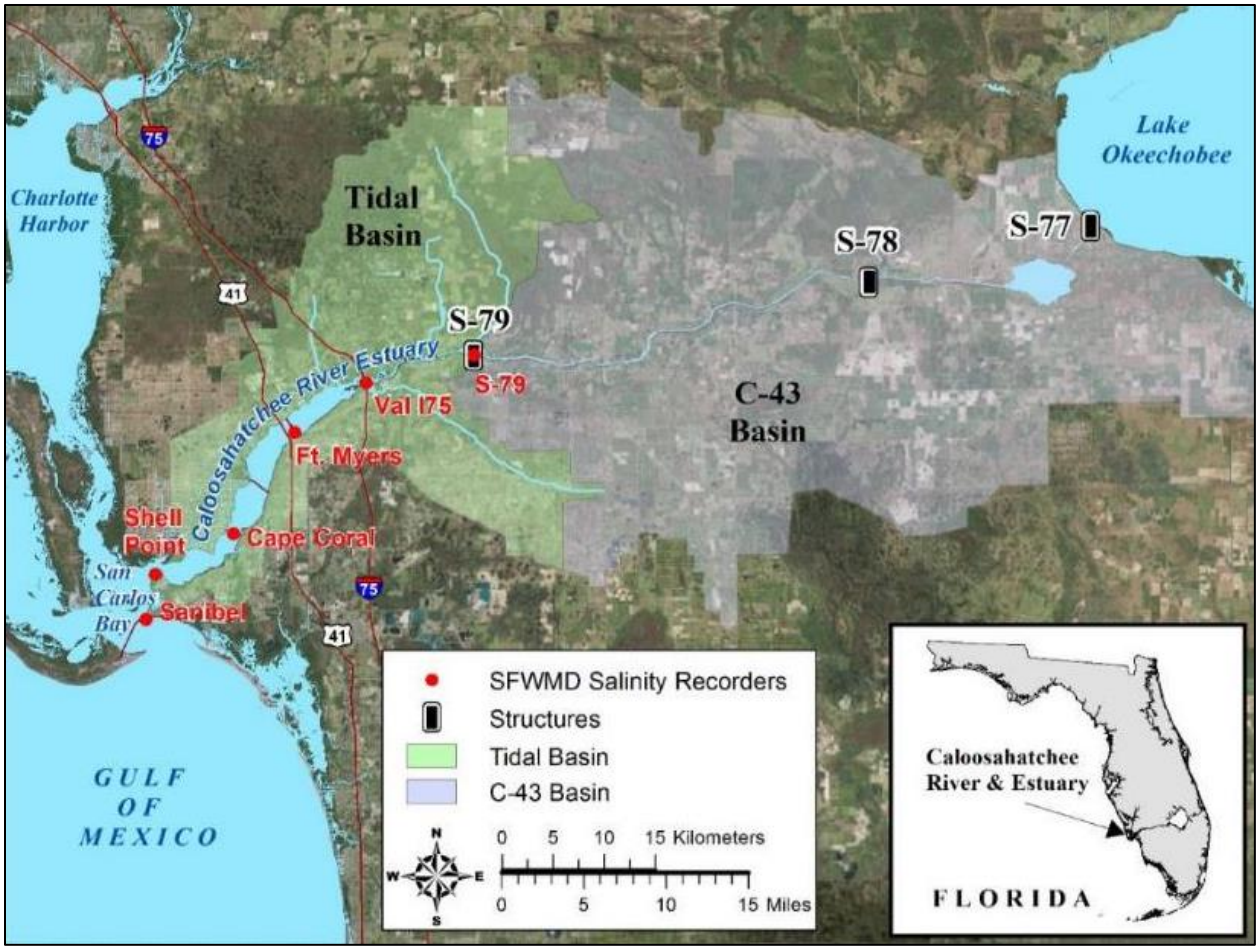


Figure ES-6. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

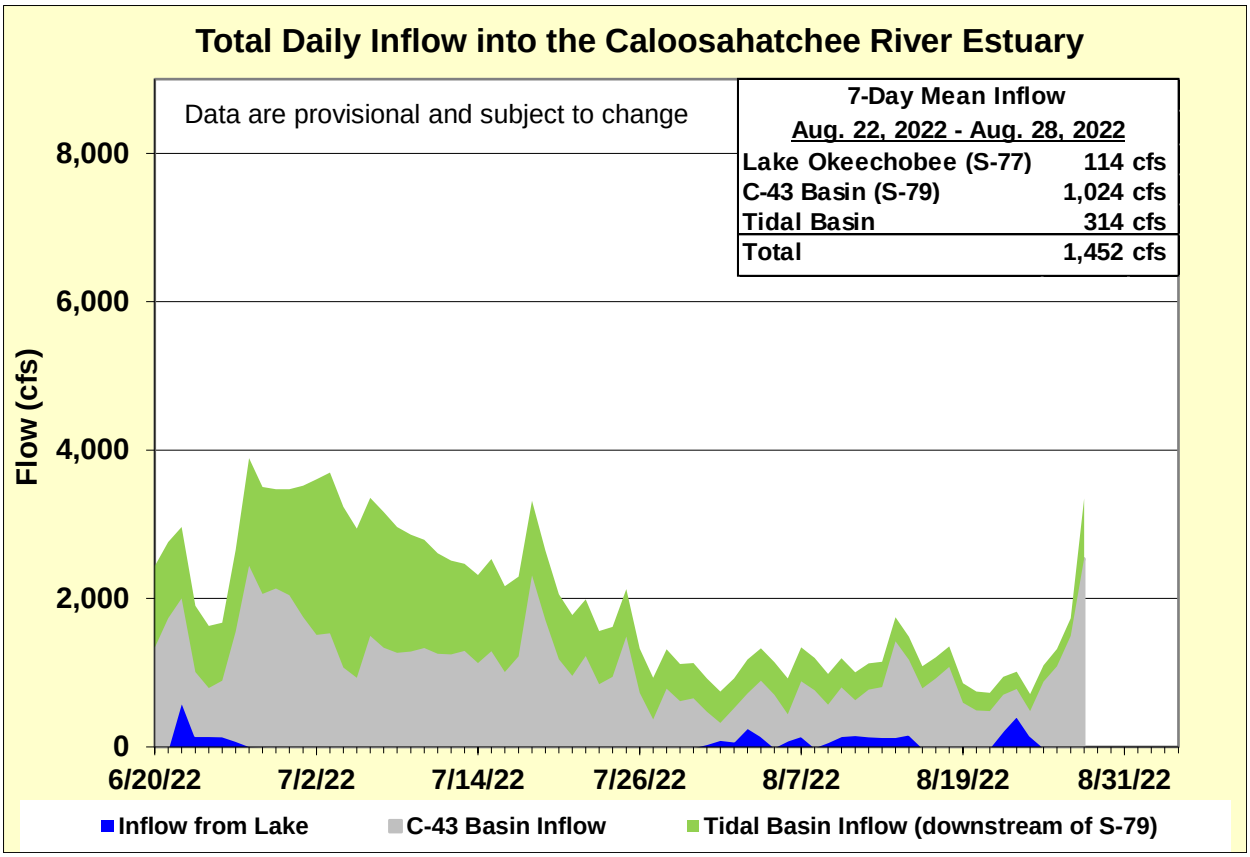


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

Table ES-2. Seven-day mean salinity at six monitoring sites in the Caloosahatchee River Estuary. Current means are in bold font; previous week's means are in parentheses. The envelope in the upper estuary sites is for the protection of tape grass and the envelope in the lower estuary is the optimum salinity range for adult eastern oysters (*Crassostrea virginica*). Data are provisional.

Sampling Site	Surface	Bottom	Optimum Envelope
S-79 (Franklin Lock)	**1.1** (0.4)	**1.1** (0.4)	0.0 – 10.0
Val I-75	**1.2** (1.0)	**1.8** (0.4)	0.0 – 10.0
Fort Myers Yacht Basin	**5.7** (5.1)	**7.9** (6.7)	0.0 – 10.0
Cape Coral	**12.2** (12.1)	**13.9** (13.7)	10.0 – 25.0
Shell Point	**26.5** (25.0)	**26.1** (25.5)	10.0 – 25.0
Sanibel	**32.1** (31.0)	**31.6** (31.0)	10.0 – 25.0

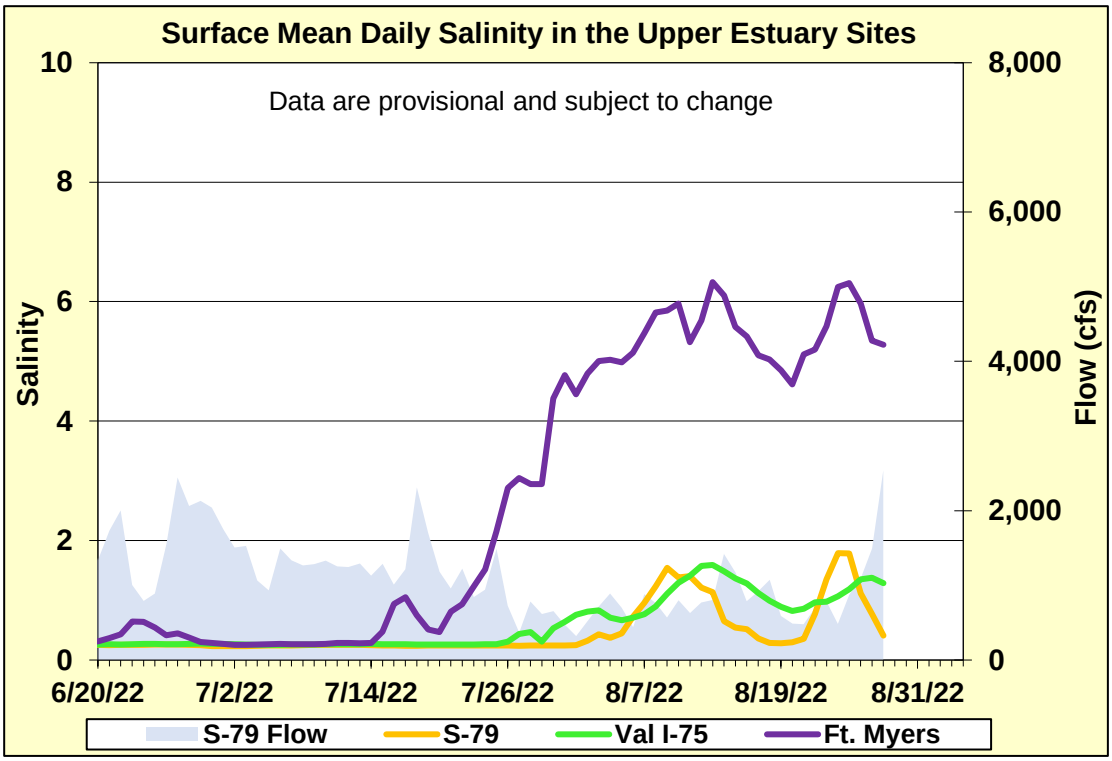


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

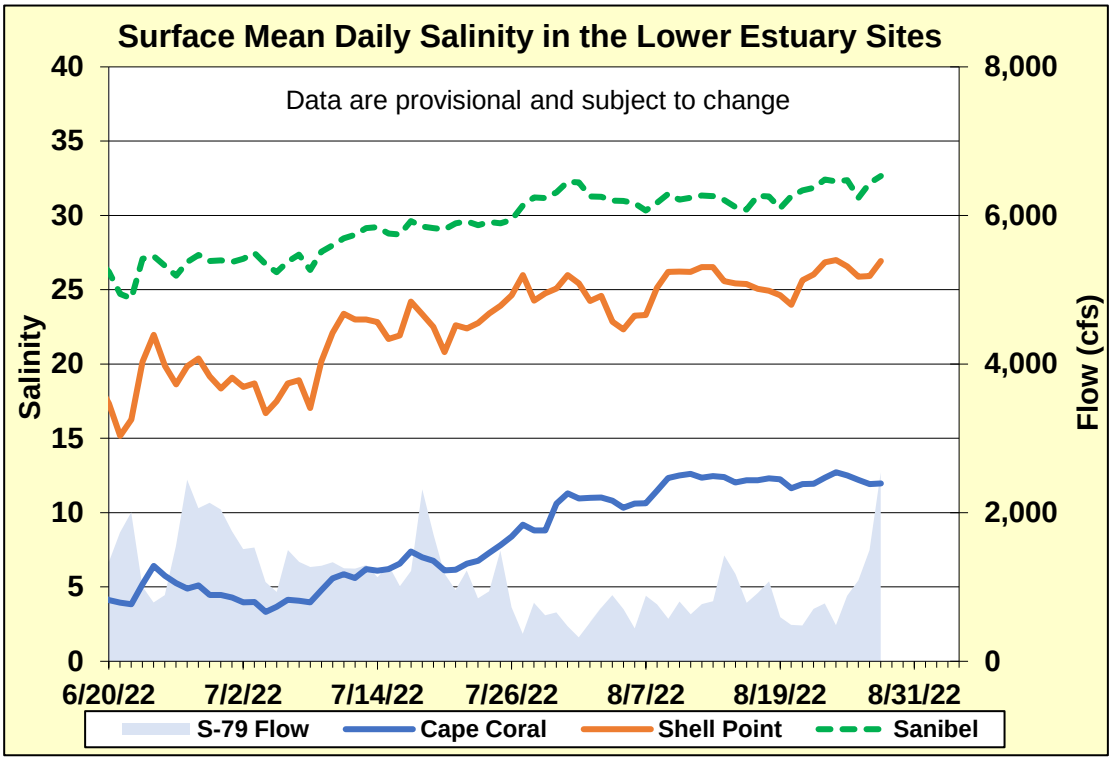


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

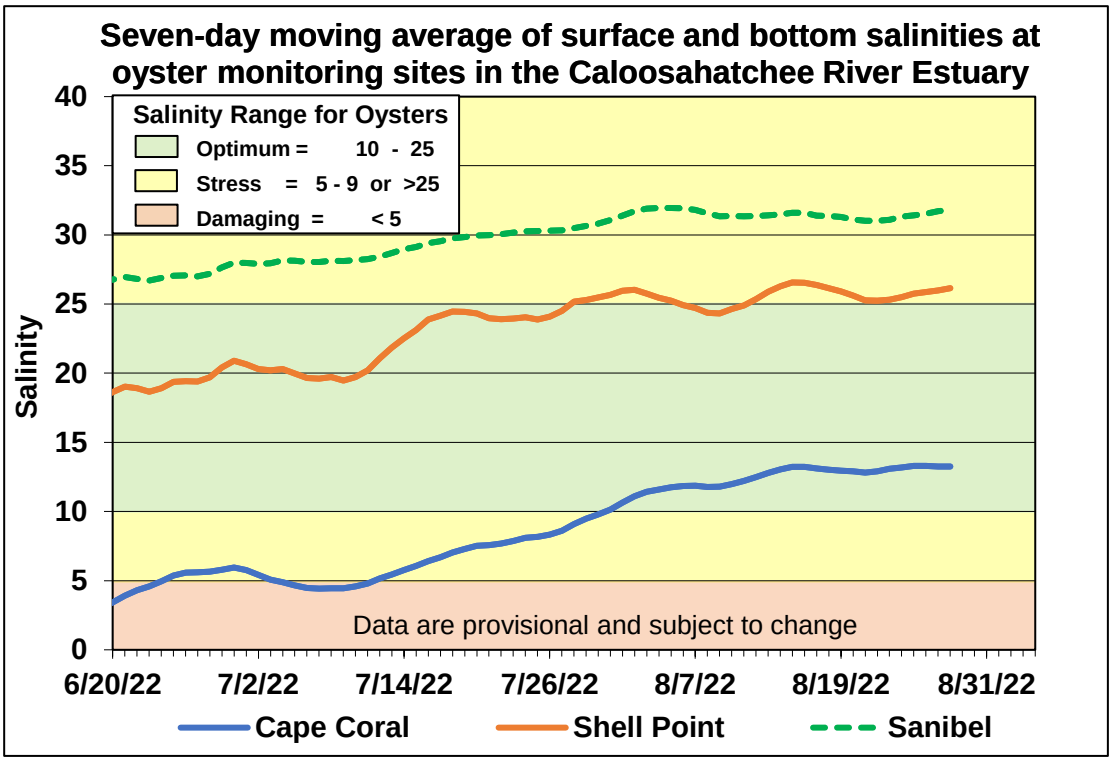


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

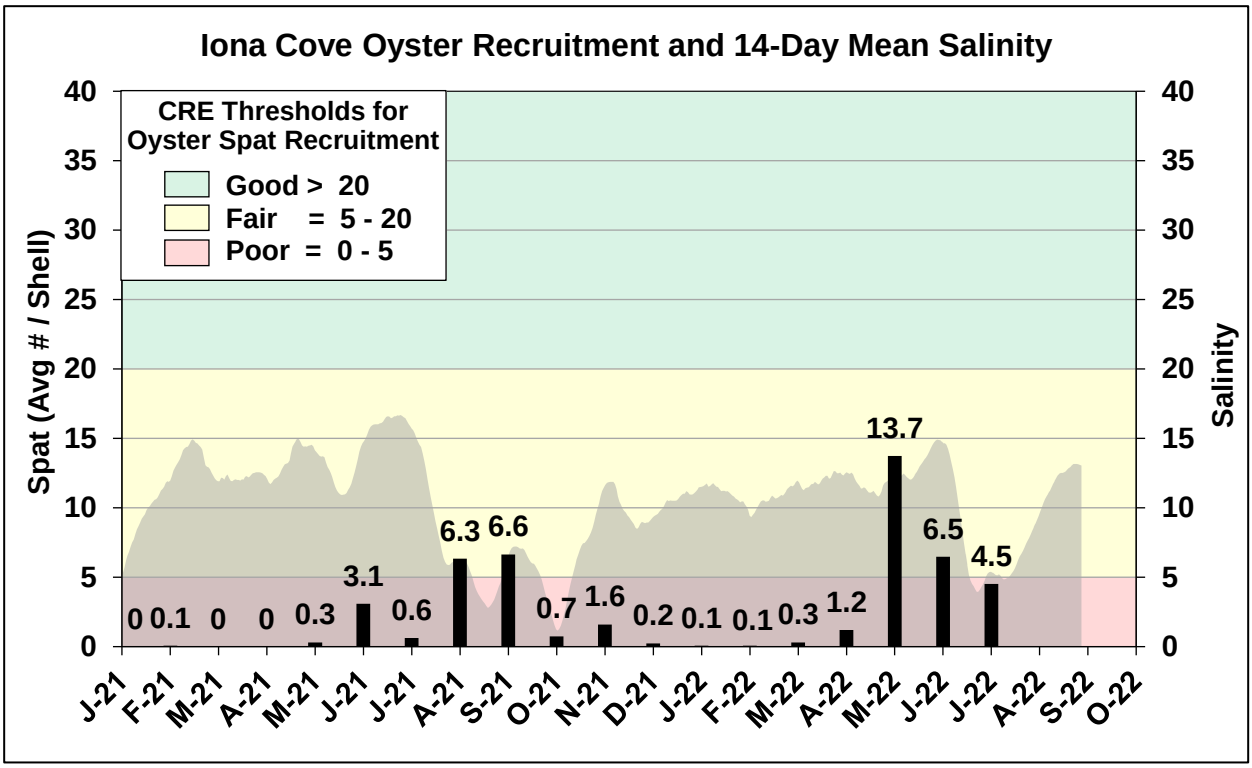


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

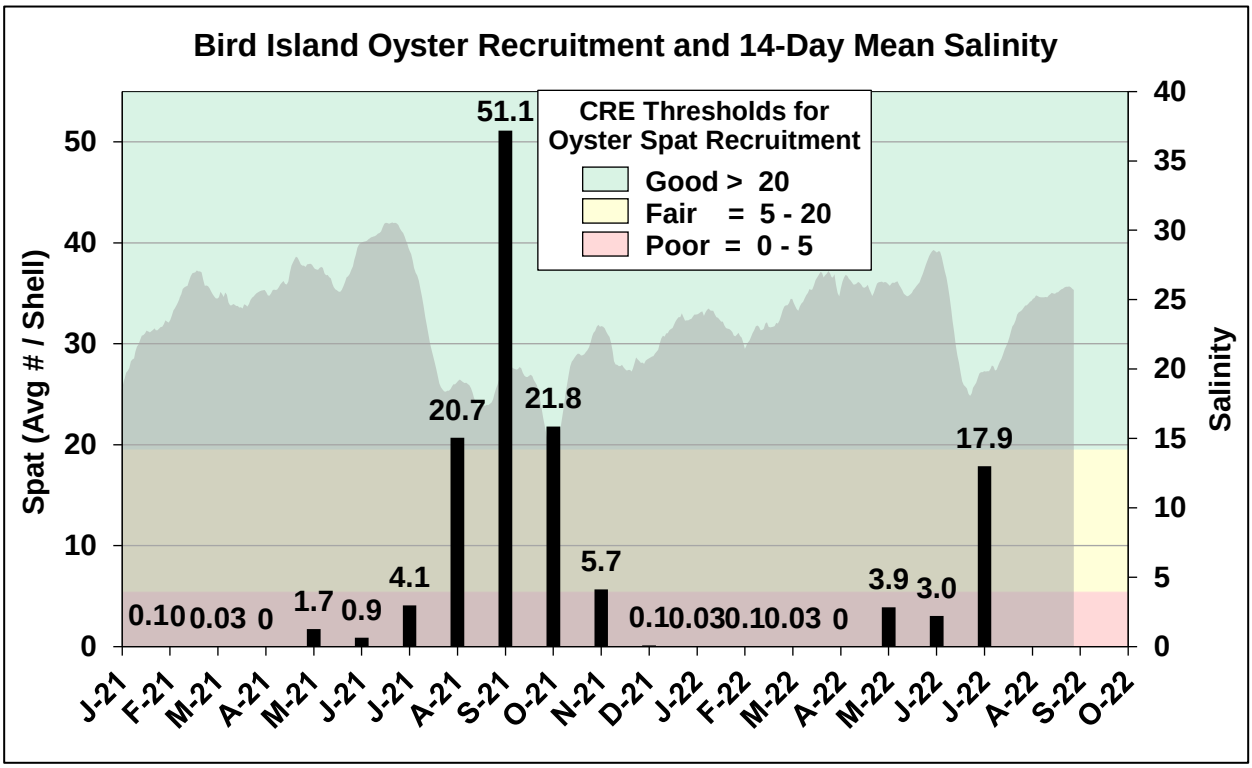


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

Table ES-3. Predicted salinity at Val I-75 in the Caloosahatchee River Estuary at the end of the forecast period for various S-79 flow release scenarios.

Scenario	Simulated S-79 Flow (cfs)	Tidal Basin Runoff (cfs)	Daily Salinity	30-Day Mean Salinity
A	0	1261	5.0	2.5
B	450	1261	3.7	2.1
C	800	1261	2.8	1.9
D	1000	1261	1.9	1.7
E	1500	1261	1.1	1.5
F	2000	1261	0.4	1.3

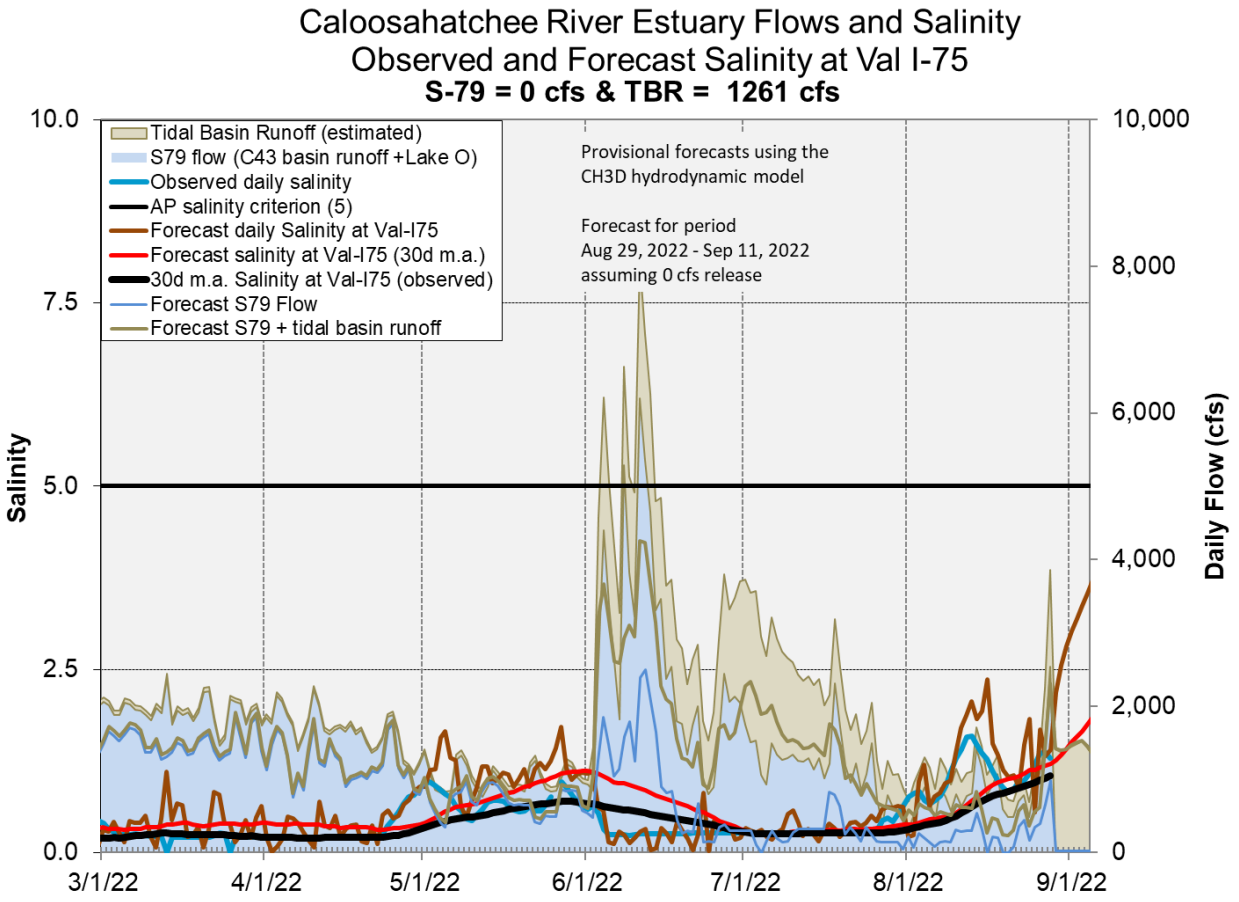


Figure ES-13. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Western Flow-way is offline for post-construction vegetation grow in. Operational restrictions are in place in STA-1E Central and Eastern Flow-ways for vegetation management activities. Online treatment cells are at or near target stage and vegetation in the flow-ways is stressed and highly stressed. The 365-day phosphorus loading rates (PLRs) are high for the Eastern and Central Flow-way (**Figure S-1**).

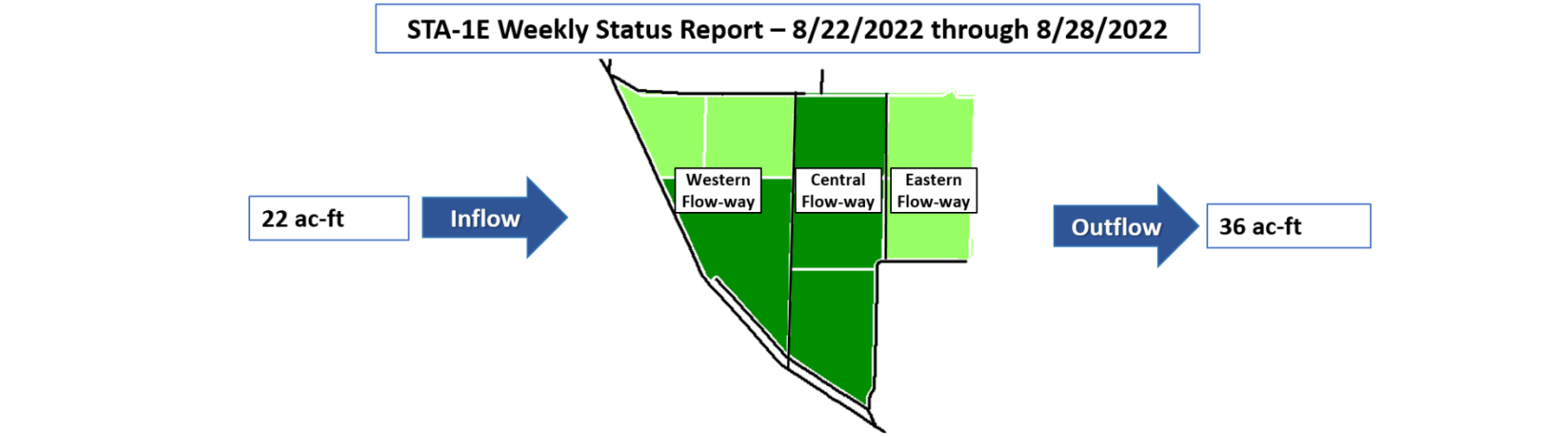
STA-1W: Operational restrictions are in place in STA-1W Western, Eastern, and Northern Flow-ways for vegetation management activities. Most treatment cells are near or below target-stage. Vegetation in the flow-ways is stressed and highly stressed. The 365-day PLRs for the Northern, Western, and Eastern Flow-ways are below 1.0 g/m^2/year (**Figure S-2**).

STA-2: STA-2 Flow-way 2 is offline for construction activities. Operational restrictions are in place in STA-2 Flow-ways 3 and 4 for vegetation management activities. Online treatment cells are near or below target-stage. Vegetation in Flow-ways 1 and 3 is stressed, and in Flow-ways 2, 4 and 5 is highly stressed. The 365-day PLRs for Flow-ways 1, 4 and 5 are at or below 1.0 g/m^2/year. The 365-day PLR for Flow-way 3 is high (**Figure S-3).**

STA-3/4: STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown. Online treatment cells are at or near target stage. Vegetation in the Eastern and Central Flow-ways is highly stressed and in the Western Flow-way is stressed. The 365-day PLRs for the Central and Western Flow-ways are below 1.0 g/m^2/year (**Figure S-4**).

STA-5/6: All flow-ways in STA-5/6 are online. Treatment cells are at or near target stage. All treatment cells have highly stressed vegetation conditions except Flow-ways 7 and 8 which are healthy. The 365-day PLRs for most flow-ways are below 1.0 g/m^2/year, except Flow-way 4 which is high. (**Figure S-5** and **S-6**).

For definitions on STA operational language see glossary following figures.



STA-1E Flow-Way Status

Flow-Way	Vegetation Status (Healthy ----- Stressed)	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
Eastern	← leaf →	1.0	Vegetation management
Central	← leaf →	1.0	Vegetation rehabilitation
Western	Offline, post-construction grow in starting 3/28/2022		

As of 8/28/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-1E Flow & Phosphorus Concentration

	7-day	28-day	365-day
Total Inflow, ac-ft	22	70	166,457
--Lake Inflow, ac-ft	0	N/A	2,600
Total Outflow, ac-ft	36	109	139,713
Inflow Conc., ppb	37	38	120
Outflow Conc., ppb	16	17	24
Includes Preliminary Data			

Figure S-1. STA-1E Weekly Status Report

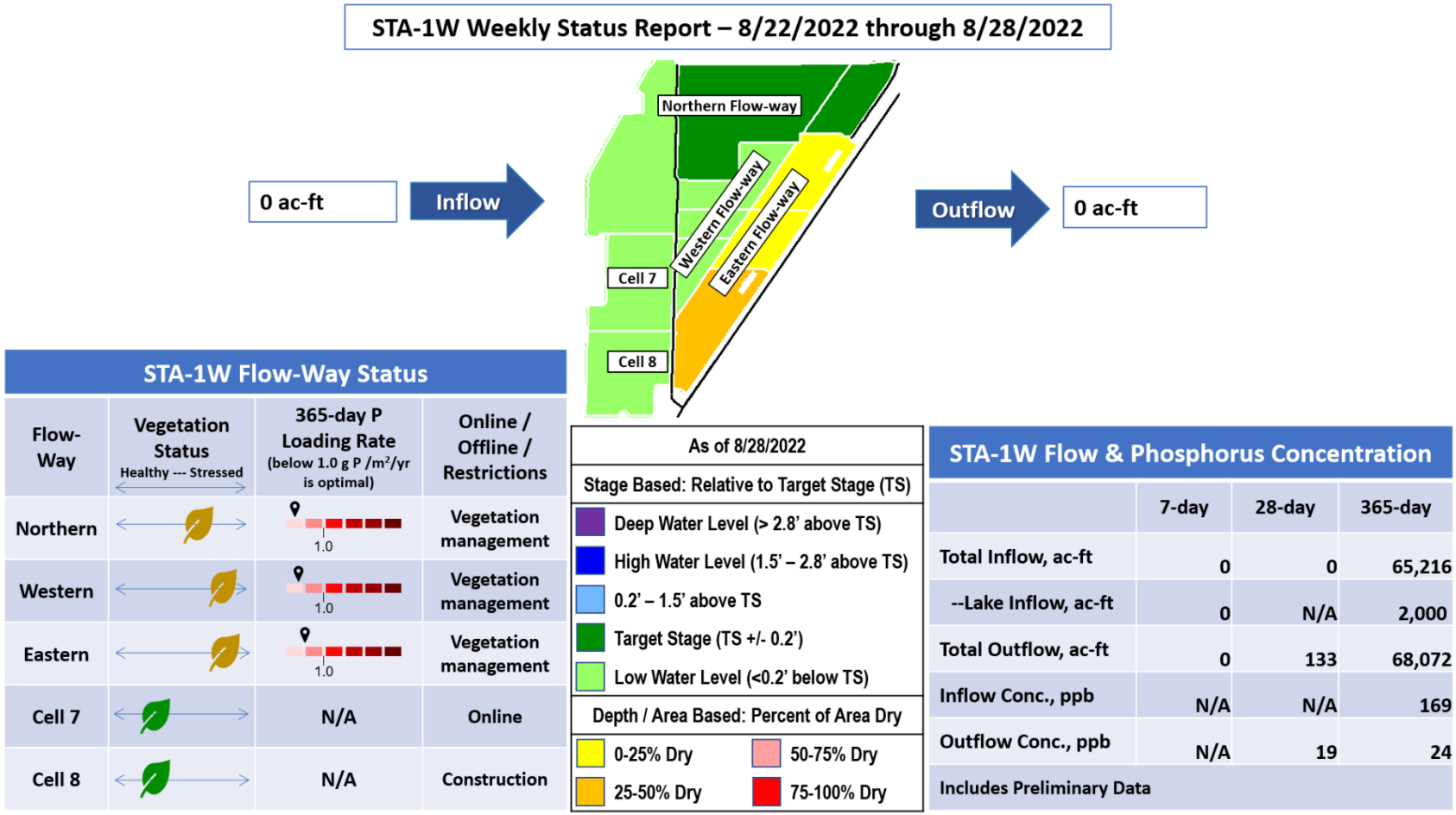
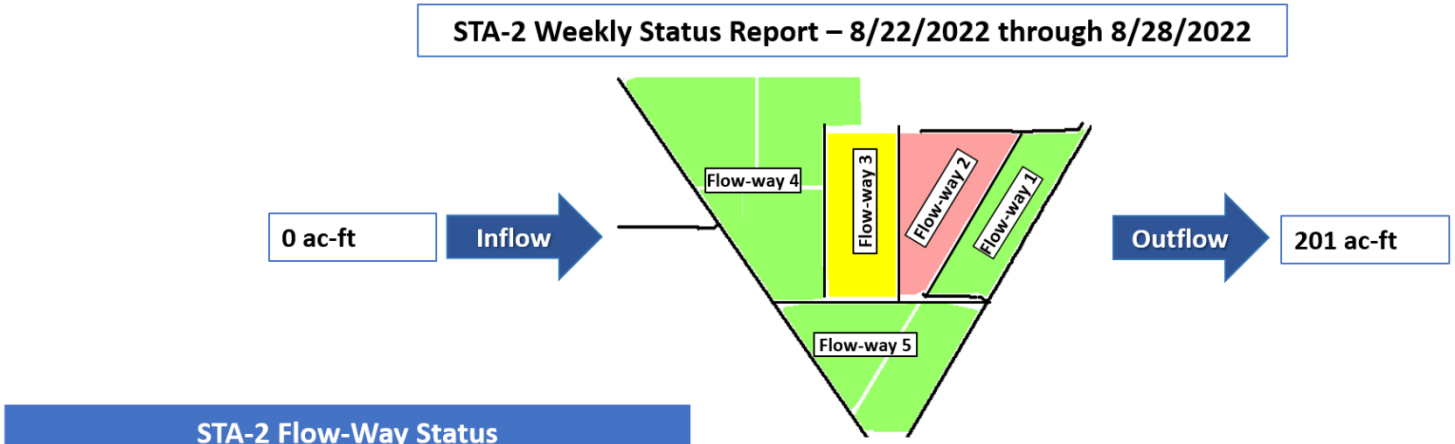


Figure S-2. STA-1W Weekly Status Report



STA-2 Flow-Way Status

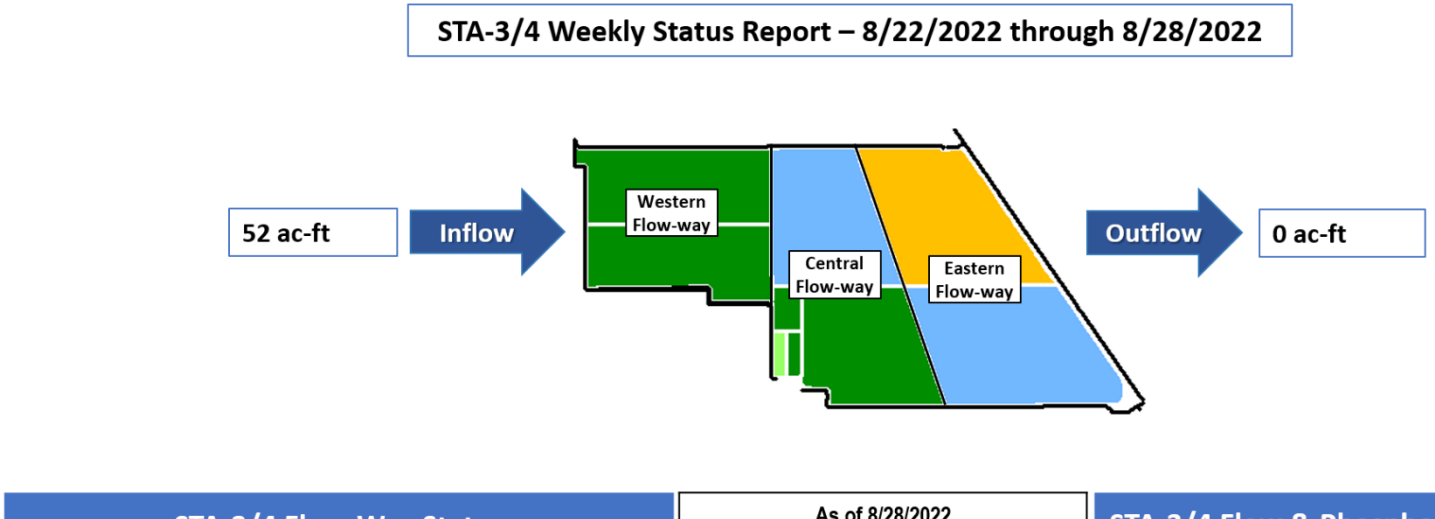
Flow-Way	Vegetation Status (Healthy ------ Stressed)	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
1		1.0	Online
2	Offline, construction activities as of 9/7/2021		
3		1.0	Vegetation Rehab
4		1.0	Vegetation Rehab
5		1.0	Online

As of 8/28/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-2 Flow & Phosphorus Concentration

	7-day	28-day	365-day
Total Inflow, ac-ft	0	0	279,848
--Lake Inflow, ac-ft	0	N/A	27,600
Total Outflow, ac-ft	201	1,324	302,367
Inflow Conc., ppb	N/A	N/A	105
Outflow Conc., ppb	14	18	24
Includes Preliminary Data			

Figure S-3. STA-2 Weekly Status Report



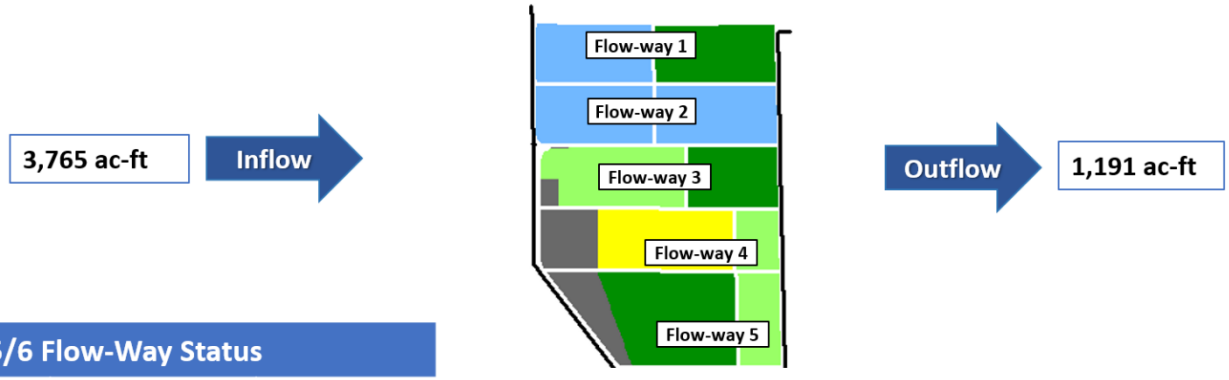
STA-3/4 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ------ Stressed	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
Eastern	Offline, vegetation management drawdown as of 3/1/2021		
Central		1.0	Online
Western		1.0	Online

As of 8/28/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-3/4 Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	52	52	264,474
--Lake Inflow, ac-ft	0	N/A	5,200
Total Outflow, ac-ft	0	1,371	253,615
Inflow Conc., ppb	33	32	89
Outflow Conc., ppb	N/A	14	15
Includes Preliminary Data			

Figure S-4. STA-3/4 Weekly Status Report

STA-5/6 Weekly Status Report – 8/22/2022 through 8/28/2022



STA-5/6 Flow-Way Status

Flow-Way	Vegetation Status (Healthy ------ Stressed)	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
1		1.0	Online
2		1.0	Online
3		1.0	Online
4		1.0	Online
5		1.0	Online

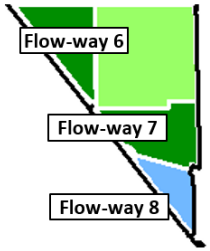
As of 8/28/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-5/6 Flow & Phosphorus Concentration

	7-day	28-day	365-day
Total Inflow, ac-ft	3,765	10,980	151,490
--Lake Inflow, ac-ft	0	N/A	0
Total Outflow, ac-ft	1,191	5,381	138,769
Inflow Conc., ppb	172	197	223
Outflow Conc., ppb	35	23	48
Includes Preliminary Data			

Figure S-5. STA-5/6 Weekly Status Report (Flow-ways 1 – 5)

STA-5/6 Weekly Status Report – 8/22/2022 through 8/28/2022



STA-5/6 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ------ Stressed	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
6		1.0	Online
7		1.0	Online
8		1.0	Online

As of 8/28/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

Figure S-6. STA-5/6 Weekly Status Report (Flow-ways 6 – 8)

Basic Concepts and Definitions for STA Weekly Status Report

- **Inflow**: Sum of flow volume at all inflow structures to an STA.
- **Lake Inflow**: Portion of the STA total inflow volume that originates from Lake Okeechobee.
- **Outflow**: Sum of flow volume at outflow structures from an STA.
- **Total Phosphorus** (TP): Total mass of phosphorus in all its forms; including particulate, dissolved, etc.
- **Inflow Concentration**: TP concentration is the mass of TP in micrograms per liter of water, µg/L or ppb. Inflow concentration refers to the flow-weighted mean TP from all inflow structures over a period of time.
- **Outflow Concentration**: The flow-weighted mean TP from all outflow structures over a period of time. The outflow concentration represents the reduction of inflow TP achieved by STA treatment of the inflow water.
- **WQBEL**: The STA outflow concentration that is required upon completion of the Restoration Strategies projects by December 2025. The outflow concentration shall not exceed 13 ppb as an annual flow weighted mean in more than 3 out of 5 water years on a rolling basis and shall not exceed 19 ppb as an annual flow weighted in any water year.
- **Flow-Way** (FW): One or more treatment cells connected in series. Cells typically have emergent aquatic vegetation (EAV) in the front portion of the flow-way followed by a mix of EAV and submerged aquatic vegetation (SAV)
- **Vegetation Status**: Healthy means the vegetation condition is good and will allow the STA to perform as designed. Stressed means the vegetation is showing signs of poor health, such as browning or areas of vegetation die-off, or the cell contains undesirable vegetation such as floating exotic vegetation requiring treatment. The TP reduction capability of the STA is affected when the vegetation condition is poor.
- **Phosphorus Loading Rate** (PLR): Mass of inflow TP in grams, divided by total treatment area of STA in square meters, per year. In general, a 365-day value of less than 1.0 is needed for an STA to perform optimally. A PLR of 2.0 is considered very high and a PLR of 3.0 is considered extremely high. The TP reduction capability of the STA is affected when the PLR is high, very high and extremely high.
- **Online**: Online status means the FW can receive and treat inflow.
- **Online with Restriction**: The FW can receive and treat inflow, but the amount of flow or water level may be limited temporarily. For example, a vegetation rehabilitation effort may require reduced flows through an area while the new plants are establishing, or nesting by protected species may require a certain water level not to be exceeded.
- **Offline**: The FW is unable to receive and treat inflow due to repairs, construction, or other prohibitive reasons.
- **Depth**: Difference between the average surface water level in a cell and the average ground elevation in that cell. Target depths, or depths between flow events, are between 1.25 ft to 1.5 ft. As depth approaches or drops below zero, an increasing percentage of the cell is considered dry and STA conditions deteriorate. An increase in depth above target depth is expected with increasing flow. However, as depth increases much above the target depth and is sustained over a period of time, it can be detrimental to vegetation health and overall STA treatment performance.
- **Note**: The data provided in this summary report were developed using a combination of provisional and quality-assured flow and water quality data. In some cases, best professional judgment was used to estimate missing data and revise questionable data. Values provided are not considered final but are appropriate for use in STA operational decision-making.

Everglades

Water Conservation Area Regulation Schedules

WCA-1: Stage at the 1-8C gauge was stable over the week but trends away from the rising schedule. The average on Sunday was 0.43 feet below the Zone A1 regulation line. WCA-2A: Stage at the 2-17 gauge continued to decline slowly last week. The average on Sunday was 0.03 feet below the rising regulation line. WCA-3A: Last week the Three Gauge Average stages fell then recovered but remain below the Zone A reg line. The average stage was 0.53 feet below the rising regulation line on Sunday. WCA-3A North: At gauge 62 (Northwest corner) stages also declined then recovered, the average on Sunday was 0.99 feet below the rising Upper schedule line.

(**Figures EV-1** through **EV-4**).

Water Depths

The SFWDAT tool indicates that within the last month the northern regions of WCA-2A and WCA-3A have dried down. Along the northern reach of the L-67s depths have receded and the spatial extent of those deeper conditions continue to decrease. Southern BCNP looks to have recovered some depths over the last month. Problems with gauges in ENP prevent the interpretation of WDAT output in that region. The SFWDAT tool indicates that within the last month the dry conditions in the northern regions of all the major WCAs along with the southern end of BCNP are drying down to soil surface. Along the northern reach of the L-67s depths have receded and the spatial extent of those deeper conditions are decreasing. Comparing current WDAT water depths to one month ago most of the EPA is lower with eastern WCA-3A significantly so. Looking back a year ago, northern WCA-2A and east central WCA-3A are shallower; conditions are deeper to the south, significantly so in portions of WCA-3B (**Figure EV-5 and Figure EV-6)**. Comparing current conditions to the 20-year median: Northern WCA-2A remains below the 10th percentile, WCA-3A and most of southern BCNP are below the 30th percentile; WCA-3B and NESRS remains in the upper percentiles. (**Figure EV-7**).

Taylor Slough and Florida Bay

Taylor Slough and Florida Bay received an average of 1.31 inches of total rain this past week, one inch more than the previous week. Stages in Taylor Slough changed little in the past week, with an average difference of −0.01 feet (**Figure EV-8 and Figure EV-9**). Taylor Slough is now 0.03 inches higher than its historical average for this time of year (pre-Florida Bay initiative which started in 2017). Average Florida Bay salinity is 36.6, an increase of +2.4 for the week ending in 8/28. Salinities continued to increase at most stations and individual station changes ranged from −0.4 at both Duck Key (DK) and Johnson Key (JK) to +9.0 at Joe Bay (JB). Last week, salinity downstream of JB at Trout Creek (TC; not shown) in the eastern nearshore region decreased by −12.3, coinciding with an increase in positive flows. This week, salinities at TC went back up by +14.6 (**Figure EV-8**), coinciding with a decrease in flows by -1500 cfs between 8/21-8/27. Upstream of TC in Joe Bay, salinities increased from last week by +9.0 and the lowest total rainfall was also recorded. In central Florida Bay, salinities remain within the 2001-

2016 Interquartile Range and are just under the 75th percentile in the East but have exceeded the interquartile range in the West beginning last week (**Figure EV-10**). Florida Bay salinity is 7.1 above its historical average for this time of year.

Water Management Recommendations

Maintaining a very moderate rate of stage change within the marsh of WCA-2A would have an ecological benefit. Flows into northern WCA-3A would benefit the ecology of that region by helping to provide enough water to protect the Alley North colony in the dry season. When water is available discharge downstream through Taylor Slough. At the WCA-3A Periodic Sci call on Friday, the extreme low water conditions in WCA-3A were discussed, as presented today at this Ops meeting. The rainfall predicted for this last weekend did not materialize and the Invest 91L in the mid-Atlantic does not have a good chance of impacting the Everglades. We re-iterate our recommendation from Friday to schedule a meeting to discuss an approach that might prevent further degradation of NE-WCA-3A and the possible fire risks associated with the Ally North colony. Individual regional recommendations can be found in **Table EV-2**.

Table EV-2. Previous week's rainfall and water depth changes in Everglades basins.

Everglades Region	Rainfall (inches)	Stage change (feet)
WCA-1	0.87	−0.01
WCA-2A	0.95	−0.02
WCA-2B	2.00	−0.03
WCA-3A	2.09	+0.05
WCA-3B	1.32	−0.01
ENP	1.98	+0.04

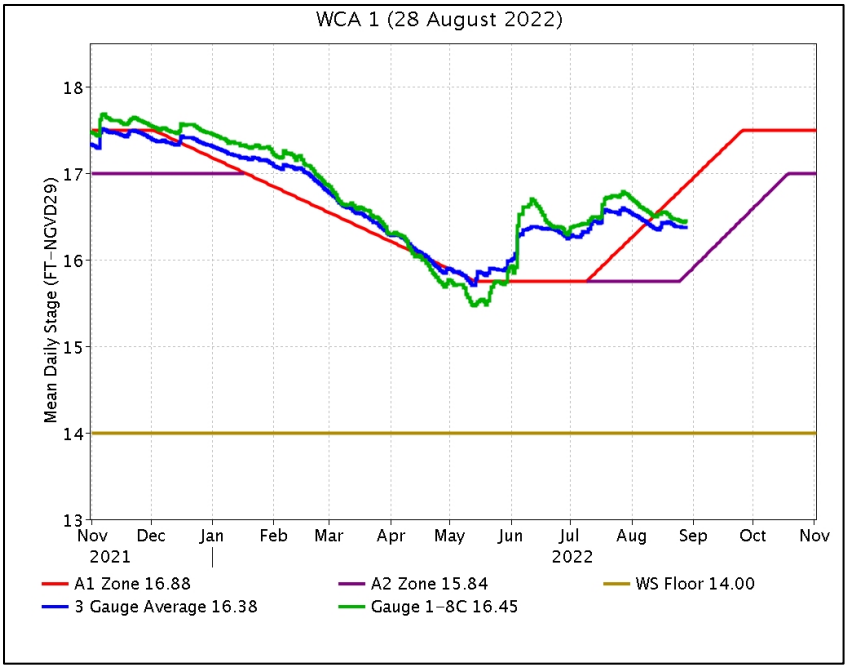


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

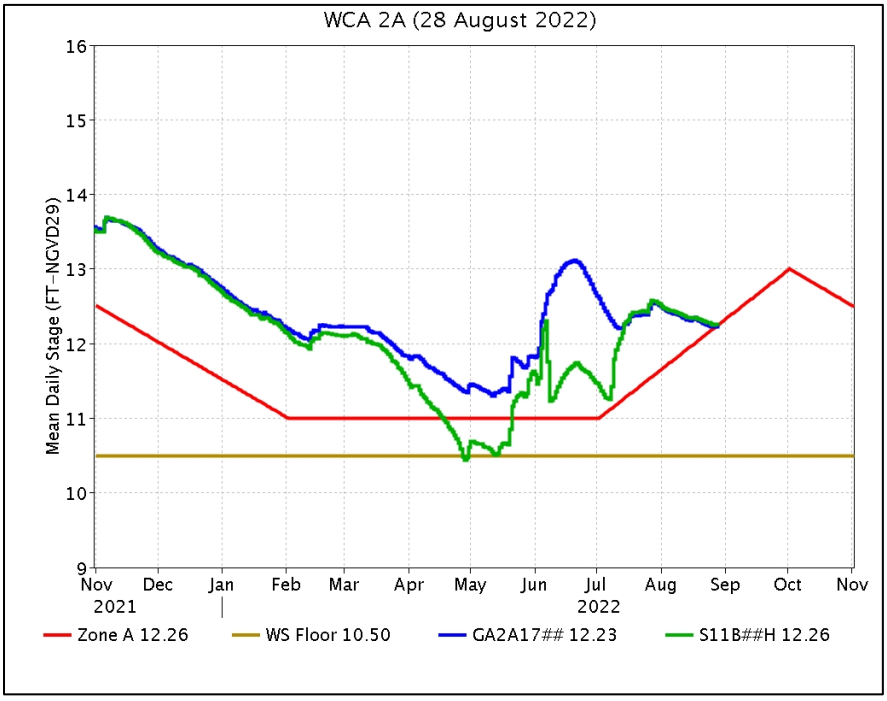


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

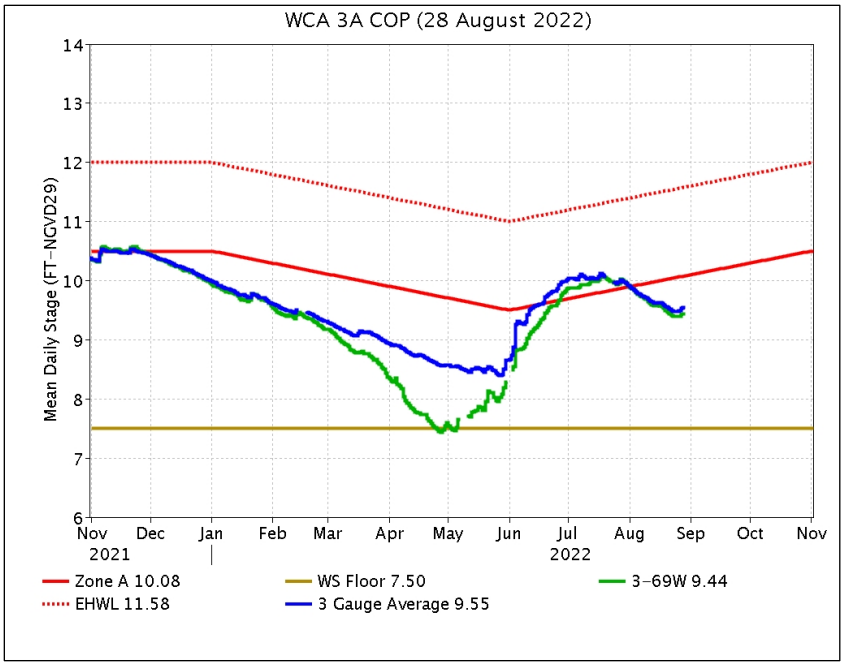


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, S-333 headwater) and regulation schedule.

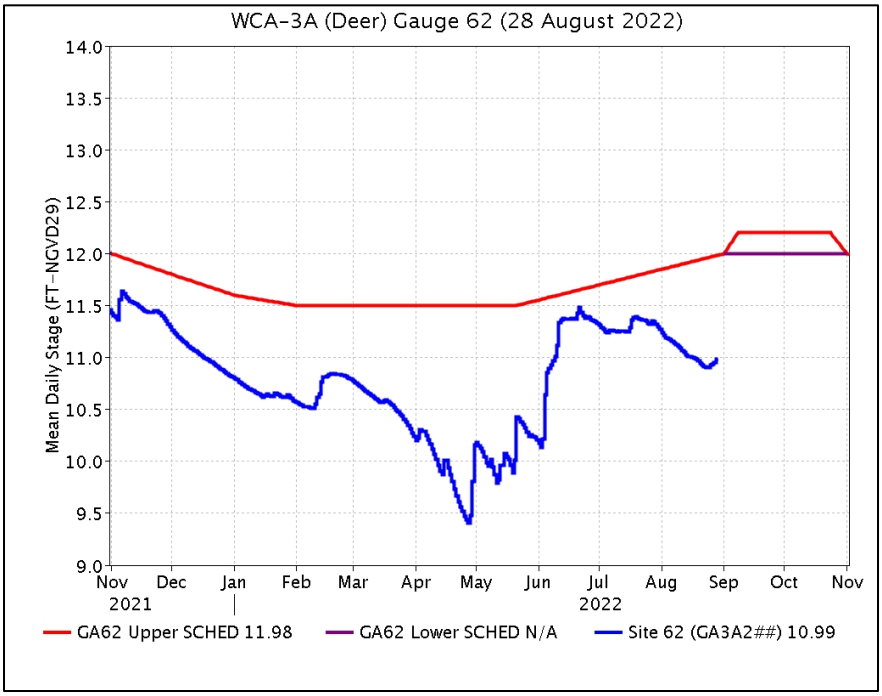


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and CA62 regulation schedule.

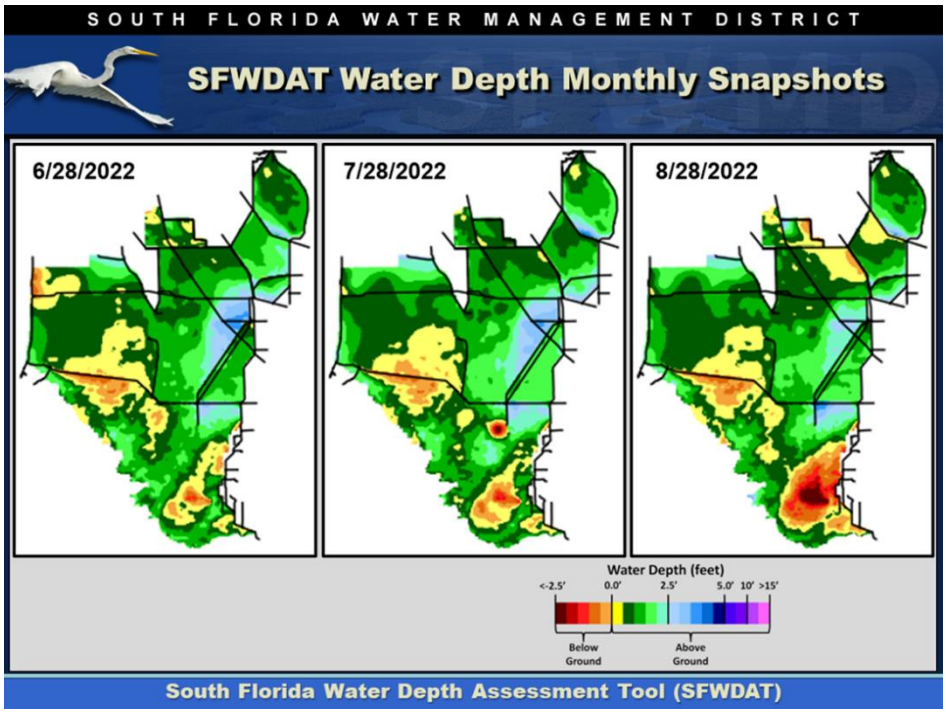


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

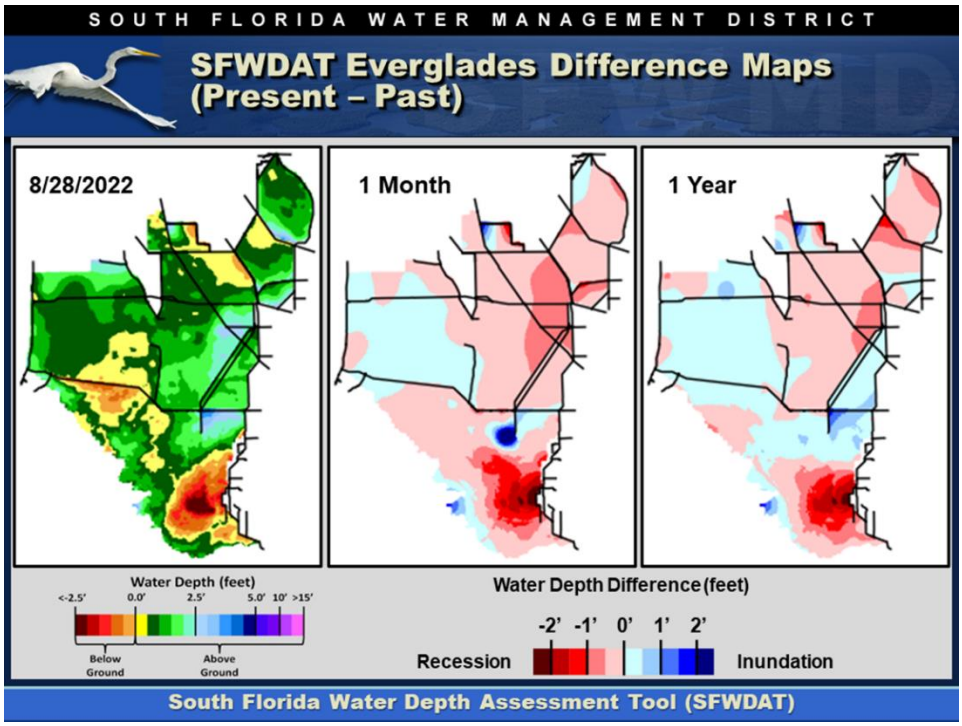


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

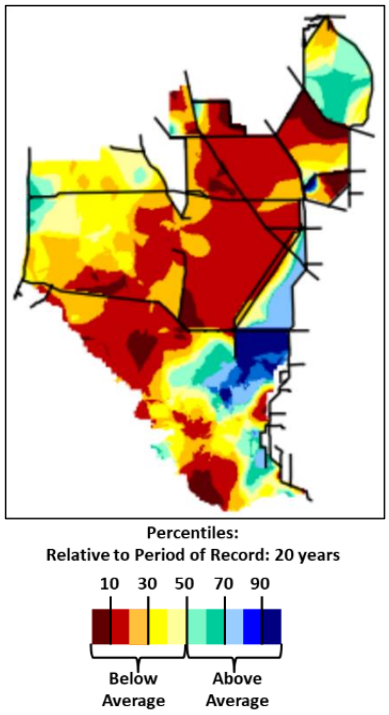


Figure EV-7. Present water depths (8/28/2022) compared to the day of year median over the previous 20 years.

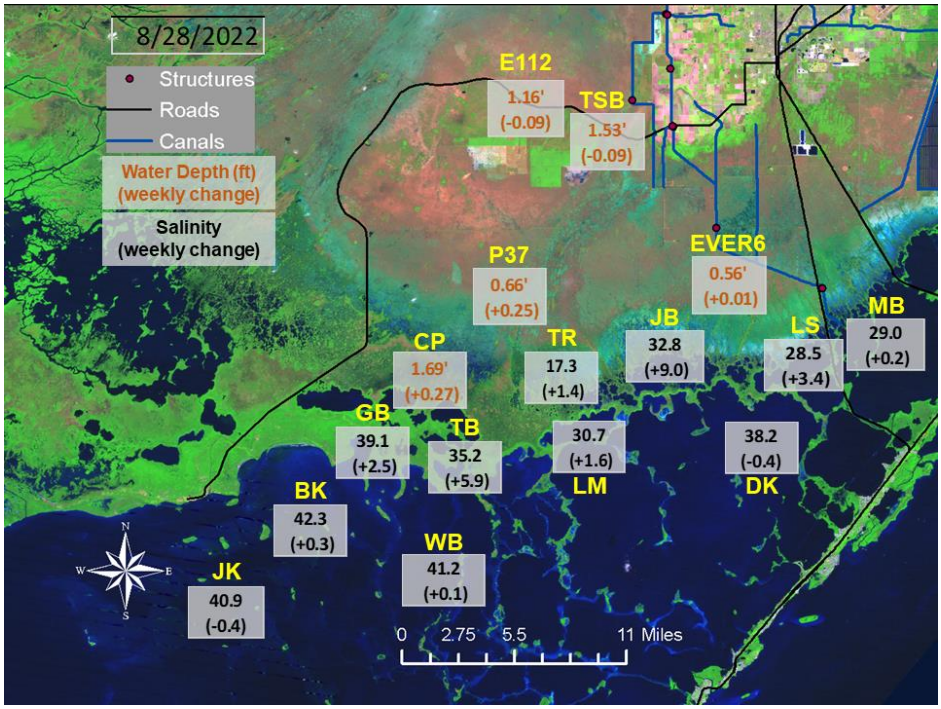


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

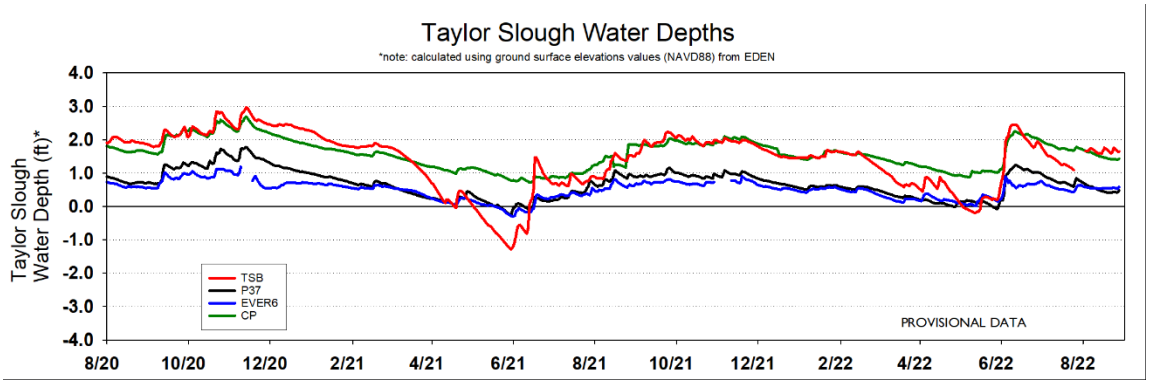


Figure EV-9. Taylor Slough water depth time series.

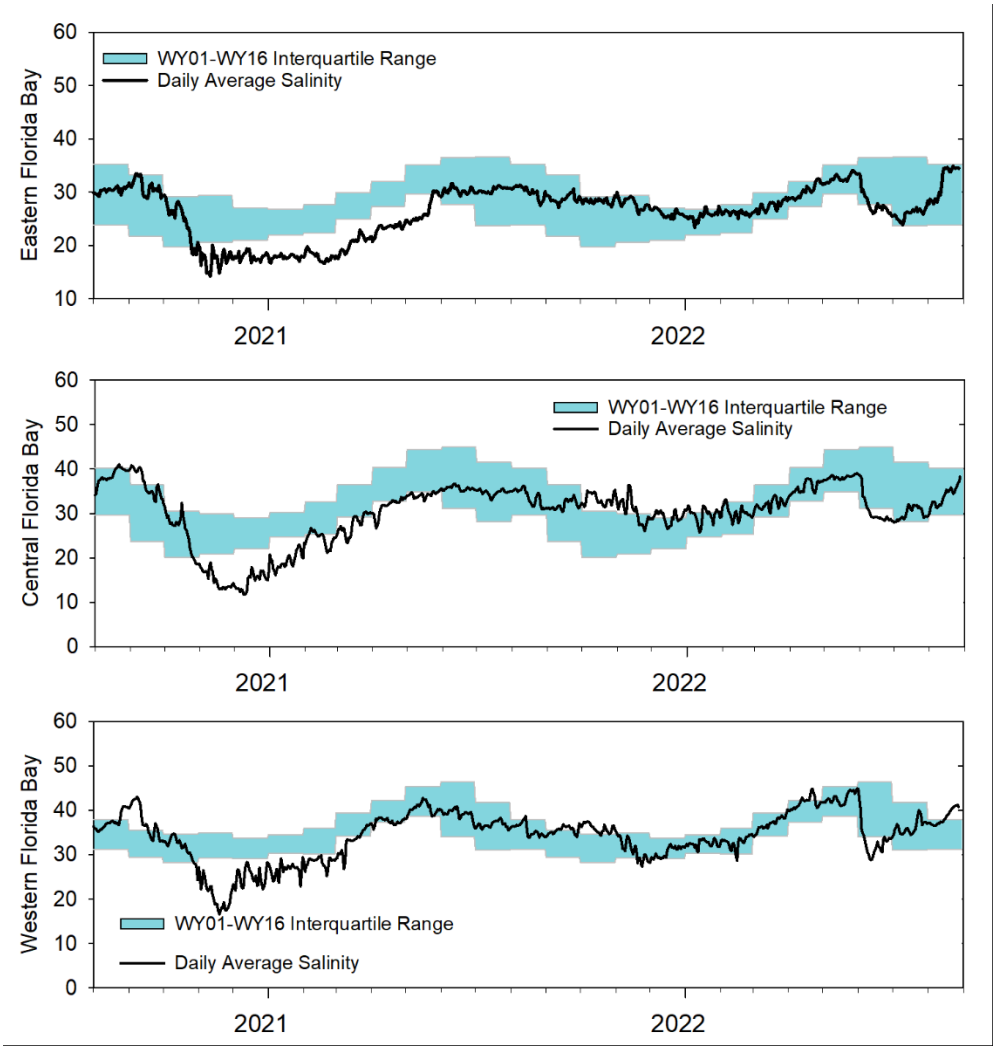


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with interquartile (25-75 percentile) ranges.

Table EV-2. Weekly water depth changes and water management recommendations

SFWMD Everglades Ecological Recommendations, August 30th, 2022 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage increased by 0.05’	Ascension rate of less than 0.25 feet per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage decreased by 0.06’	Ascension rate of less than 0.25 feet per week.	Protect within basin and downstream habitat and wildlife.
WCA-2B	Stage decreased by 0.15’	Ascension rate of less than 0.25 feet per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.16’	Ascension rate of less than 0.25 feet per week.	Protect within basin and downstream habitat and wildlife. Lower fire risk.
WCA-3A NW	Stage decreased by 0.09’	Ascension rate of less than 0.25 feet per week.	
Central WCA-3A S	Stage decreased by 0.13’	Ascension rate of less than 0.25 feet per week.	Protect within basin and downstream habitat and wildlife.
Southern WCA-3A S	Stage decreased by 0.10’		
WCA-3B	Stage decreased by 0.06’	Ascension rate of less than 0.25 feet per week.	Protect within basin and downstream habitat and wildlife. Lower fire risk.
ENP-SRS	Stage decreased by 0.02’	Make discharges to ENP according to COP and TTFF protocol while adaptively considering upstream and downstream ecological conditions. Discussions on water management within the system should be initiated as soon as possible.	Protect within basin and upstream habitat and wildlife.
Taylor Slough	Stage changes ranged from −0.071’ to +0.048’	Move water southward as possible.	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged −0.7 to +4.0	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.

Biscayne Bay

As shown in **Figure BB-1**, mean total inflow to Biscayne Bay was 140 cfs and the previous 30-day mean inflow was 228 cfs. The seven-day mean salinity was 32.7 at BBCW8, below the preferred maximum salinity of 35, and 35.3 at BBCW10, which slightly exceeds the preferred maximum salinity of 35. Data provided by Biscayne National Park.

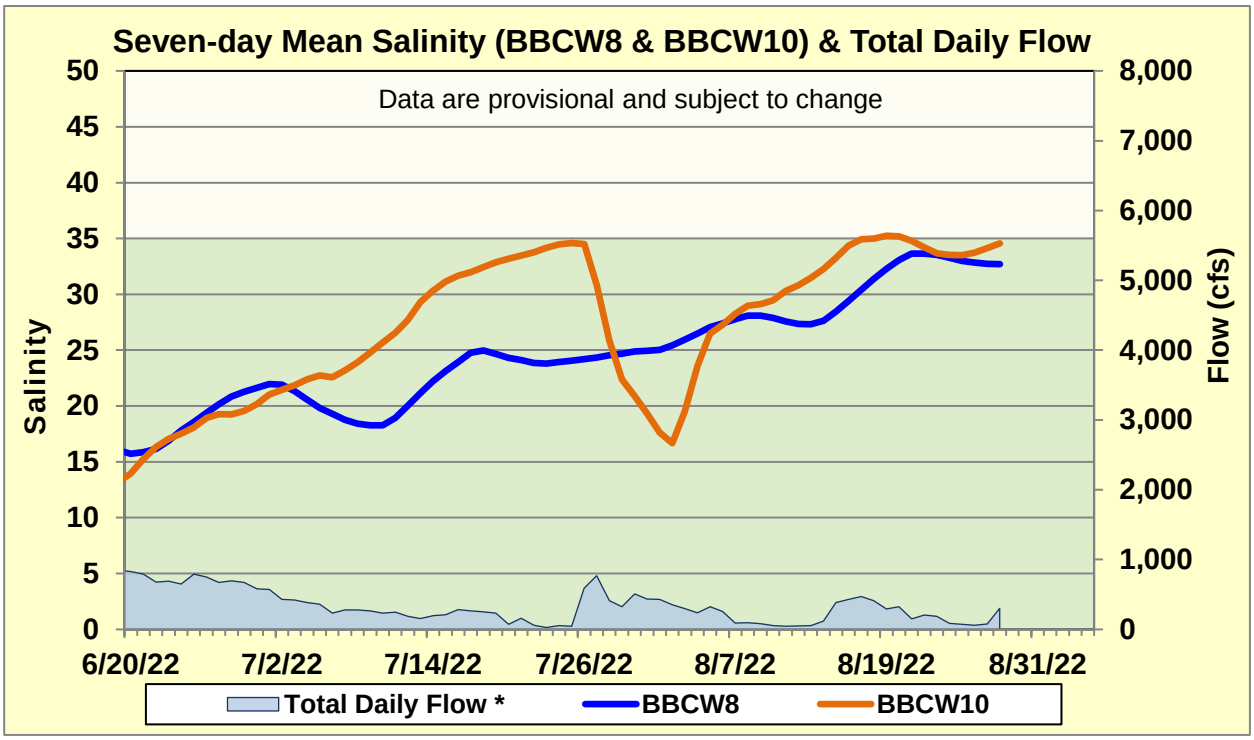


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.