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: June 12, 2024

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

A well-defined low-pressure system is not likely to develop into a tropical cyclone during its passage over the SFWMD, but further development into a tropical cyclone is possible once it travels northeastward across the southwestern Atlantic in the next few days. During the low's passage, widespread, very heavy rainfall is forecast to persist across much of the SFWMD over the next few days in a long band of high moisture left by the developing disturbance. The greatest rainfall is likely from the southwest coast to the Space Coast. Multiple days of widespread heavy rainfall along the southwest coast and over areas in and around Lake Okeechobee, including the lower east coast are forecast. The very heavy rainfall might finally subside by Saturday when the wind direction shifts to northeasterly. Much above average total SFWMD rainfall is expected for the 7-day period ending next Tuesday morning. This multi-day rain event could potentially rank among the wettest 7-day periods in June since 1991.

Kissimmee

Lake stage in East Lake Toho and Lake Toho is being allowed to rise with rainfall; no releases were made in the last seven days to slow the rate of lake stage rise. Weekly average discharge on June 9, 2024, was 340 cfs and 310 cfs at S-65 and S-65A, respectively. Mean weekly water depth on the Kissimmee River floodplain was 0.07 feet for the week ending June 9, 2024, and unchanged from the previous week. The weekly average concentration of dissolved oxygen in the Kissimmee River decreased from 7.9 mg/L the previous week to 7.7 mg/L for the week ending June 9, 2024, which is well above the potentially lethal and stressful levels for largemouth bass and other sensitive species.

Lake Okeechobee

Lake Okeechobee stage was 11.32 feet NAVD88 (12.63 ft NGVD29) on June 09, 2024, which was 0.23 feet lower than the previous week and 1.24 feet lower than a month ago. Average daily inflows (excluding rainfall) were like the previous week, at 220 cfs, compared to 230 cfs. Average daily outflows (excluding evapotranspiration) decreased from the previous week, from 4,310 cfs to 3,120. The June 8, 2024, NOAA Harmful Algal

Bloom Monitoring System suggested moderate to high cyanobacteria abundance across much of the Lake.

Estuaries

Total inflow to the St. Lucie Estuary averaged 60 cfs over the past week with all recorded flow coming from the Tidal Basin. Mean salinities increased at all sites in the estuary over the past week. Salinity in the middle estuary was in the upper stressful range (>25) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 1,880 cfs over the past week with 1,300 cfs coming from Lake Okeechobee. Mean surface salinities remained the same at S-79 and increased at the remaining sites 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 upper stressed range (>25) at Shell Point and Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, June 9, 2024, 9,400 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2025 (since May 1, 2024) is approximately 69,400 ac-feet. The total amount of inflows to the STAs in WY2025 is approximately 70,000 ac-feet. Most STA cells are at or near target stage. STA-1E Eastern Flow-way is offline for rehydration and vegetation establishment following erosion repair. Operational restrictions are in effect in STA-1E Western Flow-way, STA-2 Flow-ways 2 and 4, and STA-3/4 Eastern Flow-way for vegetation management activities. An operational restriction is in effect for STA-2 Flow-way 5 for construction activities. STA-1E Central Flow-way, STA-1W Eastern and Northern Flow-ways and Cells 6 and 7, as well as STA-2 Flow-ways 3 and 4 contain nests of Migratory Bird Treaty Act protected species. This week, if 2008 LORS recommends Lake releases to the WCAs and conditions allow, releases will be sent to STA-2, STA-3/4, or STA-5/6.

Everglades

Over the last few weeks rates of stage change remain generally favorable for the regions with active wading bird foraging and welcome rain provided hydration for WCA-3A North and northern WCA-2A. Stages decreased on average in Taylor Slough and fell below recent averages for this time of year. Average salinity increased in Florida Bay last week, conditions remain below historical estimates for this time of year in the eastern region however salinities within the western and now central region are within the IQR and above historical estimates. Florida Bay MFL metrics remain well outside thresholds of harm. White Ibis continue to nest in numbers at Alley North, within the Refuge and ENP. Around 650 Wood Storks are nesting in the Everglades Protection Area. These nests are likely doomed to fail as there is not enough time to fledge chicks before the wet season rains begin.

Biscayne Bay

Total inflow to Biscayne Bay averaged 290 cfs and the previous 30-day mean inflow averaged 140 cfs. Average daily salinity at BBCW8 was 34 which was within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Average daily

salinity at BBCW10 was 34 which was above the ideal salinity range for estuarine organisms in this region. Data provided by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On June 9, 2024, mean daily lake stages were 53.9 feet NAVD88 (1.6 feet below schedule) in East Lake Toho, 50.9 feet NAVD (1.4 feet below schedule) in Lake Toho, and 47.7 feet NAVD (2.1 feet below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**).

Lower Kissimmee

For the week ending June 9, 2024, mean weekly discharge was 340 cfs and 310 cfs at S-65 and S-65A, respectively. Mean weekly discharge from the Kissimmee River was 260 cfs at S-65D and 220 cfs at S-65E (**Table KB-2**). Mean weekly headwater stages were 45.1 feet NAVD at S-65A and 24.6 feet NAVD at S-65D on June 9, 2024. Mean weekly river channel stage was unchanged from the previous week's stage of 31.0 feet NAVD over the week ending on June 9, 2024 (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain was 0.07 feet for the week ending June 9, 2024, and unchanged from the previous week (**Table KB-2**, **Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River decreased from 7.9 mg/L the previous week to 7.7 mg/L for the week ending June 9, 2024 (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Follow the Hybrid A discharge plan for S-65/S-65A (**Figure KB-7**) until further notice. Maintain at least minimum flow (250-300 cfs) at S-65A. Allow stages to rise in Lakes East Toho, Toho and Kissimmee, but keep ascension rates slower than 0.25 ft/week to the extent possible. Avoid sudden increases in KCH stage to help protect recent plantings.

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

Water Body	Structure	Stage Monitoring Site	Weekly (7-Day) Average Discharge (cfs)	Sunday Lake Stage (feet NAVD)[a]	Schedule Type[b]	Sunday Schedule Stage (feet NAVD)	Sunday Departure from Regulation (feet)	
							6/9/24	*6/2/24*
Lakes Hart and Mary Jane	S-62	LKMJ	0	58.2	R	58.9	-0.7	-0.6
Lakes Myrtle, Preston and Joel	S-57	S-57	0	58.7	R	60.0	-1.3	-1.2
Alligator Chain	S-60	ALLI	0	61.0	R	62.2	-1.2	-1.1
Lake Gentry	S-63	LKGT	0	58.4	R	59.9	-1.5	-1.5
East Lake Toho	S-59	TOHOE	0	53.9	R	55.5	-1.6	-1.6
Lake Toho	S-61	TOHOW S-61	0	50.9	R	52.3	-1.4	-1.3
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	340	47.7	R	49.8	-2.1	-1.9

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.

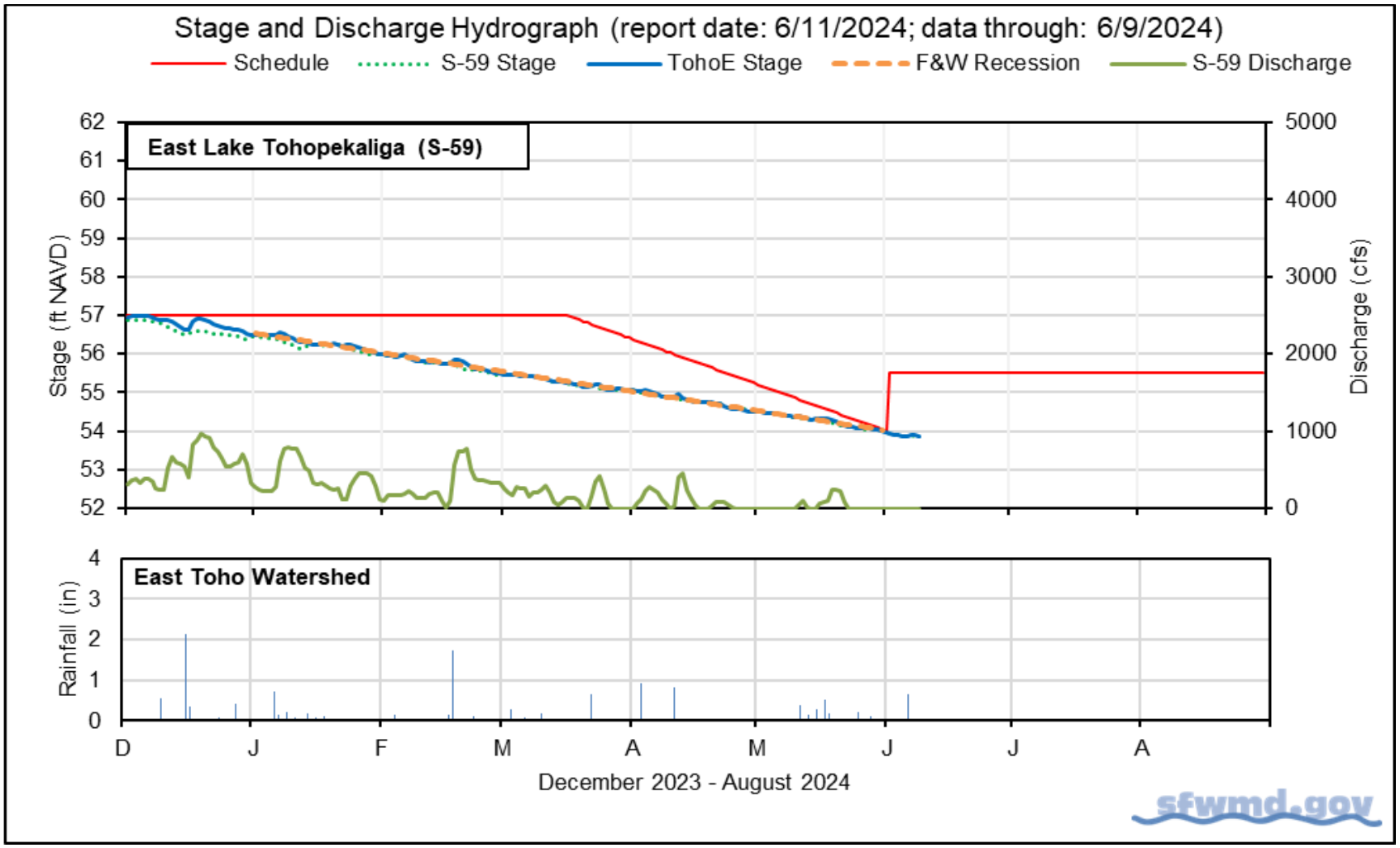


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

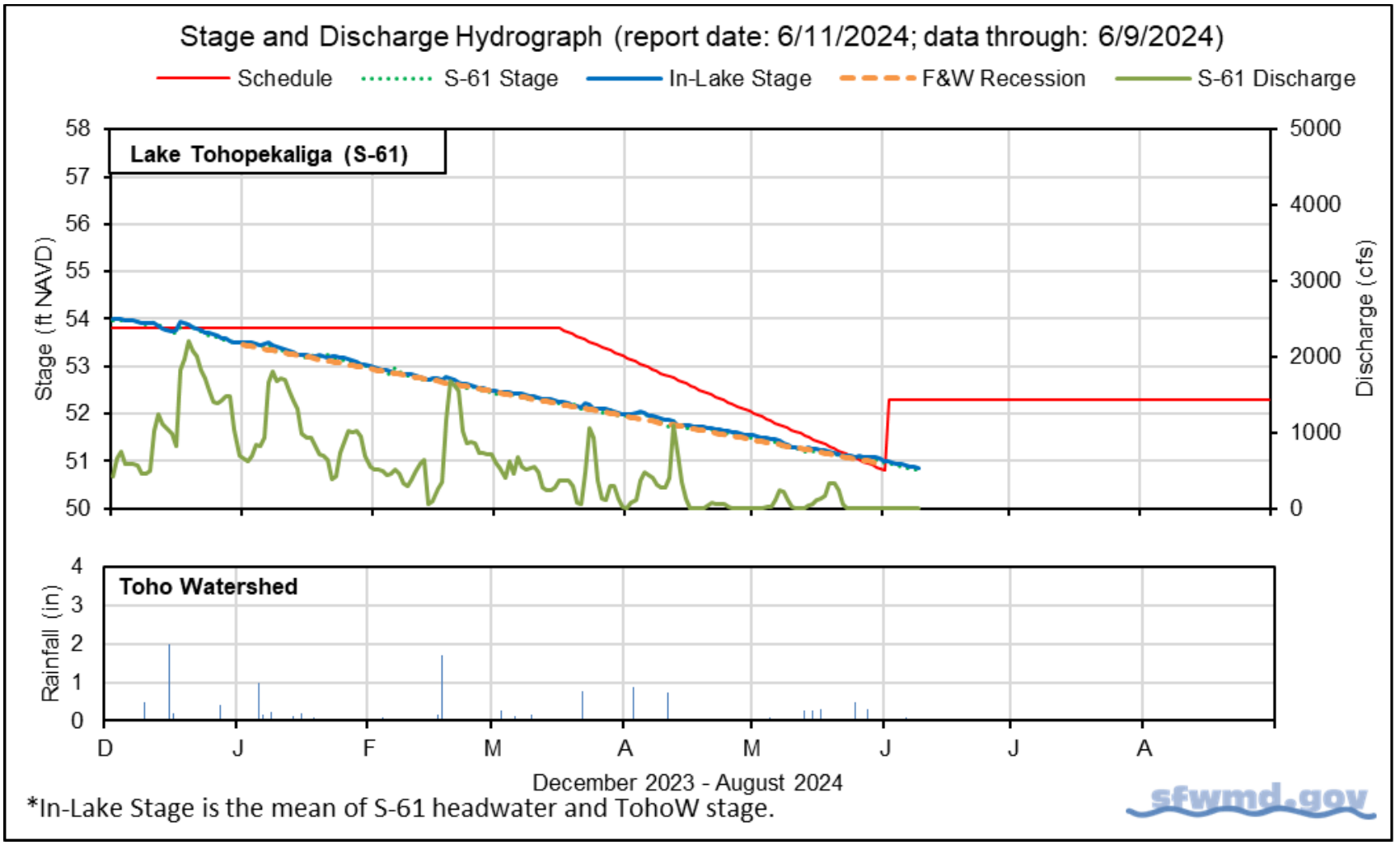


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

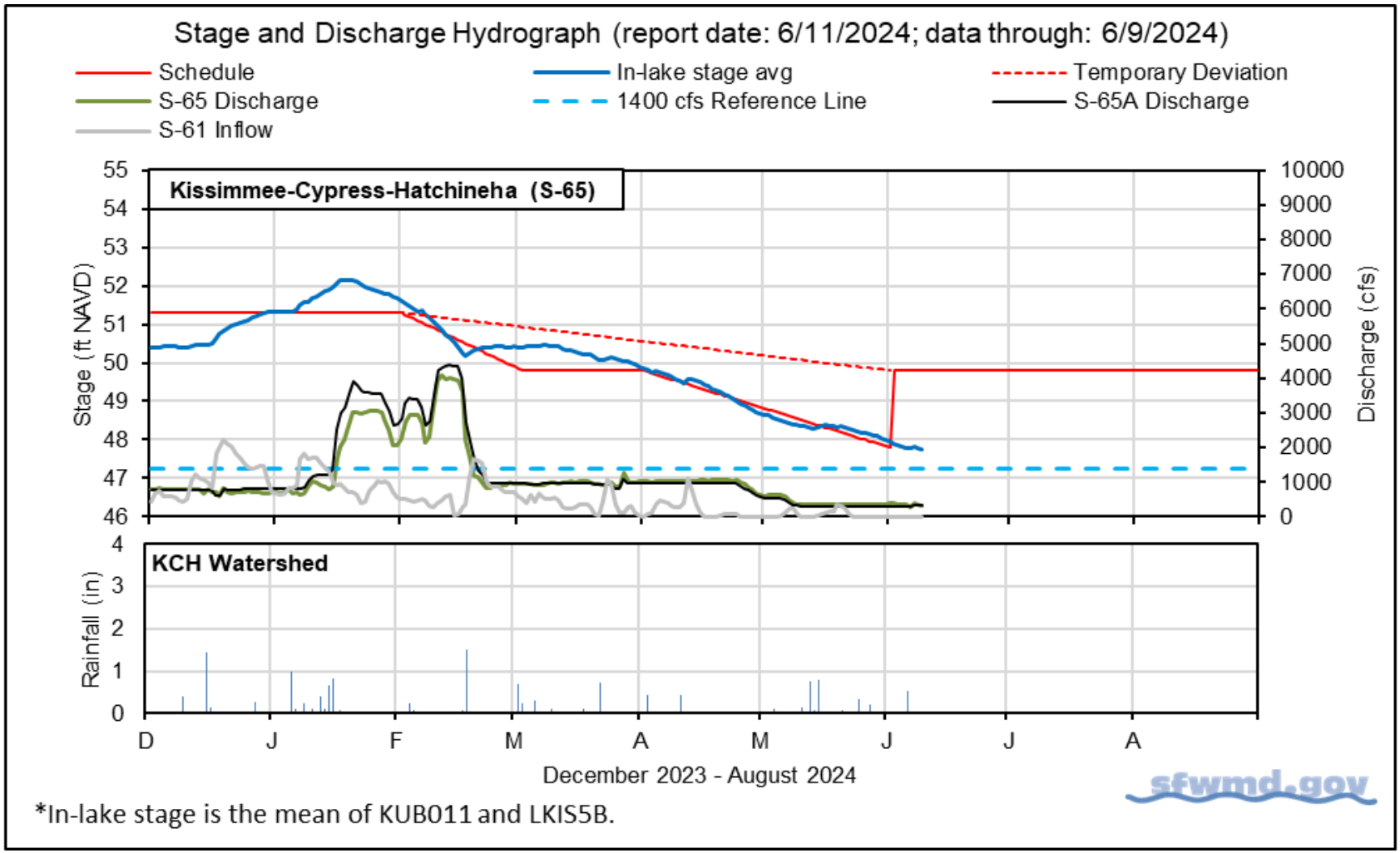


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

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	Sunday Daily Average	Weekly Average for Previous Seven Day Periods			
		6/9/24	6/9/24	6/2/24	5/26/24	5/19/24
Discharge	S-65	330	340	360	350	350
Discharge	S-65A[a]	330	310	310	310	310
Headwater Stage (feet NAVD)	S-65A	45.1	45.1	45.1	45.2	45.1
Discharge	S-65D[b]	250	260	270	280	300
Headwater Stage (feet NAVD)	S-65D[c]	24.7	24.6	24.5	24.4	24.6
Discharge (cfs)	S-65E[d]	210	220	230	240	290
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	7.3	7.7	7.9	8.2	7.8
River channel mean stage[f]	Phase I river channel	31.0	31.0	31.0	31.1	31.2
Mean depth (feet) [g]	Phase I floodplain	0.07	0.07	0.07	0.07	0.07

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. Mean of five river channel stations (PC62, KRDR02, KRBN, PC33, PC11) in the Phase I area.

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

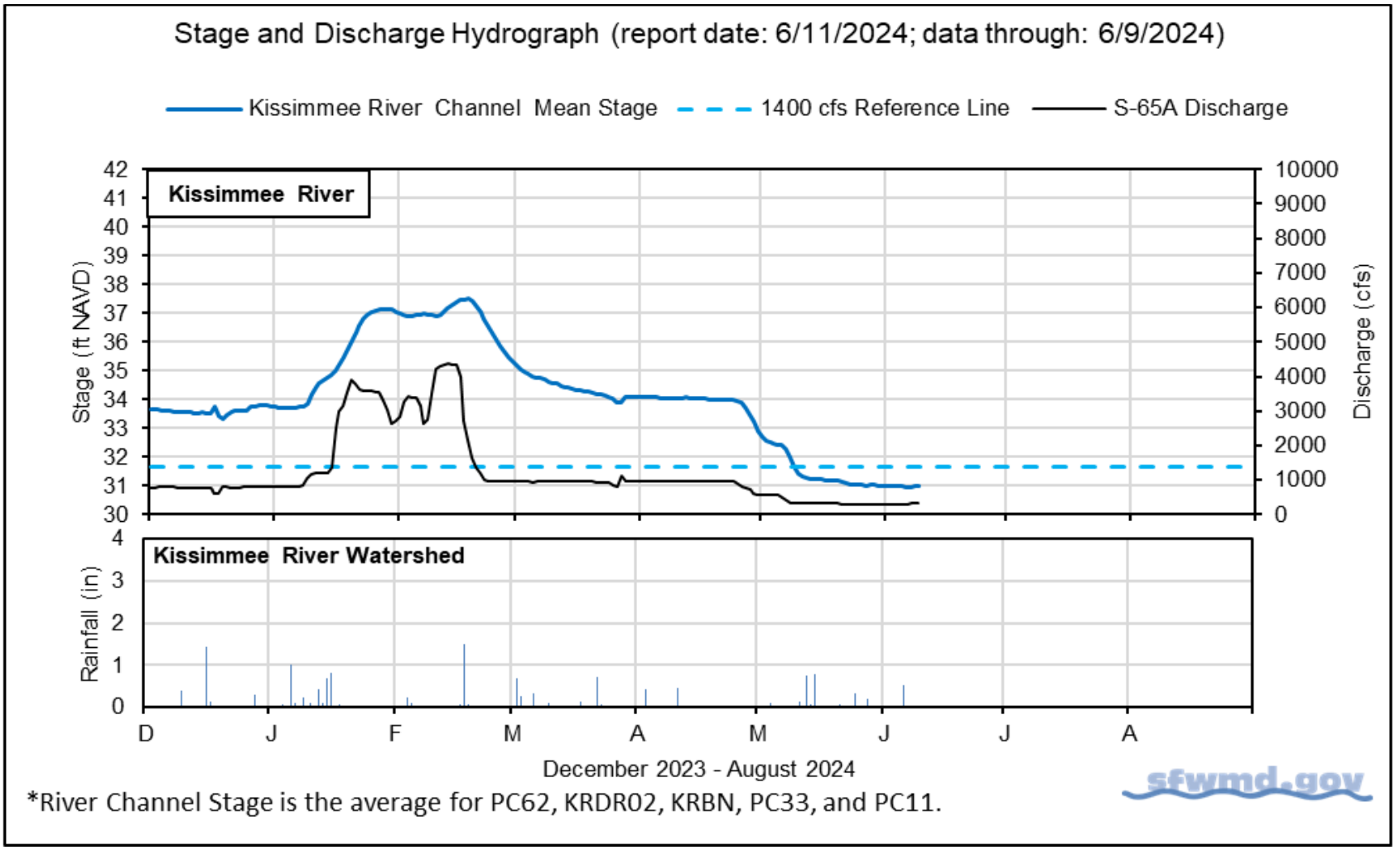


Figure KB-4. Kissimmee River stage, discharge and rainfall.

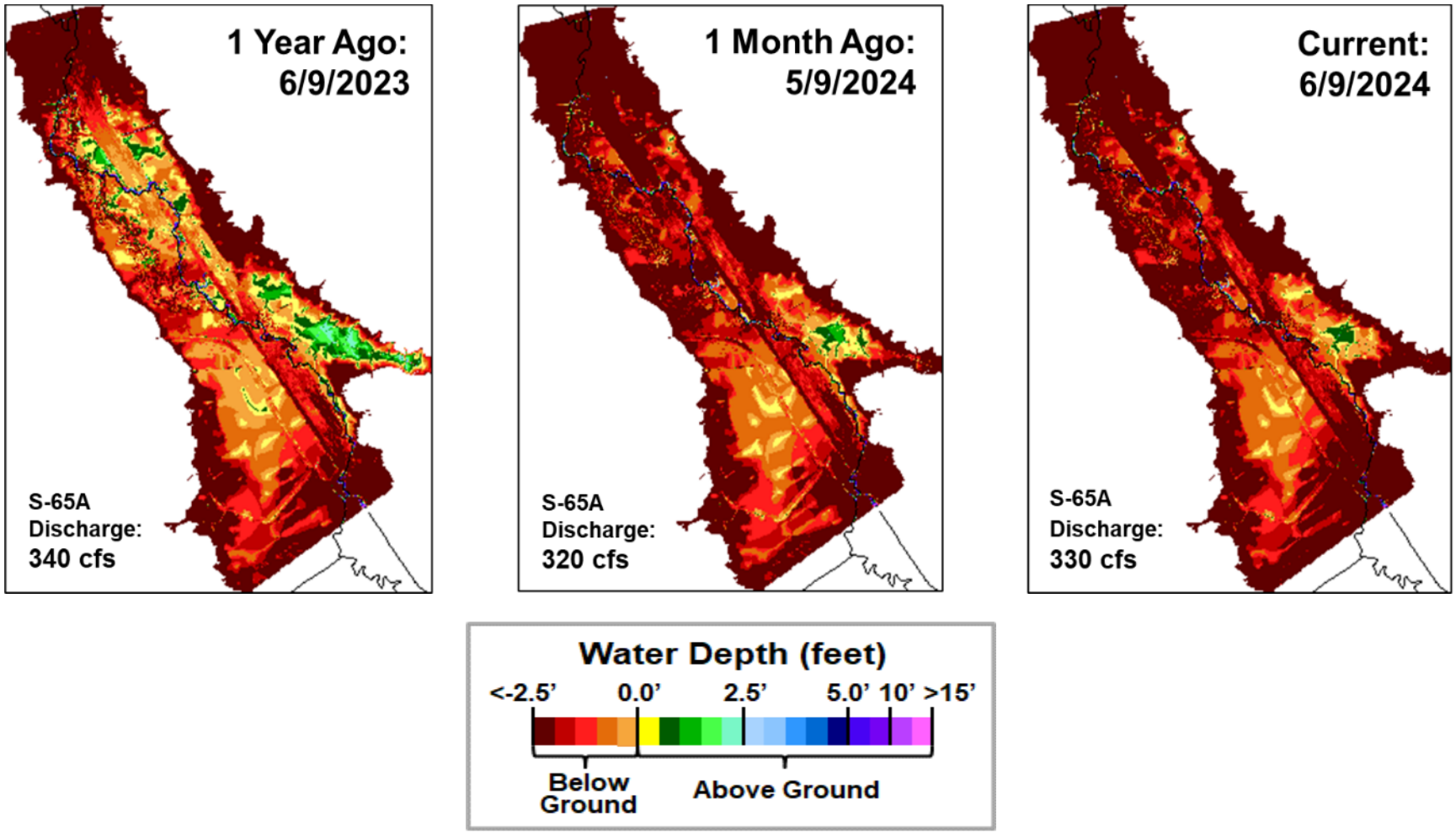


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

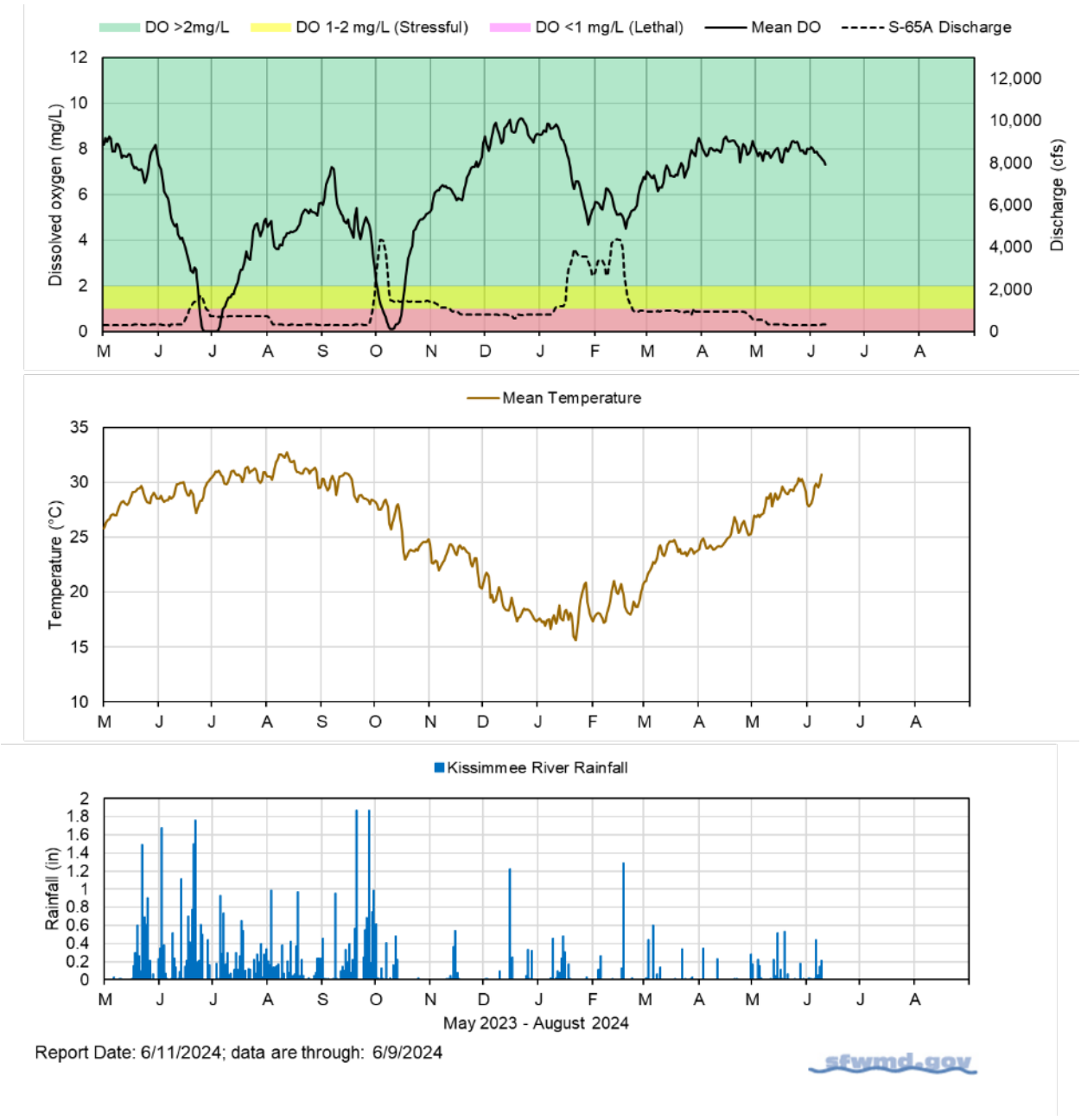


Figure KB-6. Kissimmee River channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of five stations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

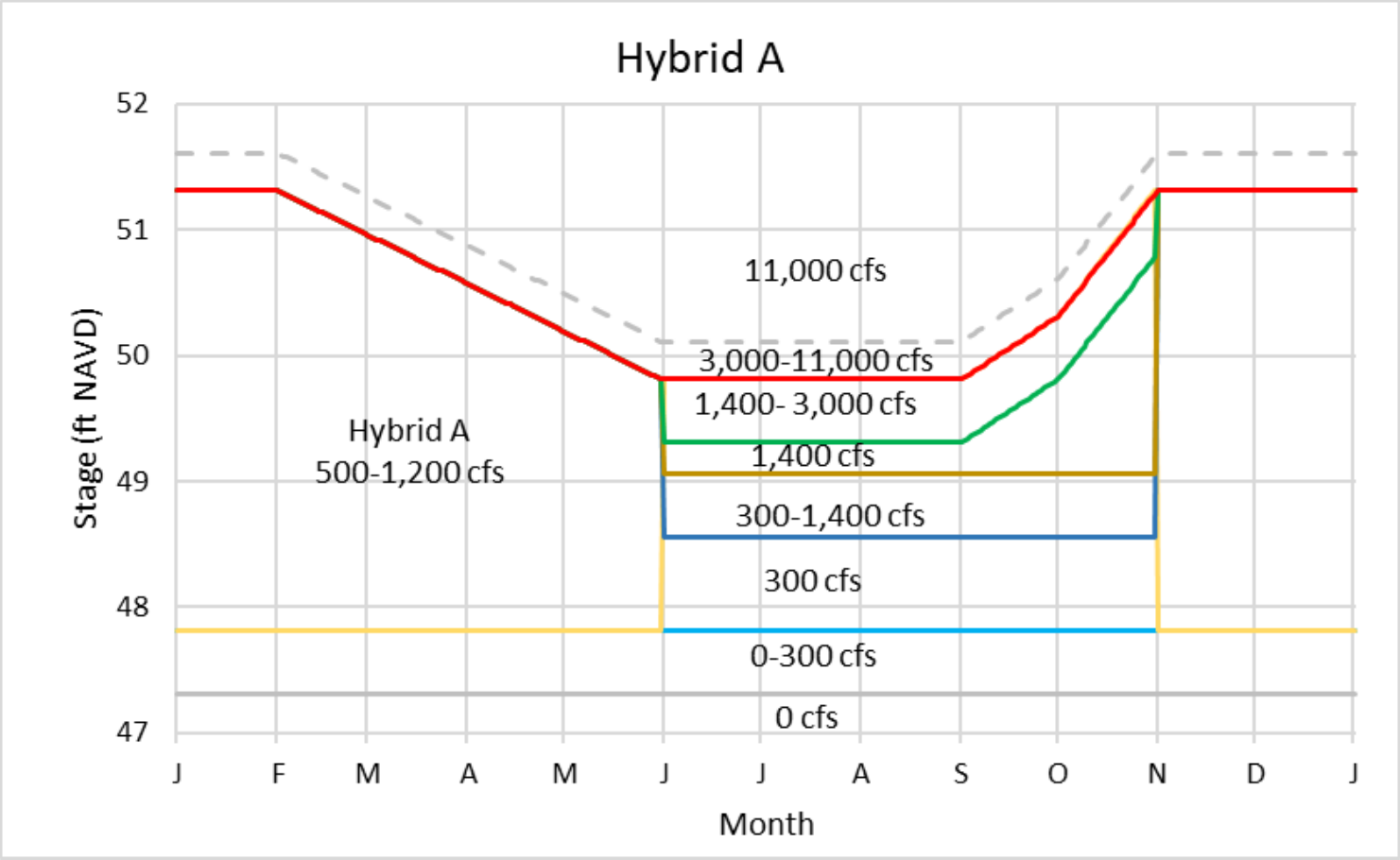


Figure KB-7. Hybrid A Discharge Plan for S-65/S-65A. Use discharge rate of change limits from IS-14-50 (Fig. KB-8).

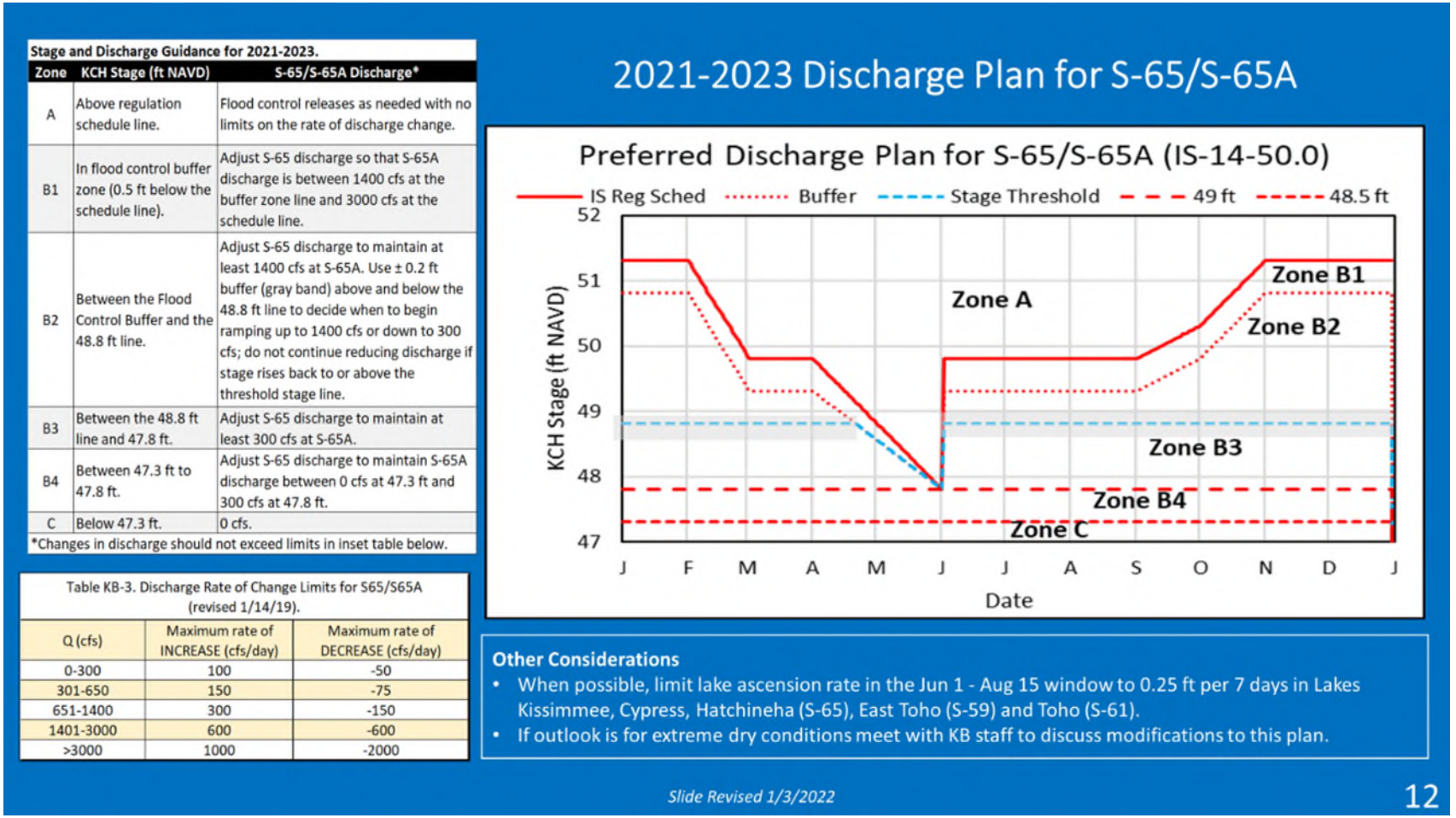


Figure KB-8. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 11.32 feet NAVD88 (12.63 ft NGVD29) on June 9, 2024, which was 0.23 feet lower than the previous week and 1.24 feet lower than a month ago (**Figure LO-1**). Lake stage is in the Base Flow sub-band (**Figure LO-2**) and was 0.50 feet above the upper limit of the recovery ecological envelope (**Figure LO-3**). According to NEXRAD, 1.07 inches of rain fell directly over the Lake last week.

Average daily inflows (excluding rainfall) were like the previous week, at 220 cfs, compared to 230 cfs. All the inflow came from the C-38 Canal via the S-65E/65EX1 structure. Average daily outflows (excluding evapotranspiration) decreased from the previous week, from 4,310 cfs to 3,120. The highest average single structure outflow was recorded at the S-77 structure into the C-43 canal (1,750 cfs), while an average of 1,840 cfs was released south through the S-350 structures. To the east, 30 cfs was released through S-308 into the C-44 canal. **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.

In the most recent satellite image from June 08th, 2024, NOAA's Harmful Algal Bloom Monitoring System suggested moderate to high cyanobacteria abundance across much of the Lake (**Figure LO-6**).

Note: All data presented in this report are provisional and are subject to change.

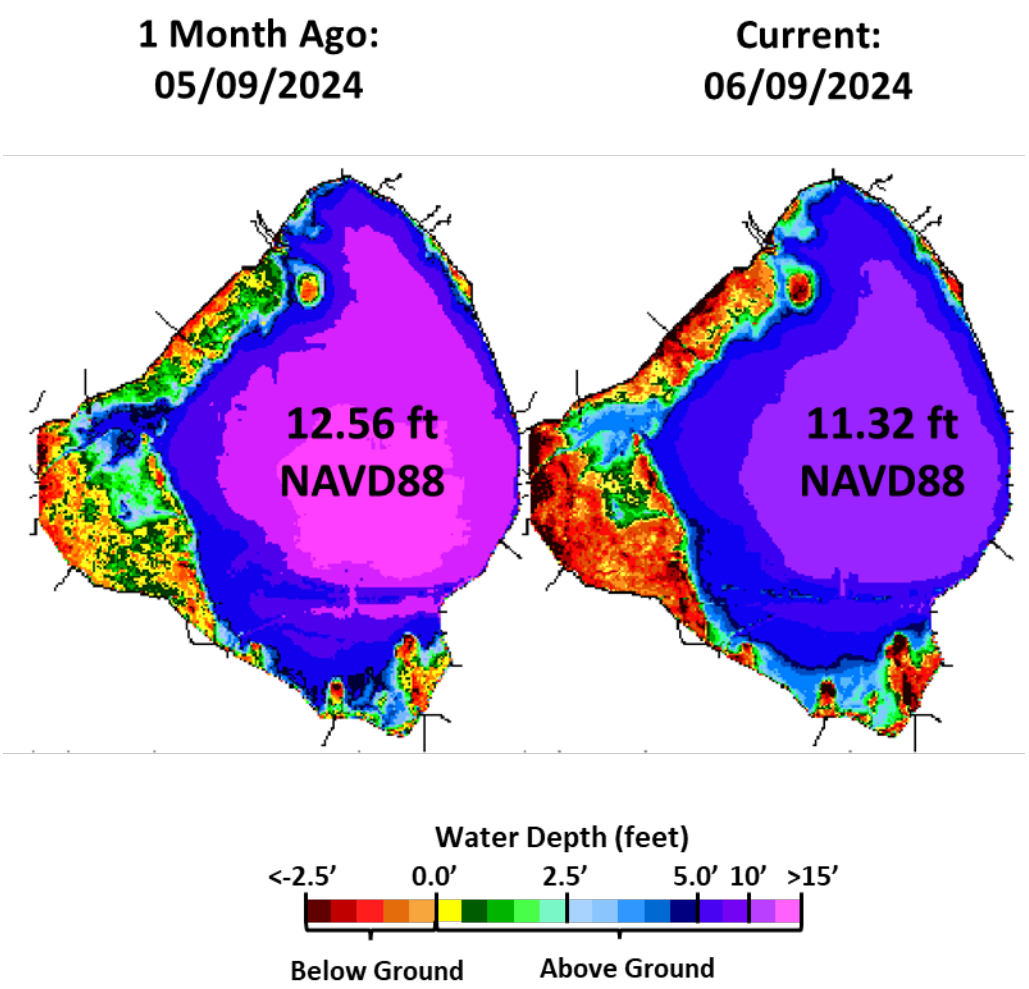


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

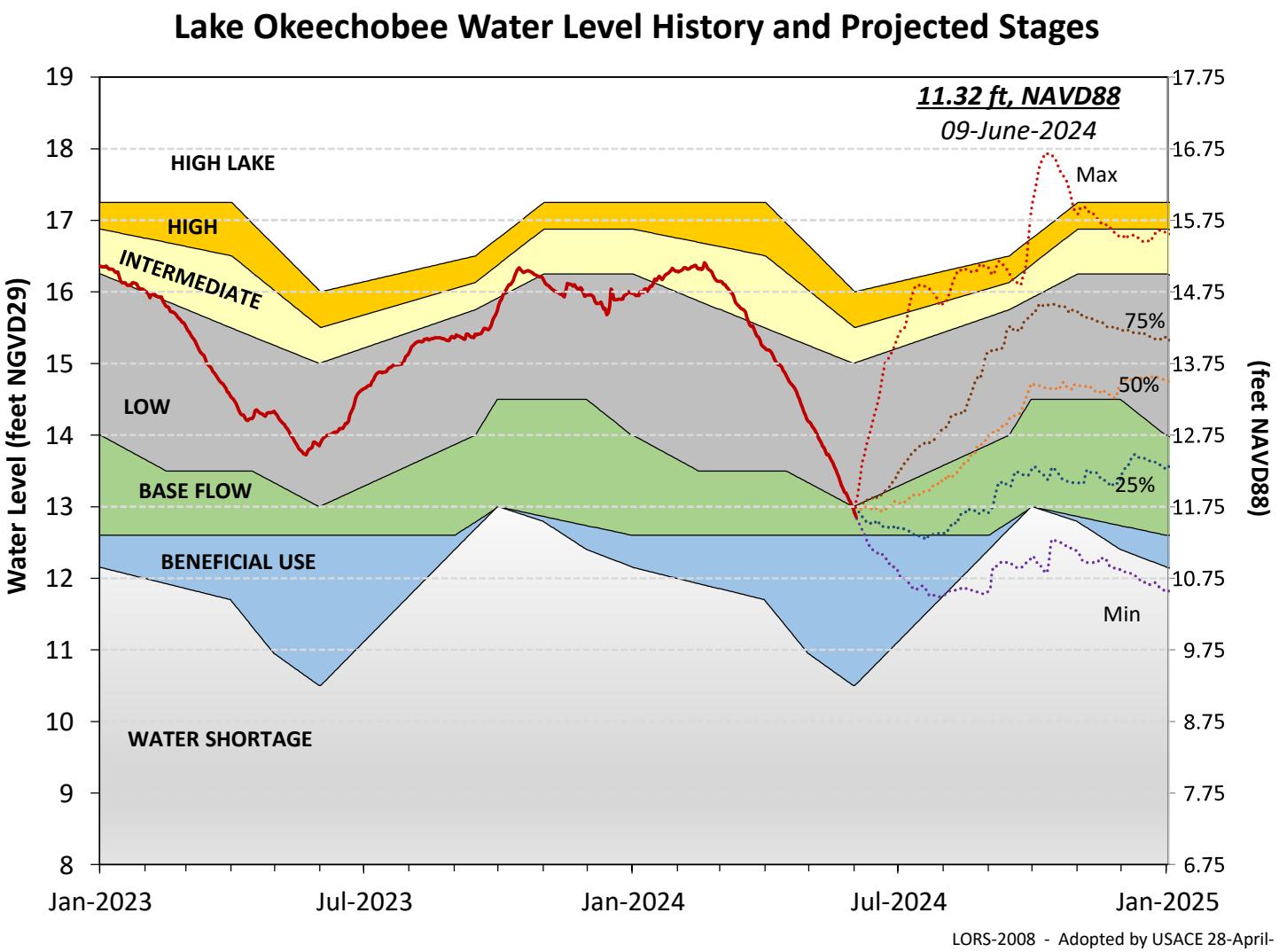


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis. Note: stages are in NGVD29, approximate NAVD88 values are shown for reference.

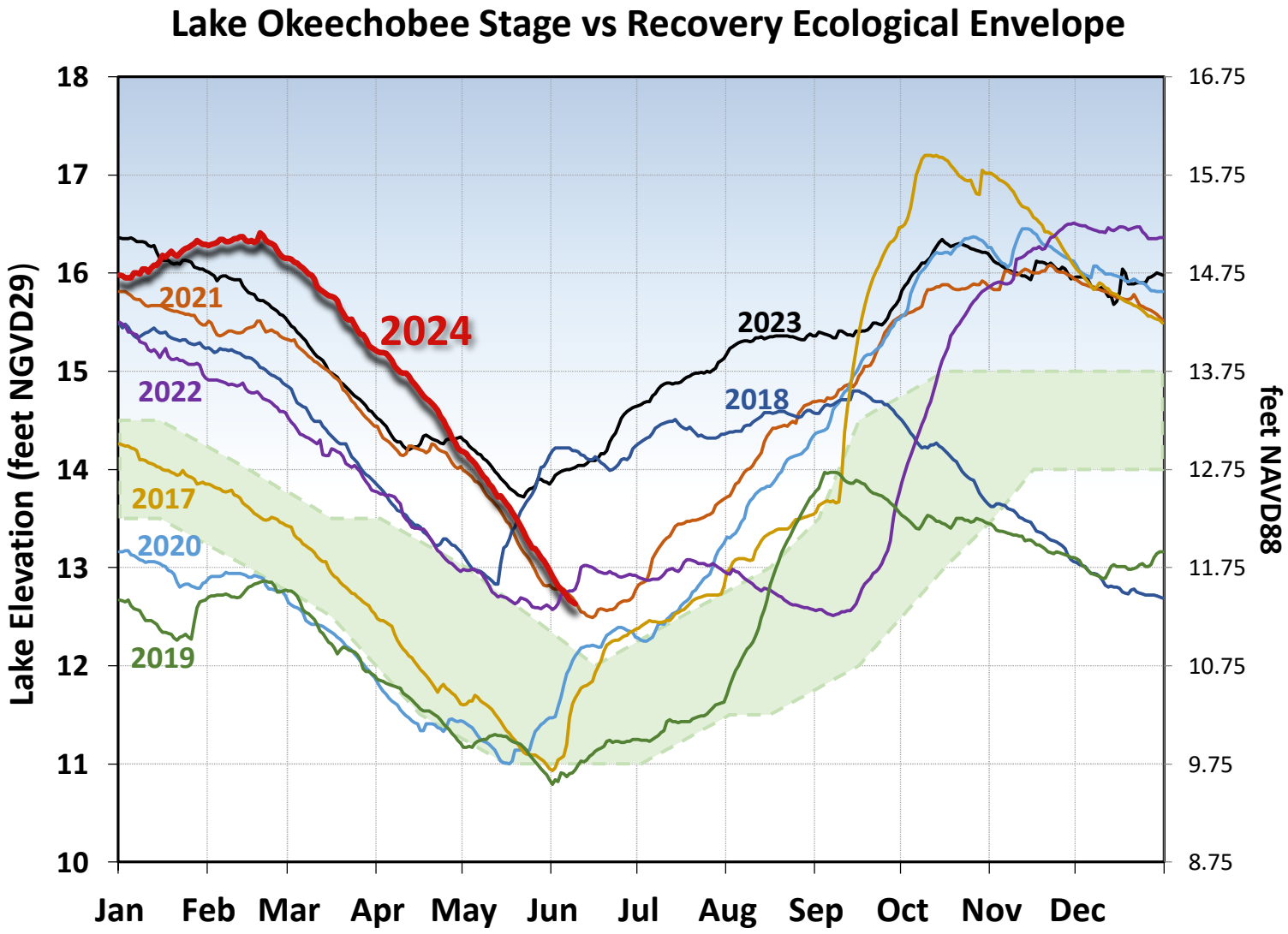


Figure LO-3. The current and seven prior year's annual stage hydrographs for Lake Okeechobee in comparison to the recovery envelope (light green). A shift from the normal ecological envelope to the recovery envelope occurred because the 30-day minimum lake stage (elevations exposed for at least 30 days, nonconsecutively) in the June 1 – July 31, 2023 window was >13 ft NGVD29 (11.75 ft NAVD88).

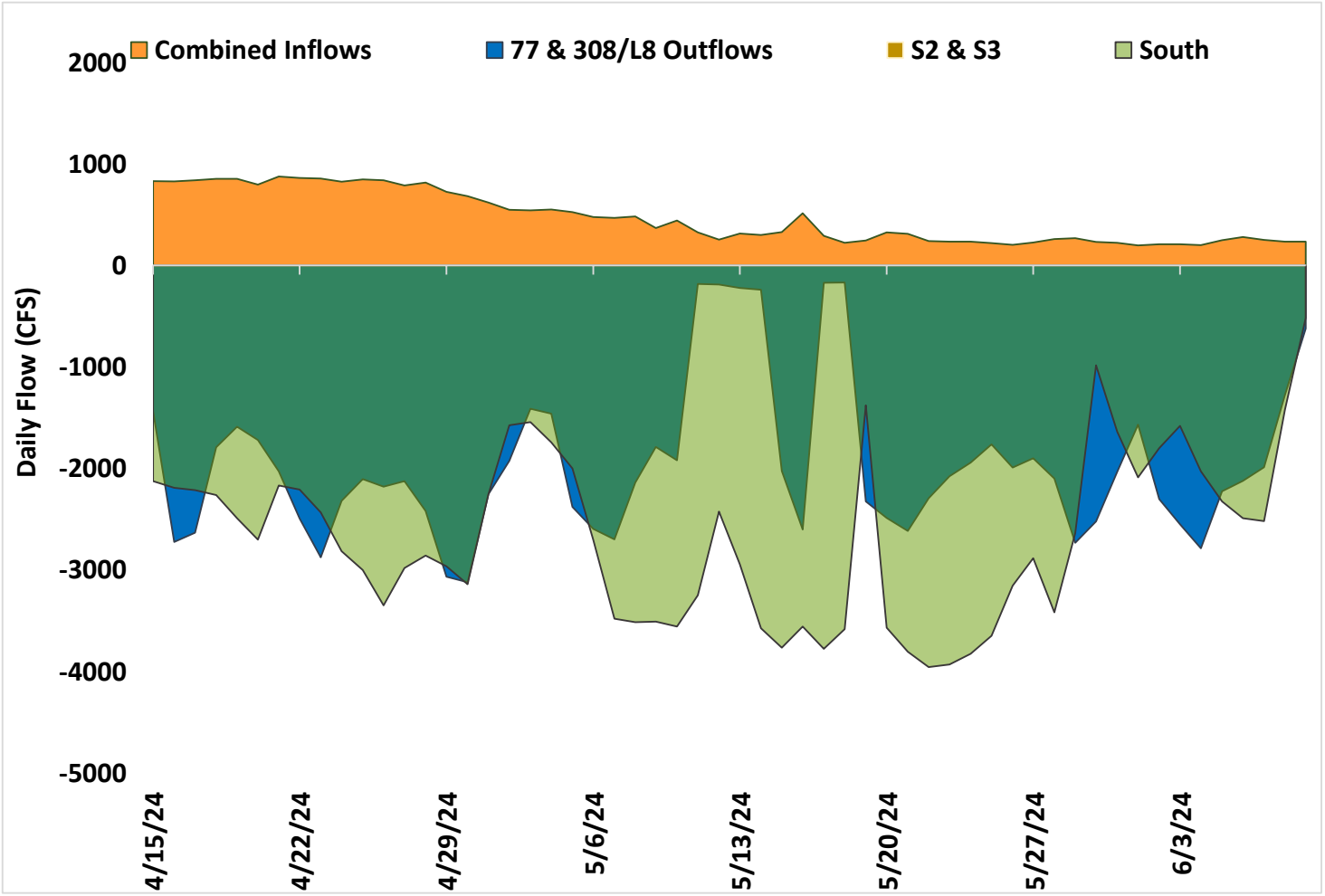


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from 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.

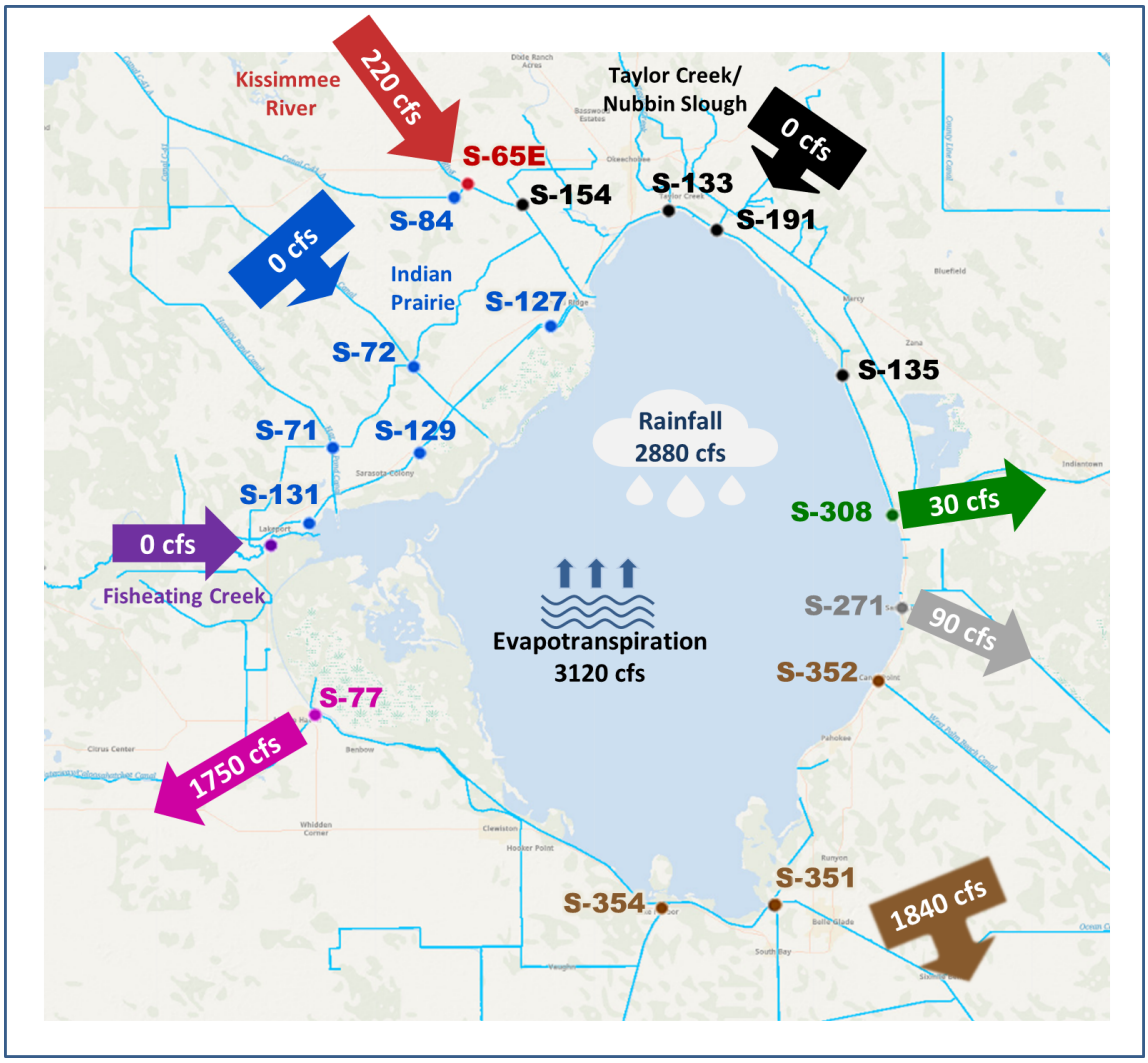


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of June 03 – 09, 2024.

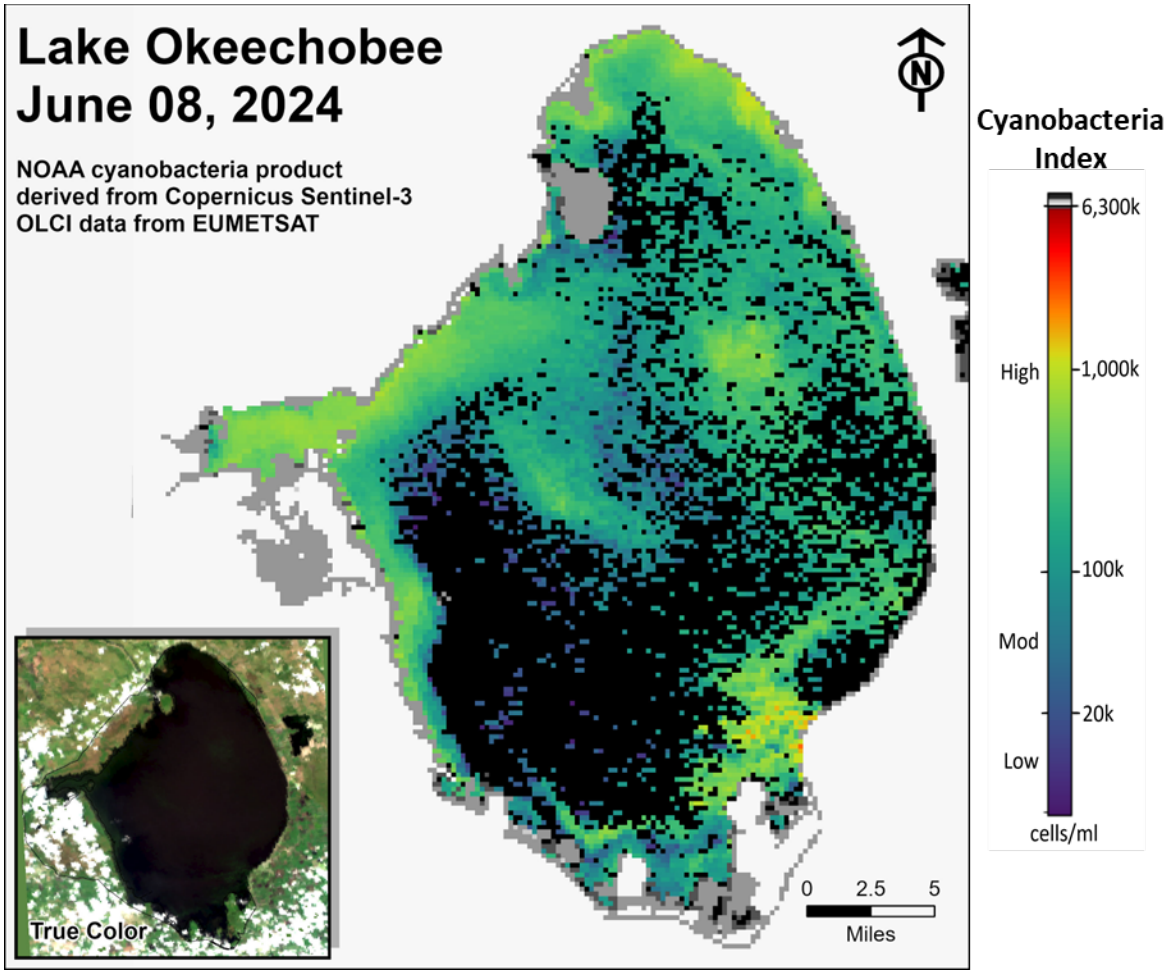


Figure LO-6. Cyanobacteria bloom index level on June 08, 2024, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover. *Provisional NOAA image, subject to change*

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 60 cfs (**Figures ES-1** and **ES-2**), and the previous 30-day mean inflow was 190 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, salinities increased 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 28. Salinity conditions in the middle estuary were estimated to be in the upper stressed range for adult eastern oysters (**Figure ES-4**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute (FWRI) was 3.1 spat/shell for May, which is an increase from the previous month (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 1,880 cfs (**Figures ES-6** and **ES-7**), and the previous 30-day mean inflow was 2,040 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, surface salinities remained the same at S-79 and increased at the remaining 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 and in the upper 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 17.9 spat/shell at Iona Cove and 40.2 spat/shell at Bird Island for May, which is a substantial increase from the previous month (**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 2,000 cfs with estimated tidal basin inflows of 1,720 cfs. Model results from all scenarios predict daily salinity to be 0.9 or lower and the 30-day moving average surface salinity to be 0.4 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 May 31, 2024, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in samples collected statewide over the past week.

Water Management Recommendations

Lake stage is in the Base Flow Sub-Band. Tributary conditions are dry. The LORS2008 release guidance suggests up to 450 cfs release at S-79 to the Caloosahatchee River Estuary and up to 200 cfs release at S-80 to the St. Lucie Estuary.

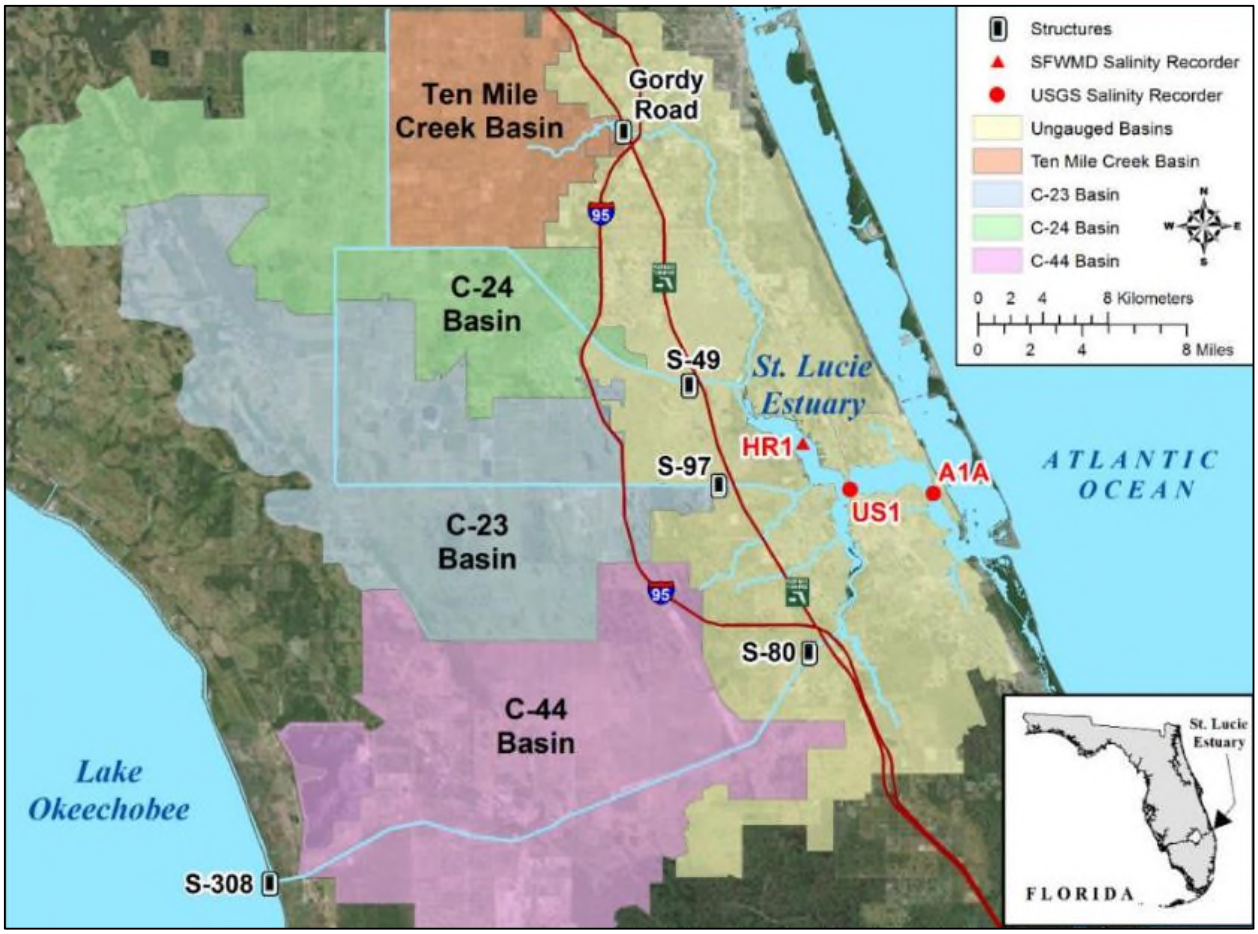


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

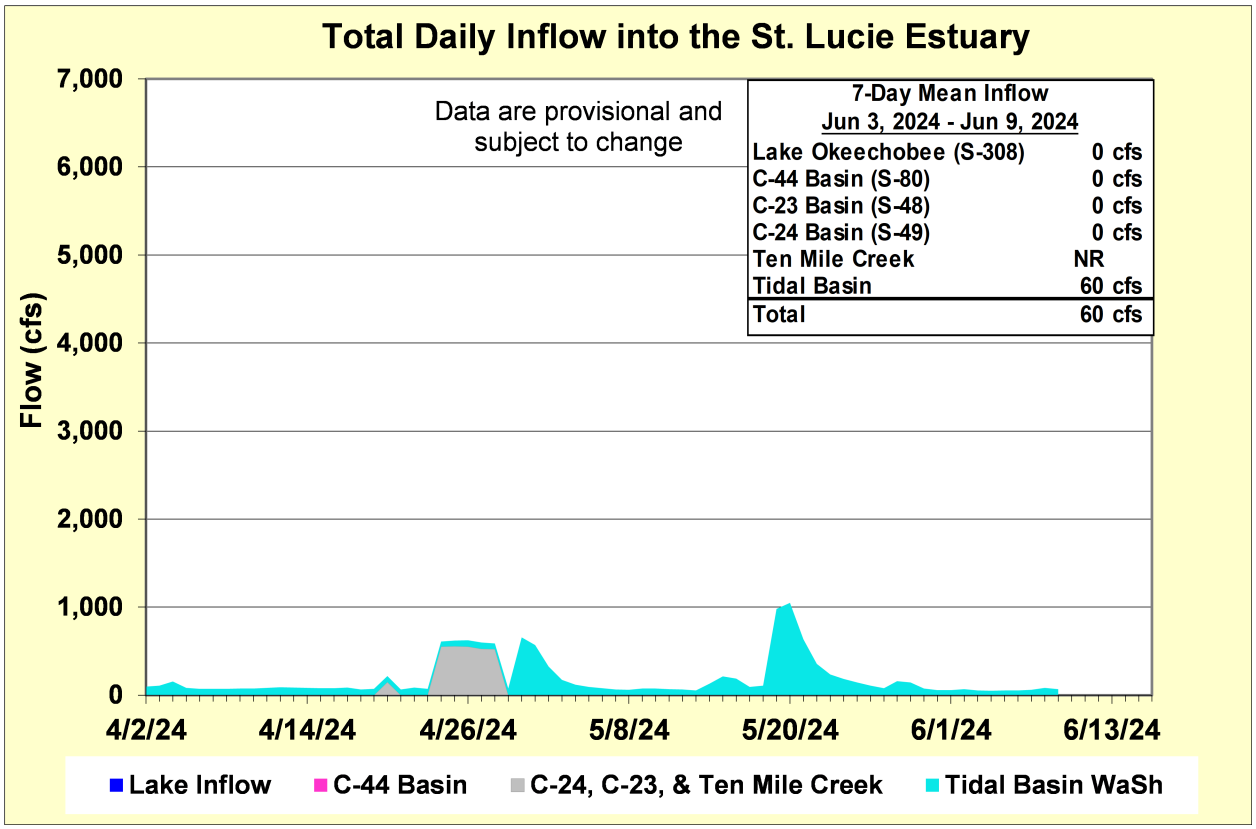


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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)	**24.4** (23.6)	**25.9** (24.8)	10.0 – 25.0
US1 Bridge	**27.9** (26.9)	**28.0** (27.0)	10.0 – 25.0
A1A Bridge	**32.1** (31.7)	**33.0** (32.9)	10.0 – 25.0

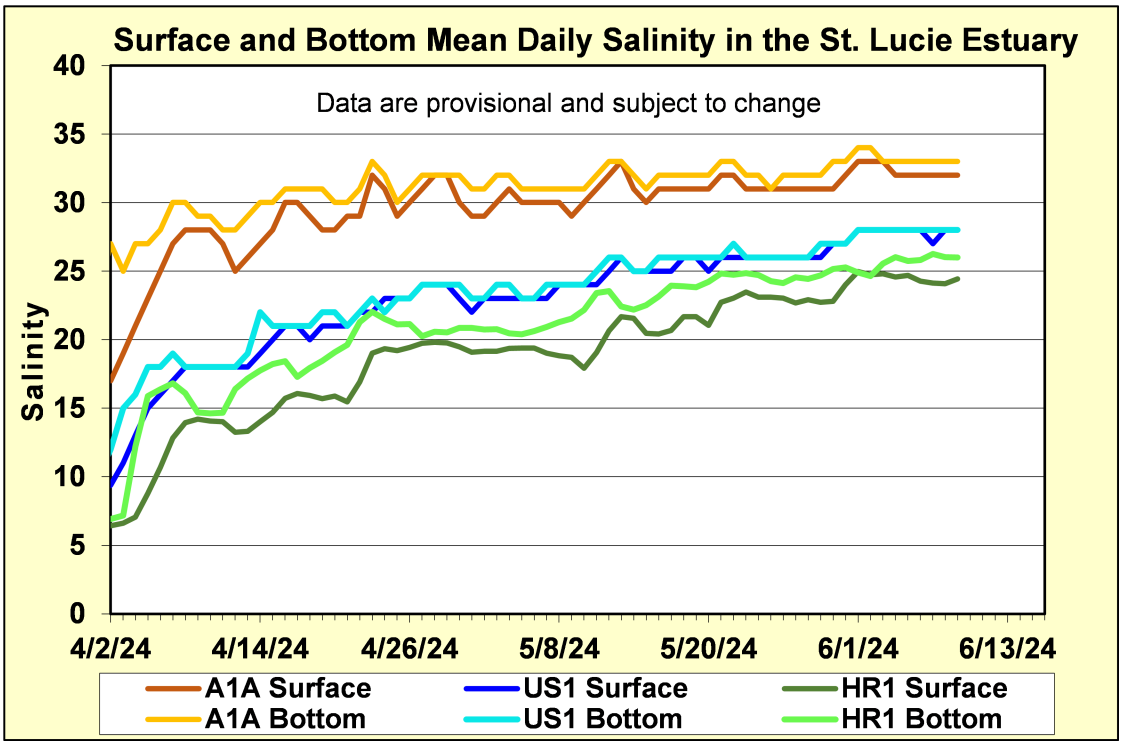


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

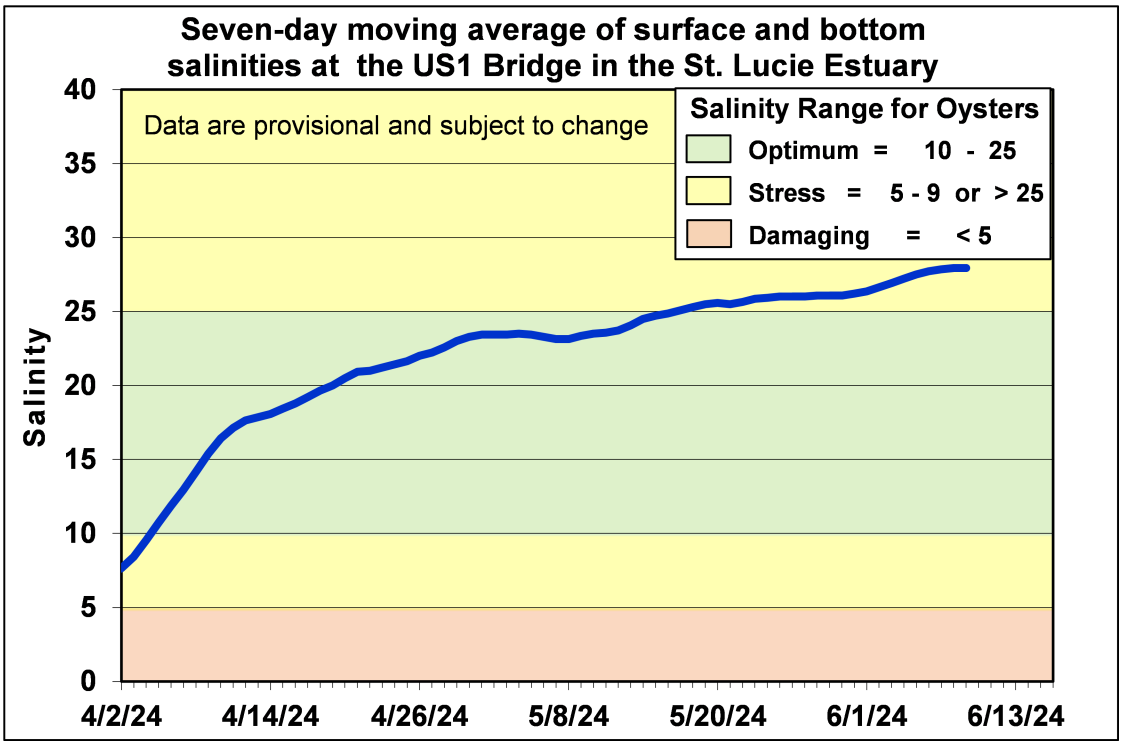


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

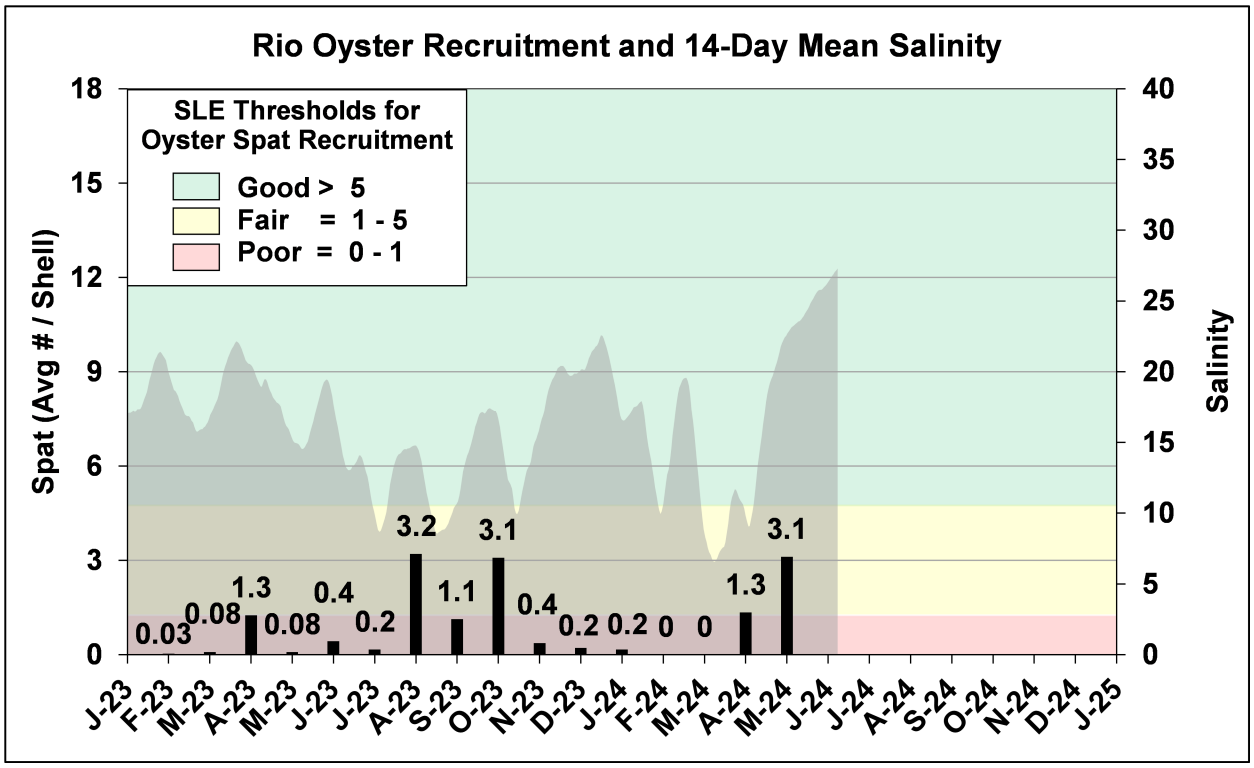


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

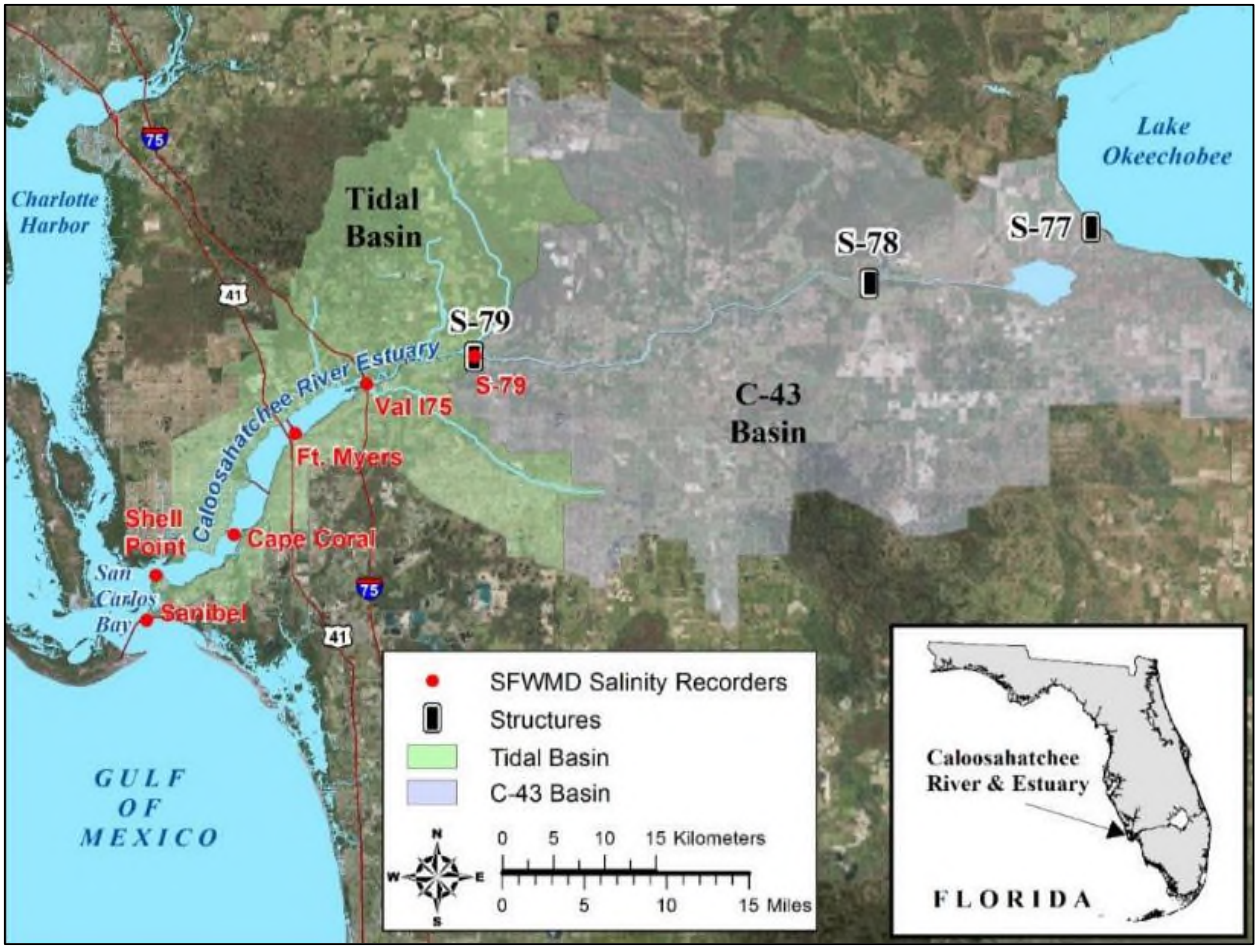


Figure ES-6. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

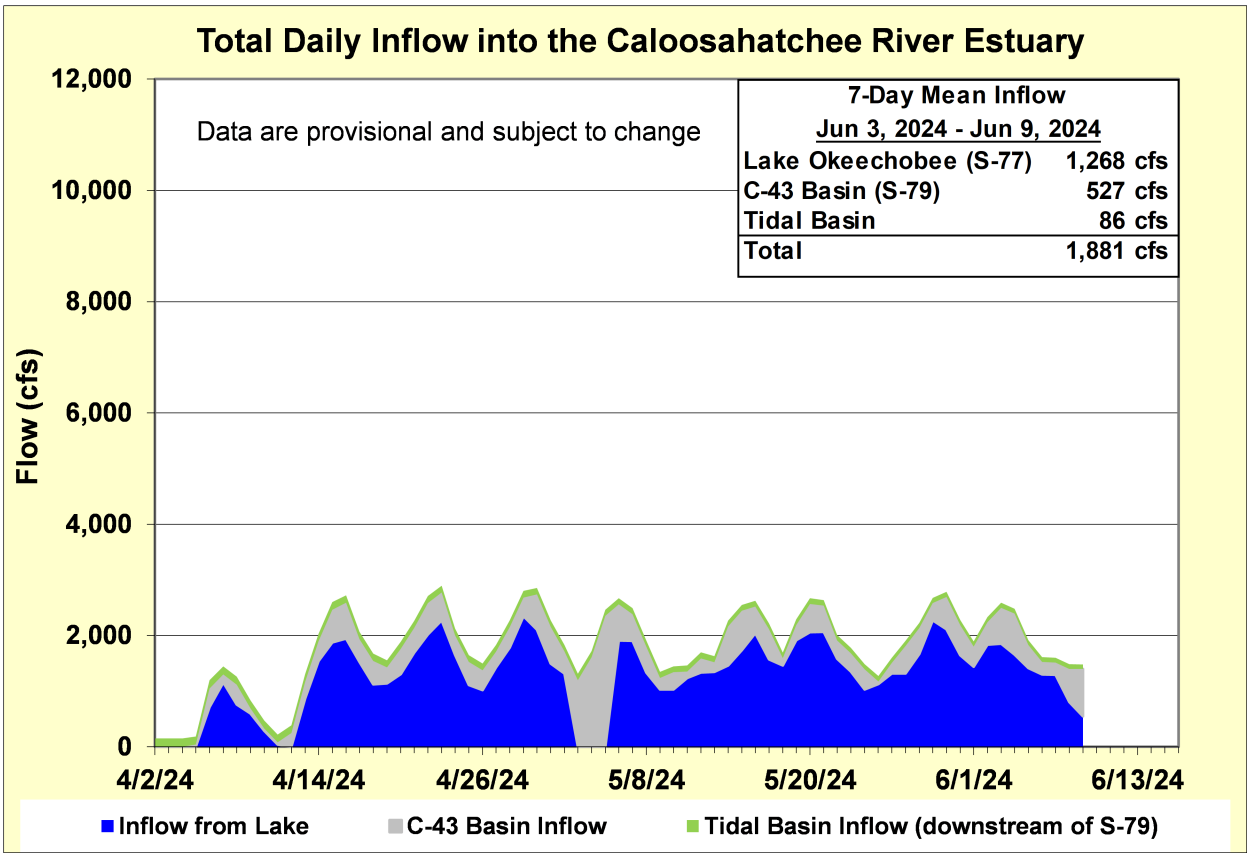


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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)	**0.2** (0.2)	**0.2** (0.2)	0.0 – 10.0
Val I-75	**0.3** (0.2)	**0.3** (0.3)	0.0 – 10.0
Fort Myers Yacht Basin	**4.5** (3.2)	**5.7** (4.5)	0.0 – 10.0
Cape Coral	**11.0** (9.8)	**14.1** (12.8)	10.0 – 25.0
Shell Point	**27.4** (25.5)	**28.1** (26.2)	10.0 – 25.0
Sanibel	**30.7** (30.5)	**32.2** (31.7)	10.0 – 25.0

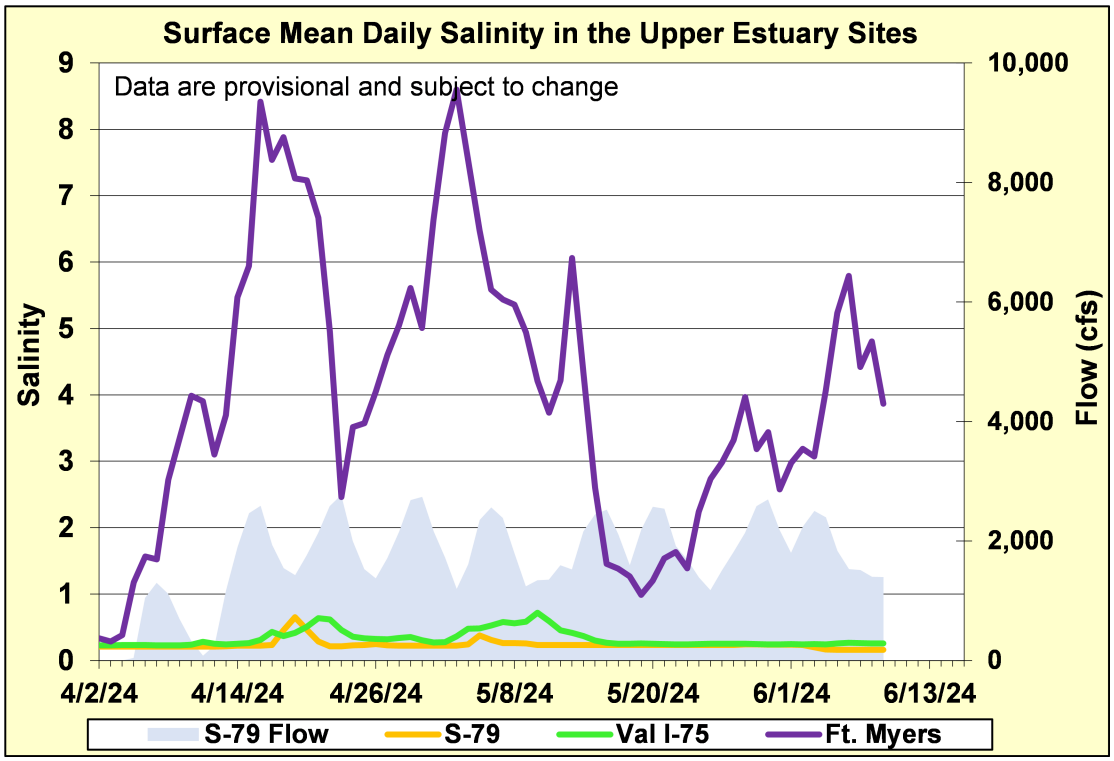


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

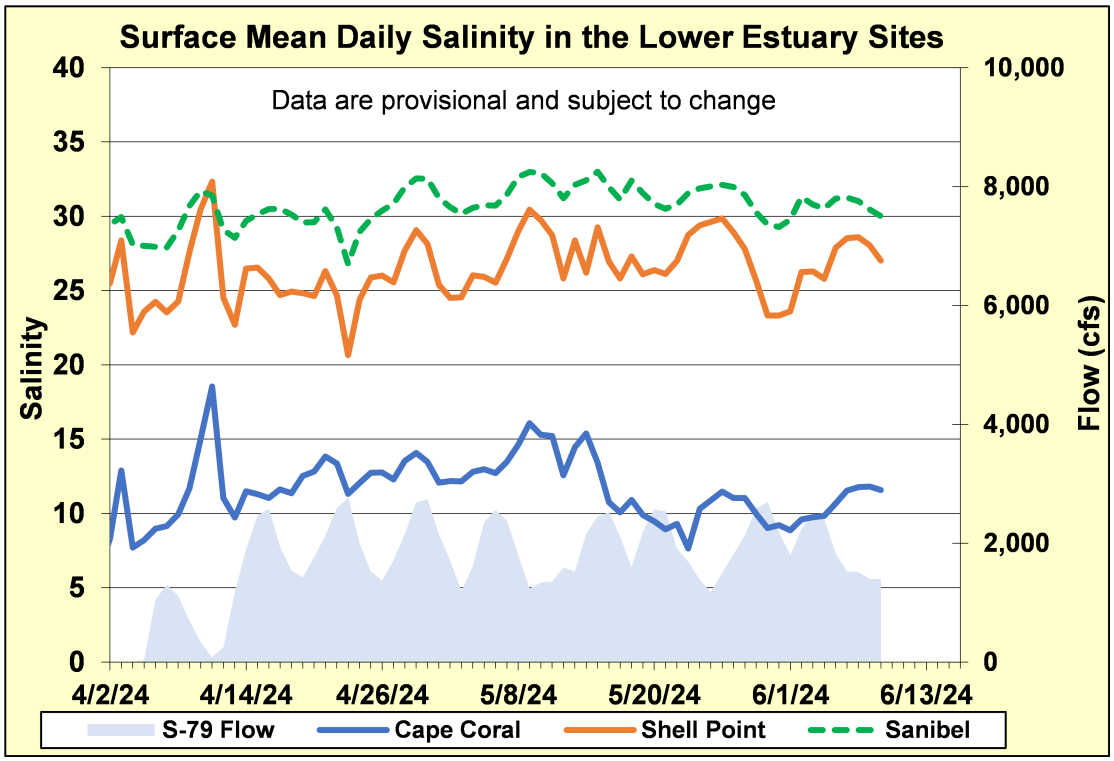


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

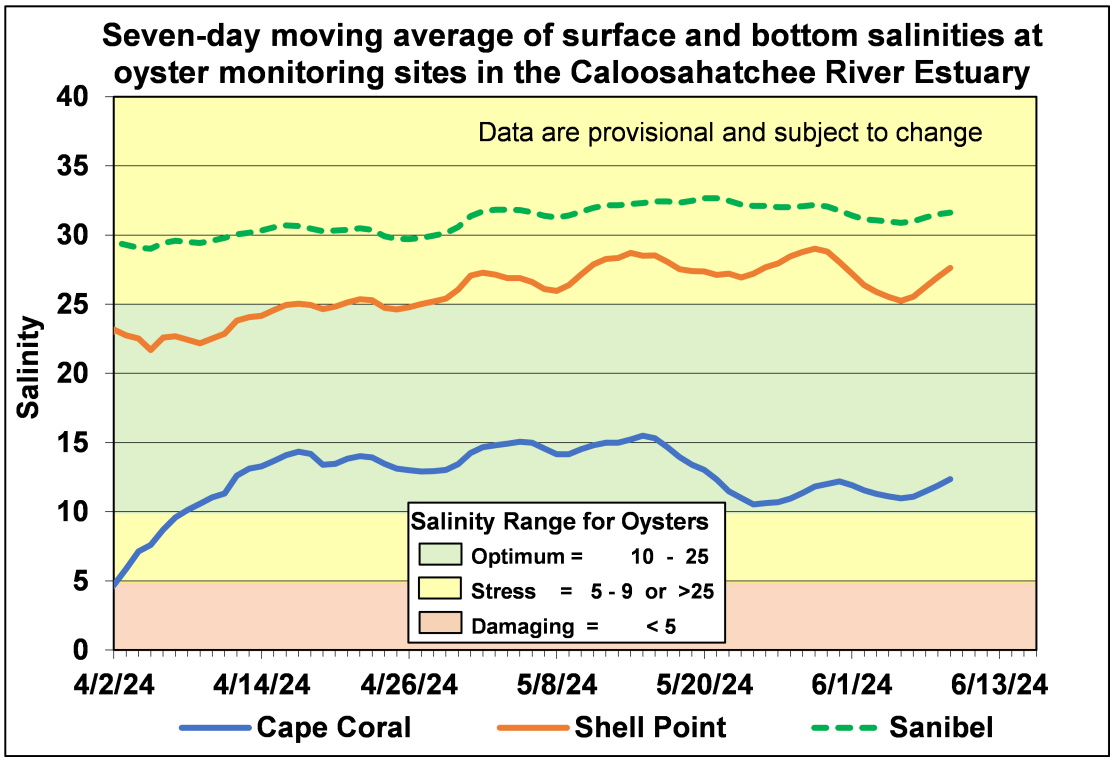


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

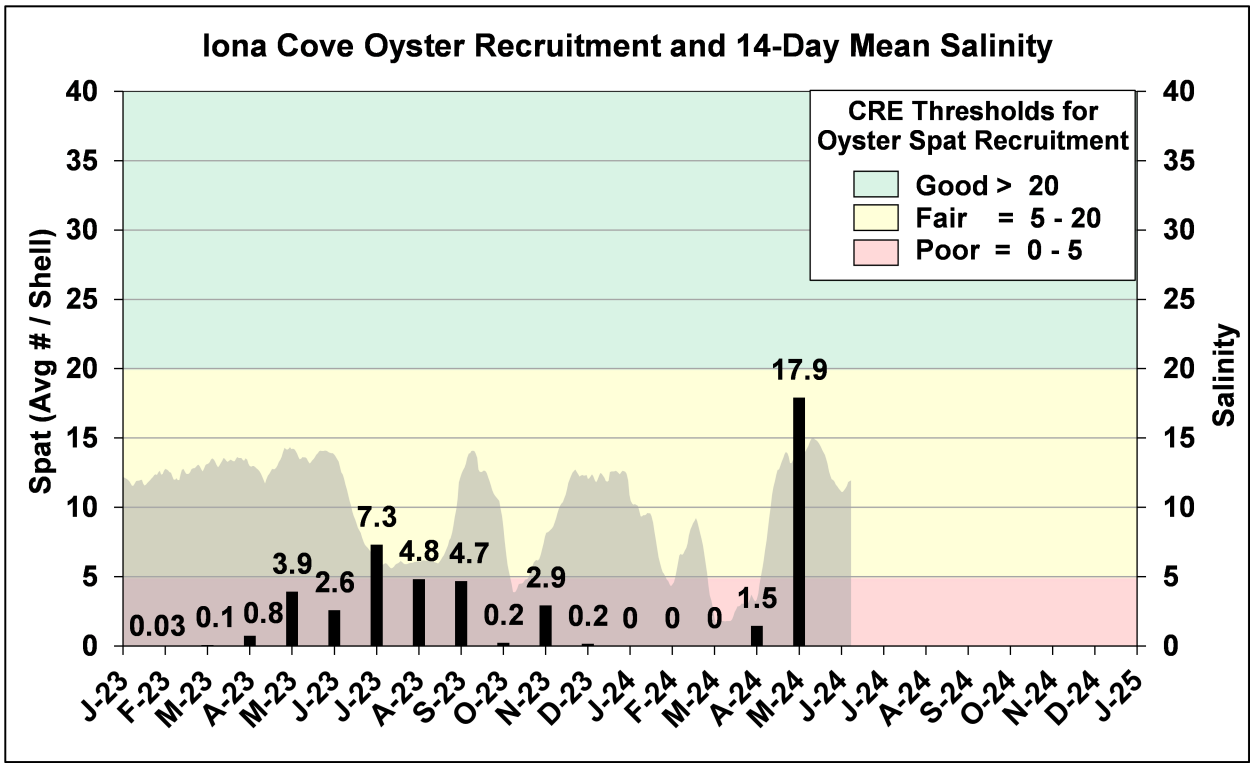


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

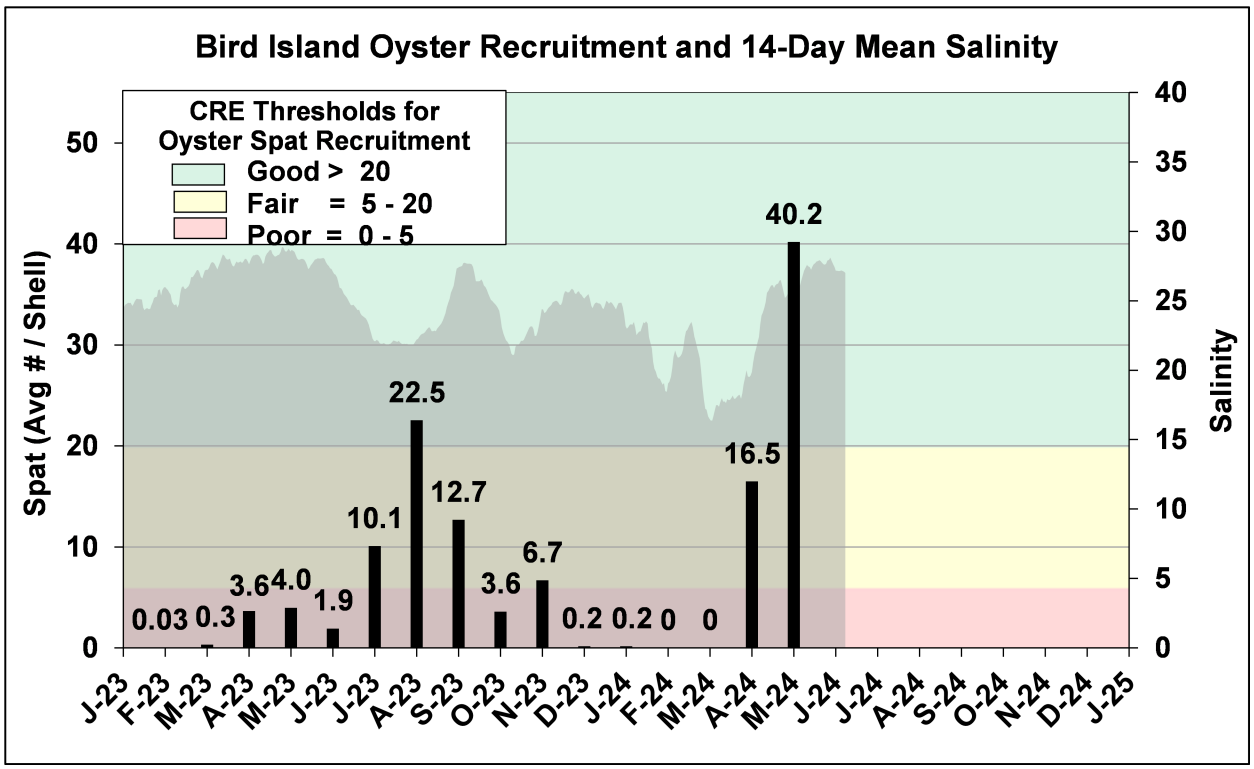


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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	450	1724	0.9	0.4
B	650	1724	0.6	0.4
C	1,200	1724	0.3	0.3
D	2,000	1724	0.3	0.3

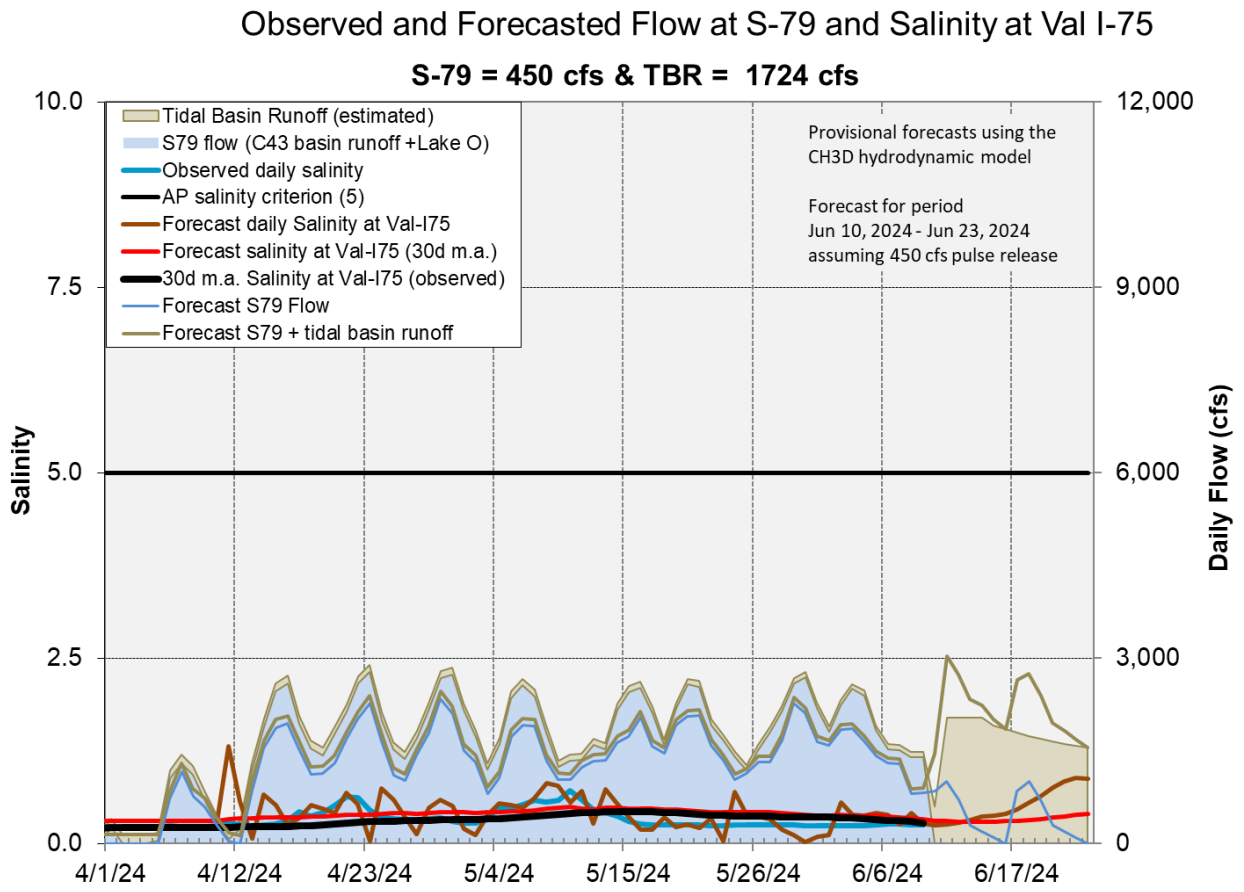


Figure ES-13. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Eastern Flow-way is offline for rehydration and vegetation establishment following erosion repair. An operational restriction is in place in STA-1E Western Flow-way for post-construction vegetation grow-in. The Central Flow-way contains nests of Migratory Bird Treaty Act protected species. Online treatment cells are at or near target stage. Vegetation in the Central flow-way is highly stressed. The 365-day phosphorus loading rate (PLR) for the Central Flow-way is high. (**Figure S-1**).

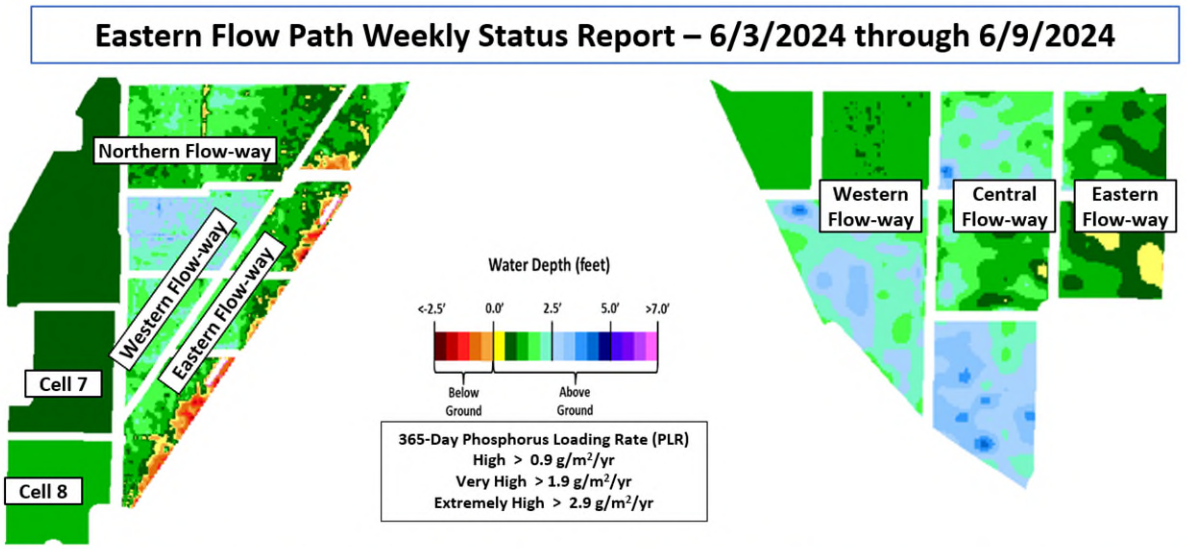
STA-1W: The Northern and Eastern Flow-ways, and Cells 6, and 7 contain nests of Migratory Bird Treaty Act protected species. Treatment cells are at or near target stage. Vegetation in the flow-ways is highly stressed. The 365-day PLR for the Eastern Flow-way is very high, the 365-day PLR for the Western Flow-way is high, and the 365-day PLR for the Northern Flow-ways is below 1.0 g/m^2/year (**Figure S-1**).

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

STA-3/4: An operational restriction is in place in the Eastern Flow-way for post-drawdown vegetation grow-in. Treatment cells are at or near target stage. Vegetation in the Central Flow-way is highly stressed and in the Eastern 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-2**).

STA-5/6: An operational restriction is in place in Flow-way 4 for vegetation management (prescribed burn). Treatment cells are at or near target stage. All treatment cells have highly stressed or stressed vegetation conditions. The 365-day PLRs for Flow-ways 1, 4, 6, 7, and 8 are below 1.0 g/m^2/year, and the 365-day PLRs for Flow-ways 2, 3, and 5 are high. (**Figure S-3**).

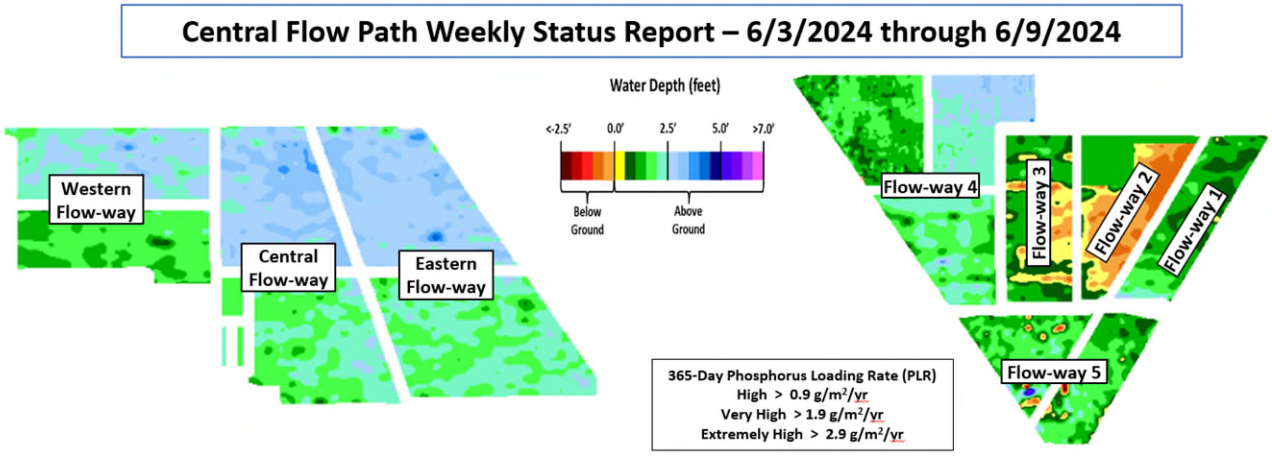
For definitions on STA operational language see glossary following figures.



STA-1W	Flow-way Status
Western	• High 365-day PLRs • Highly stressed vegetation conditions
Eastern	• Very High 365-day PLR • Highly stressed vegetation conditions • MBTA nesting
Northern	• Highly stressed vegetation conditions • MBTA nesting
Cell 6	• MBTA nesting
Cell 7+8	• MBTA nesting in Cell 7

STA-1E	Flow-way Status
Western	• Post-construction vegetation grow-in
Central	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• Offline for vegetation grow-in following erosion repair

Figure S-1. Eastern Flow Path Weekly Status Report



STA-3/4	Flow-way Status
Western	
Central	• Highly stressed vegetation conditions
Eastern	• Post-drawdown vegetation grow-in • Stressed vegetation conditions

STA-2	Flow-way Status
Flow-way 1	• Rehydration following dryout conditions
Flow-way 2	• High 365-day PLR • Post-construction vegetation grow-in • Stressed vegetation conditions
Flow-way 3	• Stressed vegetation conditions • MBTA nesting
Flow-way 4	• Planting emergent vegetation • Stressed vegetation conditions • MBTA nesting
Flow-way 5	• Highly stressed vegetation conditions • Construction activities (FPL pads)

Figure S-2. Central Flow Path Weekly Status Report

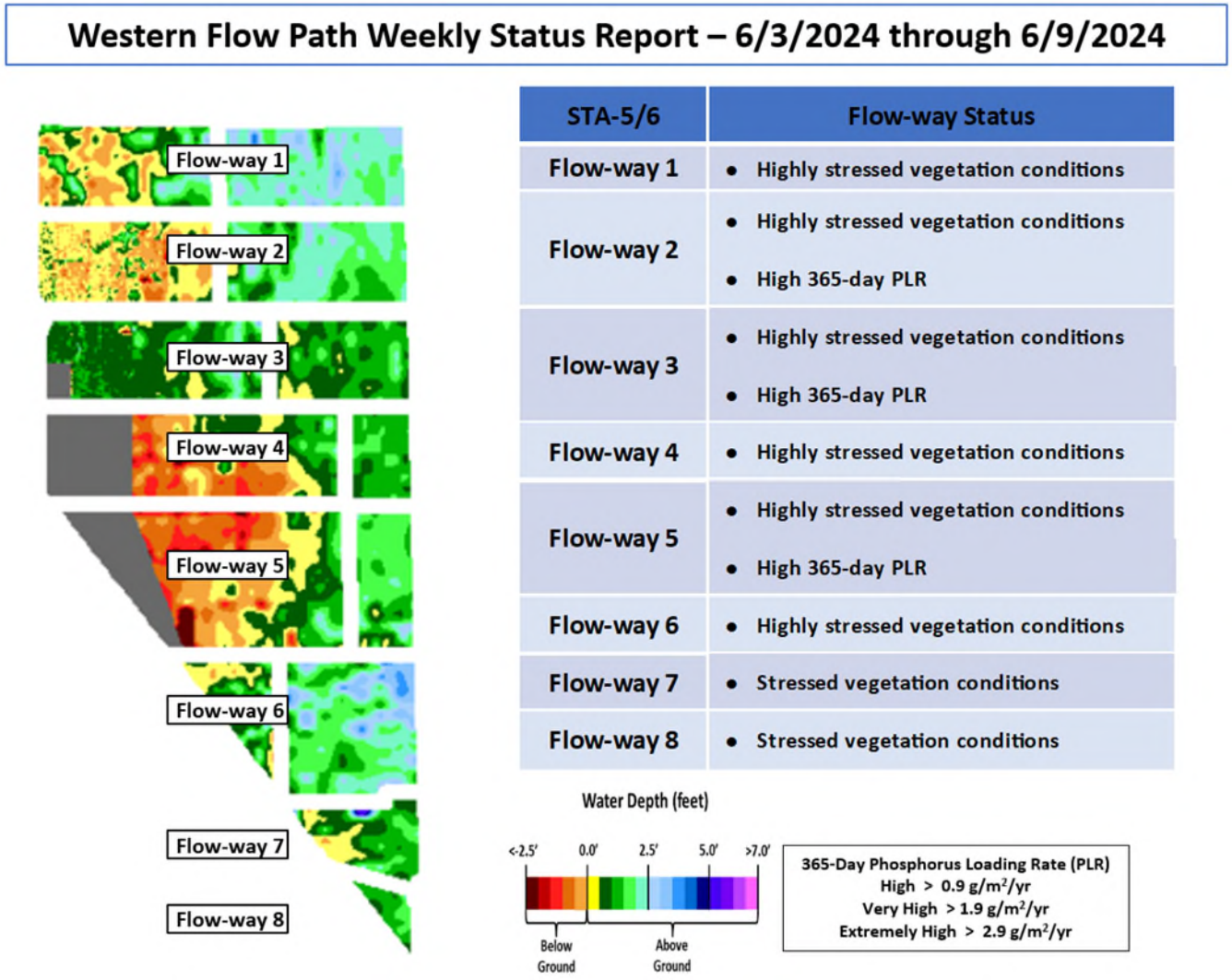


Figure S-3. Western Flow Path Weekly Status Report

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

More rain fell across Everglades last week compared to the prior week, with heaviest amounts recorded in WCA-3A and ENP. WCA-1: stage in the Refuge remains below schedule but is ascending. On June 9, the 1-8C gauge was 1.29 feet below the flat Zone A1 regulation line. WCA-2A: stage at the S-11B_H gauge receded below the WS floor last week. The average on Sunday was 0.75 feet below the flat regulation line and 0.25 below the water supply floor. WCA-3A: the 3-gauge average stage remains in Zone B stage was relatively stable over the last week. The average stage on June 9 was approximately 0.5 feet below the now rising Zone A regulation line. WCA-3A North: stage at Gauge 62 (NW corner) remains below the upper schedule last week but ascended quickly. The June 9 average was approximately one foot below that schedule line. See figures **EV-1** through **EV-3**. **Figure EV-4**, WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule, was not updated due to data transfer issues. The June 9, 2024 stage, however, is indicated on this figure.

Water Depths

The SFWDAT model output for June 9 shows a hydropattern in the WCAs that continues to dry down in WCA-1 and WCA-2A, while being somewhat wetter in WCA-3A North. Ponded conditions remain absent along the northern reaches of the L-67s in WCA-3A. In the typically ponded southern WCA-3A depths remain around one foot. Hydrologic connectivity remains in Shark River Slough but has dried down to the west while a very slight potential continues in Taylor Slough. Current WDAT water depth estimates are drier when compared to one month ago across the EPA, within northwestern WCA-3A and southeastern BCNP the exception. The comparison to modeled conditions a year ago illustrates a significantly drier condition with only a small portion of southern WCA-3A with the potential to be slightly wetter (**Figure EV-5 and Figure EV-6)**.

Comparing current conditions to the 20-year percentiles on June 9: depths remain above the 80th percentile for this time of the year in southwestern WCA-3B and northeastern Shark River Slough. Depths remain near the 10th percentile across much of WCA-1 and WCA-2A. Most of WCA-3A remains below the 50th percentile. (**Figure EV-7**).

Taylor Slough and Florida Bay

Most stages decreased across Taylor Slough over the past week, with an average decrease of 0.05 feet. Changes ranged from –0.19 feet at Taylor Slough Bridge (TSB) in the northern slough, to +0.06 feet at P37 in the southern slough (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels are now just below the recent average for this time of year by 0.1 inches compared to before the Florida Bay initiative (starting in 2017), a decrease of 3.2 inches relative to last week's comparison. The stages at Craighead Pond (CP) and TSB are both below estimated historical levels by 0.56 and 1.76 feet, respectively.

Average Florida Bay salinity was 30.8, an increase of 1.2 from last week. Southerly winds resulted in salinity increases at most sites, with changes ranging from –2.6 at Garfield

Bight (GB) in the western nearshore region, to +5.2 at Joe Bay (JB) in the eastern nearshore region (**Figure EV-8**). Salinity in within the WY2001-2016 interquartile range (25-75%) and above estimated historical levels. in the central and western regions, and below both metrics in the eastern region (**Figure EV-10**). Average Florida Bay salinity remains below its recent average for this time of year by 3.9, an increase of 1.4 from last week's comparison.

Salinity at the Taylor River station in the mangrove zone (tracked for the Florida Bay MFL) was 16.2. The 30-day moving average was 11.6, an increase of 3.0 from last week (**Figure EV-11**). The 365-day moving sum of flow from the five creeks was 402,061 (**Figure EV-11**). Some data discrepancies were recently identified in the 365-day moving sum calculation, so this week's metric should not be compared to previous weeks.

Average rainfall across Taylor Slough and Florida Bay was 0.55 inches over the past week (6/3-6/9), based on the 18 gauges used for this report. Rainfall ranged from 0.02 at Taylor Slough Bridge (TSB) to 2.51 inches at Royal Palm Lake (RPL), both in the northern slough (**Figure EV-12**). Wind directions and speeds in Florida Bay ranged from 1.7 mph N on 6/6 to 21.0 mph E on 6/3 (**Figure EV-12**).

Average daily flow from the five major creeks (McCormick, Taylor, Mud, Trout, West Highway) totaled –1,065 acre-feet last week, with net negative flows for the week. Total daily creek flow ranged from –1,810 acre-feet on June 7 to 260 acre-feet on June 3 (**Figure EV-13**). Average daily flow for the week was 4,670 acre-feet below estimated historical levels.

Implications for water management

The ecology of northern WCA-2A would benefit from inflows directed as northerly as possible as stage in that region has fallen below ground. Inflows into this region will increase residence time and sheet flow through the Everglades. Given that the wet season rains would have to hold off until July to successfully fledge chicks, a timely onset to the rainy season may discourage wood storks from carrying out nesting to the point of hatching nestlings then forced to abandon. Hydrologic connectivity has decreased in ENP; however, inputs continue to maintain some connectivity and water moving southward helps to prevent ecologically undesirable salinity swings in Florida Bay nearshore areas. 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	1.01	+0.02
WCA-2A	1.33	−0.02
WCA-2B	0.54	−0.20
WCA-3A	2.12	+0.06
WCA-3B	1.18	−0.03
ENP	2.02	+0.14

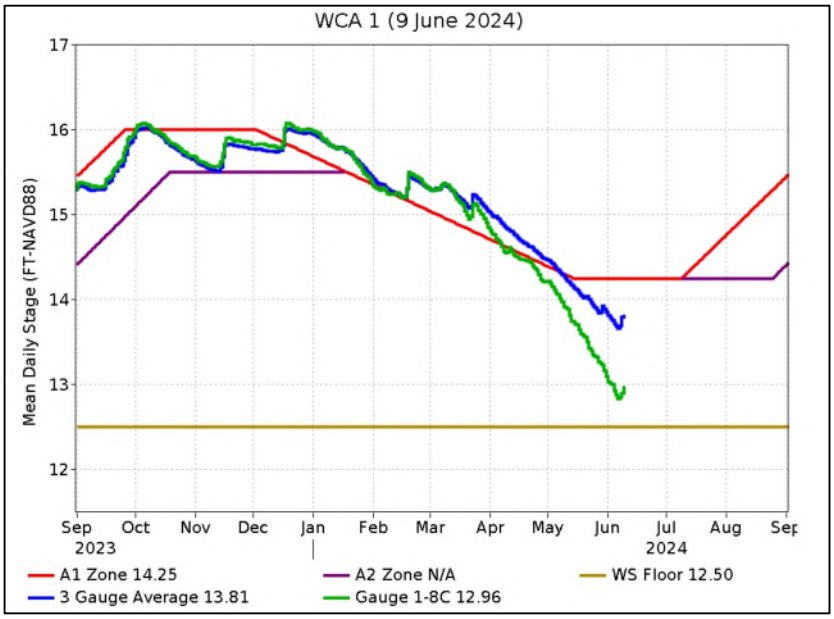


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

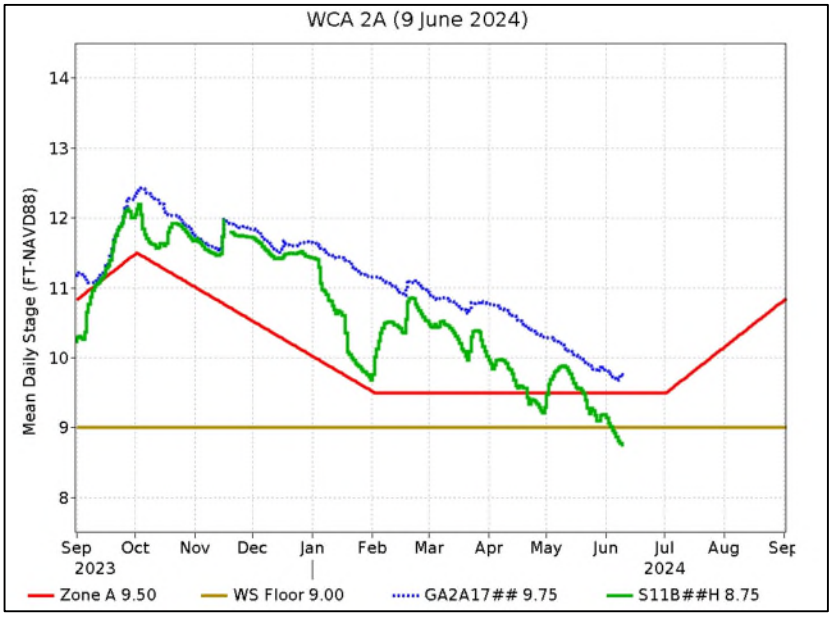


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

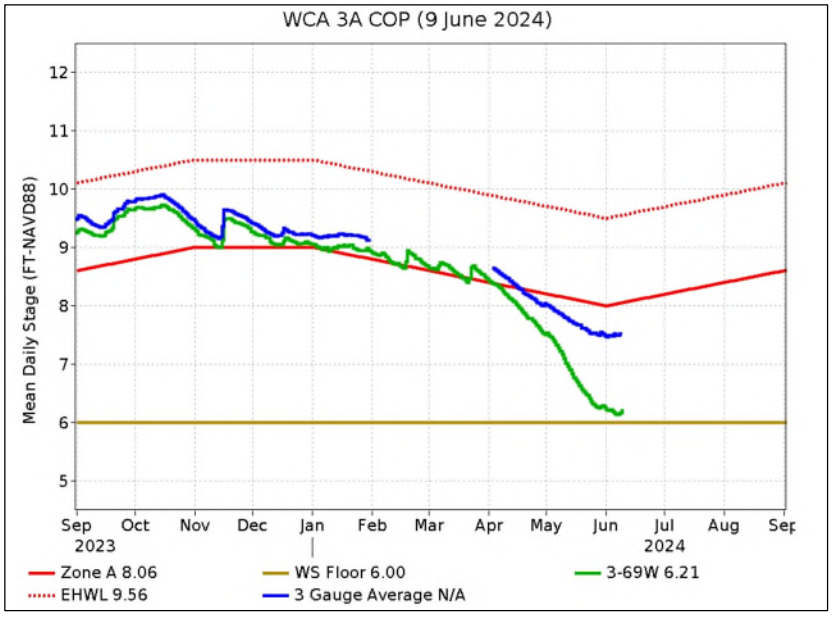


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.

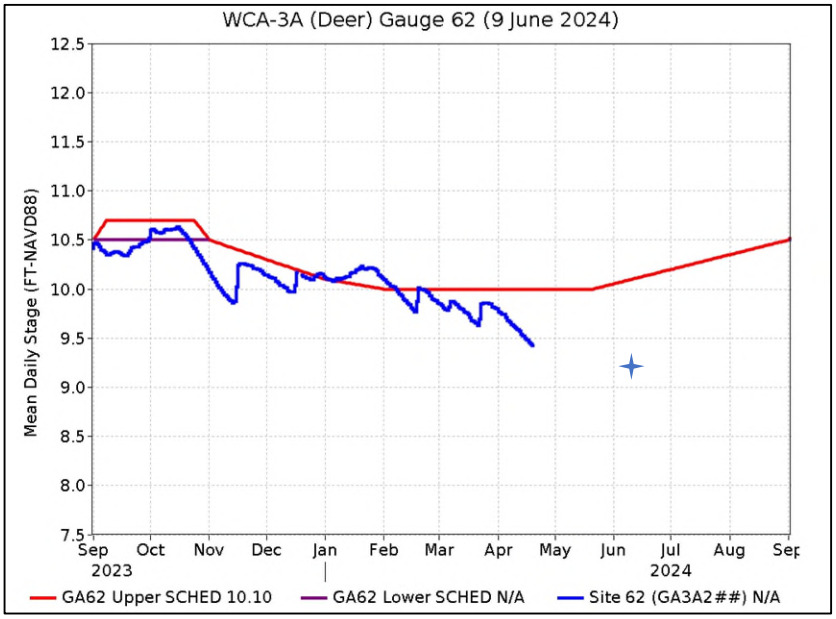


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule. Figure has not been updating due to data issues. Star represents June 9, 2024 stage.

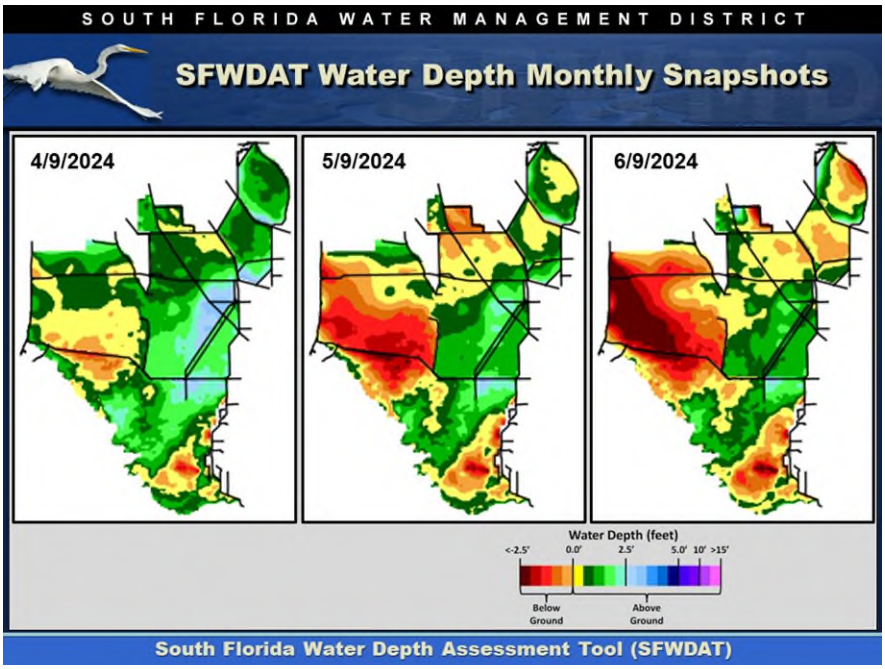


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

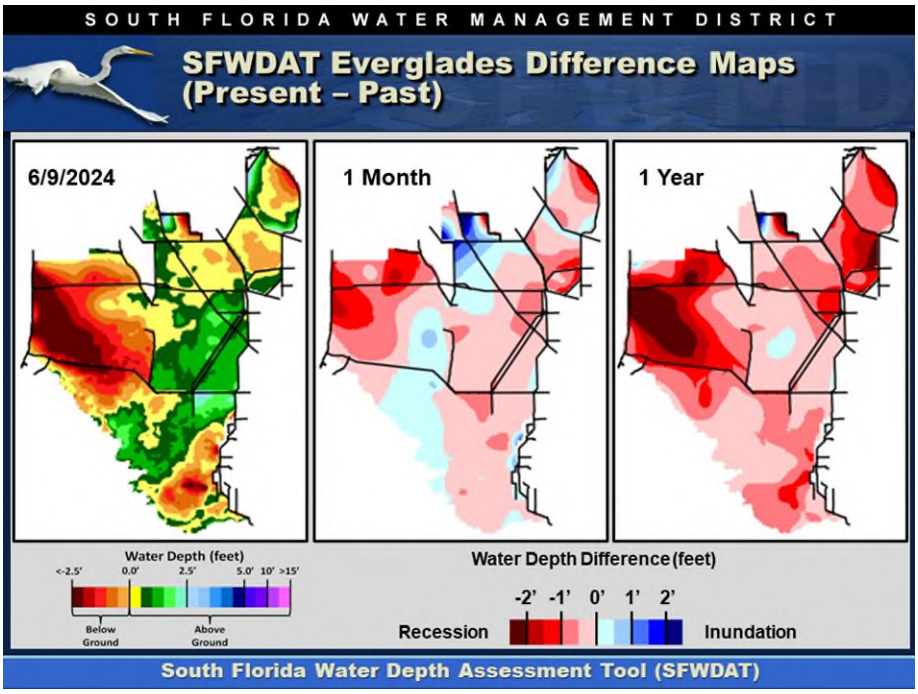


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

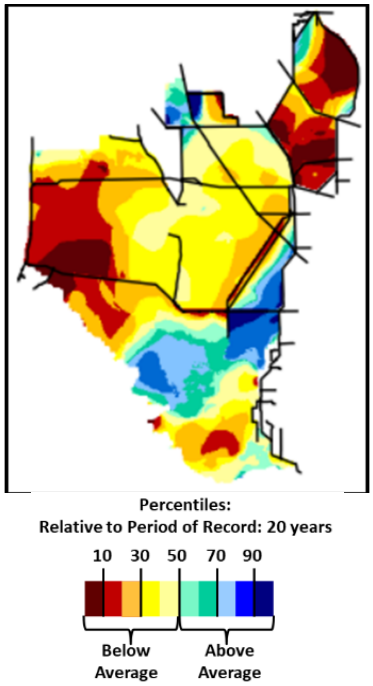


Figure EV-7. Present water depths (6/9/2024) compared to the day of year average over the previous 20 years.

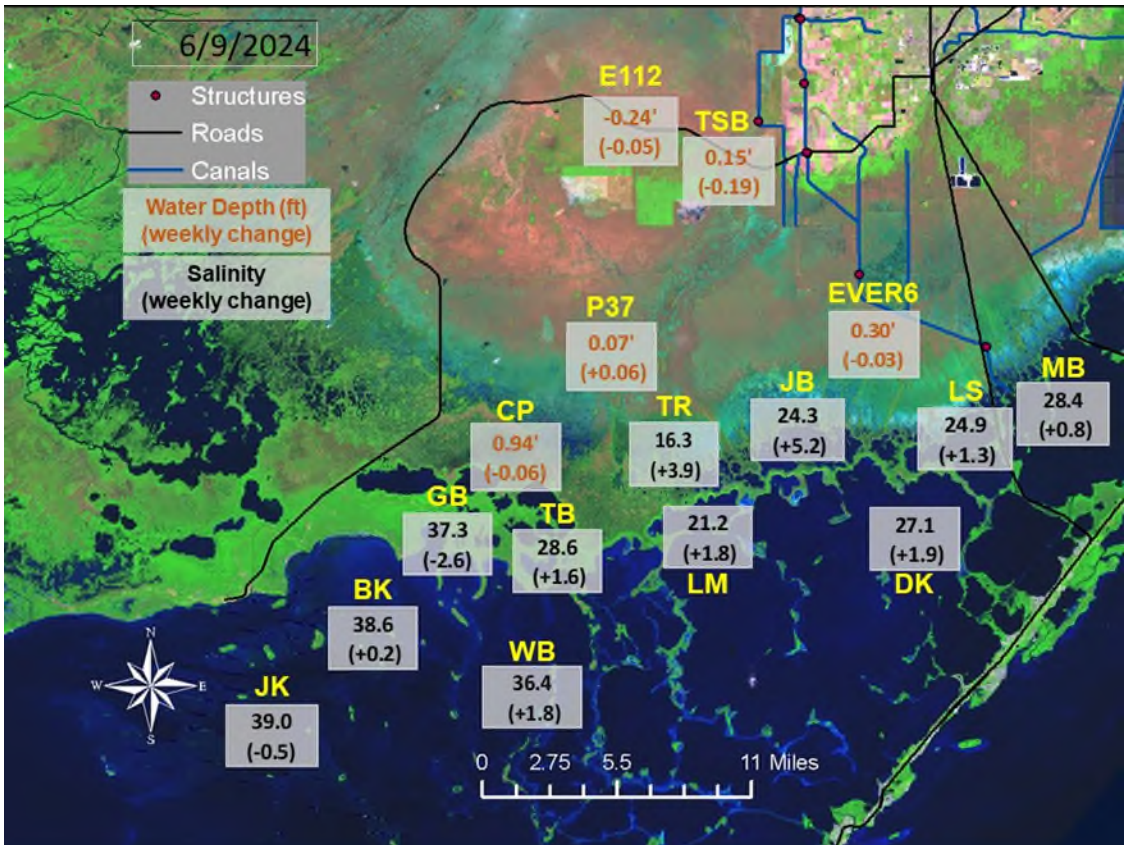


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

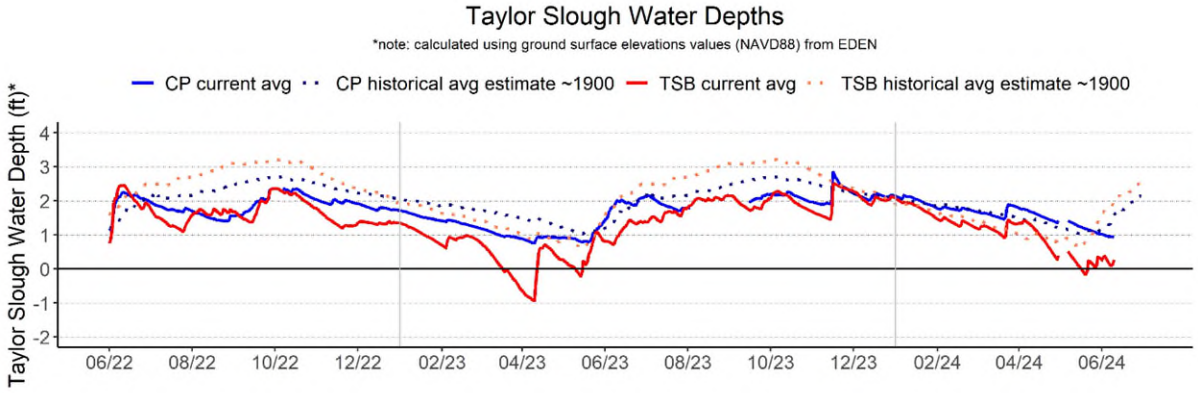


Figure EV-9. Taylor Slough water depth time series for Taylor Slough Bridge (TSB; northern slough) and Craighead Pond (CP; southern slough).

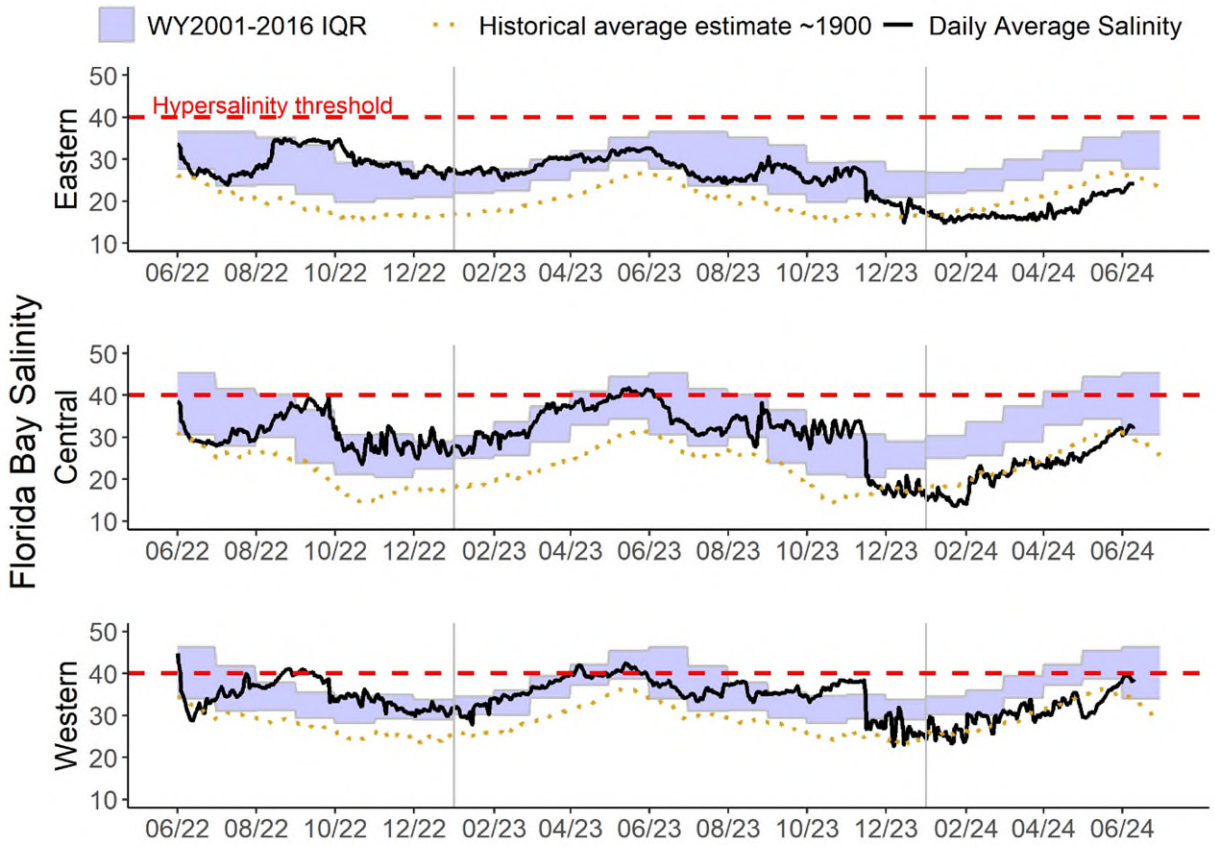


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with WY2001-2016 interquartile (25-75 percentile) ranges and estimated historical daily average salinities (~1900 CE). The hypersalinity threshold indicates the level at which salinities start to become harmful to seagrass.

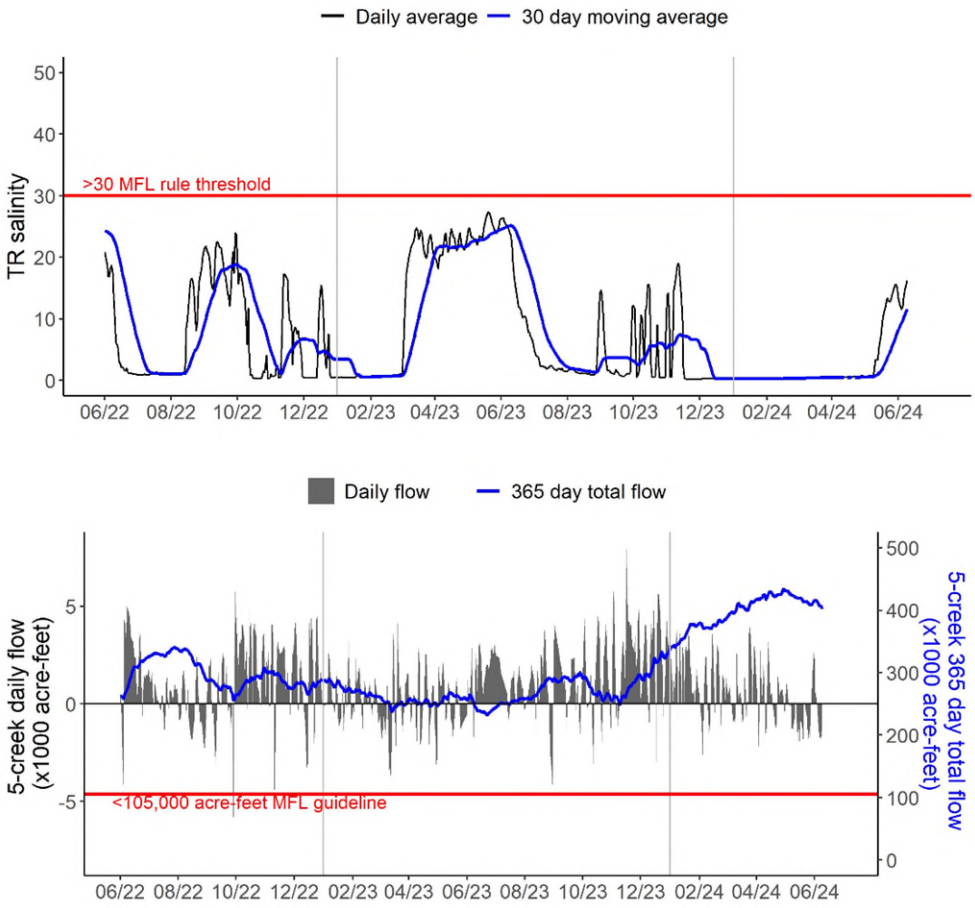


Figure EV-11. Salinity at Taylor River (TR; top) and creek inflow to Florida Bay (bottom) from the five major creeks (McCormick Creek, Taylor River, Mud Creek, Trout Creek, and West Highway Creek). The 30-day moving average salinity and 365-day total creek flow are tracked for the Florida Bay MFL criteria.

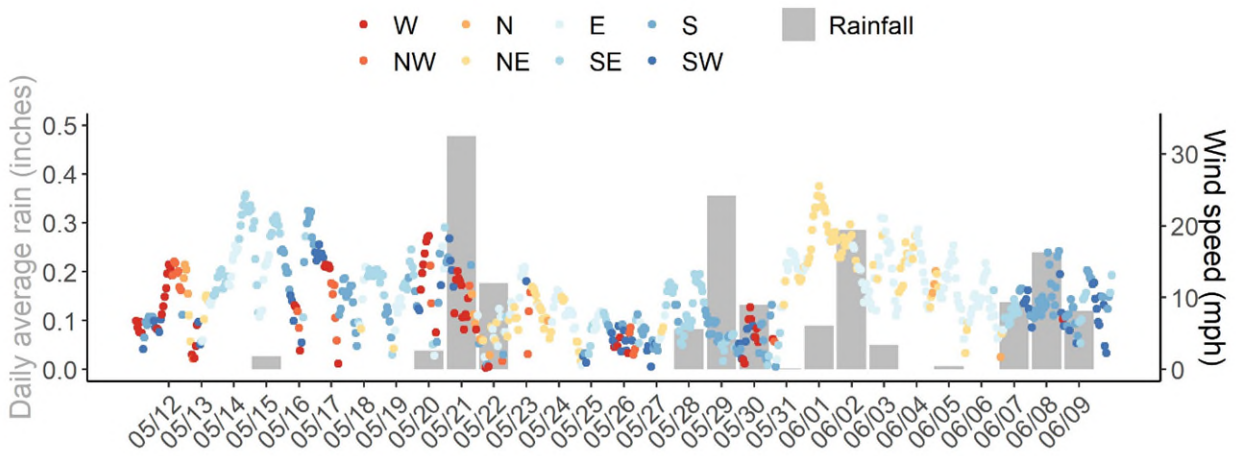


Figure EV-12. Daily average rain across Taylor Slough and Florida Bay, along with hourly average wind speed and direction (measured at Long Key) in Florida Bay over the past four weeks.

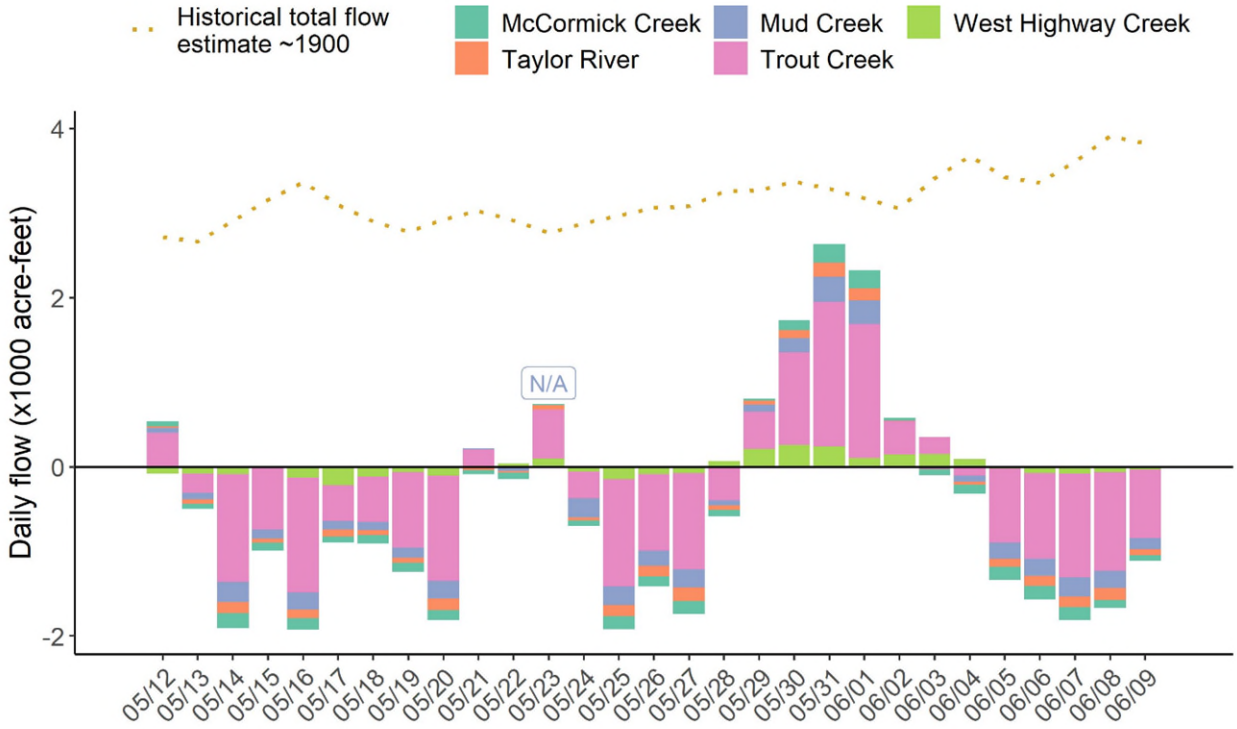


Figure EV-13. Daily average creek flow summed between five creeks with estimated historical daily flow (~1900 CE) over the past four weeks.

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

SFWMD Everglades Ecological Recommendations, June 11, 2024 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage increased by 0.02’	Recession rate of less than 0.07’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage decreased by 0.02’	Recession rate up to 0.07’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-2B	Stage decreased by 0.20’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage increased by 0.06’	Recession rate of less than 0.07’ per week.	Protect within basin and downstream habitat and wildlife (fish/crayfish reproduction, wading bird foraging and nesting).
WCA-3A NW	Stage increased by 0.19’	Recession rate of less than 0.07’ per week.	
Central WCA-3A S	Stage remained unchanged	Maintain the current recession rate of less than 0.07’ per week.	Protect within basin wildlife (fish/crayfish reproduction). Slowing the recession rate in this region may prevent late/doomed nesting attempts.
Southern WCA-3A S	Stage remained unchanged		
WCA-3B	Stage decreased by 0.03’	Recession rate of less than 0.07’ per week.	Protect within basin and downstream habitat and wildlife.
ENP-SRS	Stage increased by 0.14’	Make discharges to ENP according to COP and TTFF protocol while adaptively considering upstream and downstream ecological conditions.	Protect within basin and upstream habitat and wildlife (wading bird nesting).
Taylor Slough	Stage changes ranged from −0.19’ to +0.06’	Move water southward as possible.	When available, provide freshwater to promote water movement.
FB- Salinity	Salinity changes ranged from −2.6 to +5.2	Move water southward as possible.	When available, provide freshwater to promote water movement.

Biscayne Bay

As shown in **Figure BB-1**, mean total inflow to Biscayne Bay was 290 cfs, and the previous 30-day mean inflow was 140 cfs. The seven-day mean salinity was 34 at BBCW8 and BBCW10. Both locations are within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data were provided by Biscayne National Park.

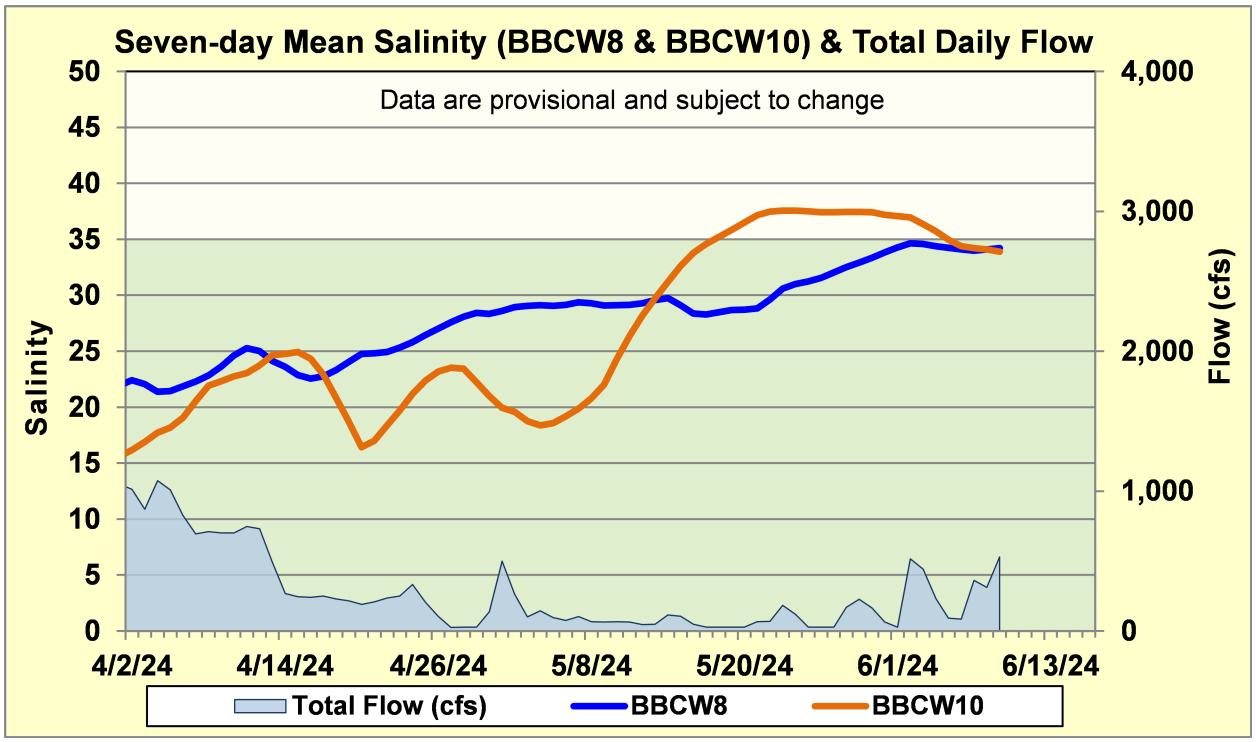


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.