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 28, 2024

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Over the next few days, a dry air mass will move into central Florida, significantly reducing daily rainfall in the Kissimmee Valley, while pockets of moist air will continue to flow into southern Florida. This weather pattern will allow for periodic isolated to scattered showers and thunderstorms to move onshore along portions of the east coast. The heaviest rainfall could occur over the Florida Keys and lower east coast, where more moisture is available, and where the storms have the greatest potential to repeatedly pass over the same areas. However, there is some uncertainty regarding how far south the dry air mass will extend, leading to decreased precipitation confidence throughout the week. Over the weekend, a tropical wave over the western Greater Antilles is forecast to move northward into either Florida or the western Atlantic Ocean. This wave will bring a surge of deep tropical moisture, fueling scattered to numerous heavy showers and thunderstorms, primarily along the east coast as the system progresses northward. Forecast confidence for the weekend rainfall is lower than usual, reflecting the sensitivity of precipitation to the tropical wave's exact location. Near normal total SFWMD rainfall is likely for the 7-day period ending next Tuesday morning.

Kissimmee

Lake stage in East Lake Toho and Lake Toho has reached the summer pool of their respective regulation schedules; releases were made in the last week to keep stage from exceeding the schedule line. Weekly average discharge on August 25, 2024, was 230 cfs and 300 cfs at S-65 and S-65A, respectively. Mean weekly water depth on the Kissimmee River floodplain decreased by 0.02 feet to 0.10 feet. The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 3.6 mg/L the previous week to 4.9 mg/L, which is above the potentially lethal and stressful levels for largemouth bass and other sensitive species.

Lake Okeechobee

Lake Okeechobee stage was 12.85 feet NAVD88 (14.16 ft NGVD29) on August 25, 2024, which was 0.11 feet higher than the previous week and 0.63 feet higher than a month

ago. Average daily inflows (excluding rainfall) decreased from 5,160 cfs the previous week to 2,910 cfs. Average daily outflows (excluding evapotranspiration) remained low at 120 cfs. In the most recent non-obscured satellite image from August 23, 2024, NOAA's Harmful Algal Bloom Monitoring System suggests moderate cyanobacteria abundance across the northern and western nearshore regions of the Lake.

Estuaries

Total inflow to the St. Lucie Estuary averaged 1,324 cfs over the past week with no flow coming from Lake Okeechobee. Over the past week, salinities increased at all sites in the estuary. Salinity conditions in the middle estuary were estimated to be within the optimal range for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,662 cfs over the past week with 123 cfs coming from Lake Okeechobee. Mean salinities remained the same at S-79, Val I-75, and Fort Myers sites and increased at the remaining sites in the estuary. The seven-day mean salinity values were within the optimal range for tape grass in the upper estuary, in the lower stressed range for adult eastern oysters at Cape Coral, in the optimal range at Shell Point, and in the upper stressed range at Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, August 25, 2024, no 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 69,200 ac-feet. The total amount of inflows to the STAs in WY2025 is approximately 559,000 ac-feet. STA cells are near or above target stage. STA-1E Central Flow-way is offline for construction activities. Operational restrictions are in effect in STA-1E Western and Eastern Flow-ways, STA-1W Northern 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. This week, there is no capacity for Lake releases in the STAs.

Everglades

Rates of stage change over the week were categorized as fair or good providing conditions supportive for apple snail reproduction. Stages remain above average for this time of year across most of the Everglades Protection Area except for central WCA-1 and northern WCA-2A, which are below. Average stage in Taylor Slough increased last week and remains above the average for this time of year. Average salinity increased slightly in Florida Bay last week; the eastern and central regions of Florida Bay remain at or below the Inter-Quartile Range, while the western region remains near the 50th percentile for this time of year. Florida Bay Minimum Flows and Levels metrics remain well outside thresholds of harm.

Biscayne Bay

Total inflow to Biscayne Bay averaged 1,046 cfs, and the previous 30-day mean inflow averaged 938 cfs. The seven-day mean salinity was 26.6 at BBCW8 and 27.2 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data were provided by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On August 25, 2024, mean daily lake stages were 55.6 feet NAVD88 (0.1 feet above schedule) in East Lake Toho, 52.4 feet NAVD88 (0.1 feet above schedule) in Lake Toho, and 48.6 feet NAVD88 (1.7 feet below the Increment 1 temporary deviation schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**).

Lower Kissimmee

For the week ending August 25, 2024, mean weekly discharge was 230 cfs and 300 cfs at S-65 and S-65A, respectively. Mean weekly discharge from the Kissimmee River was 470 cfs and 510 cfs at S-65D and S-65E, respectively (**Table KB-2**). Mean weekly headwater stages were 44.9 feet NAVD88 at S-65A and 24.6 feet NAVD88 at S-65D. Mean weekly river channel stage decreased by 0.7 feet from the previous week to 31.9 feet NAVD88 (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain decreased by 0.02 feet to 0.10 feet (**Table KB-2**, **Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 3.6 mg/L the previous week to 4.9 mg/L (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Follow the Headwaters Revitalization Schedule Increment 1 Temporary Deviation Discharge Plan for S-65/S-65A (**Figure KB-7**). 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 feet/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 NAVD88)[a]	Schedule Type[b]	Sunday Schedule Stage (feet NAVD88)	Sunday Departure from Regulation (feet)	
							8/25/24	*8/18/24*
Lakes Hart and Mary Jane	S-62	LKMJ	200	59.0	R	58.9	0.1	0.0
Lakes Myrtle, Preston, and Joel	S-57	S-57	0	59.5	R	60.0	-0.5	-0.6
Alligator Chain	S-60	ALLI	0	61.7	R	62.2	-0.5	-0.6
Lake Gentry	S-63	LKGT	0	59.5	R	59.9	-0.4	-0.7
East Lake Toho	S-59	TOHOE	450	55.6	R	55.5	0.1	-0.1
Lake Toho	S-61	TOHOW S-61	710	52.4	R	52.3	0.1	0.1
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	230	48.6	T	50.3	-1.7	-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.

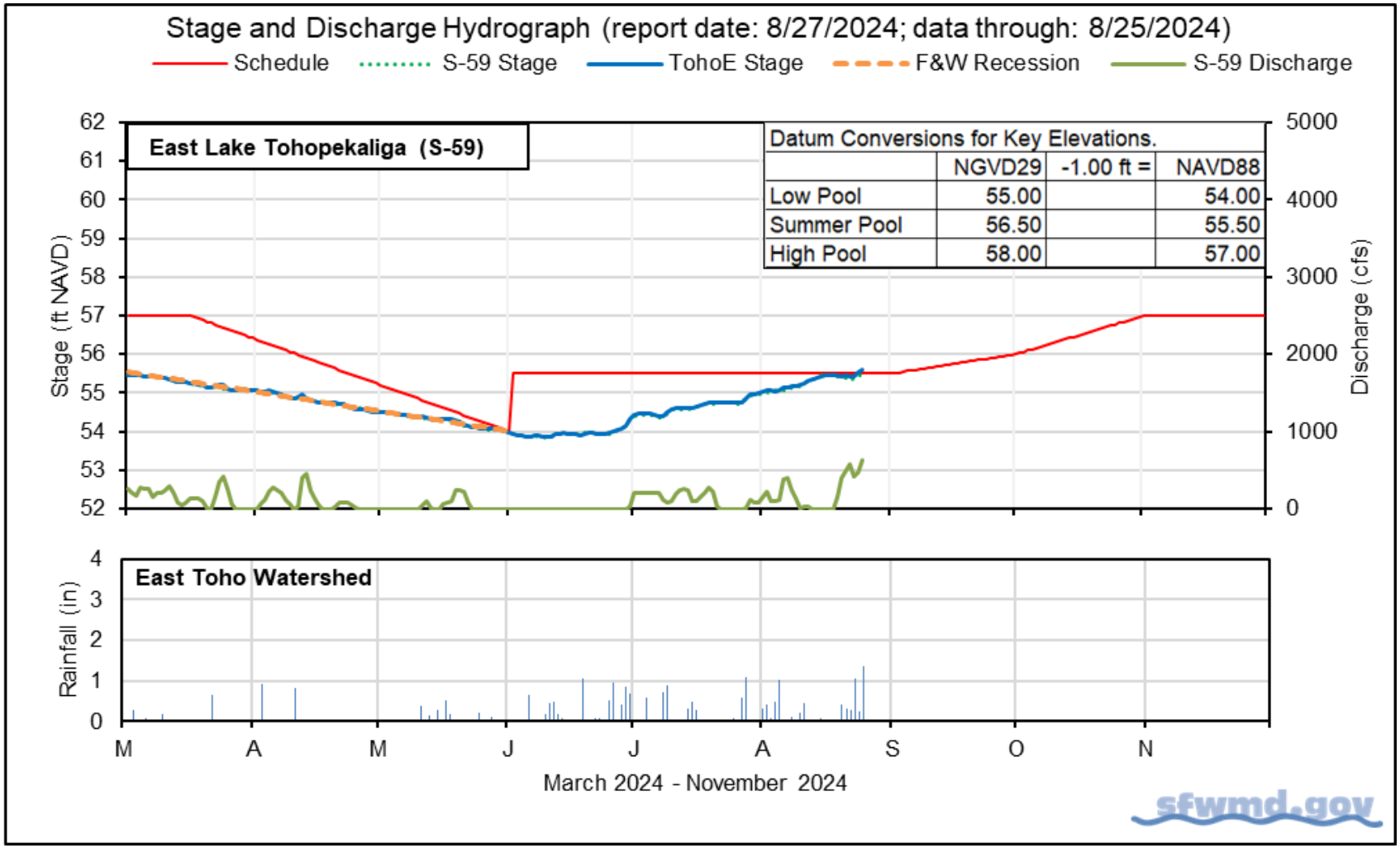


Figure KB-1. East Lake Toho regulation schedule, stage, discharge, and rainfall.

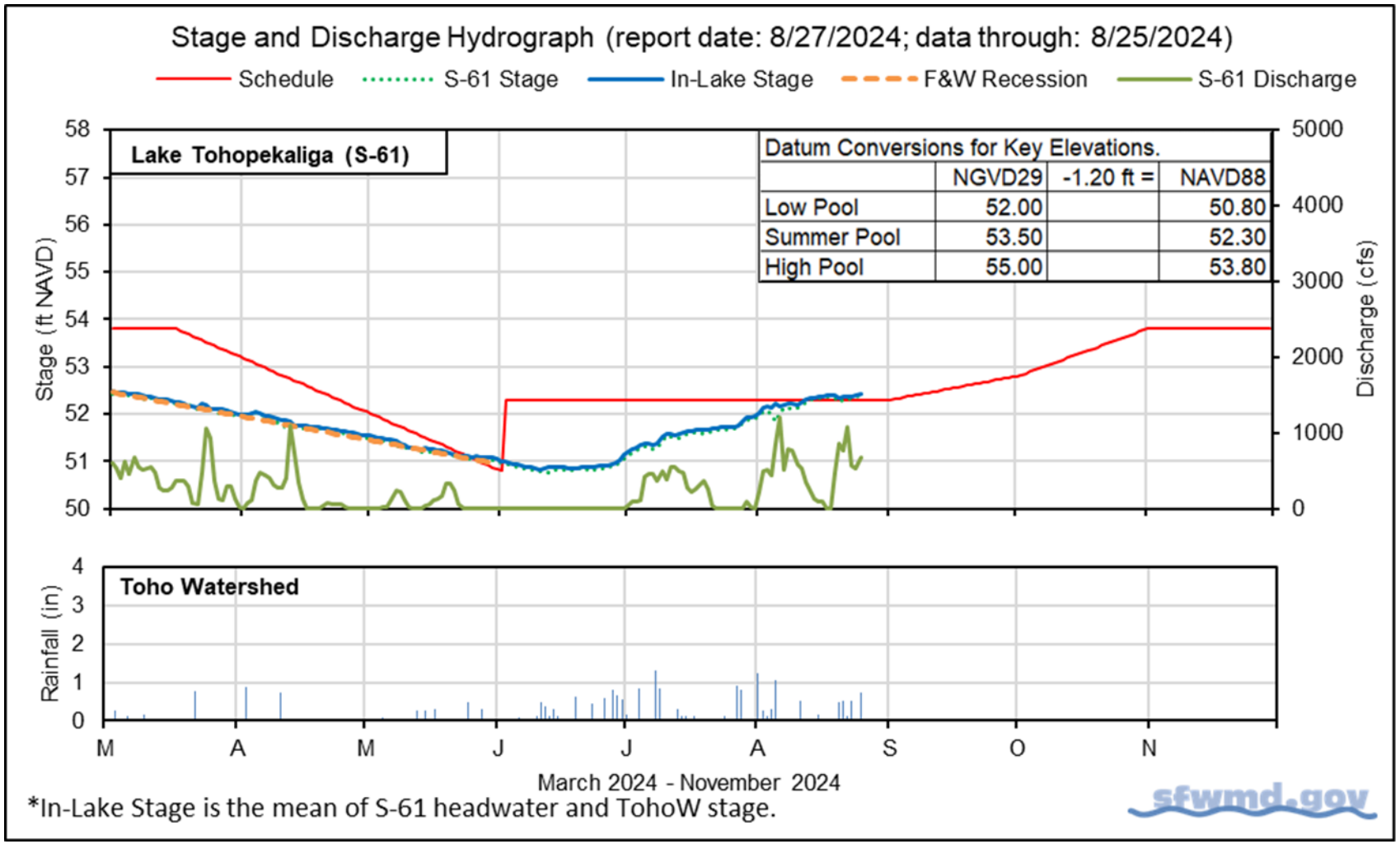


Figure KB-2. Lake Toho regulation schedule, stage, discharge, and rainfall.

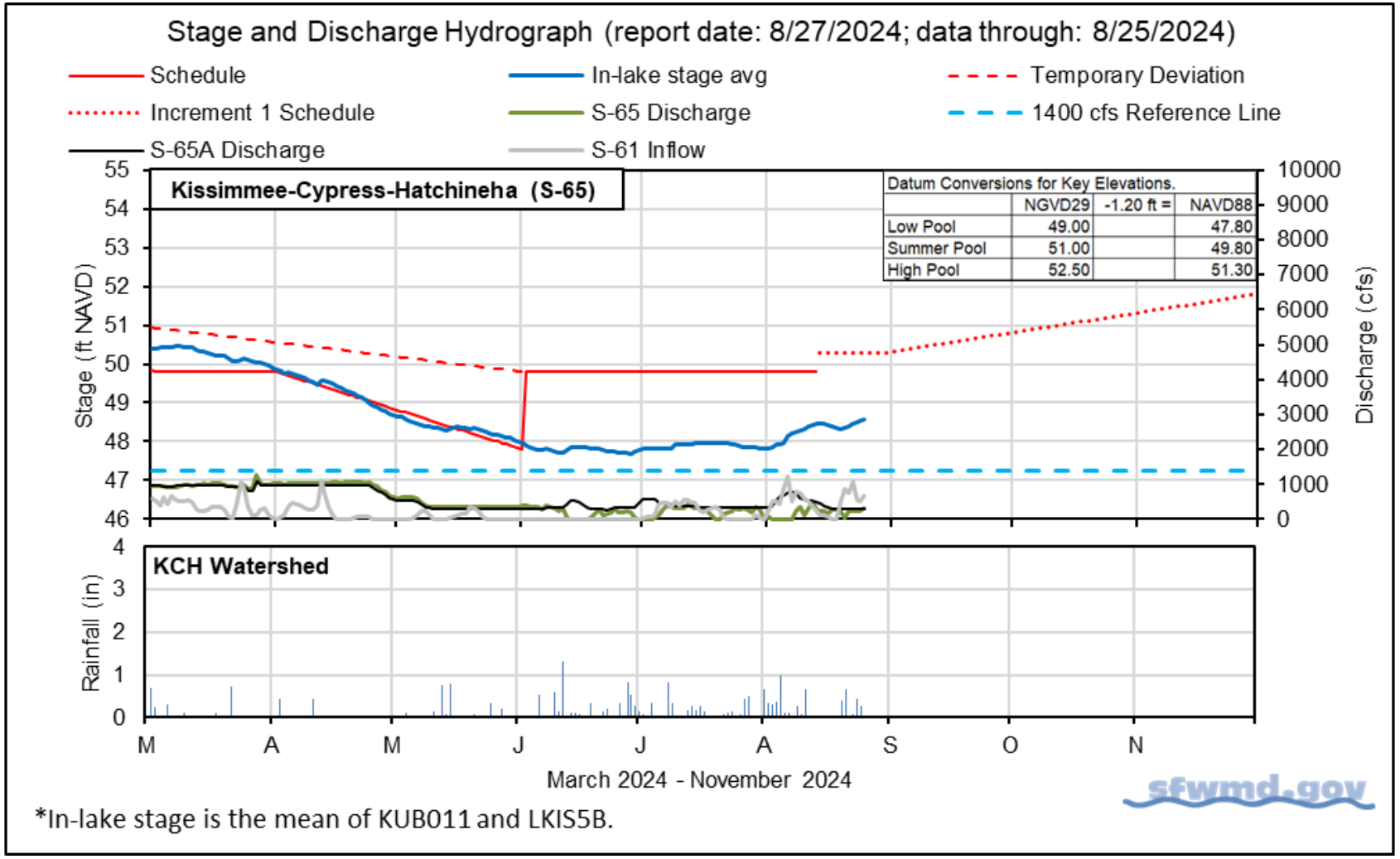


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge, and rainfall.

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			
		8/25/24	8/25/24	8/18/24	8/11/24	8/4/24
Discharge	S-65	300	230	280	150	99
Discharge	S-65A[a]	310	300	400	680	420
Headwater Stage (feet NAVD88)	S-65A	45.0	44.9	45.2	45.2	45.3
Discharge	S-65D[b]	430	470	760	960	520
Headwater Stage (feet NAVD88)	S-65D[c]	24.5	24.6	24.6	24.6	24.6
Discharge (cfs)	S-65E[d]	510	510	720	920	520
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	5.6	4.9	3.6	3.7	4.6
River channel mean stage[f]	Phase I river channel	31.9	31.9	32.6	33.7	31.9
Mean depth (feet) [g]	Phase I floodplain	0.12	0.10	0.12	0.12	0.08

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).

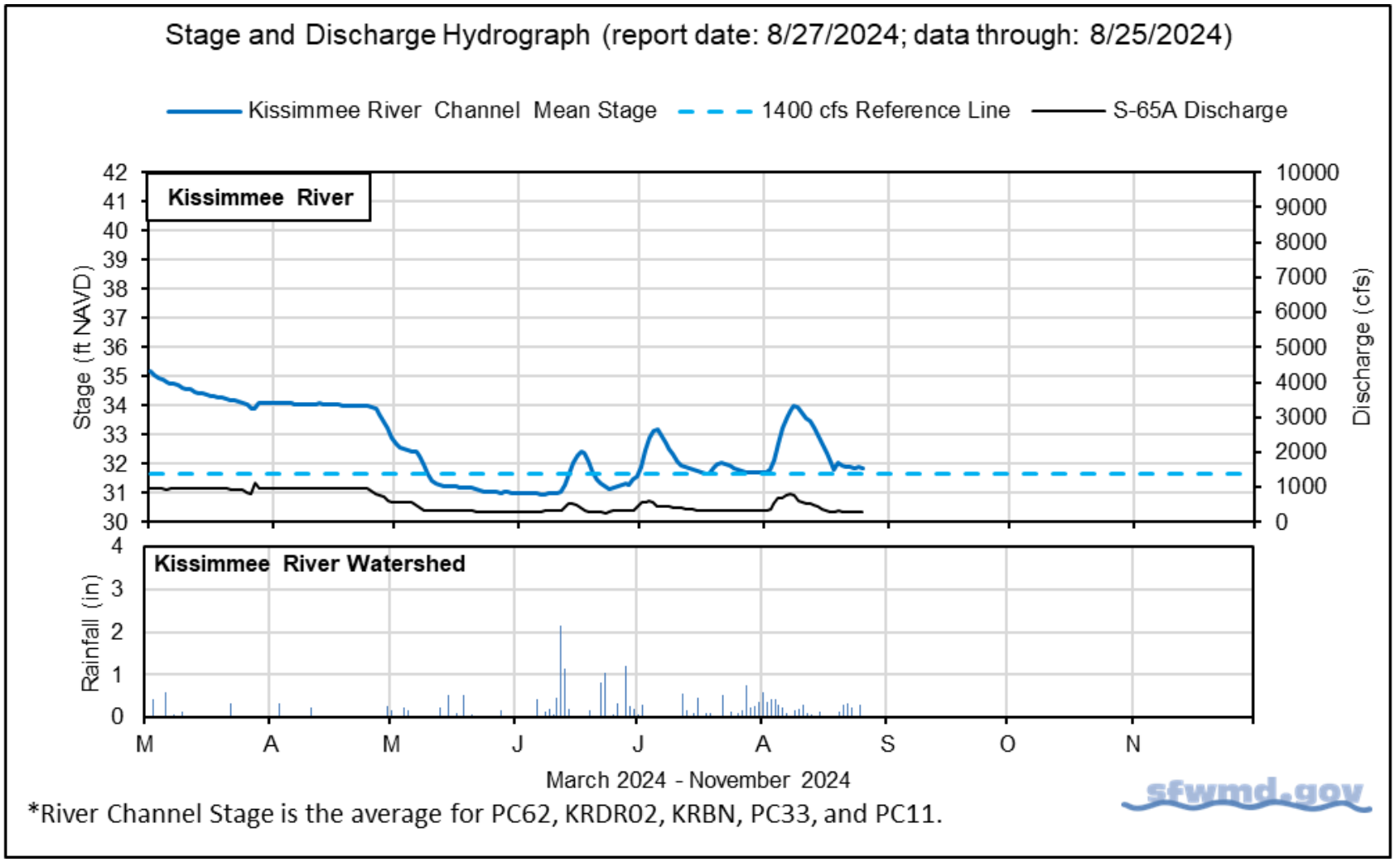


Figure KB-4. Kissimmee River stage, discharge, and rainfall.

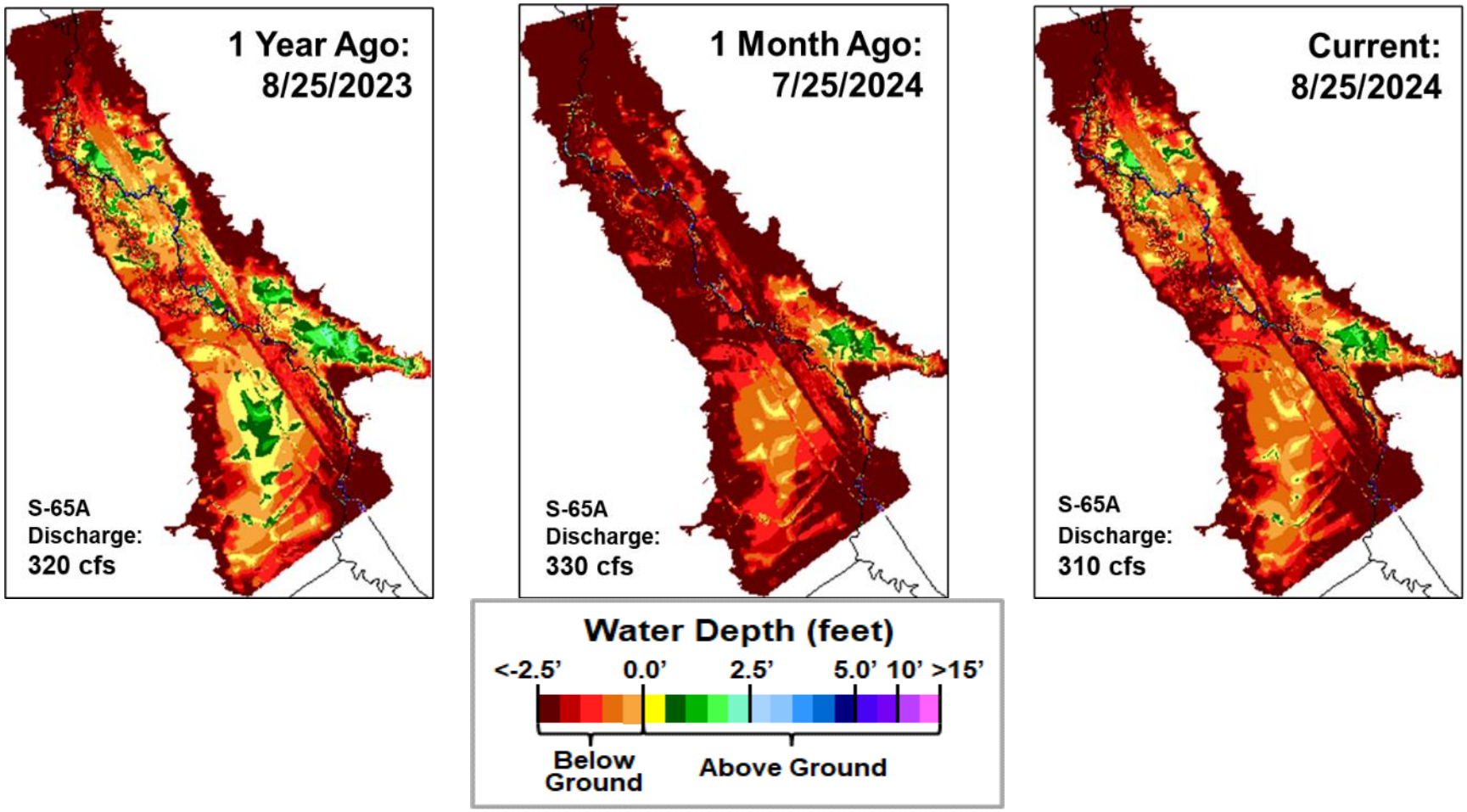


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago, and current.

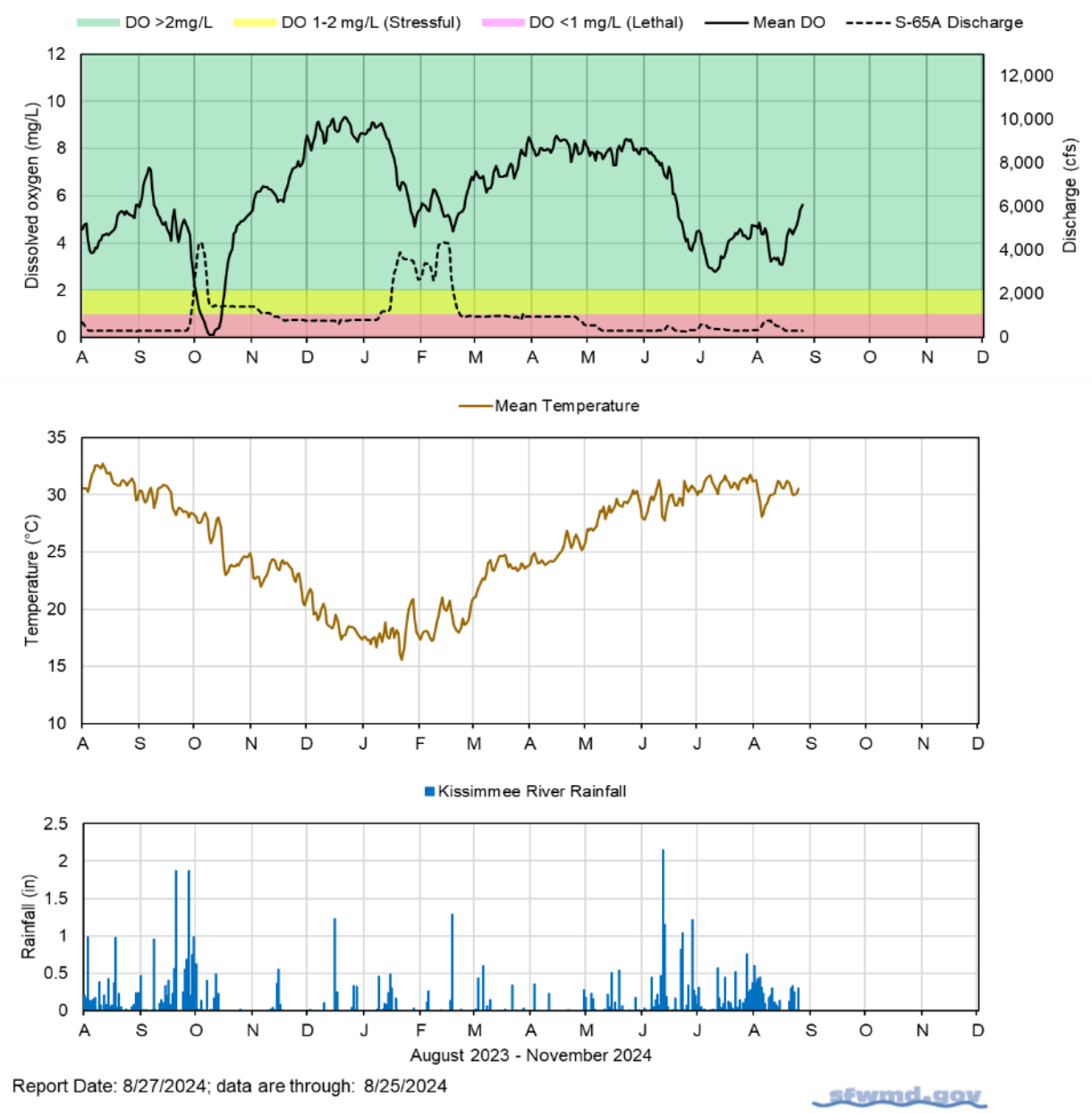


Figure KB-6. Kissimmee River channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of four stations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

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

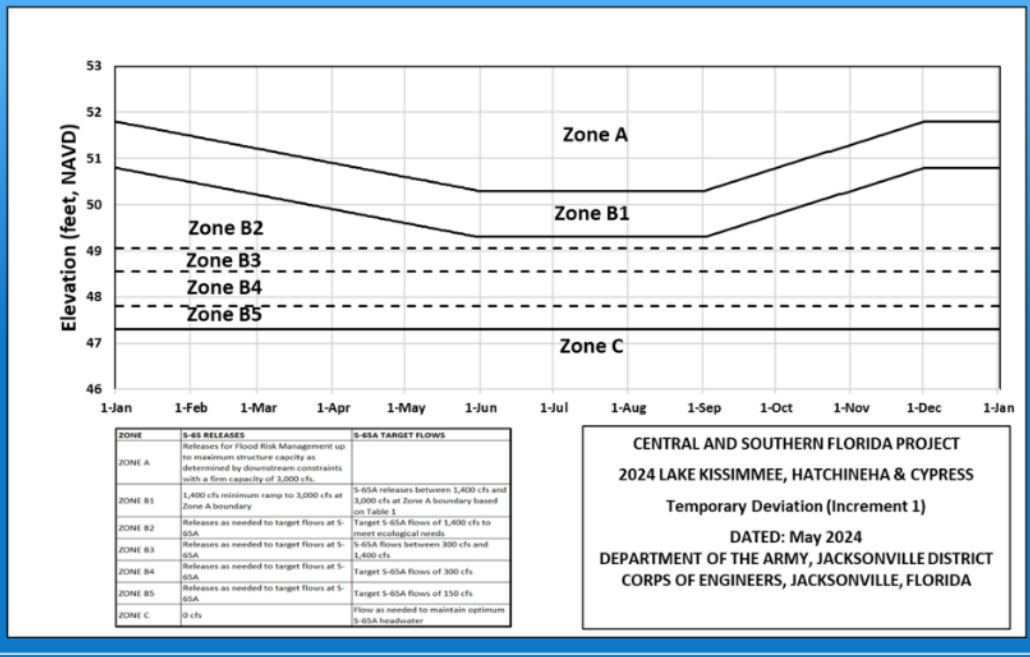
HRS Increment 1 Temporary Deviation Discharge Plan for S-65/S-65A

Discharge Guidance for Increment I Temporary Deviation Discharge Plan		
ZONE	**S-65 RELEASES**	**S-65A TARGET FLOWS**
ZONE A	Releases for Flood Risk Management up to maximum structure capcity as determined by downstream constraints with a firm capacity of 3,000 cfs.	
ZONE B1	1,400 cfs minimum ramp to 3,000 cfs at Zone A boundary	S-65A releases between 1,400 cfs and 3,000 cfs at Zone A boundary based on Table 1
ZONE B2	Releases as needed to target flows at S-65A	Target S-65A flows of 1,400 cfs to meet ecological needs
ZONE B3	Releases as needed to target flows at S-65A	S-65A flows between 300 cfs and 1,400 cfs
ZONE B4	Releases as needed to target flows at S-65A	Target S-65A flows of 300 cfs
ZONE B5	Releases as needed to target flows at S-65A	Target S-65A flows of 150 cfs
ZONE C	0 cfs	Flow as needed to maintain optimum S-65A headwater

Table KB-3. Maximum Rate of Change Limits for S-65A

MAXIMUM Release Rate of Chane Limits for S-65A. **In general recommended rates of change will be slower than shown in this table.**

Q (cfs)	Maximum rate of INCREASE (cfs/day)	Maximum rate of DECREASE (cfs/day)
0-300	50	-50
301-650	75	-75
651-1400	150	-150
1401-3000	300	-600
>3000	1000	-2000



Other Considerations

- When possible, limit lake ascension rate in the Jun 1 - Aug 15 window to 0.25 ft per 7 days in Lakes Kissimmee, Cypress, Hatchineha (S-65), East Toho (S-59) and Toho (S-61).
- If outlook is for extreme dry conditions meet with KB staff to discuss modifications to this plan.

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Figure KB-7. Headwaters Revitalization Schedule (HRS) Increment 1 Temporary Deviation Discharge Plan for S-65/S-65A.

Lake Okeechobee

Lake Okeechobee stage was 12.85 feet NAVD88 (14.16 ft NGVD29) on August 25, 2024, which was 0.11 feet higher than the previous week and 0.63 feet higher than a month ago (**Figure LO-1**). Lake stage is in Zone D of the regulation schedule (**Figure LO-2**) and was 0.96 feet above the upper limit of the recovery ecological envelope (**Figure LO-3**). According to NEXRAD, 0.60 inches of rain fell directly over the Lake last week.

Average daily inflows (excluding rainfall) decreased from 5,160 cfs the previous week to 2,910 cfs. The largest inflows came from the Indian Prairie watershed (960 cfs) via the S-71, S-72, and S-84 structures, while Fisheating Creek discharged 900 cfs. Average daily outflows (excluding evapotranspiration) remained low at 120 cfs, all of which was released to the west through S-77. **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 non-obscured satellite image from August 23, 2024, NOAA's Harmful Algal Bloom Monitoring System continues to suggest that the recent storm activity reduced cyanobacteria abundance, and shows moderate, but patchy, cyanobacteria concentrations across the northern and western nearshore regions of the Lake (**Figure LO-6**).

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

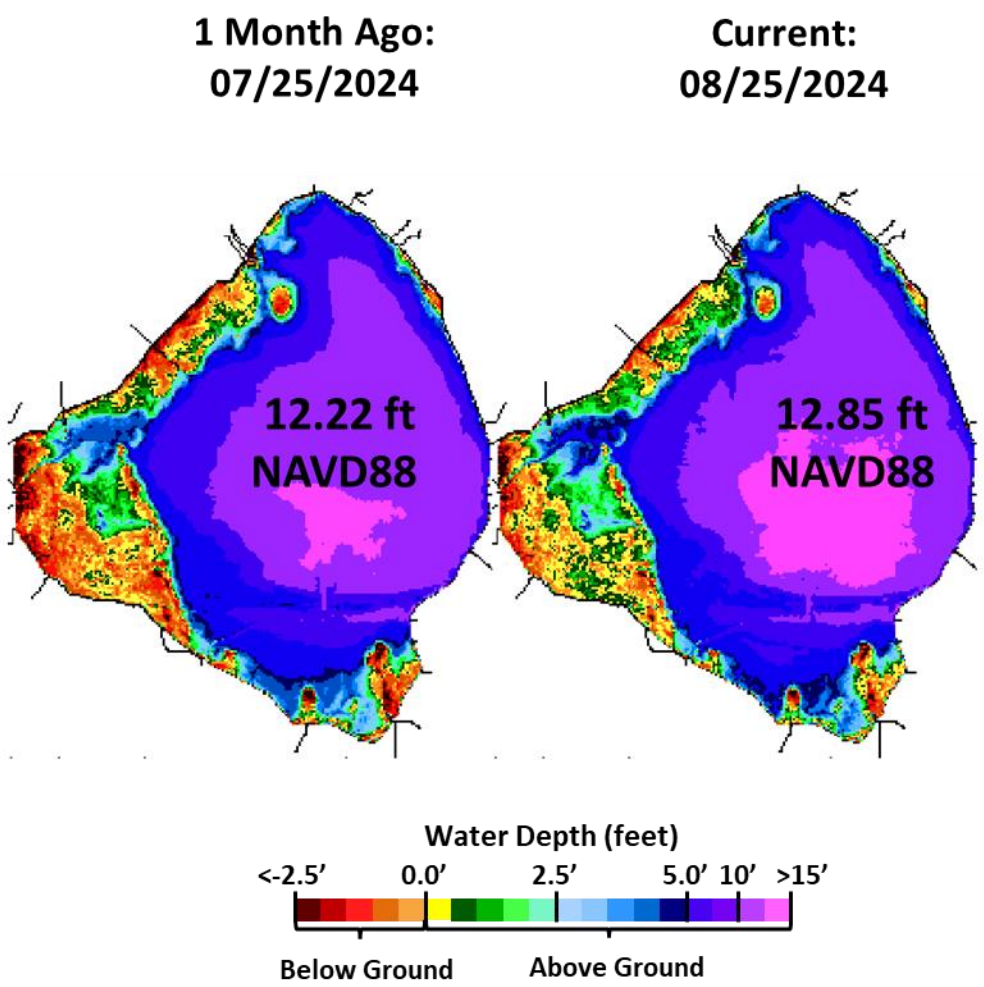


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

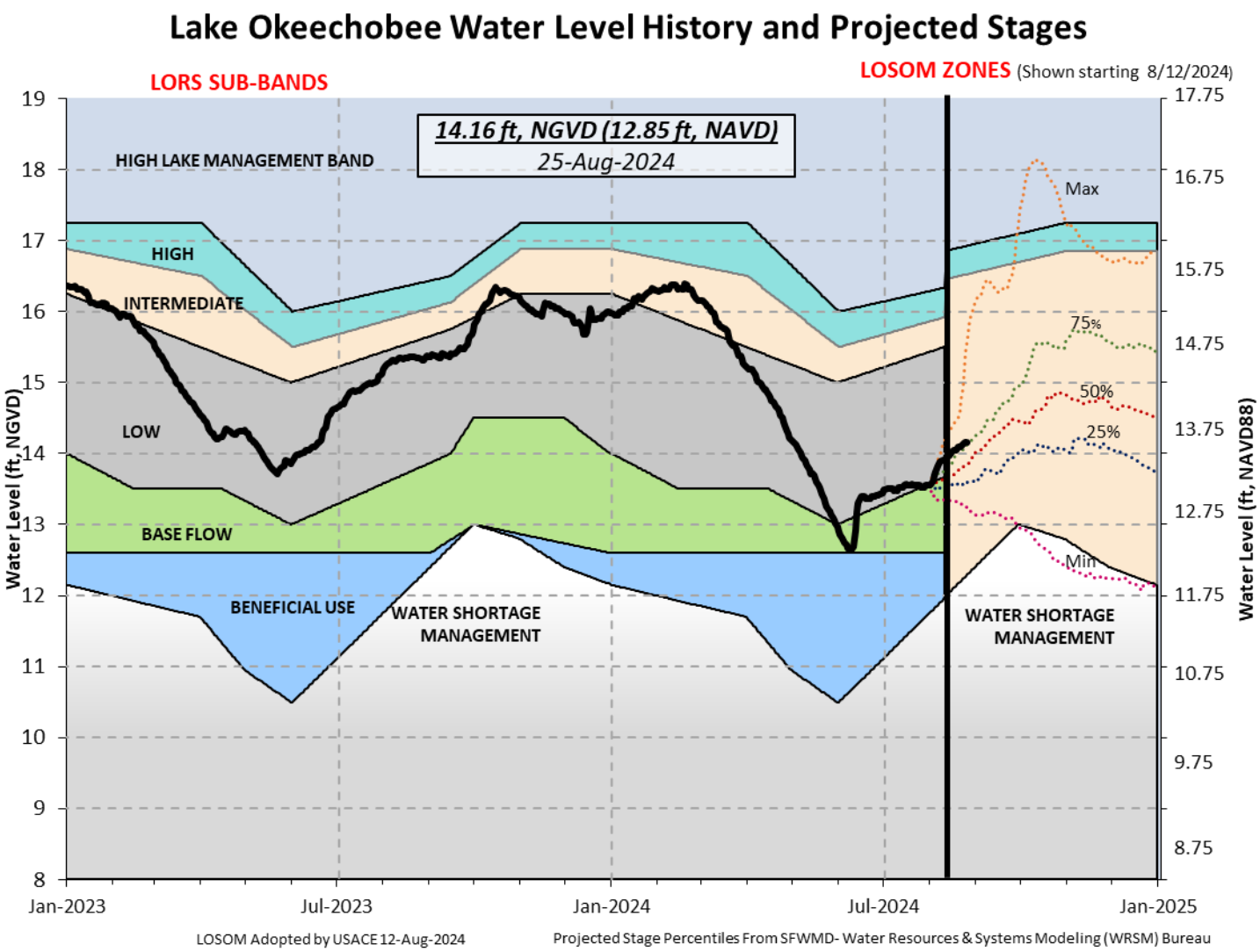


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis. Note: stages are in NGVD29, approximate NAVD88 values are shown for reference.

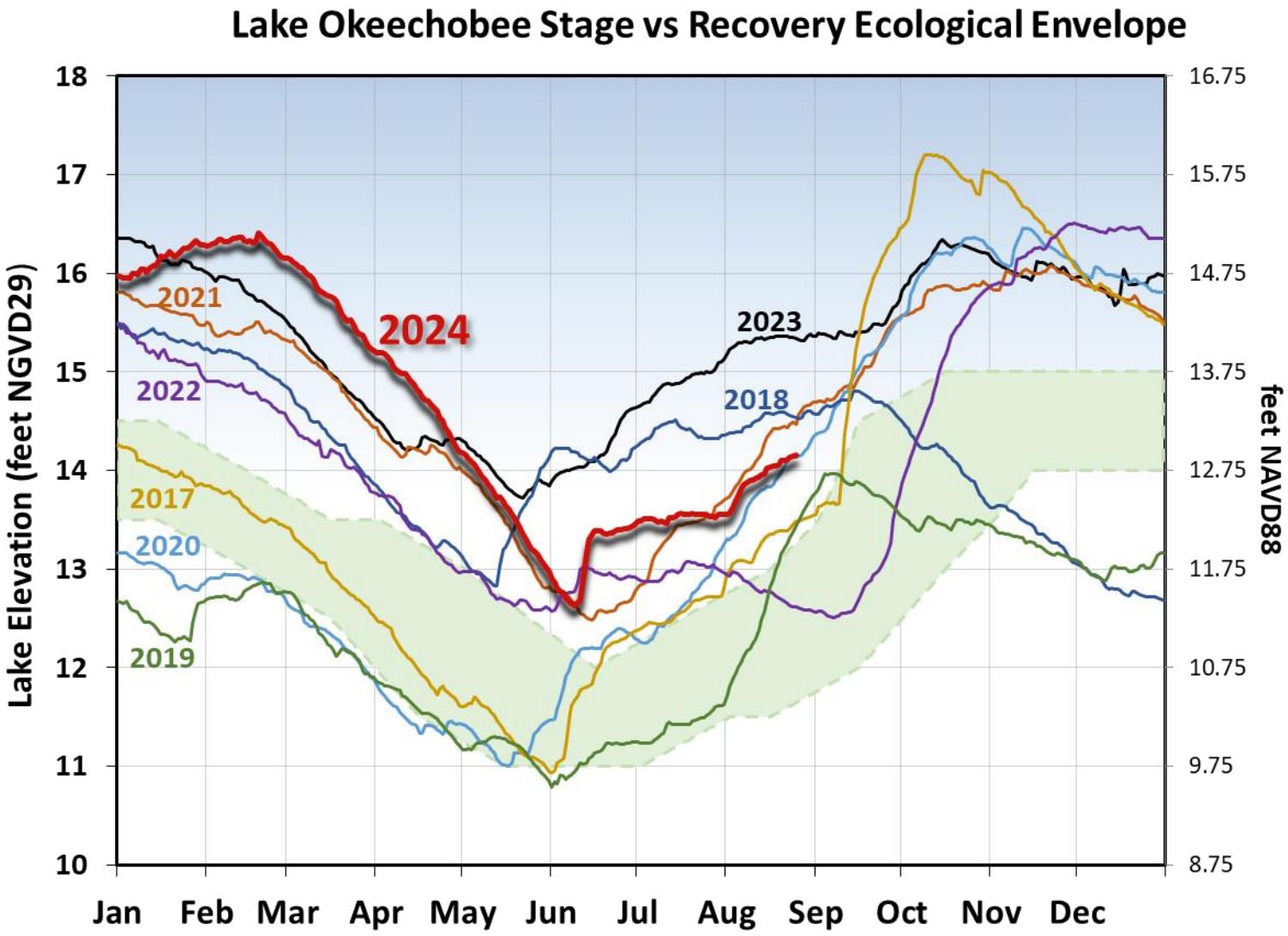


Figure LO-3. The current and seven prior year's annual stage hydrographs for Lake Okeechobee in comparison to the recovery envelope (light green). A shift from the normal ecological envelope to the recovery envelope occurred because the 30-day minimum lake stage (elevations exposed for at least 30 days,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

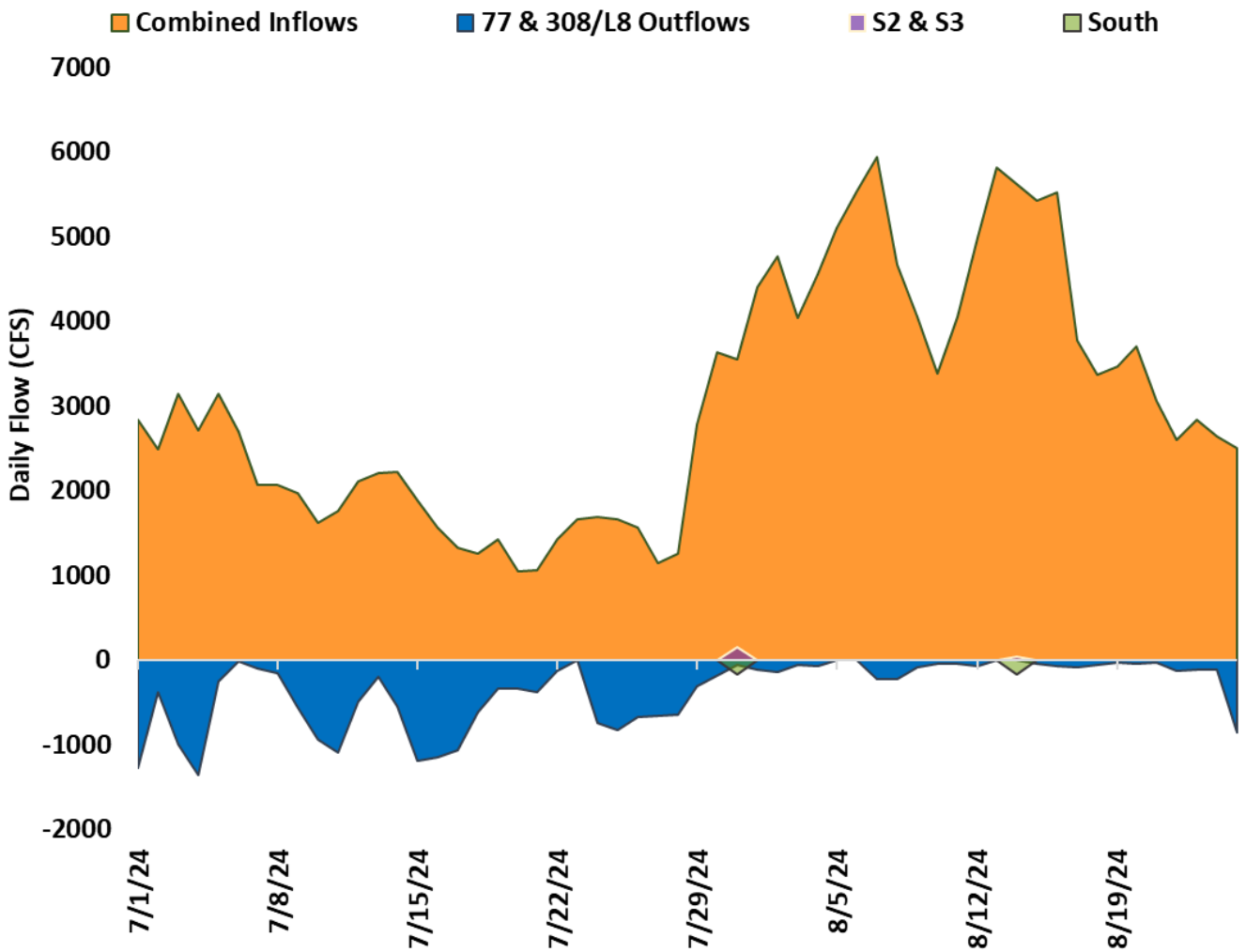


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

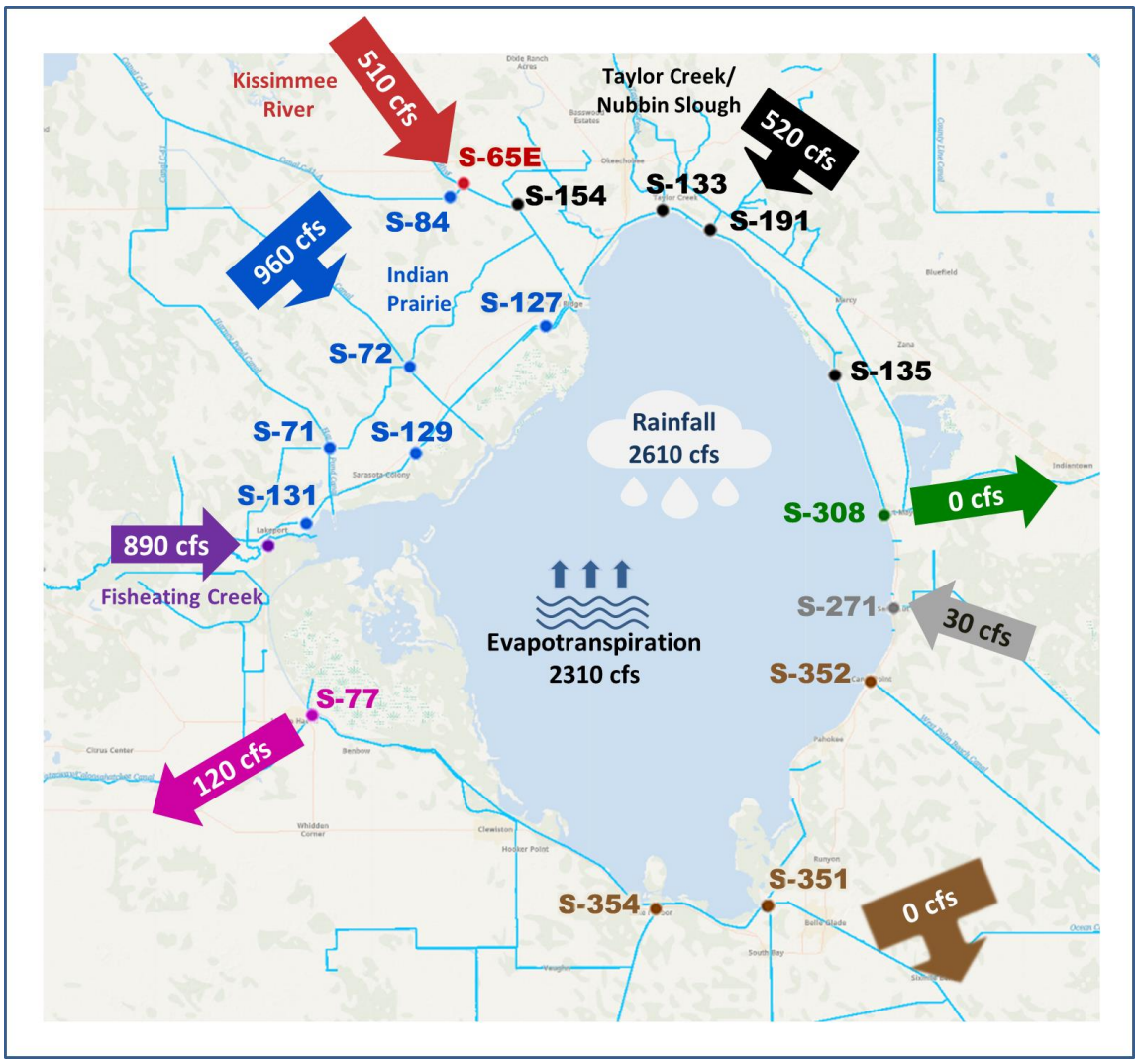


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of August 19 - 25, 2024.

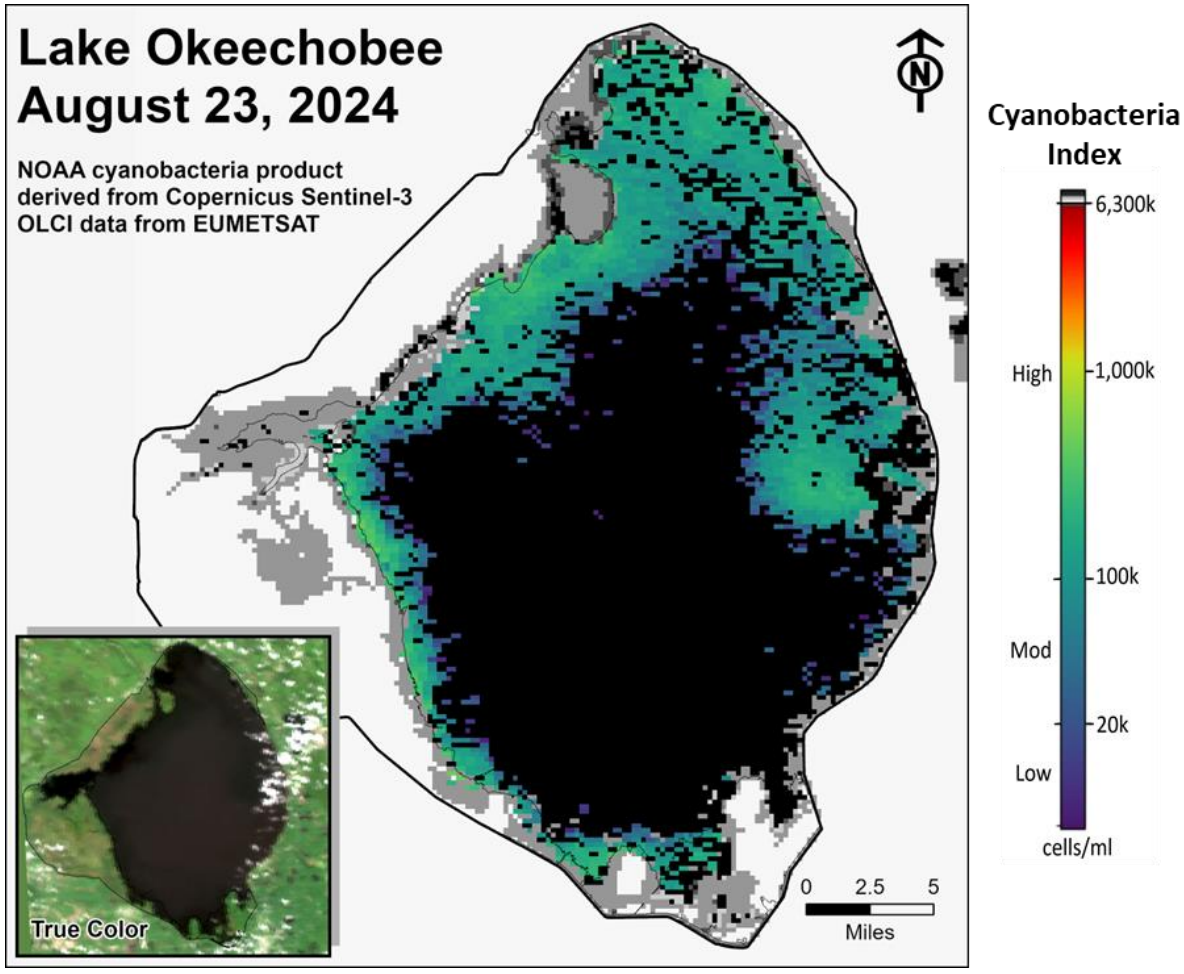


Figure LO-6. Cyanobacteria bloom index level on Lake Okeechobee, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover. *Provisional NOAA image, subject to change*.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 1,324 cfs (**Figures ES-1** and **ES-2**), and the previous 30-day mean inflow was 1,920 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 10.4. 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 (FWRI) was 0.9 spat/shell for July, which is a decrease from the previous month (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 2,662 cfs (**Figures ES-6** and **ES-7**), and the previous 30-day mean inflow was 4,651 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, salinities remained the same at S-79, Val I-75, and Fort Myers 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 lower stressed range for adult eastern oysters at Cape Coral, in the optimal range at Shell Point, and in the upper stressed range at Sanibel (**Figure ES-10**). The mean larval oyster recruitment rate reported by the FWRI was 1.1 spat/shell at Iona Cove and 36.6 spat/shell at Bird Island for July, which is a decrease for Iona Cove and an increase for Bird Island compared to the previous month (**Figures ES-11 and ES-12**).

Surface salinity at Val I-75 was forecast 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 450 to 2,000 cfs with estimated tidal basin inflows of 639 cfs. Model results from all scenarios predict daily salinity to be 0.3 or lower and the 30-day moving average surface salinity to be 0.3 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 FWRI reported on August 23, 2024, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in any samples collected statewide over the past week.

Water Management Recommendations

Lake Okeechobee stage in Zone D. Current climatological and hydrological conditions are normal. The LOSOM release guidance suggests up to 2,000 cfs release at S-79 to the Caloosahatchee River Estuary and no releases at S-80 to the St. Lucie Estuary.

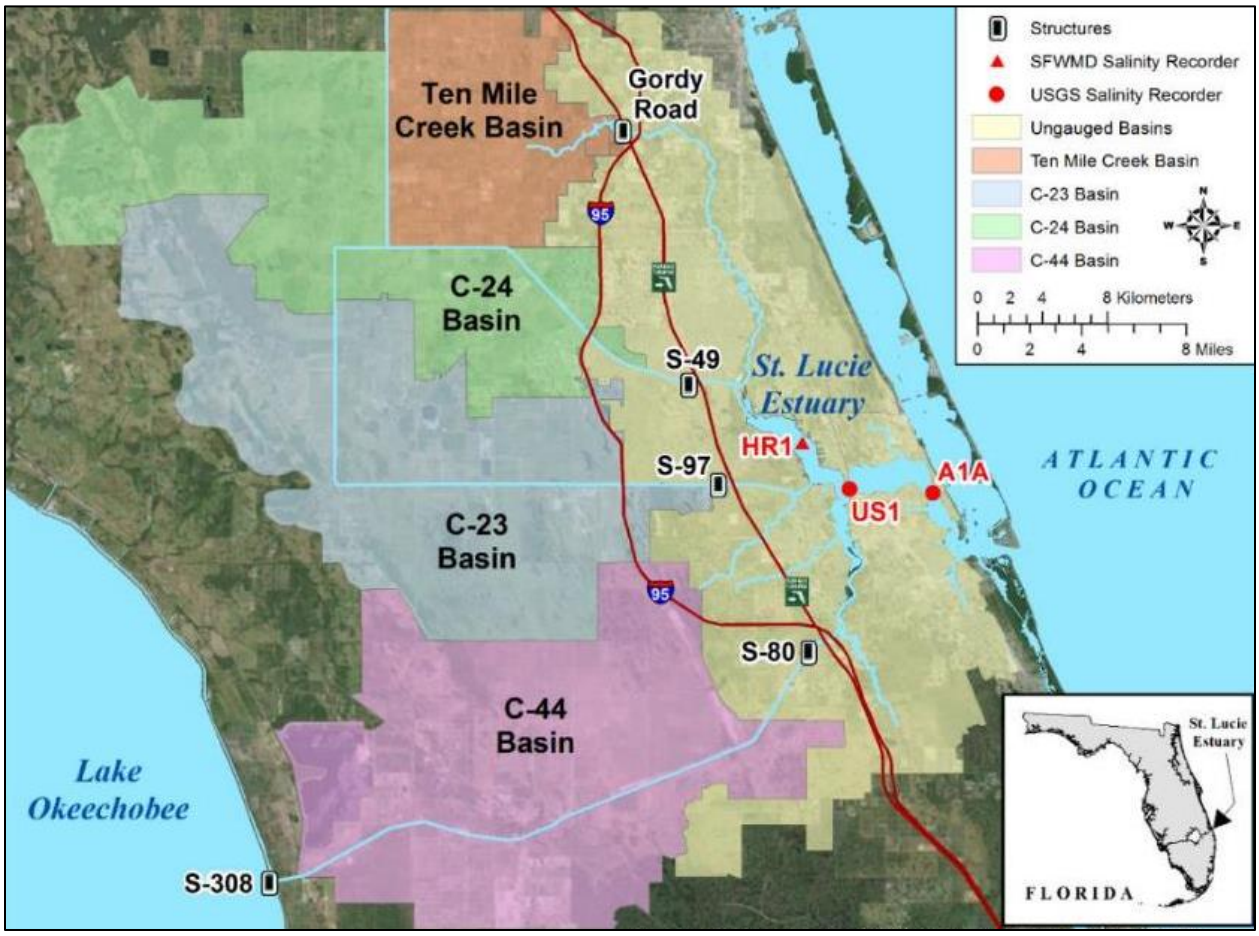


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

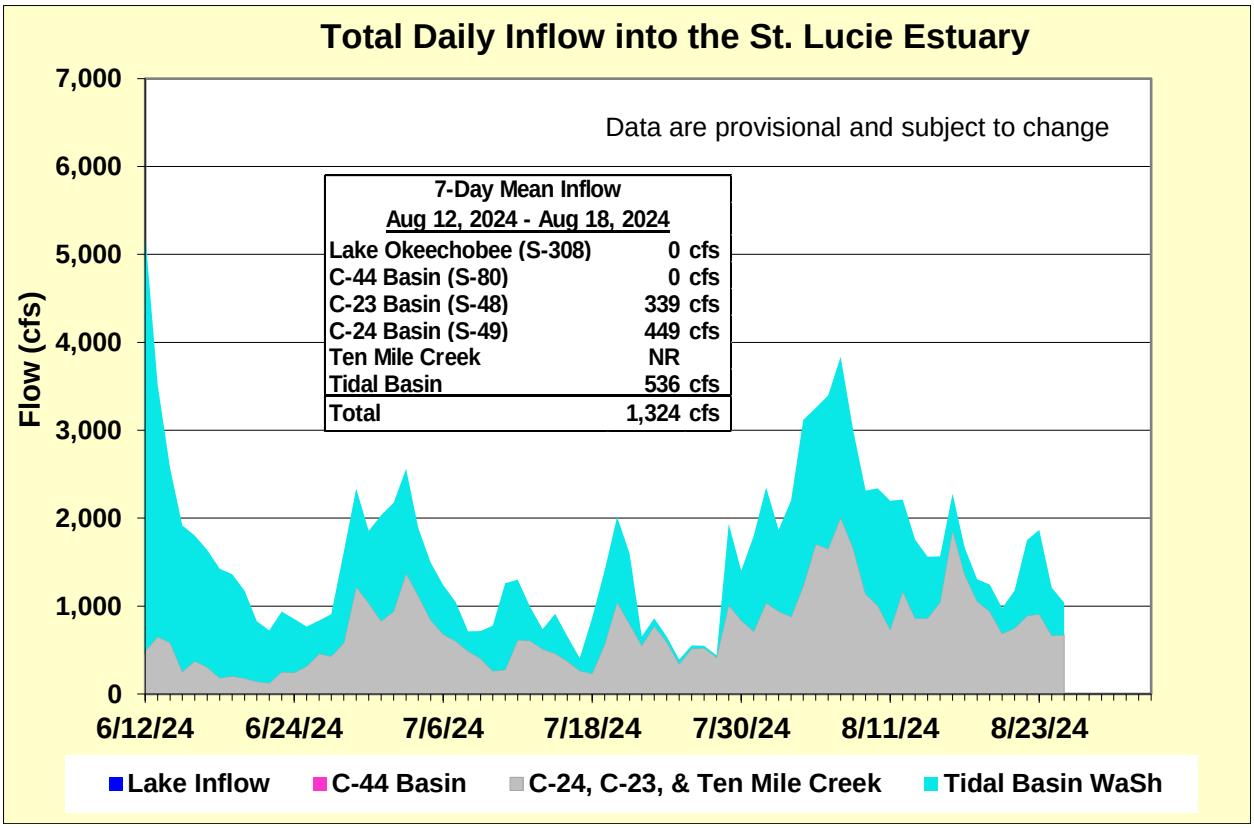


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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)	**3.5** (2.6)	**8.6** (6.2)	10.0 – 25.0
US1 Bridge	**9.5** (6.7)	**11.4** (10.7)	10.0 – 25.0
A1A Bridge	**18.4** (15.7)	**24.7** (24.7)	10.0 – 25.0

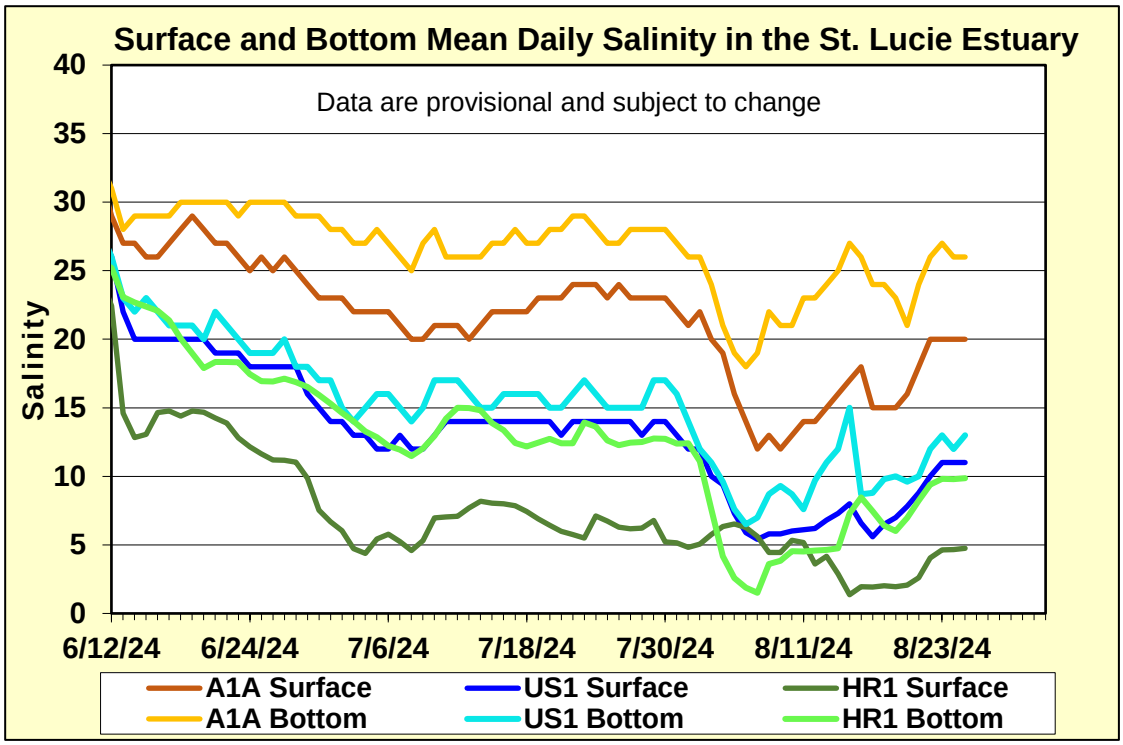


Figure ES-3. Mean daily salinity at the A1A, US1, and HR1 sites in the St. Lucie Estuary.

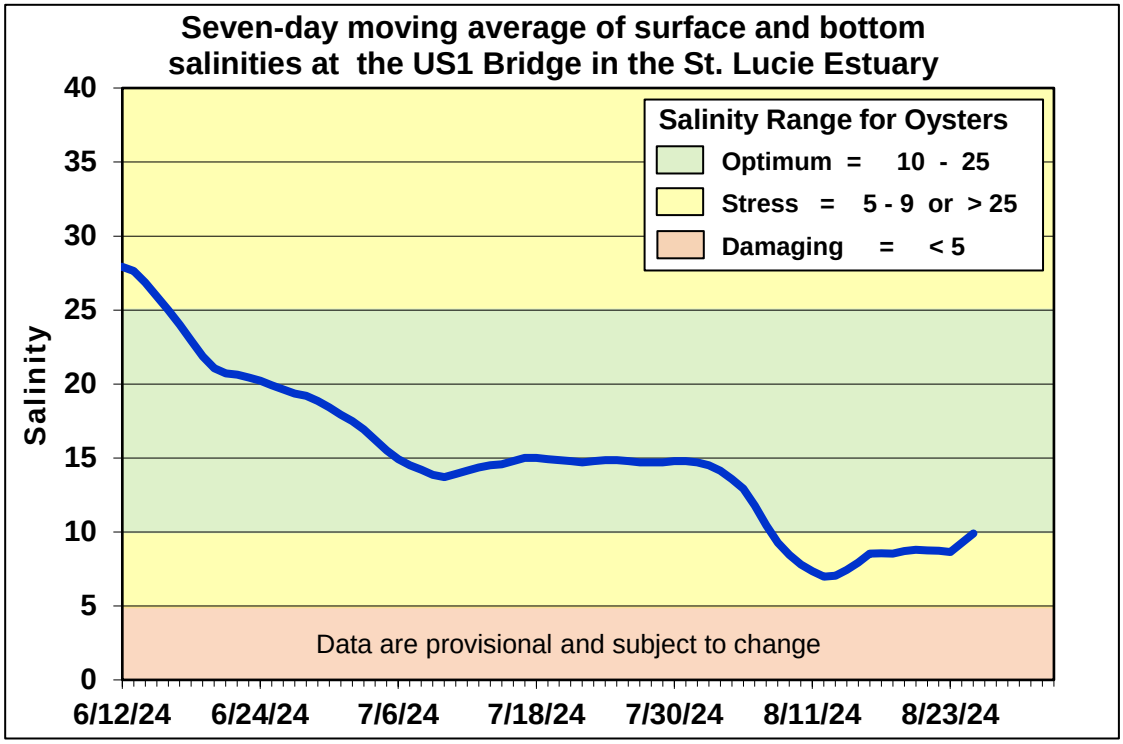


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

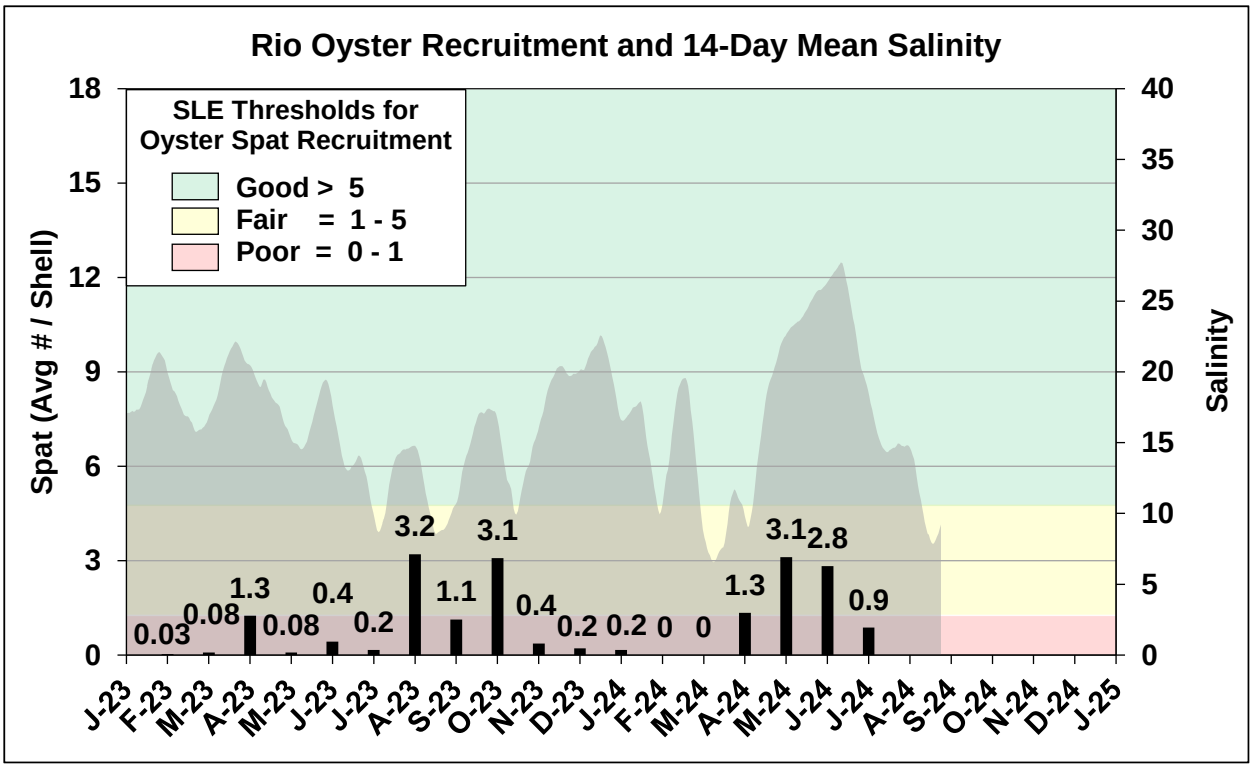


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

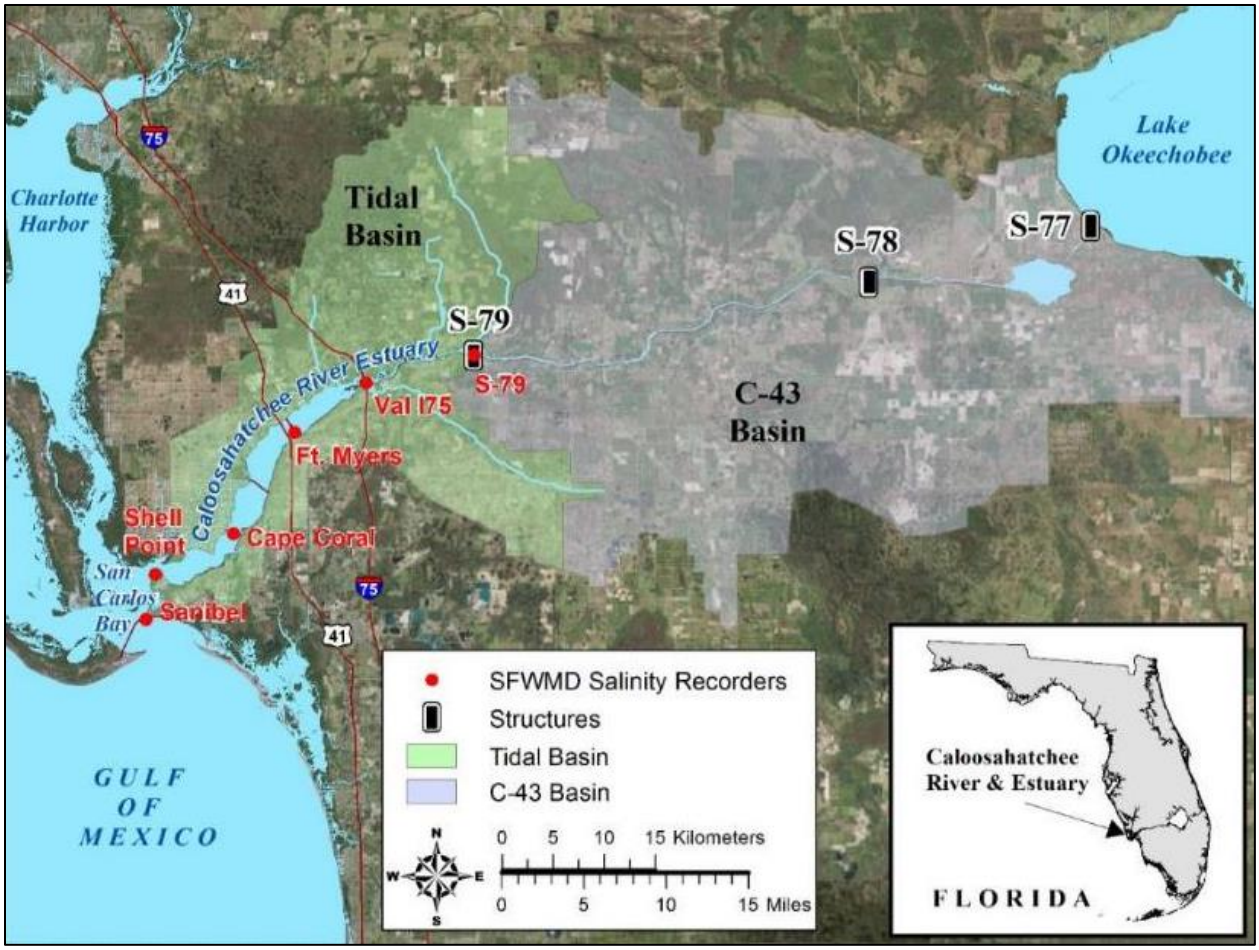


Figure ES-6. Basins, water control structures, and salinity monitoring sites in the Caloosahatchee River Estuary.

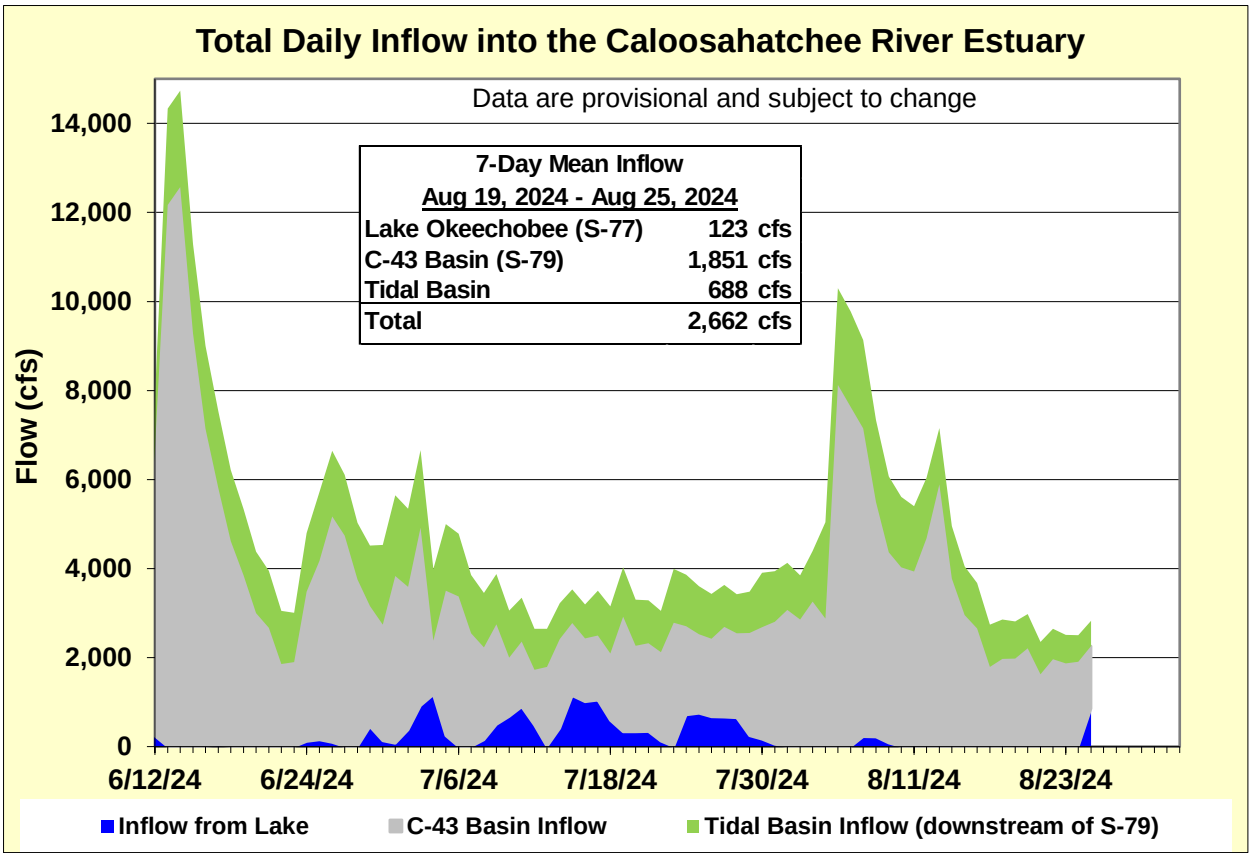


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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	**0.2** (0.2)	**0.2** (0.2)	0.0 – 10.0
Fort Myers Yacht Basin	**0.2** (0.2)	**0.2** (0.2)	0.0 – 10.0
Cape Coral	**5.4** (1.6)	**6.6** (2.6)	10.0 – 25.0
Shell Point	**20.1** (13.9)	**21.4** (18.3)	10.0 – 25.0
Sanibel	**25.9** (23.5)	**27.6** (26.0)	10.0 – 25.0

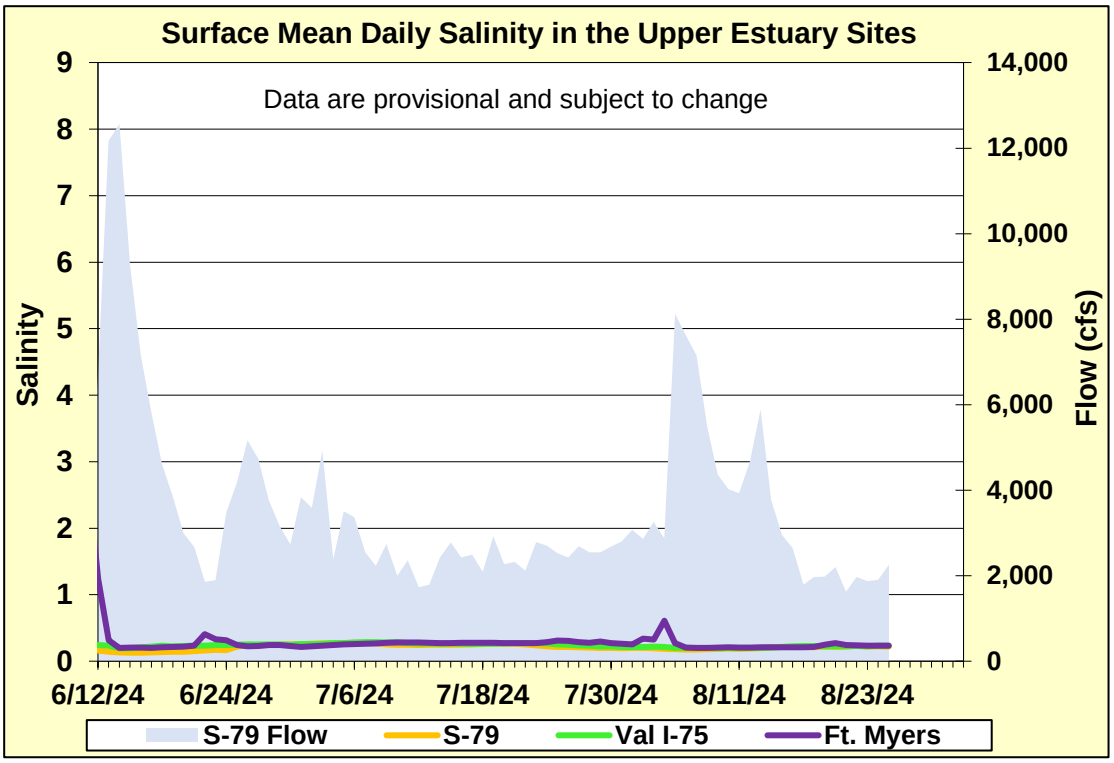


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

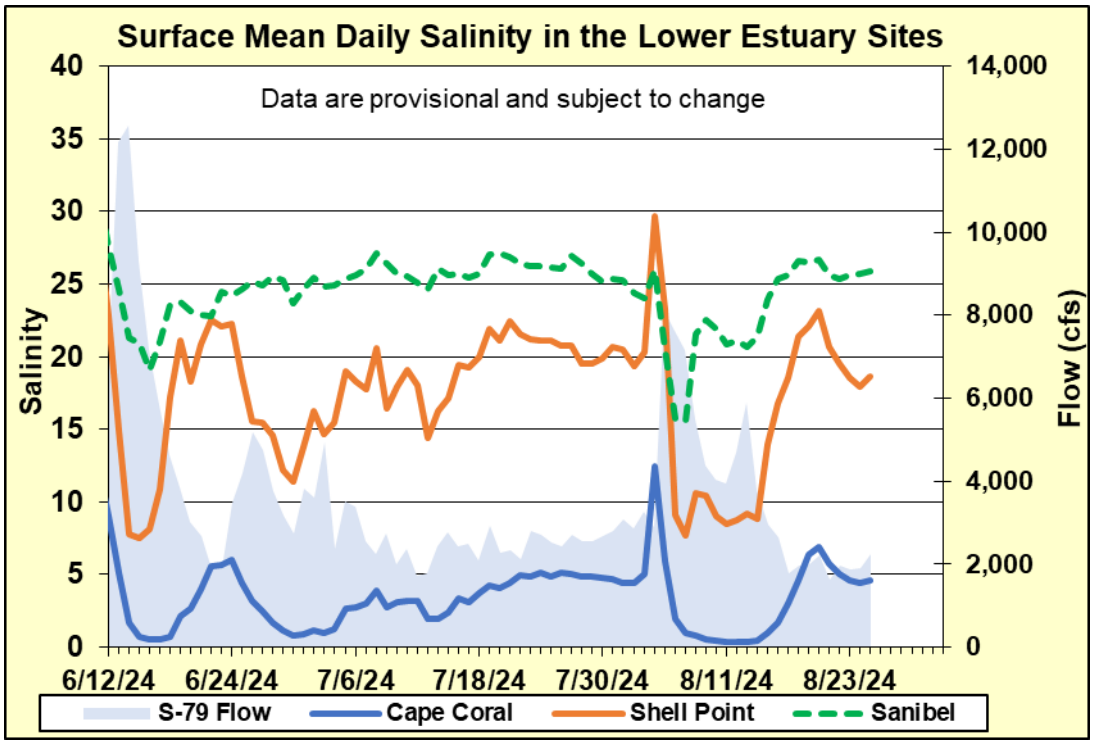


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

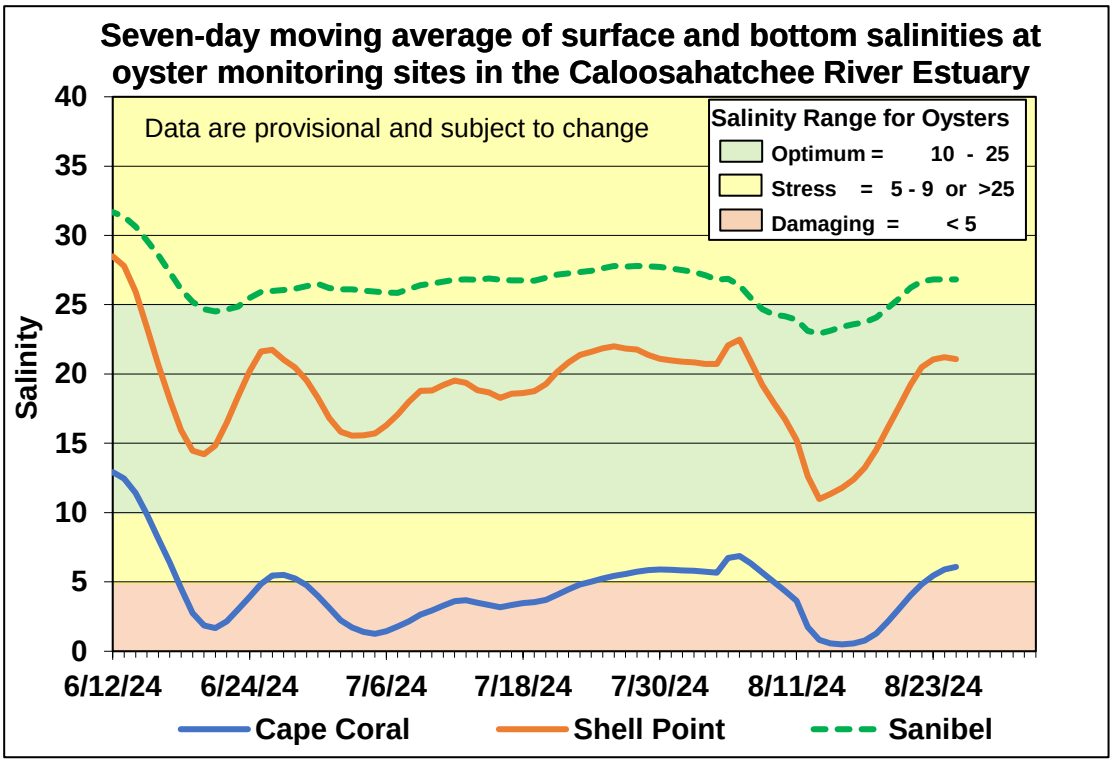


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point, and Sanibel monitoring sites in the Caloosahatchee River Estuary.

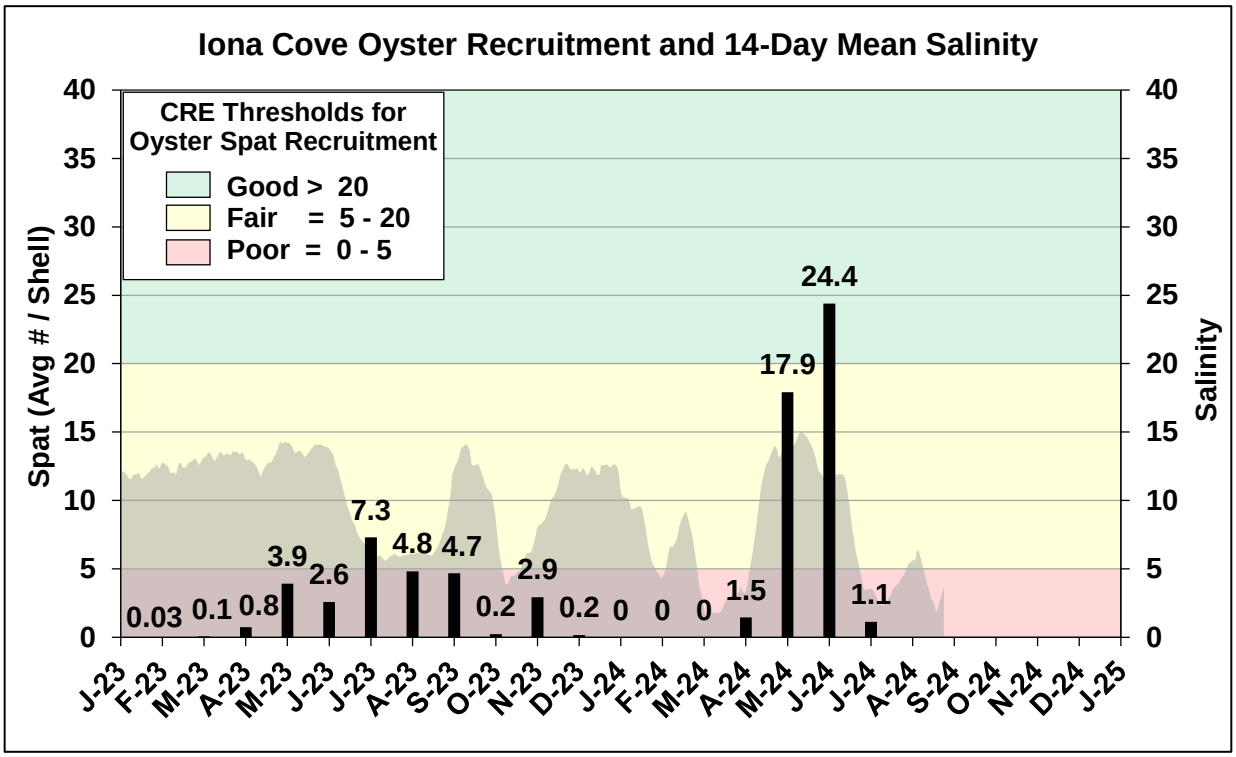


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

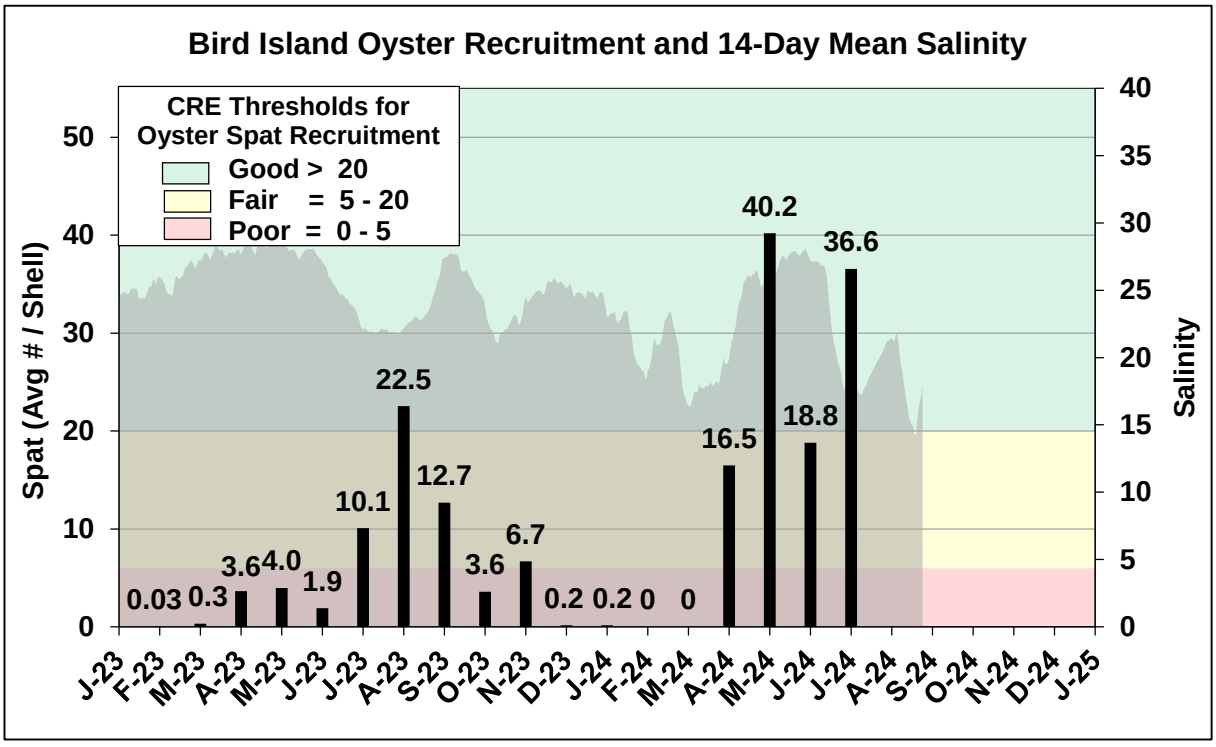


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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	450	639	0.3	0.3
B	650	639	0.3	0.3
C	1,200	639	0.3	0.3
D	2,000	639	0.3	0.3

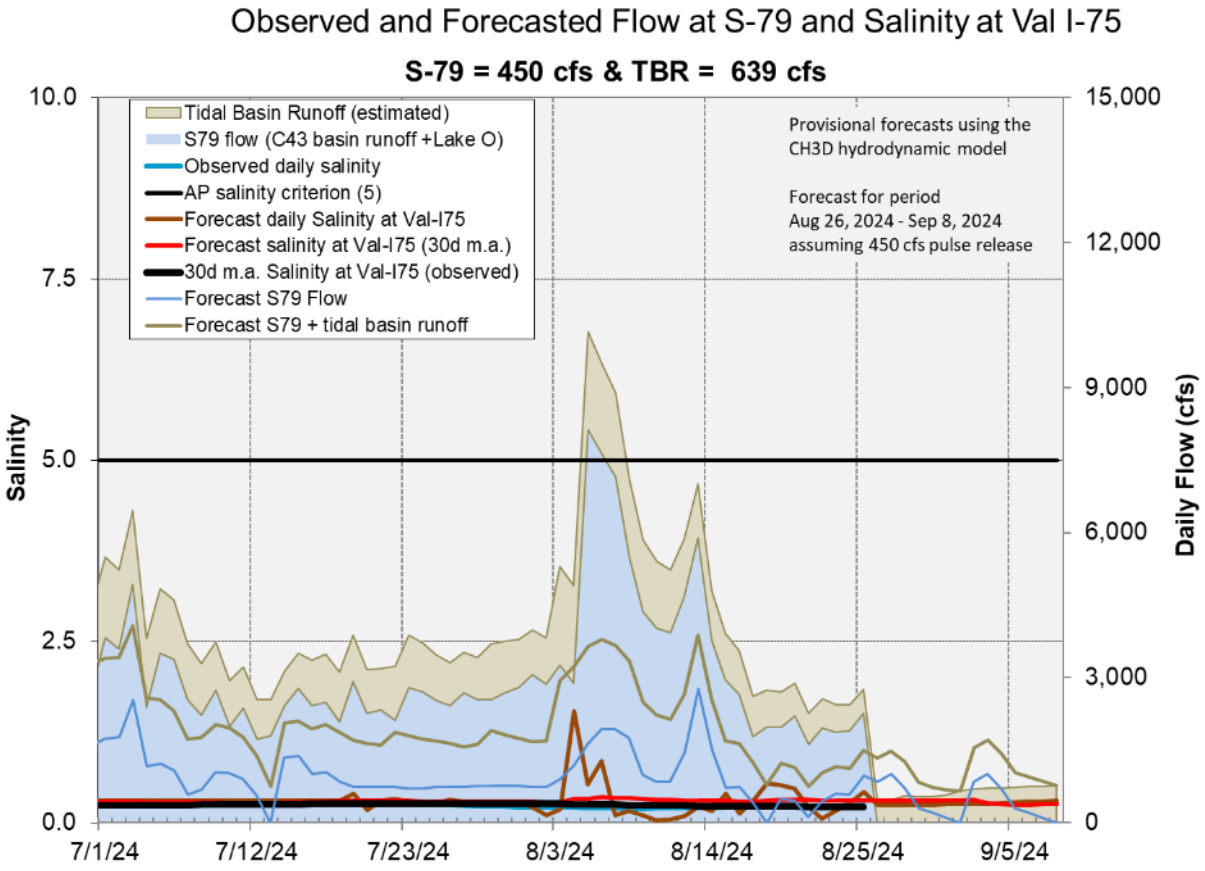


Figure ES-13. Surface salinity forecast at the Val I-75 site assuming a 450 cfs pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Central Flow-way is offline for construction activities. An operational restriction is in place in the Western Flow-way for post-construction vegetation grow-in, and in the Eastern Flow-way for vegetation establishment following erosion repair. Online treatment cells are near or above target stage. (**Figure S-1**).

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

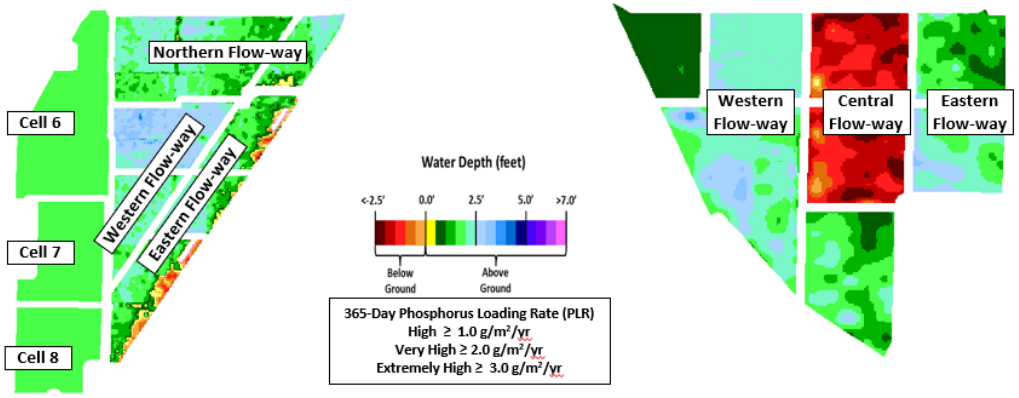
STA-2: Operational restrictions are in place in Flow-ways 2 and 4 for vegetation management activities, and in Flow-way 5 for construction activities. Online treatment cells are near or above target stage. Vegetation in Flow-ways 2, 3, and 4 is stressed, and in 5 is highly stressed. The 365-day PLRs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

STA-5/6: Treatment cells are near or above 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, the 365-day PLRs for Flow-ways 2 and 5 are high, and the 365-day PLR for Flow-way 3 is very high. (**Figure S-3**).

For definitions on STA operational language see glossary following figures.

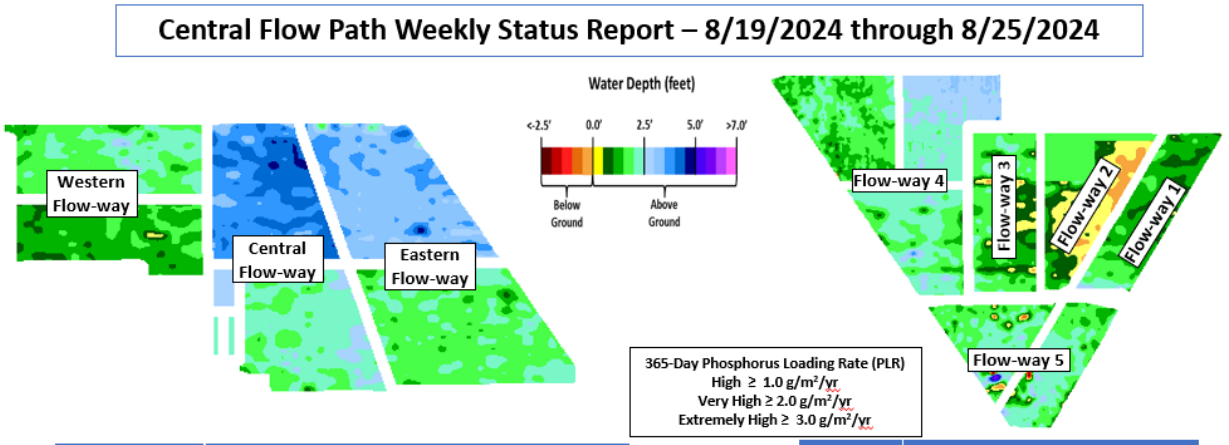
Eastern Flow Path Weekly Status Report – 8/19/2024 through 8/25/2024



STA-1W	Flow-way Status
Western	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• High 365-day PLR • Highly stressed vegetation conditions
Northern	• Highly stressed vegetation conditions • Planting emergent vegetation
Cell 6	
Cell 7+8	

STA-1E	Flow-way Status
Western	• Post-construction vegetation grow-in
Central	• Offline for construction activities
Eastern	• Online with restrictions for vegetation grow-in following erosion repair

Figure S-1. Eastern Flow Path Weekly Status Report



STA-3/4	Flow-way Status
Western	• High 365-day PLR
Central	• Highly stressed vegetation conditions • High 365-day PLR
Eastern	• Post-drawdown vegetation grow-in • Stressed vegetation conditions

STA-2	Flow-way Status
Flow-way 1	• Upstream FAV control
Flow-way 2	• High 365-day PLR • Post-construction vegetation grow-in • Stressed vegetation conditions • Upstream FAV control
Flow-way 3	• High 365-day PLR • Stressed vegetation conditions • Upstream FAV control
Flow-way 4	• Planting emergent vegetation • Stressed vegetation conditions • Post-storm recovery • Upstream FAV control
Flow-way 5	• Highly stressed vegetation conditions • Construction activities (FPL pads)

Figure S-2. Central Flow Path Weekly Status Report

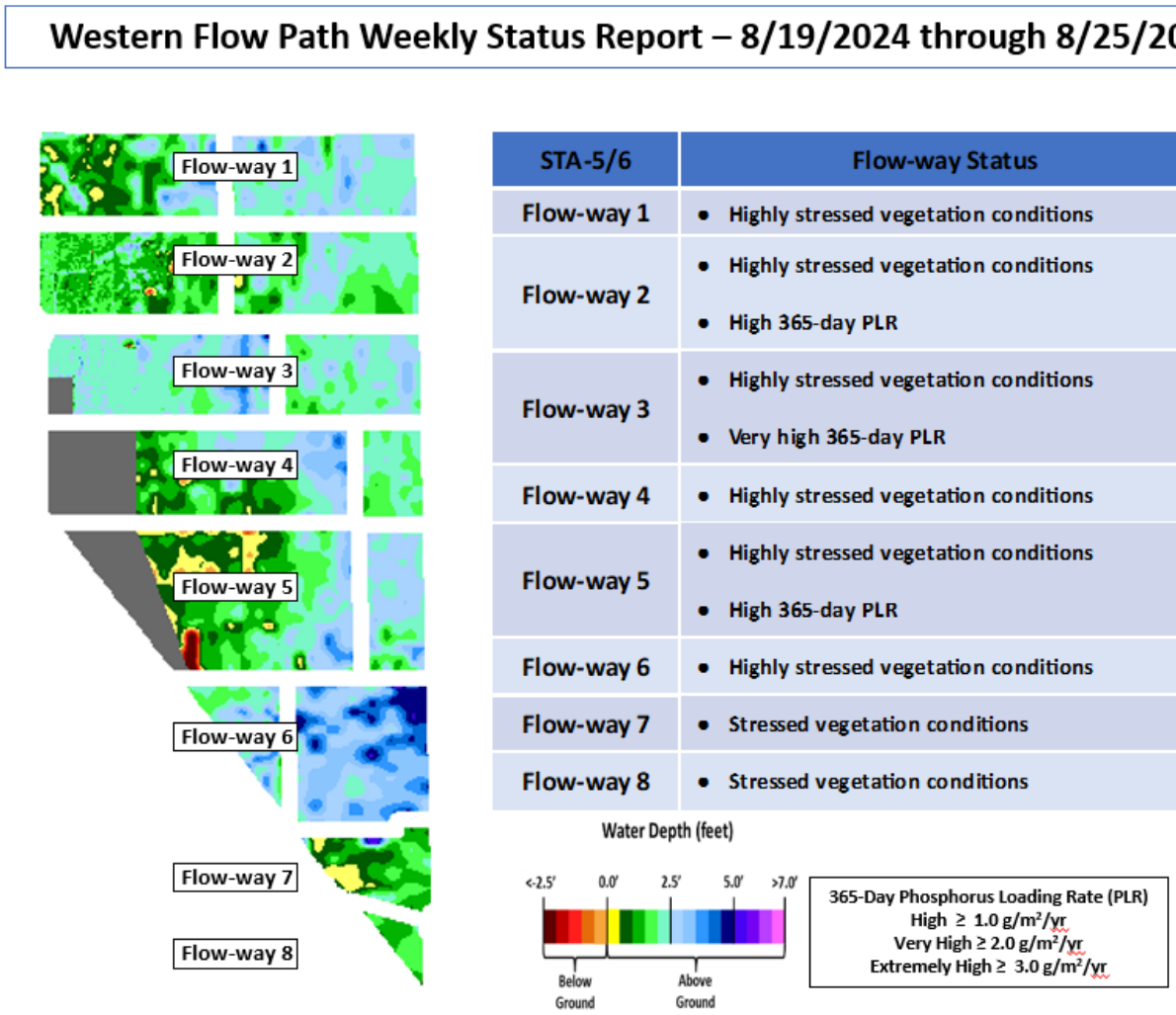


Figure S-3. Western Flow Path Weekly Status Report

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

Rainfall increased markedly in WCA-3A in both basin-wide average and local maximum compared to the week prior. WCA-1: Stages within the Refuge rose slightly but remained under the schedule line last week. On Sunday the 3-Gauge average was 0.27 feet below the Zone A1 regulation line. WCA-2A: Stage at gauge 2A-17 continues to trend up and slightly away from the regulation line. The average on Sunday was 0.75 feet above the Zone A line. WCA-3A: The 3-Gauge average stage receded then ascended late in the last week, above the Zone A regulation line by 0.66 feet on Sunday. WCA-3A North: Stage at Gauge 62 (NW corner) remained steady and below the regulation line last week. The average on Sunday was 0.14 feet below the rising Upper Schedule. See figures **EV-1** through **EV-4**.

Water Depths

The South Florida Water Depth Assessment Tool (SFWDAT) model output for August 25th, 2024, illustrates a hydro-pattern of a drying WCA 3A North compared to a month ago. Ponded conditions remain stable over the last month in the upper reaches of the L-67s and southern WCA-3A. The northern end of the Refuge still has some potential for water at ground surface. Hydrologic connectivity is being well maintained within the major sloughs of Everglades National Park (ENP). Current WDAT water depth estimates show a mixture of conditions when compared to one month ago, with WCA-3A North slightly shallower and -3A South slightly deeper. A similar story in WCA-2A with the extreme northern end significantly shallower and the southern end deeper. The comparison to modeled conditions a year ago also illustrates a mix of conditions generally shallower in the north and eastern side of WCA WCA-3A and ENP, while generally deeper to the west.

Comparing current conditions to the 20-year percentiles for August 25th; depth conditions remain above average for the majority of the system, around the 90th percentile for this time of the year in Shark River Slough (SRS) and most of WCA-3B. Conditions are shallower than average in northern WCA-2A, and central WCA-1. See figures **EV-5** through **EV-7**.

Taylor Slough and Florida Bay

All stages increased across Taylor Slough over the past week, with an average increase of 0.10 feet. Changes ranged from +0.06 feet at EPSW in the C-111 area to +0.16 feet at P37 in the southern slough (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels remain above the recent average for this time of year by 3.5 inches compared to before the Florida Bay initiative (starting in 2017), a decrease of 0.3 inches relative to last week's comparison. Both the Craighead Pond (CP) and Taylor Slough Bridge (TSB) stages are below estimated historical levels (circa 1900) by 0.60 and 1.18 feet, respectively.

Average Florida Bay salinity was 25.7, an increase of 0.3 from last week. Salinity increased at most stations and changes ranged from –2.8 at Buoy Key (BK) in the western region to +2.3 at Joe Bay (JB) in the eastern nearshore region (**Figure EV-8**). Salinity is

above estimated historical levels (circa 1900) and at or below the WY2001-2016 Interquartile Range (IQR) 25th percentile in the central and eastern regions, and near the 50th percentile in the western region (**Figure EV-10**). Average Florida Bay salinity remains below its recent average for this time of year by 2.3, an increase of 0.4 from last week.

Salinity at the Taylor River (TR) station in the mangrove zone (tracked for the Florida Bay MFL) was 0.9. The 30-day moving average was 1.4, a decrease of 0.1 from last week (**Figure EV-11**). The 365-day moving sum of flow from the five major creeks (McCormick Creek, Taylor River, Mud Creek, Trout Creek, West Highway Creek) was 371,810 acre-feet, a decrease of 12,971 acre-feet from last week (**Figure EV-11**).

Average rainfall across Taylor Slough and Florida Bay was 1.28 inches over the past week, based on the 18 gauges used for this report. Rainfall ranged from 0.22 inches at Little Madeira Bay (LM) in the eastern nearshore region to 2.68 inches at Whipray Basin (WB) in the central region (**Figure EV-12**). Wind directions and speeds in Florida Bay ranged from 0.8 mph SW on August 22nd to 23.8 mph E on August 23rd (**Figure EV-12**).

Average daily flow from the five major creeks totaled 128 acre-feet last week, with net positive flows for the week. Total daily creek flow ranged from –933 acre-feet on August 20th to 1,089 acre-feet on August 23rd (**Figure EV-13**). Average daily flow for the week was 4,118 acre-feet below estimated historical levels (circa 1900).

Implications for water management

The ecology of the Everglades benefits from ascension rates of less than 0.25 feet per week this time of year. The Dynamic Position Analysis modeling for gauge 3-63 in northeast WCA-3A suggests that wetter than average conditions will be required to have the potential of reaching the October 1st threshold depth that is supportive of nesting at the critical Alley North colony. However, if a relatively long hydroperiod was maintained in northern WCA-3A as suggested by the 75th percentile that will be critical for a successful 2025 wading bird nesting season. Continued freshwater inputs to ENP and into Florida Bay is helping to maintain ecologically desirable salinities, and maintaining inputs of water southward will help 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	1.38	+0.02
WCA-2A	1.26	+0.21
WCA-2B	4.93	+0.39
WCA-3A	2.04	+0.06
WCA-3B	1.51	+0.06
ENP	1.65	−0.04

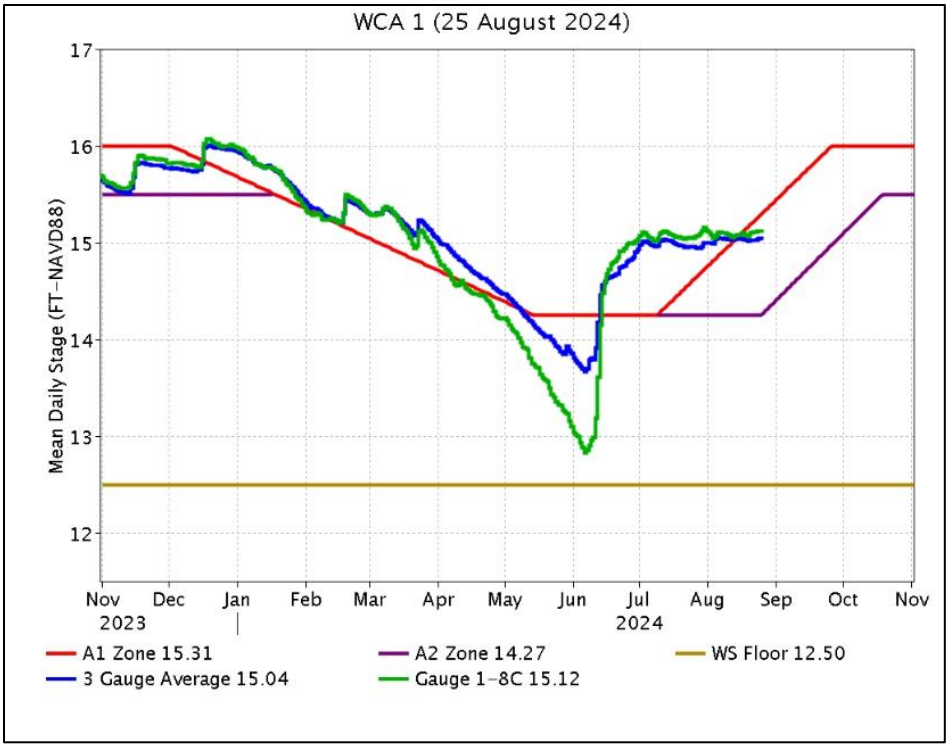


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

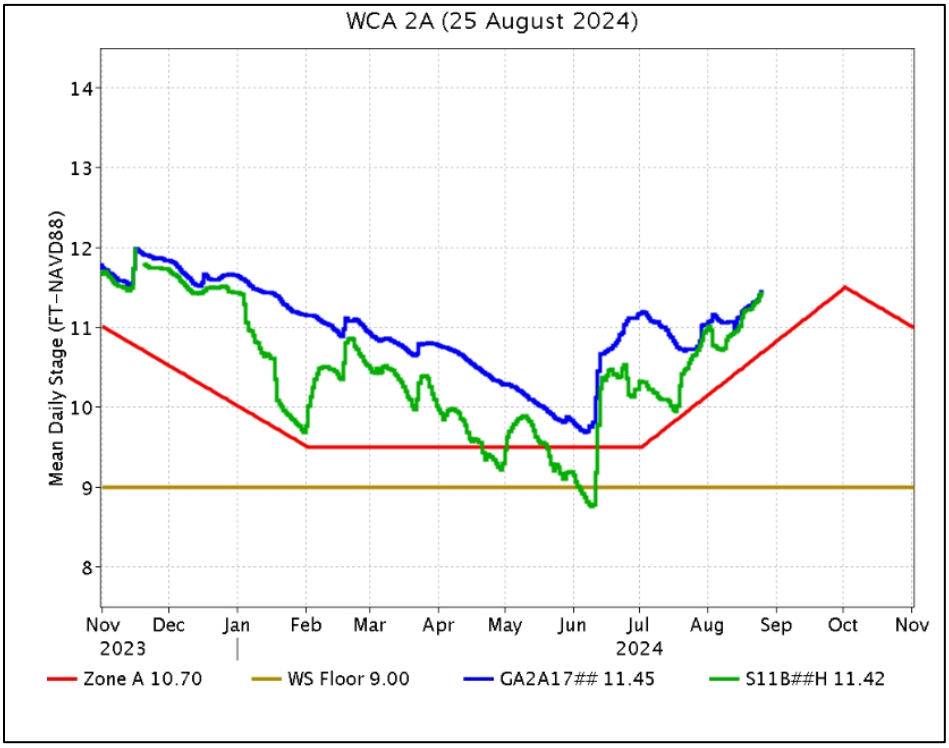


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

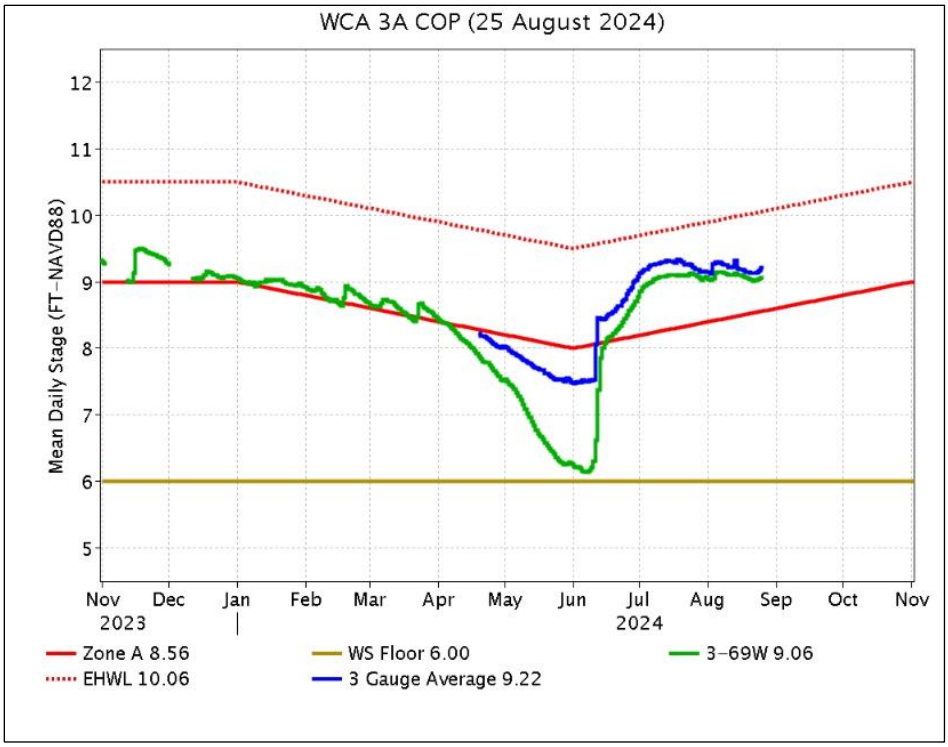


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.

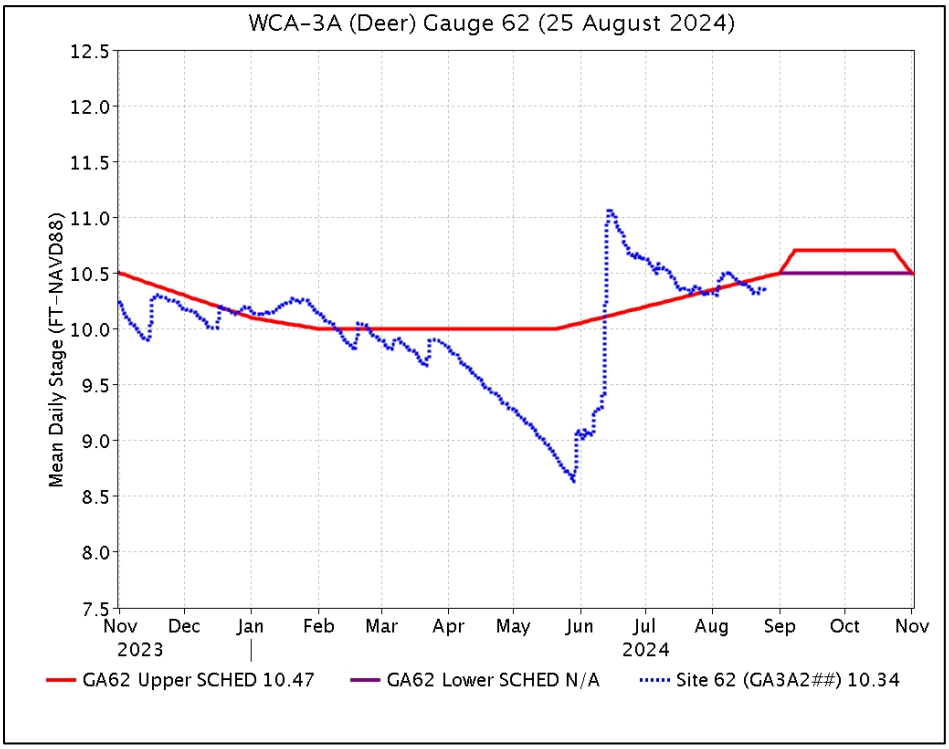


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule.

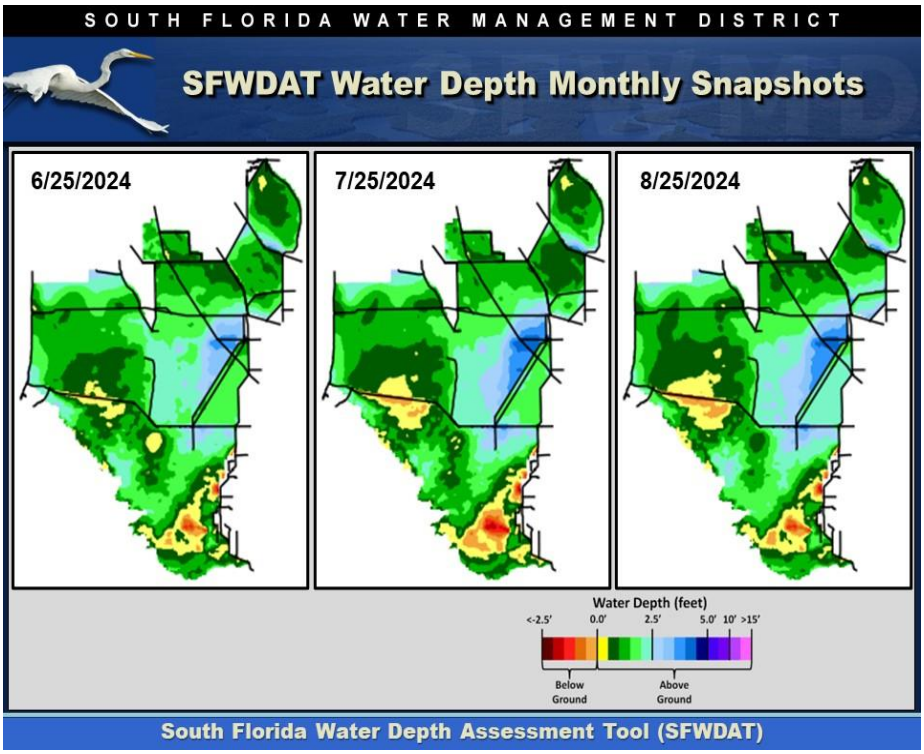


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

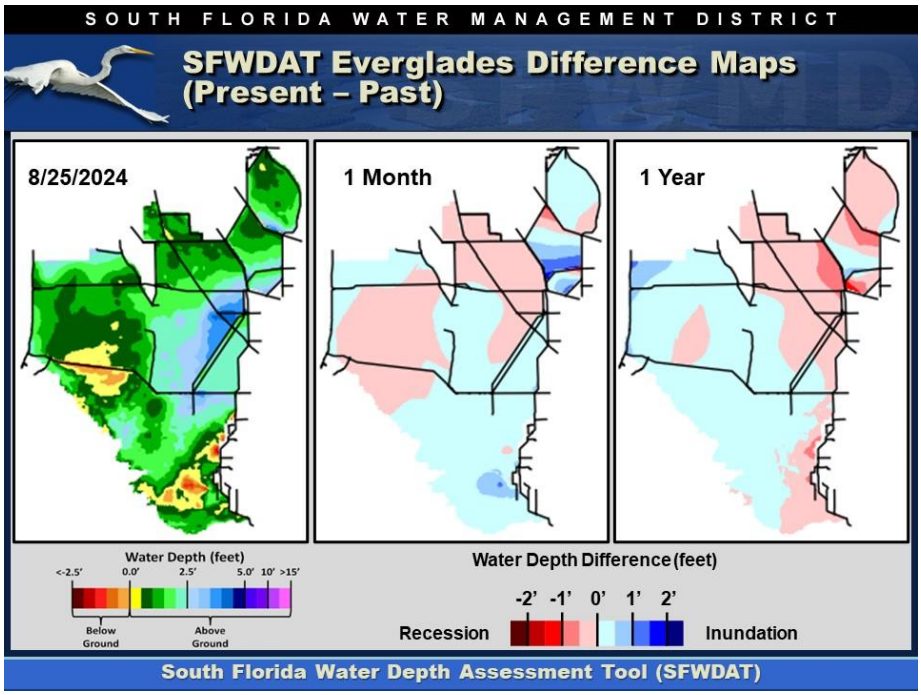


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

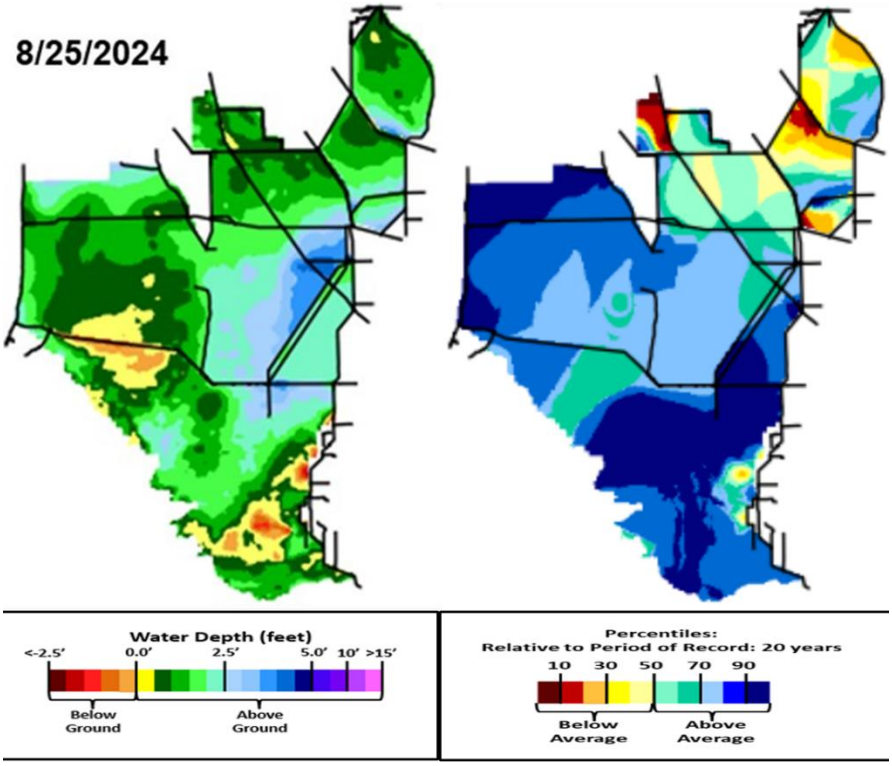


Figure EV-7. Present water depths (August 25th, 2024) compared to the day of year average over the previous 20 years.

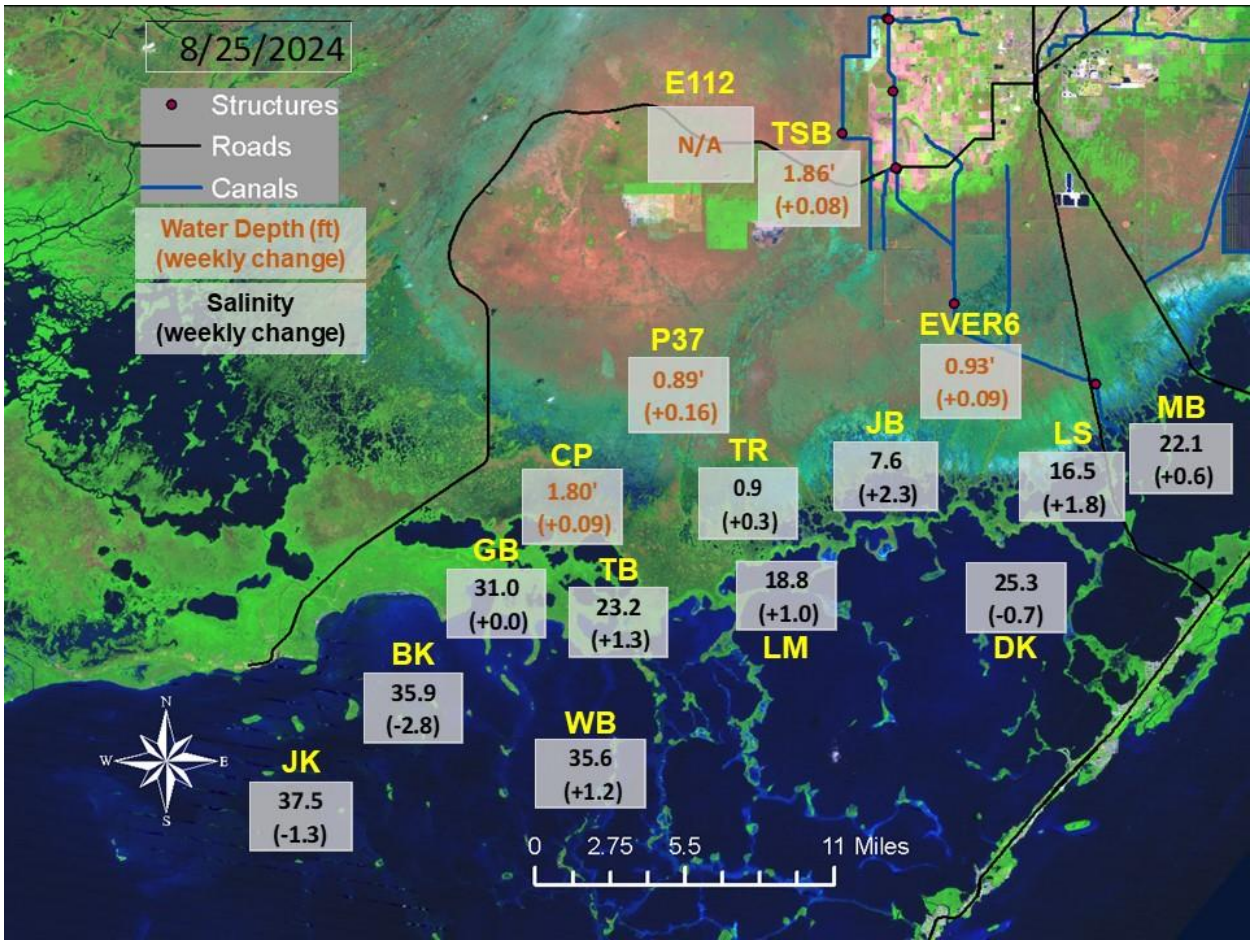


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

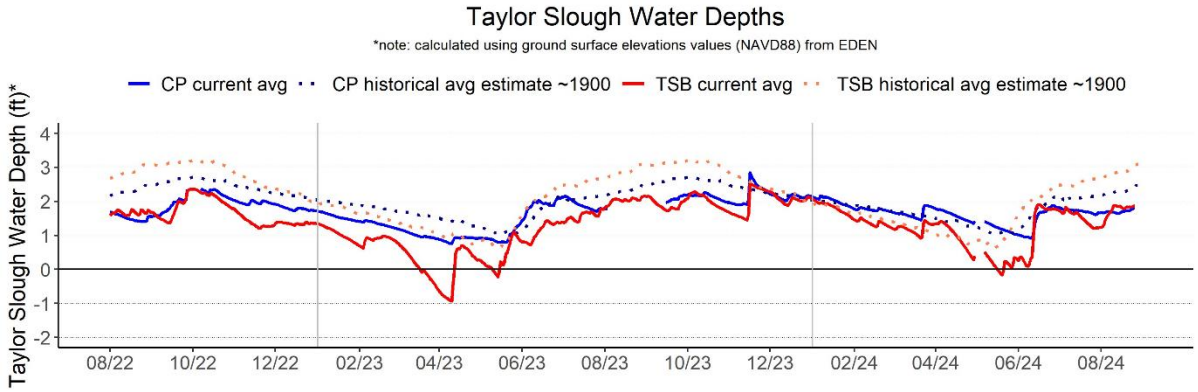


Figure EV-9. Taylor Slough water depth time series for Taylor Slough Bridge (TSB; northern slough) and Craighead Pond (CP; southern slough).

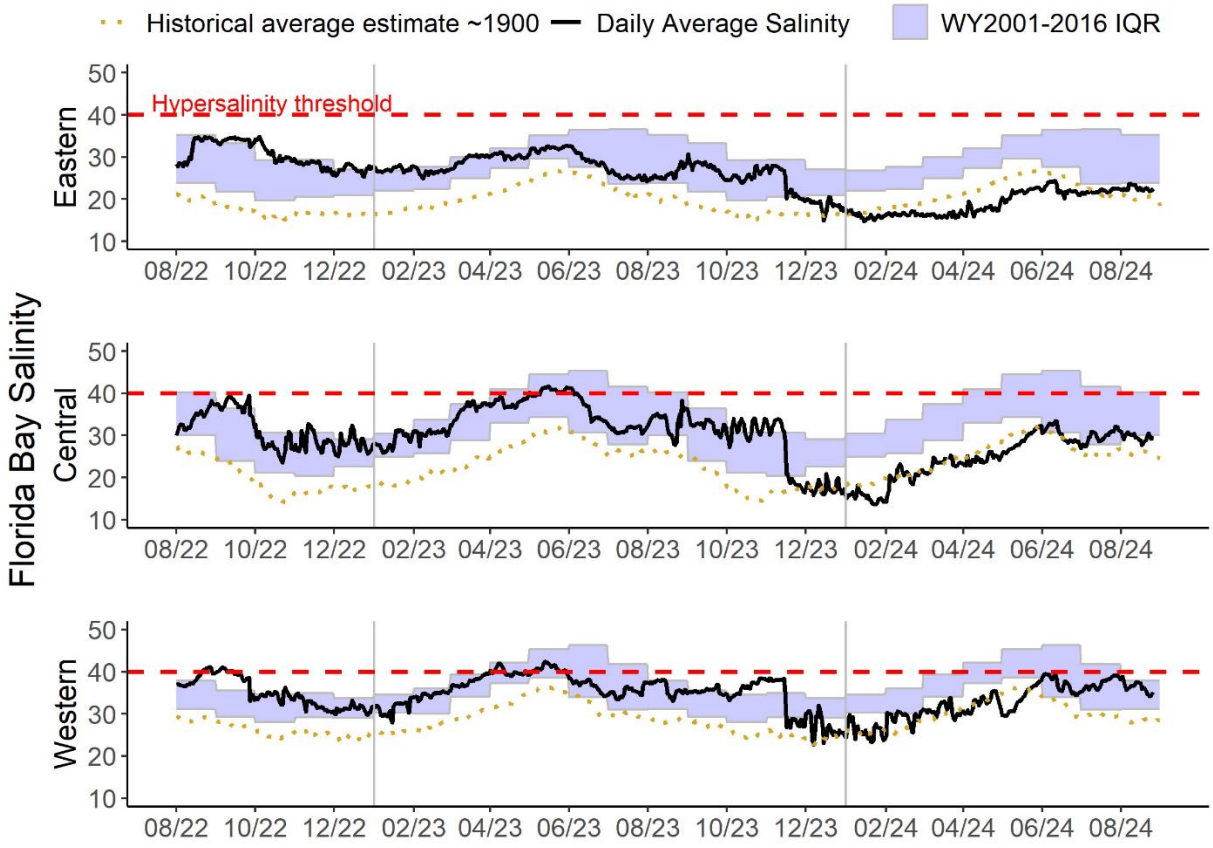


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with WY2001-2016 interquartile (25-75 percentile) ranges (IQR) and estimated historical daily average salinities. The hypersalinity threshold indicates the level at which salinities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

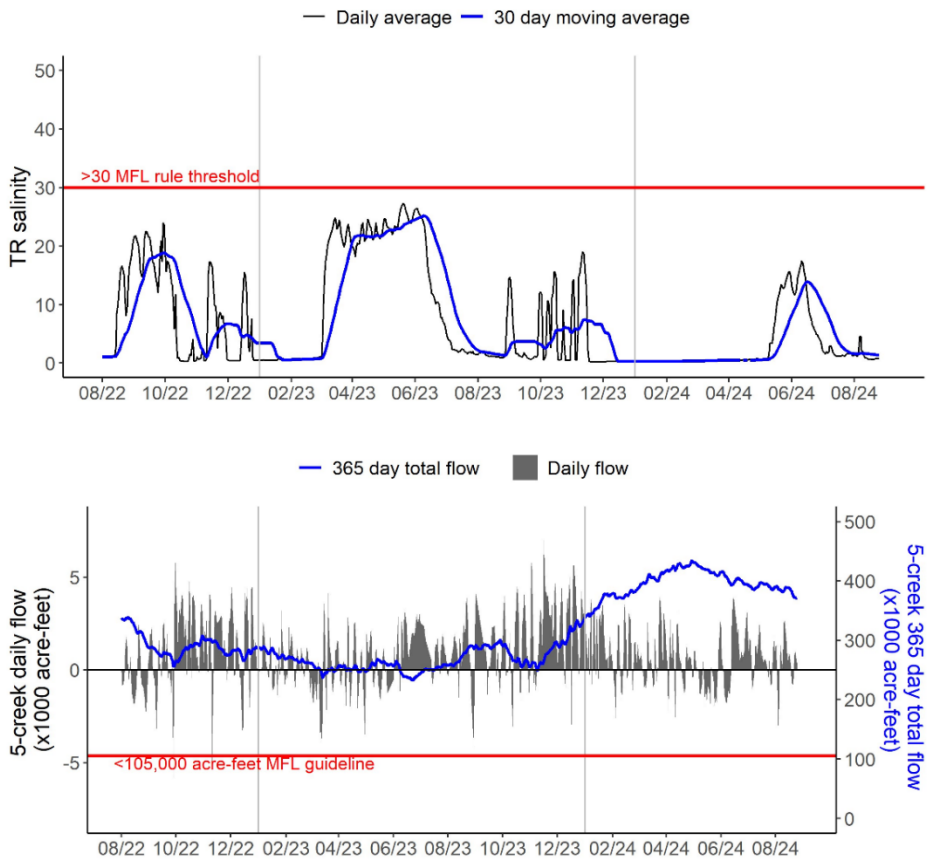


Figure EV-11. Salinity at Taylor River (TR; top) and creek inflow to Florida Bay (bottom) from the five major creeks (McCormick Creek, Taylor River, Mud Creek, Trout Creek, and West Highway Creek). The 30-day moving average salinity and 365-day total creek flow are tracked for the Florida Bay MFL criteria.

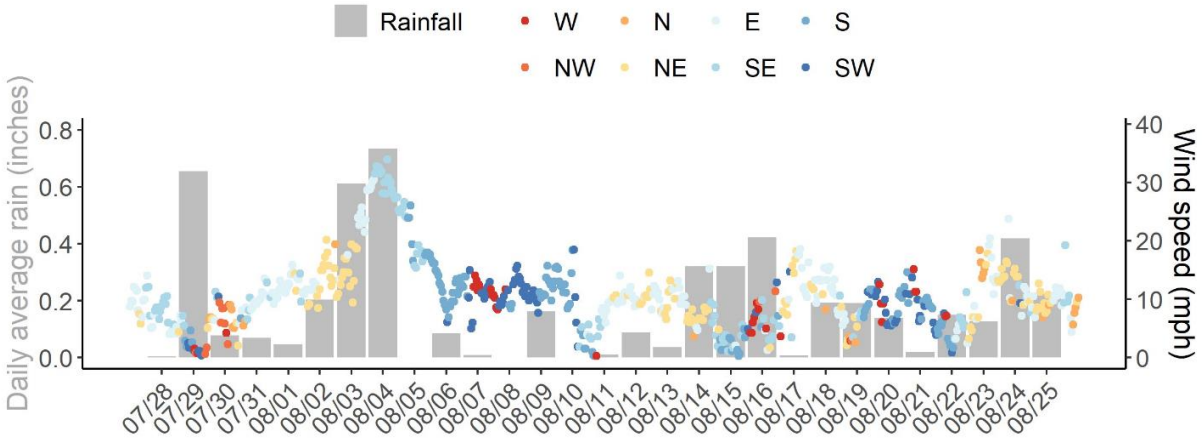


Figure EV-12. Daily average rain across Taylor Slough and Florida Bay, along with hourly average wind speed and direction (measured at Long Key) in Florida Bay over the past four weeks.

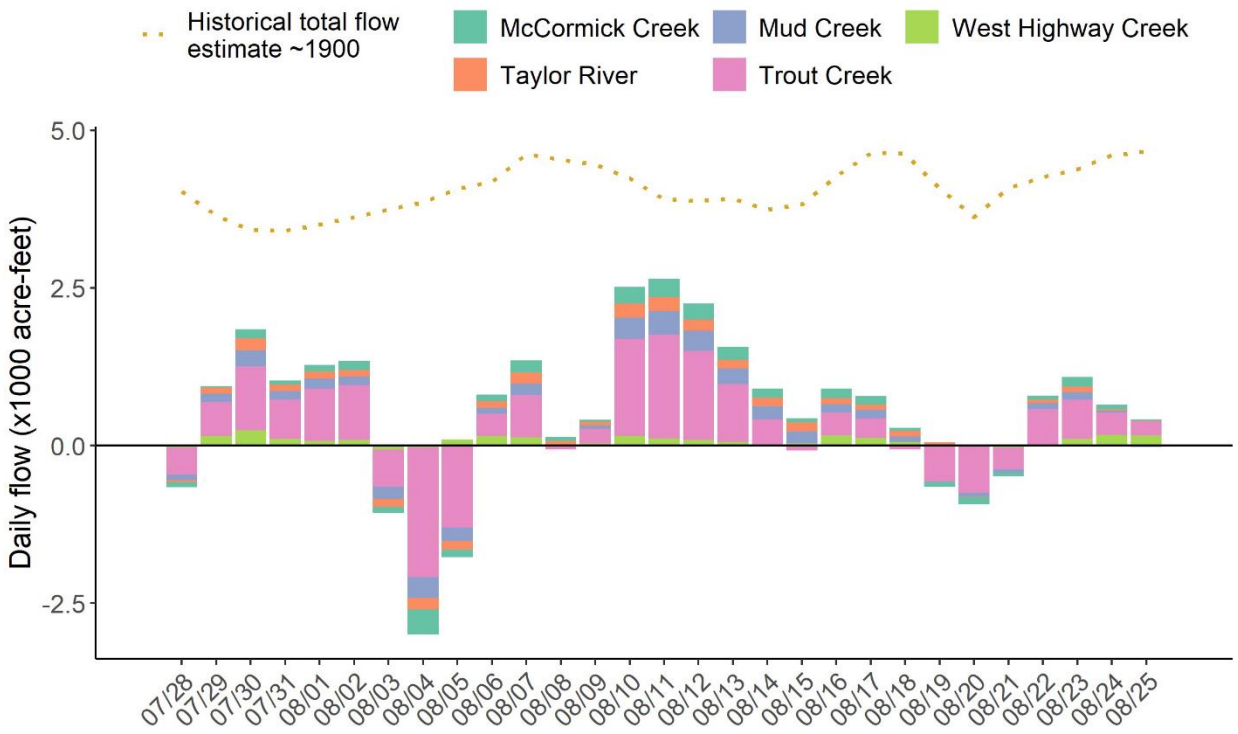


Figure EV-13. Daily average creek flow summed between five creeks with estimated historical daily flow over the past four weeks.

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

SFWMD Everglades Ecological Recommendations, August 27, 2024 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage increased by 0.02 feet	Ascension rate of less than 0.25' per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage increased by 0.21 feet	Ascension rate of less than 0.25' per week.	Protect within basin and downstream habitat and wildlife.
WCA-2B	Stage increased by 0.39 feet	Ascension rate of less than 0.25' per week or 0.5' per two weeks.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage increased by 0.08 feet	Ascension rate of less than 0.25' per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NW	Stage decreased by 0.01 feet	Ascension rate of less than 0.25' per week.	
Central WCA-3A S	Stage increased by 0.08 feet	Ascension rate of less than 0.18' per week.	Protect within basin wildlife.
Southern WCA-3A S	Stage increased by 0.08 feet		
WCA-3B	Stage increased by 0.06 feet	Ascension rate of less than 0.18' per week.	Protect within basin and downstream habitat and wildlife.
ENP-SRS	Stage decreased by 0.04 feet	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.
Taylor Slough	Stage changes ranged from +0.06' to +0.16'	Move water southward as possible.	When available, provide freshwater to promote water movement.
FB- Salinity	Salinity changes ranged from –2.8 to +2.3	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 1,046 cfs, and the previous 30-day mean inflow was 938 cfs. The seven-day mean salinity was 26.6 at BBCW8 and 27.2 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data were provided by Biscayne National Park.

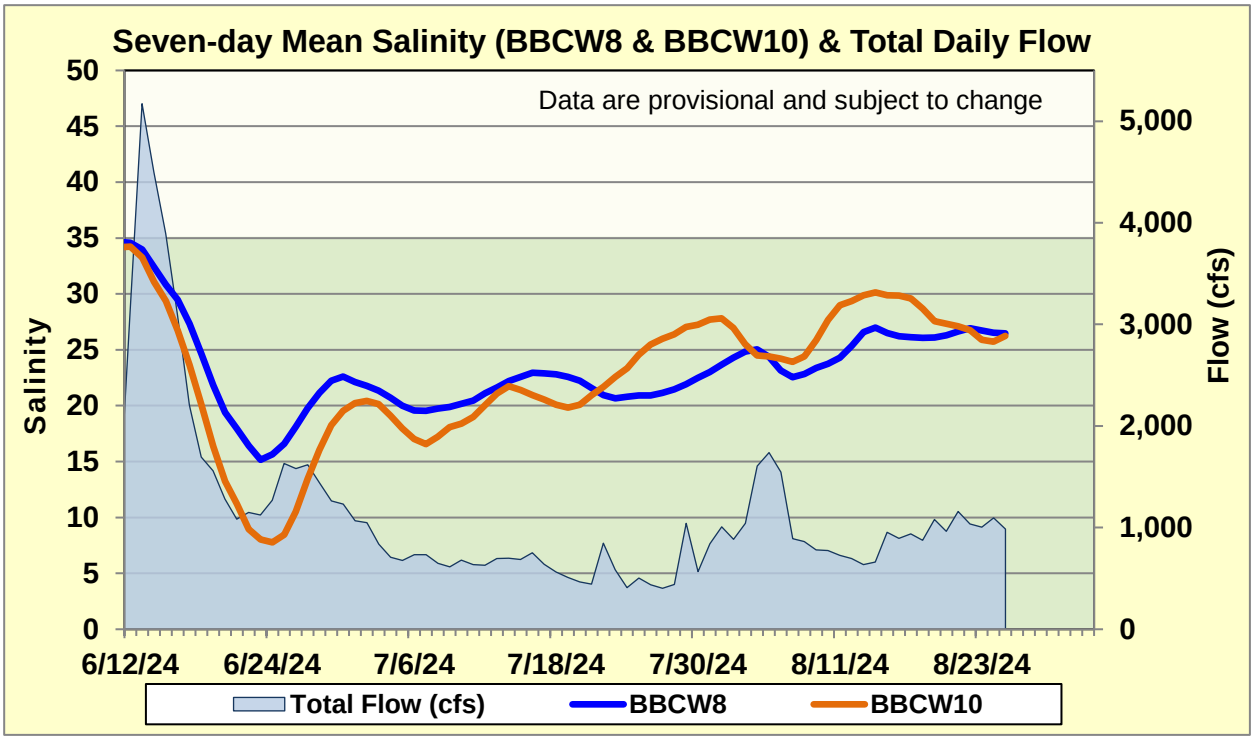


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.