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: November 20, 2024

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

A line of fast-moving showers and thunderstorms are expected to race into areas north and west of Lake Okeechobee on Wednesday morning and progress southeastward in some form across the remainder of the SFWMD during the afternoon. By early evening, a cold front will approach just northwest of Lake Okeechobee and is expected to reach the southern tip of Florida around midnight. The rapid movement of these rains areas, along with their tendency to train over certain areas, could result in a good or widespread coverage of moderately heavy rainfall in west-to-east streaks. A blend of the latest model guidance indicates the potential for area-averaged rainfall ranging from a quarter to more than four tenths of an inch over the northwestern part of the SFWMD and amounts generally decreasing toward the lower east coast. However, given ongoing differences among models, confidence in the Day-2 QPF remains low. On Thursday, a chilly, very dry air mass will move into Florida and stay through Sunday, marking the coolest conditions so far this fall season. Beginning Sunday afternoon, a gradual moderation in temperatures and a slow increase in shallow moisture levels is predicted, but atmospheric stability will prevent rainfall through mid-week next week. For the week ending next Tuesday morning, total rainfall across the SFWMD is expected to range from below to near-normal levels. This forecast, however, carries low confidence due to uncertainties in Wednesday's rainfall outlook.

Kissimmee

Releases continued in the last week from East Lake Toho and Lake Toho to keep the lakes at their regulation schedules. Weekly average discharge on November 17, 2024, was 1,400 cfs at both S-65 and S-65A. Mean weekly water depth on the Kissimmee River floodplain decreased by 0.13 feet to 0.97 feet. The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 3.2 mg/L the previous week to 3.7 mg/L, which is above the potentially lethal level of 1.0 mg/L and above the stressful level of 2.0 mg/L (**Figure KB-6**).

Lake Okeechobee

Lake Okeechobee stage was 14.74 feet NAVD88 (16.05 ft NGVD29) on November 17, 2024, which was 0.1 feet lower than the previous week and 0.09 feet higher than a month ago. Average daily inflows (excluding rainfall) decreased from 3,650 cfs the previous week, to 2,360 cfs. Average daily outflows (excluding evapotranspiration) increased from 1,200 cfs the previous week to 2,180 cfs. The most recent non-obscured satellite image from November 17, 2024, suggests minimal bloom activity on Lake Okeechobee.

Estuaries

Total inflow to the St. Lucie Estuary averaged 492 cfs over the past week with most of the 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 optimal range (10-25) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,245 cfs over the past week. Over the past week, salinities remained the same at Shell Point and Sanibel, and on the bottom at both Val I75 and Cape Coral. Salinities decreased at the bottom at Ft. Myers and increased at the remaining sites in the estuary. 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 at Shell Point and Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, November 17, 2024, 2,200 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 74,800 ac-feet. The total amount of inflows to the STAs in WY2025 is approximately 957,000 ac-feet. STA cells are near target stage. STA-1E Central Flow-way is offline for construction activities. Operational restrictions are in effect in STA-1E Western Flow-way, STA-1W Northern Flow-way, STA-2 Flow-ways 2 and 4, and STA-3/4 Eastern, Central, and Western Flow-ways for vegetation management activities. This week, if LOSOM recommends Lake releases to the WCAs and conditions allow, releases will be sent to STA-1E, STA-2, or STA-3/4.

Everglades

Stage change rates were fair or good last week with exception of northern WCA3A, which experienced excessive recession rates. Water depths throughout the Everglades Protection Area have decreased, more substantially in WCA2B, northern WCA 3A, Big Cypress, and southern Everglades National Park. Conditions in WCA-3A North continue to be drier relative to the rest of that basin which may have negative implications for the upcoming wading bird nesting season. Recession rates of up to 0.12 feet per week are considered protective of good foraging conditions. Large numbers of birds are already foraging along the coast allowing for early nesting and coastal colony formation. The relatively wet conditions across the landscape could produce critical foraging habitat in over-drained higher elevation areas during the nesting period if recession rates are appropriate. Average stage in Taylor Slough decreased last week and remains above the recent average (since 2017) for this time of year. Average salinity increased throughout Florida Bay last week with greatest increases occurring in the central region. Salinities in the eastern region of Florida Bay remain just below the 25th percentile of the Inter-Quartile Range (IQR) while the central region is near the 50th percentile and the western region is at historic levels. Florida Bay MFL metrics remain well outside thresholds of harm.

Biscayne Bay

Total inflow to Biscayne Bay averaged 312 cfs, and the previous 30-day mean inflow averaged 641 cfs. The seven-day mean salinity was 17.1 at BBCW8 and 16.7 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 November 17, 2024, mean daily lake stages were 57.0 feet NAVD88 (on schedule) in East Lake Toho, 54.0 feet NAVD88 (55.0 ft NGVD29), or at schedule in Lake Toho (although a discrepancy caused by the datum conversion causes stage to appear higher in the hydrograph in Fig KB-2), and 51.0 feet NAVD88 (0.6 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 November 17, 2024, mean weekly discharge was 1,400 cfs at both S-65 and S-65A. Mean weekly discharge from the Kissimmee River was 1,700 cfs and 1,800 cfs at S-65D and S-65E, respectively (**Table KB-2**). Mean weekly headwater stages were 45.2 feet NAVD88 at S-65A and 25.6 feet NAVD88 at S-65D. Mean weekly river channel stage decreased by 0.5 feet to 36.0 feet NAVD88 (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain decreased by 0.13 feet to 0.97 feet (**Table KB-2**, **Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 3.2 mg/L the previous week to 3.7 mg/L (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Follow the Headwaters Revitalization Schedule (HRS) 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.

Table KB-1. Average discharge for the preceding seven days, Sunday's average daily stage and Sunday's average daily departure from Kissimmee Chain of Lakes (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)	
							11/17/24	*11/10/24*
Lakes Hart and Mary Jane	S-62	LKMJ	46	60.0	R	59.9	0.1	0.0
Lakes Myrtle, Preston and Joel	S-57	S-57	39	60.9	R	61.0	-0.1	-0.1
Alligator Chain	S-60	ALLI	1	63.0	R	63.0	0.0	-0.1
Lake Gentry	S-63	LKGT	7	60.5	R	60.4	0.1	0.0
East Lake Toho	S-59	TOHOE	47	57.0	R	57.0	0.0	0.0
Lake Toho	S-61	TOHOW S-61	220	54.0	R	53.8	0.2	0.2
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	1400	51.0	T	51.6	-0.6	-0.3

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.

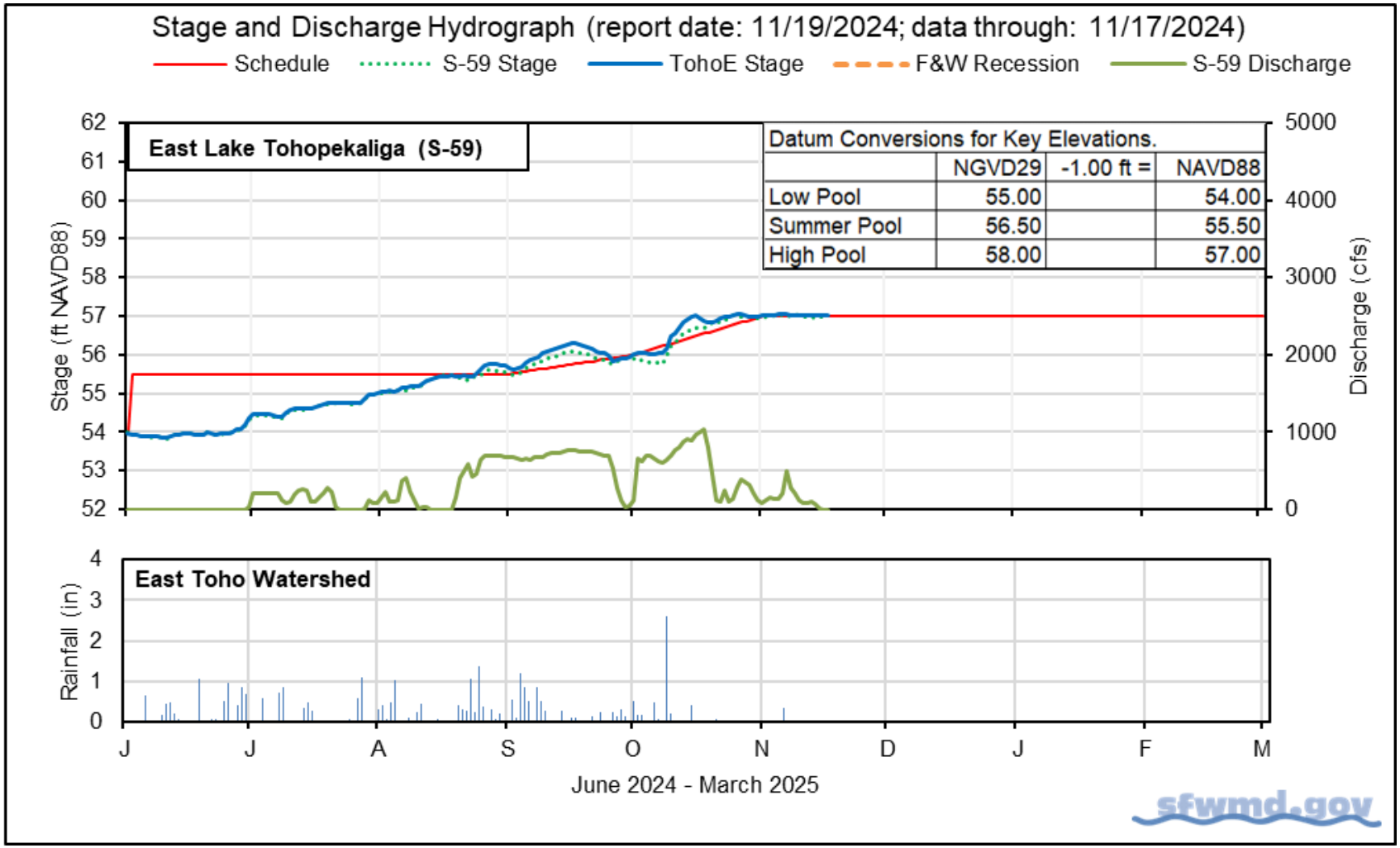


Figure KB-1. East Lake Toho regulation schedule, stage, discharge, and rainfall.

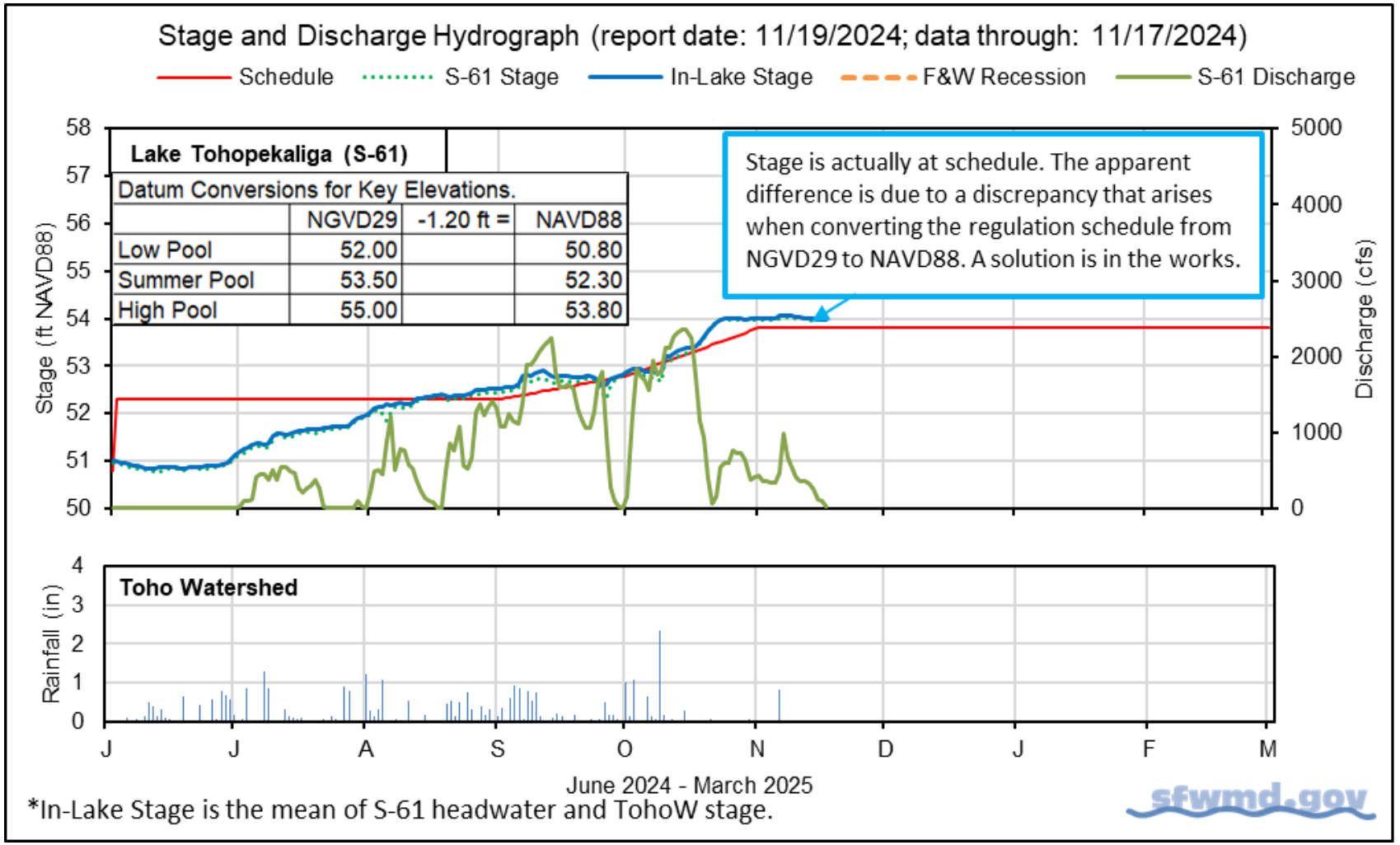


Figure KB-2. Lake Toho regulation schedule, stage, discharge, and rainfall.

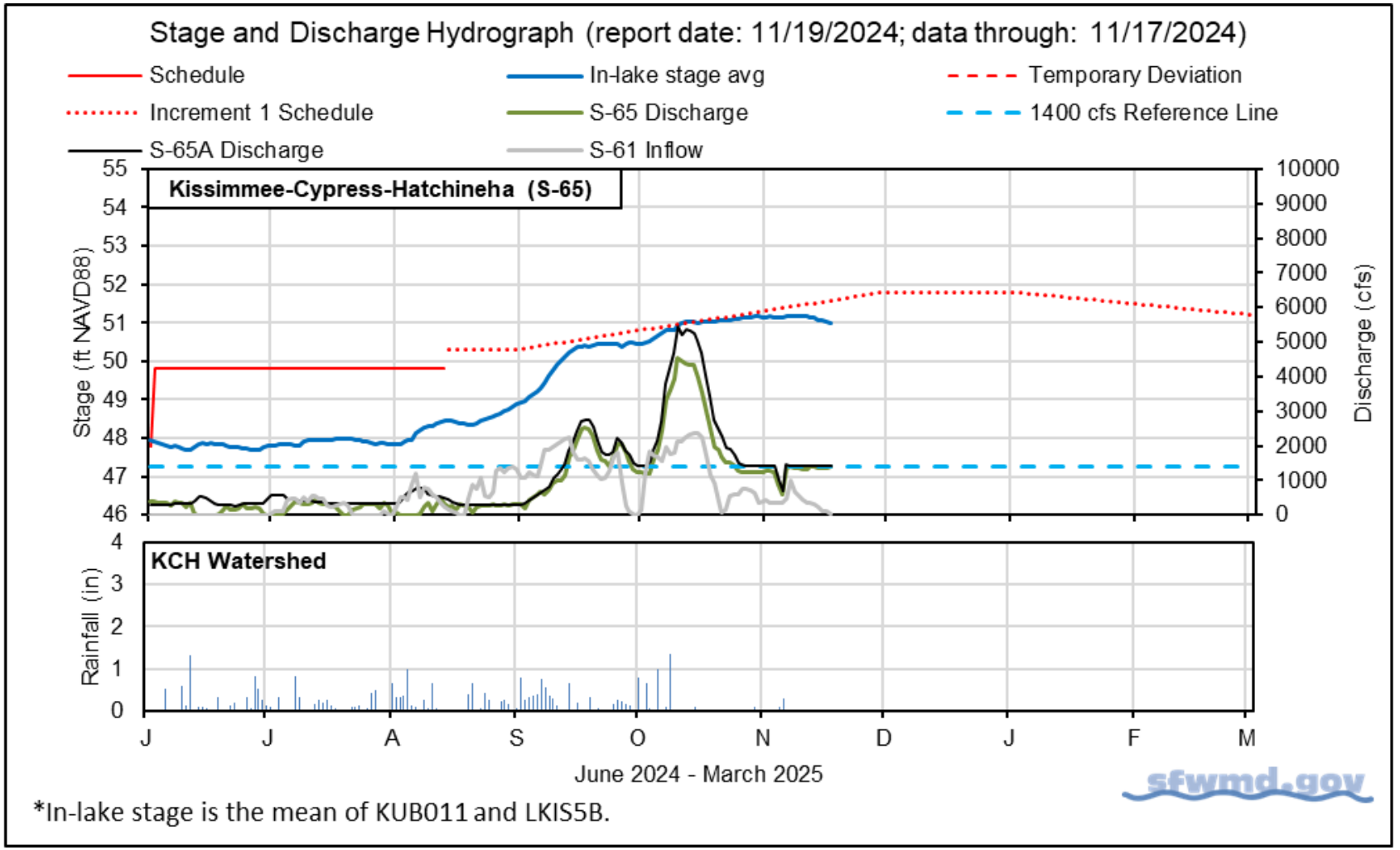


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge, and rainfall.

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			
		11/17/24	11/17/24	11/10/24	11/3/24	10/27/24
Discharge	S-65	1,400	1,400	1,200	1,300	1,400
Discharge	S-65A[a]	1,400	1,400	1,300	1,400	1,700
Headwater Stage (feet NAVD88)	S-65A	45.2	45.2	45.2	45.2	45.0
Discharge	S-65D[b]	1,600	1,700	2,100	2,700	4,100
Headwater Stage (feet NAVD88)	S-65D[c]	25.2	25.6	26.5	26.9	26.9
Discharge (cfs)	S-65E[d]	1,700	1,800	2,200	2,800	4,100
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	4.0	3.7	3.2	2.1	1.0
River channel mean stage (feet NAVD88) [f]	Phase I river channel	35.5	36.0	36.5	36.2	37.3
Mean depth (feet) [g]	Phase I floodplain	0.92	0.97	1.10	1.26	1.89

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).

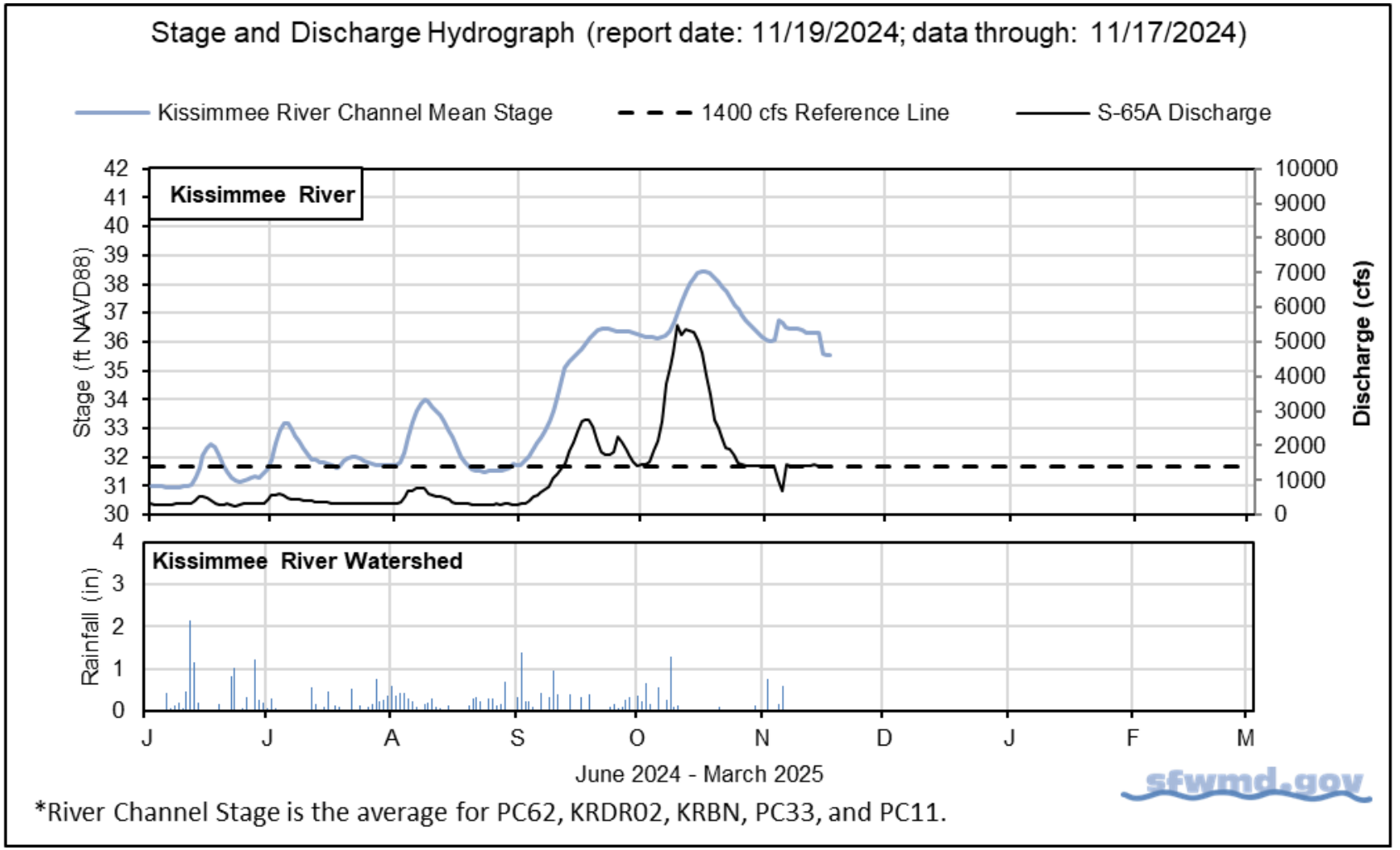


Figure KB-4. Kissimmee River stage, discharge, and rainfall.

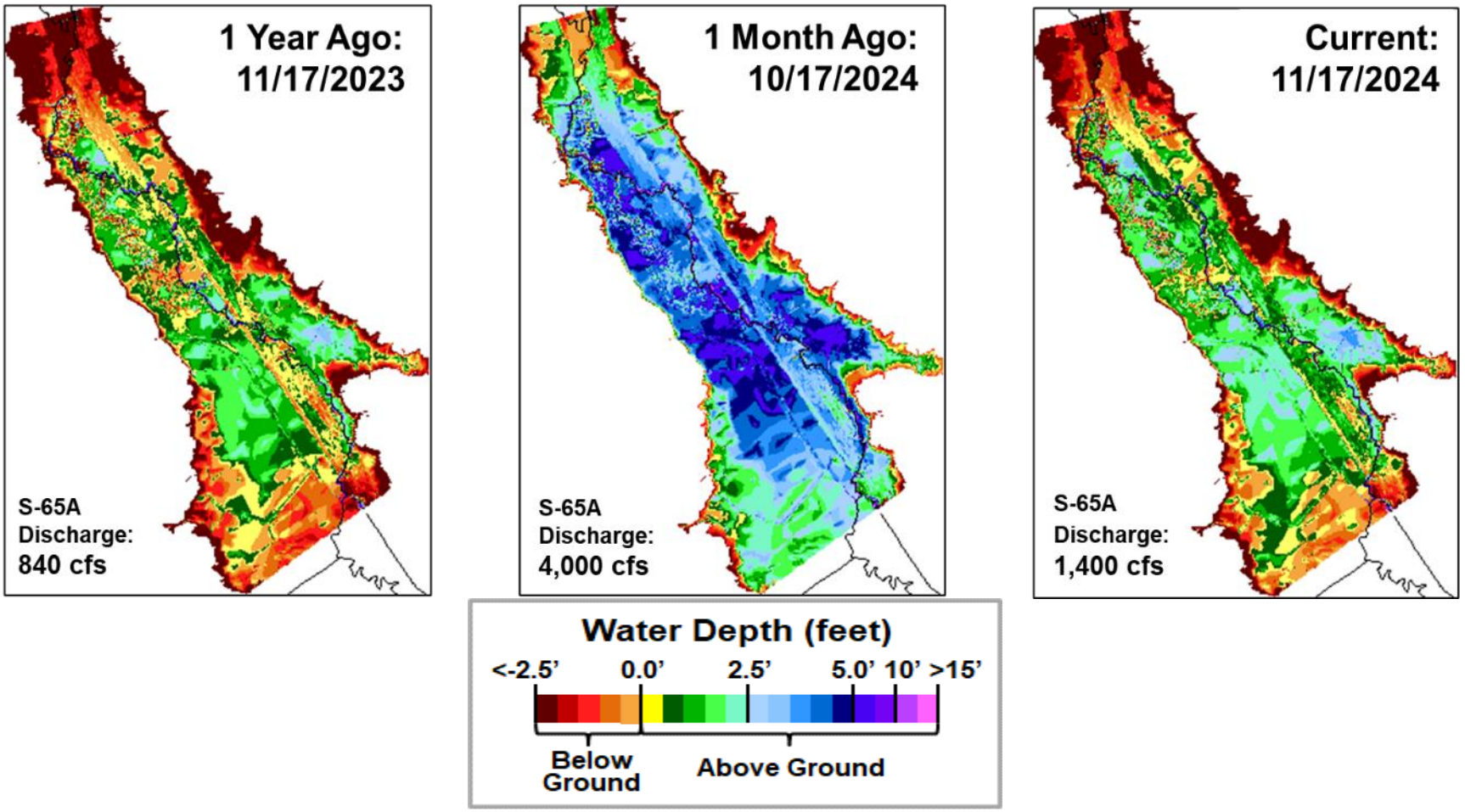


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago, and current.

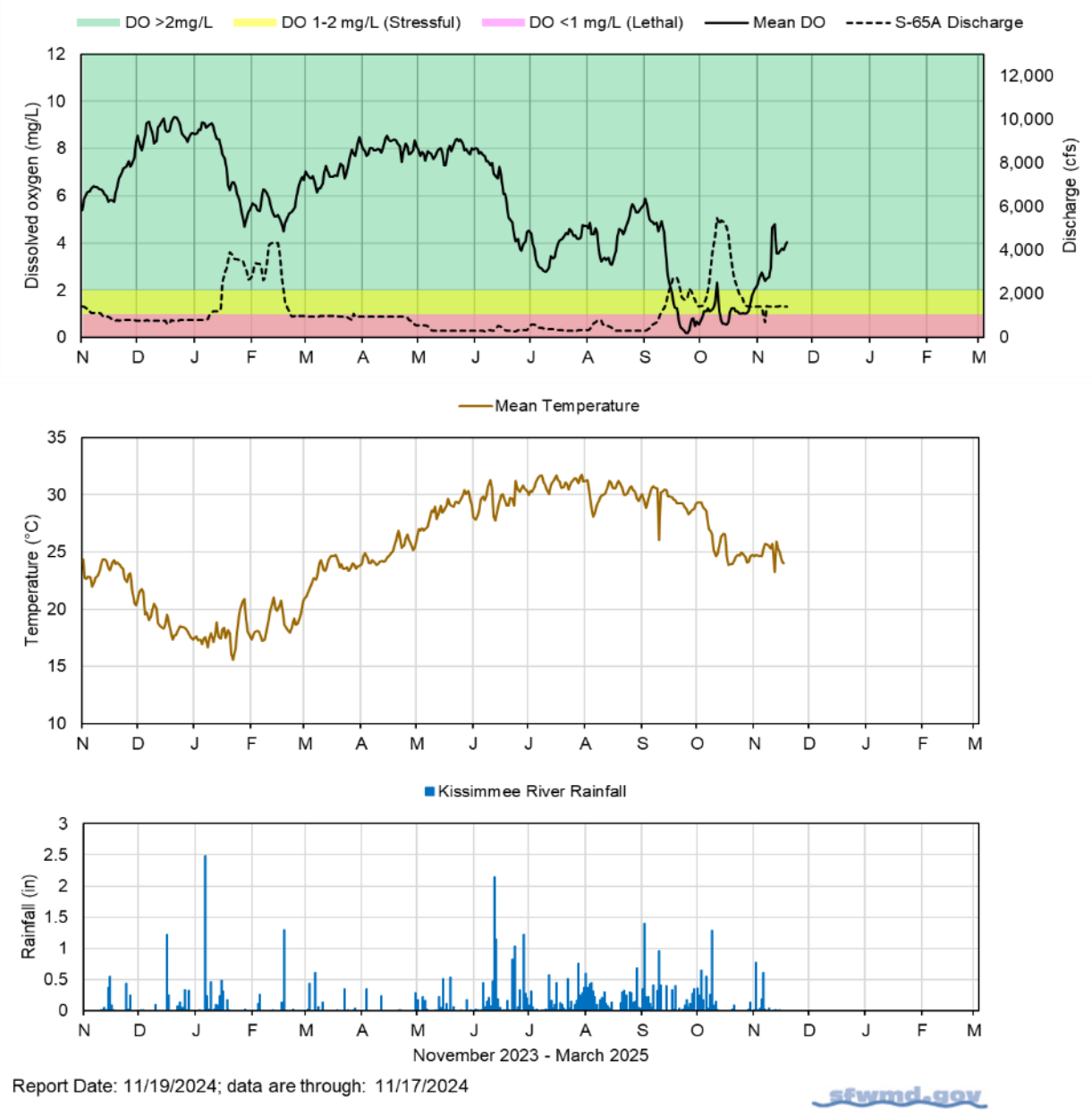


Figure KB-6. Kissimmee River channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of five stations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

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

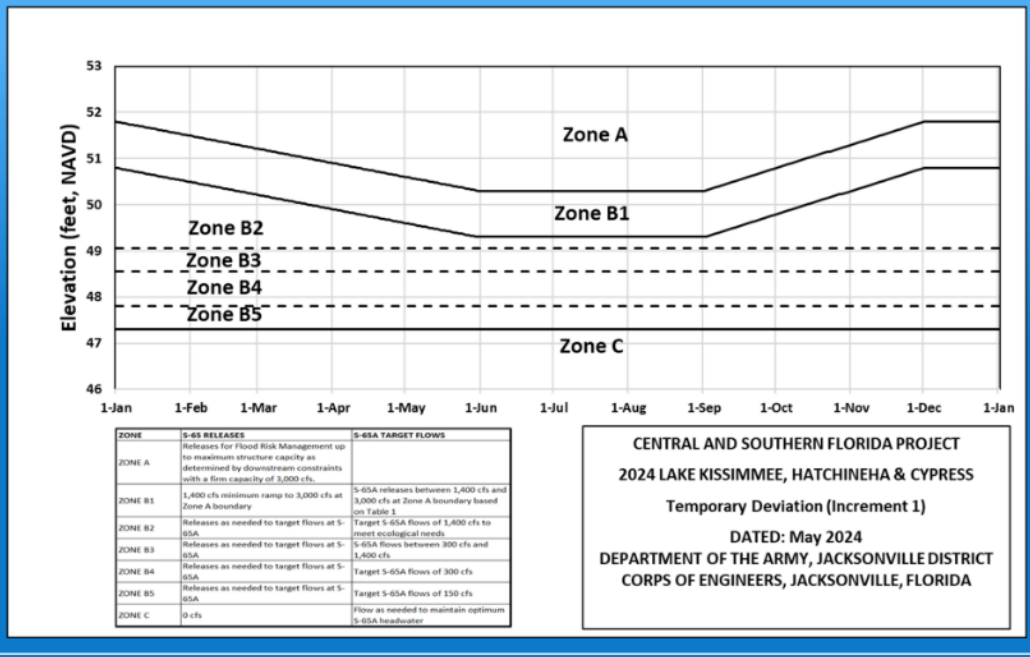
HRS Increment 1 Temporary Deviation Discharge Plan for S-65/S-65A

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



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

CENTRAL AND SOUTHERN FLORIDA PROJECT

2024 LAKE KISSIMMEE, HATCHINEHA & CYPRESS

Temporary Deviation (Increment 1)

DATED: May 2024

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT
CORPS OF ENGINEERS, JACKSONVILLE, FLORIDA

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 14.74 feet NAVD88 (16.05 ft NGVD29) on November 17, 2024, which was 0.1 feet lower than the previous week and 0.09 feet higher than a month ago (**Figure LO-1**). Lake stage is in Zone D of the regulation schedule (**Figure LO-2**) and was 1.05 feet above the upper limit of the recovery ecological envelope (**Figure LO-3**). According to NEXRAD, 0.0 inches of rain fell directly over the Lake last week.

Average daily inflows (excluding rainfall) decreased from 3,650 cfs the previous week, to 2,360 cfs. The largest single inflow came from the Kissimmee River via the S-65E structure (1,800 cfs). Average daily outflows (excluding evapotranspiration) increased from 1,200 cfs the previous week to 2,180 cfs. **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 November 12, 2024, NOAA's Harmful Algal Bloom Monitoring System suggests minimal bloom activity on Lake Okeechobee (**Figure LO-6**).

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

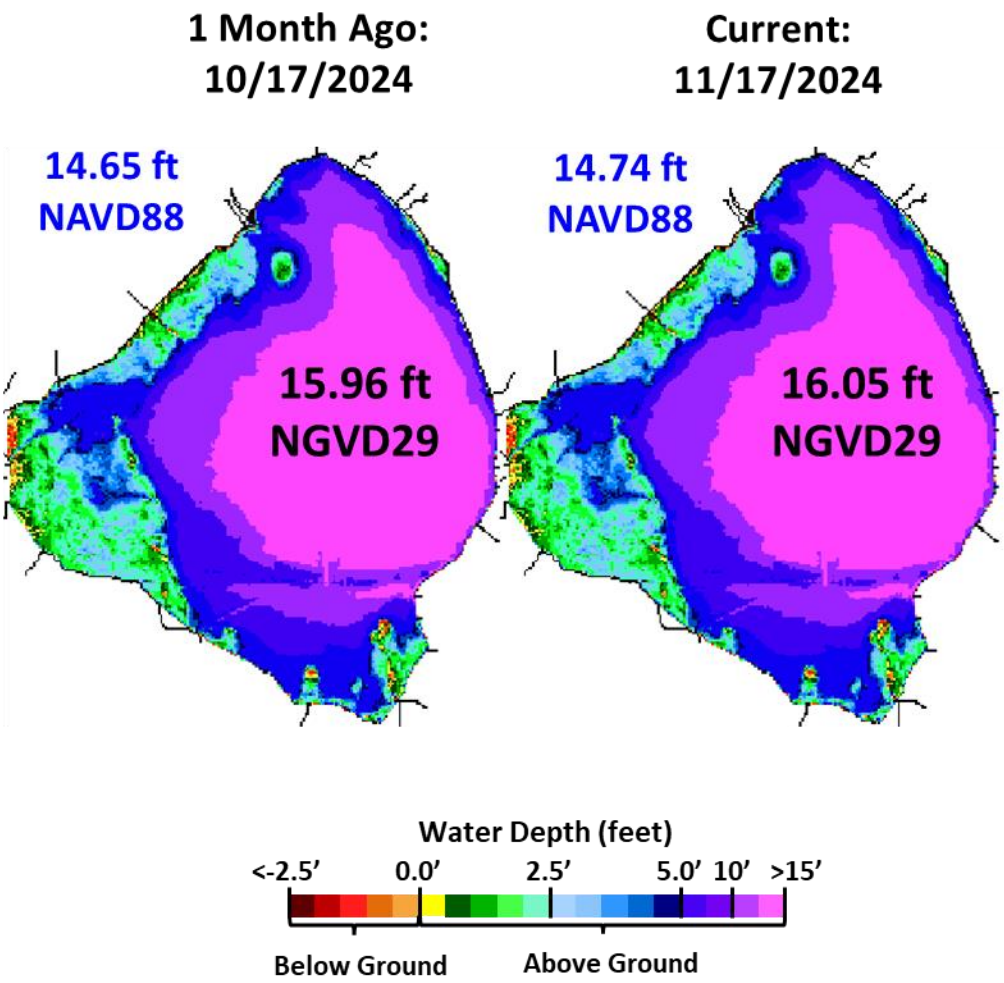


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

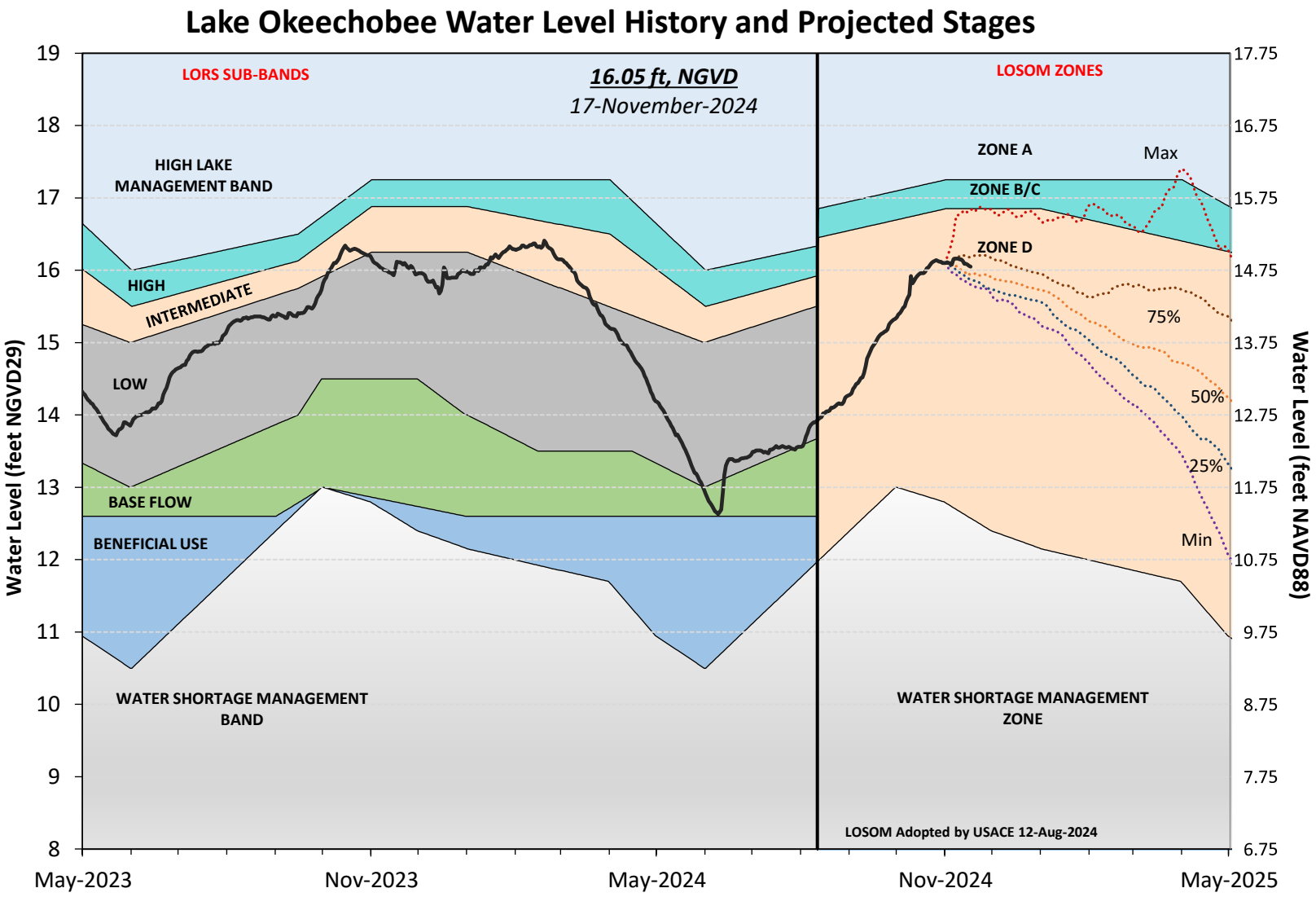


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis.
Note: stages are in NGVD29, approximate NAVD88 values are shown for reference.

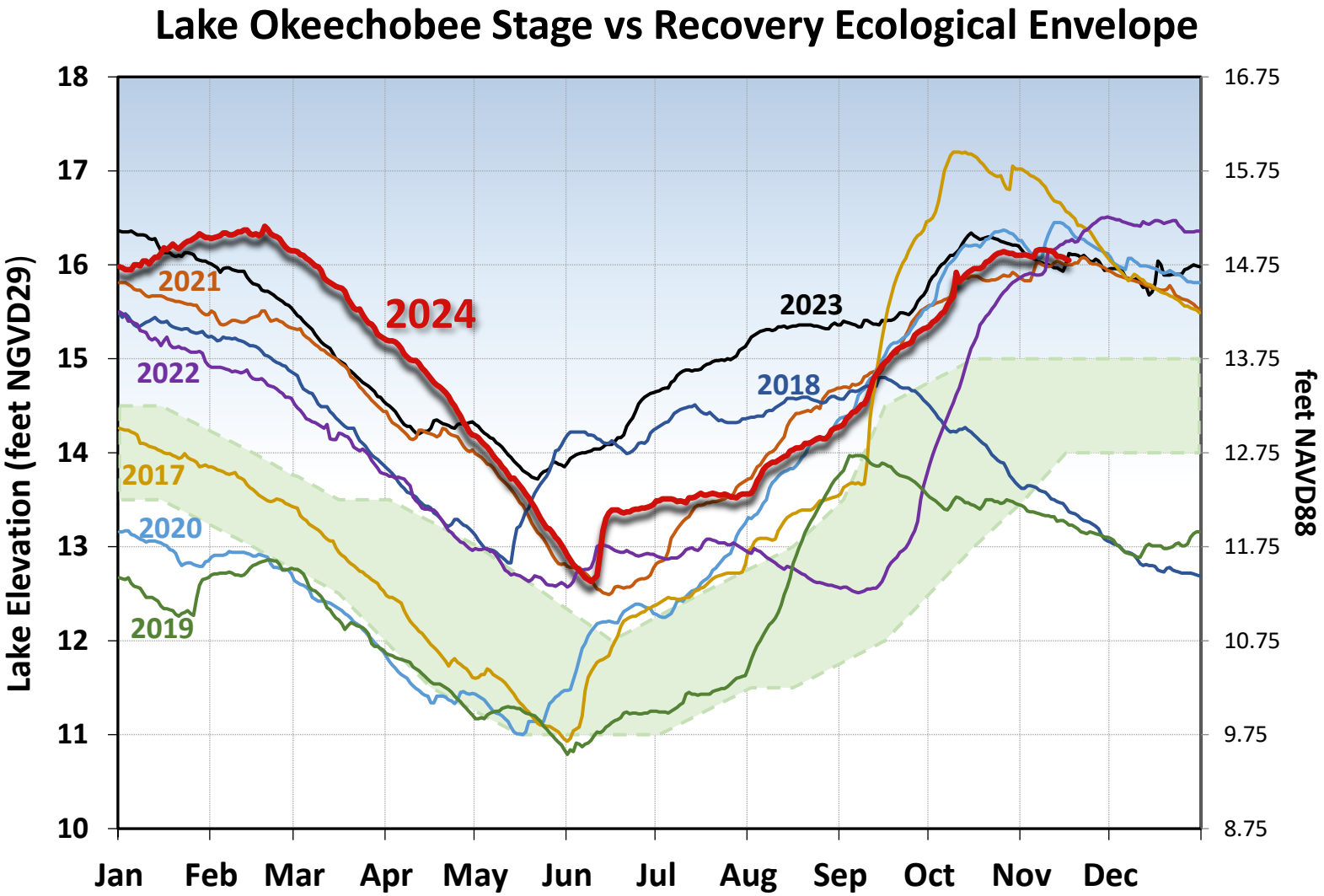


Figure LO-3. The current and seven prior year's annual stage hydrographs for Lake Okeechobee in comparison to the recovery envelope (light green). A shift from the normal ecological envelope to the recovery envelope occurred because the 30-day minimum lake stage (elevations exposed for at least 30 days,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

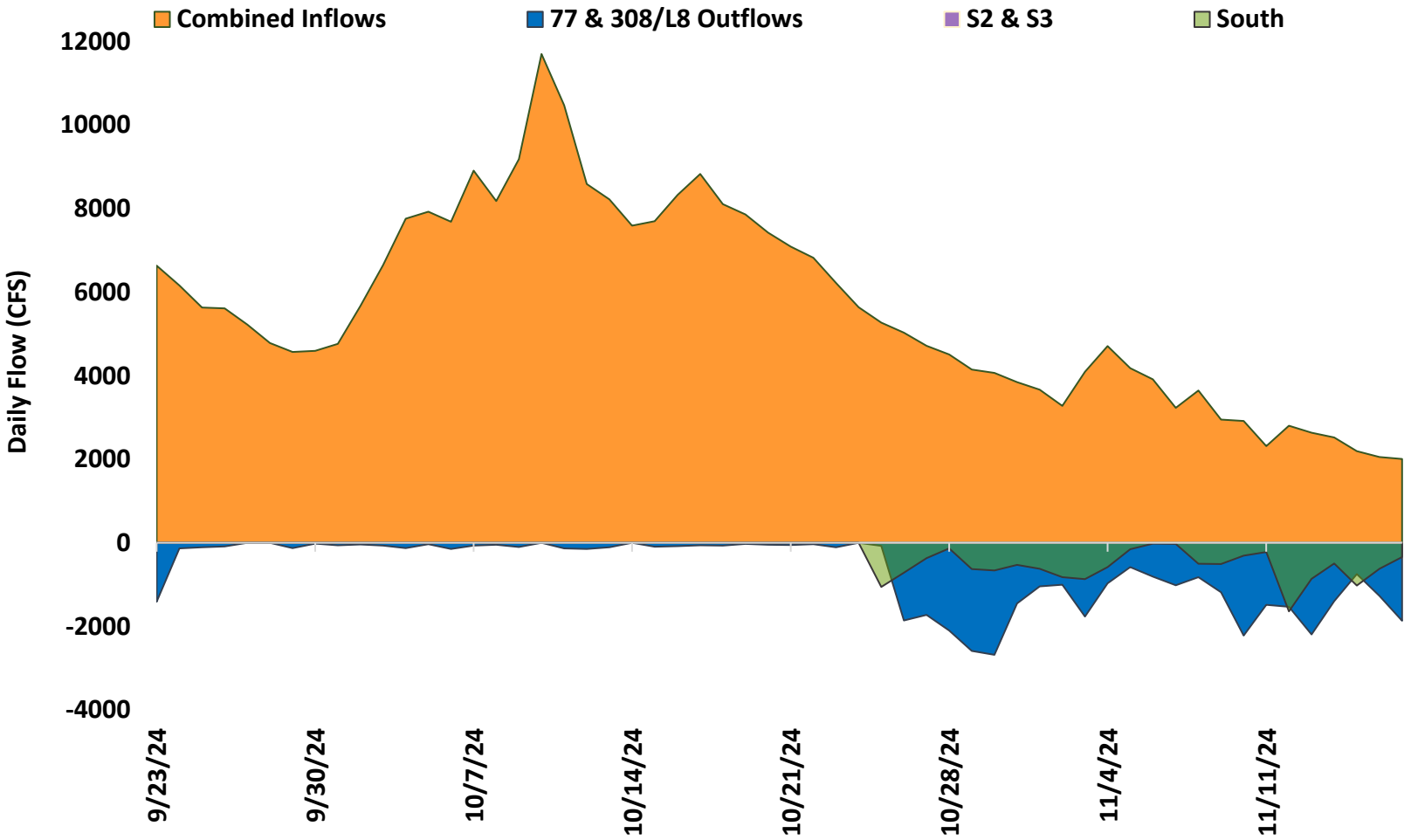


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

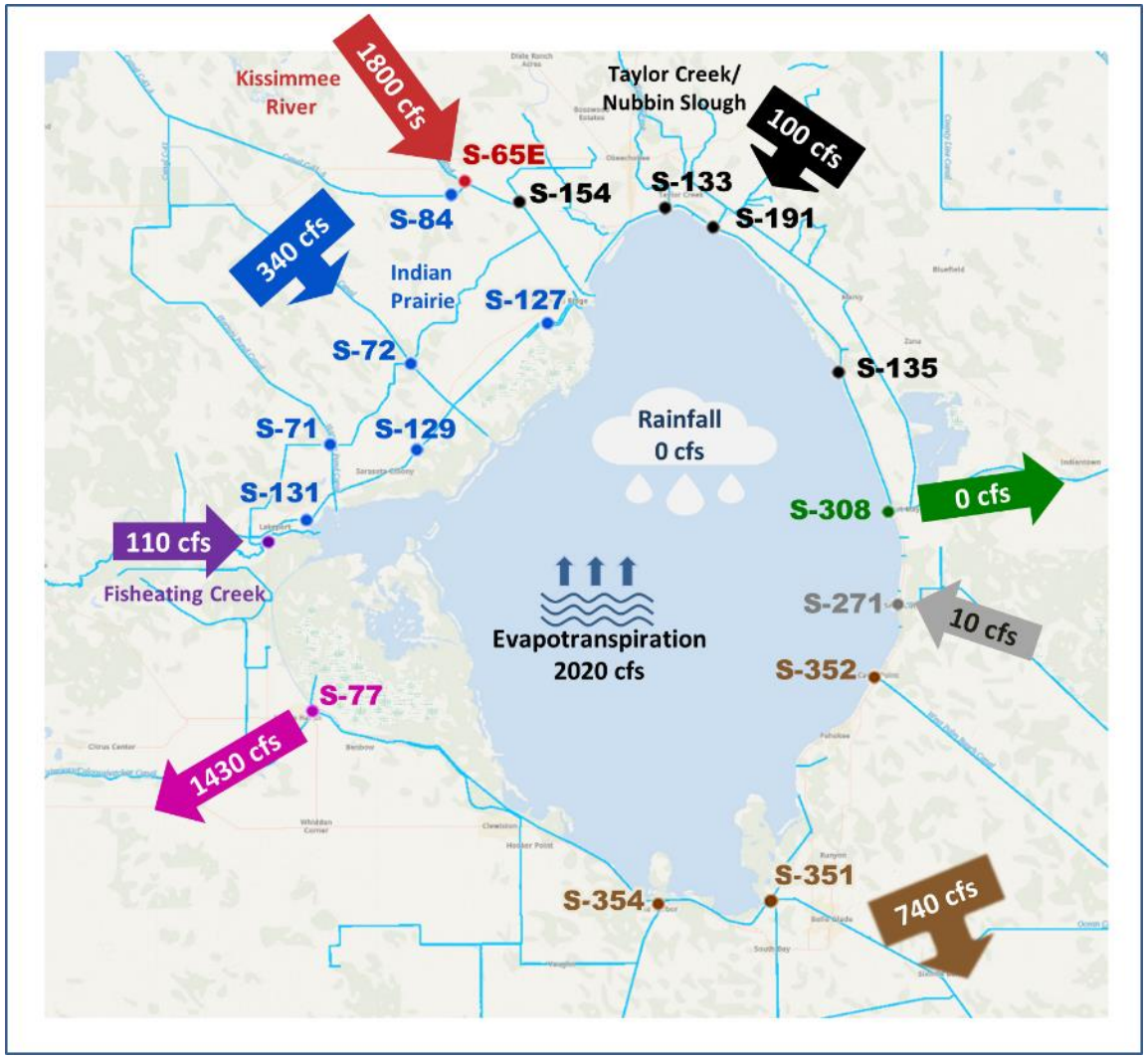


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of November 11 - 17, 2024.

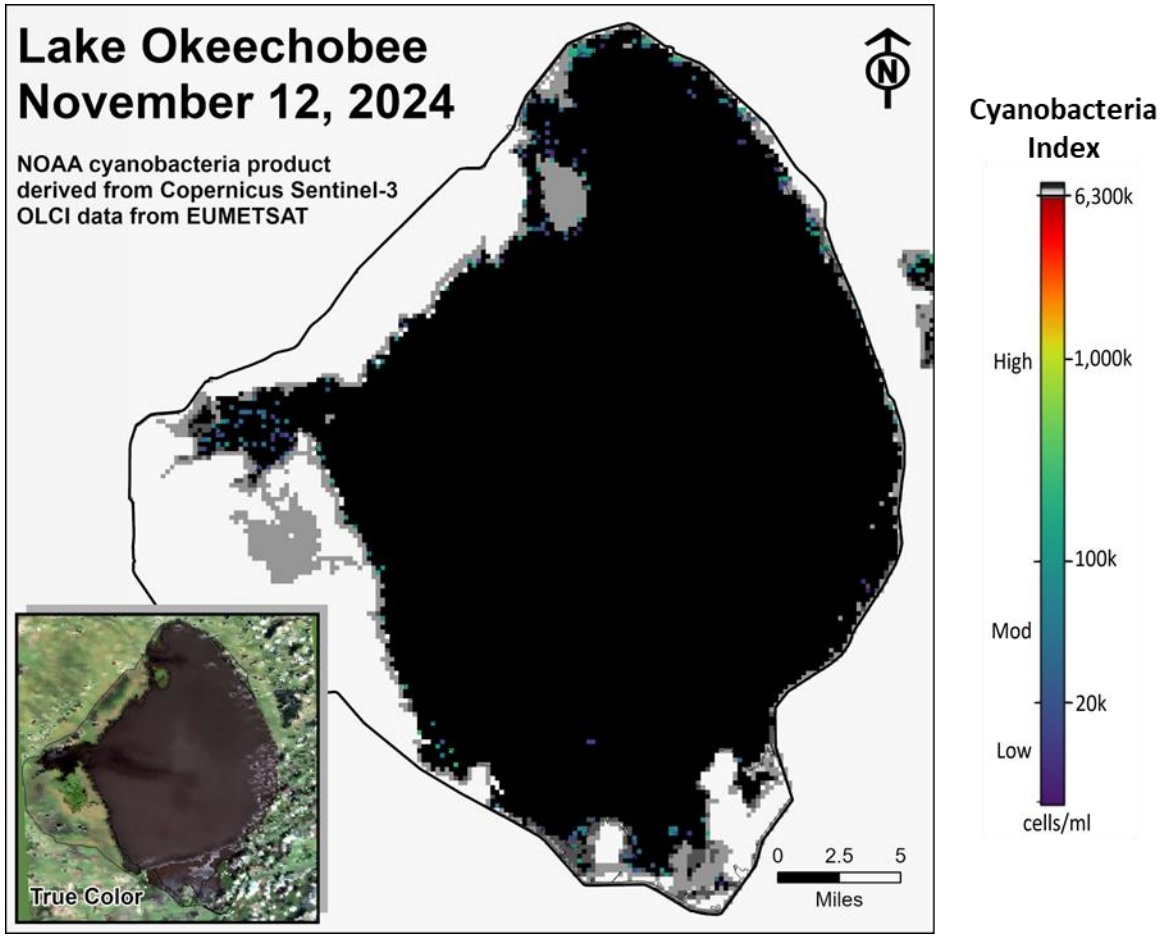


Figure LO-6. Cyanobacteria bloom index level on Lake Okeechobee, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover. *Provisional NOAA image, subject to change*.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 492 cfs (**Figures ES-1** and **ES-2**), and the previous 30-day mean inflow was 1,021 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 11.9. 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 0.4 spat/shell for October, which was similar to the previous month (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 2,245 cfs (**Figures ES-6** and **ES-7**), and the previous 30-day mean inflow was 2,172 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 Shell Point and Sanibel, and on the bottom at both Val I75 and Cape Coral. Salinities decreased at the bottom at Ft. Myers and increased at the remaining sites in the estuary. Surface salinity at Ft. Myers was not reported this week and work is ongoing to bring this site back online (**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 Sanibel and Shell Point (**Figure ES-10**). The mean larval oyster recruitment rate reported by the FWRI was 1.8 spat/shell at Iona Cove and 16.6 spat/shell at Bird Island for October, which was a decrease at both sites from the previous month, indicating the end of fall spawning season (**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 158 cfs. Model results from all scenarios predict daily salinity to be 0.6 or lower and the 30-day moving average surface salinity to be 0.9 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 November 15, 2024, that *Karenia brevis*, the Florida red tide dinoflagellate, was observed at background to medium concentrations in samples collected from Charlotte, Lee, and Collier counties over the past week. On the east coast, red tide was not observed.

Water Management Recommendations

Lake stage is 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.

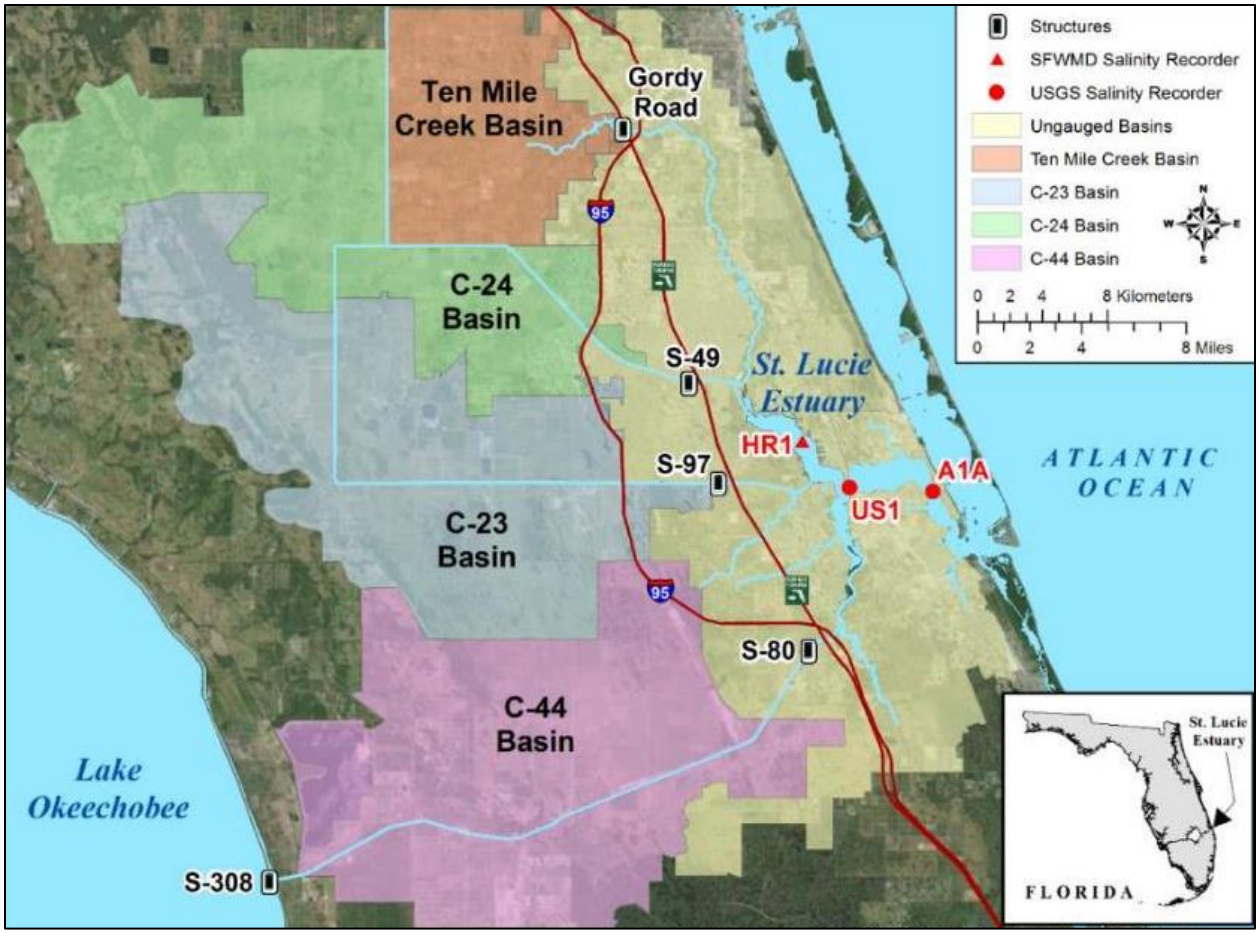


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

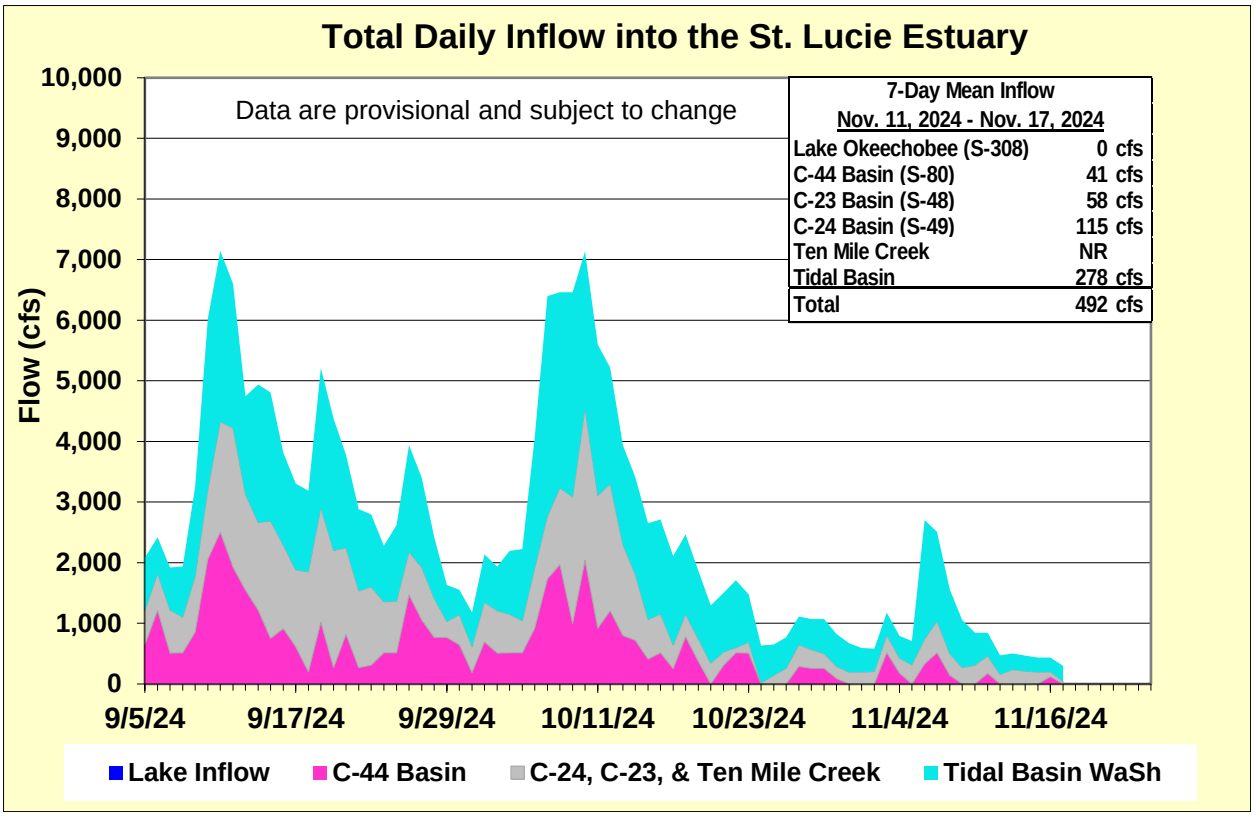


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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)	**4.7** (2.4)	**9.1** (3.0)	10.0 – 25.0
US1 Bridge	**10.2** (6.7)	**13.7** (7.5)	10.0 – 25.0
A1A Bridge	**22.3** (19.1)	**28.0** (25.6)	10.0 – 25.0

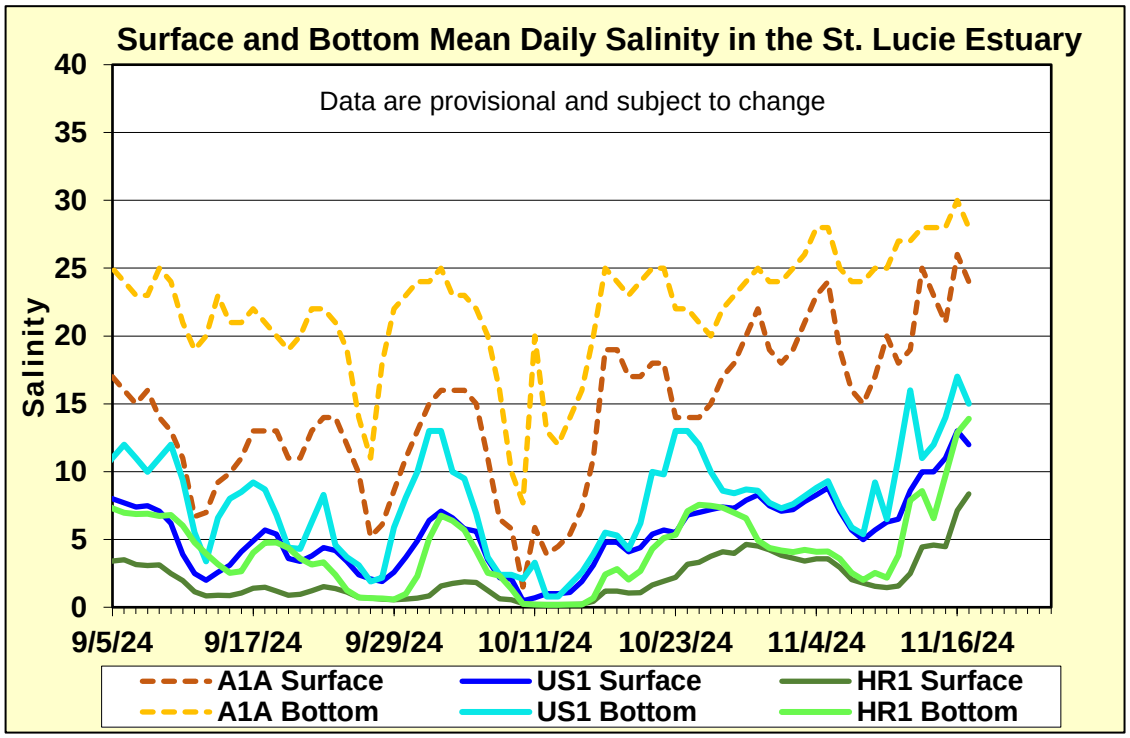


Figure ES-3. Mean daily salinity at the A1A, US1, and HR1 sites in the St. Lucie Estuary.

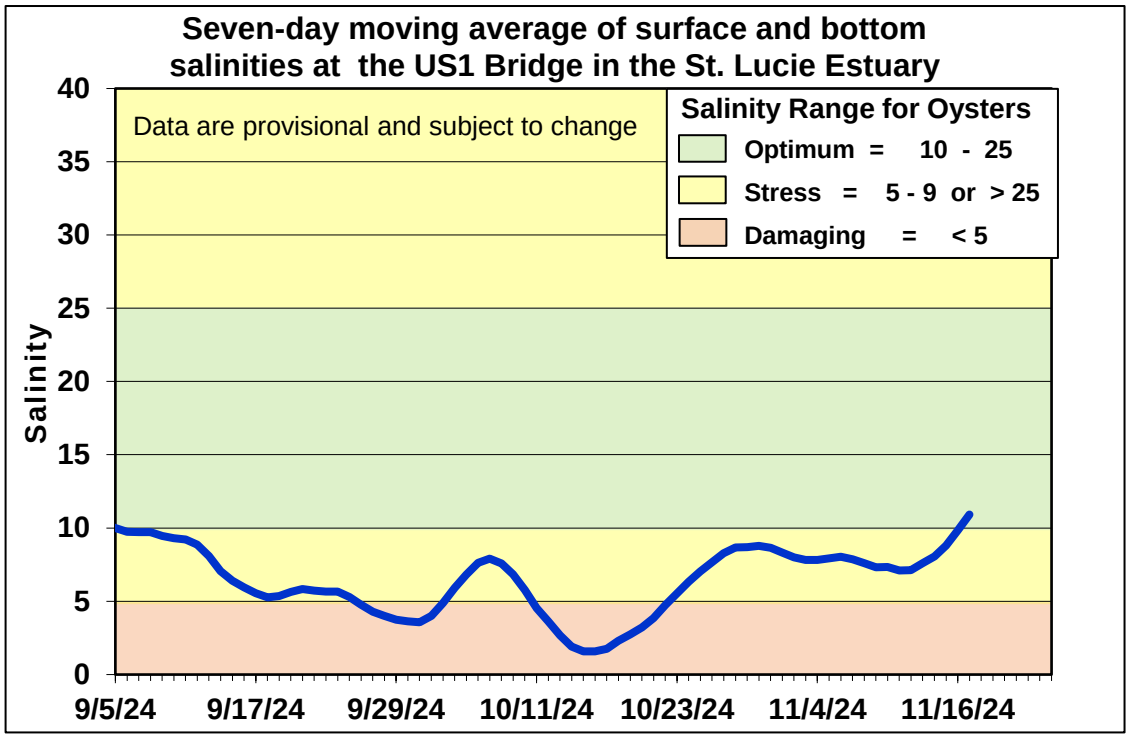


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

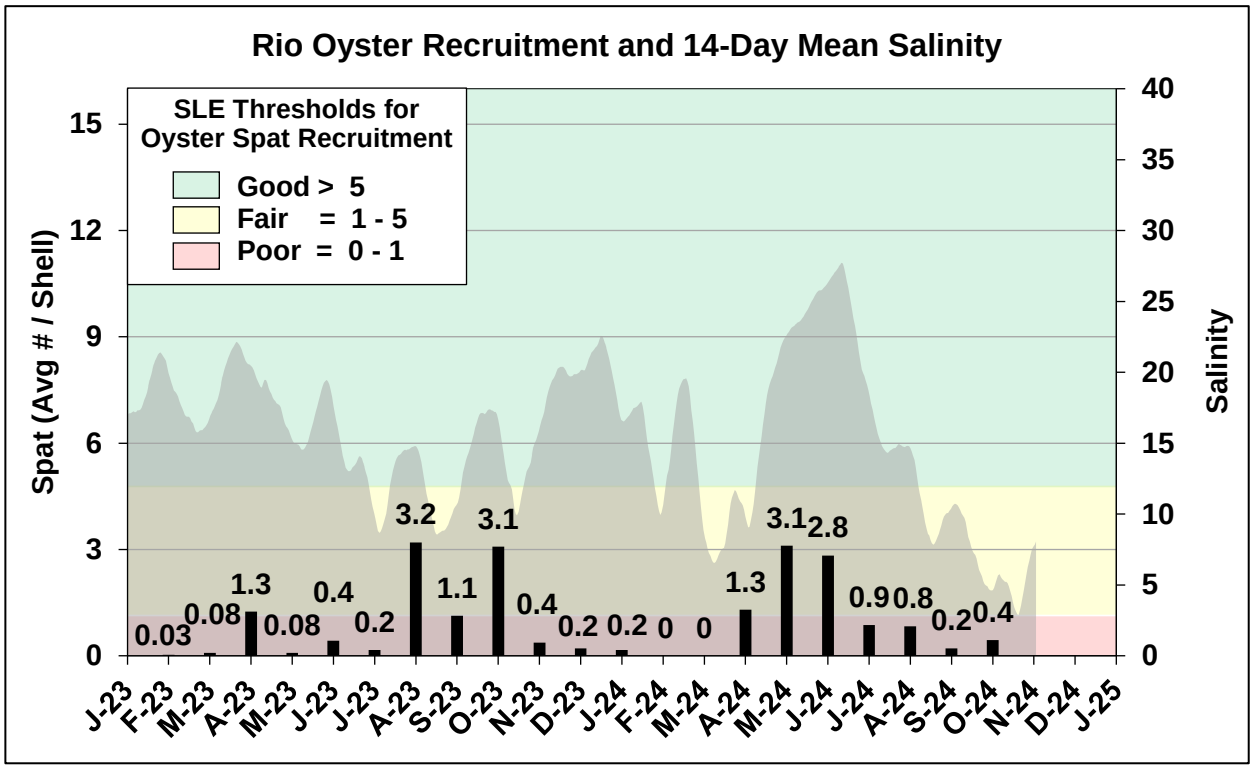


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

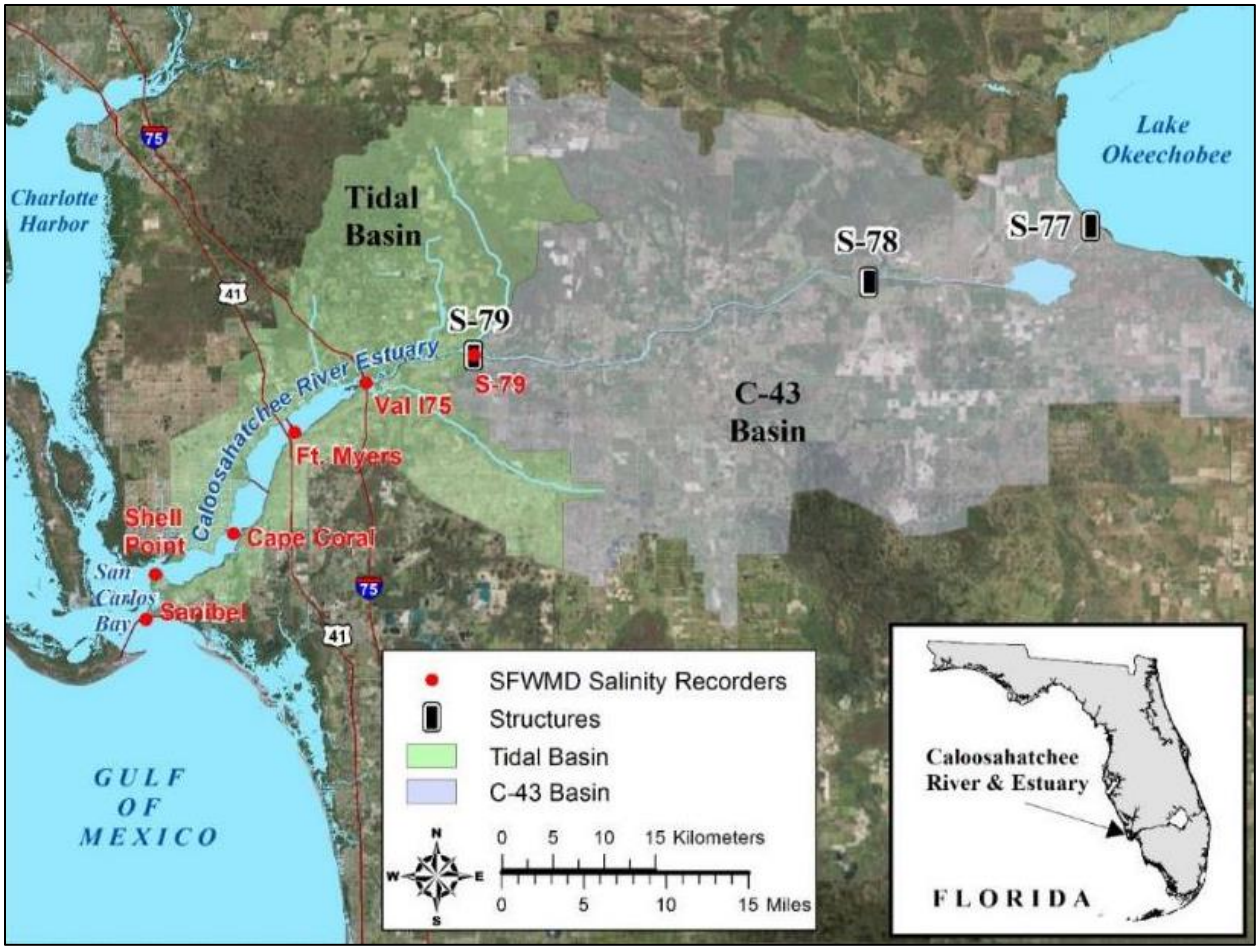


Figure ES-6. Basins, water control structures, and salinity monitoring sites in the Caloosahatchee River Estuary.

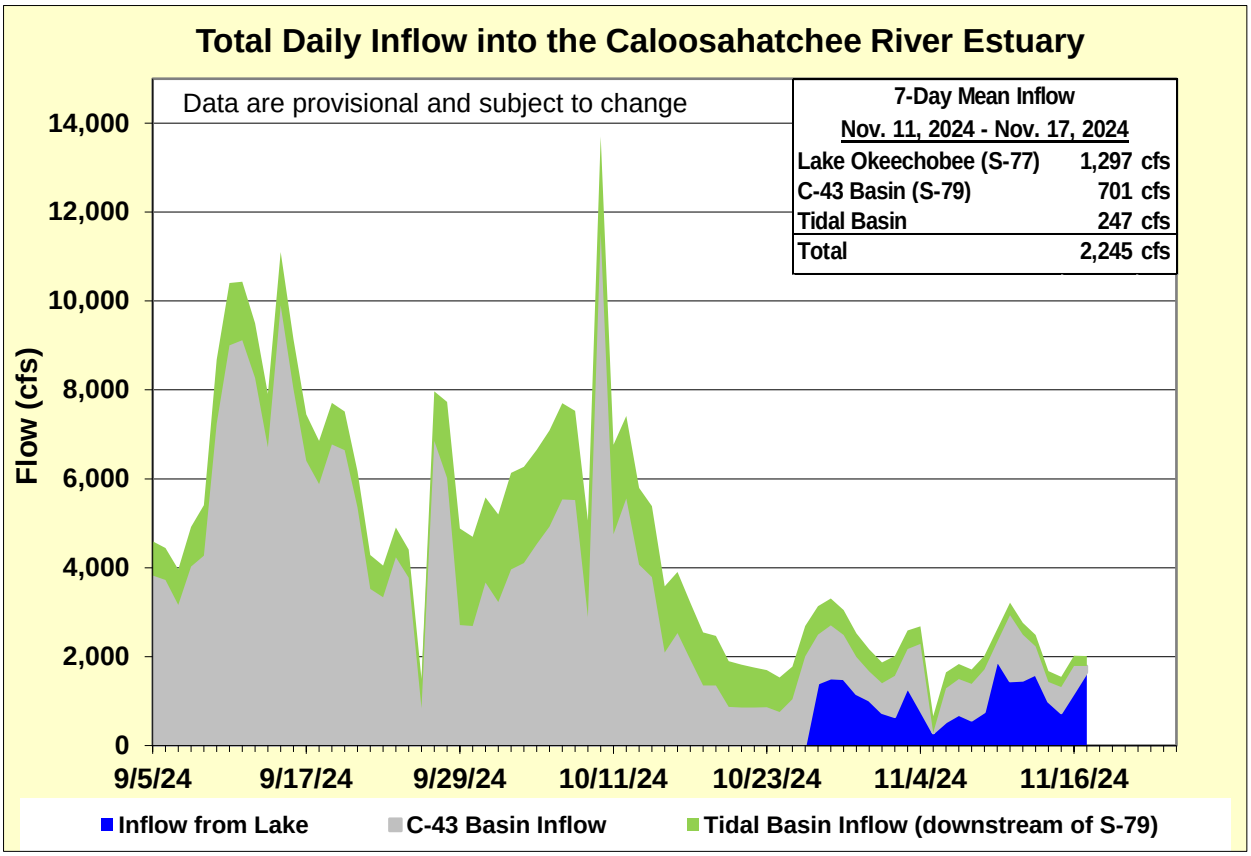


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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. Missing or not reported values are represented by NR. The envelope in the upper estuary sites is for the protection of tape grass and the envelope in the lower estuary is the optimum salinity range for adult eastern oysters (*Crassostrea virginica*). Data are provisional.

Sampling Site	Surface	Bottom	Optimum Envelope
S-79 (Franklin Lock)	**1.5** (1.2)	**1.5** (1.1)	0.0 – 10.0
Val I-75	**2.2** (1.2)	**3.1** (2.7)	0.0 – 10.0
Fort Myers Yacht Basin	**NR** (13.8)	**10.5** (13.8)	0.0 – 10.0
Cape Coral	**14.2** (12.8)	**16.8** (16.8)	10.0 – 25.0
Shell Point	**27.3** (27.5)	**27.6** (27.3)	10.0 – 25.0
Sanibel	**31.5** (31.8)	**32.1** (32.0)	10.0 – 25.0

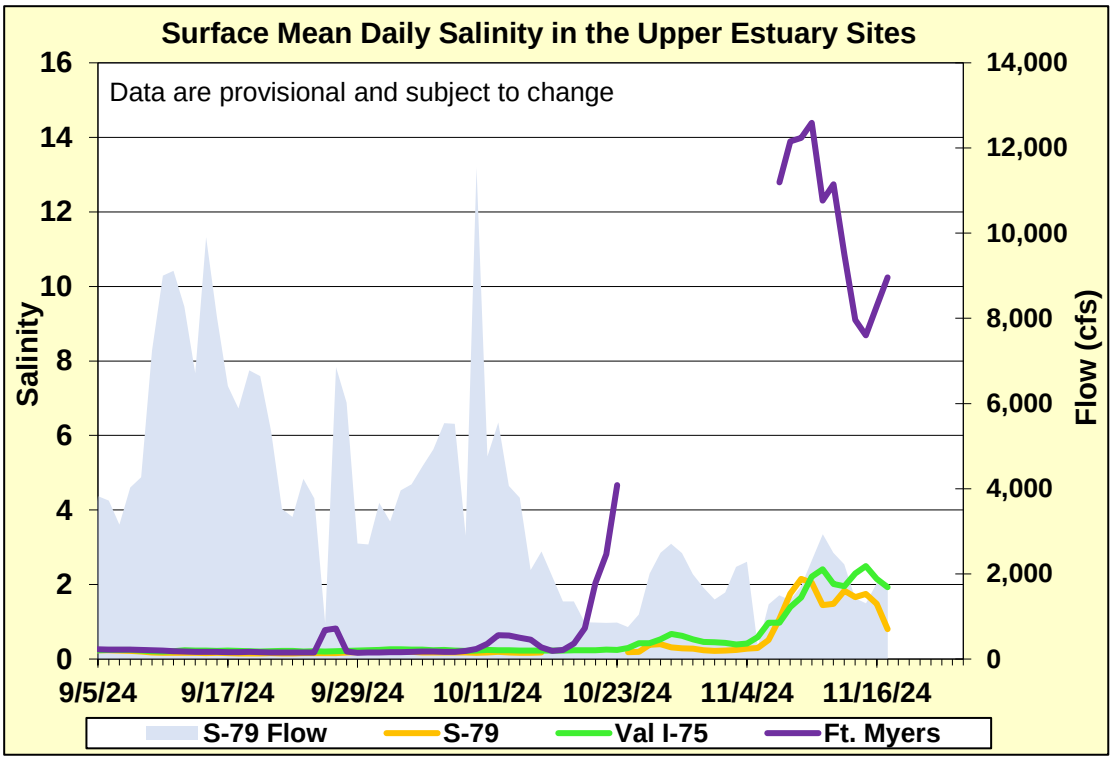


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

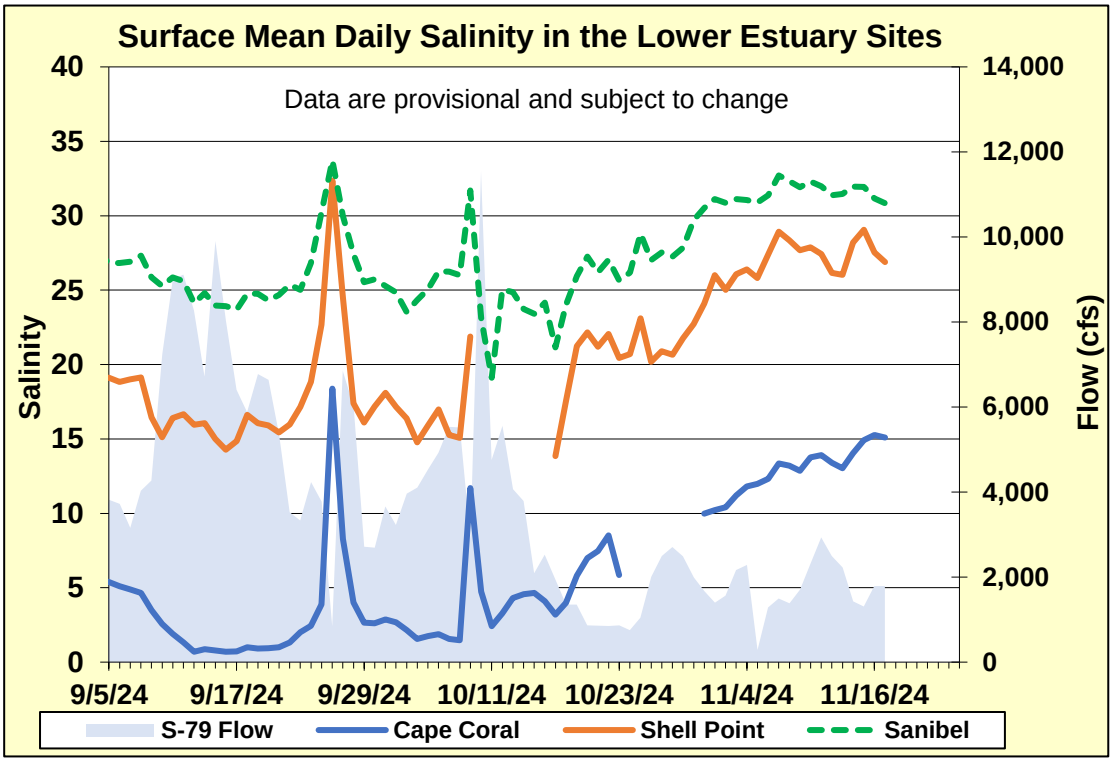


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

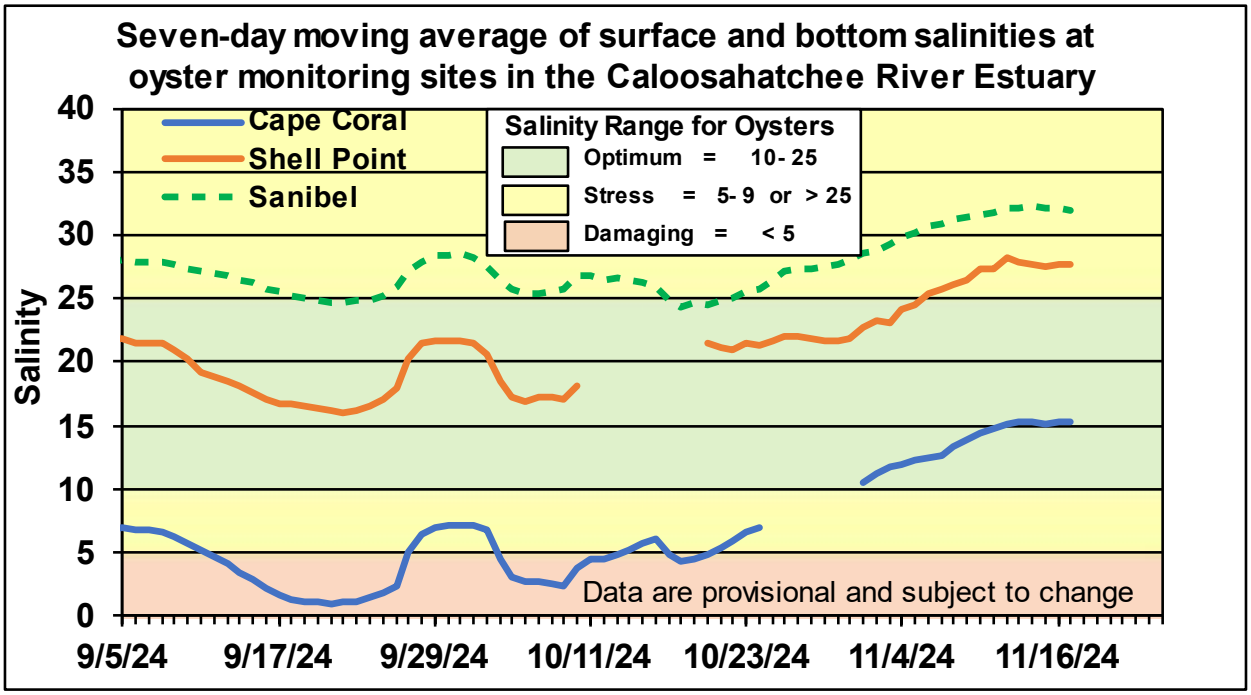


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point, and Sanibel monitoring sites in the Caloosahatchee River Estuary.

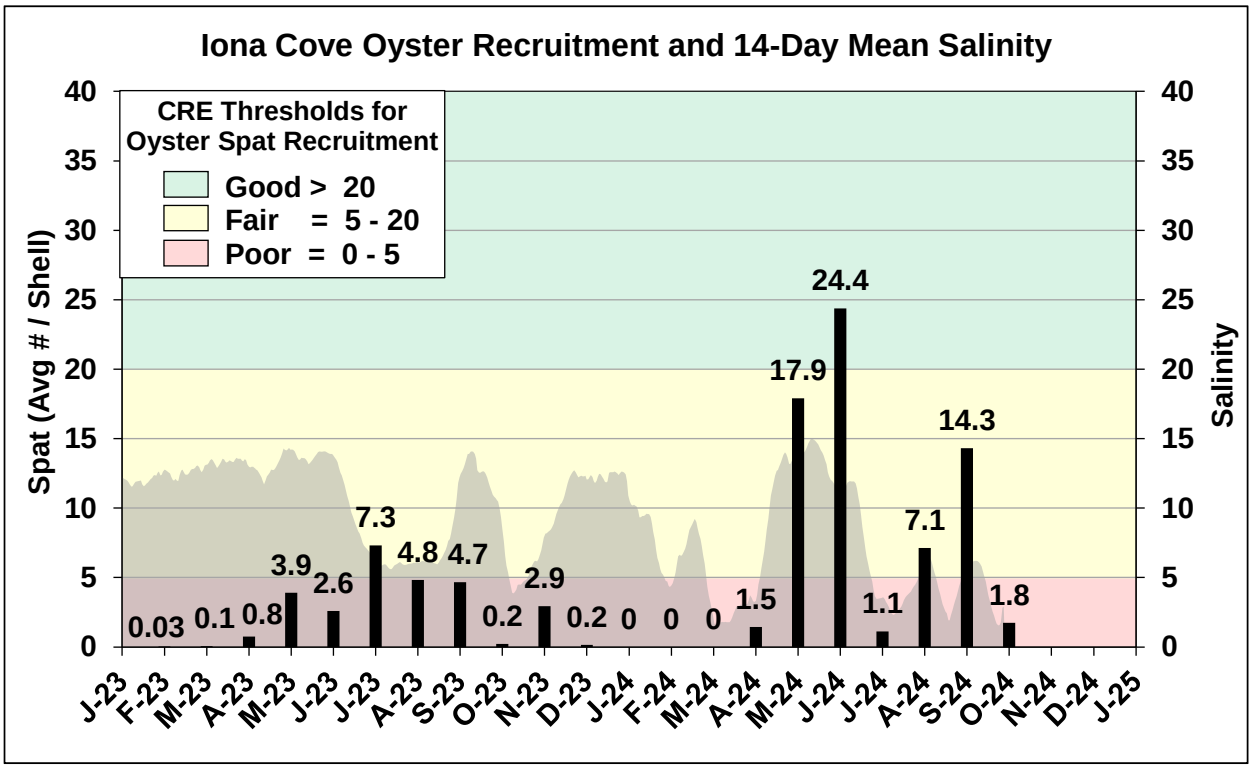


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

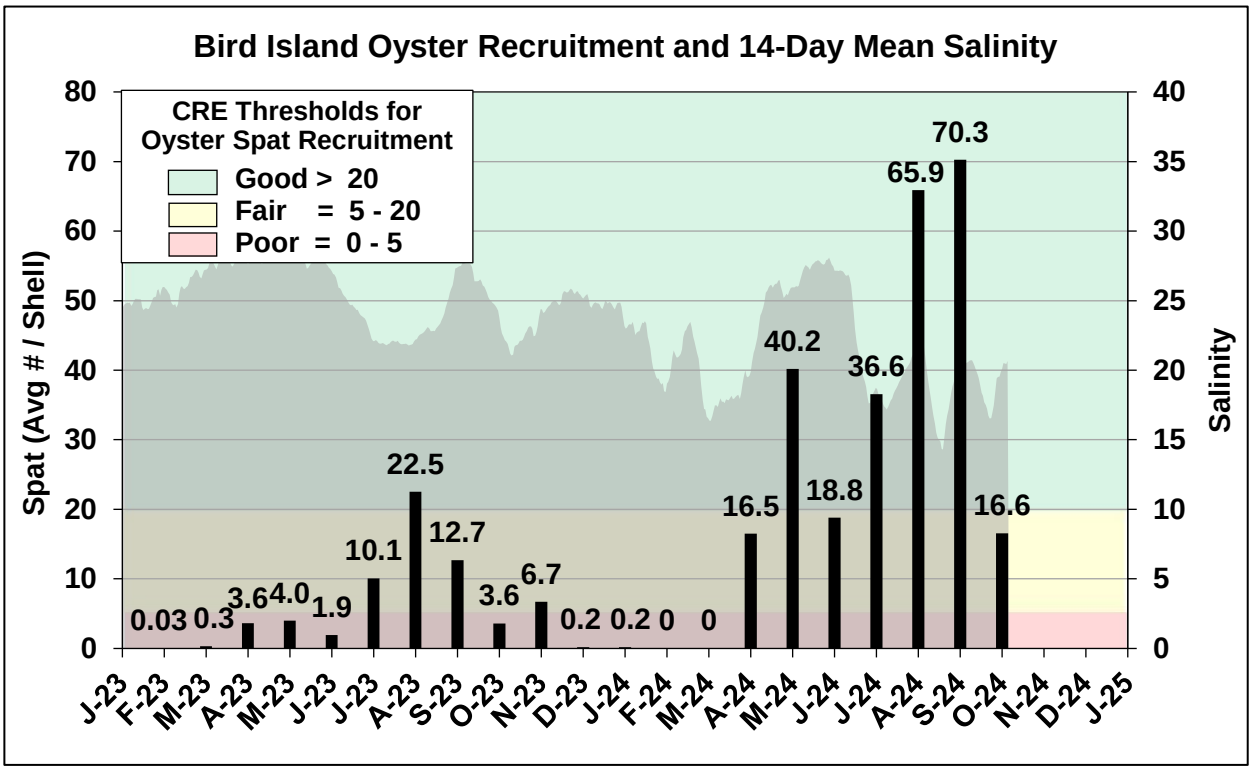


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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	158	0.6	0.9
B	650	158	0.5	0.9
C	1,200	158	0.3	0.9
D	2,000	158	0.3	0.9

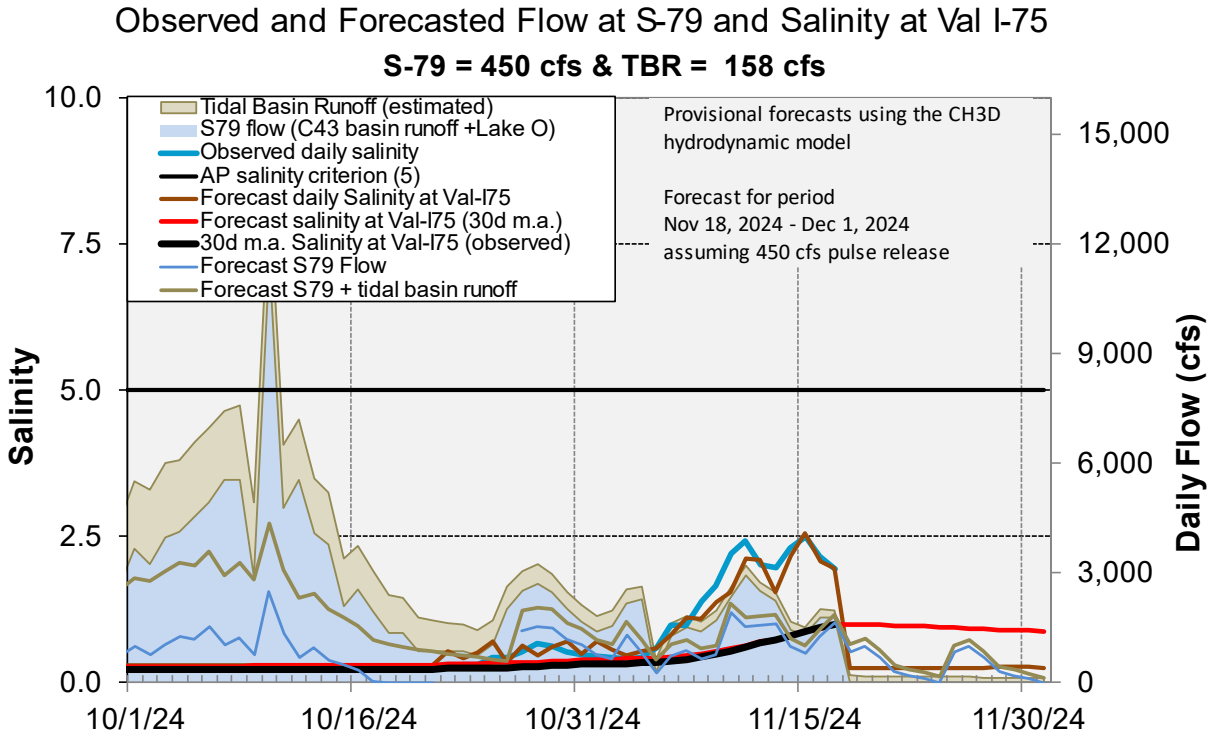


Figure ES-13. Surface salinity forecast at the Val I-75 site assuming a 450 cfs pulse release at S-79.

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. Online treatment cells are 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 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**).

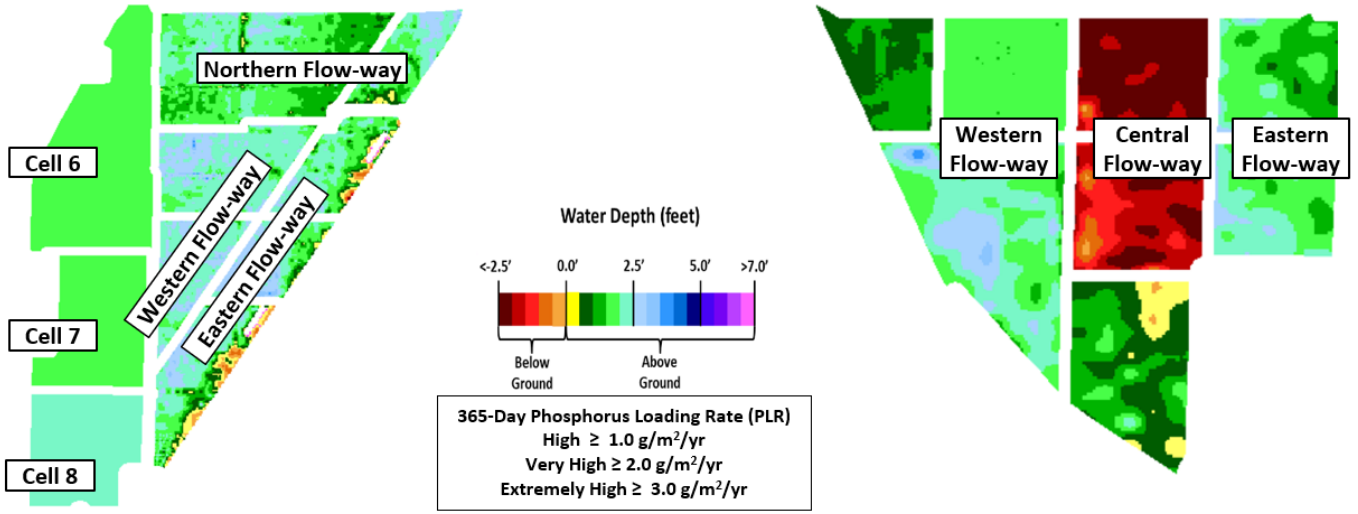
STA-2: Operational restrictions are in place in Flow-ways 2 and 4 for vegetation management activities. Online treatment cells are above target stage. Vegetation in Flow-ways 2, 3, and 4 is stressed, and in 5 is highly stressed. The 365-day PLRs for Flow-ways 1, 4, and 5 are below 1.0 g/m^2/year. The 365-day PLRs 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, and operational restrictions are in place for the Central and Western Flow-ways for exotic vegetation control. Treatment cells are 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 above target stage. All treatment cells have highly stressed or stressed vegetation conditions. The 365-day PLRs for Flow-ways 1, 6, 7, and 8 are below 1.0 g/m^2/year, and the 365-day PLRs for Flow-ways 2, 3, 4, and 5 are high. (**Figure S-3**).

For definitions on STA operational language see glossary following figures.

Eastern Flow Path Weekly Status Report – 11/11/2024 through 11/17/2024

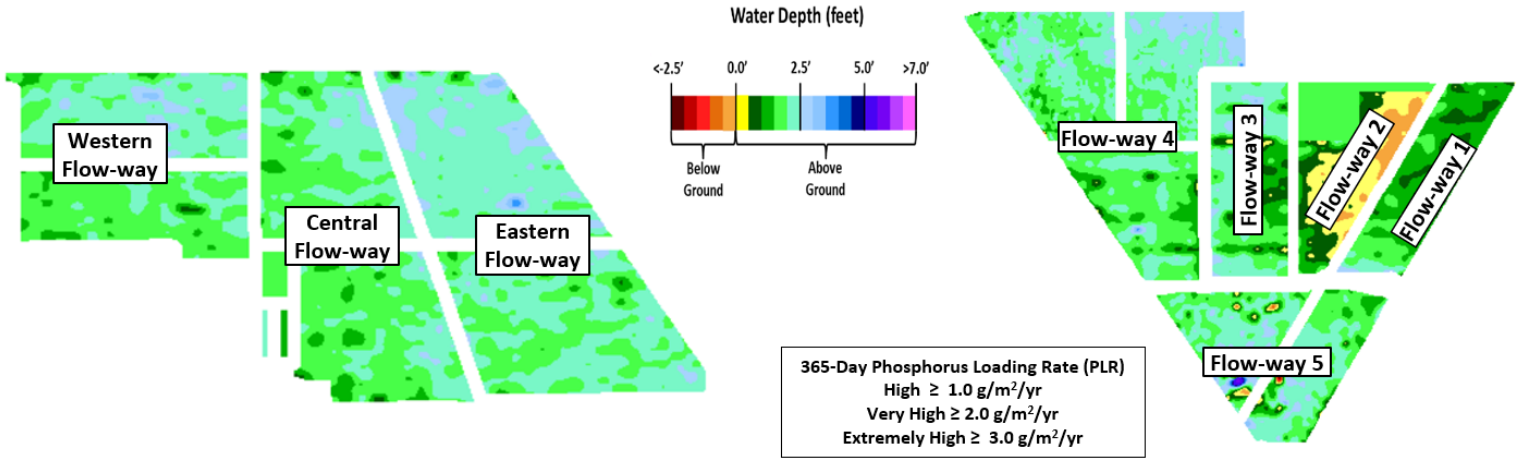


STA-1W	Flow-way Status
Western	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• High 365-day PLR • Highly stressed vegetation conditions
Northern	• Stressed vegetation conditions • Planting emergent vegetation
Cell 6	
Cell 7+8	

STA-1E	Flow-way Status
Western	• Post-construction vegetation grow-in
Central	• Offline for construction activities
Eastern	

Figure S-1. Eastern Flow Path Weekly Status Report

Central Flow Path Weekly Status Report – 11/11/2024 through 11/17/2024

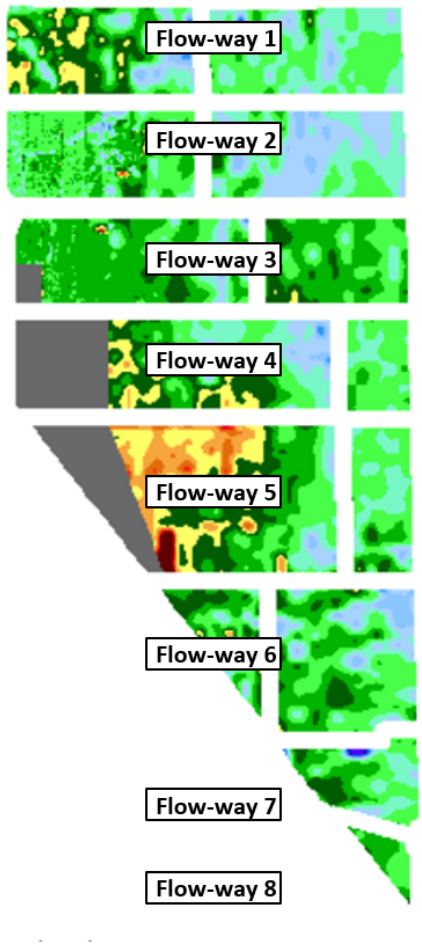


STA-3/4	Flow-way Status
Western	• High 365-day PLR • Exotic vegetation control
Central	• Highly stressed vegetation conditions • High 365-day PLR • Exotic vegetation control
Eastern	• Post-drawdown vegetation grow-in

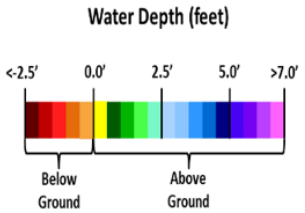
STA-2	Flow-way Status
Flow-way 1	• Upstream FAV control
Flow-way 2	• High 365-day PLR • Post-construction vegetation grow-in • Stressed vegetation conditions • Upstream FAV control
Flow-way 3	• High 365-day PLR • Stressed vegetation conditions • Upstream FAV control
Flow-way 4	• Planting emergent vegetation • Upstream FAV control
Flow-way 5	• Highly stressed vegetation conditions

Figure S-2. Central Flow Path Weekly Status Report

Western Flow Path Weekly Status Report – 11/11/2024 through 11/17/2024



STA-5/6	Flow-way Status
Flow-way 1	• Highly stressed vegetation conditions
Flow-way 2	• Highly stressed vegetation conditions • High 365-day PLR
Flow-way 3	• Highly stressed vegetation conditions • High 365-day PLR
Flow-way 4	• Stressed vegetation conditions • High 365-day PLR
Flow-way 5	• Highly stressed vegetation conditions • High 365-day PLR
Flow-way 6	• Highly stressed vegetation conditions
Flow-way 7	• Stressed vegetation conditions
Flow-way 8	• Stressed vegetation conditions



365-Day Phosphorus Loading Rate (PLR)
High ≥ 1.0 g/m^2/yr
Very High ≥ 2.0 g/m^2/yr
Extremely High ≥ 3.0 g/m^2/yr

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

Little rainfall occurred throughout the area. WCA-1: Stages within the Refuge remained steady during the week and is under the zone A2 schedule line. On Sunday, the 3-Gauge average was 0.13 feet below the A2 Zone regulation line. WCA-2A: Stage ascension at gauge 2A-17 remains above but following the slope of the regulation line. The average on Sunday was around 0.75 feet above the Zone A line. WCA-3A: The 3-Gauge average stage declined over the last week, remaining above the Zone A regulation line by around 0.25 feet on Sunday. WCA-3A North: Stage at Gauge 62 (NW corner) continued to recede away from the regulation line last week. The average on Sunday was 0.33 feet below the Upper Schedule. See figures **EV-1** through **EV-4**.

Water Depths

The SFWDAT model output for November 17, 2024, has shallower conditions throughout the Everglades Protection Area (EPA). Notably, there is a drying out of the northern portions of the WCAs and a contraction of ponded conditions in southern/eastern WCA3A and in northern Shark River Slough (SRS). Big Cypress has greater potential for water below ground surface which is expanding both to the north and south of Tamiami trail. Hydrologic connectivity remains within the major sloughs of Everglades National Park (ENP) but is contracting, specifically in Taylor Slough. Current WDAT water depth estimates when compared to one month ago, indicate a uniform pattern of shallower conditions throughout the EPA with greater recessions occurring from WCA2A into the northern WCA3A and out west into Big Cypress area. Southern ENP is further experiencing recessions of nearly a foot over the past month.

The comparison to modeled conditions a year ago shows similar shallower conditions throughout the EPA with exception to southern WCA2A. Comparing current conditions to the 20-year percentiles for November 17th, depth conditions moved towards average in WCA-1 and northern WCA-2A, the majority of WCA-3A has fallen below the 70th percentile, and ENP and WCA-3B remain above the 80th percentile. See figures **EV-5** through **EV-7**.

Taylor Slough and Florida Bay

All stages decreased across Taylor Slough over the past week, with an average decrease of 0.11 feet. Changes ranged from −0.20 feet at Taylor Slough Bridge (TSB) in the northern slough to −0.04 feet in the C-111 area (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels remain above the recent average for this time of year by 4.5 inches compared to before the Florida Bay initiative (starting in 2017), a decrease of 0.9 inches relative to last week's comparison. The Craighead Pond (CP) and TSB stages are below estimated historical levels (circa 1900) by 0.44 and 0.99 feet, respectively.

Average Florida Bay salinity was 21.2, an increase of 1.2 from last week. Salinity increased at most sites, with changes ranging from −2.8 at Johnson Key (JK) in the western region to +5.2 at Terrapin Bay (TB) in the central nearshore region (**Figure EV-8**). Salinity remains below the WY2001-2016 Interquartile Range (IQR) and near

estimated historical levels (circa1900) in the eastern and western regions and is now within the IQR in the central region (**Figure EV-10**). Average Florida Bay salinity remains below its recent average for this time of year by 3.7, 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 0.4. The 30-day moving average was 0.2, with no change 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 424,802 acre-feet, a decrease of 23,242 acre-feet from last week (**Figure EV-11**).

Average rainfall across Taylor Slough and Florida Bay was 0.03 inches over the past week, based on the 18 gauges used for this report. Rainfall ranged from 0.00 inches at 11 stations to 0.21 inches at Manatee Bay (MB) in the eastern nearshore region (**Figure EV-12**). Wind directions and speeds in Florida Bay ranged from 0.7 mph S on November 15th to 27.9 mph NE on November 13th (**Figure EV-12**).

Average daily flow from the five major creeks totaled 642 acre-feet last week, with net positive flows for the week. Total daily creek flow ranged from −1,817 acre-feet on November 15th to 3,391 acre-feet on November 13th (**Figure EV-13**). Average daily flow for the week was 3,496 acre-feet below estimated historical levels (circa 1900).

Implications for water management

The ecology of the Everglades benefits from recession rates from 0.0 to 0.12 feet per week this time of year. Maintaining a hydroperiod supportive of upcoming wading bird nesting at the Alley North colony in WCA-3A North is less likely as drier conditions persist in that region and as we approach La Nina climatic conditions, suggesting a drier than average dry season. Florida Bay salinity is good and will continue to benefit from maintaining freshwater input to the system when available. Individual regional recommendations can be found in **Table EV-2**.

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

Everglades Region	Rainfall (inches)	Stage change (feet)
WCA-1	0.00	−0.06
WCA-2A	0.00	−0.14
WCA-2B	0.00	−0.11
WCA-3A	0.00	−0.18
WCA-3B	<0.01	−0.08
ENP	0.02	−0.05

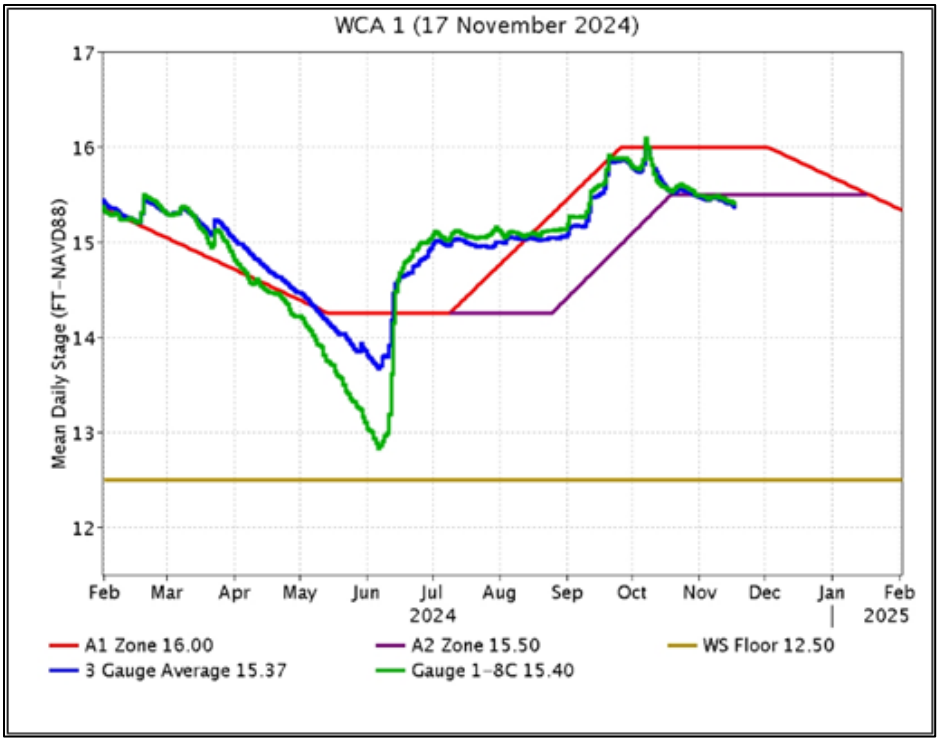


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

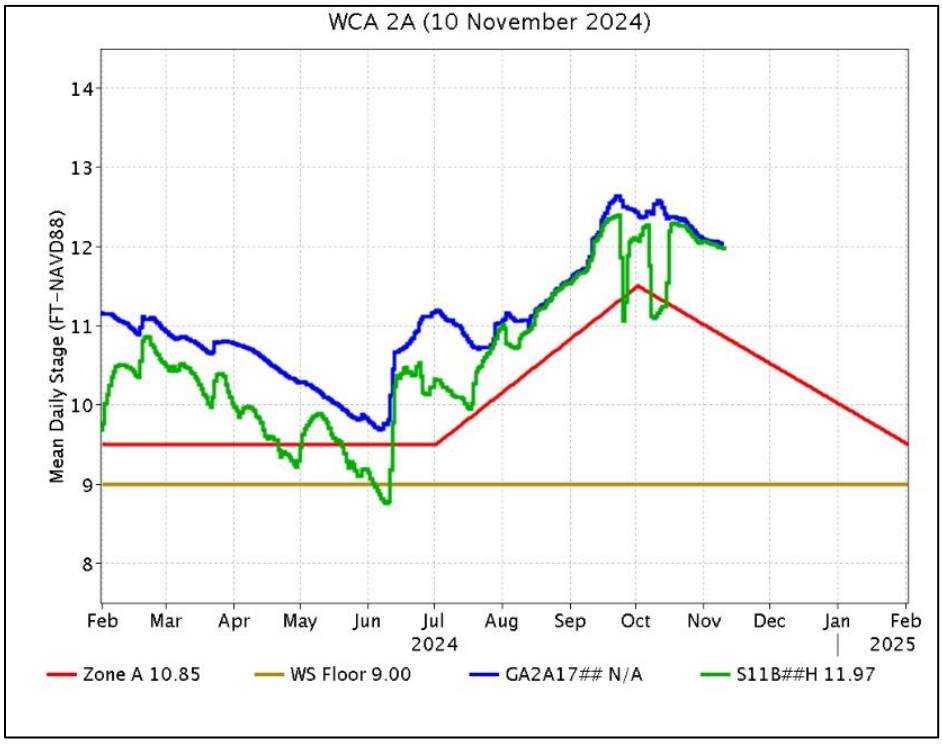


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

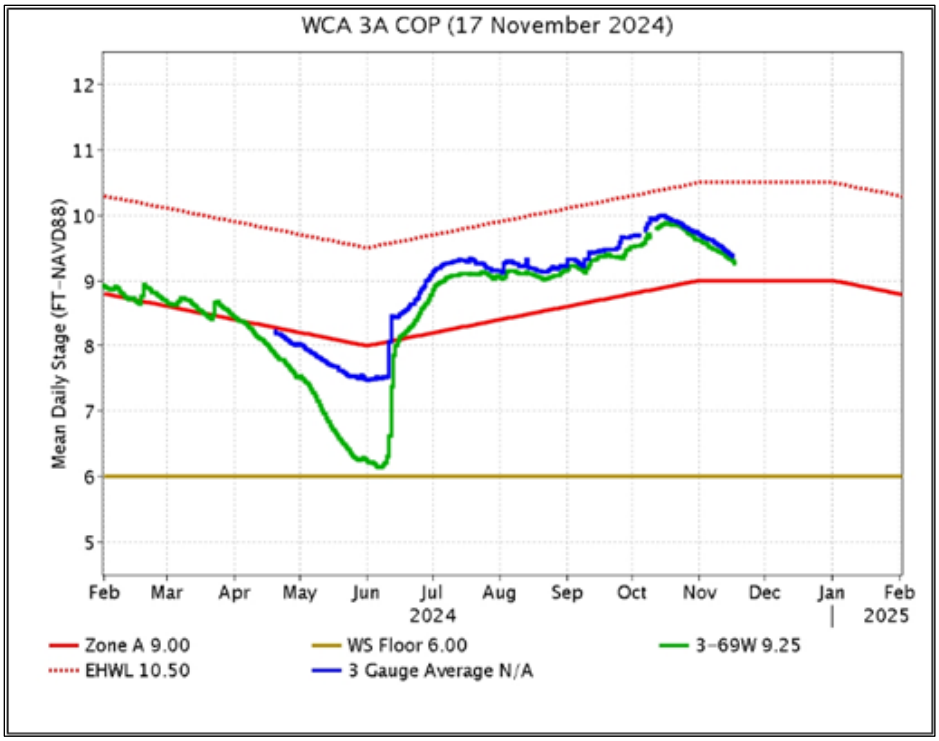


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.

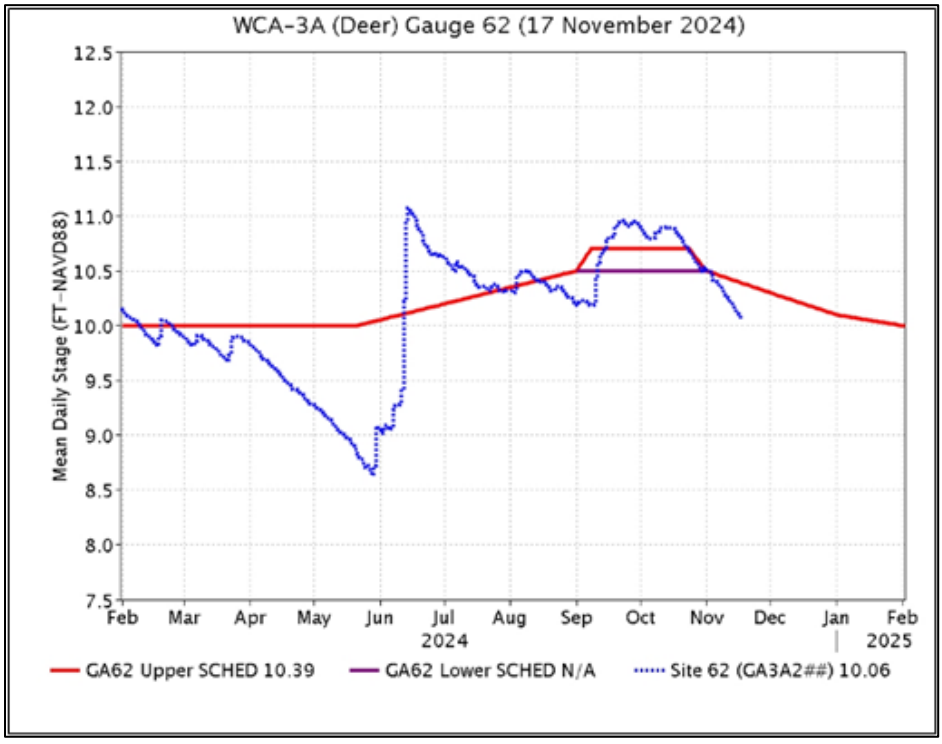


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule.

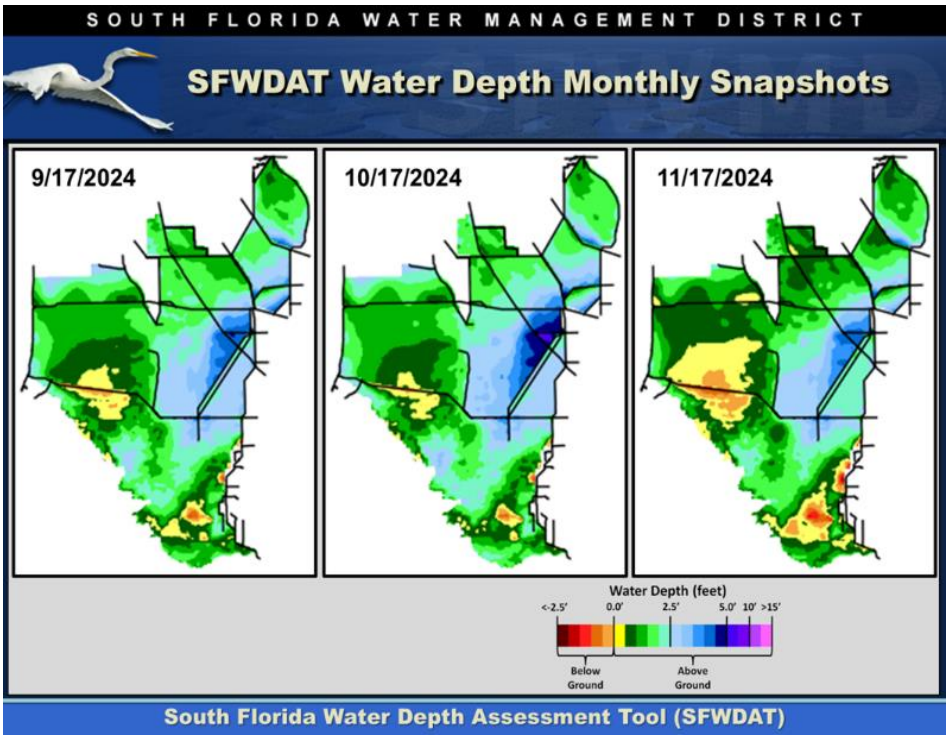


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

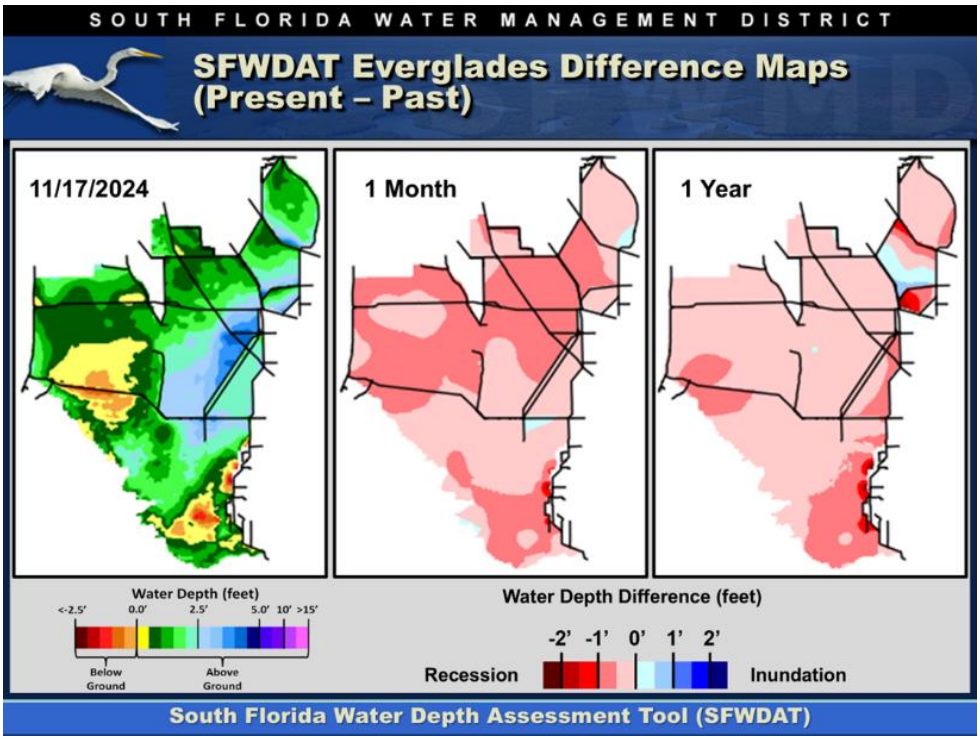


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

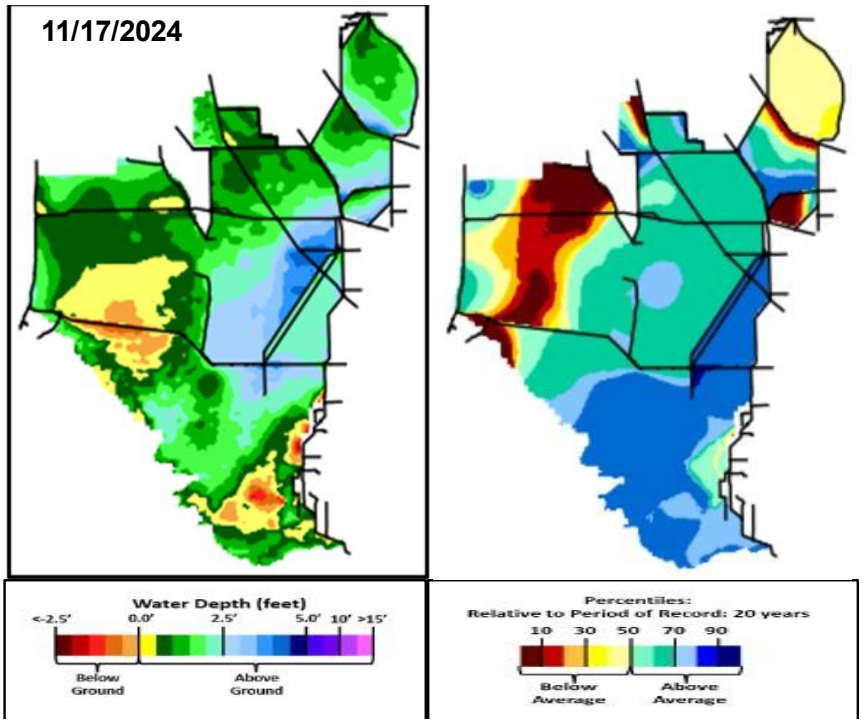


Figure EV-7. Present water depths (November 10th, 2024) compared to the day of year average over the previous 20 years.

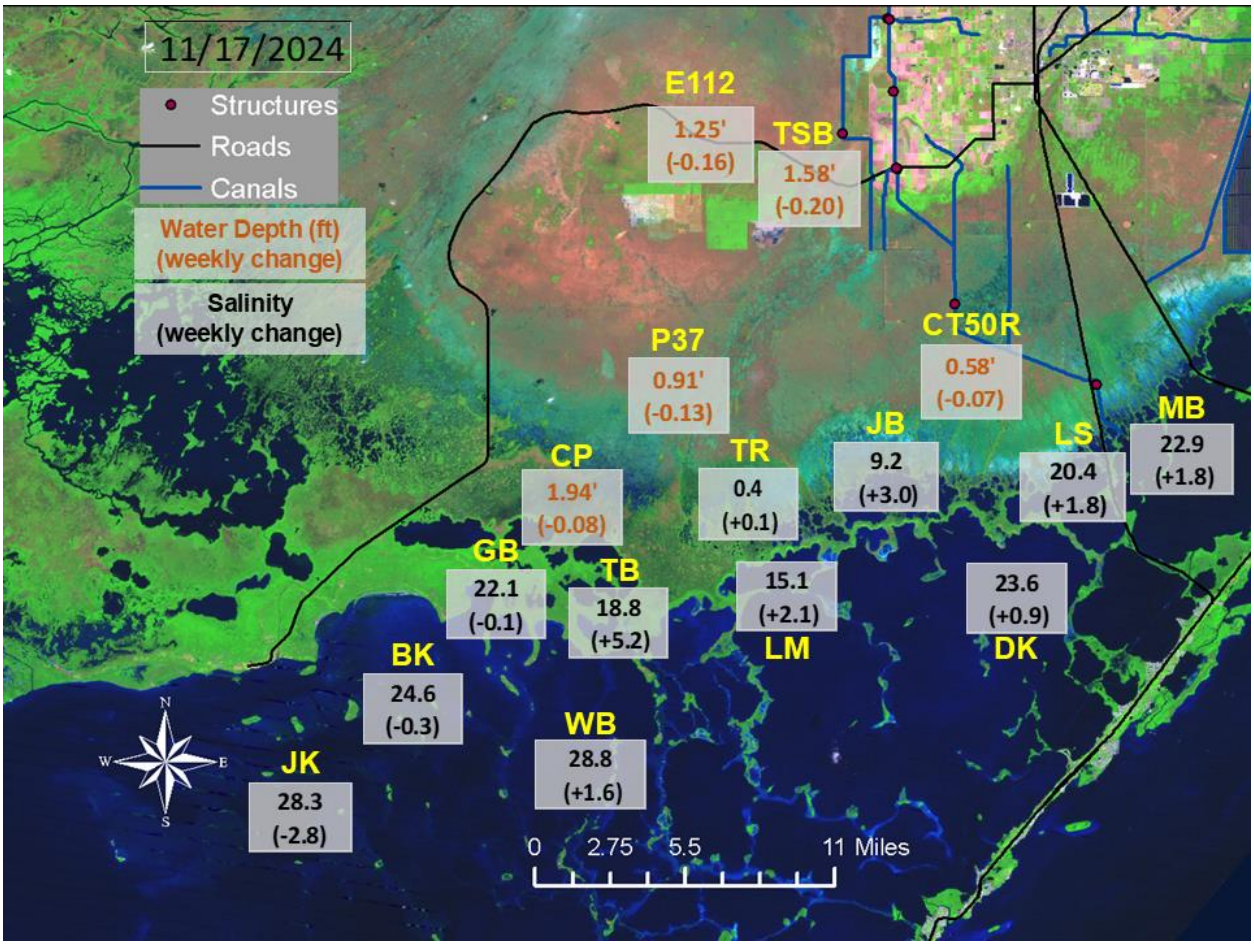


Figure EV-8. Taylor Slough water depths and Florida Bay salinities with changes from a week ago.

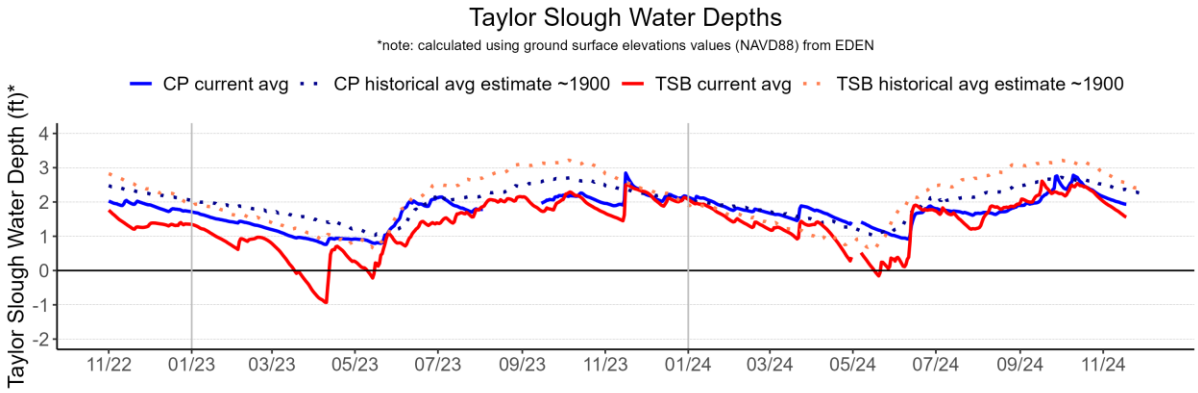


Figure EV-9. Taylor Slough water depth time series for Taylor Slough Bridge (TSB; northern slough) and Craighead Pond (CP; southern slough).

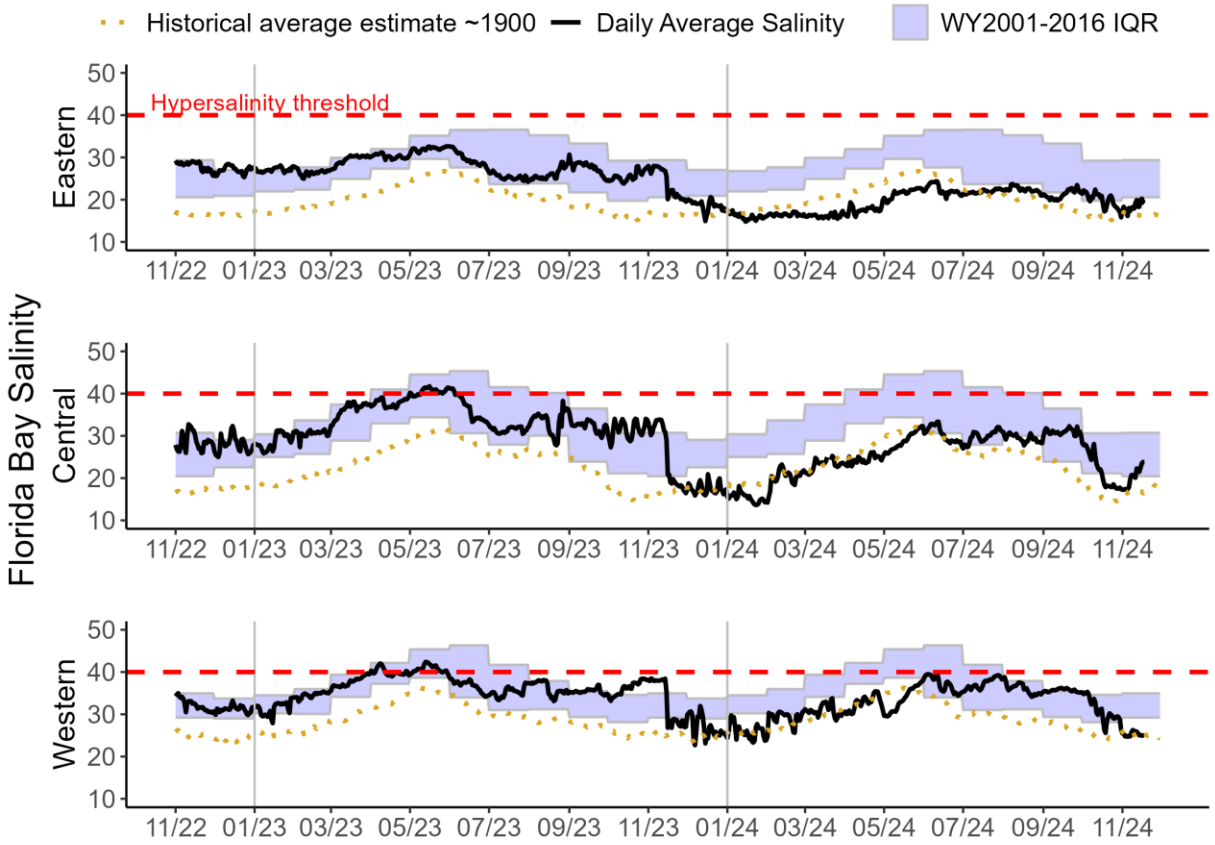


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with WY2001-2016 interquartile (25-75 percentile) ranges (IQR) and estimated historical daily average salinities. The hypersalinity threshold indicates the level at which salinities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

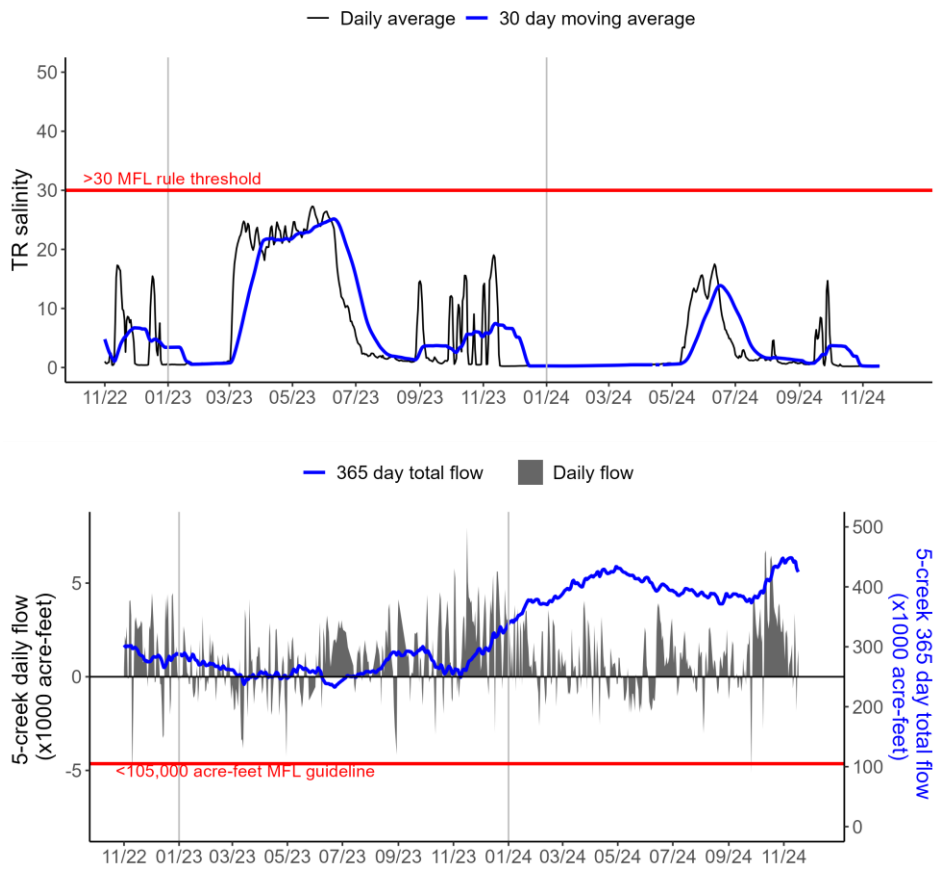


Figure EV-11. Salinity at Taylor River (TR; top) and creek inflow to Florida Bay (bottom) from the five major creeks (McCormick Creek, Taylor River, Mud Creek, Trout Creek, and West Highway Creek). The 30-day moving average salinity and 365-day total creek flow are tracked for the Florida Bay MFL criteria.

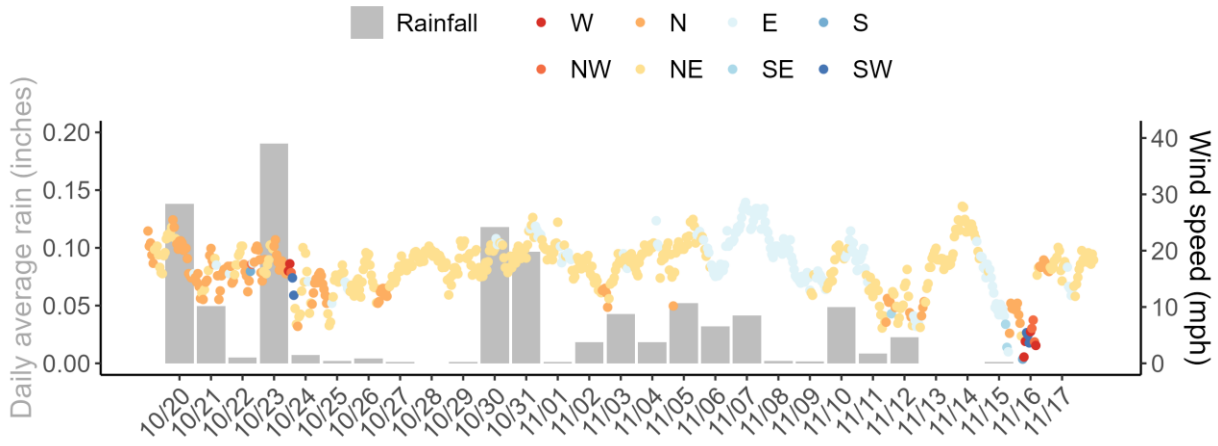


Figure EV-12. Daily average rain across Taylor Slough and Florida Bay, along with hourly average wind speed and direction (measured at Long Key) in Florida Bay over the past four weeks.

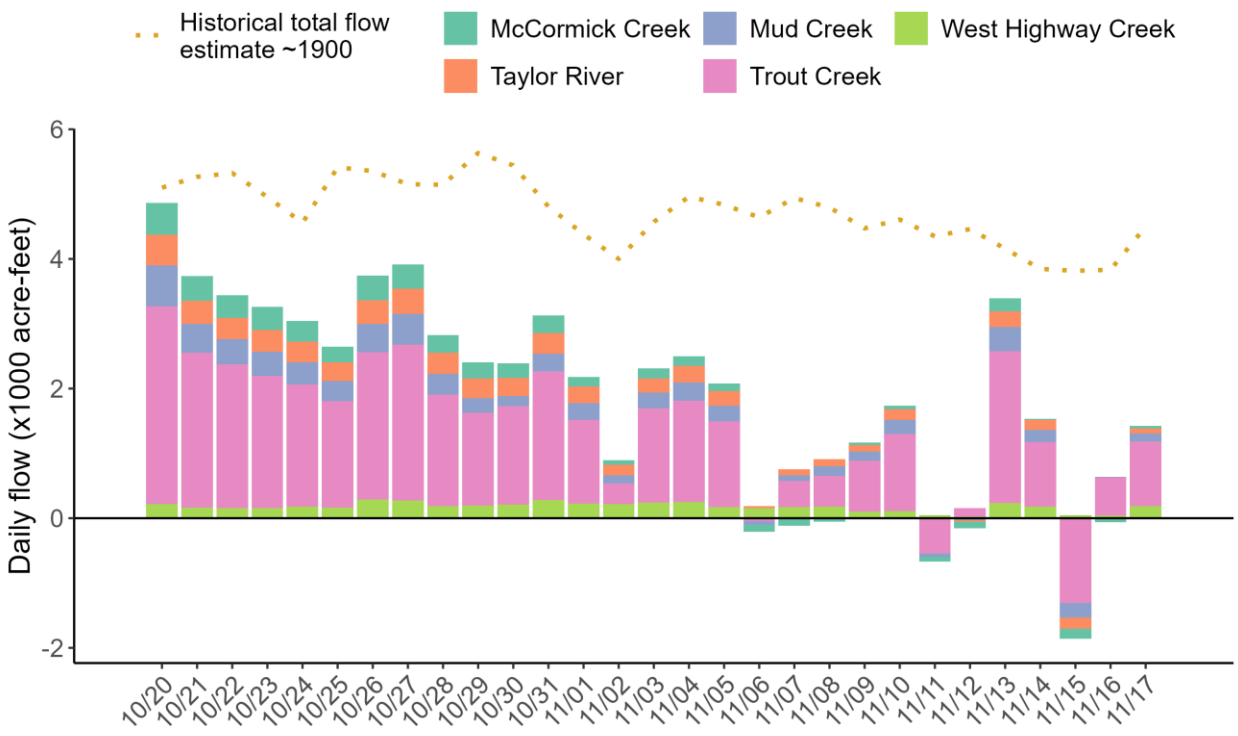


Figure EV-13. Daily average creek flow summed between five creeks with estimated historical daily flow over the past four weeks.

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

SFWMD Everglades Ecological Recommendations, November 19, 2024 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.06 feet	Recession rate of less than 0.06 feet per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage decreased by 0.14 feet	Recession rate of less than 0.12 feet per week.	Protect within basin and downstream habitat and wildlife.
WCA-2B	Stage decreased by 0.11 feet	Recession rate of less than 0.12 feet per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.21 feet	Recession rate of less than 0.12 feet per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NW	Stage decreased by 0.20 feet	Recession rate of less than 0.12 feet per week.	
Central WCA-3A S	Stage decreased by 0.17 feet	Recession rate of less than 0.12 feet per week.	Protect within basin wildlife.
Southern WCA-3A S	Stage decreased by 0.13 feet		
WCA-3B	Stage decreased by 0.08 feet	Recession rate of less than 0.12 feet per week.	Protect within basin and downstream habitat and wildlife.
ENP-SRS	Stage decreased by 0.05 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 −0.20 feet to -0.04 feet	Move water southward as possible.	When available, provide freshwater to promote water movement.
FB- Salinity	Salinity changes ranged from –2.8 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 312 cfs, and the previous 30-day mean inflow was 641 cfs. The seven-day mean salinity was 17.1 at BBCW8 and 16.7 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.

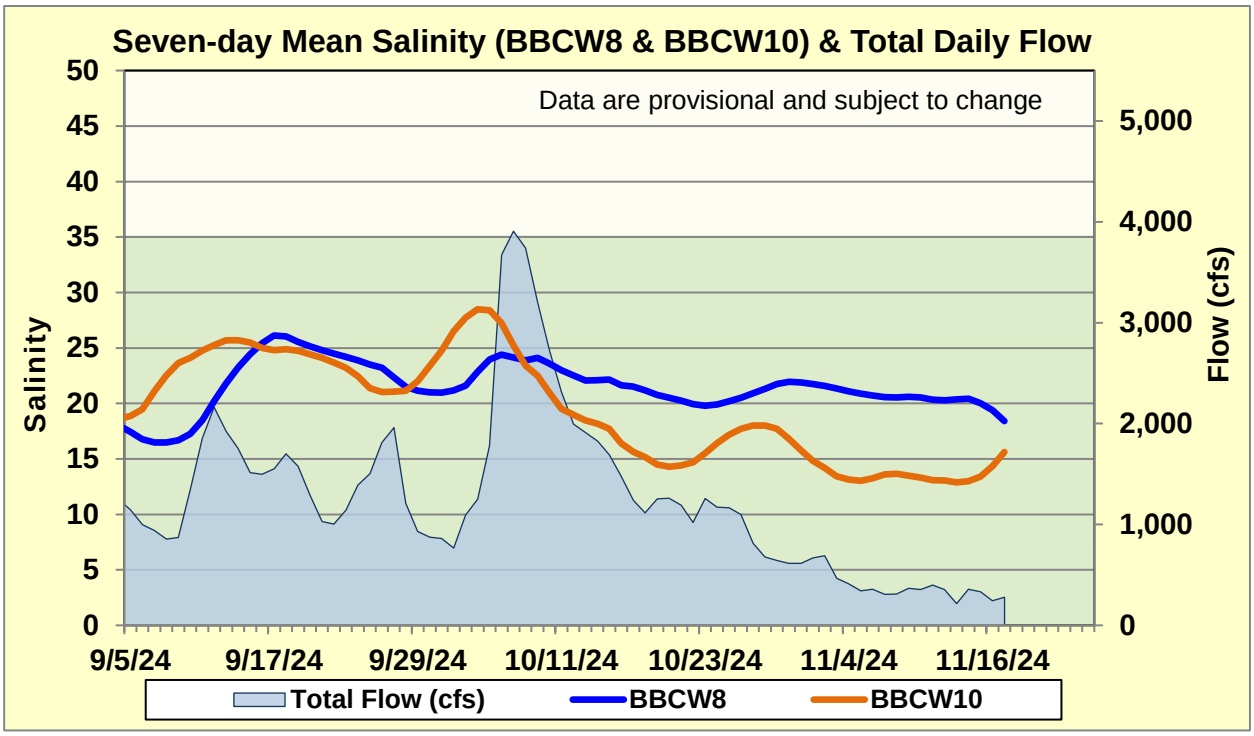


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.