

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:** October 16, 2024

**SUBJECT:** Weekly Environmental Conditions for Systems Operations

### **Summary**

#### **Weather Conditions and Forecast**

A strong upper-air disturbance located over the Midwest is expected to move into the southeastern U.S. by Wednesday. A secondary cold front will sweep into the Kissimmee Valley during the morning hours, possibly bringing isolated or widely scattered light showers. This cold front is expected to advance into the southern third of the SFWMD by the afternoon and reach the southern tip of Florida by evening, followed by a sharp increase in northerly to north-northeasterly winds. Strong onshore winds will carry moisture toward the east coast during the evening and overnight, resulting in possible light showers, which may extend southward into the Florida Keys. While scattered east-coast showers are likely on Thursday, overall area-averaged rainfall is expected to remain relatively low. By Friday, a fast-moving upper-air disturbance crossing the Gulf of Mexico will introduce forced ascent over Florida which could result in a significant rainfall event along the east coast from Friday into early Saturday. Following the passage of this upper-air disturbance, shallow moisture and brisk northeasterly winds will persist, though the winds are expected to gradually weaken by late in the weekend and into early next week. Widely scattered light showers could continue along the east coast, but their inland reach is expected to remain limited. Western areas are most likely to remain dry from Friday through Sunday. Forecast confidence for Saturday is very low as the upper quartile of model solutions shows greater moisture persisting, allowing some east-coast rains to continue into the day. By Monday, moisture could penetrate farther inland, potentially causing light showers to extend into the central or western interior of the SFWMD. For the week ending next Tuesday morning, total SFWMD rainfall is forecast to be below or much below normal, though portions of the east coast may experience normal to above-normal rainfall.

#### **Kissimmee**

Releases in the last week from East Lake Toho and Lake Toho were needed to begin lowering lake stage back to their respective regulation schedules because of above average rainfall due in part to Hurricane Milton. Weekly average discharge on October 13, 2024, was 4,100 cfs and 4,900 cfs at S-65 and S-65A, respectively. Mean weekly

water depth on the Kissimmee River floodplain increased by 0.44 feet to 1.71 feet. The daily concentration of dissolved oxygen in the Kissimmee River increased over most of the week before declining, which resulted in an increase in the weekly average concentration from 0.9 mg/L the previous week to 1.3 mg/L although the mean daily value had decreased to 0.6 mg/L by Sunday, October 13, 2024, which is below both the potentially lethal level of 1.0 mg/L and the stressful level of 2.0 mg/L (**Figure KB-6**).

### **Lake Okeechobee**

Lake Okeechobee stage was 14.65 feet NAVD88 (15.96 ft NGVD29) on October 13, 2024, which was 0.46 feet higher than the previous week and 1.13 feet higher than a month ago. Average daily inflows (excluding rainfall) increased from 6,440 cfs the previous week, to 9,320 cfs, as rainfall from Hurricane Milton continues to flow in from the northern watersheds. Average daily outflows (excluding evapotranspiration) were zero for the sixth consecutive week. There are no recent non-obscured satellite images.

### **Estuaries**

Total inflow to the St. Lucie Estuary averaged 5,886 cfs over the past week with most of the flow coming from the Tidal Basin. Mean salinities decreased at all three sites in the estuary over the past week. Salinity in the middle estuary was in the damaging range (<5) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 7,709 cfs over the past week with no flow coming from Lake Okeechobee. Mean salinities remained below 1 at S-79, Val I-75 and Fort Myers, and decreased at Shell Point. The Fort Myers and Shell Point stations only reported until October 9th, and then stopped recording, likely due to the effects of Hurricane Milton. Cape Coral and Sanibel stations remained missing over the past week and are undergoing repairs. 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 Shell Point.

### **Stormwater Treatment Areas**

For the week ending Sunday, October 13, 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 896,000 ac-feet. STA cells are 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. This week, there is no capacity for Lake releases in the STAs.

### **Everglades**

Rates of stage change over the week were categorized as good or fair across the Everglades Protection Area (EPA). Stages at Gauge 63 in northeastern 3A continue to be supportive of nesting at the Alley North colony. Stages remain above average across most of the EPA. Average stage in Taylor Slough increased last week and remains above the average for this time of year, with creek flow approaching historical levels. Average salinity decreased in Florida Bay last week; all regions of the bay remain within the

Interquartile Range (IQR). Florida Bay Minimum Flows and Levels (MFL) metrics remain well outside thresholds of harm.

### **Biscayne Bay**

Total inflow to Biscayne Bay averaged 2,822 cfs and the previous 30-day mean inflow averaged 1,764 cfs. The seven-day mean salinity was 22.1 at BBCW8 and 18.2 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 October 13, 2024, mean daily lake stages were 56.8 feet NAVD88 (0.4 feet above schedule) in East Lake Toho, 53.3 feet NAVD88 (0.1 feet below schedule) in Lake Toho, and 51.0 feet NAVD88 (at 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 October 13, 2024, mean weekly discharge was 4,100 cfs and 4,900 cfs at S-65 and S-65A, respectively. Mean weekly discharge from the Kissimmee River was 2,400 cfs and 2,600 cfs at S-65D and S-65E, respectively (**Table KB-2**). Mean weekly headwater stages were 45.6 feet NAVD88 at S-65A and 26.8 feet NAVD88 at S-65D. Mean weekly river channel stage increased by 0.9 feet to 37.1 feet NAVD88 (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain increased by 0.44 feet to 1.71 feet (**Table KB-2, Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 0.9 mg/L the previous week to 1.3 mg/L (**Table KB-2, Figure KB-6**).

#### ***Water Management Recommendations***

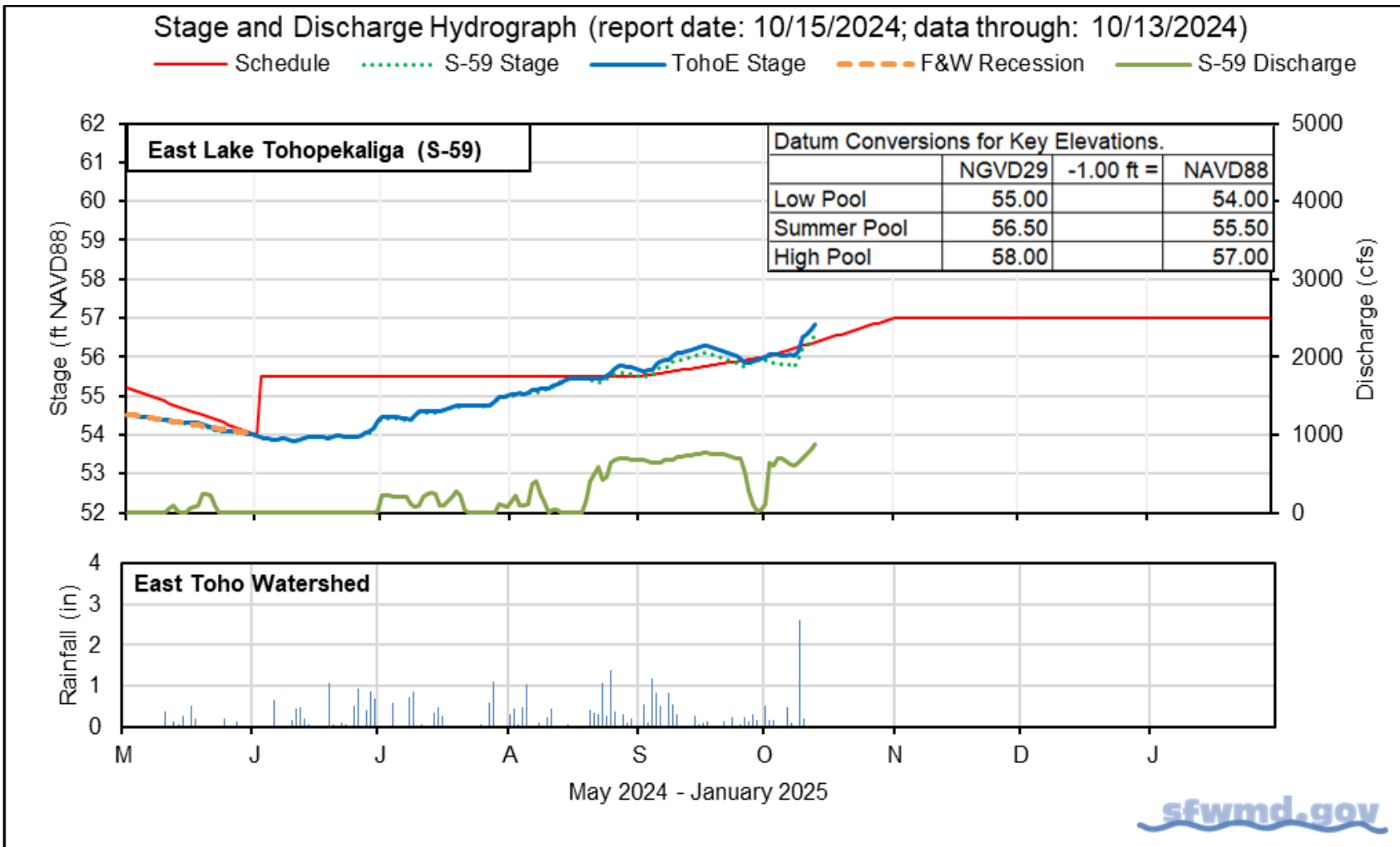
Follow the Headwaters Revitalization Schedule (HRS) Increment 1 Temporary Deviation Discharge Plan for S-65/S-65A (**Figure KB-7**). Maintain at least minimum flow (250-300 cfs) at S-65A.

**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.

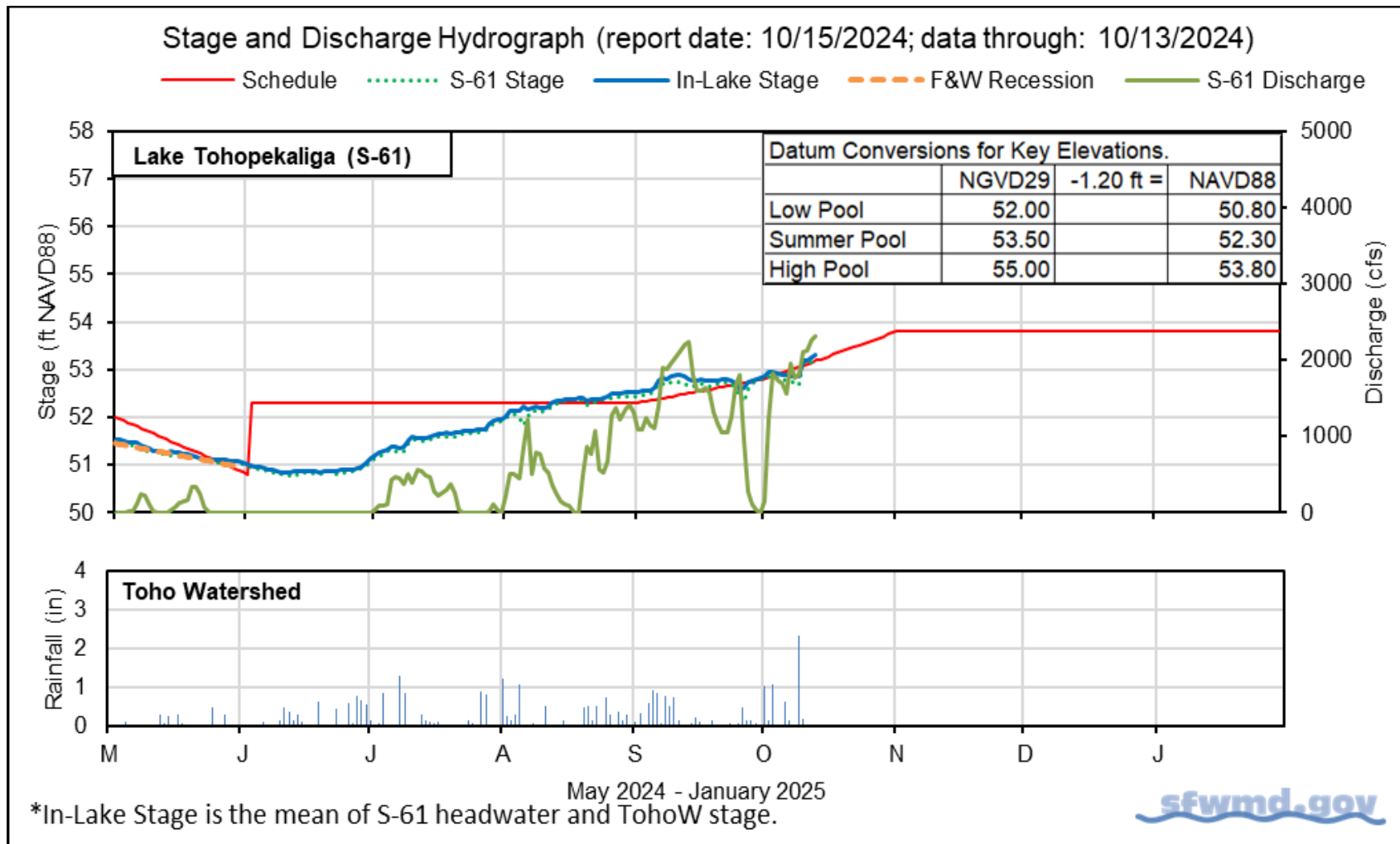
Water Body	Structure	Stage Monitoring Site	Weekly (7-Day) Average Discharge (cfs)	Sunday Lake Stage (feet NAVD88) <sup>a</sup>	Schedule Type <sup>b</sup>	Sunday Schedule Stage (feet NAVD88)	Sunday Departure from Regulation (feet)	
							10/13/24	10/6/24
Lakes Hart and Mary Jane	S-62	LKMJ	490	60.2	R	59.3	0.9	-0.2
Lakes Myrtle, Preston and Joel	S-57	S-57	140	61.8	R	60.4	1.4	-0.3
Alligator Chain	S-60	ALLI	430	62.2	R	62.5	-0.3	-0.7
Lake Gentry	S-63	LKGT	460	60.0	R	60.1	-0.1	-0.3
East Lake Toho	S-59	TOHOE	710	56.8	R	56.4	0.4	-0.1
Lake Toho	S-61	TOHOW S-61	2000	53.3	R	53.2	0.1	-0.1
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	4100	51.0	T	51.0	0.0	-0.2

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

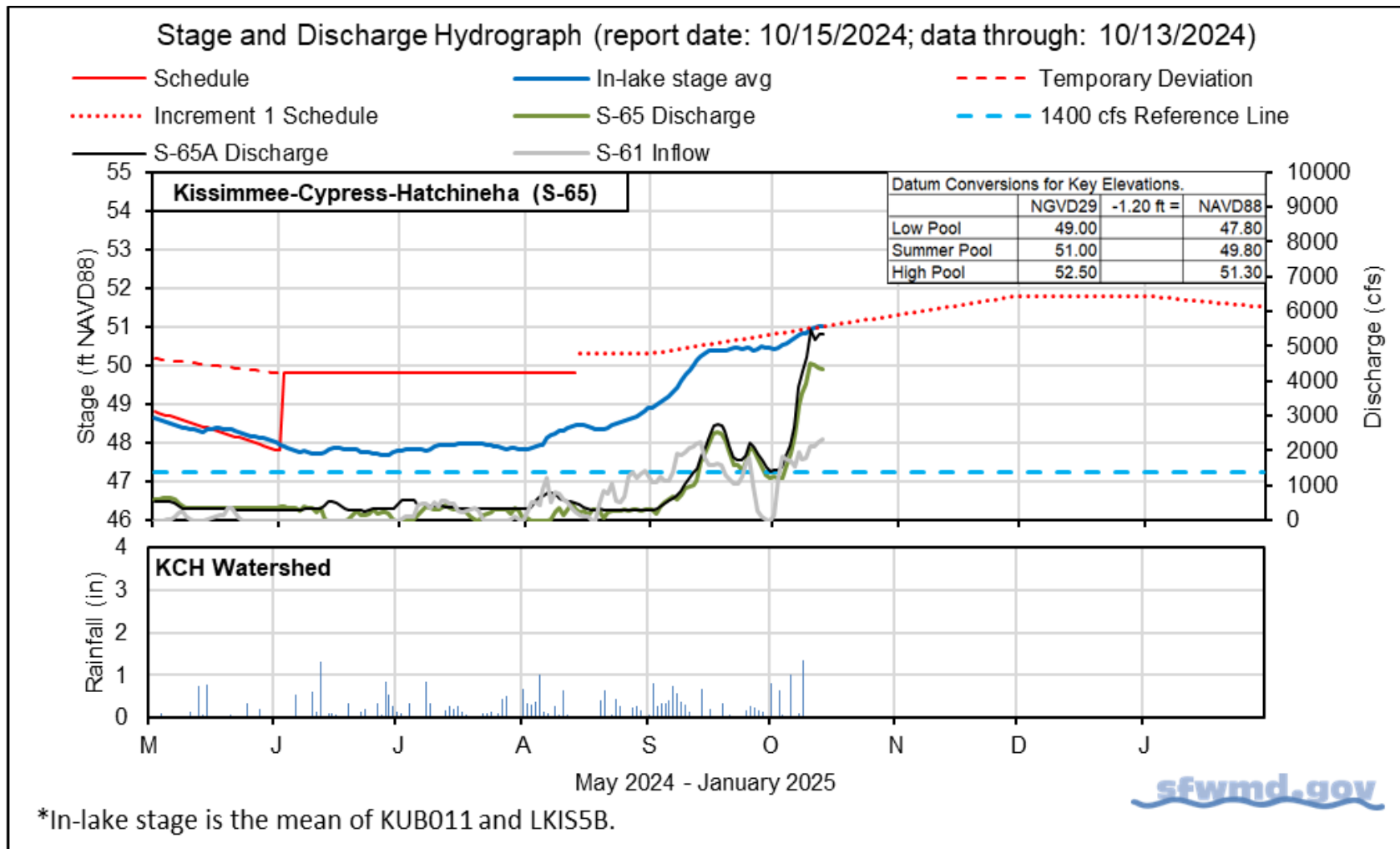
b. A: projected recession line; R: USACE regulation schedule; S: temporary recession target line; T: temporary schedule; NA: not applicable or not available.



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



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



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

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

Metric	Location	Sunday Daily Average	Weekly Average for Previous Seven Day Periods			
		10/13/24	10/13/24	10/6/24	9/29/24	9/22/24
Discharge	S-65	4,300	4,100	1,500	1,700	2,100
Discharge	S-65A <sup>a</sup>	5,300	4,900	1,800	1,900	2,400
Headwater Stage (feet NAVD88)	S-65A	46.3	45.6	44.9	45.0	45.2
Discharge	S-65D <sup>b</sup>	3,000	2,400	2,300	2,100	1,800
Headwater Stage (feet NAVD88)	S-65D <sup>c</sup>	26.9	26.8	26.3	26.1	25.9
Discharge (cfs)	S-65E <sup>d</sup>	3,100	2,600	2,400	2,200	1,800
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) <sup>e</sup>	Phase I, II/III river channel	0.6	1.3	0.9	0.5	0.8
River channel mean stage (feet NAVD88) <sup>f</sup>	Phase I river channel	38.0	37.1	36.2	36.4	36.2
Mean depth (feet) <sup>g</sup>	Phase I floodplain	2.12	1.71	1.27	1.36	1.21

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.

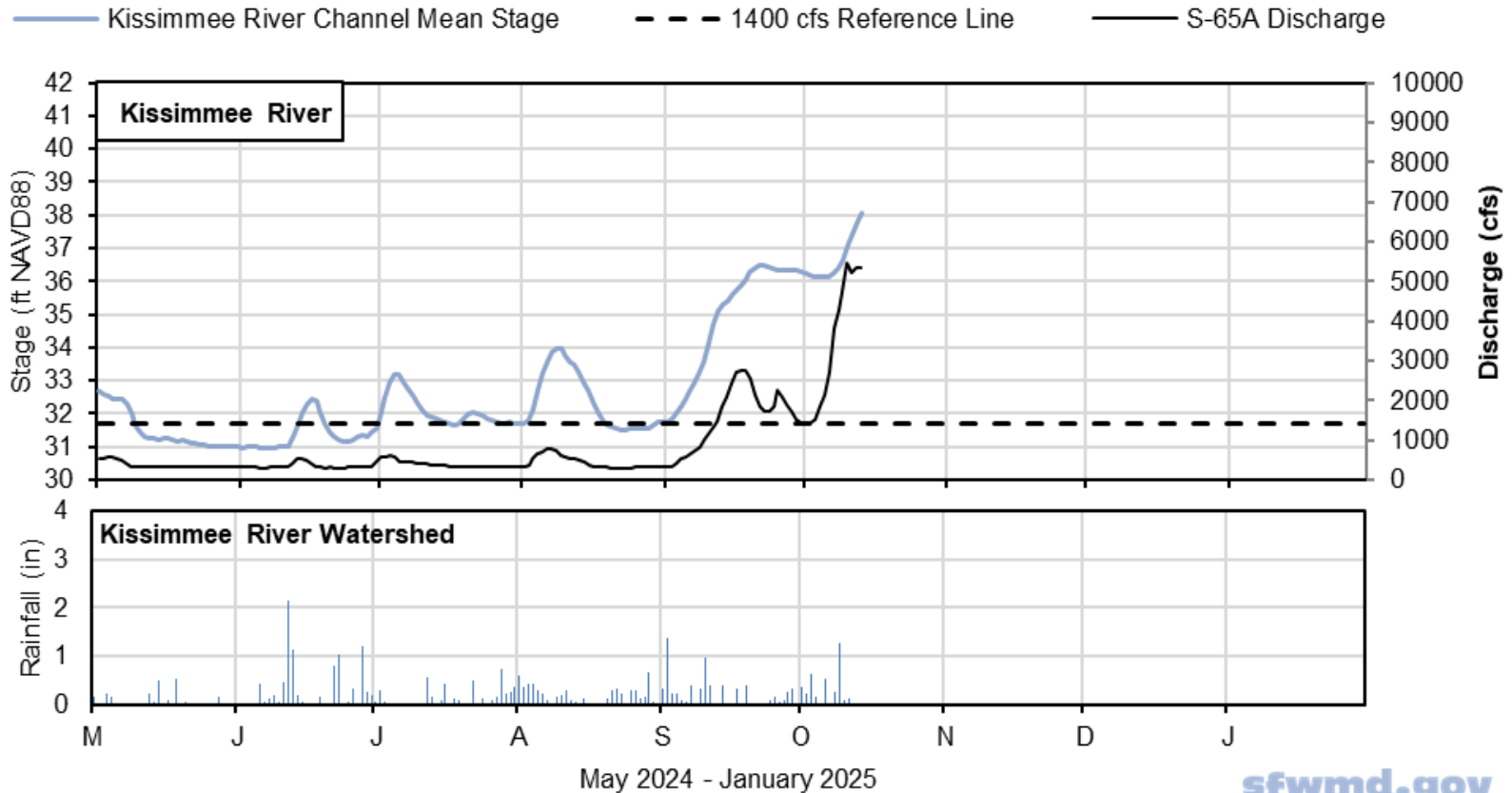
e. Dissolved oxygen is the average of values from sondes KRBN, PC62, PC33, PD62R, and PD42R.

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).



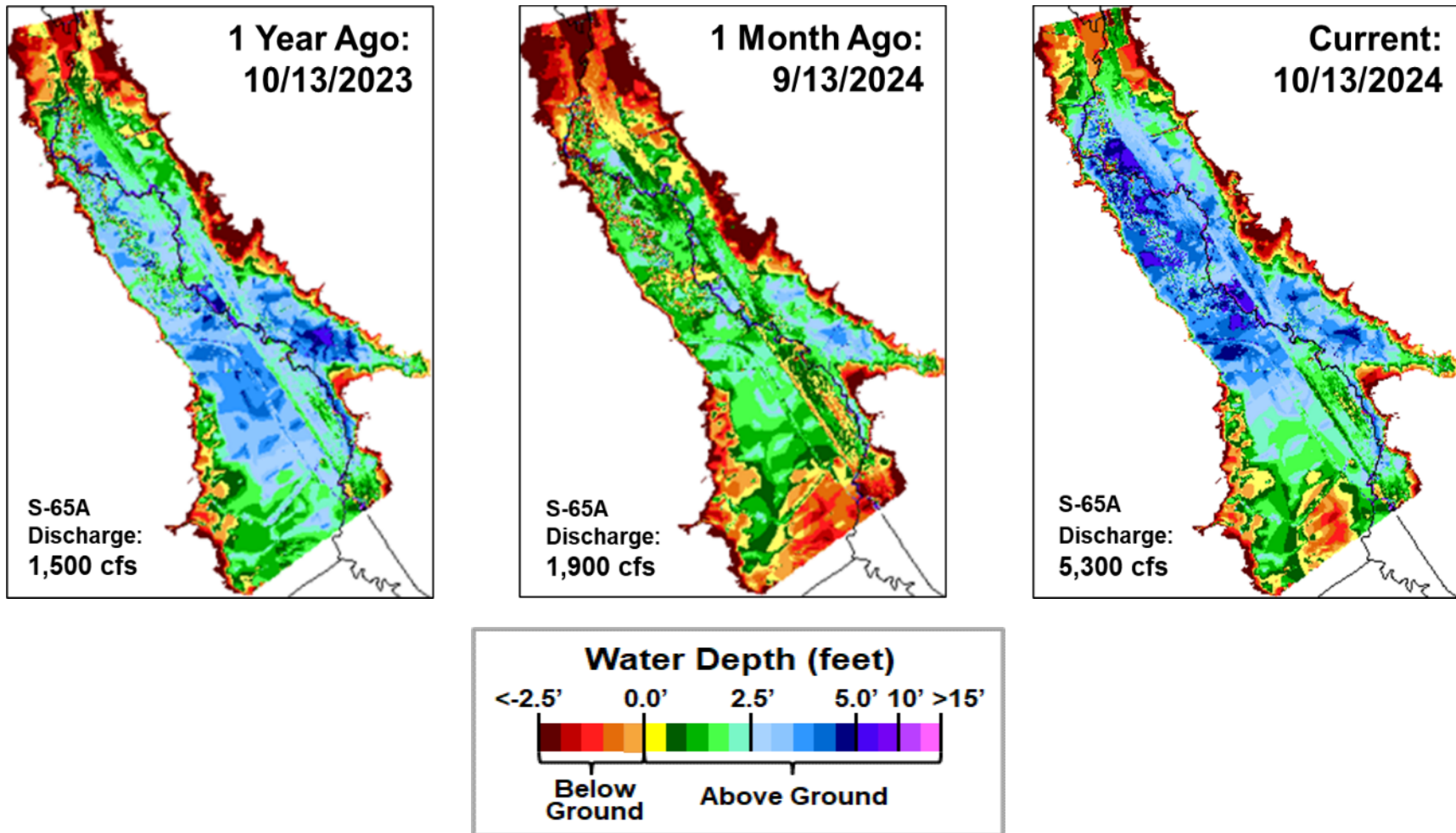
Stage and Discharge Hydrograph (report date: 10/15/2024; data through: 10/13/2024)



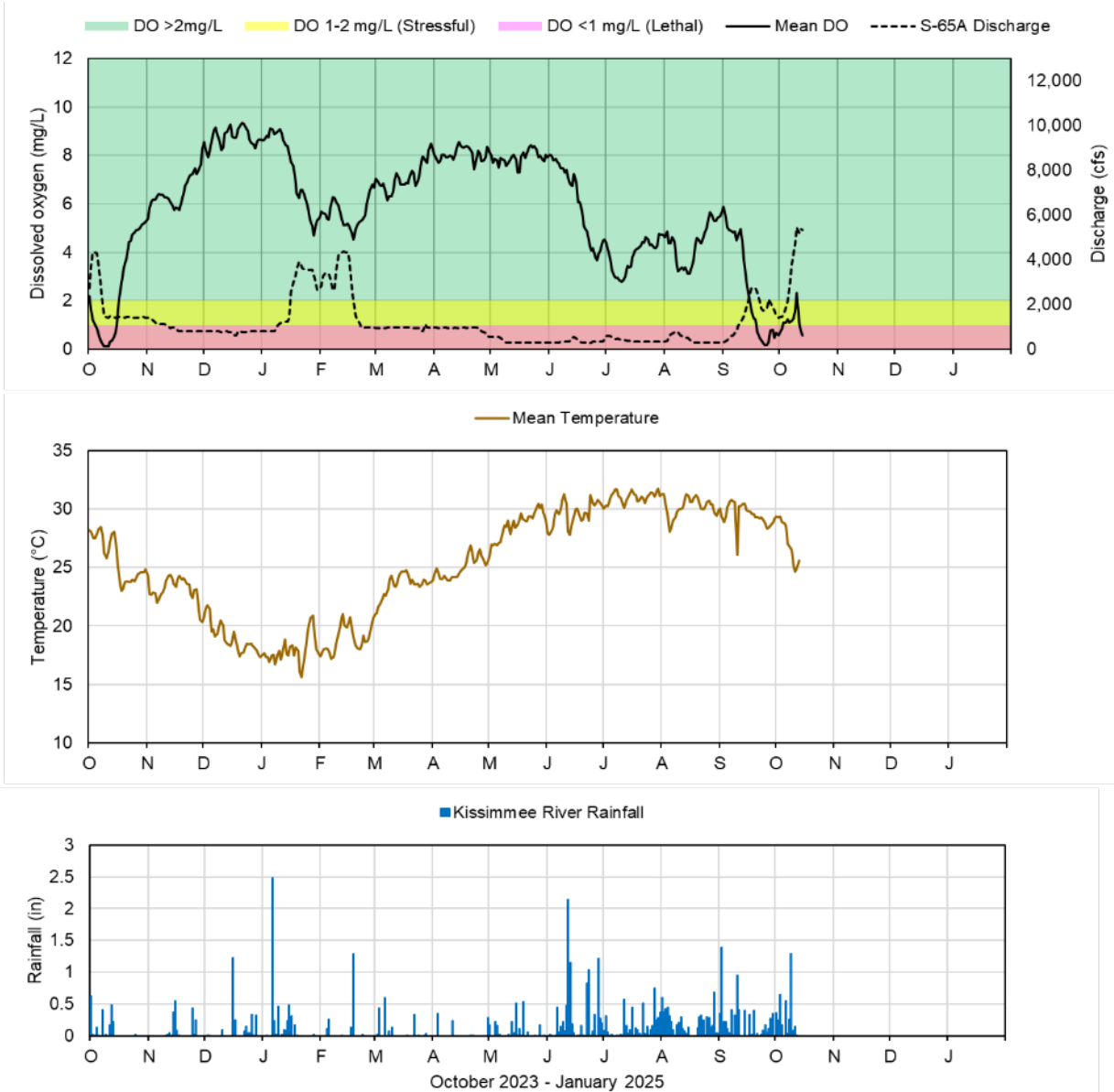
\*River Channel Stage is the average for PC62, KRDR02, KRBN, PC33, and PC11.



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.



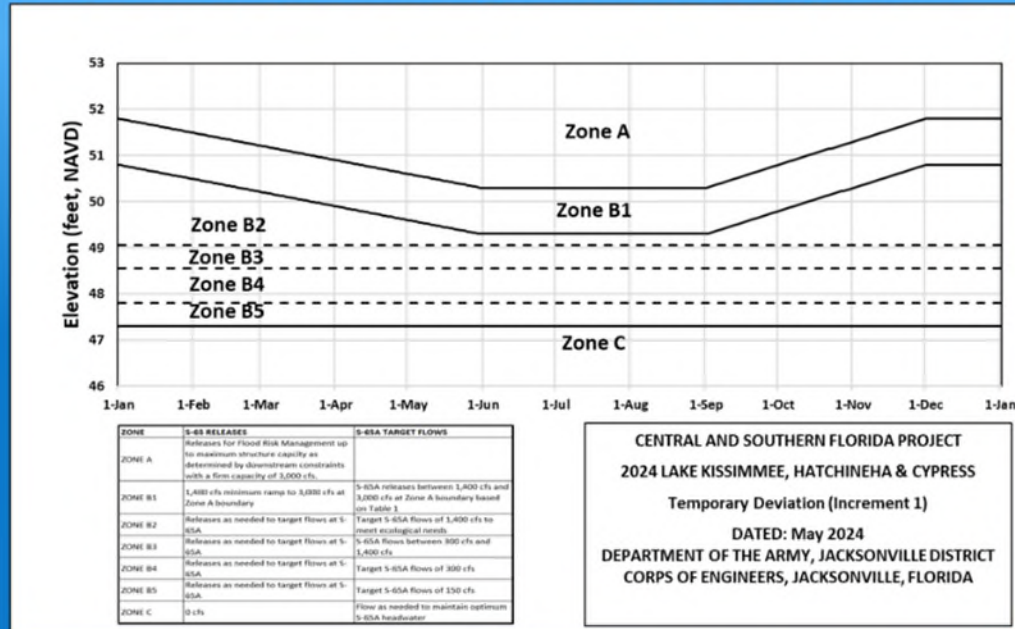
Report Date: 10/15/2024; data are through: 10/13/2024



**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.

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

Discharge Guidance for Increment 1 Temporary Deviation Discharge Plan		
ZONE	S-65 RELEASES	S-65A TARGET FLOWS
ZONE A	Releases for Flood Risk Management up to maximum structure capacity 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 Change 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

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.

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

## Lake Okeechobee

Lake Okeechobee stage was 14.65 feet NAVD88 (15.96 ft NGVD29) on October 13, 2024, which was 0.46 feet higher than the previous week and 1.13 feet higher than a month ago (**Figure LO-1**). Lake stage is in Zone D of the regulation schedule (**Figure LO-2**) and was 0.99 feet above the upper limit of the recovery ecological envelope (**Figure LO-3**). According to NEXRAD, 0.97 inches of rain fell directly over the Lake last week.

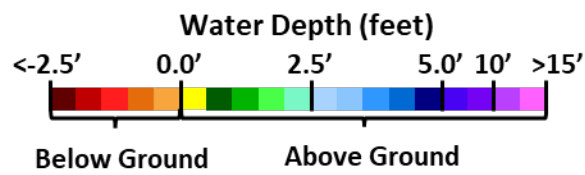
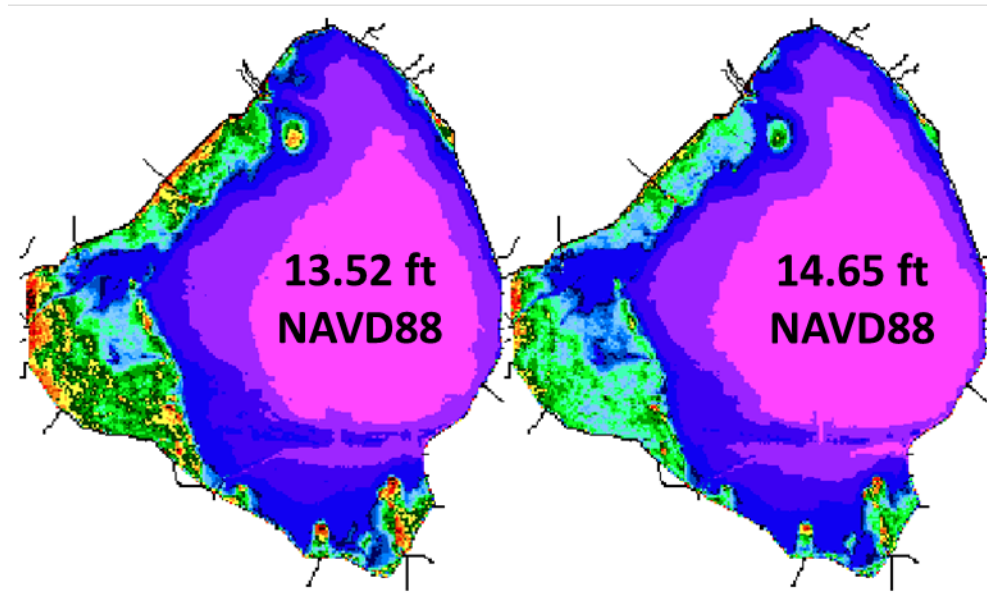
Average daily inflows (excluding rainfall) increased from 6,440 cfs the previous week, to 9,320 cfs. The largest single inflow came from the Kissimmee River via the S-65E structure (2,610 cfs) followed by Fisheating Creek (2,200 cfs) and the C-41A Canal (1,500 cfs via S-84/84X). For the sixth week in a row, average daily outflows (excluding evapotranspiration) were zero, as no water was released from the Lake. **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.

There are no recent usable images since the non-obscured satellite image from October 3, 2024, NOAA's Harmful Algal Bloom Monitoring System (**Figure LO-6**).

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

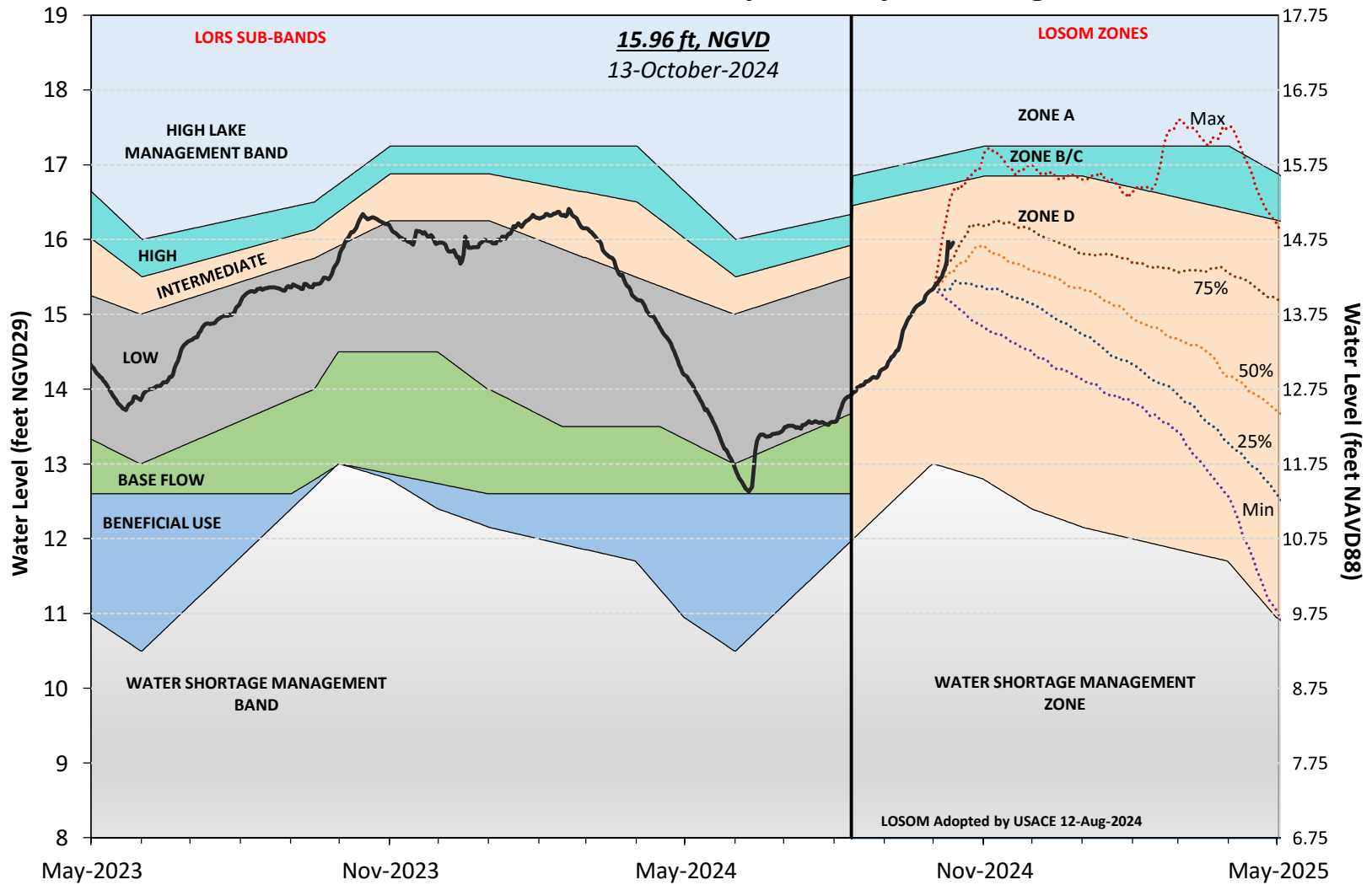
1 Month Ago:  
09/13/2024

Current:  
10/13/2024



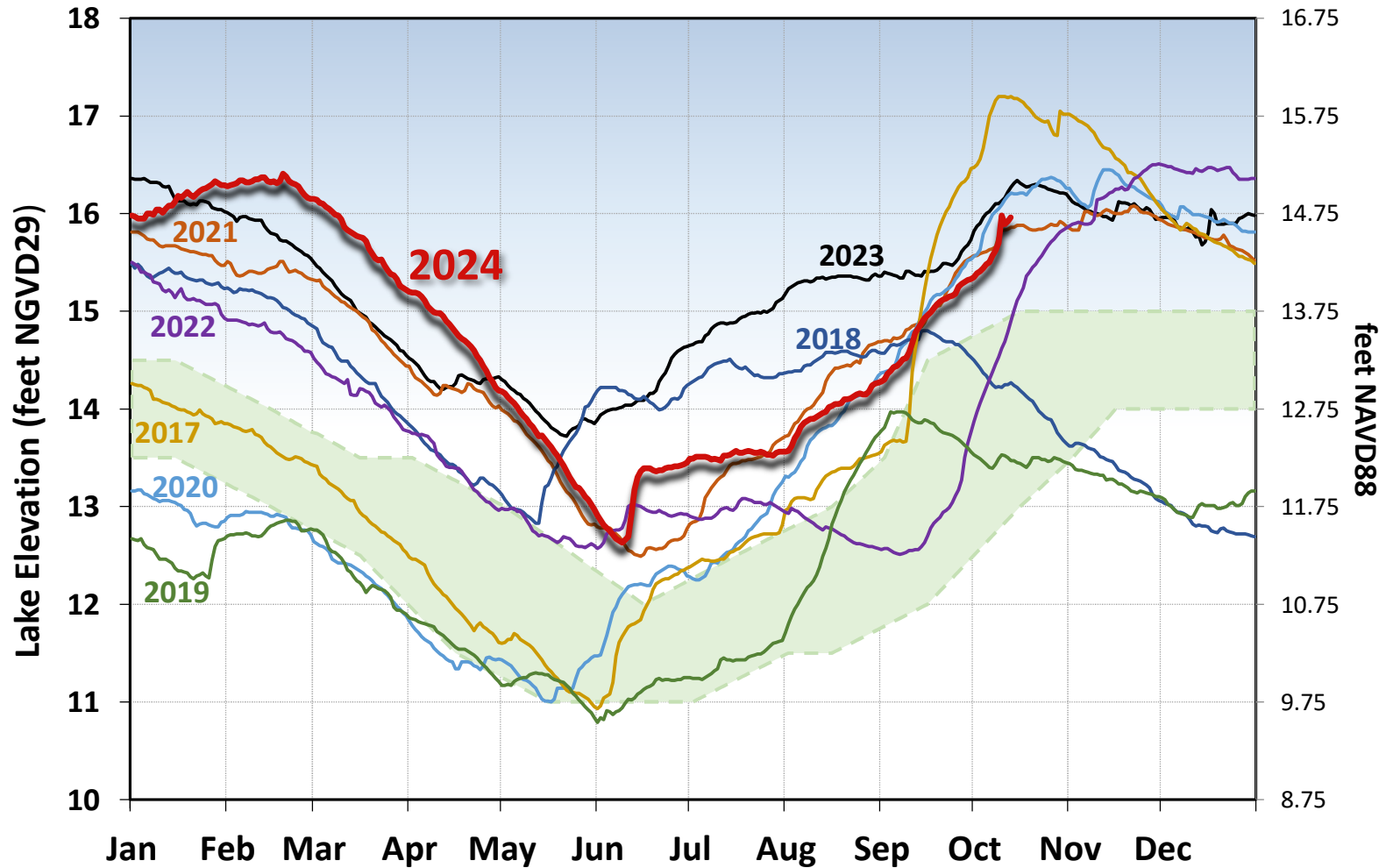
**Figure LO-1.** Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

## Lake Okeechobee Water Level History and Projected Stages



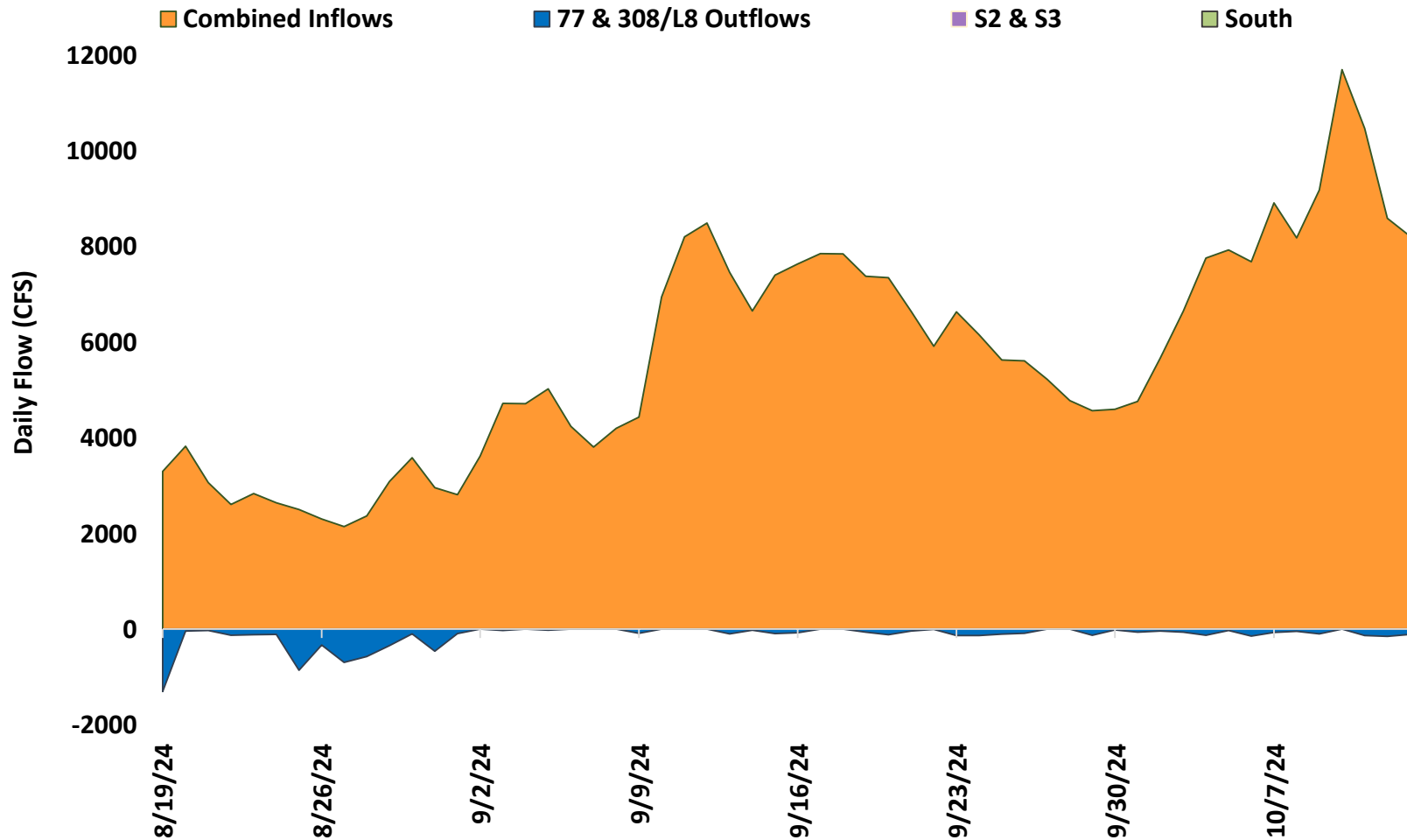
**Figure LO-2.** Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis. Note: stages are in NGVD29, approximate NAVD88 values are shown for reference.

## Lake Okeechobee Stage vs Recovery Ecological Envelope

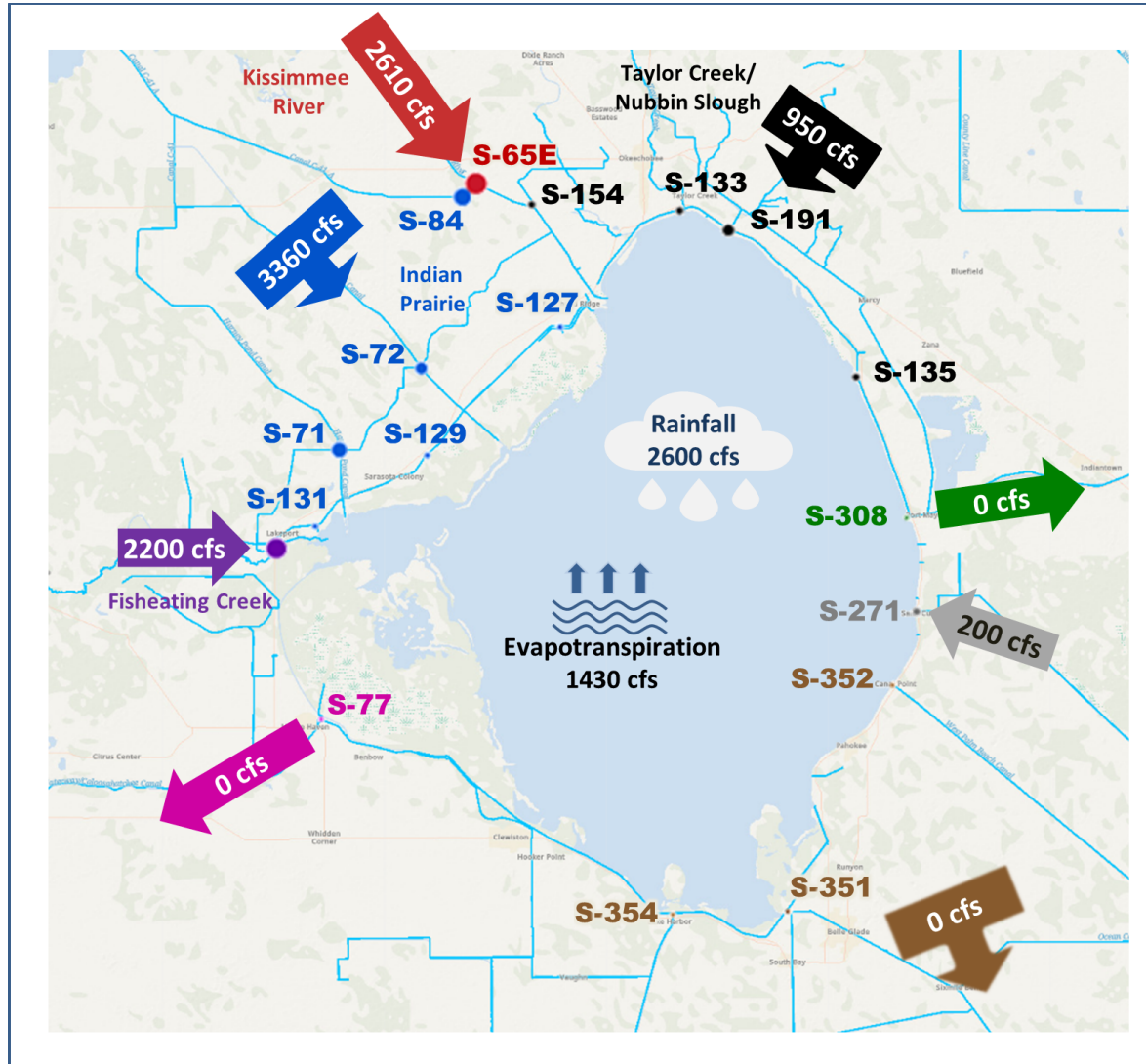


**Figure LO-3.** The current and seven prior year's annual stage hydrographs for Lake Okeechobee in comparison to the recovery envelope (light green). A shift from the normal ecological envelope to the recovery envelope occurred because the 30-day minimum lake stage (elevations exposed for at least 30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

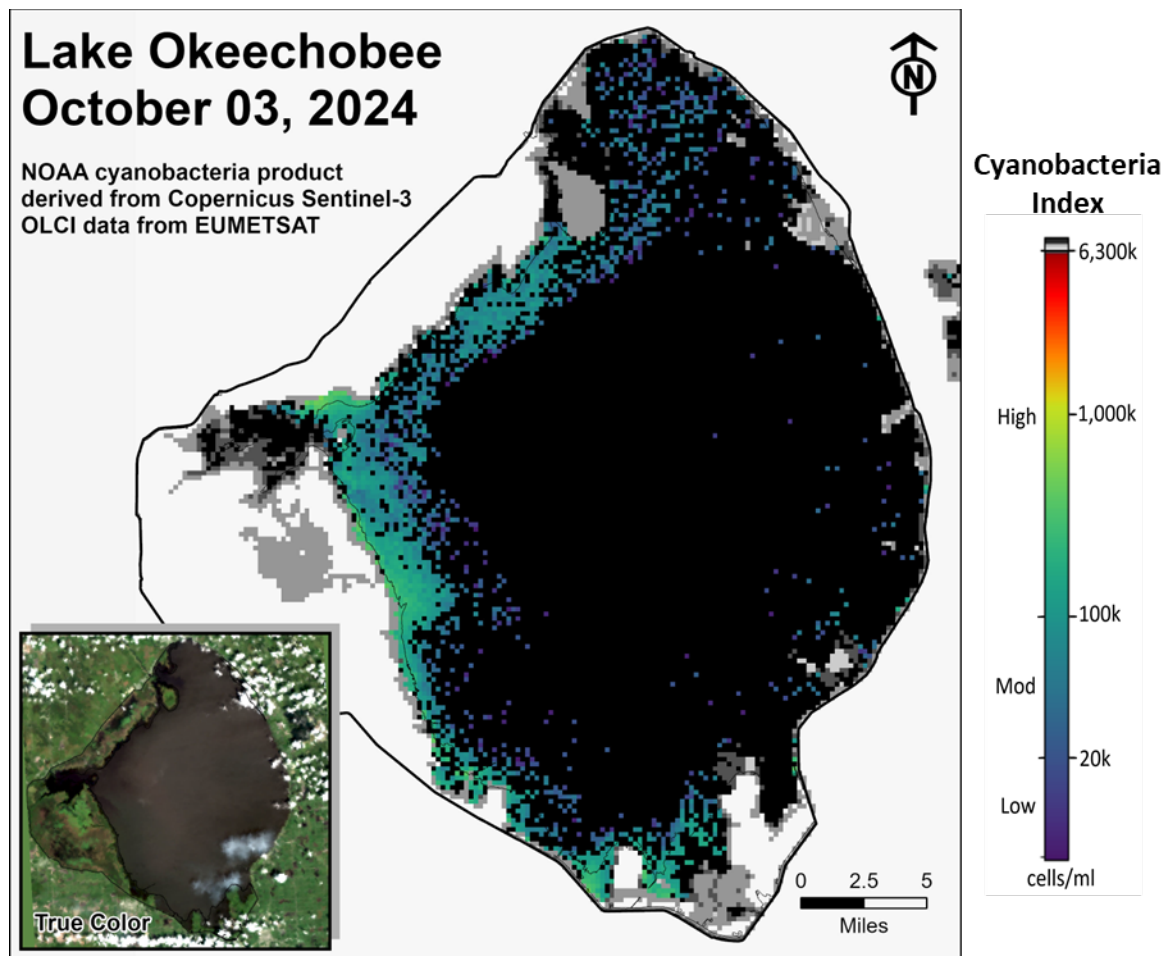




**Figure LO-4.** Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows 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 October 7 –13, 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 5,886 cfs (**Figures ES-1 and ES-2**), and the previous 30-day mean inflow was 3,730 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, salinities decreased at all sites within 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 1.9. Salinity conditions in the middle estuary were estimated to be within the damaging range for adult eastern oysters (**Figure ES-4**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute (FWRI) was 0.2 spat/shell for September, which was slightly lower than the previous month (**Figure ES-5**).

### *Caloosahatchee River Estuary*

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 7,709 cfs (**Figures ES-6 and ES-7**), and the previous 30-day mean inflow was 6,639 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, salinities remained below 1 at S-79, Val I-75, and Fort Myers and increased at Shell Point (**Table ES-2 and Figures ES-8 and ES-9**). Fort Myers and Shell Point stations only had data available through October 9, 2024 and stopped recording likely from Hurricane Milton passing through. Cape Coral and Sanibel stations continue to be offline the past week from Hurricane Helene. 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 Shell Point (**Figure ES-10**). The mean larval oyster recruitment rate reported by the FWRI was 14.3 spat/shell at Iona Cove and 70.3 spat/shell at Bird Island for September, which is an increase at both sites from 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<sup>1</sup>) 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 913 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.

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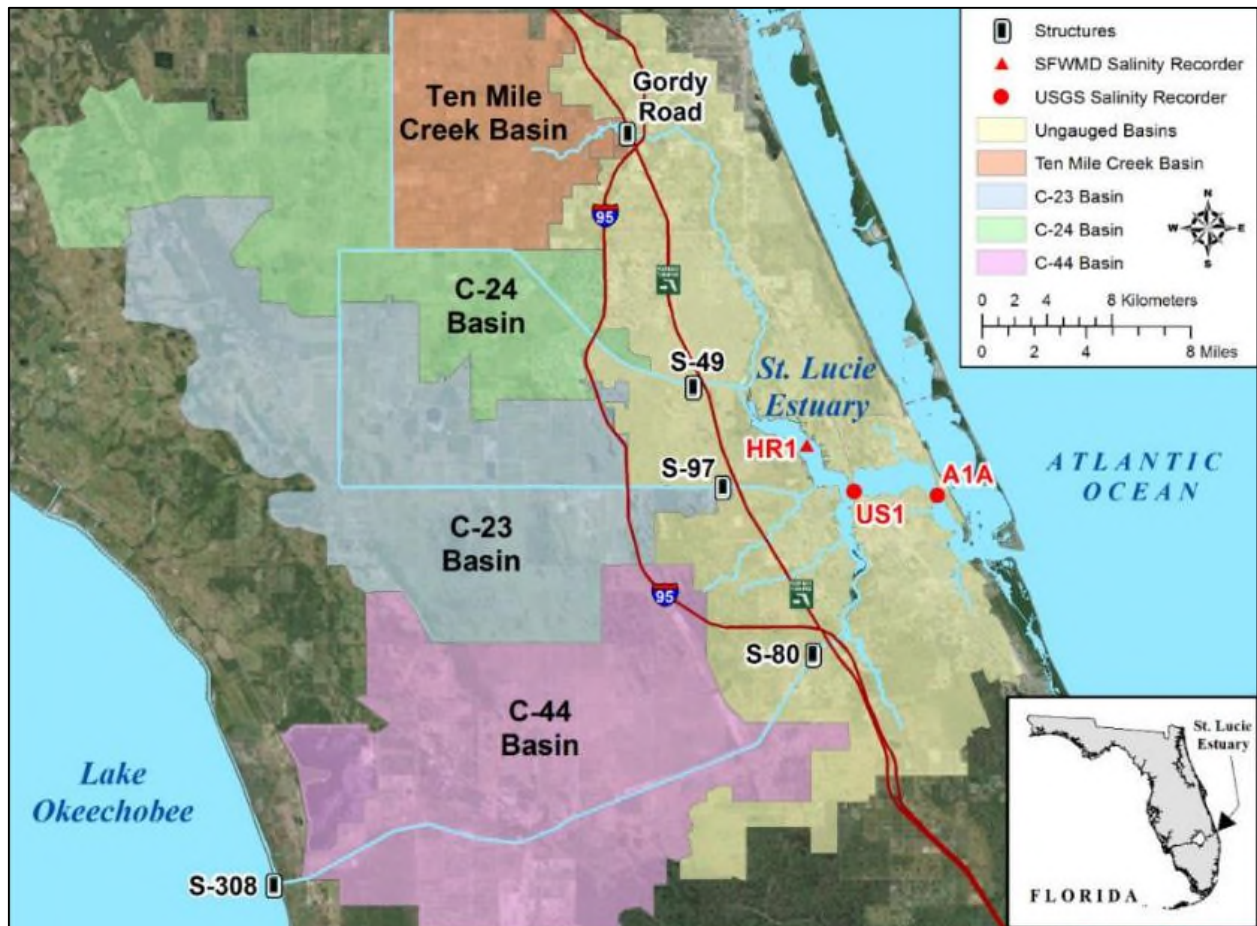
<sup>1</sup> Qui, C., and Y. Wan. 2013. Time series modeling and prediction of salinity in the Caloosahatchee River Estuary. *Water Resources Research* 49:5804-5816.

## Red Tide

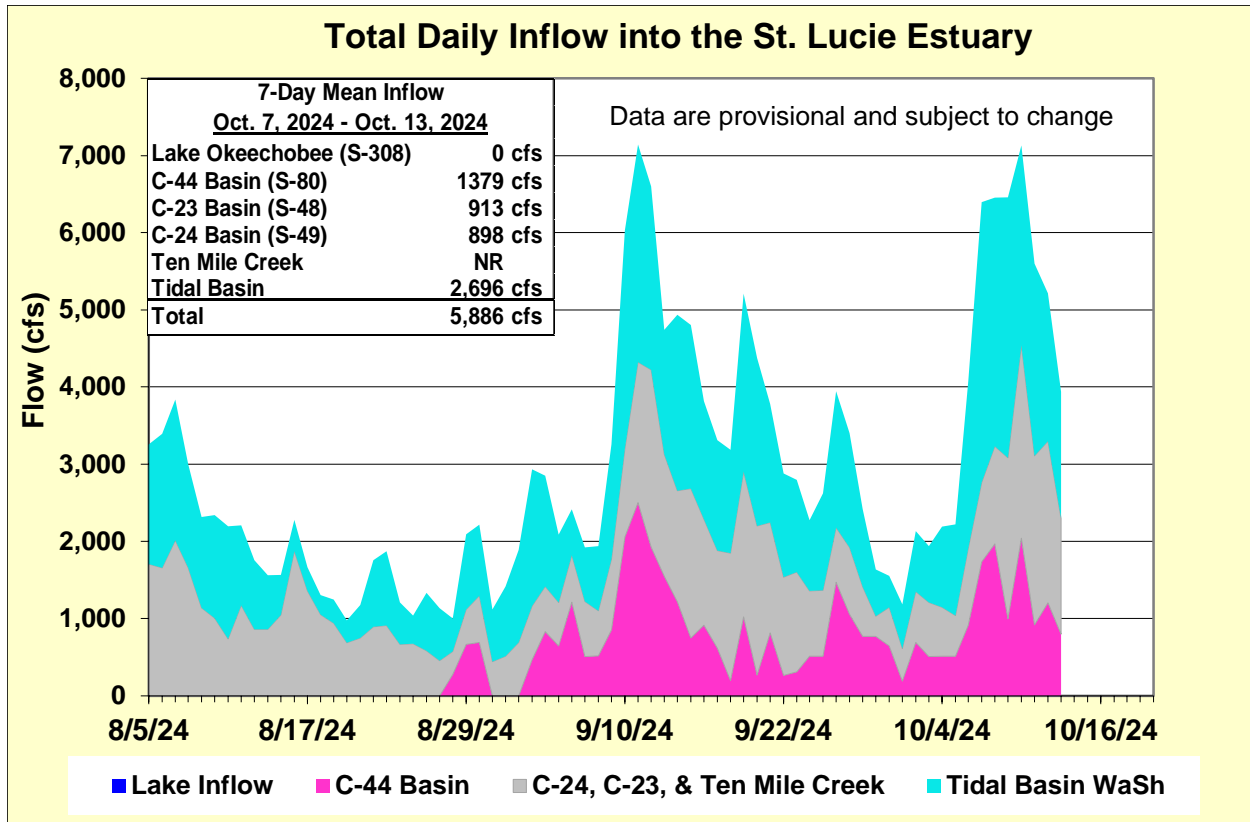
The FWRI reported on October 4, 2024, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed at bloom concentrations in samples collected within the District region over the past week.

## 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.



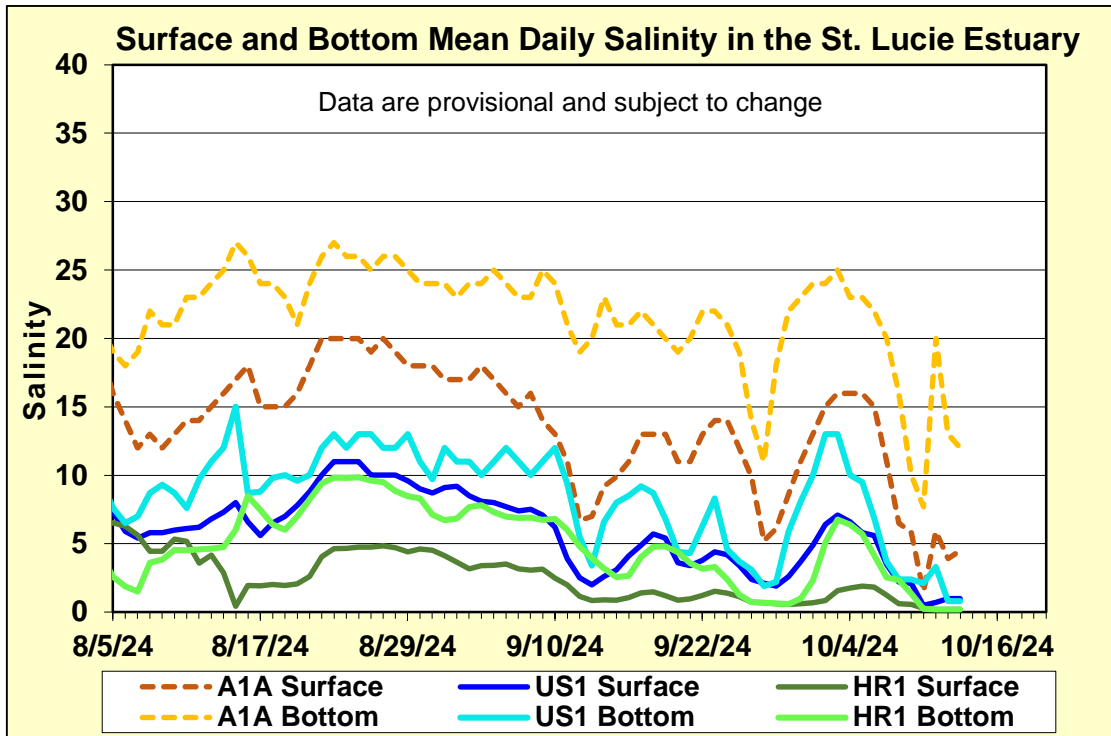
**Figure ES-1.** Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.



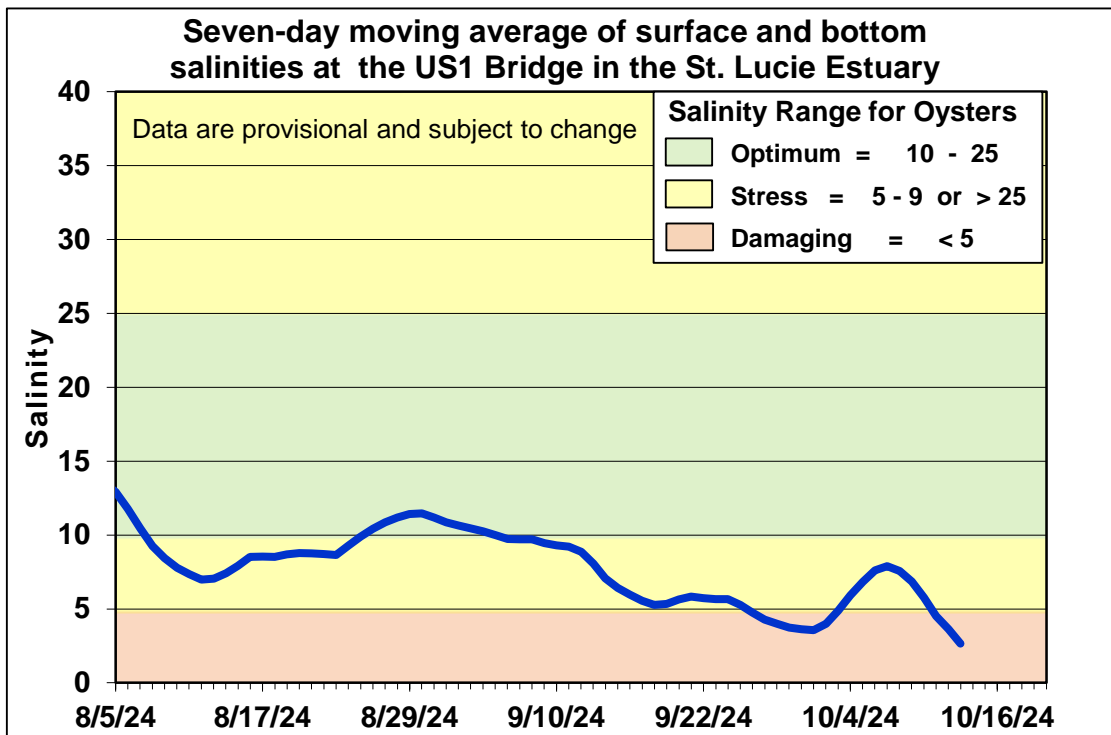
**Figure ES-2.** Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

**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.

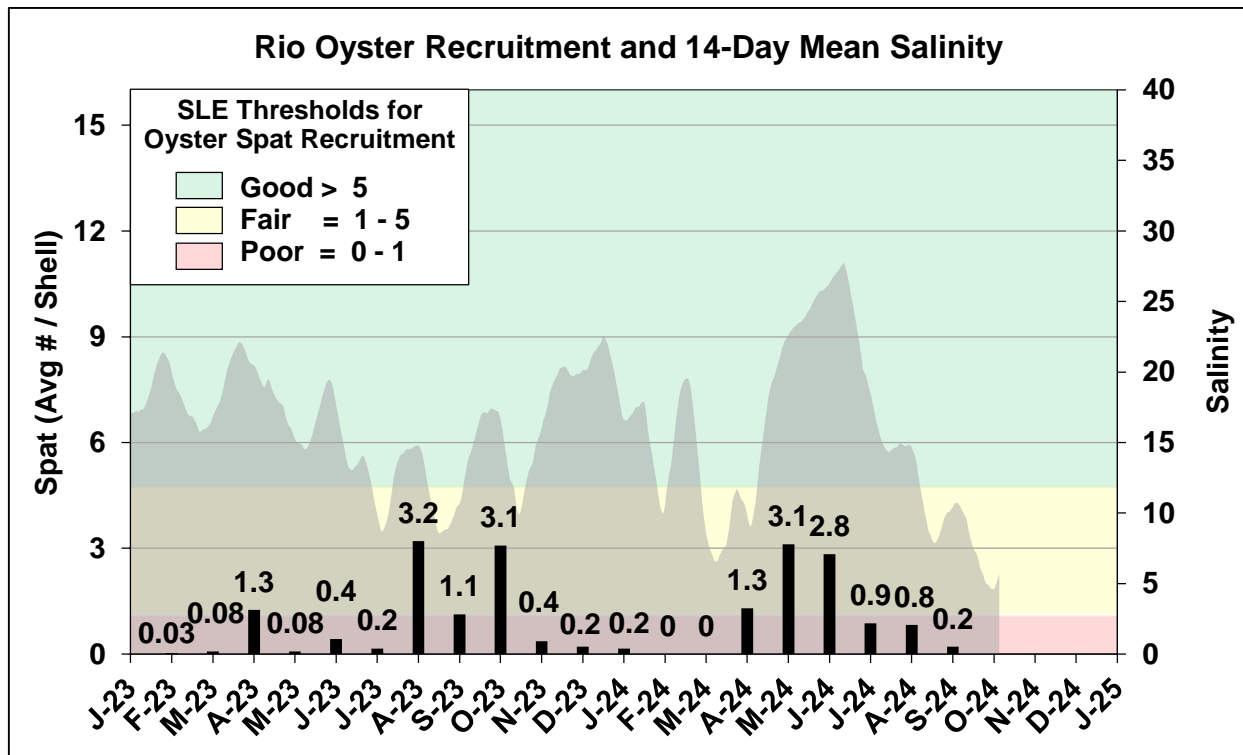
Sampling Site	Surface	Bottom	Optimum Envelope
HR1 (North Fork)	<b>0.5</b> (1.3)	<b>1.0</b> (4.5)	10.0 – 25.0
US1 Bridge	<b>1.6</b> (5.7)	<b>2.2</b> (10.1)	10.0 – 25.0
A1A Bridge	<b>5.6</b> (14.6)	<b>14.1</b> (23.4)	10.0 – 25.0



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

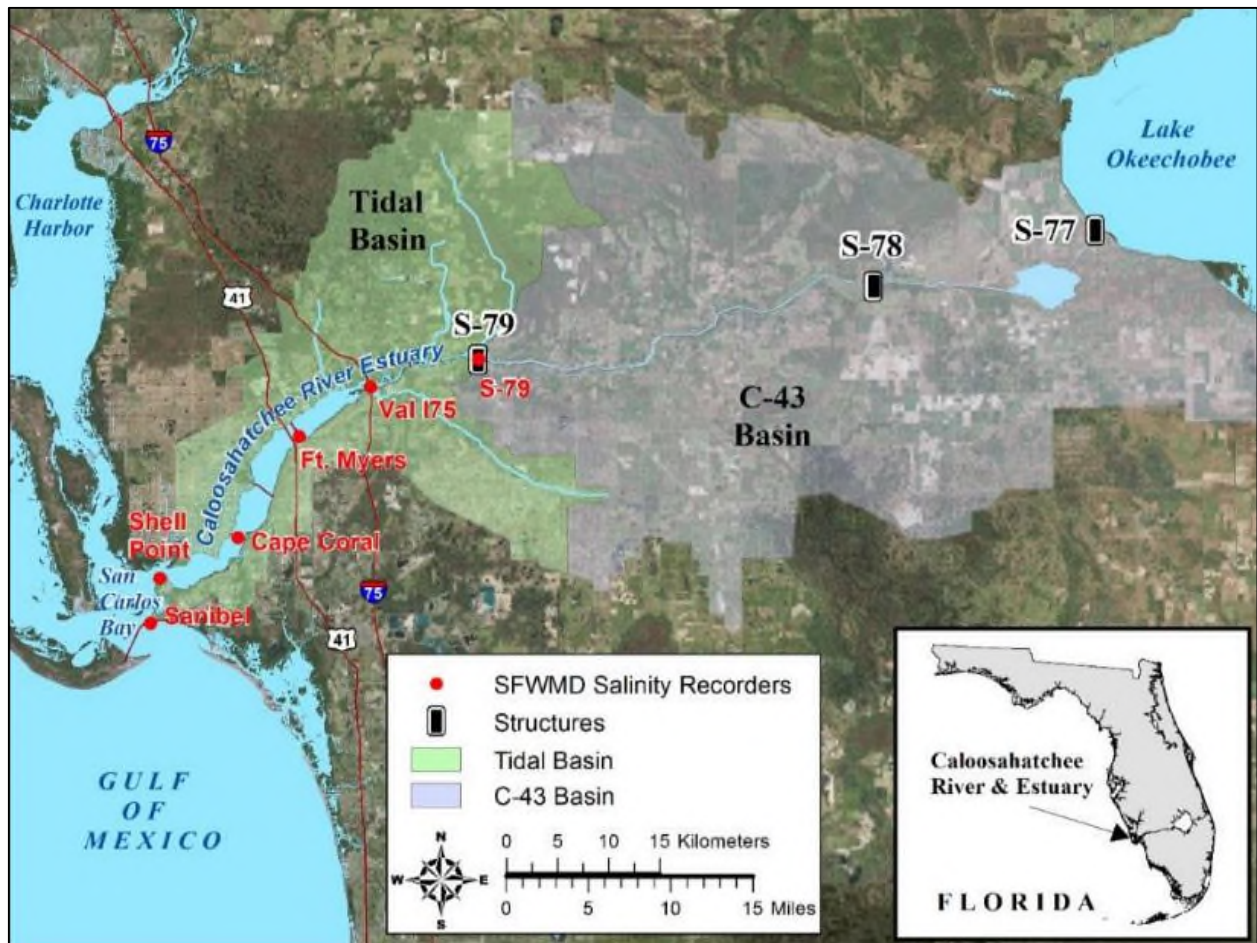


**Figure ES-4.** Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

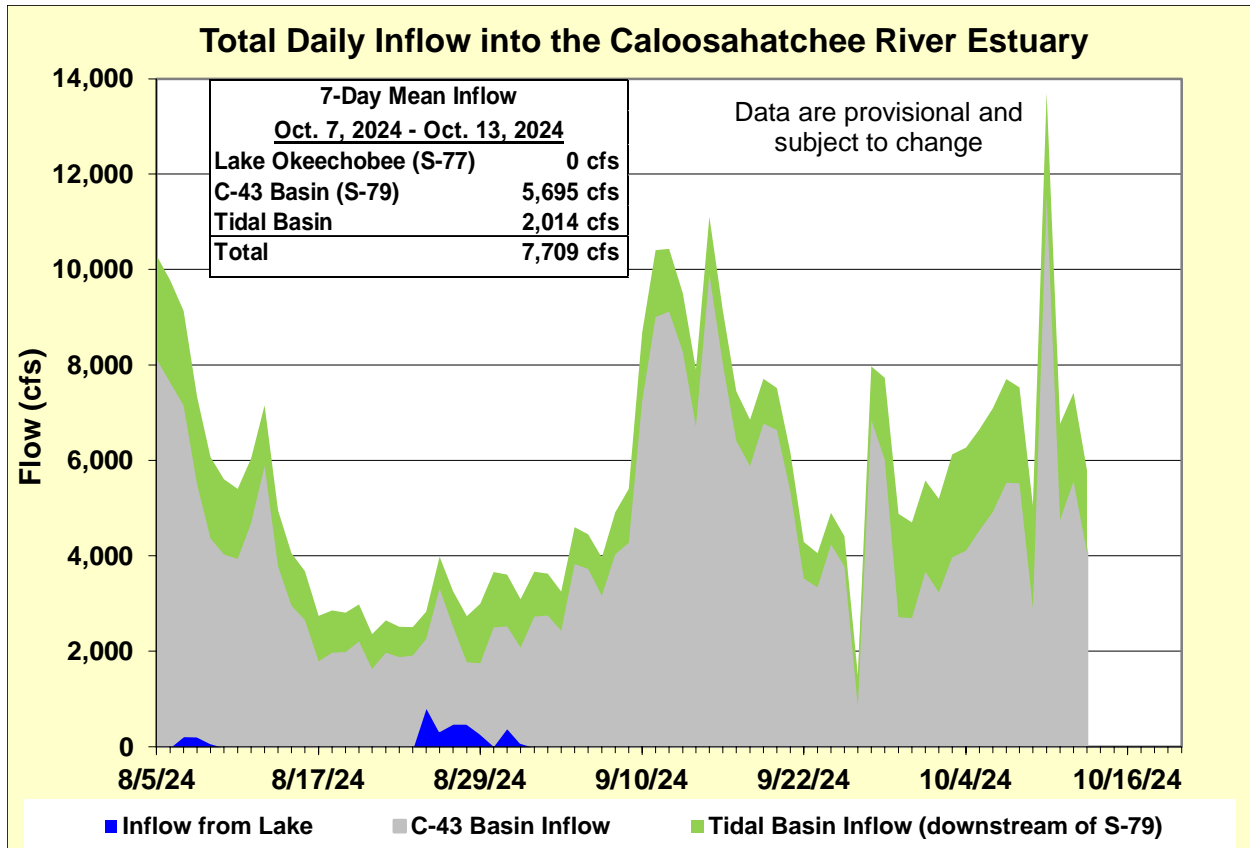


**Figure ES-5.** Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.





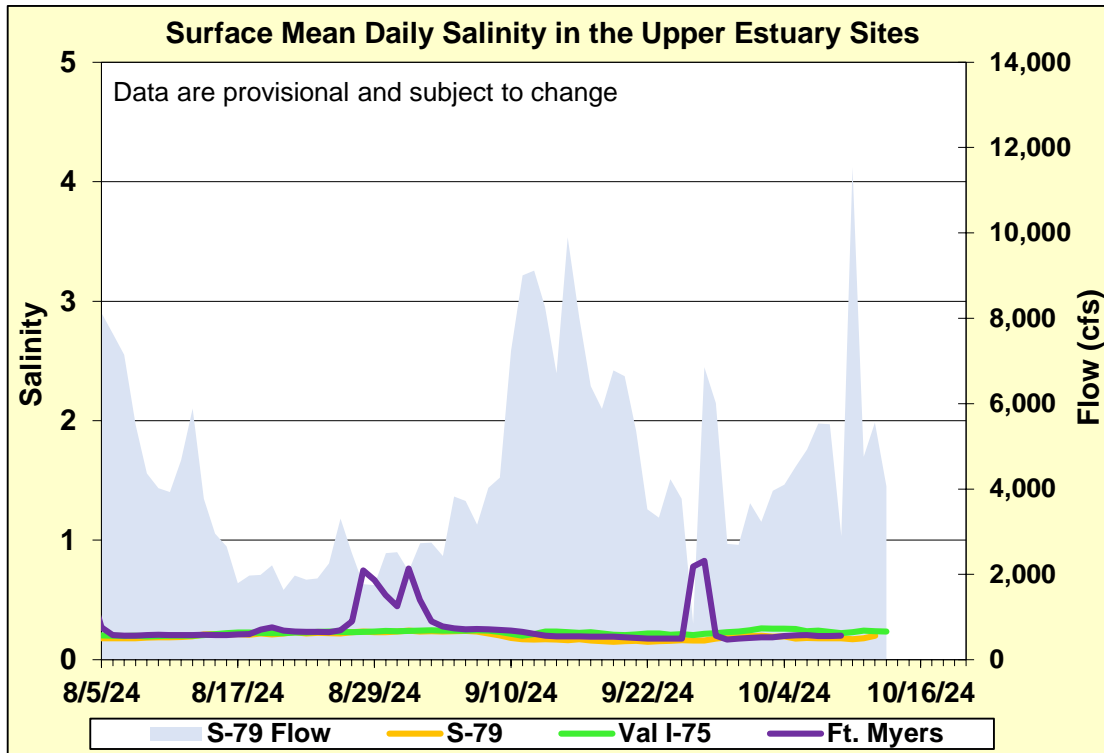
**Figure ES-6.** Basins, water control structures, and salinity monitoring sites in the Caloosahatchee River Estuary.



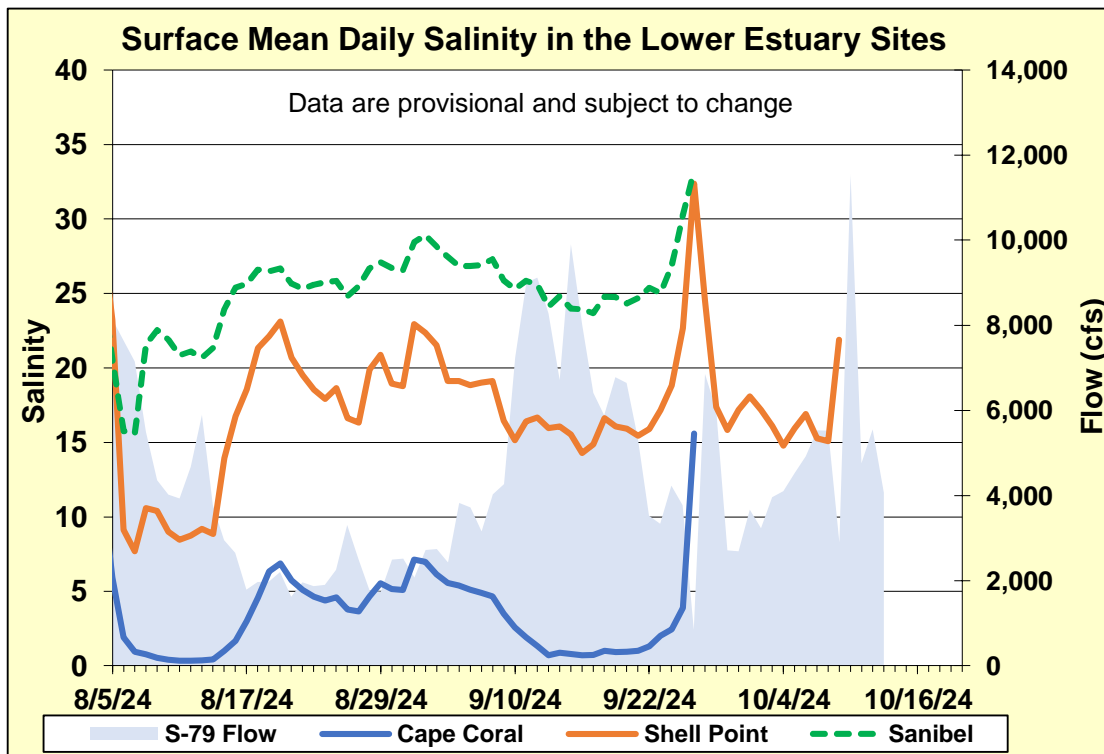
**Figure ES-7.** Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

**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.

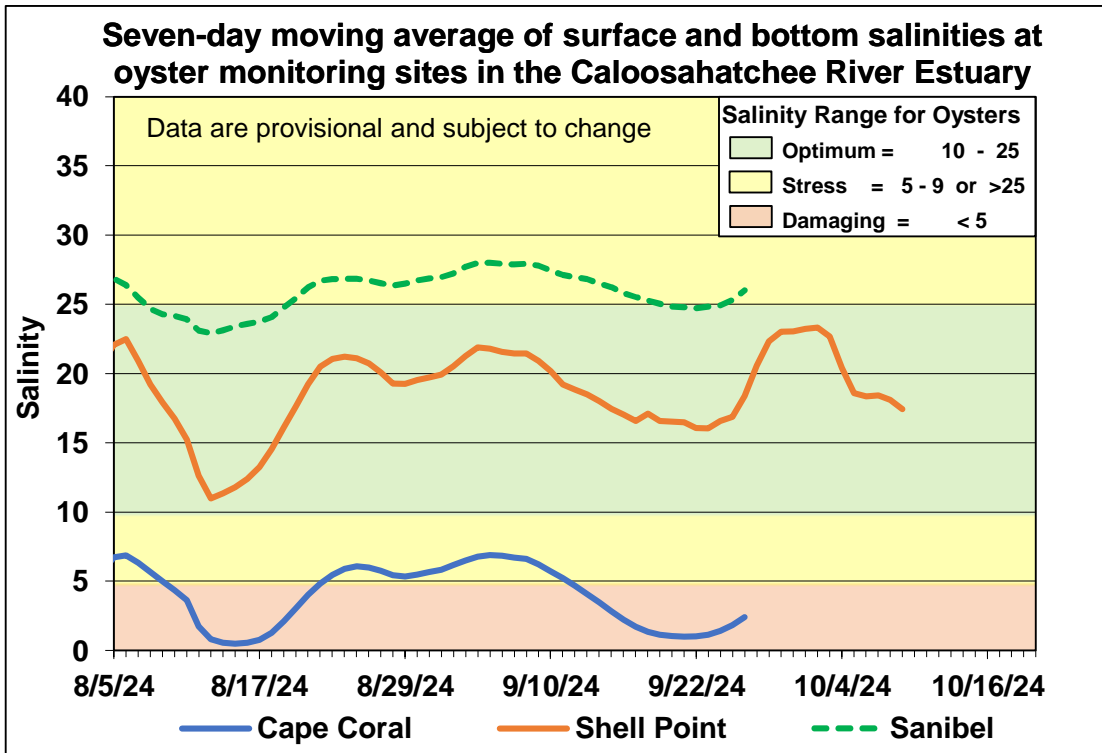
Sampling Site	Surface	Bottom	Optimum Envelope
S-79 (Franklin Lock)	<b>0.2</b> (0.2)	<b>0.2</b> (0.2)	0.0 – 10.0
Val I-75	<b>0.2</b> (0.3)	<b>0.2</b> (0.2)	0.0 – 10.0
Fort Myers Yacht Basin	<b>0.2</b> (0.2)	<b>0.2</b> (0.2)	0.0 – 10.0
Cape Coral	<b>NR</b> (NR)	<b>NR</b> (NR)	10.0 – 25.0
Shell Point	<b>17.4</b> (16.6)	<b>22.0</b> (20.2)	10.0 – 25.0
Sanibel	<b>NR</b> (NR)	<b>NR</b> (NR)	10.0 – 25.0



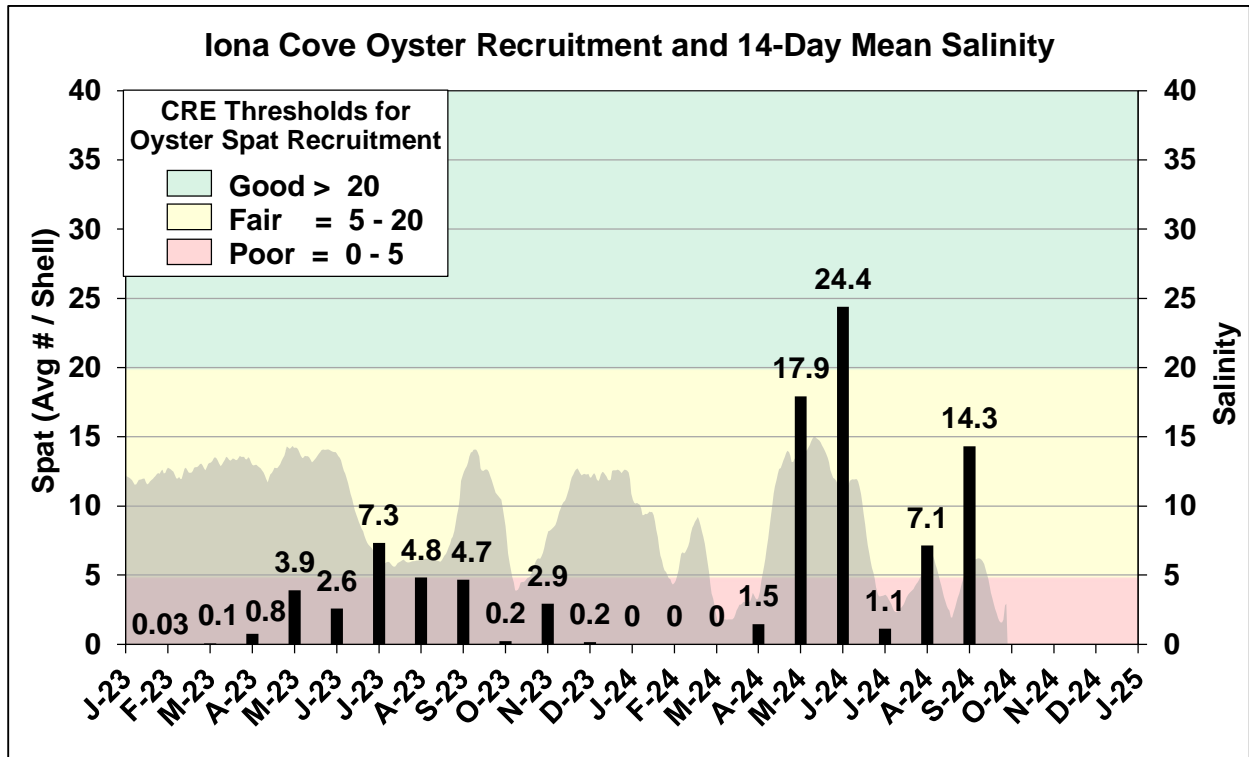
**Figure ES-8.** Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.



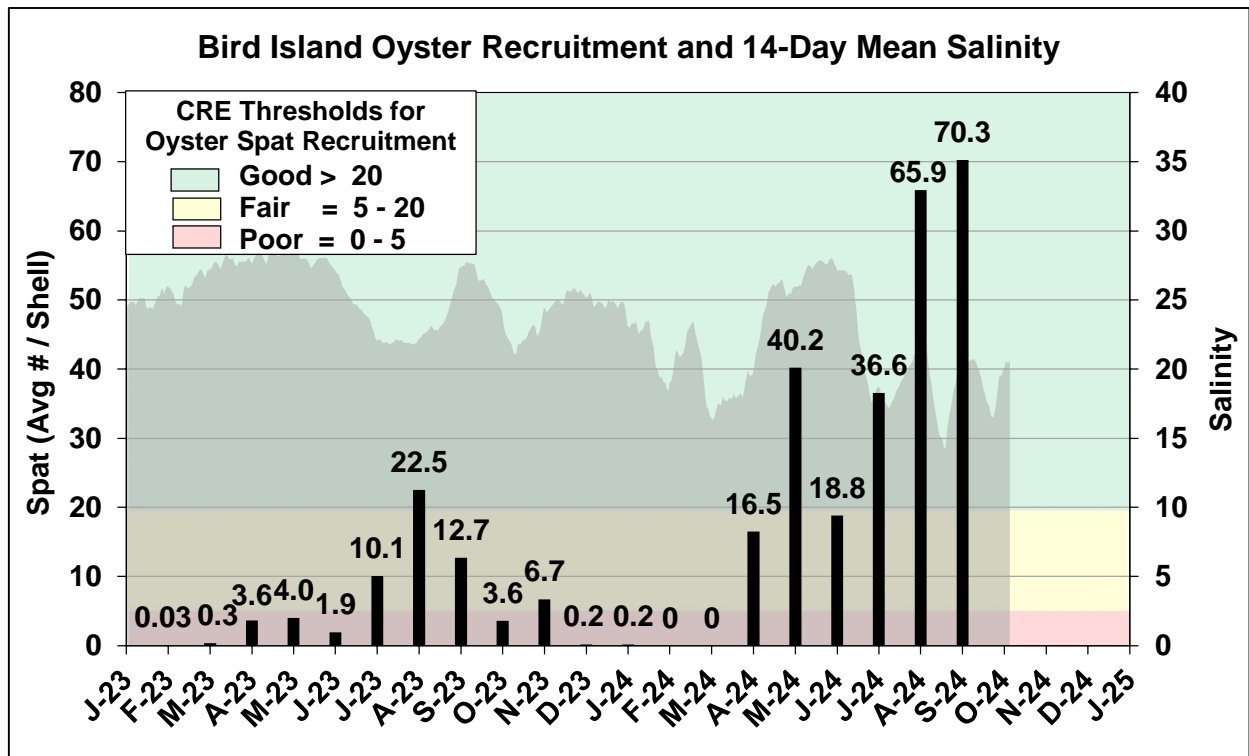
**Figure ES-9.** Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.



**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.

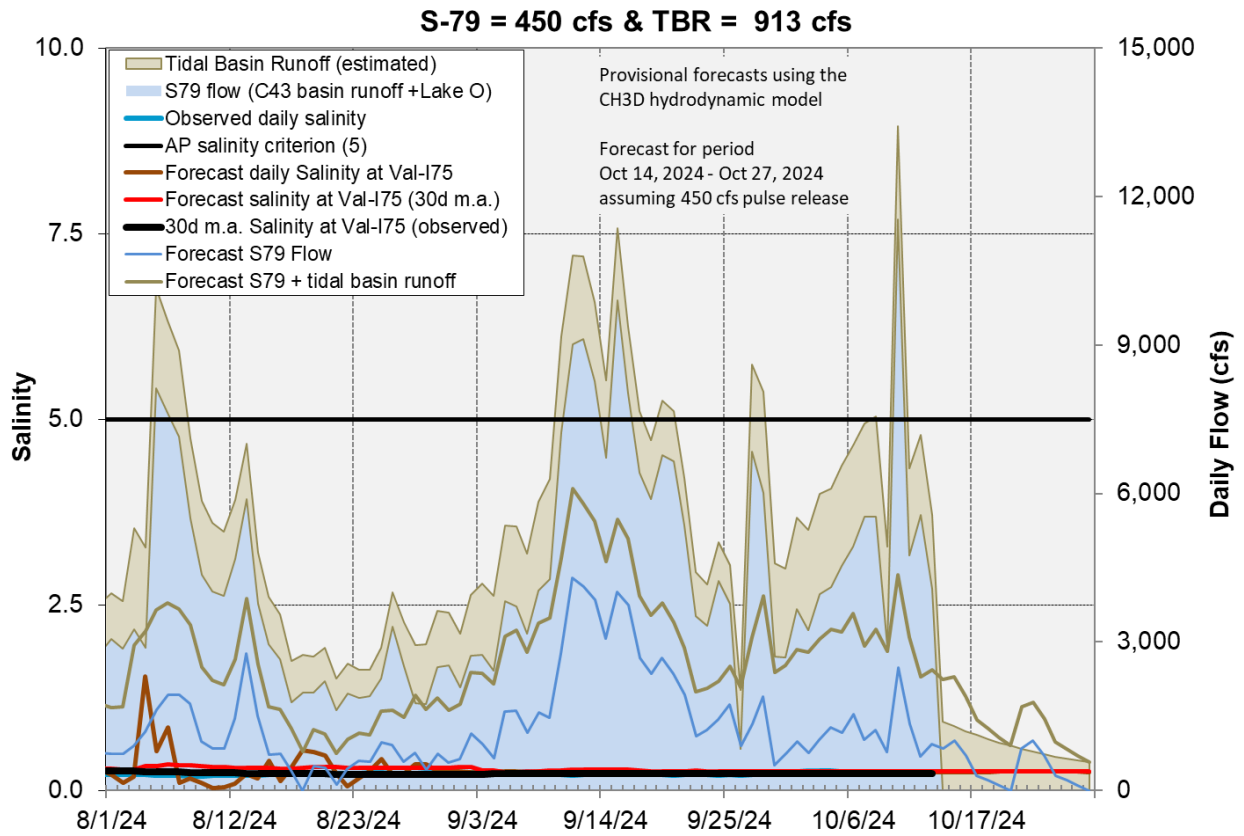


**Figure ES-12.** Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

**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	913	0.3	0.3
B	650	913	0.3	0.3
C	1200	913	0.3	0.3
D	2000	913	0.3	0.3

**Observed and Forecasted Flow at S-79 and Salinity at Val I-75**



**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 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<sup>2</sup>/year (**Figure S-1**).

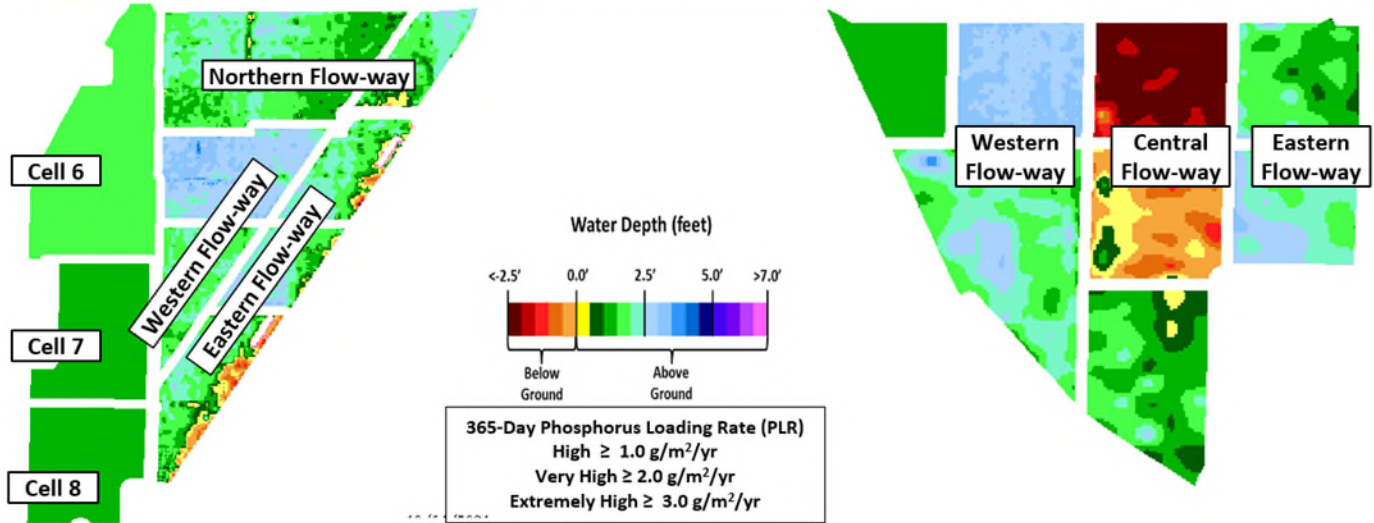
**STA-2:** Operational restrictions are in place in Flow-ways 2 and 4 for vegetation management activities. Online treatment cells are above target stage. Vegetation in Flow-ways 2, 3, and 4 is stressed, and in 5 is highly stressed. The 365-day PLRs for Flow-ways 1, 4, and 5 are below 1.0 g/m<sup>2</sup>/year. 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. 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<sup>2</sup>/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 – 10/7/2024 through 10/13/2024



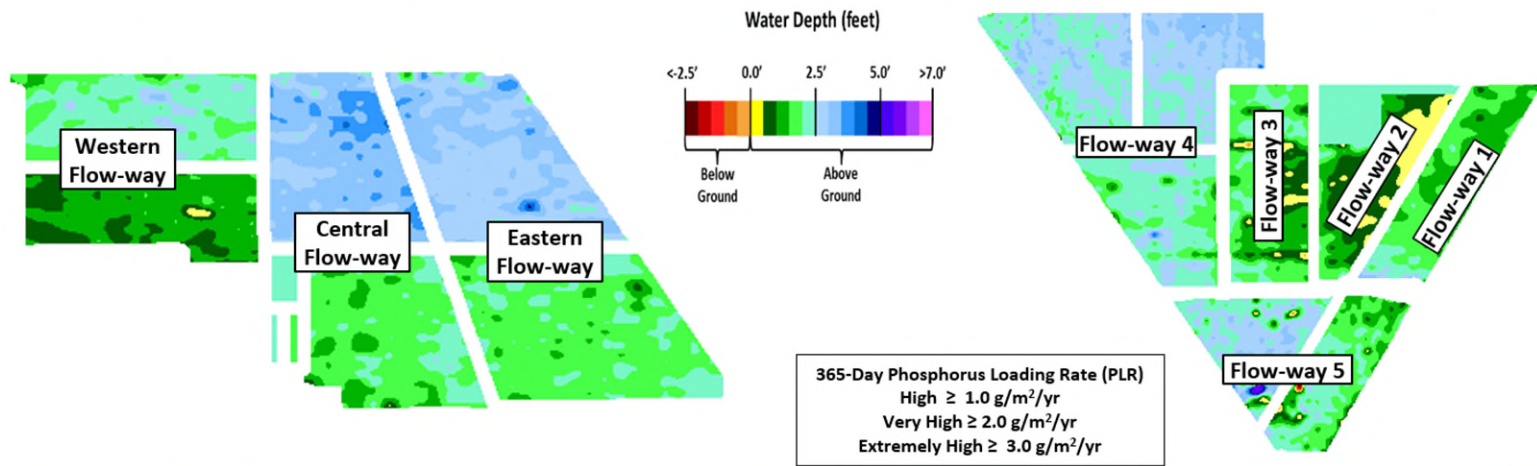
STA-1W	Flow-way Status
Western	<ul style="list-style-type: none"> <li>• High 365-day PLR</li> <li>• Highly stressed vegetation conditions</li> </ul>
Eastern	<ul style="list-style-type: none"> <li>• High 365-day PLR</li> <li>• Highly stressed vegetation conditions</li> </ul>
Northern	<ul style="list-style-type: none"> <li>• Stressed vegetation conditions</li> <li>• Planting emergent vegetation</li> </ul>
Cell 6	
Cell 7+8	

STA-1E	Flow-way Status
Western	<ul style="list-style-type: none"> <li>• Post-construction vegetation grow-in</li> </ul>
Central	<ul style="list-style-type: none"> <li>• Offline for construction activities</li> </ul>
Eastern	<ul style="list-style-type: none"> <li>• Online with restrictions for vegetation grow-in following erosion repair</li> </ul>

**Figure S-1.** Eastern Flow Path Weekly Status Report



## Central Flow Path Weekly Status Report – 10/7/2024 through 10/13/2024

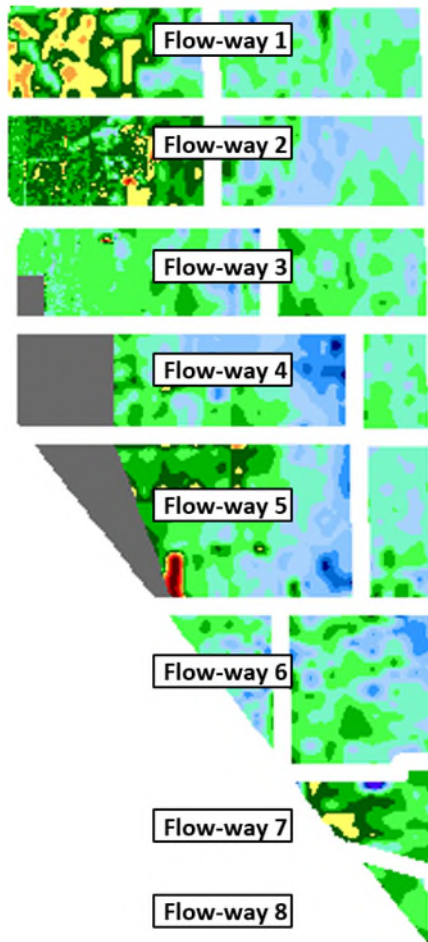


STA-3/4	Flow-way Status
Western	<ul style="list-style-type: none"> <li>High 365-day PLR</li> </ul>
Central	<ul style="list-style-type: none"> <li>Highly stressed vegetation conditions</li> <li>High 365-day PLR</li> </ul>
Eastern	<ul style="list-style-type: none"> <li>Post-drawdown vegetation grow-in</li> </ul>

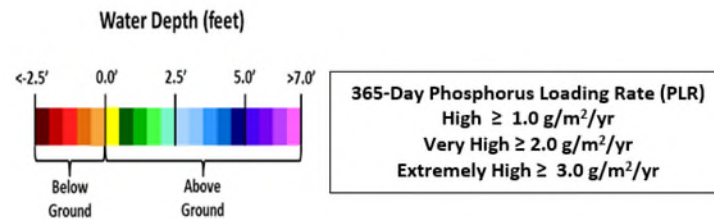
STA-2	Flow-way Status
Flow-way 1	<ul style="list-style-type: none"> <li>Upstream FAV control</li> </ul>
Flow-way 2	<ul style="list-style-type: none"> <li>High 365-day PLR</li> <li>Post-construction vegetation grow-in</li> <li>Stressed vegetation conditions</li> <li>Upstream FAV control</li> </ul>
Flow-way 3	<ul style="list-style-type: none"> <li>High 365-day PLR</li> <li>Stressed vegetation conditions</li> <li>Upstream FAV control</li> </ul>
Flow-way 4	<ul style="list-style-type: none"> <li>Planting emergent vegetation</li> <li>Upstream FAV control</li> </ul>
Flow-way 5	<ul style="list-style-type: none"> <li>Highly stressed vegetation conditions</li> </ul>

**Figure S-2.** Central Flow Path Weekly Status Report

## Western Flow Path Weekly Status Report – 10/7/2024 through 10/13/2024



STA-5/6	Flow-way Status
Flow-way 1	<ul style="list-style-type: none"> <li>Highly stressed vegetation conditions</li> </ul>
Flow-way 2	<ul style="list-style-type: none"> <li>Highly stressed vegetation conditions</li> <li>High 365-day PLR</li> </ul>
Flow-way 3	<ul style="list-style-type: none"> <li>Highly stressed vegetation conditions</li> <li>High 365-day PLR</li> </ul>
Flow-way 4	<ul style="list-style-type: none"> <li>Stressed vegetation conditions</li> <li>High 365-day PLR</li> </ul>
Flow-way 5	<ul style="list-style-type: none"> <li>Highly stressed vegetation conditions</li> <li>High 365-day PLR</li> </ul>
Flow-way 6	<ul style="list-style-type: none"> <li>Highly stressed vegetation conditions</li> </ul>
Flow-way 7	<ul style="list-style-type: none"> <li>Stressed vegetation conditions</li> </ul>
Flow-way 8	<ul style="list-style-type: none"> <li>Stressed vegetation conditions</li> </ul>



**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,  $\mu\text{g/L}$  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***

A surprising week of rainfall totals with most of the Water Conservation Areas (WCA) receiving less than the week prior and much more in ENP. WCA-1: Stages fell sharply over the last week in the Refuge. On Sunday, the 3-Gauge average was 0.32 feet below the A1 Zone regulation line. WCA-2A: Stage increased at gauge 2A-17 last week and remains above the Zone A regulation line by ~0.7 feet as of Sunday. WCA-3A: The 3-Gauge average stage increased over last week, remaining above the Zone A regulation line on Sunday by ~1.1 feet. WCA-3A North: Stage change at Gauge 62 (NW corner) trended lower towards the Upper schedule line, 0.09 feet on Sunday. See figures **EV-1** through **EV-4**.

### ***Water Depths***

The SFWDAT model output for October 13th, 2024 illustrates a current hydropattern that is much wetter across the EPA compared to a month ago, especially the southern regions of the WCA's. Ponded conditions continue to expand in southern and eastern WCA-3A and remain in northern Shark River Slough. Hydrologic connectivity continues to strengthen within the major sloughs of ENP. Current WDAT water depth estimates when compared to one month ago, indicate that most of the EPA is deeper significantly so in northern WCA-3A and WCA-2A. Northern SRS is showing a slight reduction in water levels. The comparison to modeled conditions a year ago show a more mixed trend exhibiting shallower conditions in WCA-1, significantly so in the southeast. WCA-3B is slightly shallower with the rest of the EPA is experiencing slightly deeper conditions.

Comparing current conditions to the 20-year percentiles for October 13th: stages remain well above average across the system with only portions of WCA-1 near the 70th percentile. See figures **EV-5** through **EV-7**.

### ***Taylor Slough and Florida Bay***

Most stages increased across Taylor Slough over the past week, with an average increase of 0.18 feet. Changes ranged from -0.01 feet at EPSW in the southern C-111 area to +0.31 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 9.8 inches compared to before the Florida Bay initiative (starting in 2017), an increase of 3.5 inches relative to last week's comparison. The Craighead Pond (CP) stage is now at estimated historical levels (circa 1900) and the Taylor Slough Bridge (TSB) stage remains below by 0.57 feet.

Average Florida Bay salinity was 21.3, a decrease of 2.1 from last week. Increased freshwater inflow from upstream after the hurricane resulted in salinity decreases at most stations. Changes ranged from -5.6 at Garfield Bight (GB) in the western nearshore region to +2.3 at Little Madeira Bay (LM) in the eastern nearshore region (Figure **EV-8**). Salinity is above estimated historical levels (circa 1900) and within the WY2001-2016 Interquartile Range (IQR) for all three regions (Figure **EV-10**). Average Florida Bay salinity remains below its recent average for this time of year by 2.1, a decrease of 2.0 from last week.

Salinity at the Taylor River (TR) station in the mangrove zone (tracked for the Florida Bay MFL) was 0.2. The 30-day moving average was 3.6, 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 412,089 acre-feet, an increase of 20,763 acre-feet from last week (Figure **EV-11**).

Average rainfall across Taylor Slough and Florida Bay was 3.58 inches over the past week, based on the 18 gauges used for this report. Rainfall ranged from 2.07 inches at Trout Creek (TC) in the eastern nearshore region to 5.01 inches at Buoy Key (BK) in the western region (Figure **EV-12**). Wind directions and speeds in Florida Bay ranged from 0.4 mph NW on October 7th to 35.5 mph S on October 9th (Figure **EV-12**).

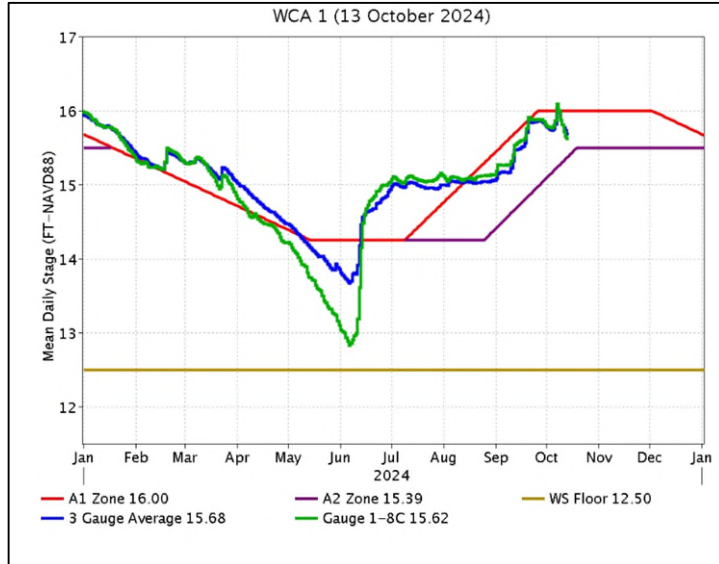
Average daily flow from the five major creeks totaled 2,895 acre-feet last week, with net positive flows for the week. Total daily creek flow ranged from -2,781 acre-feet on October 9th to 6,746 acre-feet on October 12th (Figure **EV-13**). Average daily flow for the week was 2,319 acre-feet below estimated historical levels (circa 1900).

**Implications for water management**

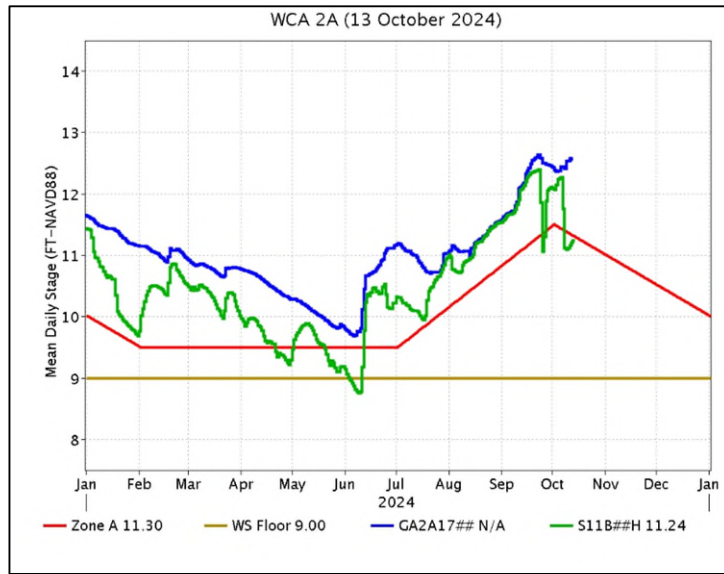
The ecology of the Everglades benefits from ascension rates of less than 0.25 feet per week this time of year. Maintaining a hydroperiod supportive of upcoming wading bird nesting at the Alley North colony in WCA-3A becomes more important now as the peak stage has reached a level that should protect the colony from a dry out during the upcoming wading bird nesting season unless recession rates become excessive. Wading birds in the EPA have had below average nesting success for three consecutive years. Continued freshwater inputs to Everglades National Park (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.

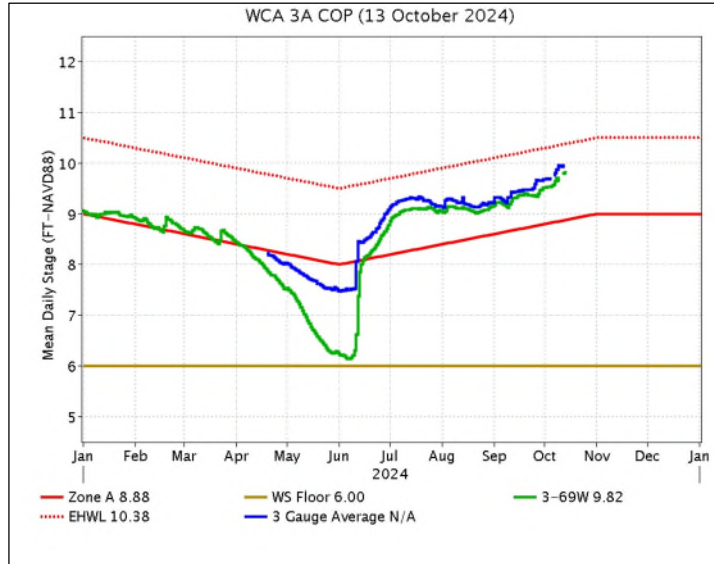
Everglades Region	Rainfall (inches)	Stage change (feet)
WCA-1	1.06	-0.11
WCA-2A	1.88	+0.14
WCA-2B	0.58	-0.02
WCA-3A	1.32	+0.26
WCA-3B	1.47	+0.09
ENP	3.82	+0.11



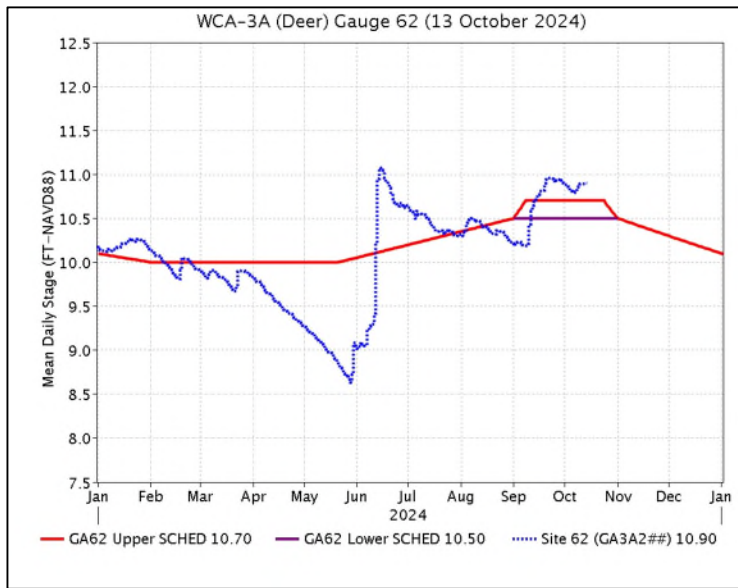
**Figure EV-1.** WCA-1 stage hydrographs and regulation schedule.



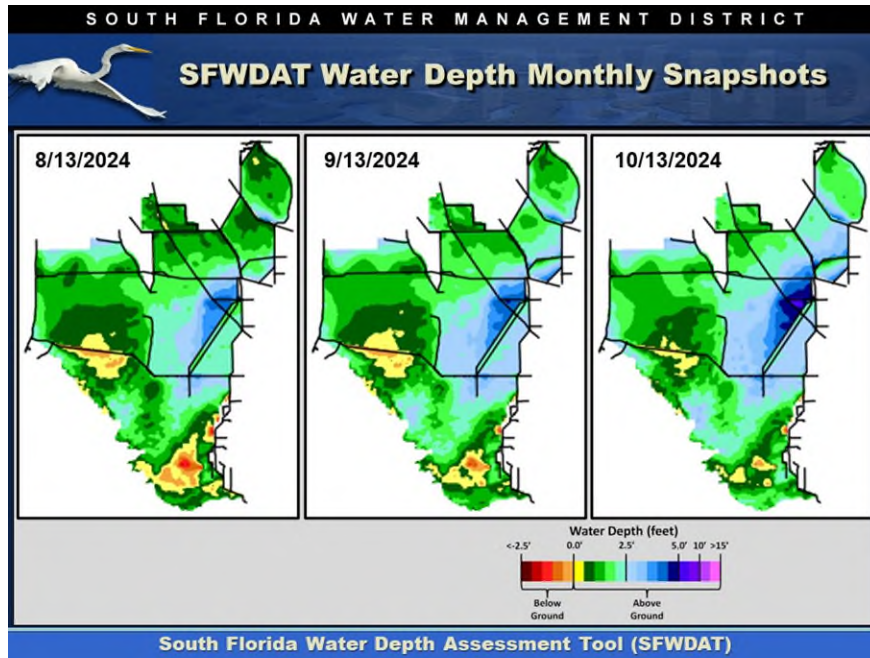
**Figure EV-2.** WCA-2A stage hydrographs and regulation schedule.



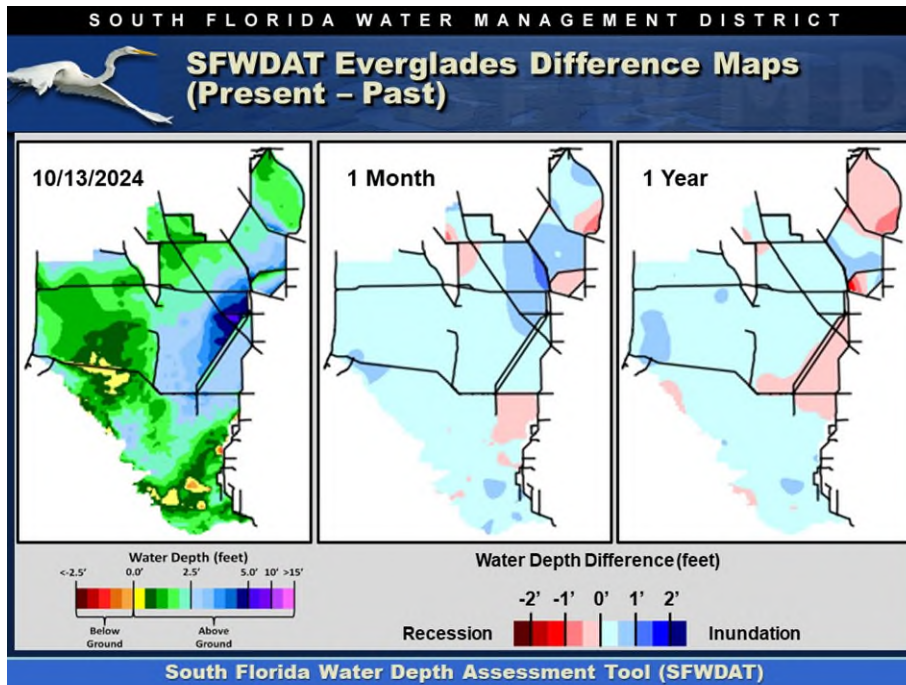
**Figure EV-3.** WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.



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

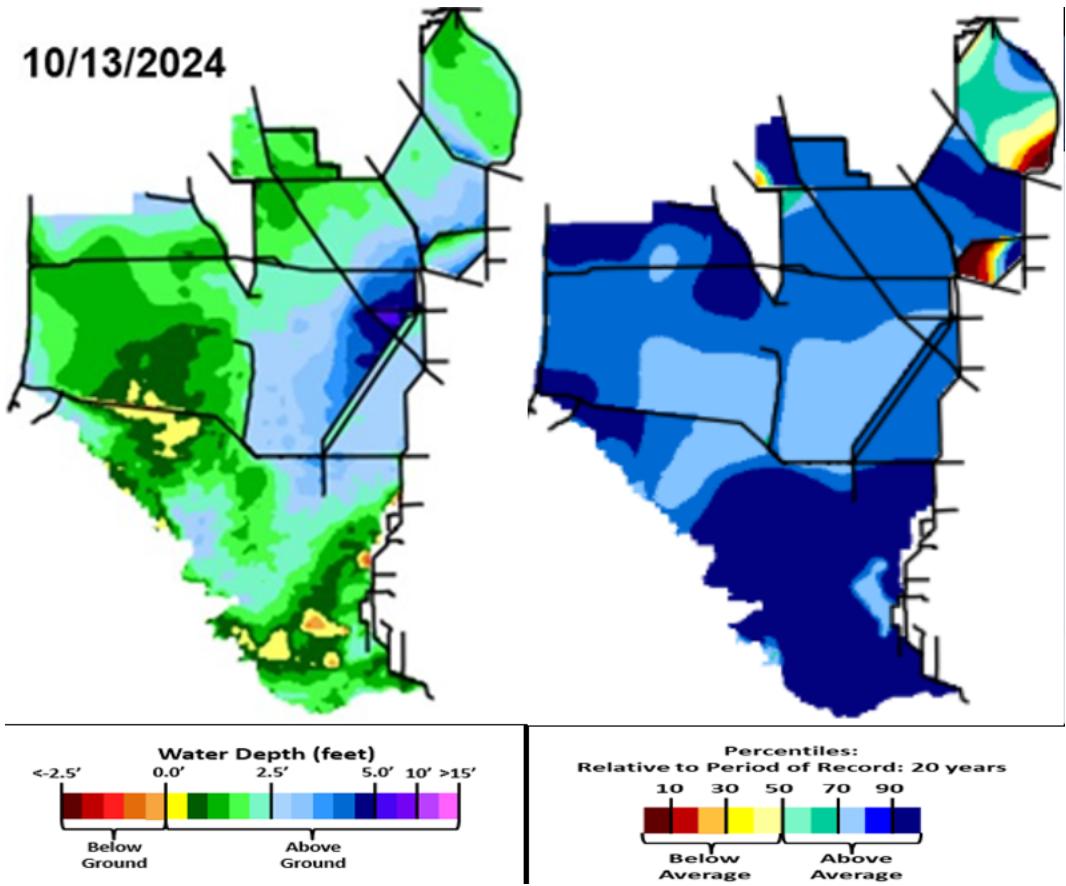


**Figure EV-5.** Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.



**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 (October 13<sup>th</sup>, 2024) compared to the day of year average over the previous 20 years.

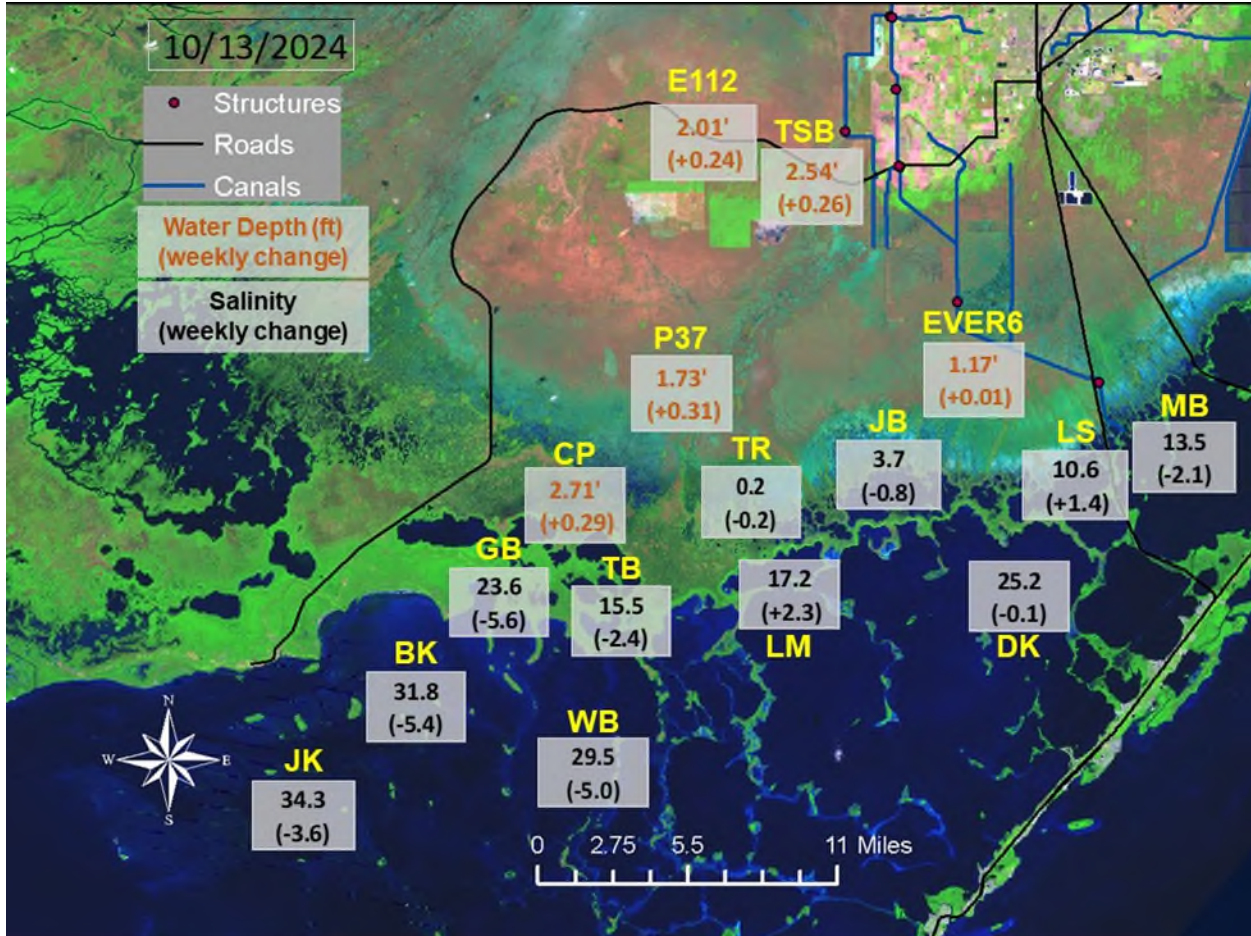


Figure EV-8. Taylor Slough water depths and Florida Bay salinities with changes from a week ago.

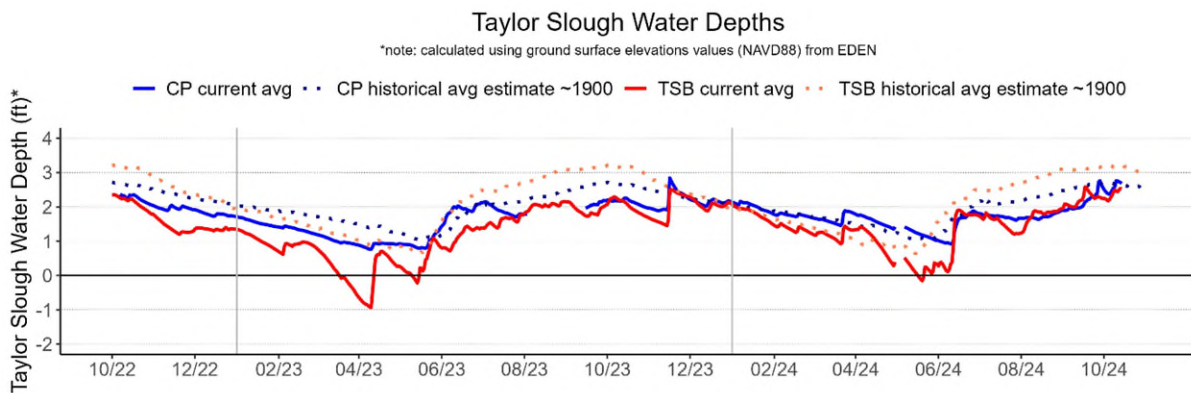
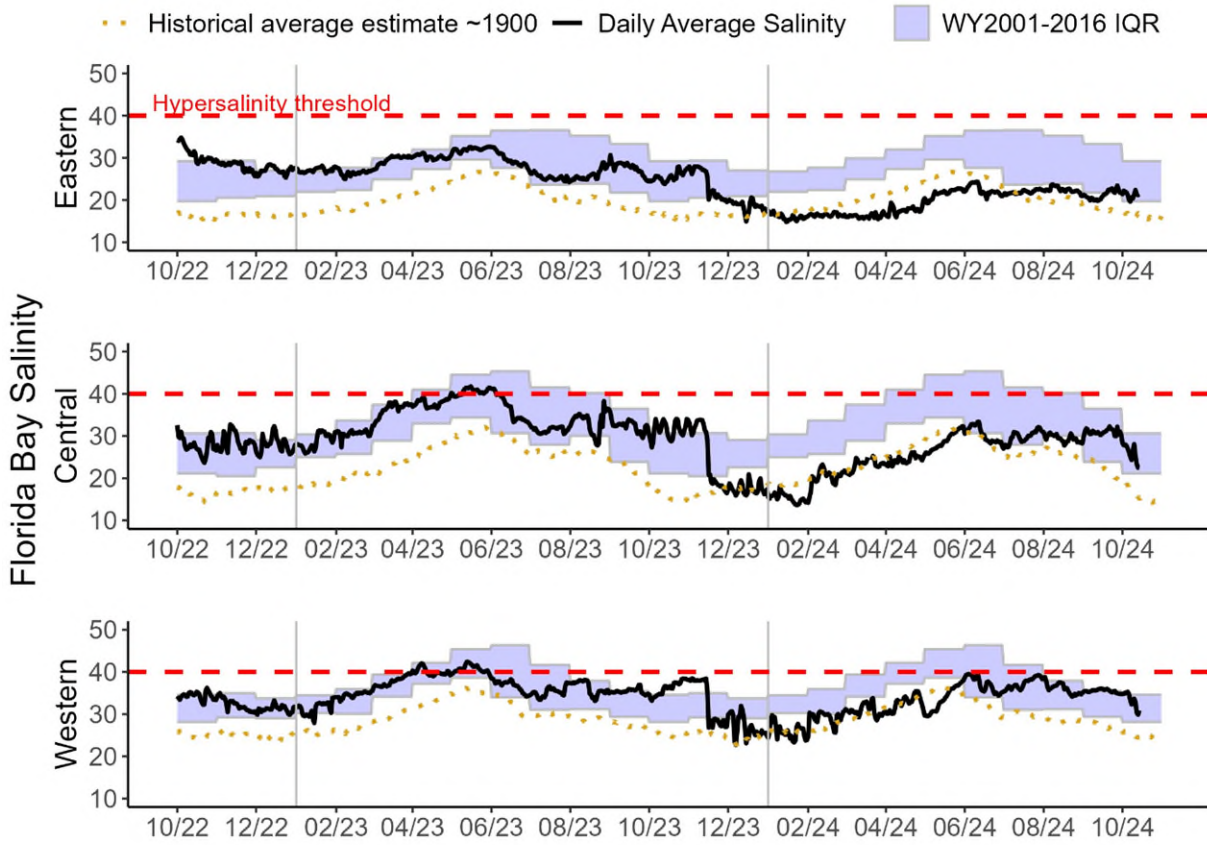
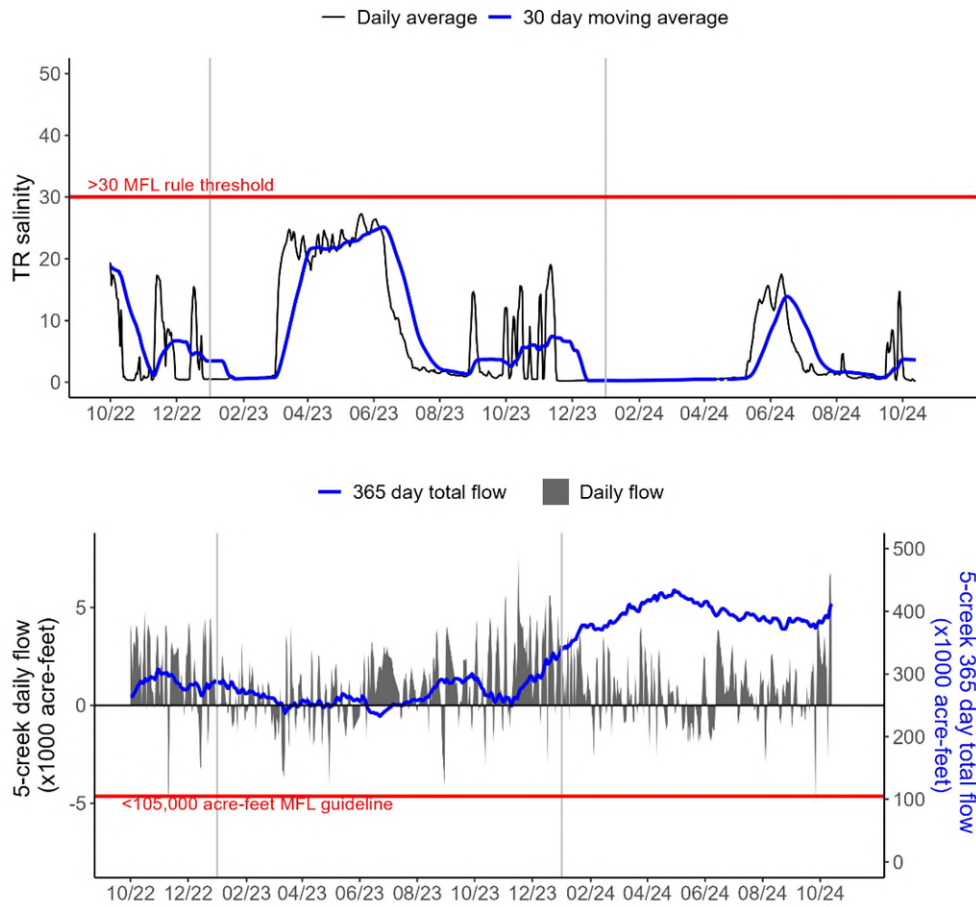


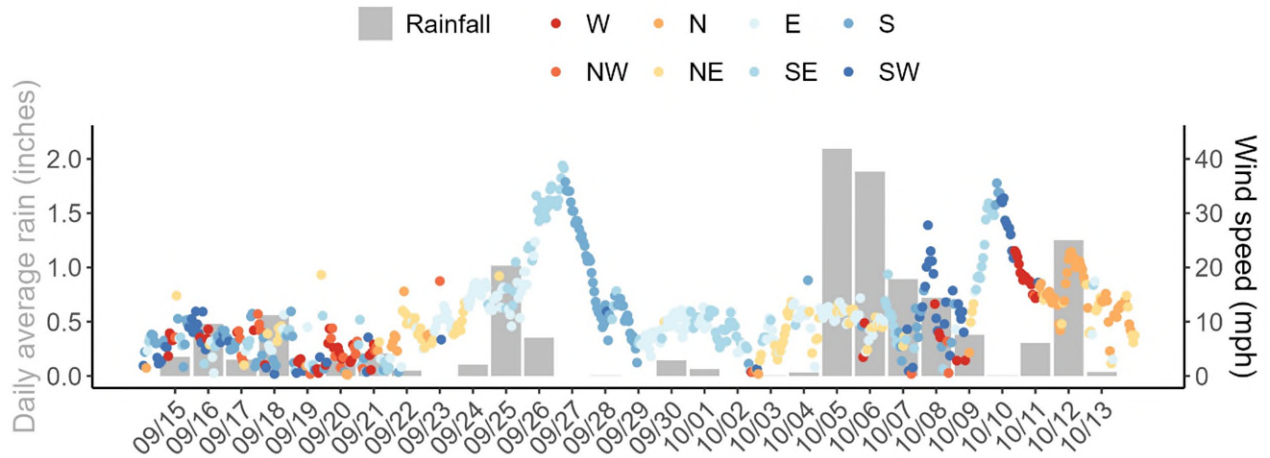
Figure EV-9. Taylor Slough water depth time series for Taylor Slough Bridge (TSB; northern slough) and Craighead Pond (CP; southern slough).



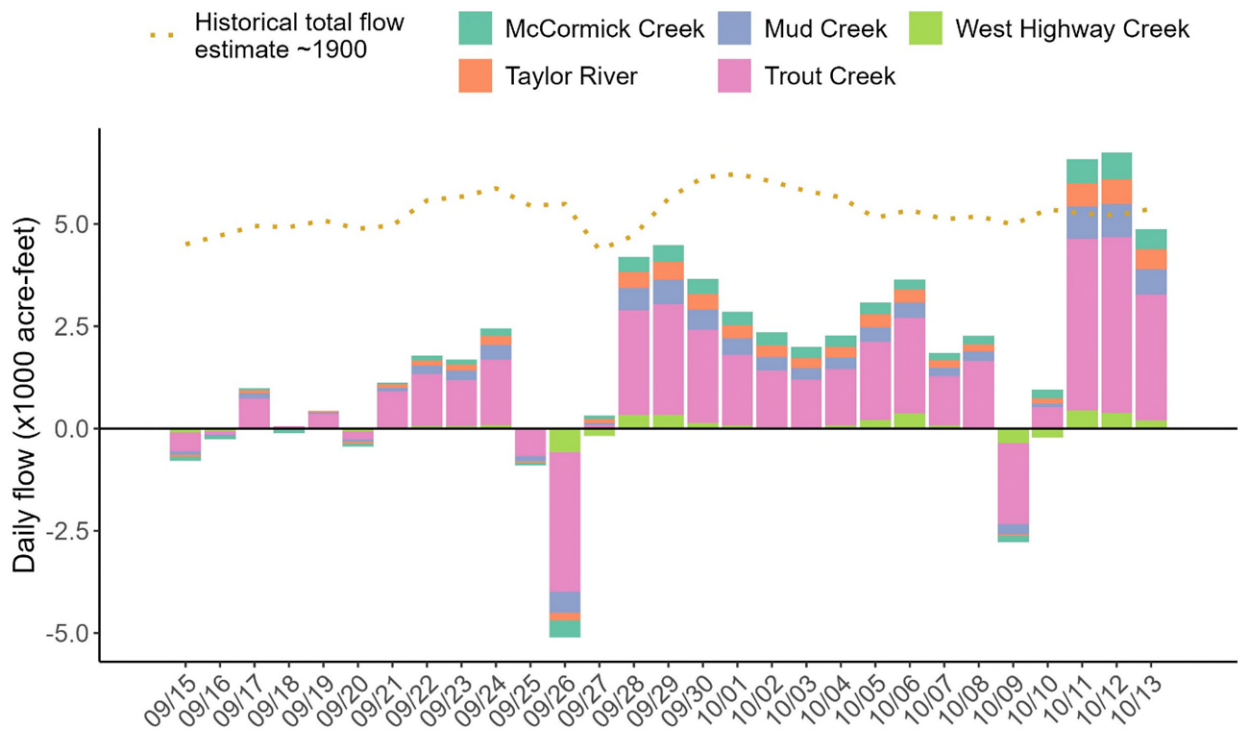
**Figure EV-10.** Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with WY2001-2016 interquartile (25-75 percentile) ranges (IQR) and estimated historical daily average salinities. The hypersalinity threshold indicates the level at which salinities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



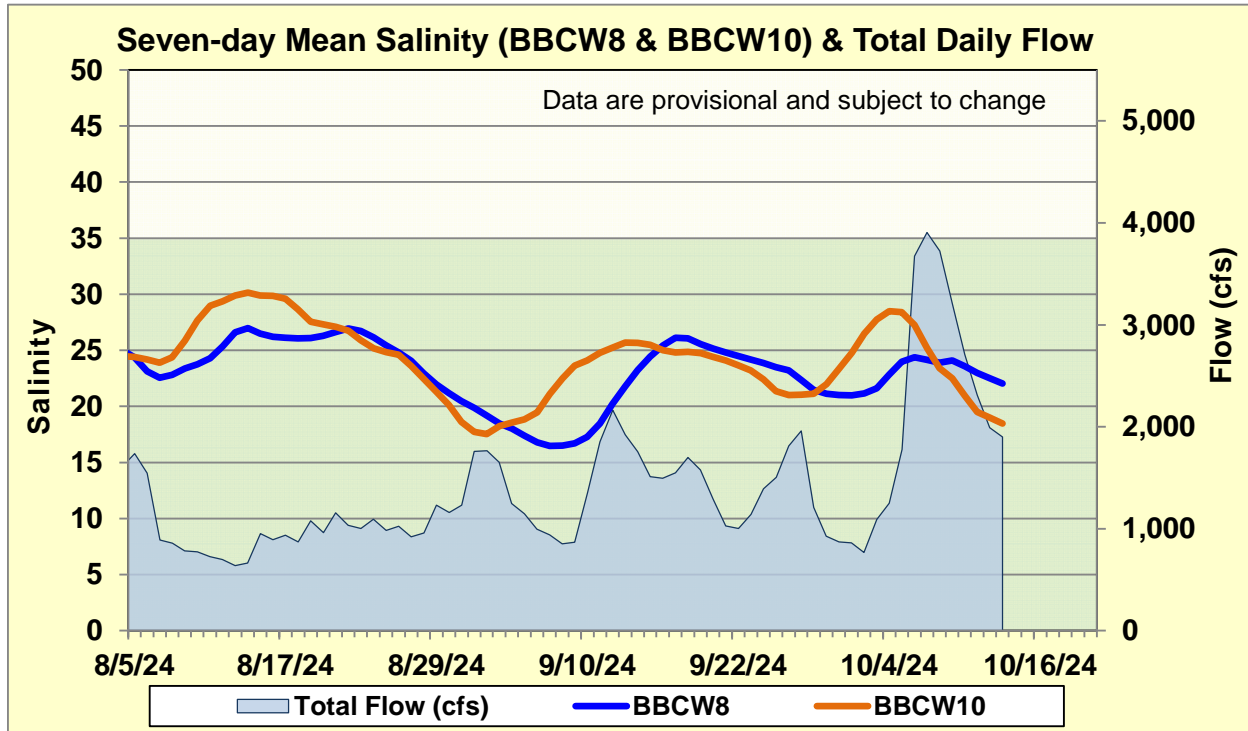
**Figure EV-13.** Daily average creek flow summed between five creeks with estimated historical daily flow over the past four weeks.

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

<b>SFWMD Everglades Ecological Recommendations, October 15, 2024 (red is new)</b>			
	Weekly change	Recommendation	Reasons
<b>WCA-1</b>	Stage decreased by 0.11'	Ascension rate of less than 0.25' per week.	Protect within basin and downstream habitat and wildlife.
<b>WCA-2A</b>	Stage increased by 0.14'	Ascension rate of less than 0.25' per week.	Protect within basin and downstream habitat and wildlife.
<b>WCA-2B</b>	Stage decreased by 0.01'	Ascension rate of less than 0.25' per week or 0.5' per two weeks.	Protect within basin and downstream habitat and wildlife.
<b>WCA-3A NE</b>	Stage increased by 0.46'	Ascension rate of less than 0.25' per week.	Protect within basin and downstream habitat and wildlife.
<b>WCA-3A NW</b>	Stage increased by 0.13'	Ascension rate of less than 0.25' per week.	
<b>Central WCA-3A S</b>	Stage increased by 0.22'	Ascension rate of less than 0.18' per week.	Protect within basin wildlife.
<b>Southern WCA-3A S</b>	Stage increased by 0.23'		
<b>WCA-3B</b>	Stage increased by 0.09'	Ascension rate of less than 0.18' per week.	Protect within basin and downstream habitat and wildlife.
<b>ENP-SRS</b>	Stage increased by 0.11'	Make discharges to ENP according to COP and TTF protocol while adaptively considering upstream and downstream ecological conditions.	Protect within basin and upstream habitat and wildlife.
<b>Taylor Slough</b>	Stage changes ranged from -0.01' to +0.31'	Move water southward as possible.	When available, provide freshwater to promote water movement.
<b>FB- Salinity</b>	Salinity changes ranged from -5.6 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 2,822 cfs, and the previous 30-day mean inflow was 1,764 cfs. The seven-day mean salinity was 22.1 at BBCW8 and 18.2 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.