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: February 28, 2024

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Strong stability of the atmosphere will prevent any rainfall from occurring through Wednesday. A cold front will push into north Florida early on Thursday, where it will slow down before moving into the northern part of the SFWMD Thursday morning. Although most of the SFWMD will generally be dry on Thursday and Friday, some shower activity could occur near the SFWMD's border. Following this, another cold front will move into north Florida or the far northern part of the SFWMD on Saturday and into the northern half of the SFWMD on Sunday. Warm and moist air overspreading the SFWMD on Saturday could cause isolated or widely scattered shower activity, with the potential for isolated areas to experience a heavier shower. On Sunday, scattered to numerous showers and thunderstorms are possible, some heavy, north and east of Lake Okeechobee. In contrast, rains will keep away from the southwestern part of the SFWMD, especially the west coast. On Monday, a gradually dissipating cold front pushes southward through the central part of the SFWMD Monday morning and the southern part of the area during the afternoon. Although most model solutions show less rainfall Monday, scattered afternoon to early-evening rains near the eastern metropolitan areas are possible. For the week ending next Tuesday morning, the forecast of total SFWMD rainfall is very uncertain, though the best guess is that it could be near- to somewhat below normal. However, there is some potential for the eastern to northeastern half of the area to see above normal rainfall if the upper quartile of model solutions verify. For the week-2 period (5-11 March), there are strong indications of much-above normal total SFWMD rainfall.

Kissimmee

Releases were made from East Lake Toho and Lake Toho to continue spring lake stage recessions to low pool. Weekly average discharge on February 25, 2024, was 980 cfs and 1,200 cfs at S-65 and S-65A, respectively. Mean weekly water depth on the Kissimmee River floodplain decreased by 0.5 feet to 1.40 feet over the week ending February 25, 2024. The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 5.0 mg/L last week to 5.3 mg/L for the week ending

February 25, 2024, which is well above the potentially lethal and stressful levels for largemouth bass and other sensitive species.

Lake Okeechobee

Lake Okeechobee stage was 16.24 feet NGVD on February 25, 2024, which was 0.08 feet lower than the previous week and 0.02 feet lower than a month ago. Average daily inflows (excluding rainfall) increased from the previous week, going from 3,510 cfs to 4,570 cfs. Average daily outflows (excluding evapotranspiration) increased considerably from the previous week, going from 3,960 cfs to 9,090 cfs. The February 25, 2024, satellite image from NOAA's Harmful Algal Bloom Monitoring System suggested a moderate bloom potential along most shallow shorelines within the Lake**.**

Estuaries

Total inflow to the St. Lucie Estuary averaged 3,200 cfs over the past week with 2,240 coming from Lake Okeechobee. Mean salinities decreased at all three sites within the estuary over the past week. Salinity in the middle estuary was in the lower stressed range (5-10) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 7,040 cfs over the past week with 5,000 cfs coming from Lake Okeechobee. Mean surface salinities remained the same at S-79 and Val I-75 and decreased at the remaining sites in the estuary over the past week. Salinities were in the optimal range (0-10) for tape grass in the upper estuary. Salinities were in the damaging range (0-5) for adult eastern oysters at Cape Coral, in the optimal range (10-25) at Shell Point, and in the upper stressed range (> 25) at Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, February 25, 2024, 3,900 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2024 (since May 1, 2023) is approximately 24,500 ac-feet. The total amount of inflows to the STAs in WY2024 is approximately 1,333,000 ac-feet. Most STA cells are near or above target stage. STA-1E Eastern Flow-way is offline for erosion repair in Cell 2. Operational restrictions are in effect in STA-1E Western Flow-way, STA-1W Northern Flow-way, STA-2 Flow-ways 2 and 4, STA-3/4 Eastern Flow-way, and STA-5/6 Flow-way 4 for vegetation management activities. This week, if 2008 LORS recommends Lake releases to the WCAs and conditions allow, releases will be sent to the A-1 FEB/STA-3/4 or STA-5/6.

Everglades

Last week's rates of stage change (Sunday to Sunday) were in the "good" range as rainfall was well below-average for this time of year. Stage change in Taylor Slough was near zero, but depths remain well above-average. Salinity change in Florida Bay last week was also minimal; conditions remain below the 25th percentile for this time of year in all regions. Numbers of foraging wading birds declined but not as much as anticipated given the reversals. This response (or lack thereof) tends to happen when wet antecedent conditions result in high prey production. This was also reflected in the number of nesting wading birds which continues to slowly increase at the coast but is very late in the WCAs. The current waterfowl response near Cape Sable is an interesting story – an in-depth

count suggests about 50k birds, notable because numbers haven't been seen like that for the last 60-70 years.

Biscayne Bay

Total inflow to Biscayne Bay averaged 710 cfs and the previous 30-day mean inflow averaged 600 cfs. The seven-day mean salinity was 26.3 at BBCW8 and 20.1 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data provided by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On February 25, 2024, mean daily lake stages were 56.6 feet NGVD (1.4 feet below schedule) in East Lake Toho, 53.6 feet NGVD (1.4 feet below schedule) in Lake Toho, and 51.6 feet NGVD (0.6 feet below the temporary deviation schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**).

Lower Kissimmee

For the week ending February 25, 2024, mean weekly discharge was 980 cfs and 1,200 cfs at S-65 and S-65A, respectively. Mean weekly discharge from the Kissimmee River was 3,400 cfs at S-65D and 3,400 cfs at S-65E (**Table KB-2**). Mean weekly headwater stages were 46.1 feet NGVD at S-65A and 27.7 feet NGVD at S-65D on February 25, 2024. Mean weekly river channel stage decreased by 0.7 feet to 38.8 feet NGVD over the week ending on February 25, 2024 (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain decreased by 0.5 feet to 1.40 feet over the week ending February 25, 2024 (**Table KB-2**, **Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 5.0 mg/L the previous week to 5.3 mg/L for the week ending February 25, 2024 (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Continue the stage recessions in Lakes East Toho and Toho to reach their low pools on May 31, 2024. Follow the Hybrid A discharge plan for S-65/S-65A (Fig. KB-7) through May 31, 2024, except as otherwise indicated. Maintain at least minimum flow (250-300 cfs) at S-65A. Continue the S-65/S-65A flow ramp down to ~700 cfs to facilitate S-69 repairs. To the extent possible, modify S-65D headwater stage to meet USACE objectives for S-69 repairs.

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

Water Body	Structure	Stage Monitoring Site	Weekly (7-Day) Average Discharge (cfs)	Sunday Lake Stage (feet NGVD)[a]	Schedule Type[b]	Sunday Schedule Stage (feet NGVD)	Sunday Departure from Regulation (feet)	
							2/25/24	*2/18/24*
Lakes Hart and Mary Jane	S-62	LKMJ	140	60.9	R	61.0	-0.1	0.0
Lakes Myrtle, Preston and Joel	S-57	S-57	51	61.1	R	61.1	0.0	0.1
Alligator Chain	S-60	ALLI	110	64.0	R	64.0	0.0	0.1
Lake Gentry	S-63	LKGT	170	61.5	R	61.5	0.0	0.1
East Lake Toho	S-59	TOHOE	550	56.6	R	58.0	-1.4	-1.2
Lake Toho	S-61	TOHOW S-61	1200	53.6	R	55.0	-1.4	-1.2
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	980	51.6	T	52.2	-0.6	-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.

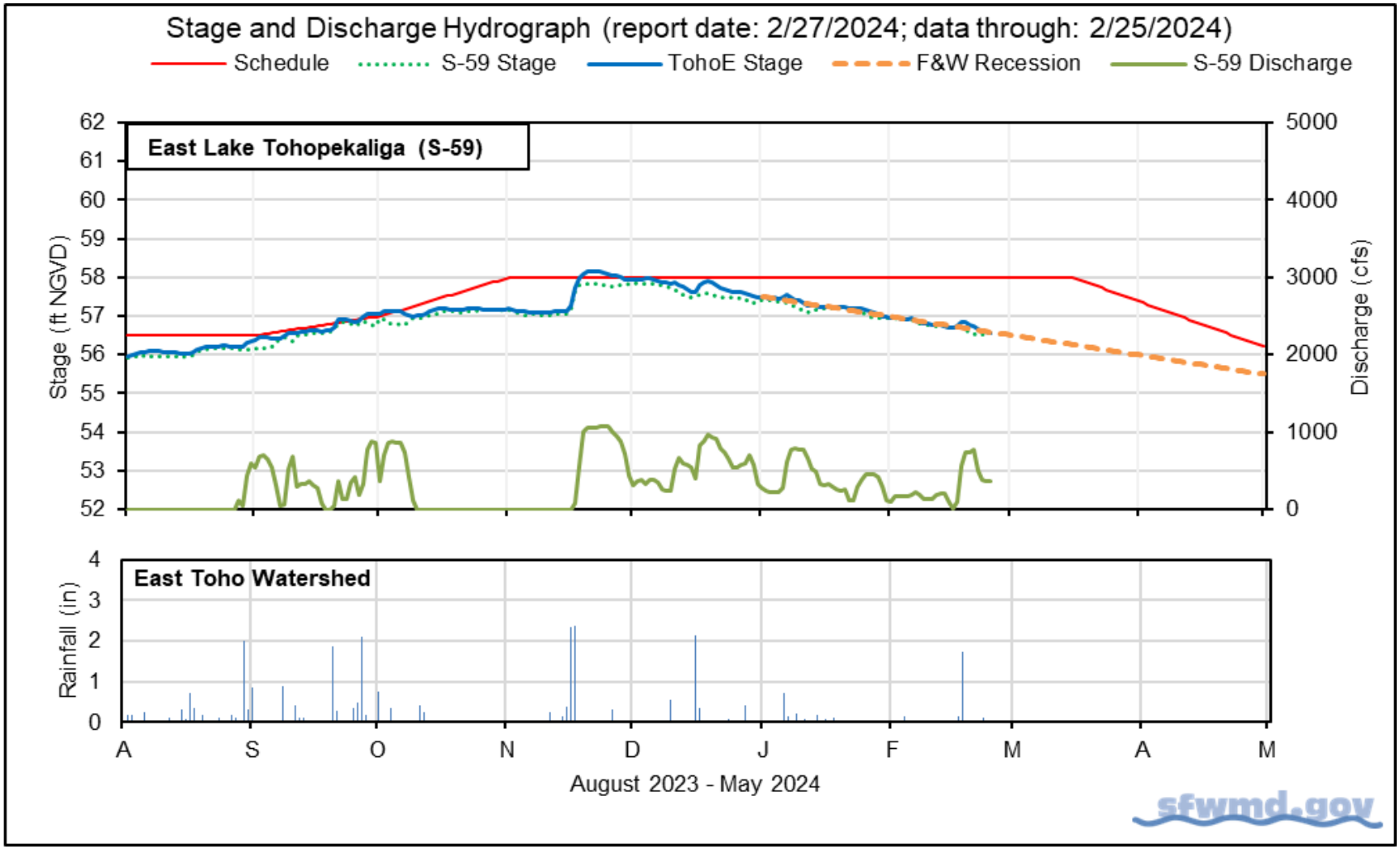


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

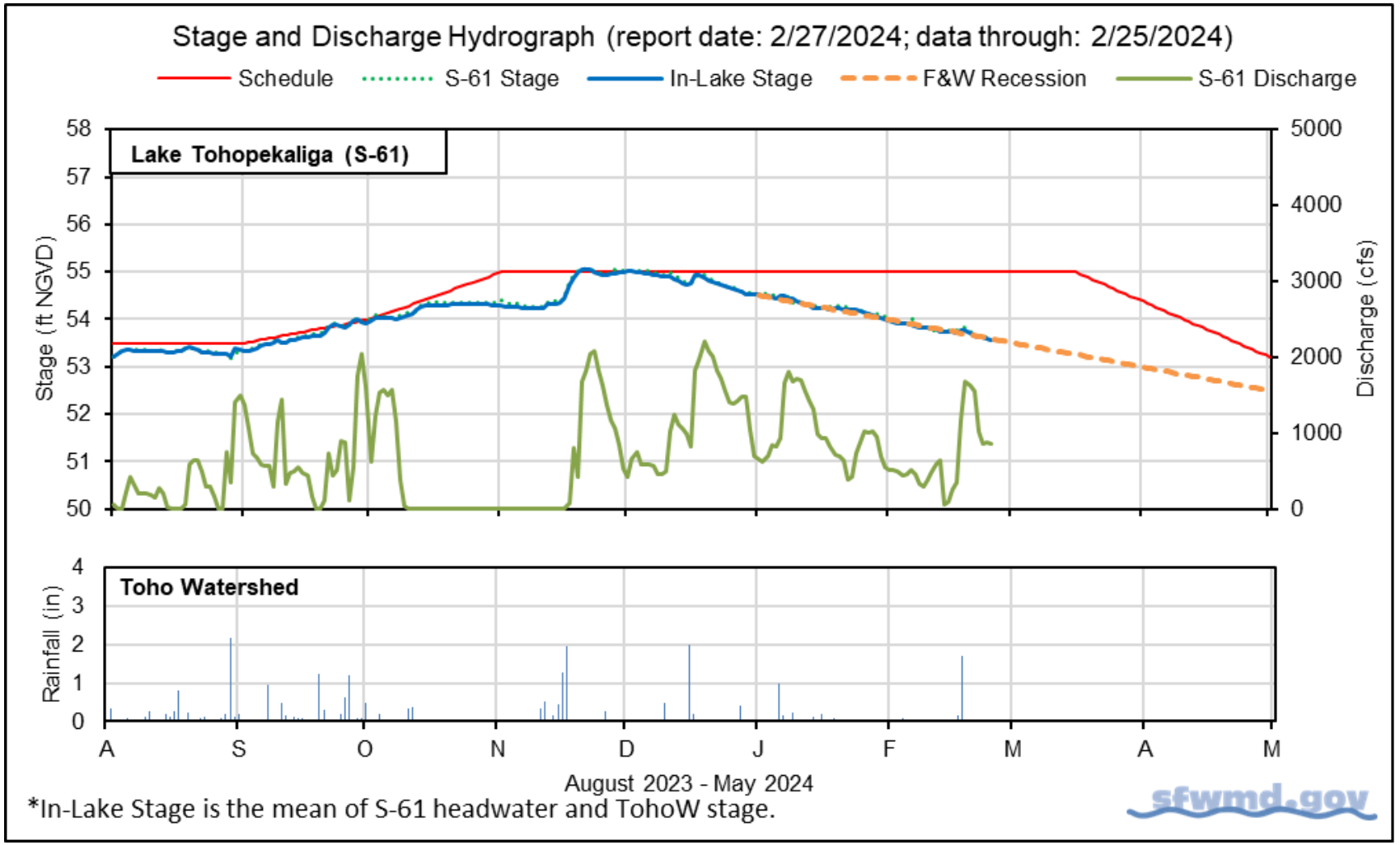


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

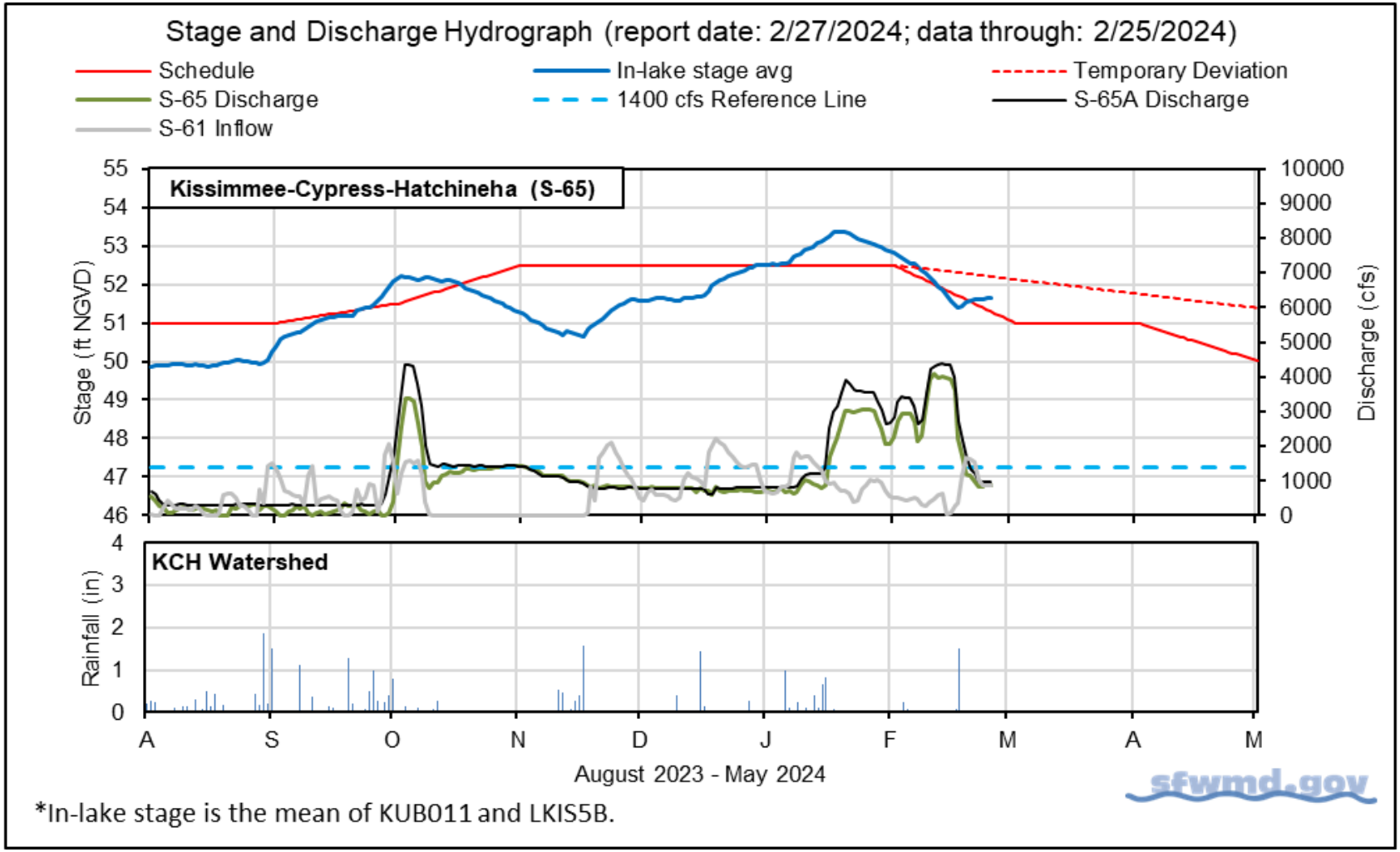


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

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			
		2/25/24	2/25/24	2/18/24	2/11/24	2/4/24
Discharge	S-65	890	980	3,300	3,000	2,500
Discharge	S-65A[a]	960	1,200	3,800	3,400	3,000
Headwater Stage (feet NGVD)	S-65A	46.4	46.1	46.4	46.4	46.9
Discharge	S-65D[b]	3,000	3,400	2,900	2,900	3,200
Headwater Stage (feet NGVD)	S-65D[c]	27.6	27.7	27.6	26.2	26.8
Discharge (cfs)	S-65E[d]	3,000	3,400	2,900	2,900	3,100
Discharge (cfs)	S-67	0	0	0	0	1
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	6.0	5.3	5.0	5.9	5.4
River channel mean stage[f]	Phase I river channel	38.0	38.8	39.5	39.1	39.1
Mean depth (feet) [g]	Phase I floodplain	1.02	1.40	1.90	1.62	1.66

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).

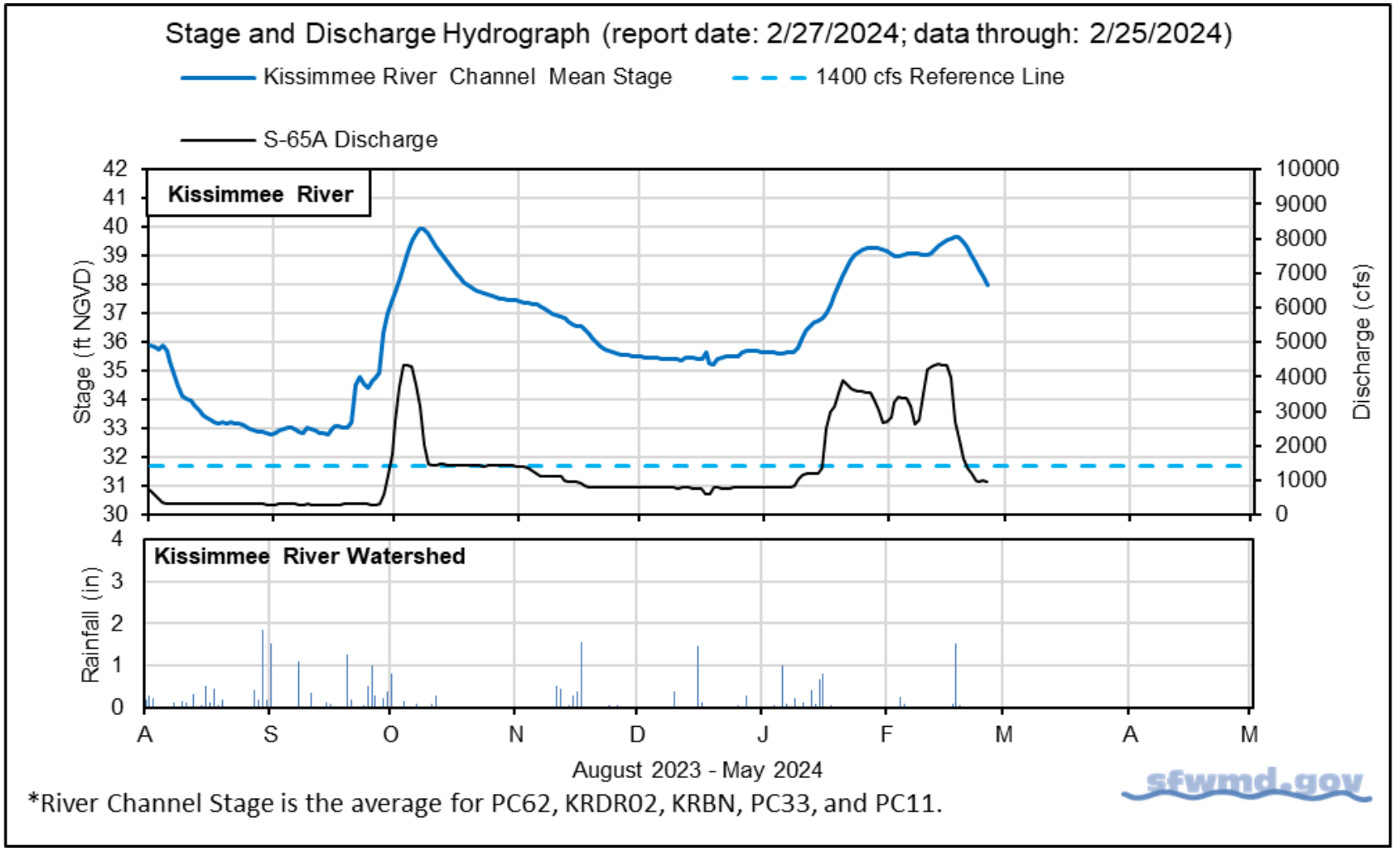


Figure KB-4. Kissimmee River stage, discharge and rainfall.

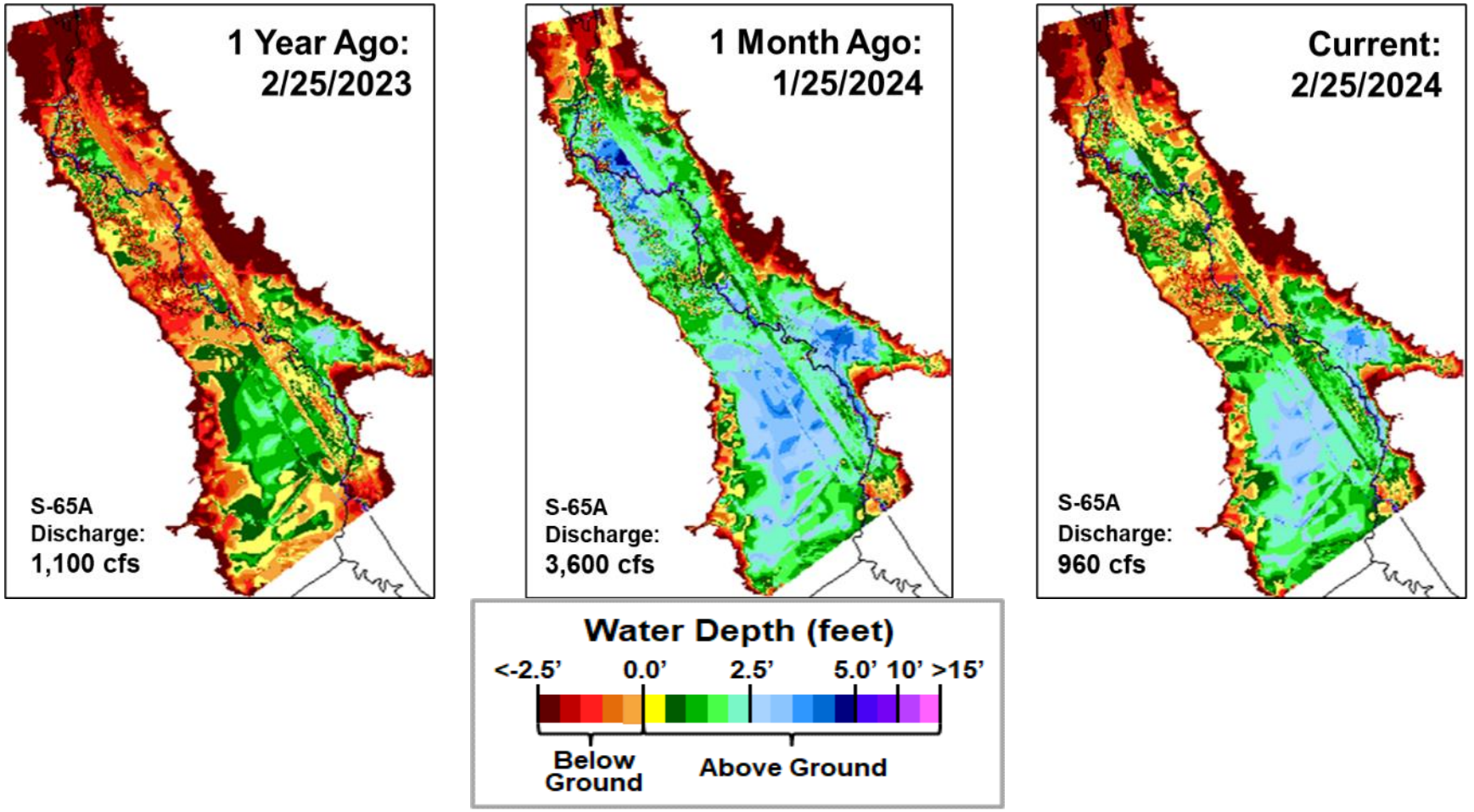


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

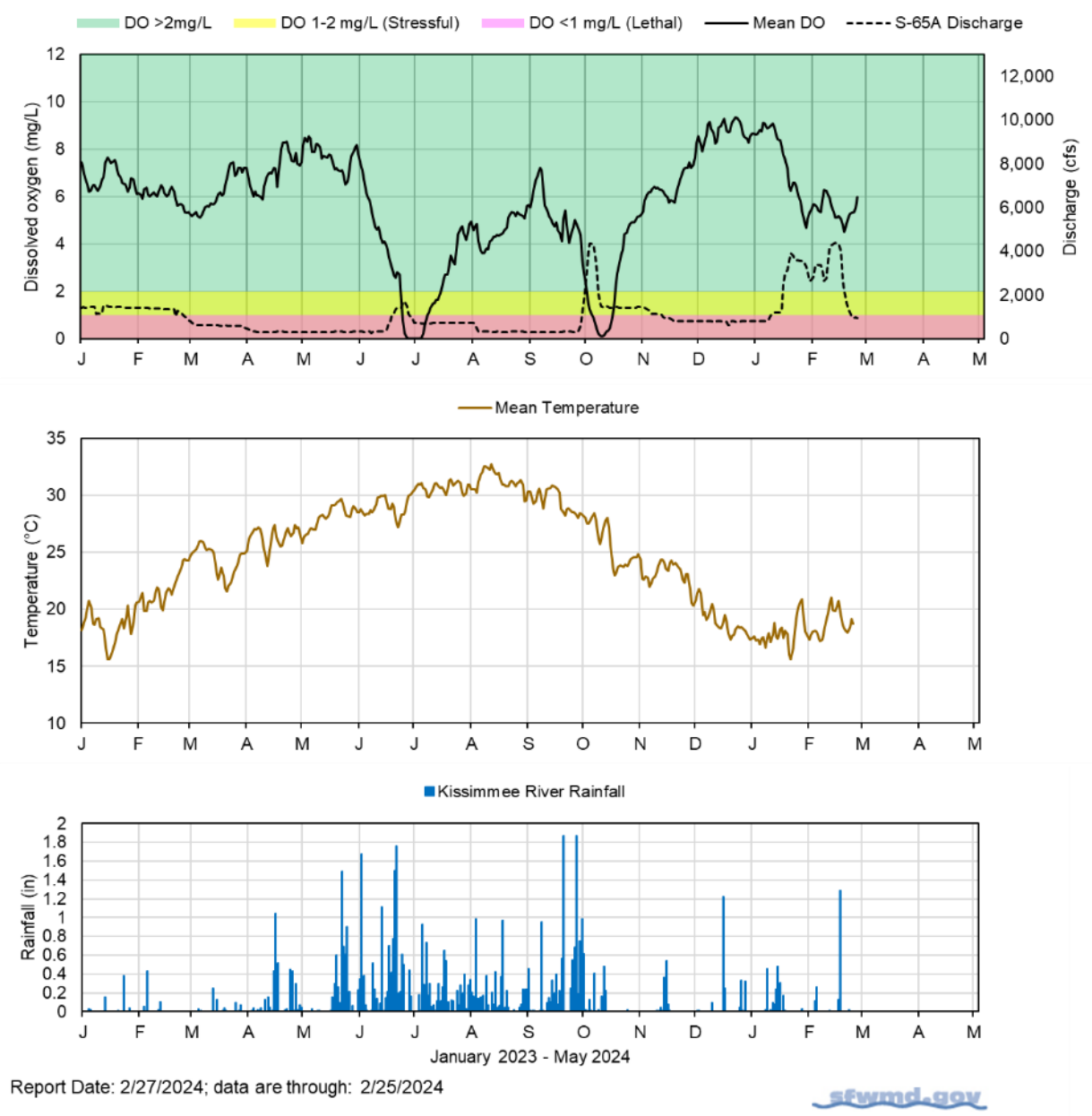


Figure KB-6. Kissimmee River channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of six stations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

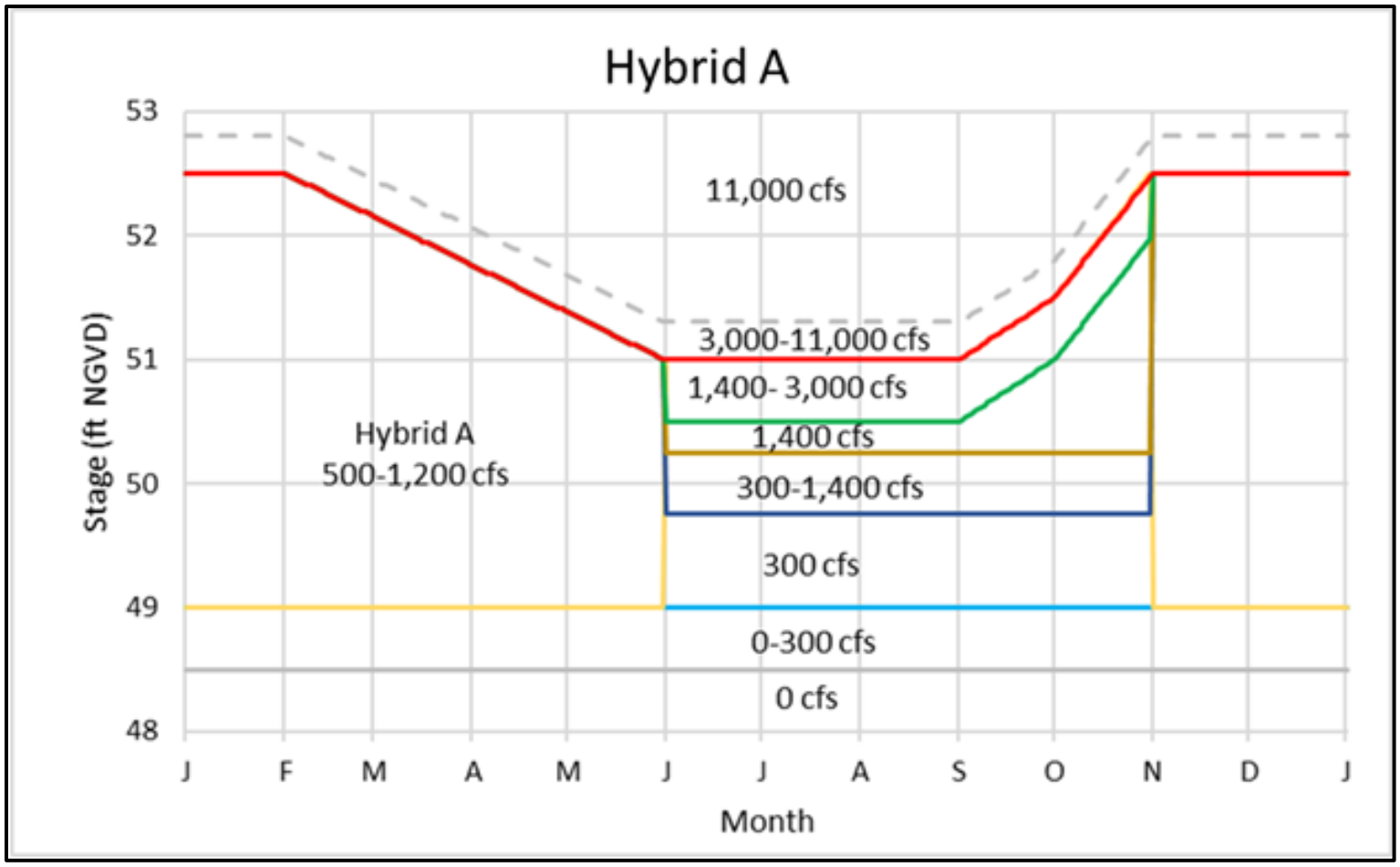


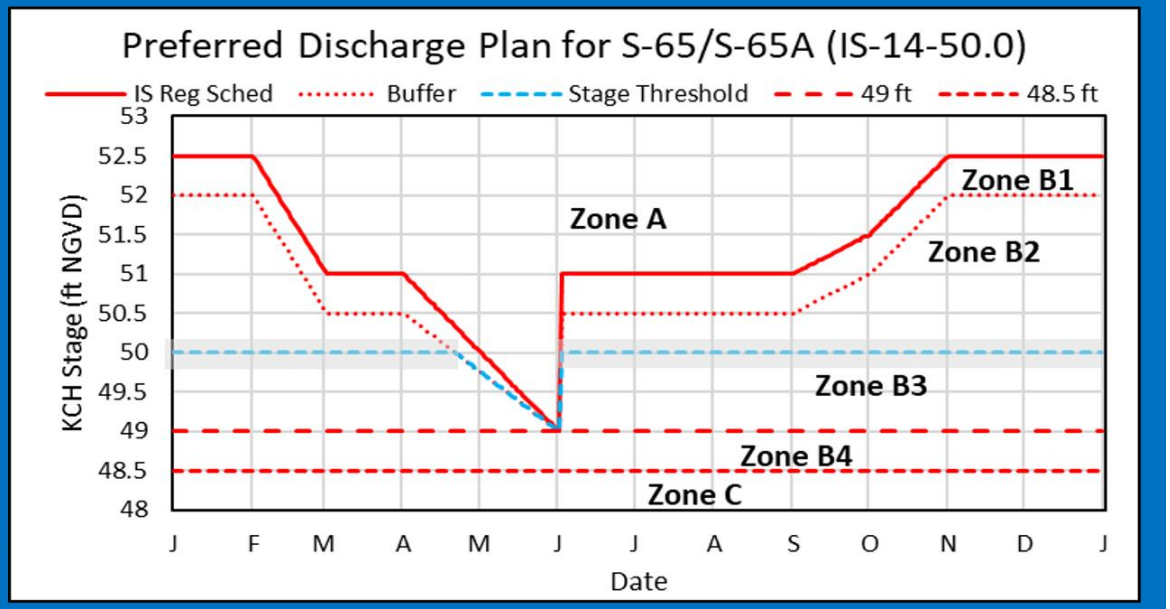
Figure KB-7. Hybrid A Discharge Plan for S-65/S-65A. Use discharge rate of change limits from IS-14-50 (Fig. KB-8).

2021-2023 Discharge Plan for S-65/S-65A

Stage and Discharge Guidance for 2021-2023.		
Zone	**KCH Stage (ft NGVD)**	**S-65/S-65A Discharge***
A	Above regulation schedule line.	Flood control releases as needed with no limits on the rate of discharge change.
B1	In flood control buffer zone (0.5 ft below the schedule line).	Adjust S-65 discharge so that S-65A discharge is between 1400 cfs at the buffer zone line and 3000 cfs at the schedule line.
B2	Between the Flood Control Buffer and the 50.0 ft line.	Adjust S-65 discharge to maintain at least 1400 cfs at S-65A. Use ± 0.2 ft buffer (gray band) above and below the 50.0 ft line to decide when to begin ramping up to 1400 cfs or down to 300 cfs; do not continue reducing discharge if stage rises back to or above the threshold stage line.
B3	Between the 50.0 ft line and 49 ft.	Adjust S-65 discharge to maintain at least 300 cfs at S-65A.
B4	Between 48.5 ft to 49 ft.	Adjust S-65 discharge to maintain S-65A discharge between 0 cfs at 48.5 ft and 300 cfs at 49 ft.
C	Below 48.5 ft.	0 cfs.
*Changes in discharge should not exceed limits in inset table below.		

Table KB-3. Discharge Rate of Change Limits for S65/S65A (revised 1/14/19).

Q (cfs)	Maximum rate of INCREASE (cfs/day)	Maximum rate of DECREASE (cfs/day)
0-300	100	-50
301-650	150	-75
651-1400	300	-150
1401-3000	600	-600
>3000	1000	-2000



Other Considerations

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

Slide Revised 1/3/2022

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

Lake Okeechobee

Lake Okeechobee stage was 16.24 feet NGVD on February 25, 2024, which was 0.08 feet lower than the previous week and 0.02 feet lower than a month ago (**Figure LO-1**). Lake stage remained in the intermediate sub-band (**Figure LO-2**) and was 1.42 feet above the upper limit of the ecological envelope (**Figure LO-3**). According to NEXRAD, 0.1 inches of rain fell directly over the Lake last week.

Average daily inflows (excluding rainfall) increased from the previous week, going from 3,510 cfs to 4,570 cfs. The highest structure inflow came from the C-38 Canal via the S-65E/65EX1 structure (3,430 cfs). Average daily outflows (excluding evapotranspiration) increased considerably from the previous week, going from 3,960 cfs to 9,090 cfs. The highest average single structure outflow was recorded at the S-77 structure into the C-43 canal (5,030 cfs), while an average of 3,490 cfs was released through S-308 into the C-44 canal. **Figures LO-4 and LO-5** show the combined average daily inflows and outflows for the Lake over the past eight weeks, and average inflows and outflows last week, respectively. These data are provisional and are subject to change.

In the most recent non-obscured satellite image from February 25th, 2024, NOAA's Harmful Algal Bloom Monitoring System suggested a moderate bloom risk along most shallow shorelines of the Lake (**Figure LO-6**).

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

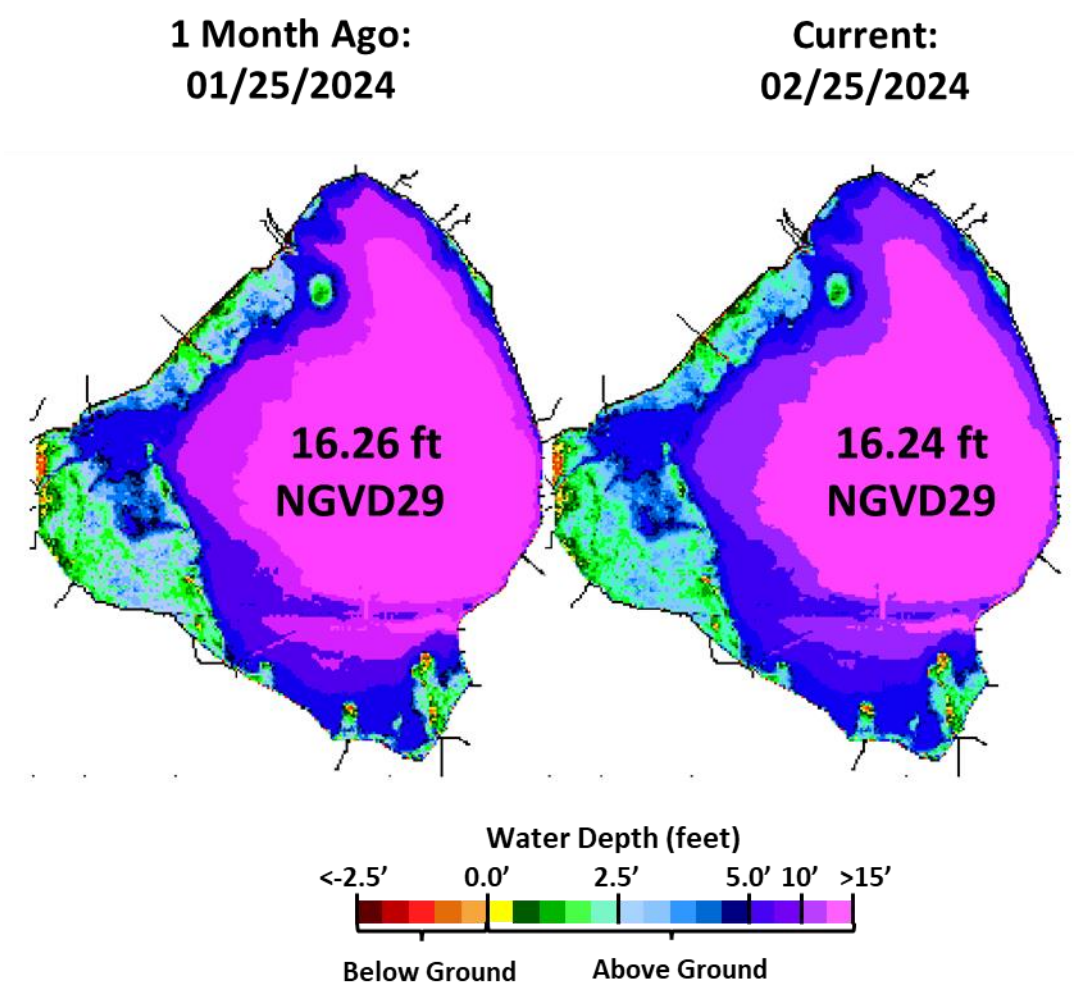


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

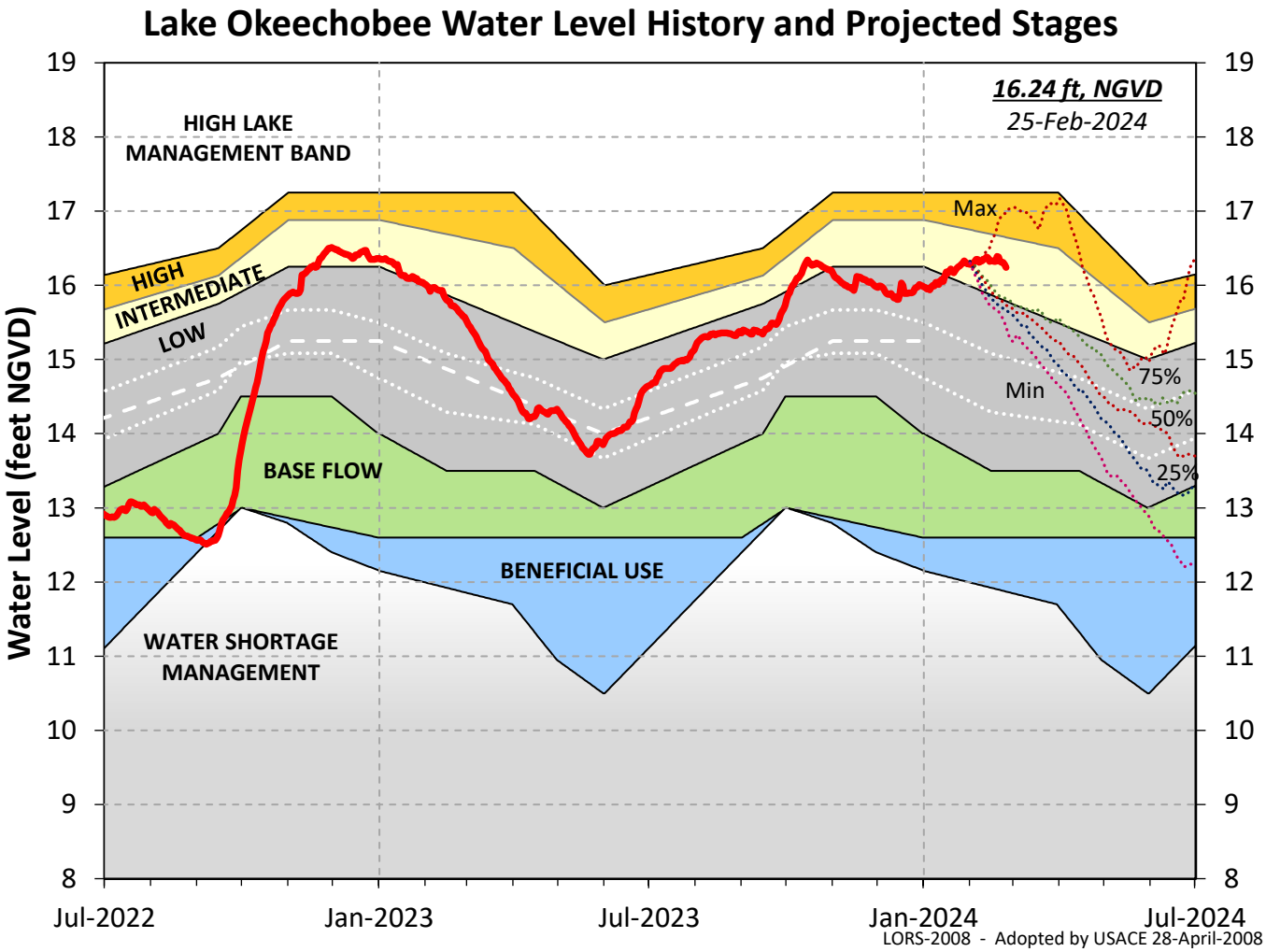


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis.

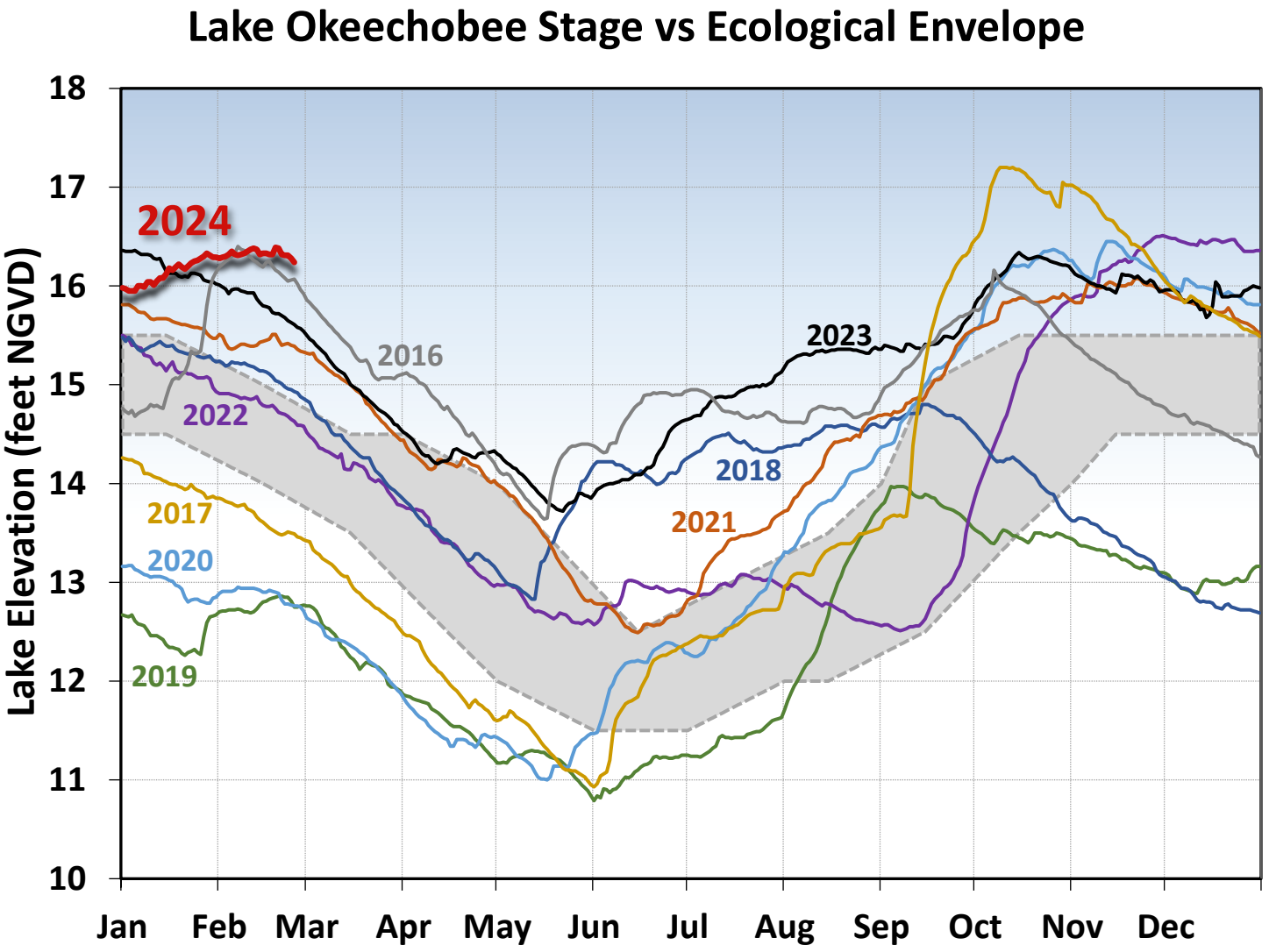


Figure LO-3. The current and eight prior year's annual stage hydrographs for Lake Okeechobee in comparison to the ecological envelope.

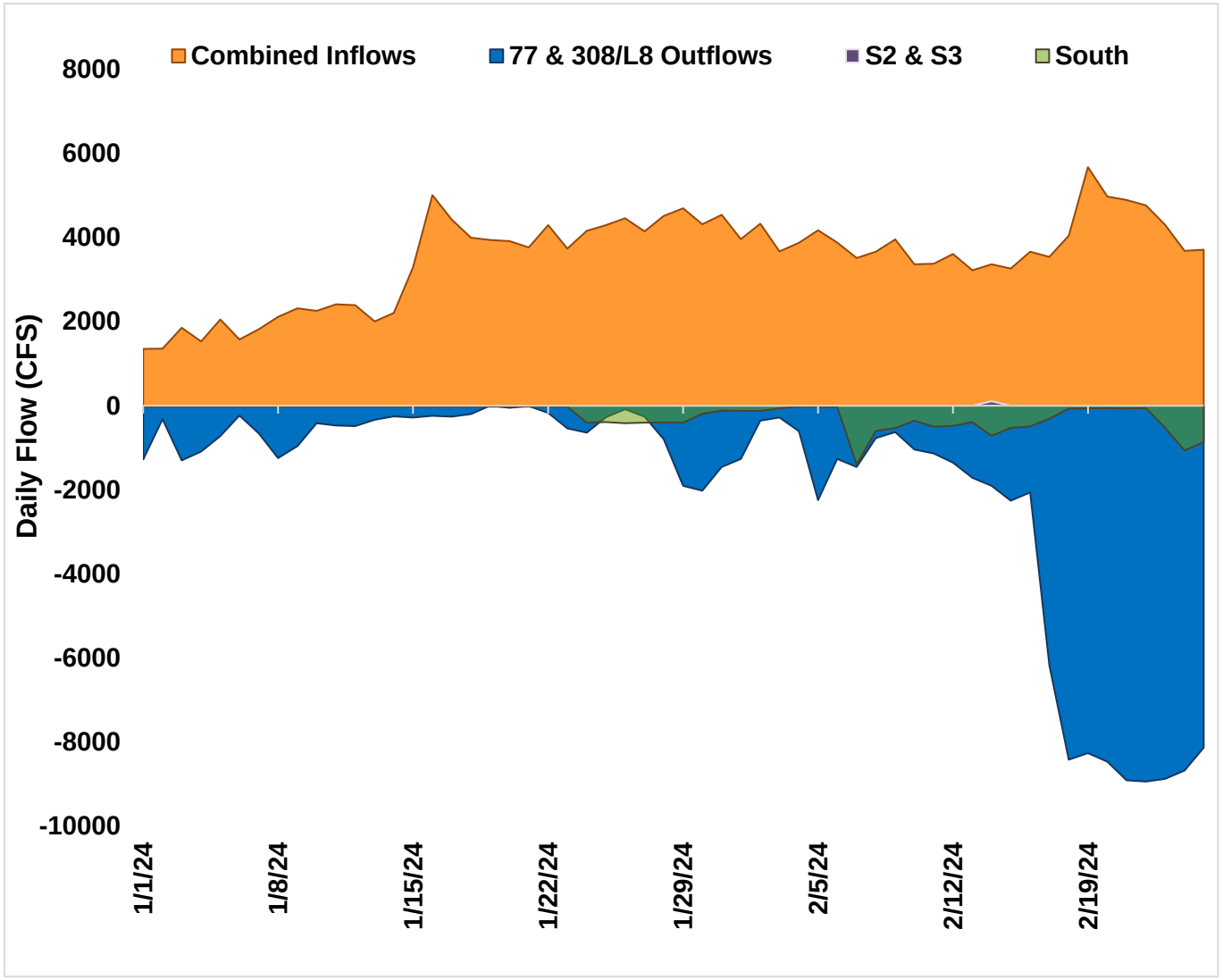


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

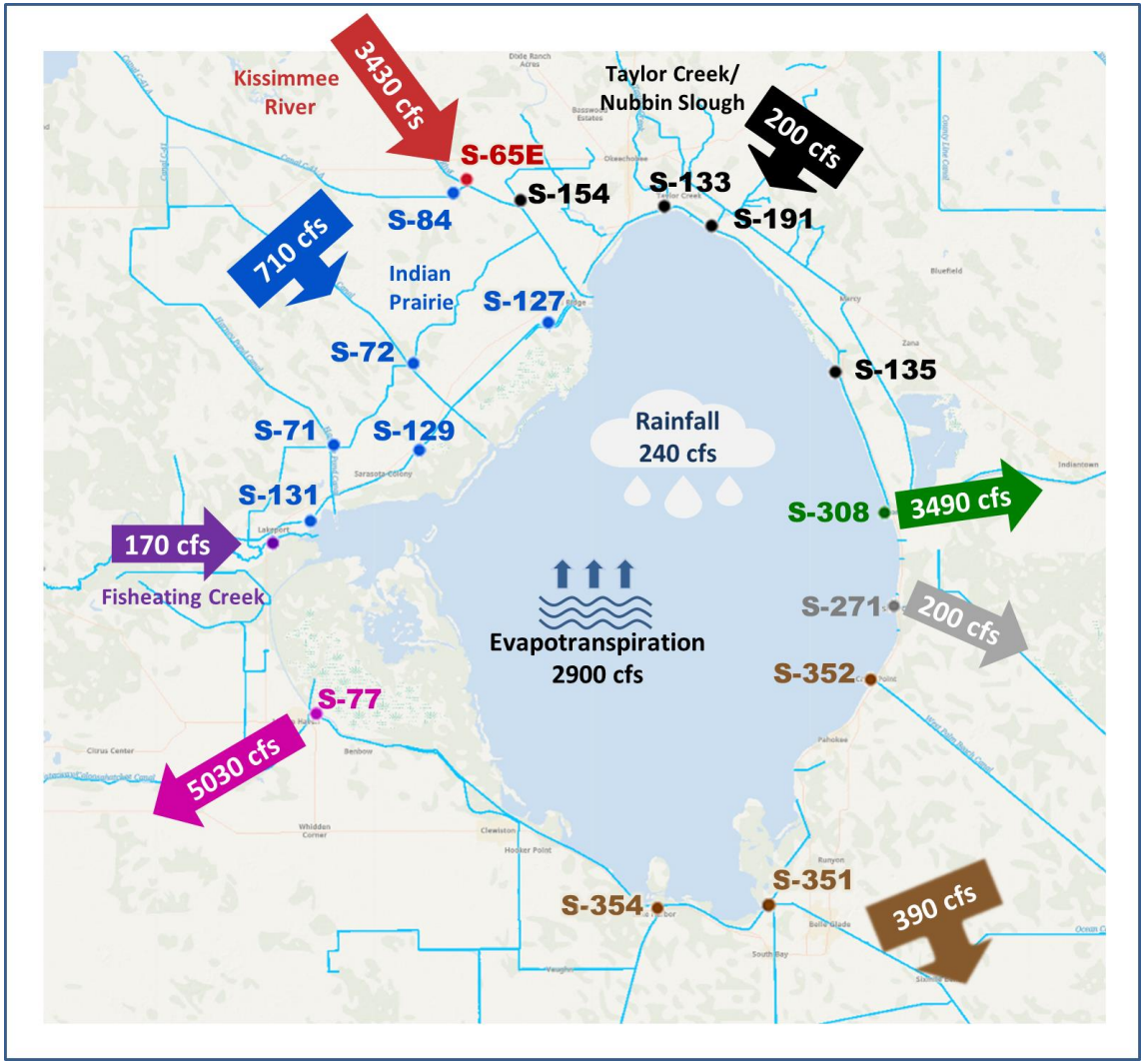


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of February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

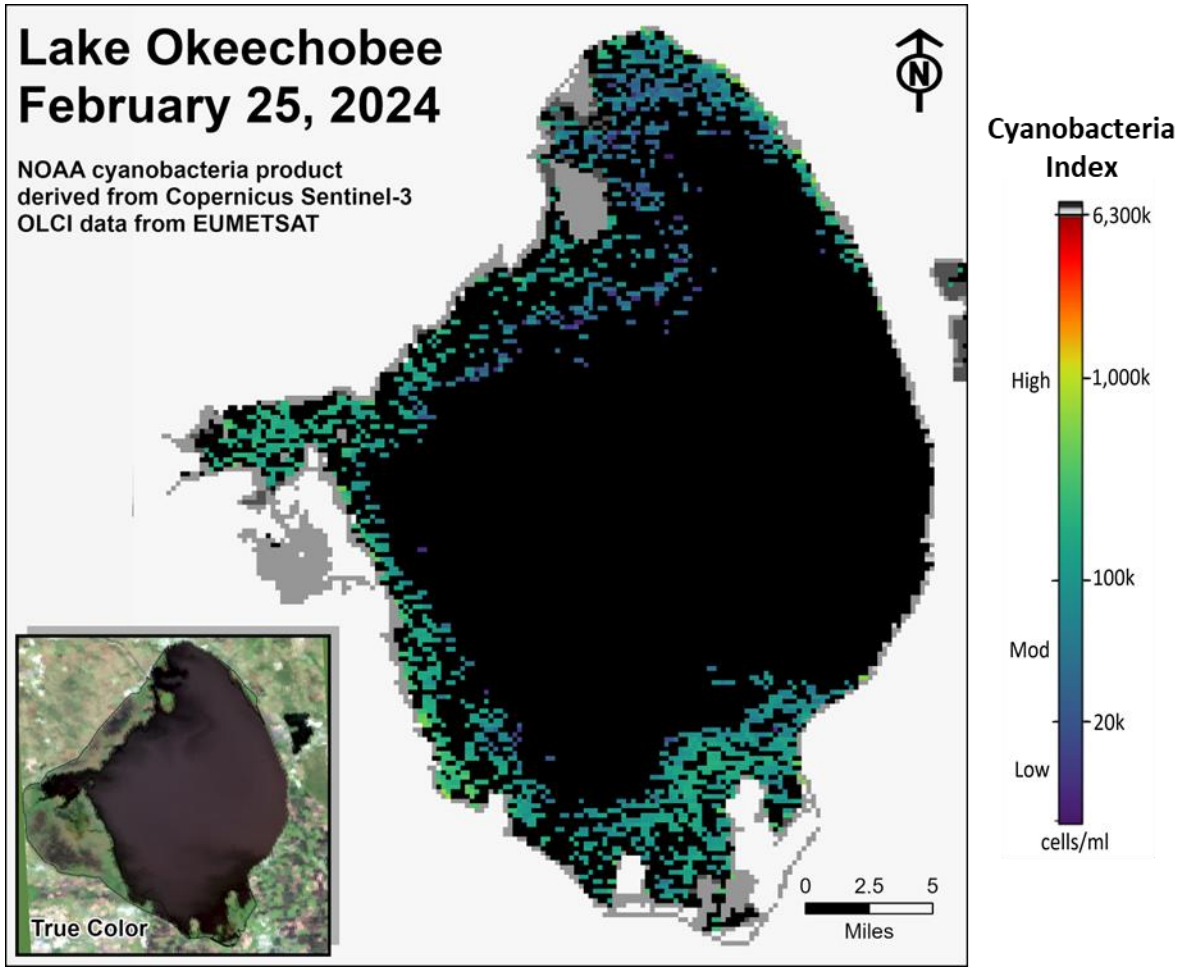


Figure LO-6. Cyanobacteria bloom index level on February 25, 2024, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover. *Provisional NOAA image, subject to change*

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 3,208 cfs (**Figures ES-1** and **ES-2**), and the previous 30-day mean inflow was 520 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 8.2. Salinity conditions in the middle estuary were within the lower stressed range for adult eastern oysters (**Figure ES-4**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute (FWRI) was 0.2 spat/shell for January, which was the same as the previous month's rate (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 7,035 cfs (**Figures ES-6** and **ES-7**), and the previous 30-day mean inflow was 3,821 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, salinities remained the same at S-79 and Val I-75 and decreased at the remaining sites in the estuary (**Table ES-2** and **Figures ES-8** and **ES-9**). The seven-day mean salinities (**Table ES-2**) were in the optimal range (0-10) for tape grass in the upper estuary. The seven-day mean salinity values were within the damaging range for adult eastern oysters at Cape Coral, in the optimal range at Shell Point, and in the upper stressed range at Sanibel (**Figure ES-10**). The mean larval oyster recruitment rate reported by the FWRI was 0 spat/shell at Iona Cove which was a slight decrease from the previous month's rate (**Figure ES-11**). At Bird Island, the mean recruitment rate was 0.2 spat/shell in January which was the same as the previous month's rate (**Figure ES-12**).

Surface salinity at Val I-75 was forecasted for the next two weeks using an autoregression model (Qiu and Wan, 2013[1]) coupled with a linear reservoir model for the tidal basin. Model scenarios included pulse releases at S-79 ranging from 0 to 1,500 cfs, and a steady release at 2,000 cfs with estimated tidal basin inflows of 207 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 0.9 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 Florida Fish and Wildlife Research Institute reported on February 23, 2024, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in any samples collected within the District region. On the east coast, red tide was not observed in samples from St. Lucie, Martin, Palm Beach, Broward or Miami-Dade counties.

Water Management Recommendations

Lake stage is in the Intermediate Sub-Band. Tributary conditions are wet. The LORS2008 release guidance suggests up to 4,000 cfs release at S-77 to the Caloosahatchee River Estuary and up to 1,800 cfs release at S-80 to the St. Lucie Estuary.

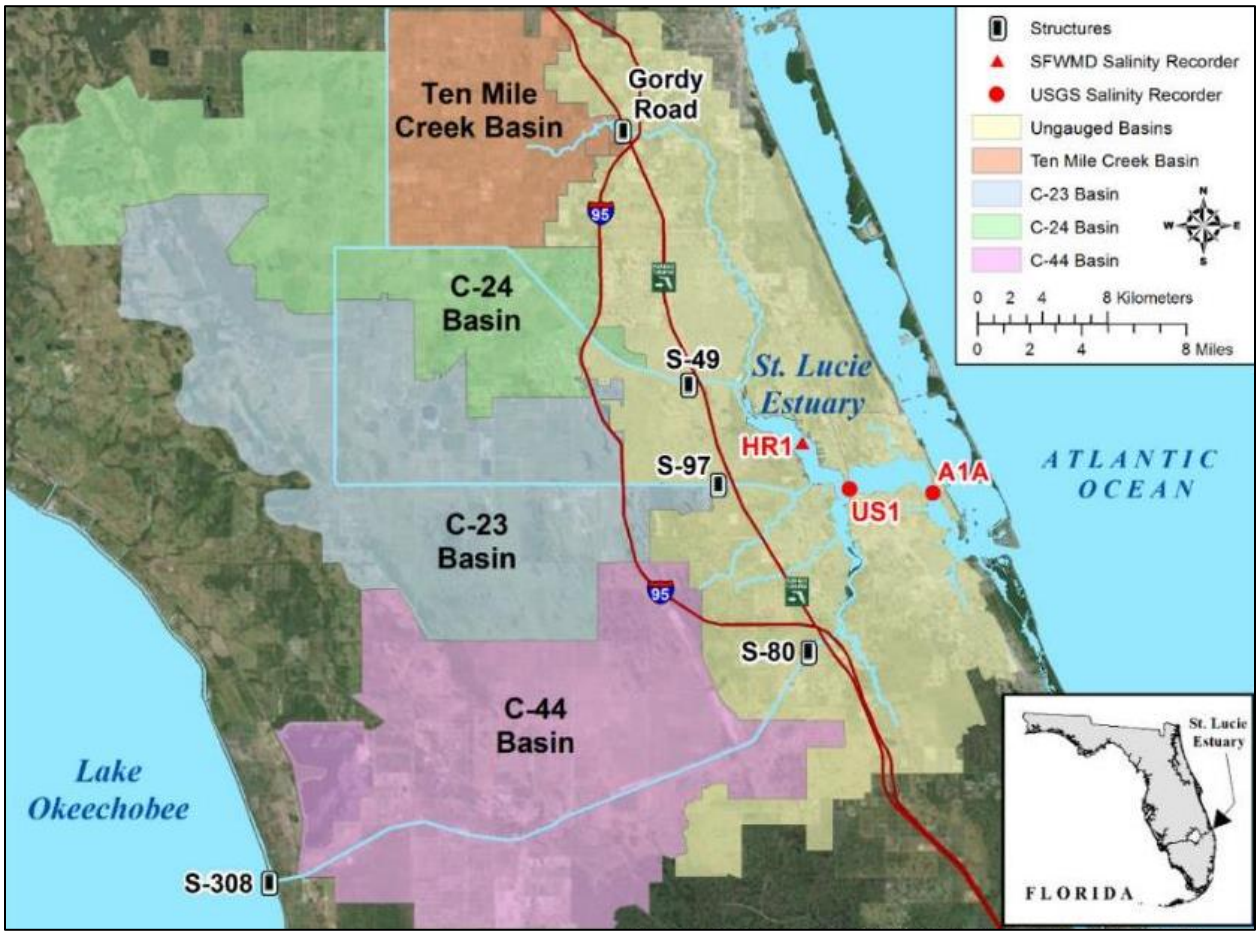


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

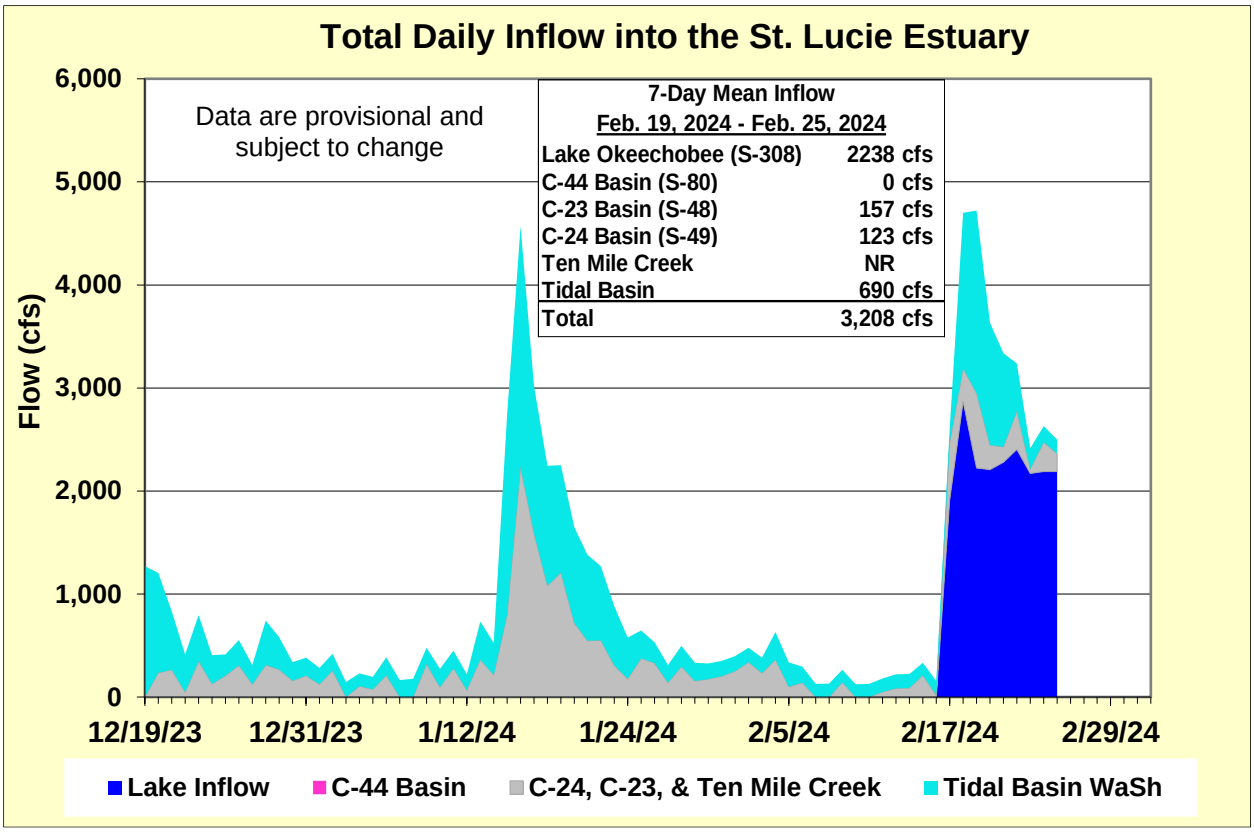


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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

Sampling Site	Surface	Bottom	Optimum Envelope
HR1 (North Fork)	**9.2** (14.9)	**10.7** (18.1)	10.0 – 25.0
US1 Bridge	**5.7** (17.7)	**10.6** (19.6)	10.0 – 25.0
A1A Bridge	**11.4** (25.6)	**18.6** (28.3)	10.0 – 25.0

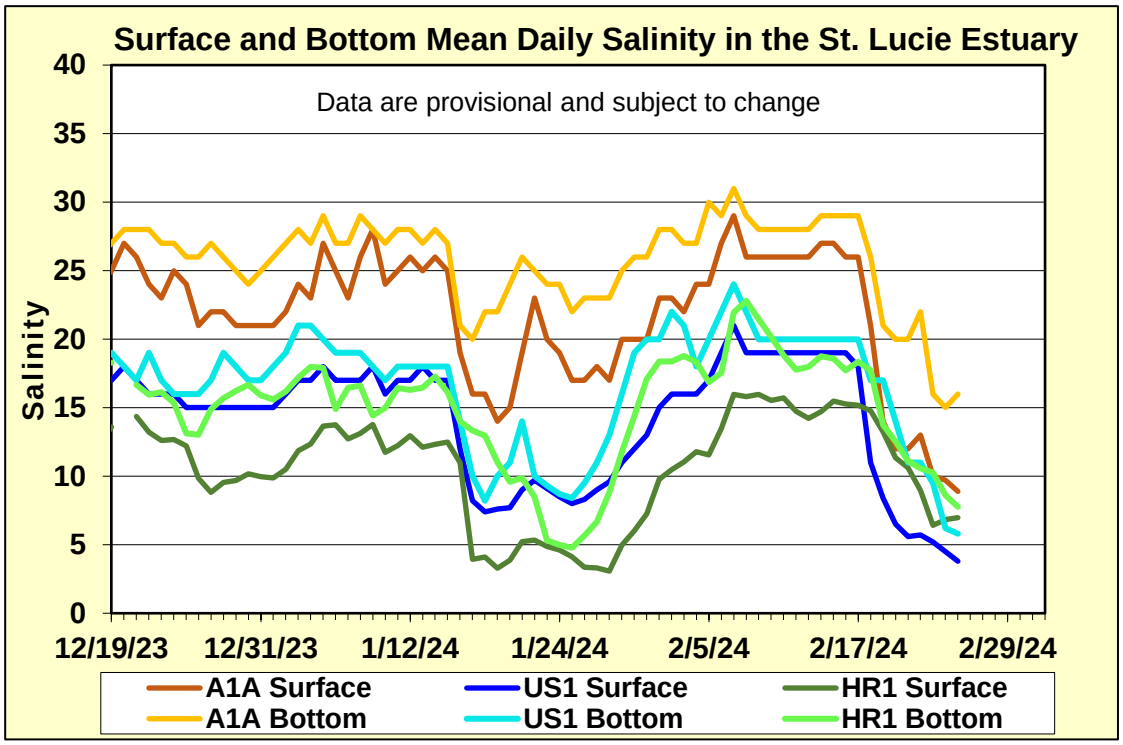


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

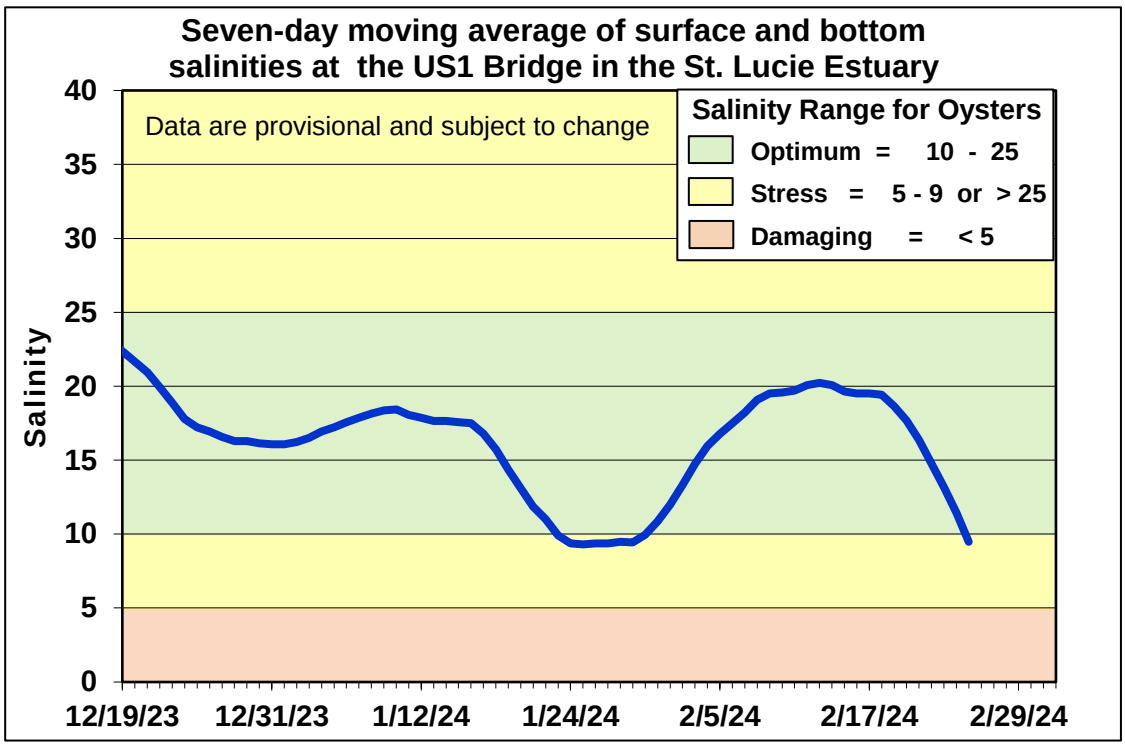


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

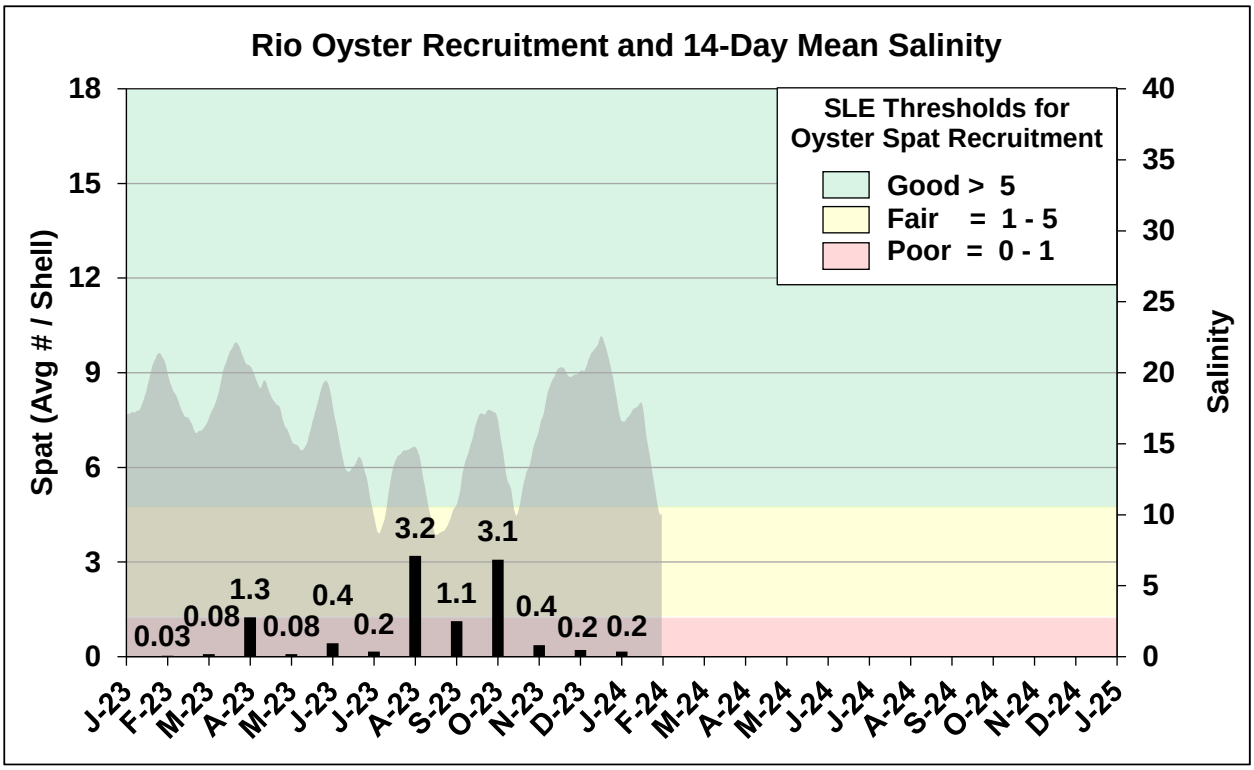


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

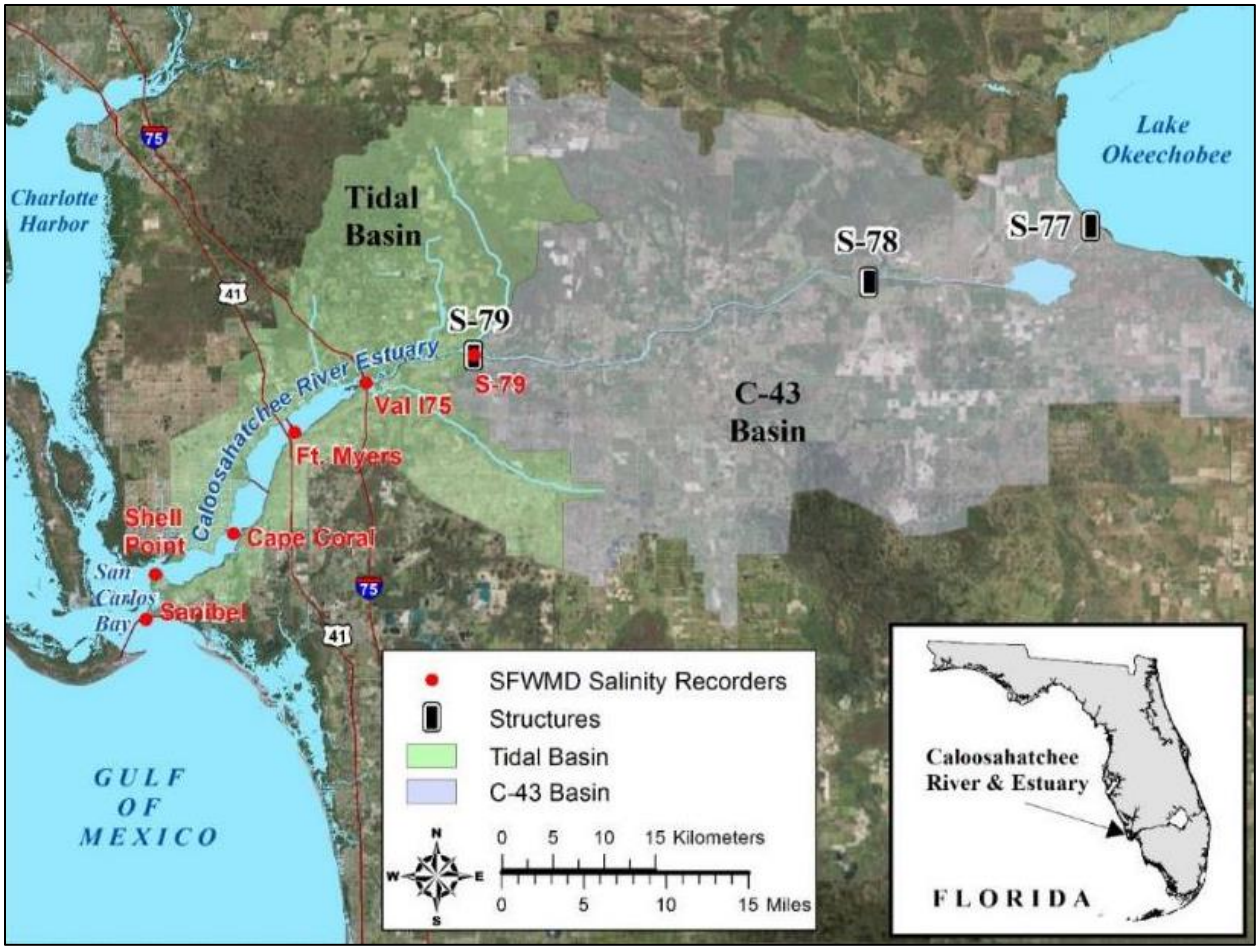


Figure ES-6. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

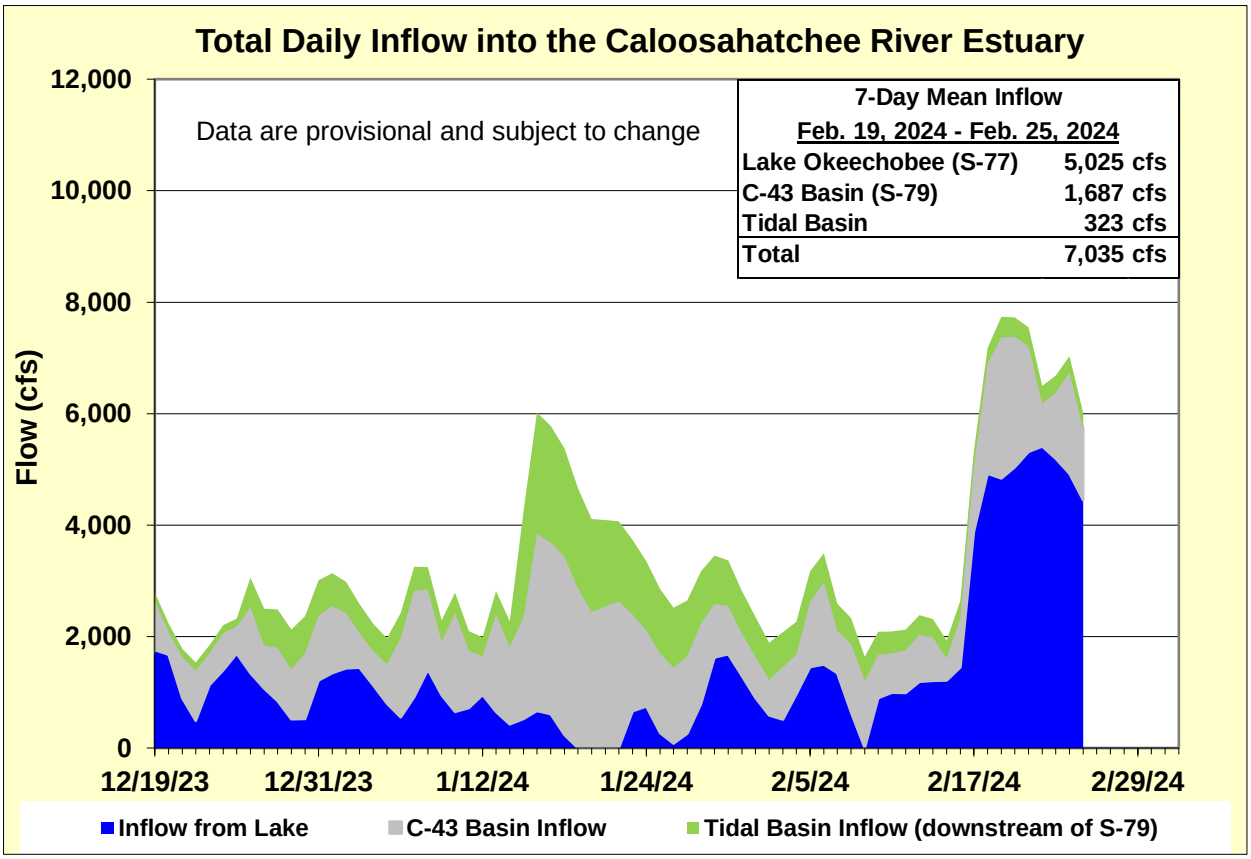


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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

Sampling Site	Surface	Bottom	Optimum Envelope
S-79 (Franklin Lock)	**0.2** (0.2)	**0.2** (0.2)	0.0 – 10.0
Val I-75	**1.8** (1.8)	**1.8** (1.8)	0.0 – 10.0
Fort Myers Yacht Basin	**0.2** (0.9)	**0.2** (1.2)	0.0 – 10.0
Cape Coral	**1.4** (8.0)	**1.8** (9.7)	10.0 – 25.0
Shell Point	**12.8** (22.8)	**16.0** (24.0)	10.0 – 25.0
Sanibel	**-** (28.5)	**-** (29.3)	10.0 – 25.0

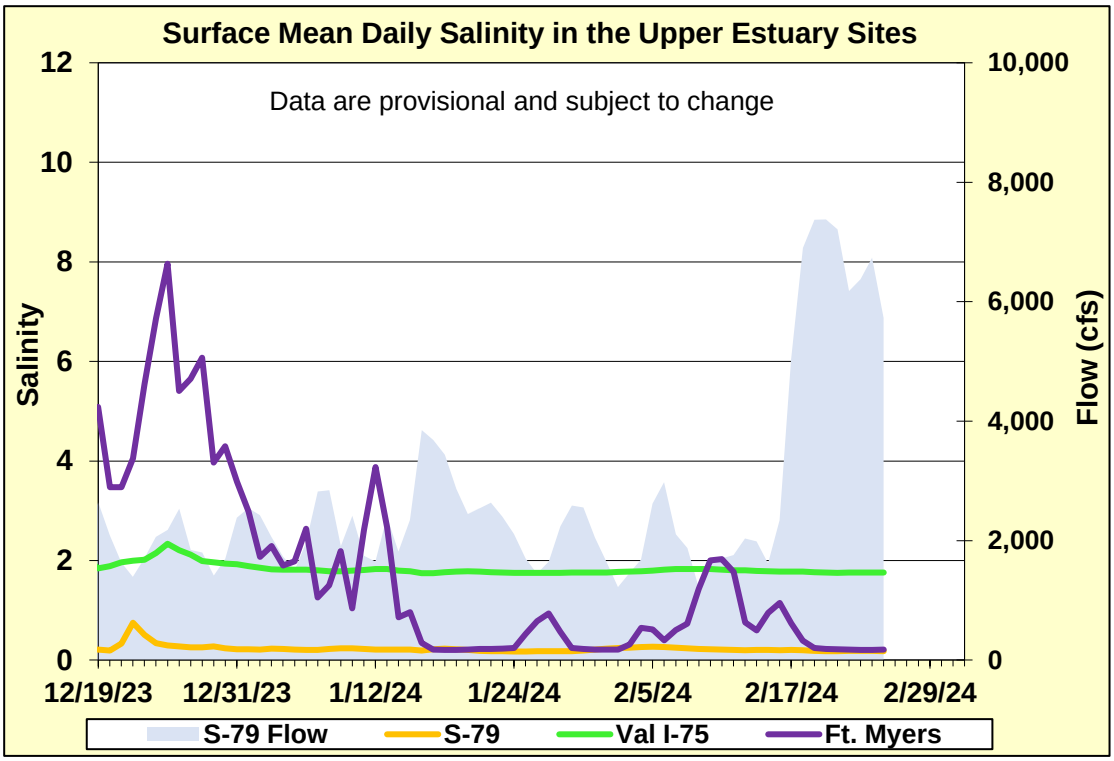


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

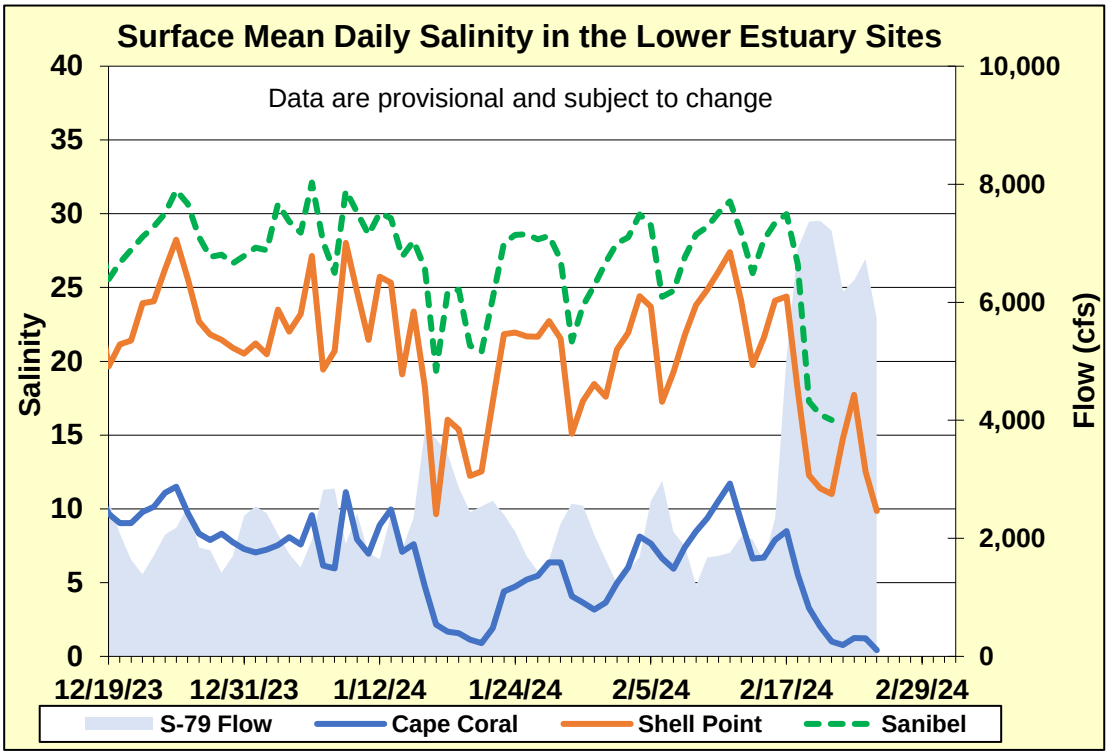


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

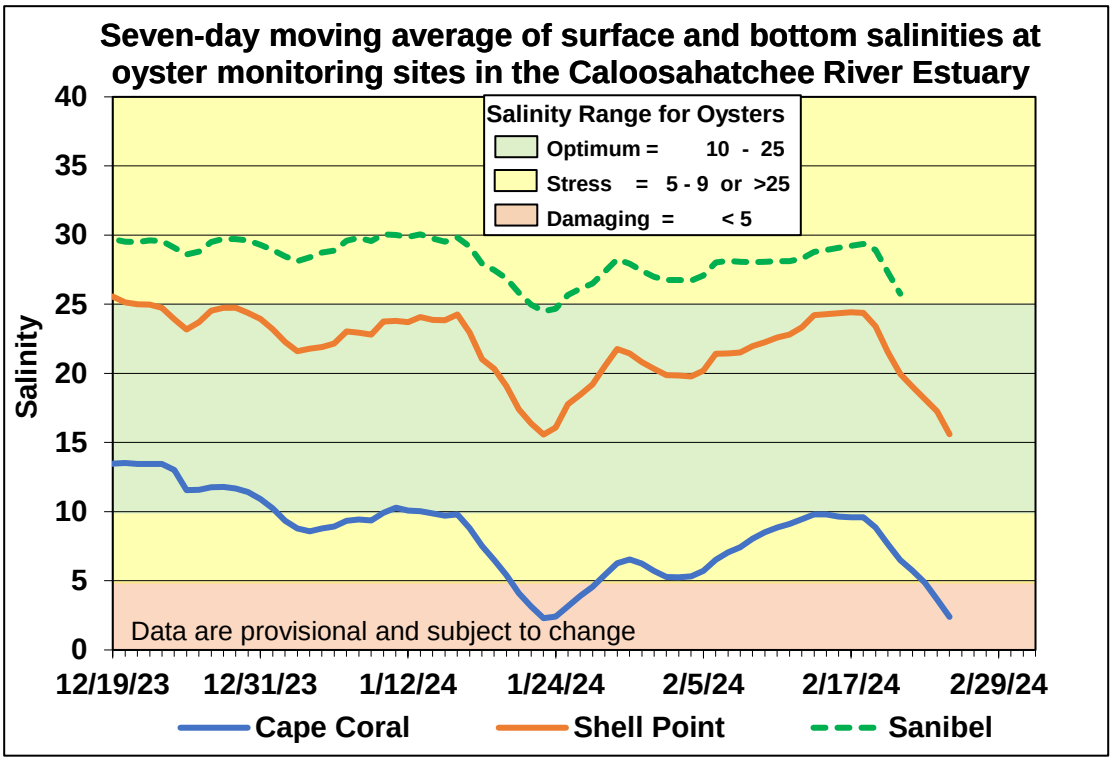


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

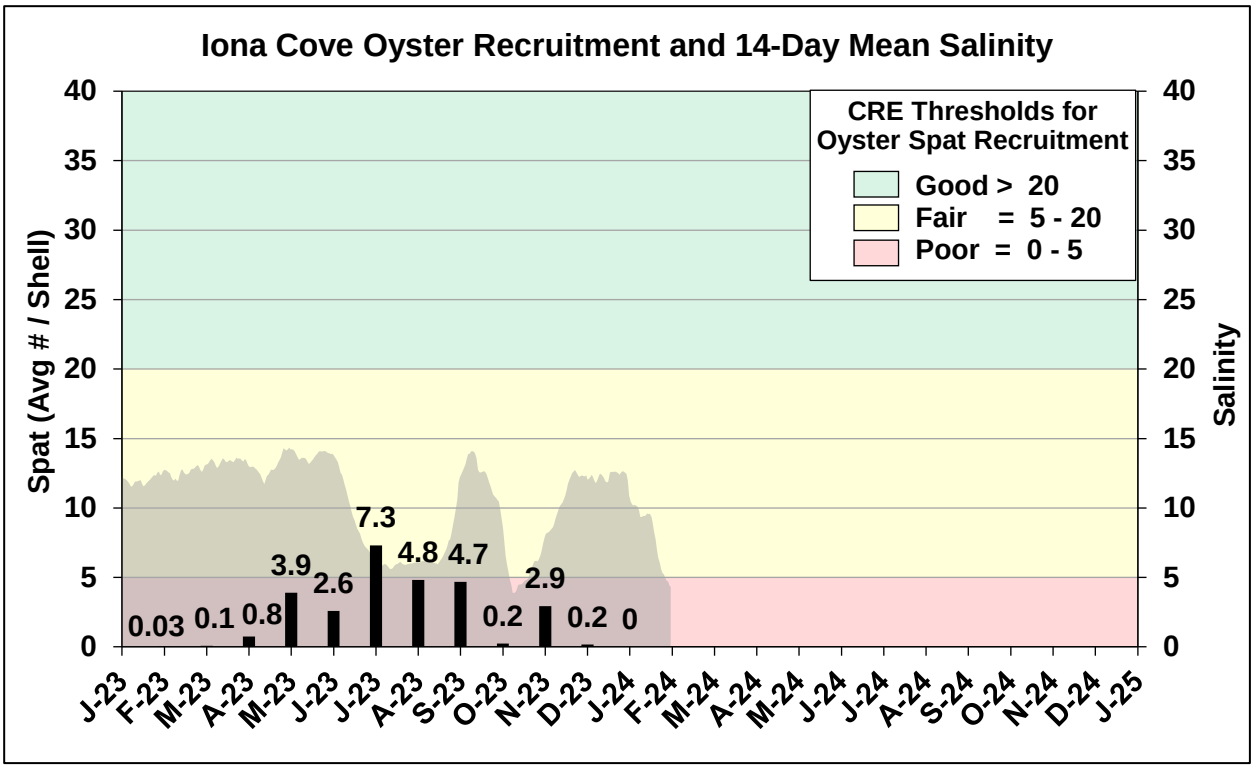


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

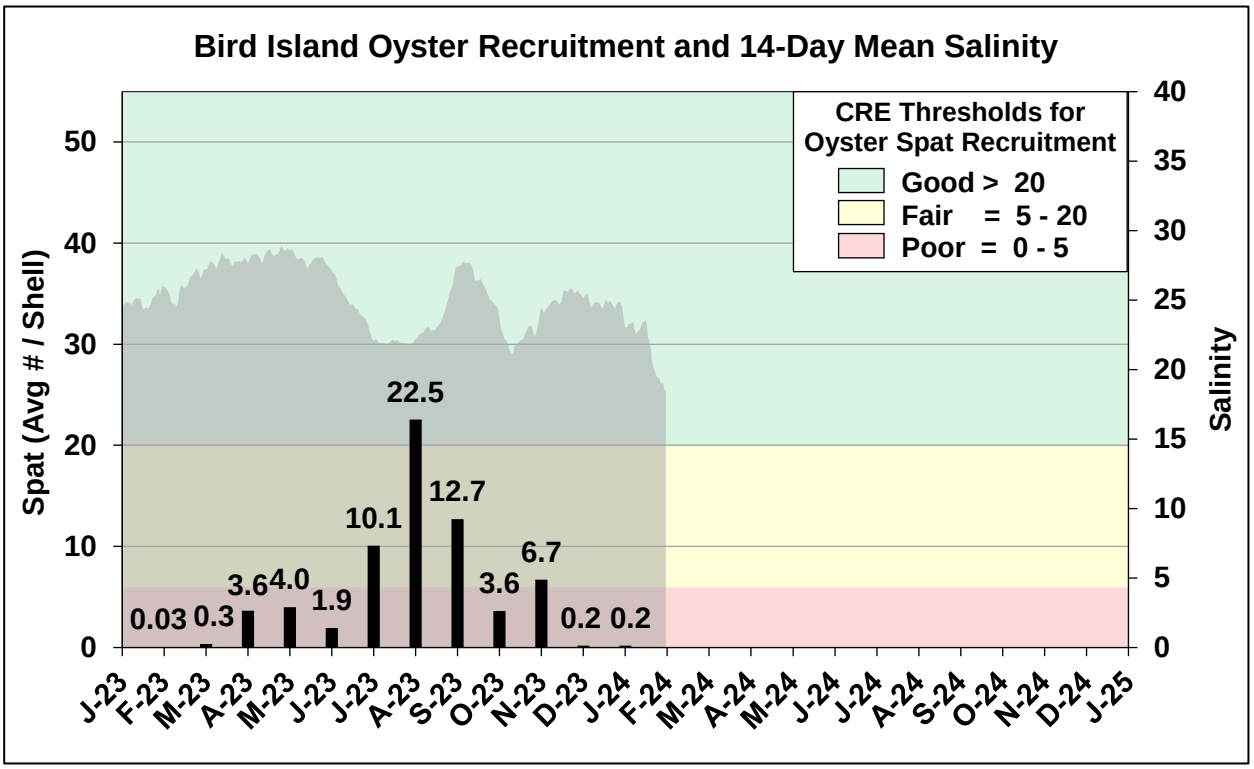


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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

Scenario	Simulated S-79 Flow (cfs)	Tidal Basin Runoff (cfs)	Daily Salinity	30-Day Mean Salinity
A	0	207	0.3	0.9
B	450	207	0.3	0.9
C	750	207	0.3	0.9
D	1,000	207	0.3	0.9
E	1,500	207	0.3	0.9
F	2,000	207	0.3	0.9

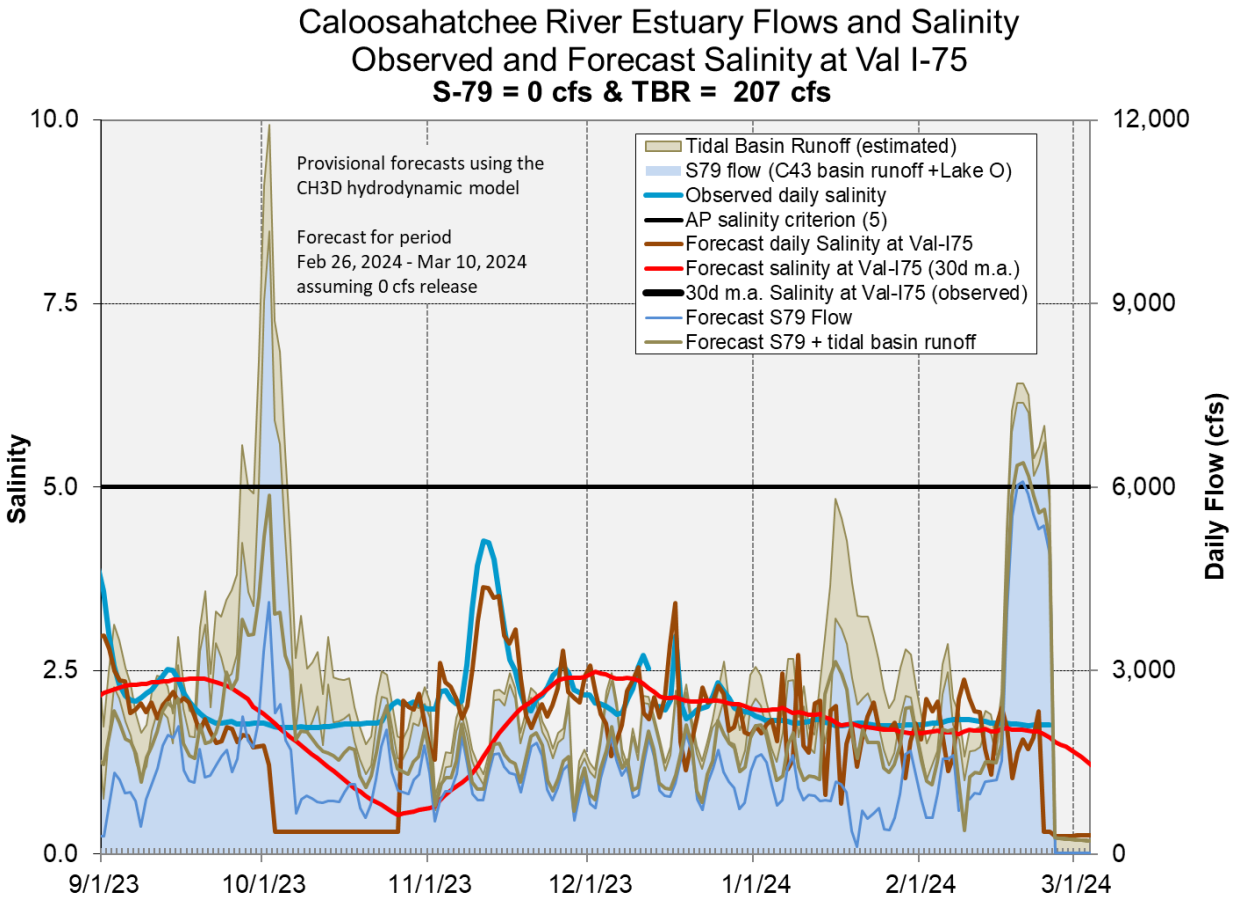


Figure ES-13. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Eastern Flow-way is offline for erosion repair in Cell 2. An operational restriction is in place in STA-1E Western Flow-way for post-construction vegetation grow-in. Online treatment cells are at or above target stage. Vegetation in the Central flow-way is highly stressed. The 365-day phosphorus loading rate (PLR) for the Central Flow-way is high. (**Figure S-1**).

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

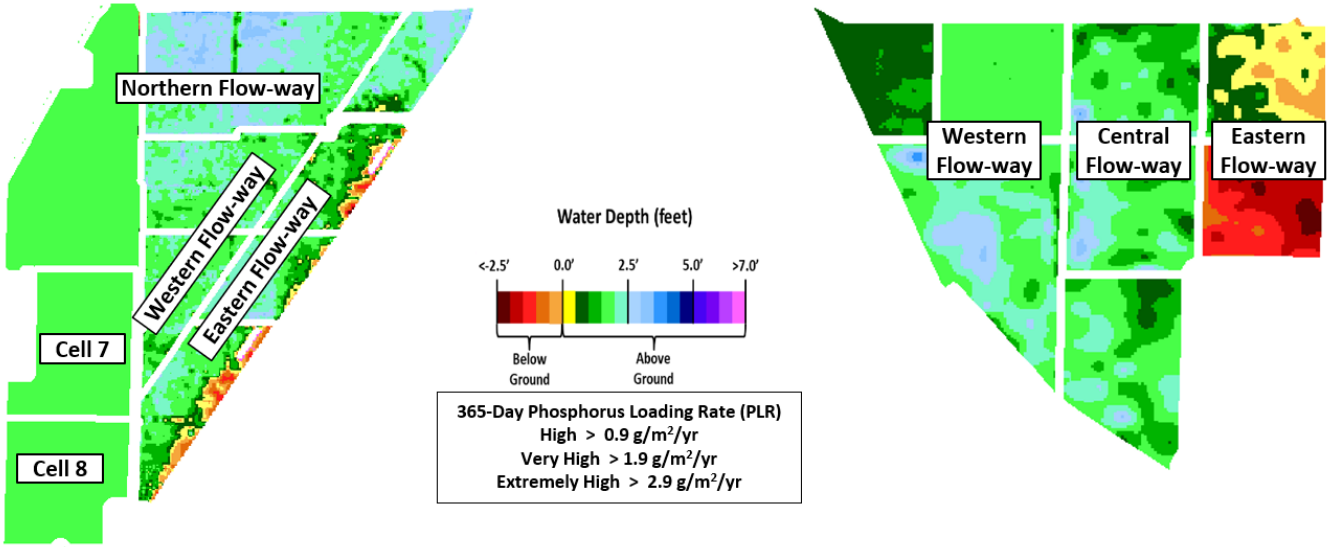
STA-2: Operational restrictions are in place in Flow-ways 2 and 4 for vegetation management activities. Online treatment cells are near or above target stage. Vegetation in Flow-ways 2, 3, and 4 is stressed, and in 5 is highly stressed. The 365-day PLRs for Flow-ways 3, 4, and 5 are below 1.0 g/m^2/year.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

STA-3/4: An operational restriction is in place in the Eastern Flow-way for post-drawdown vegetation grow-in. Treatment cells are at or 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 below 1.0 g/m^2/year (**Figure S-2**).

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

For definitions on STA operational language see glossary following figures.

Eastern Flow Path Weekly Status Report – 2/19/2024 through 2/25/2024

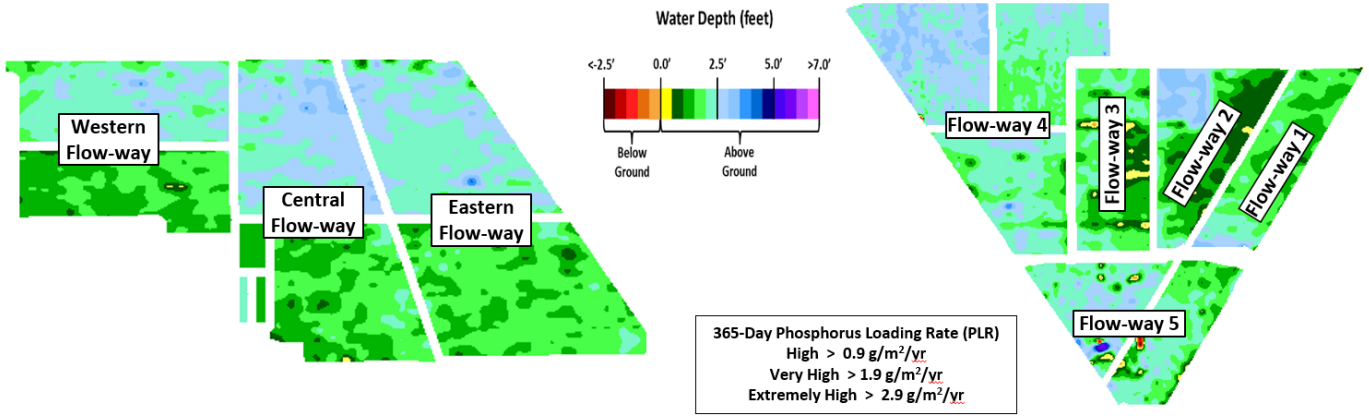


STA-1W	Flow-way Status
Western	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• Very High 365-day PLR • Highly stressed vegetation conditions
Northern	• Highly stressed vegetation conditions • Planting emergent vegetation
Cell 6	
Cell 7+8	

STA-1E	Flow-way Status
Western	• Post-construction vegetation grow-in
Central	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• Offline for Cell 2 erosion repair

Figure S-1. Eastern Flow Path Weekly Status Report

Central Flow Path Weekly Status Report – 2/19/2024 through 2/25/2024

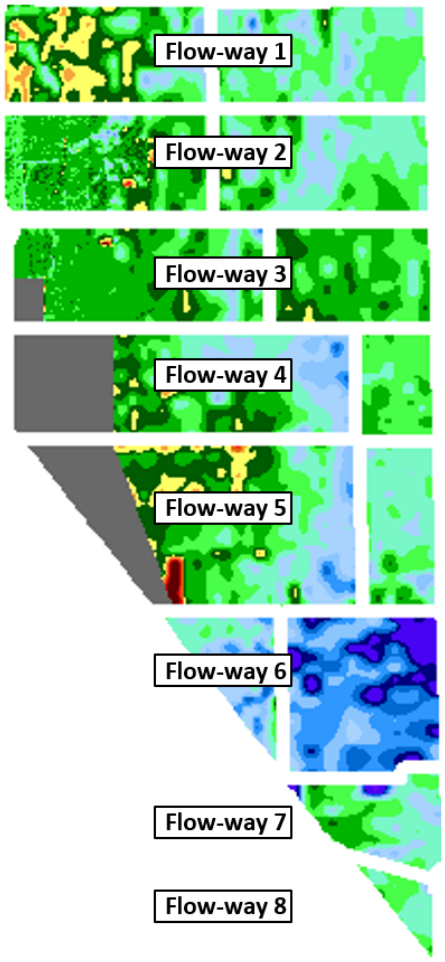


STA-3/4	Flow-way Status
Western	
Central	• Highly stressed vegetation conditions • Removal of floating tussocks
Eastern	• Post-drawdown vegetation grow-in • Stressed vegetation conditions

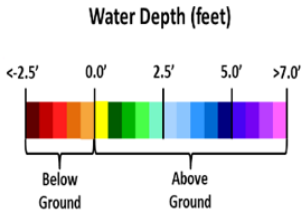
STA-2	Flow-way Status
Flow-way 1	• High 365-day PLR • Upstream nuisance vegetation control
Flow-way 2	• Post-construction vegetation grow-in • Planting emergent vegetation • Stressed vegetation conditions • Upstream nuisance vegetation control
Flow-way 3	• Stressed vegetation conditions • Upstream nuisance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

Figure S-2. Central Flow Path Weekly Status Report

Western Flow Path Weekly Status Report – 2/19/2024 through 2/25/2024



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	• Highly stressed vegetation conditions • Vegetation management (prescribed burn)
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 > 0.9 g/m^2/yr
Very High > 1.9 g/m^2/yr
Extremely High > 2.9 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

Around a tenth of an inch of rain fell across the Everglades Protection Area last week. WCA-1: Stage within the Refuge above schedule but fell along the slope of the A1 zone line last week, stage on Sunday at the 1-8C gauge was 0.43 feet above that line. WCA-2A: Stage at the S-11B_H gauge trended towards schedule last week. The average on Sunday was 1.27 feet above the flat regulation line. WCA-3A: The 3-Gauge average stage trended slightly towards the schedule line last week. The average stage on Sunday was 0.31 feet above the falling Zone A regulation line. WCA-3A North: Stage at Gauge 62 (NW corner) fell below the Upper schedule late last week, average on Sunday was 0.07 feet below that schedule line. See figures **EV-1** through **EV-4**.

Water Depths

The SFWDAT model output for February 25, 2024, illustrates a drying trend from north to south in WCA-3A. Ponded conditions remain along the northern reaches of the L-67s in WCA-3A. In southern WCA-3A the spatial extent of flooding there is like one month ago. Hydrologic connectivity remains within all the major sloughs of ENP, but trending drier. Current WDAT water depth estimates remain somewhat drier when compared to one month ago across most of the EPA, most significantly in WCA-2A and western BCNP. The comparison to modeled conditions a year ago has returned to showing wetter conditions across the EPA, less significant in WCA-1 and WCA-2A. (**Figure EV-5 and Figure EV-6)**.

Comparing current conditions to the 20-year average on February 25th: Depth conditions return to above the 90th percentile for this time of the year across a most of the EPA. Depths in southwestern WCA-3A moved back to above 70% compared to the period of record (**Figure EV-7**).

Taylor Slough and Florida Bay

Total weekly rainfall averaged 0.24 inches in Taylor Slough and Florida Bay over the past week (2/19-2/26) based on the 18 gauges used for this report. Total rainfall ranged from 0.05 inches at Joe Bay (JB) to 0.38 inches at Manatee Bay (MB), both in the eastern nearshore region. The average change in stages across Taylor Slough was negligible. Individual stage changes ranged from –0.03 feet at E112, to +0.02 feet at Taylor Slough Bridge (TSB), both in the northern slough (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels remain above the recent average for this time of year by 11.4 inches compared to before the Florida Bay initiative (starting in 2017), an increase of 1.1 inches relative to last week's comparison.

Average Florida Bay salinity was 20.5, a decrease of 0.1 from last week. Salinity changes were variable across the bay, ranging from –3.1 at Garfield Bight (GB) in the western nearshore region to +2.6 at Little Madeira Bay (LM) in the eastern nearshore region (**Figure EV-8**). Western salinities remain just below the 25th percentile and central and eastern salinities remain well below it (**Figure EV-10**). Average Florida Bay salinity

remains below its recent average for this time of year by 7.0, a decrease of 1.4 from last week.

Implications for water management

The ecology of WCA-3A will benefit from recession rates in the “good” or “fair” range, this type of recession increases foraging opportunities for wading birds and lessen the flooding stress on tree islands. A continuation of a recession at the 2-17 gauge would be beneficial for the marsh and tree island ecology in WCA-2A as we move through the dry season. As conditions remain above the 90th percentile in NESRS, continuing strong positive TS creek flows to avoid salinity swings in the nearshore areas is showing to be ecologically beneficial. 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	0.09	−0.08
WCA-2A	0.08	−0.08
WCA-2B	0.11	−0.11
WCA-3A	0.09	−0.09
WCA-3B	0.11	−0.09
ENP	0.09	−0.10

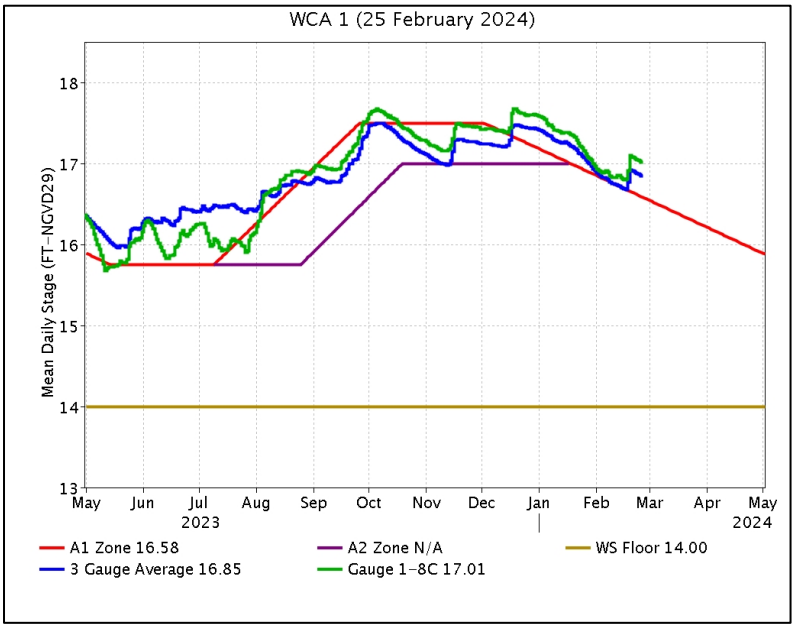


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

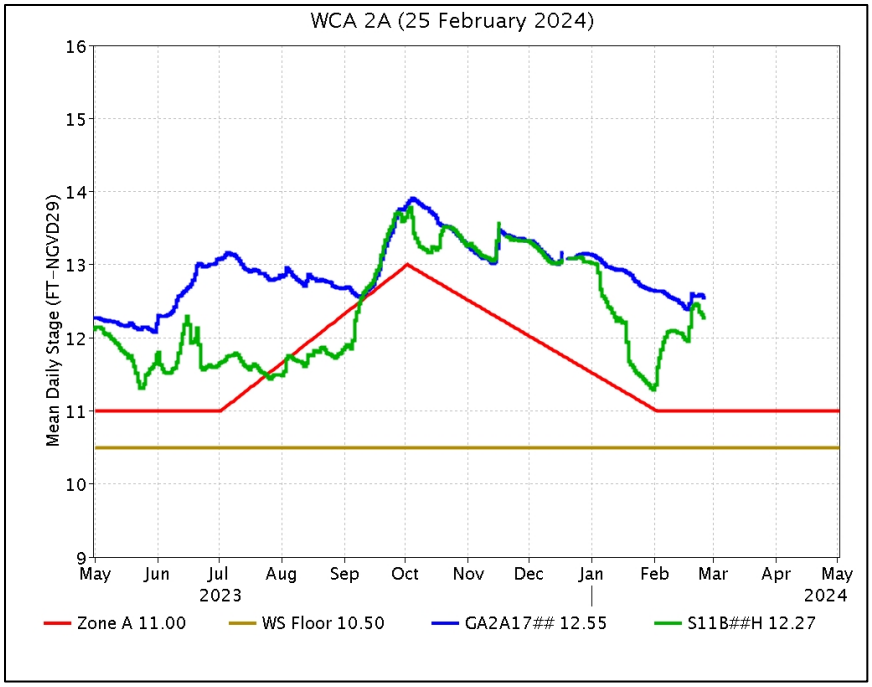


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

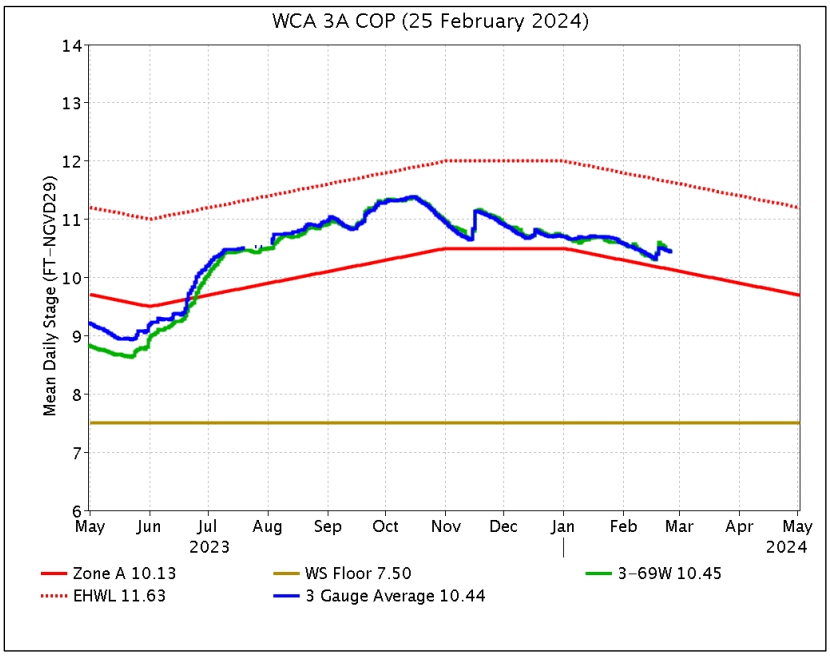


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.

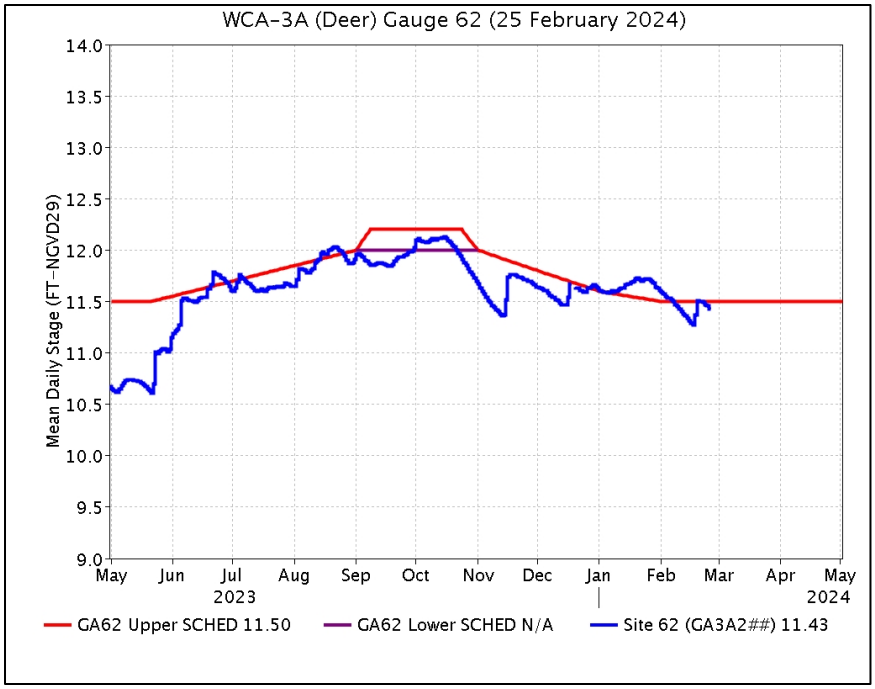


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule.

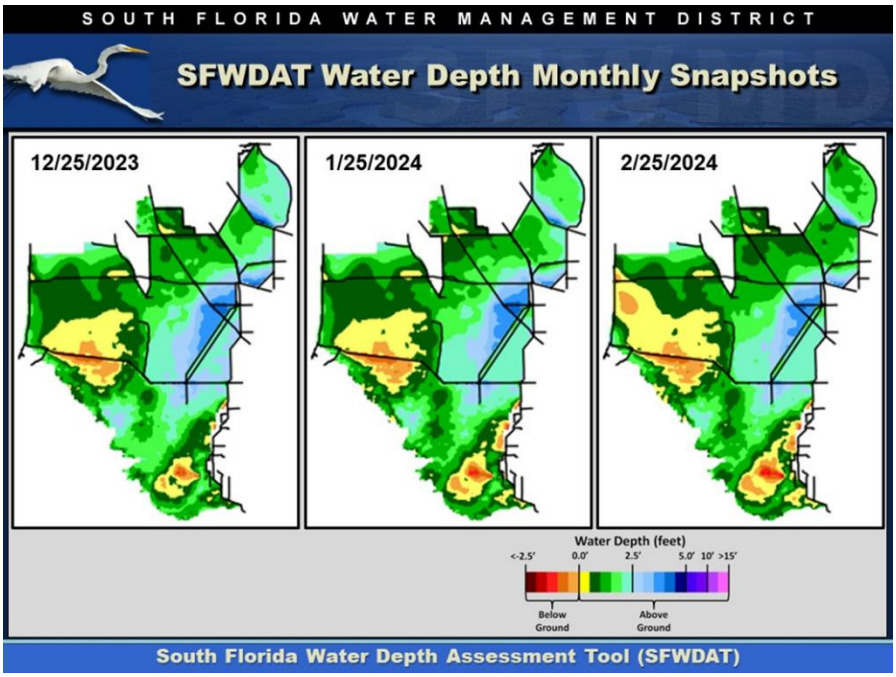


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

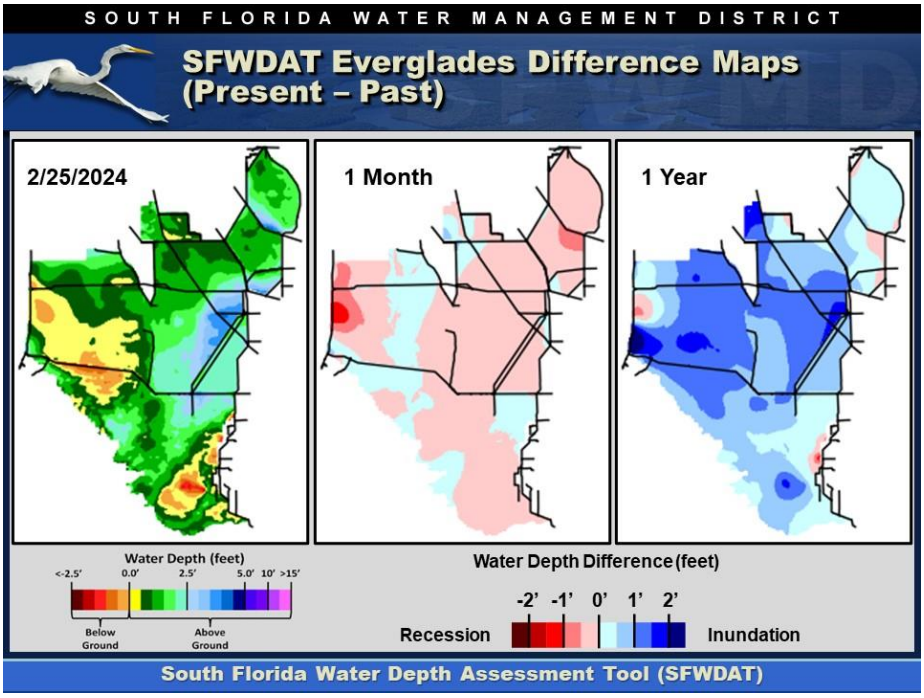


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

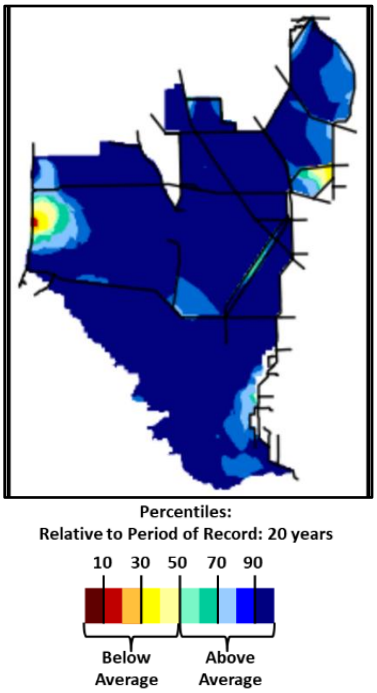


Figure EV-7. Present water depths (2/25/2024) compared to the day of year average over the previous 20 years.

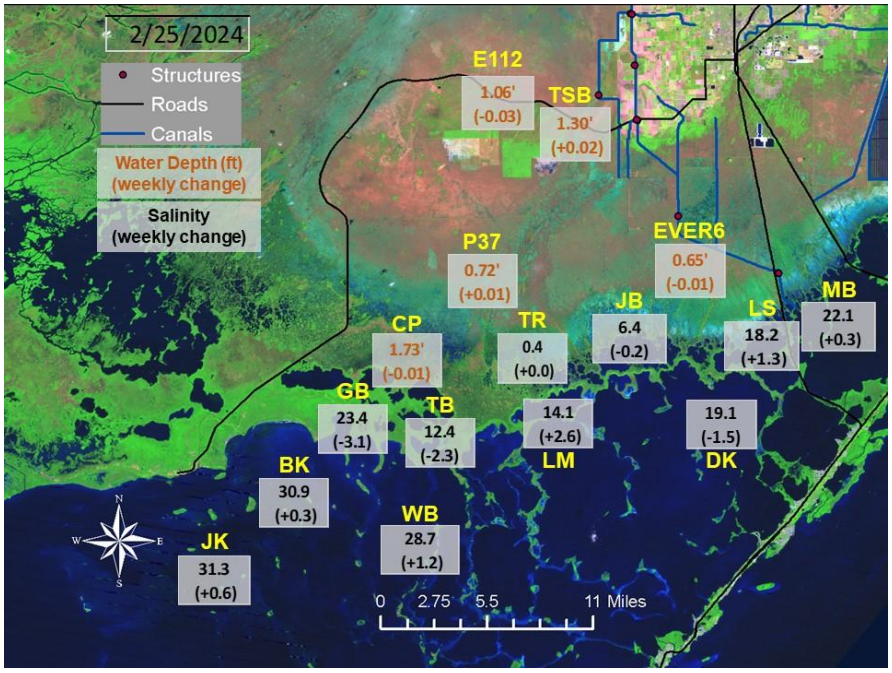


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

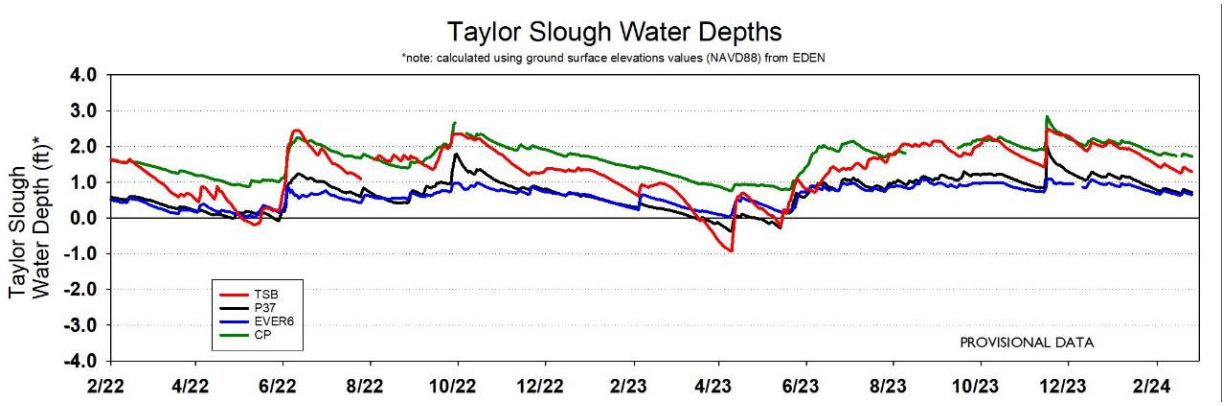


Figure EV-9. Taylor Slough water depth time series.

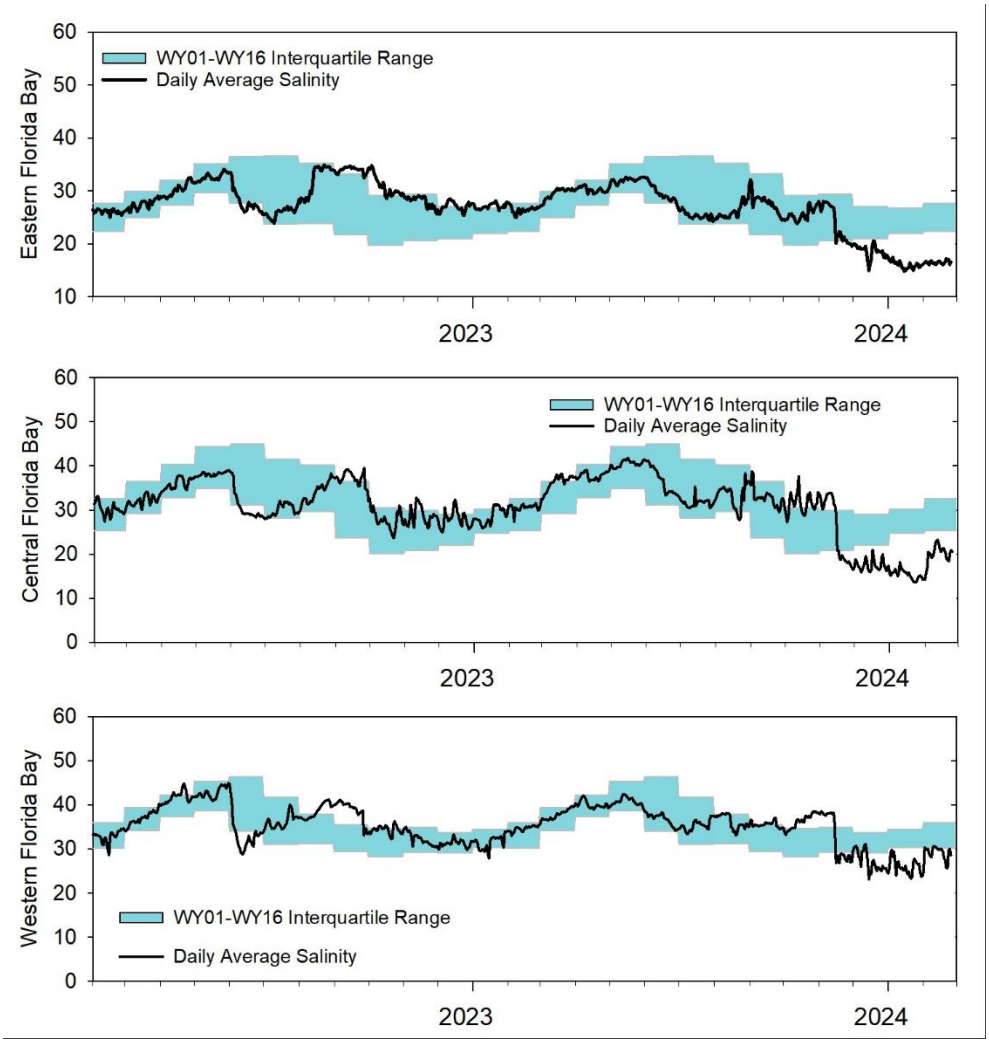


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with interquartile (25-75 percentile) ranges.

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

SFWMD Everglades Ecological Recommendations, February 27, 2024 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.08’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage decreased by 0.08’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-2B	Stage decreased by 0.11’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.06’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat (peat soils) and wildlife (fish/crayfish reproduction, wading bird foraging and nesting).
WCA-3A NW	Stage decreased by 0.10’	Recession rate of less than 0.12’ per week.	
Central WCA-3A S	Stage decreased by 0.11’	Recession rate of less than 0.12’ per week.	Protect within basin wildlife (fish/crayfish reproduction, wading bird foraging).
Southern WCA-3A S	Stage decreased by 0.08’		
WCA-3B	Stage decreased by 0.09’	Recession rate of less than 0.12’ per week.	Protect within basin (sensitive tree islands) and downstream habitat and wildlife.
ENP-SRS	Stage decreased by 0.10’	Make discharges to ENP according to COP and TTFF protocol while adaptively considering upstream and downstream ecological conditions.	Protect within basin and upstream habitat and wildlife (wading bird nesting).
Taylor Slough	Stage changes ranged from −0.03’ to +0.02’	Move water southward as possible.	When available, provide freshwater to promote water movement.
FB- Salinity	Salinity changes ranged from −3.1 to +2.6	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 707 cfs, and the previous 30-day mean inflow was 598 cfs. The seven-day mean salinity was 26.3 at BBCW8 and 20.1 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.

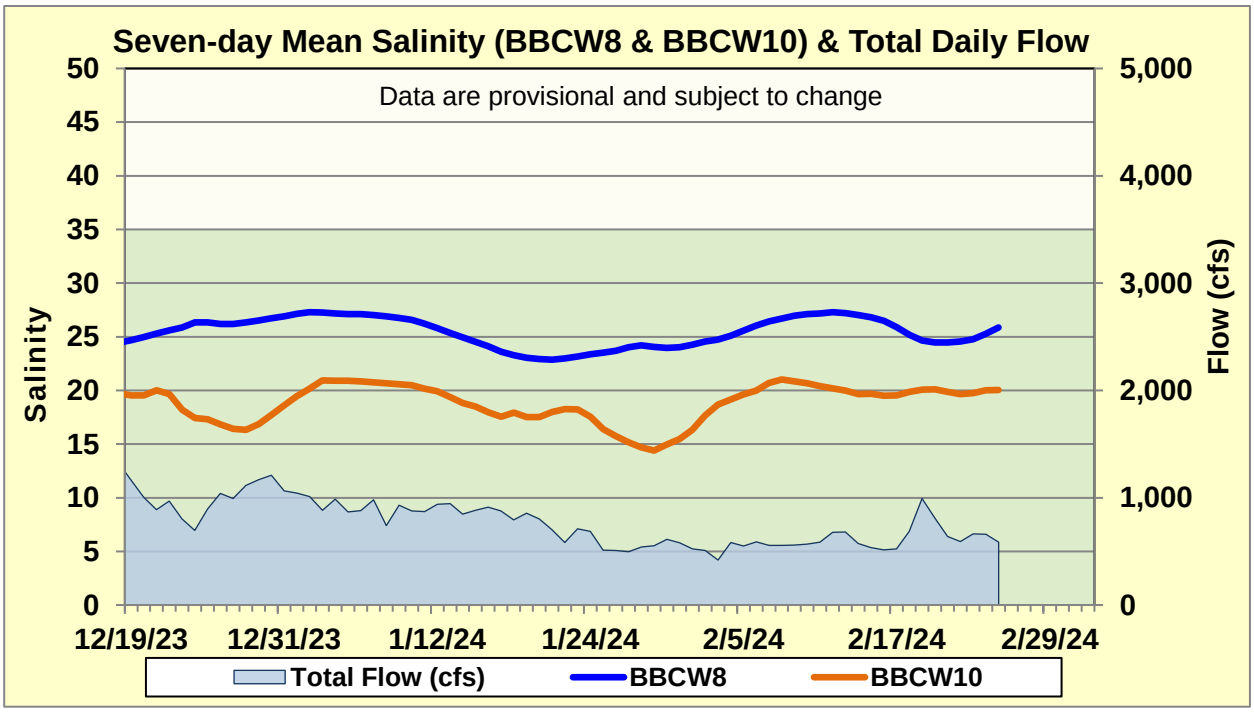


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.