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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 2, 2022

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Dry high pressure over the area continues. Some limited moisture with very light showers south and east Wednesday and Thursday is possible. As moisture increases a bit Friday, daytime heating is forecast to generate some scattered light showers focused over the southern interior. A weakening frontal boundary is forecast to push into north central Florida Friday night and then temporarily stall across the District Saturday but with limited shower coverage. The front is forecast to lift north Saturday night and Sunday before returning back southward into the District Sunday night and Monday. The exact details of where the front stalls and the available moisture for the system remain uncertain, but the current quantitative precipitation forecast (QPF) shows light to moderate shower activity focused over the northern half of the District Saturday and Sunday and then over the southern half of the District Monday. During the first 7-day period (Week 1), rainfall is forecast to be below the historical average. Rainfall for the second 7-day period (Week 2) is forecast to be near the historical average.

Kissimmee

Flow at S-65 was increased to ~1400 cfs to stop the stage rise in KCH, and water depth on the Kissimmee River floodplain is rising. Mean depth increased to 0.20 feet as of January 30, 2022. The concentration of dissolved oxygen in the Kissimmee River has remained well above the region of concern, with an average of 9.1 mg/L for the week ending on January 30, 2022.

Lake Okeechobee

Lake Okeechobee stage was 14.96 feet NGVD on January 30, 2022 and it was 0.56 feet lower than a month ago (**Figure LO-1**). Lake stage fell back to within the ecological envelope on January 1, 2022, after being above the envelope since late September 2021, and having spent a total of 279 days (79%) in 2021 above the envelope (**Figure LO-2**). Average daily inflows (excluding rainfall) increased from the previous week, going from 567 cfs to 1,031 cfs. Average daily outflows (excluding evapotranspiration) also increased from the previous week, going from 1,788 cfs to 3,310 cfs. Recent satellite imagery

(January 30, 2022) showed scattered areas of moderate bloom potential along the western shorelines (**Figure LO-6**).

Estuaries

Total inflow to the St. Lucie Estuary averaged approximately 349 cfs over the past week with no flow coming from Lake Okeechobee. Mean salinities increased at all sites in the estuary over the past week. Salinity at the US1 Bridge was in the good range (10-26) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,216 cfs over the past week with 1,565 cfs coming from the Lake. Mean salinities remained the same at S-79, increased slightly at Val I-75, Ft. Myers, and Sanibel, and decreased slightly at Cape Coral and Shell Point over the past week. Salinities were in the good range (0-10) for tape grass at Val I-75 and Ft. Myers. Salinities were in the good range (10-30) for adult eastern oysters at Shell Point and Sanibel, and in the fair range at Cape Coral.

Stormwater Treatment Areas

For the week ending Sunday, January 30, 2022, approximately 1,400 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2022 (since May 1, 2021) is approximately 79,000 ac-feet. The total amount of inflows to the STAs in WY2022 is approximately 973,000 ac-feet. Most STA cells are at or near target stage, except portions of STA-5/6 cells that are drying out. STA-1E Western Flow-way is offline for the Restoration Strategies project to fill and grade Cells 5 and 7, and STA-1E Eastern Flow-way is offline for rip-rap repairs related to Tropical Storm Eta. Additionally, STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown, STA-2 Flow-way 2 is offline for construction activities, and STA-5/6 Flow-way 4 is offline for vegetation management activities. Operational restrictions are in place in STA-1W Western, Eastern, and Northern Flow-ways for construction activities. Operational restrictions are in effect in STA-1E Central Flow-way and STA-2 Flow-ways 3 and 4 for vegetation management activities. This week, if 2008 LORS recommends Lake releases to the WCAs and conditions allow, releases will be sent to STA-2.

Everglades

WCA-1, WCA-2A, WCA-3B and eastern ENP depths remain above average. Elevated recessions at the gauges in WCA-3A meant every region within that basin moved into the poor recession rate range except in the northwest. Depths are lower in WCA-3A North than any other gauge locations and stages are not looking good for nesting at the Alley North colony. Conditions remained fair in Taylor Slough and Florida Bay last week. Salinities rose only slightly, and stages remain high in northern Taylor slough helped by a maintained discharge. Conditions are looking favorable for CSSS habitat and nesting this year.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On January 30, 2022, lake stages were 57.6 feet NGVD (0.4 feet below schedule) in East Lake Toho, 54.1 feet NGVD (0.9 feet below schedule) in Lake Toho, and 50.2 feet NGVD (2.3 feet below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1, Figures KB-1-3**).

Lower Kissimmee

Discharges to the Kissimmee River on January 30, 2022 were 1,360 cfs at S-65 and 1,280 cfs at S-65A; discharges from the Kissimmee River were 1,030 cfs at S-65D and 1,010 cfs at S-65E (**Table KB-2**). Headwater stages were 46.4 feet NGVD at S-65A and 26.7 feet NGVD at S-65D on January 30, 2022. With lower water temperatures, the concentration of dissolved oxygen is well above the region of concern, with an average of 9.1 mg/L for the week ending on January 30, 2022 (**Table KB-2, Figure KB-4**). Flow at S-65 was increased to ~1400 cfs to stop the stage rise in KCH, and water depth on the Kissimmee River floodplain is rising. Mean depth increased to 0.20 feet as of January 30, 2022 (**Figure KB-5**).

Water Management Recommendations

Managed stage recessions for snail kite nesting season were started on Lakes Toho and East Toho on January 15, 2022 to gradually reduce lake stages to their low pools by June 1. In Kissimmee-Cypress-Hatchineha, continue to keep stage flat or slowly declining while maintaining at least 300 cfs at S-65A and following the IS-14-50 discharge plan (**Figure KB-6**) for S-65 and S-65A.

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

Water Body	Structure	Stage Monitoring Site	7-Day Average Discharge (cfs)	Lake Stage (feet NGVD) ^a	Schedule Type ^b	Schedule Stage (feet NGVD)	Departure from Regulation (feet)	
							1/30/22	1/23/22
Lakes Hart and Mary Jane	S-62	LKMJ	54	60.9	R	61.0	-0.1	0.0
Lakes Myrtle, Preston and Joel	S-57	S-57	24	61.3	R	61.3	0.0	0.0
Alligator Chain	S-60	ALLI	0	64.0	R	64.0	0.0	0.0
Lake Gentry	S-63	LKGT	41	61.4	R	61.5	-0.1	0.0
East Lake Toho	S-59	TOHOE	303	57.6	R	58.0	-0.4	-0.2
Lake Toho	S-61	TOHOW S-61	671	54.1	R	55.0	-0.9	-0.7
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	1,314	50.2	R	52.5	-2.3	-2.2

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.

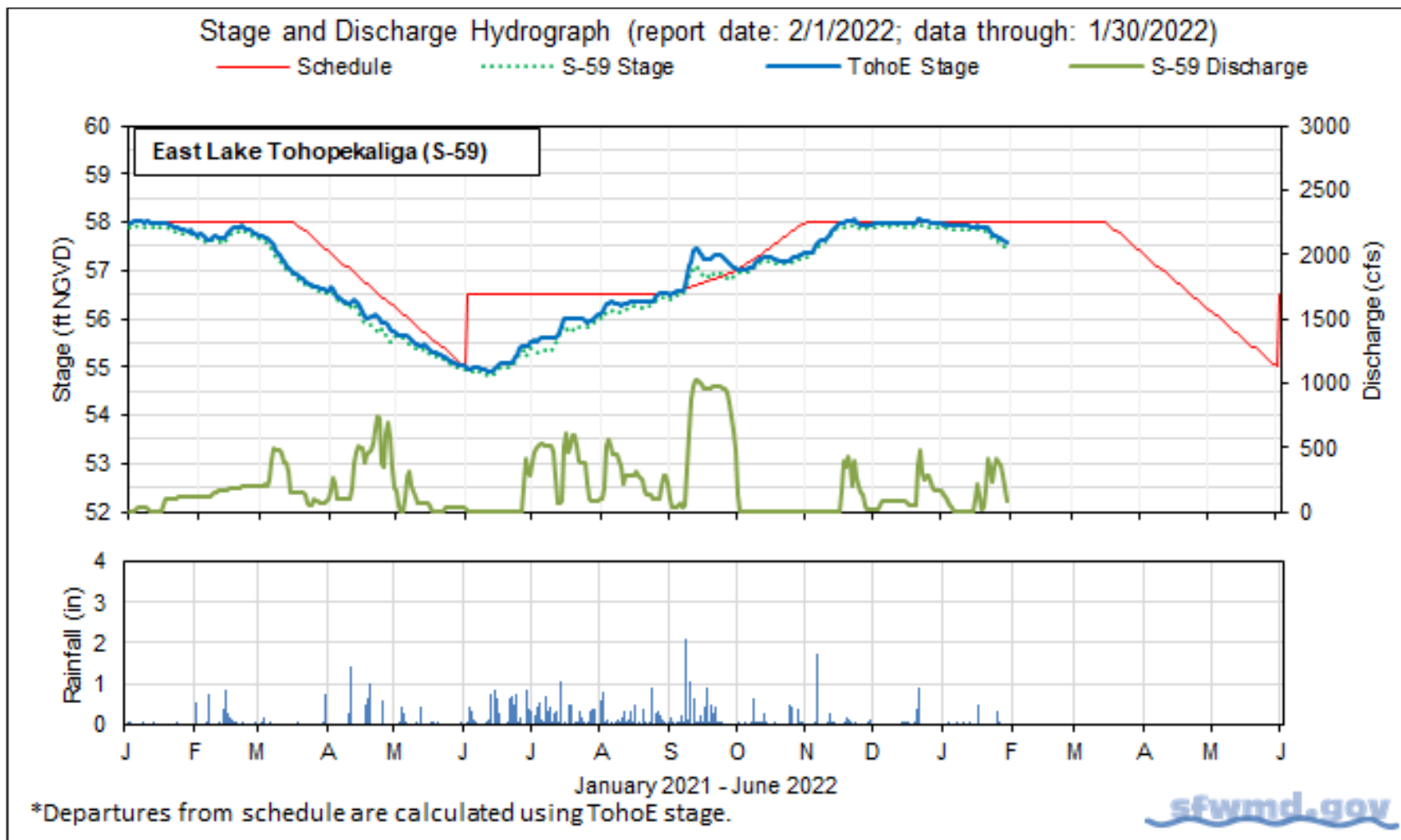


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

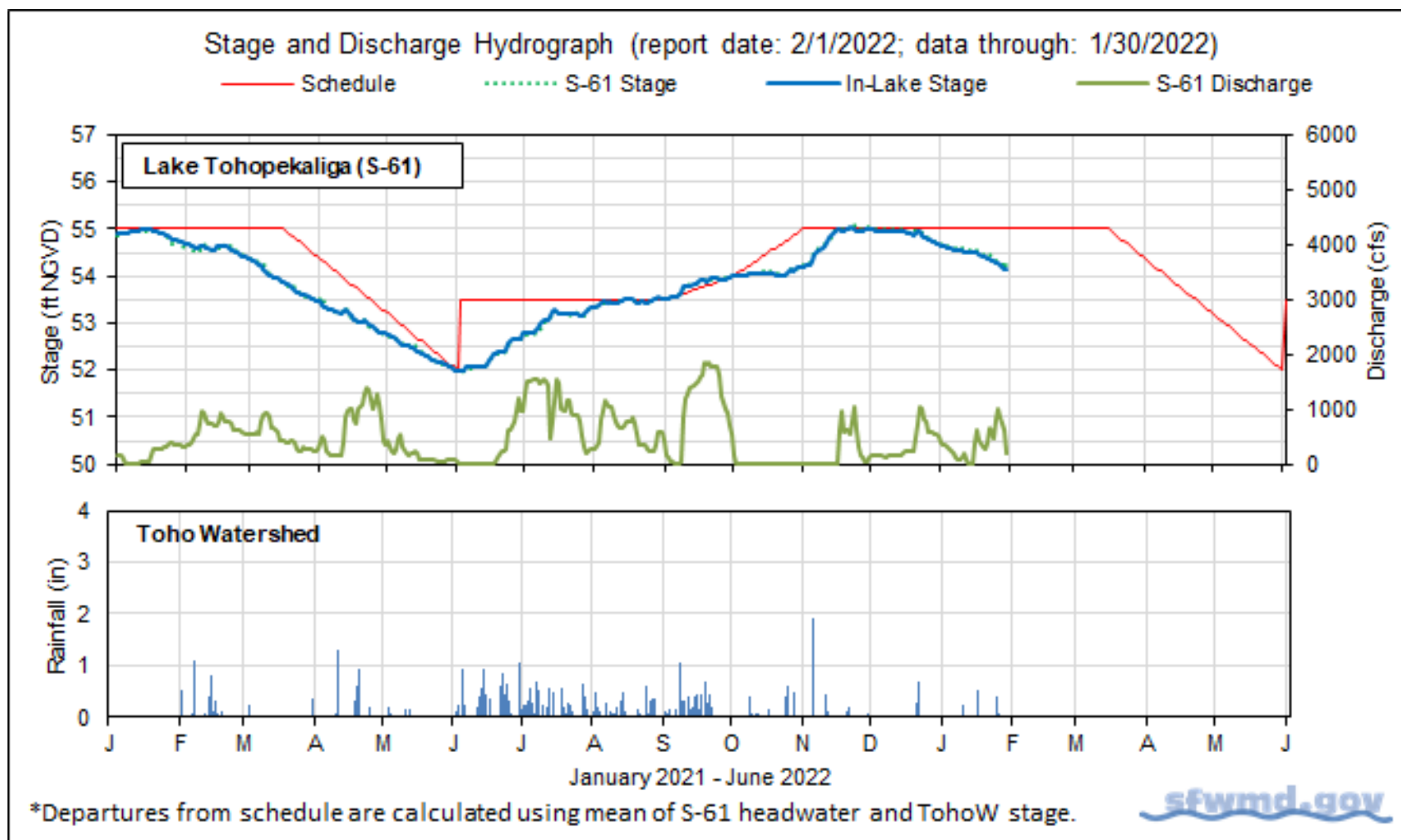


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

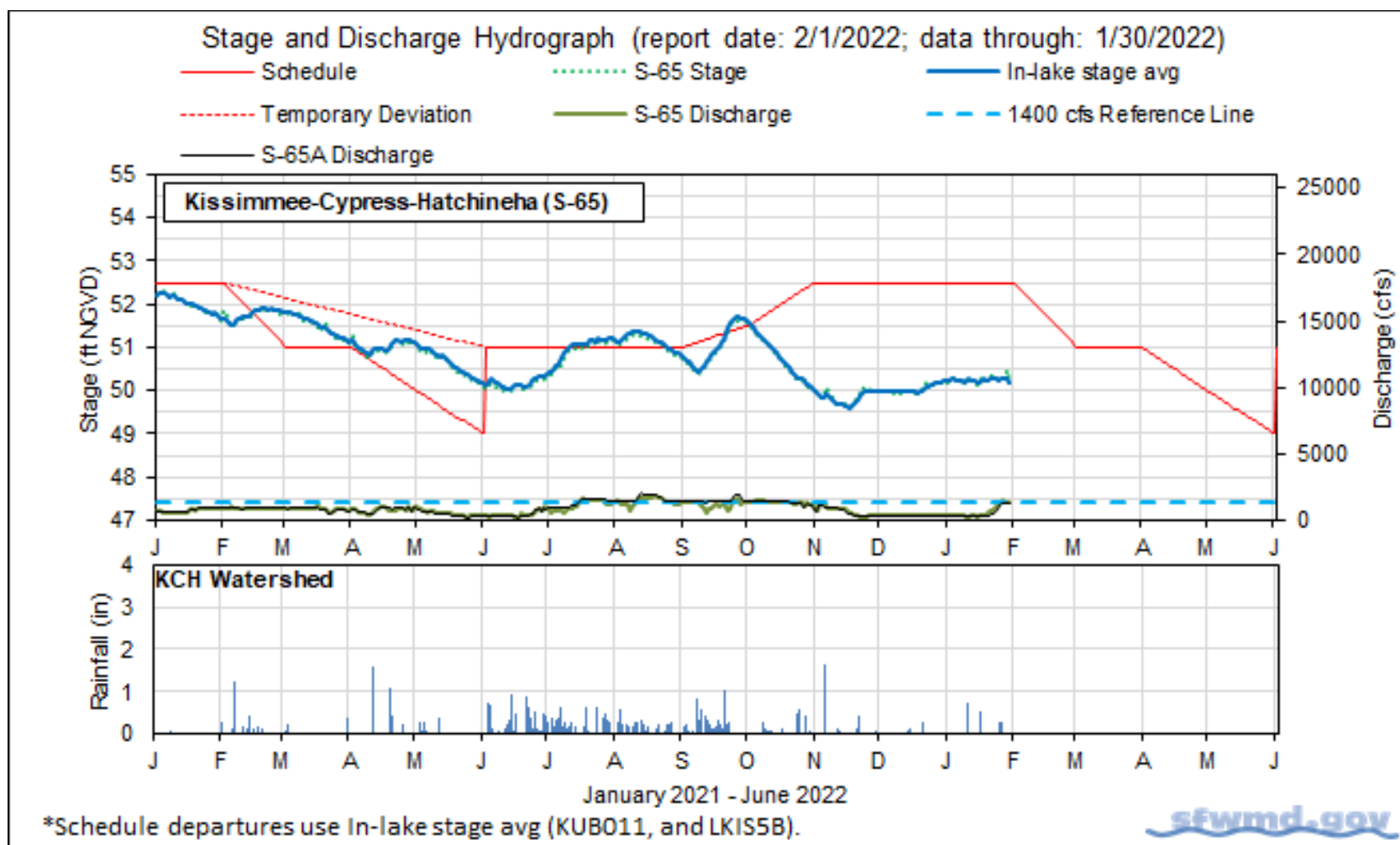


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

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	Daily Average	Average for Previous Seven Day Periods			
		1/30/22	1/30/22	1/23/22	1/16/22	1/9/22
Discharge	S-65	1,360	1,310	560	330	360
Discharge	S-65A ^a	1,280	1,190	400	290	290
Headwater Stage (feet NGVD)	S-65A	46.4	46.4	46.3	46.4	46.3
Discharge	S-65D ^b	1,030	840	360	310	340
Headwater Stage (feet NGVD)	S-65D ^c	26.7	26.6	26.6	26.5	26.5
Discharge (cfs)	S-65E ^d	1,010	820	380	340	340
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) ^e	Phase I, II/III river channel	9.7	9.1	8.7	7.9	8.0
Mean depth (feet) ^f	Phase I floodplain	0.20	0.18	0.20	0.18	0.20

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.

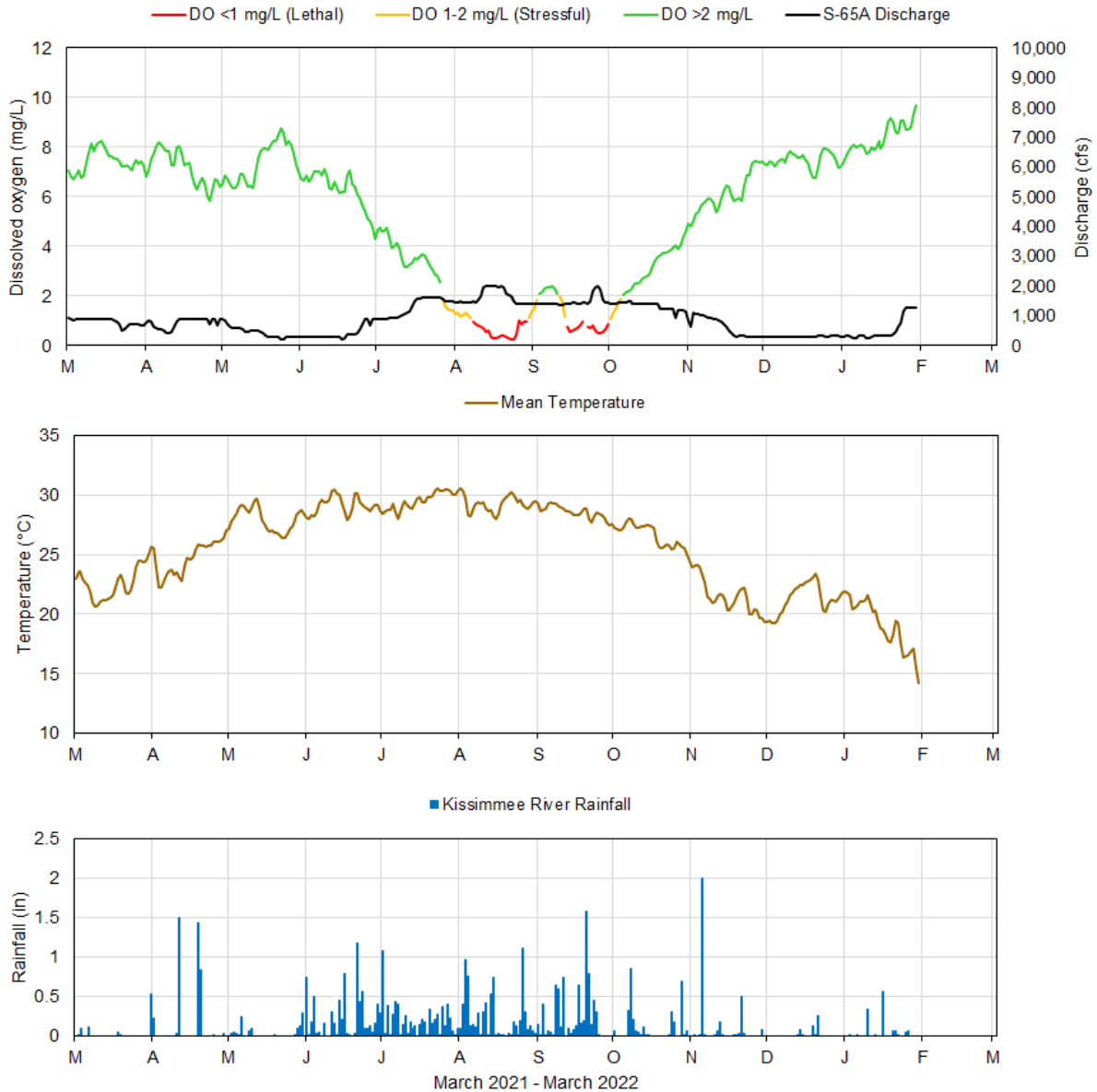
d. Combined discharge from S-65E and S-65EX1.

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

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

Table KB-3. Discharge rate of change limits for S65/S-65A (revised 1/14/19).

Discharge (cfs)	Maximum Rate of Increase (cfs/day)	Maximum Rate of Decrease (cfs/day)
0-300	100	-50
301-650	150	-75
651-1,400	300	-150
1,401-3,000	600	-600
>3,000	1,000	-2,000



Report Date: 2/1/2022; data are through: 1/30/2022



Figure KB-4. Restored 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, KRBN, PC33, PD62R, and PD42R with an average of three stations reporting this week. Rainfall values are daily totals for Kissimmee River (Pool BCD) AHED watershed.

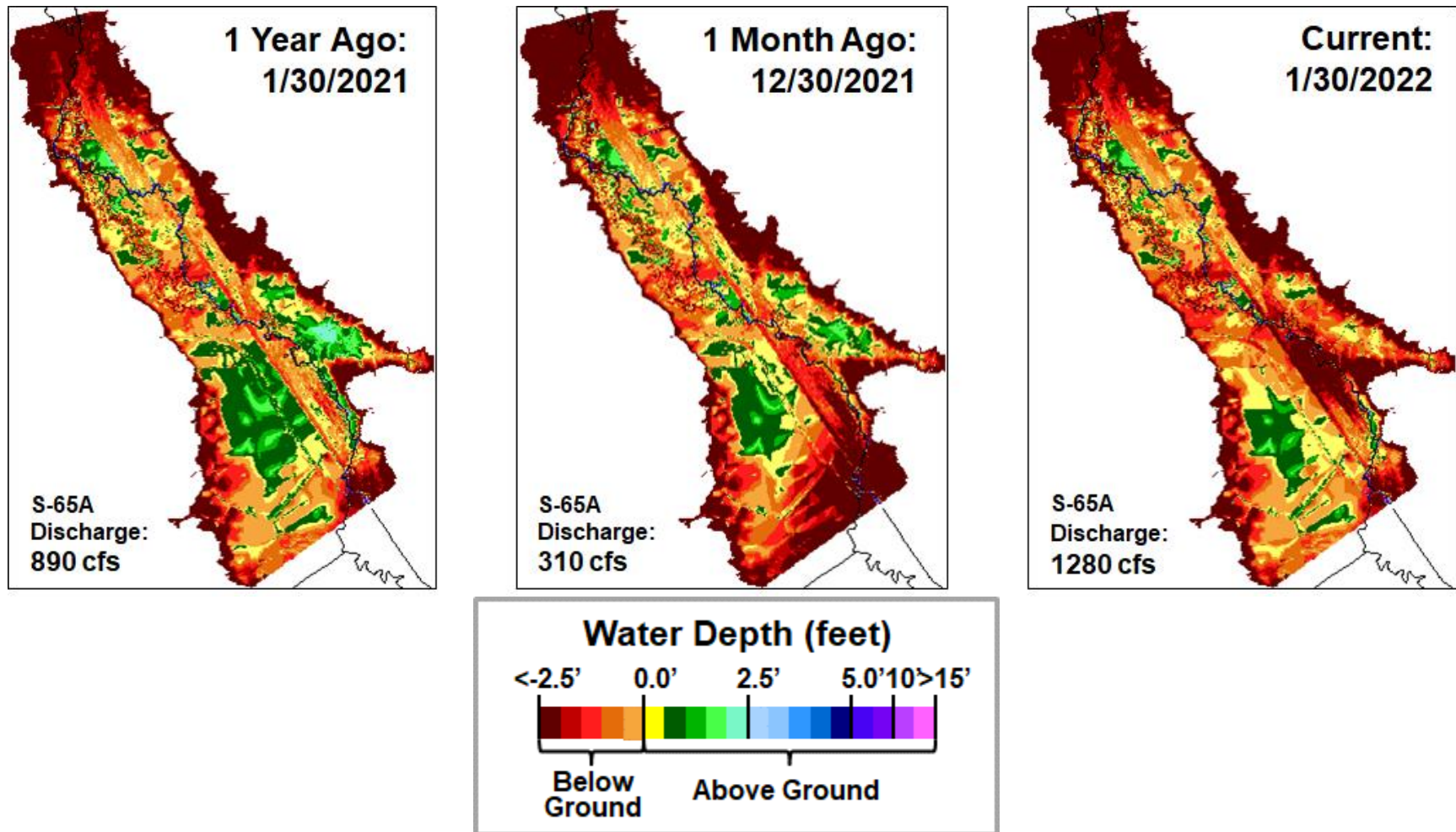


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

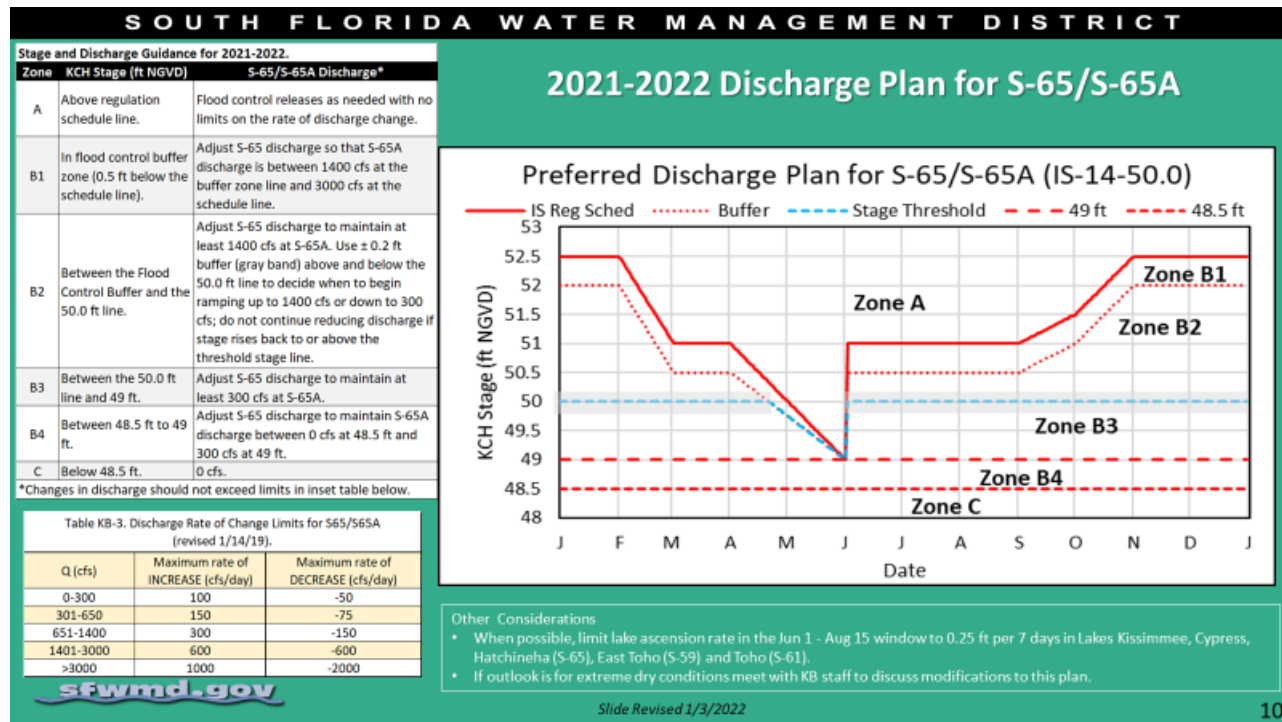


Figure KB-6. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 14.96 feet NGVD on January 30, 2022, with water levels 0.56 feet lower than a month ago (**Figure LO-1**). Lake stage remains in the Low sub-band (**Figure LO-2**) and is still within the ecological envelope, having spent 279 days (79%) of the last year above the envelope (**Figure LO-3**). According to NEXRAD, 0.06 inches of rain fell directly on the Lake last week.

Average daily inflows (excluding rainfall) increased from the previous week, going from 567 cfs to 1,031 cfs. Average daily outflows (excluding evapotranspiration) also increased from the previous week, going from 1,788 cfs to 3,310 cfs. Highest inflows came from the Kissimmee River through the S-65E structure (816 cfs). The highest outflow (1,879 cfs) was to the west via the S-77 structure, while 1,255 cfs flowed south via the S-350 structures (S-351, 659 cfs; S-352, 189 cfs; S-354, 407 cfs). There was 32 cfs of outflow to the east via the S-308 structure and 144 cfs of outflow to the L-8 canal through the S-271 structure (formerly Culvert 10A). **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.

The most recent satellite image (January 30, 2022) from the NOAA cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor showed scattered areas of moderate bloom potential along the western shorelines (**Figure LO-6**).

1 Month Ago:
12/31/2021

Current:
01/30/2022

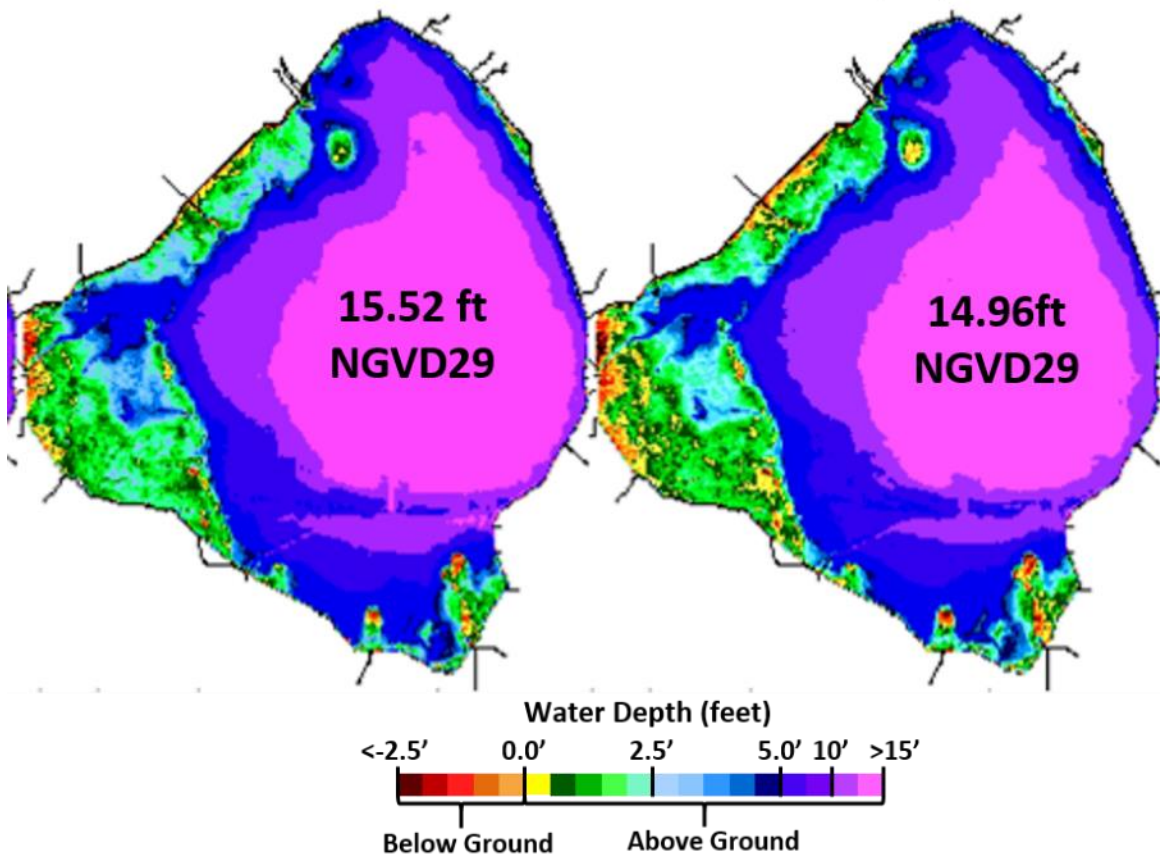
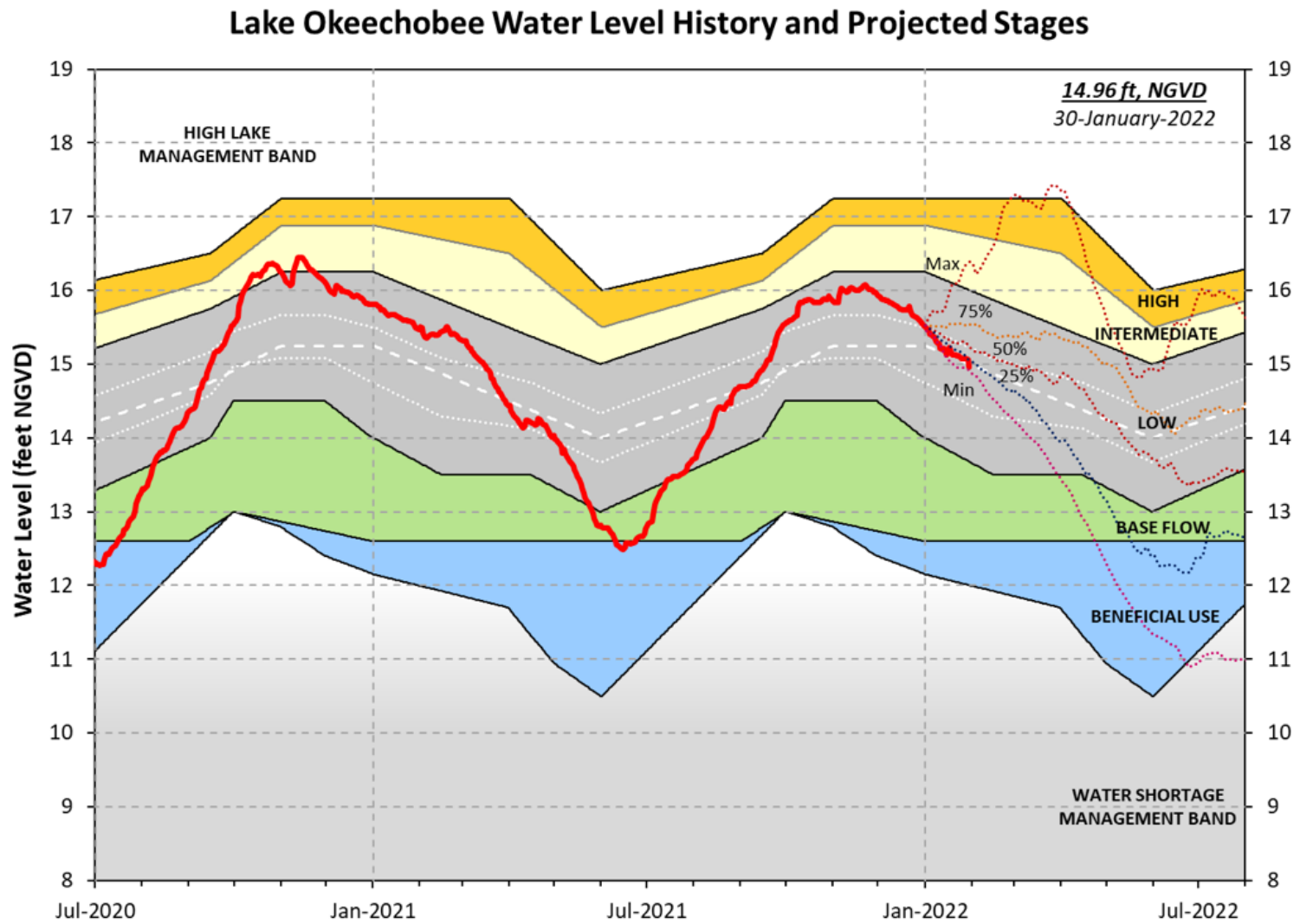


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).



LORS-2008 - Adopted by USACE 28-April-2008

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

Lake Okeechobee Stage vs Ecological Envelope

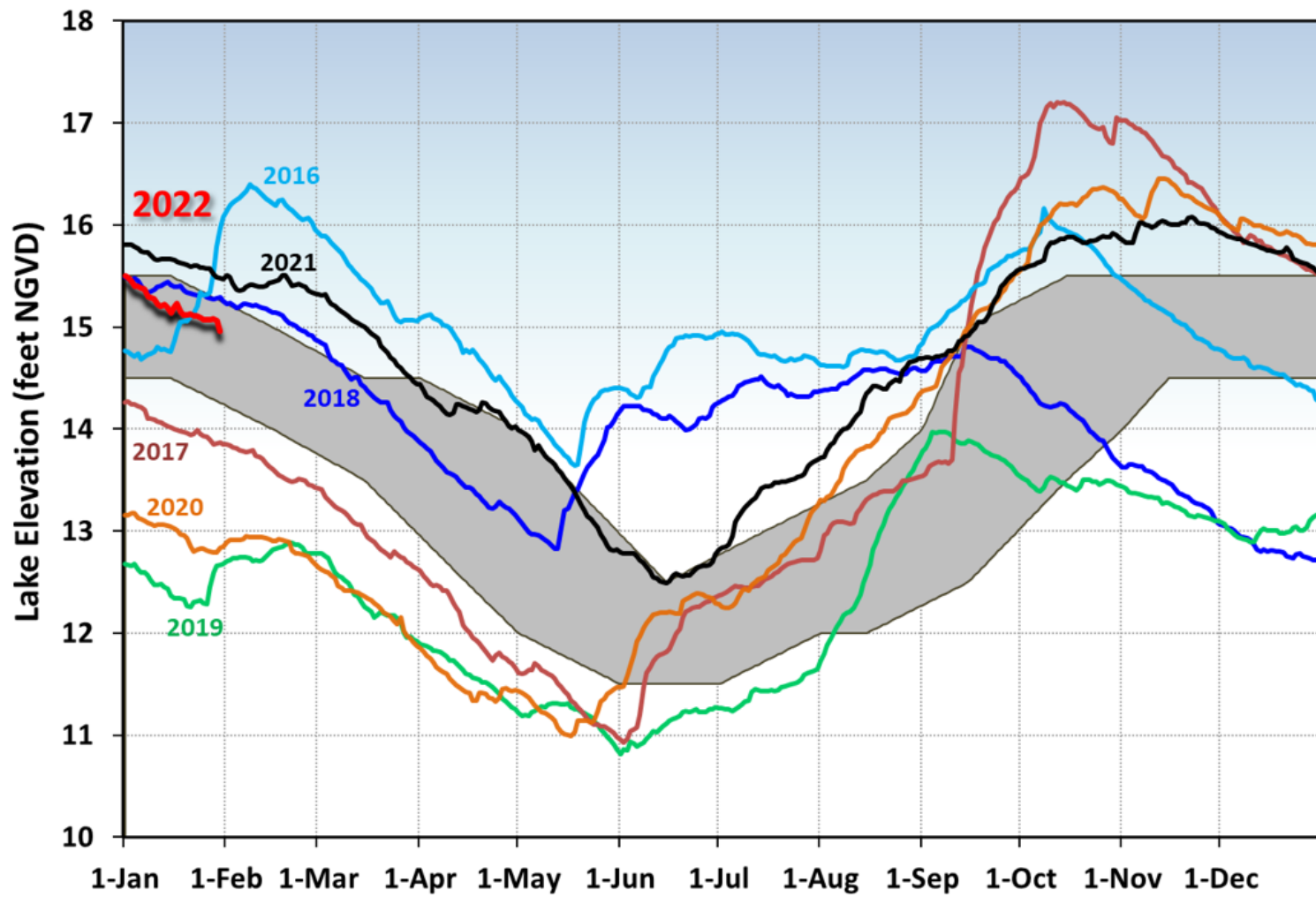


Figure LO-3. The prior six years of annual stage hydrographs for Lake Okeechobee in comparison to the ecological envelope.

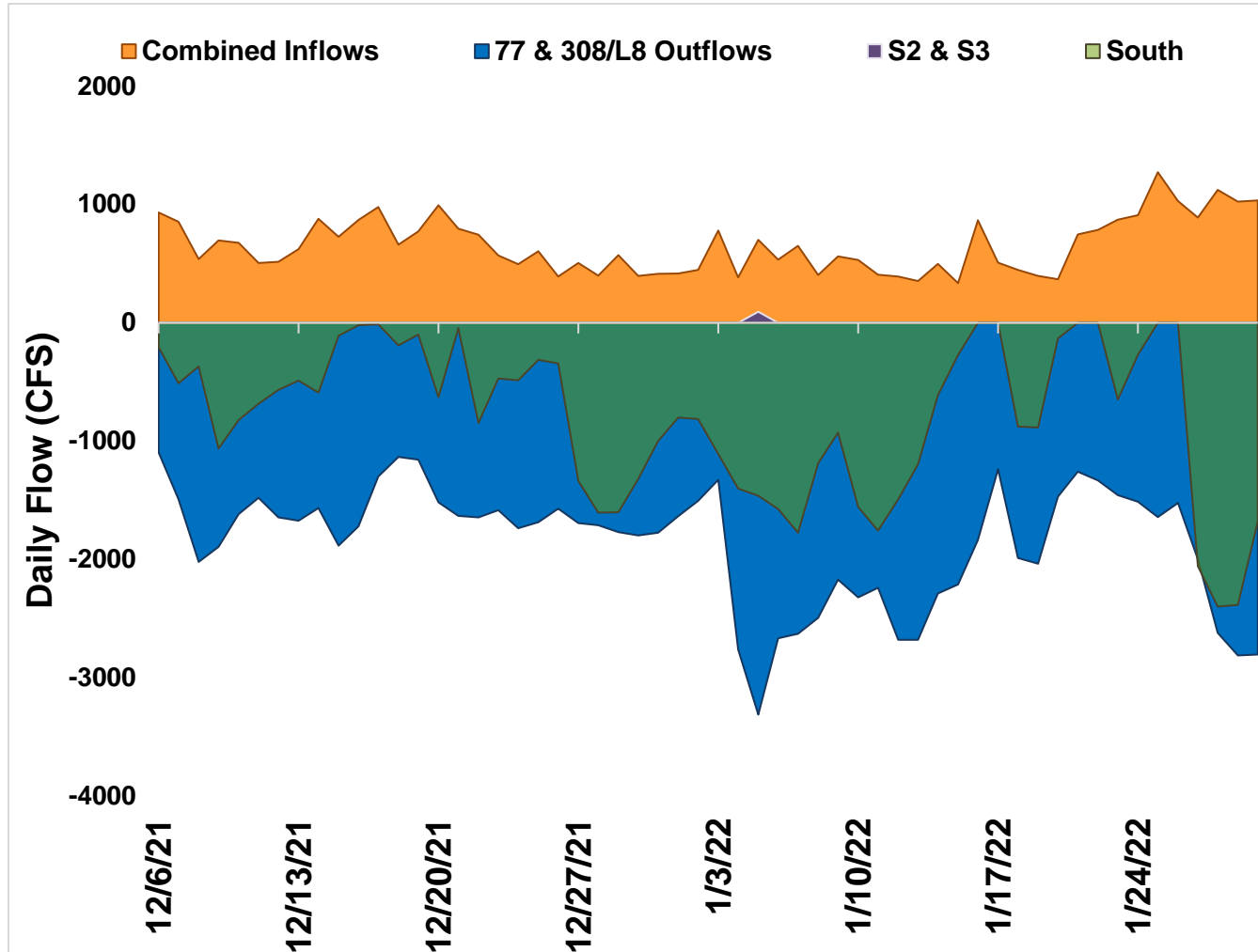


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

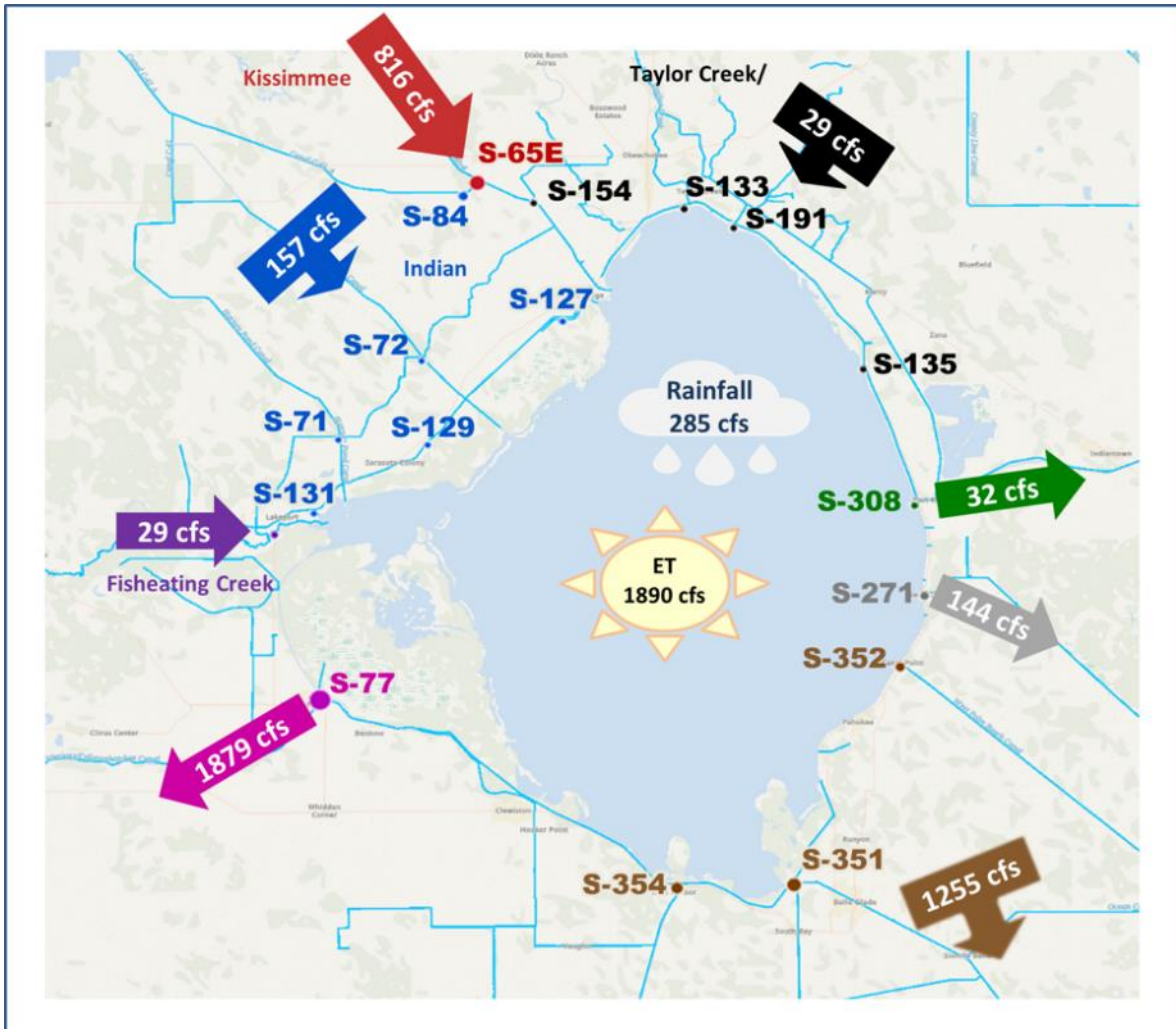


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of January 24, 2022 – January 30, 2022.

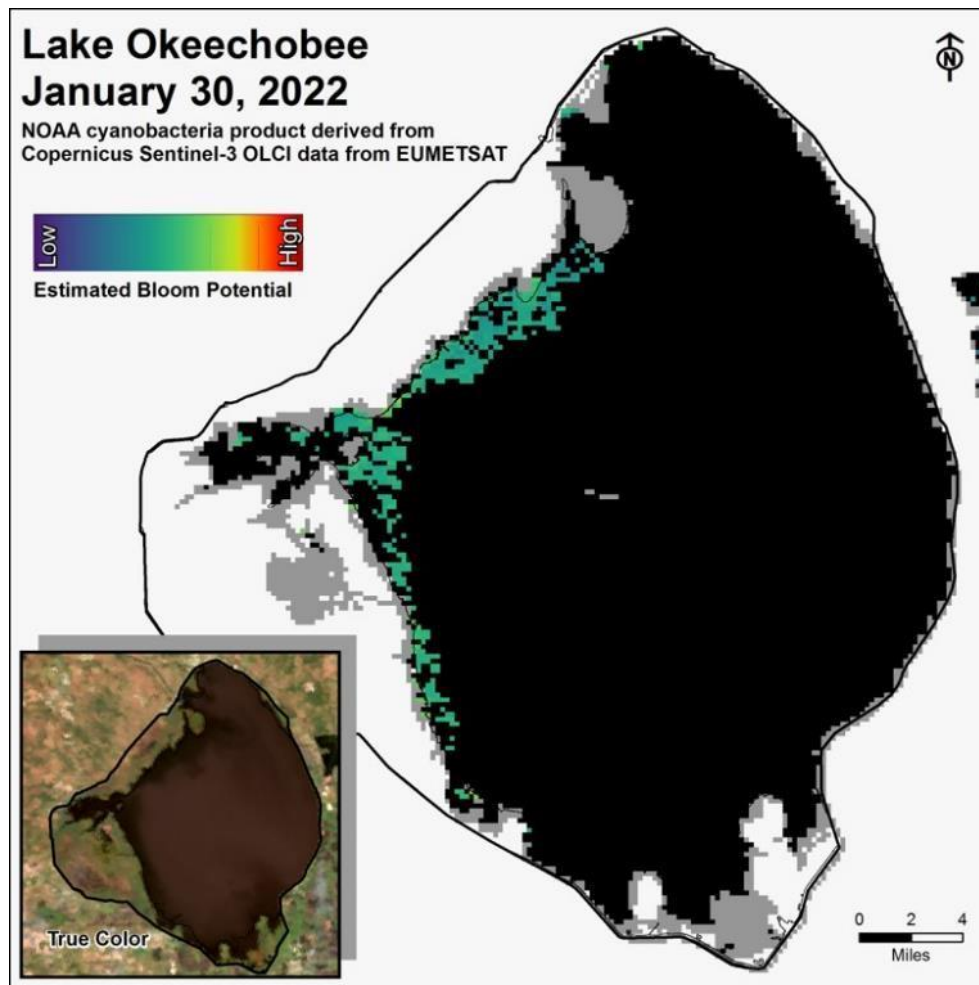


Figure LO-6. Cyanobacteria bloom potential on January 30, 2022 based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was approximately 349 cfs (**Figures ES-1 and ES-2**) and the previous 30-day mean inflow was approximately 381 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, salinities increased at all sites 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 21.5. Salinity conditions in the middle estuary were estimated to be within the good range for adult eastern oysters (**Figure ES-4**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was approximately 2,216 cfs (**Figures ES-5 and ES-6**) and the previous 30-day mean inflow was approximately 2,134 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-6**.

Over the past week, salinities remained the same at S-79, increased slightly at Val I-75, Ft. Myers, and Sanibel, and decreased slightly at Cape Coral and Shell Point (**Table ES-2 and Figures ES-7 and ES-8**). The seven-day mean surface salinities (**Table ES-2**) were in the good range (0-10) for tape grass at Val I-75 and at Ft. Myers. The seven-day mean surface salinity values were within the good range for adult eastern oysters at Shell Point and Sanibel, and in the fair range at Cape Coral (**Figure ES-9**).

Surface salinity at Val I-75 was forecasted for the next two weeks, using an autoregression model (Qiu and Wan, 2013¹) coupled with a linear reservoir model for the tidal basin. Model scenarios included pulse releases at S-79 ranging from 0 to 1500 cfs and a steady release at 2,000 cfs with estimated tidal basin inflows of 80 cfs. Model results from all scenarios predict daily salinity to be 1.2 or lower and the 30-day moving average surface salinity to be 0.3 at Val I-75 at the end of the two-week period (**Table ES-3 and Figure ES-10**). This keeps predicted salinities at Val I-75 within the LORS 2008 salinity range (0.0-5.0).

Red Tide

The Florida Fish and Wildlife Research Institute reported on January 28, 2022, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in any samples collected statewide. On the east coast, red tide was not observed in samples collected from St. Lucie, Martin, Palm Beach or Broward counties.

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

Water Management Recommendations

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

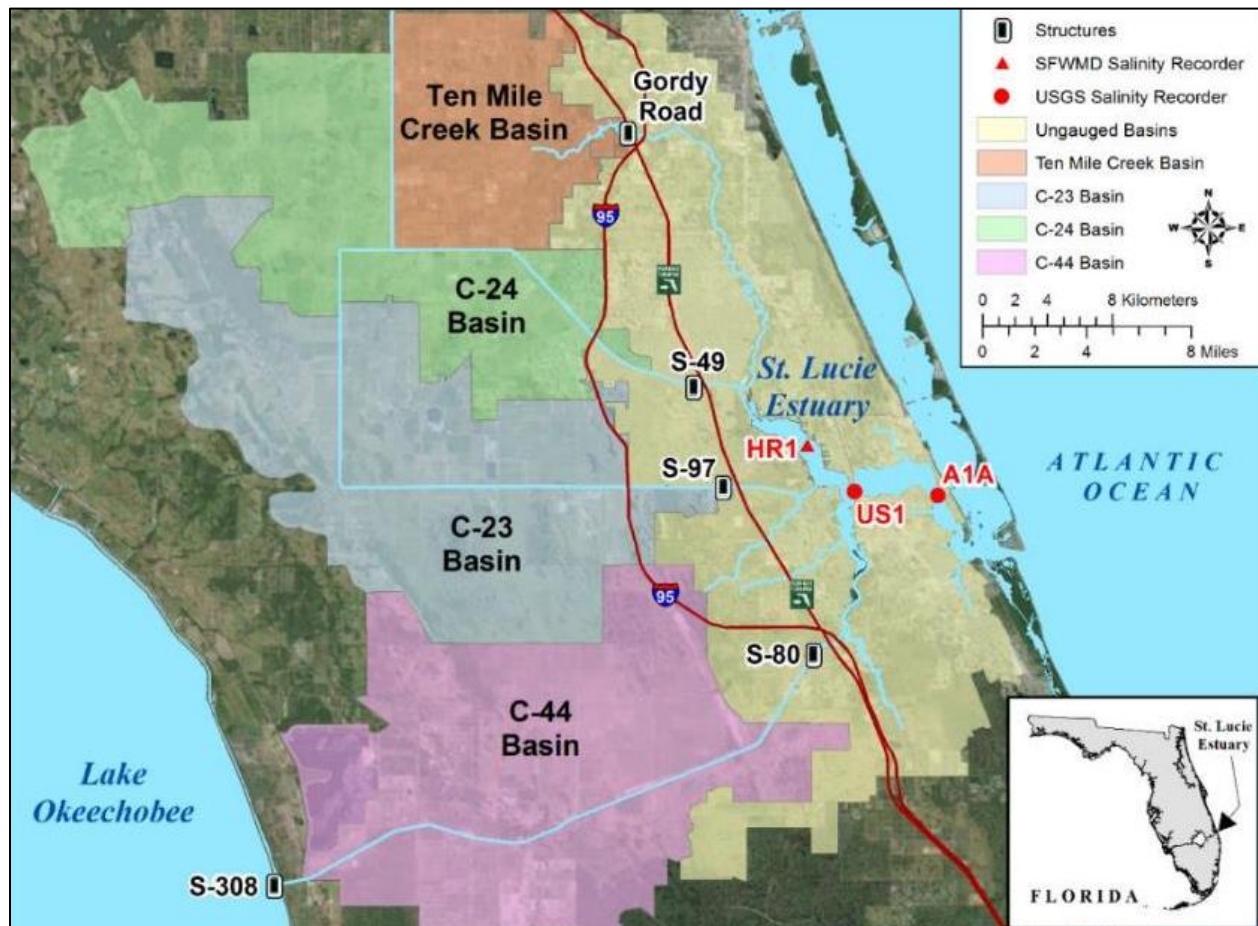


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

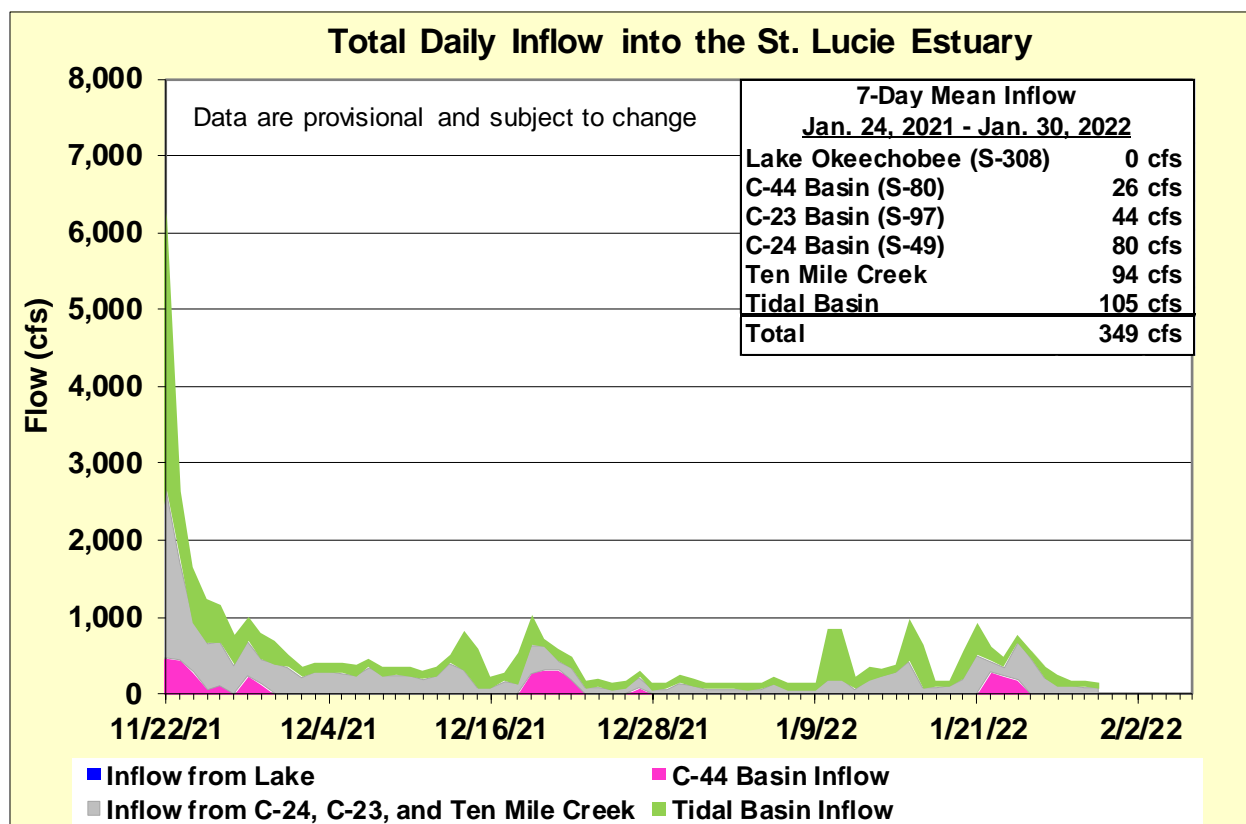


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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

Sampling Site	Surface	Bottom	Envelope
HR1 (North Fork)	17.4 (16.3)	20.0 (19.0)	NA ^a
US1 Bridge	20.9 (20.2)	22.1 (21.9)	10.0 – 26.0
A1A Bridge	27.6 (27.3)	29.1 (29.0)	NA ^a

a. The envelope is not applicable.

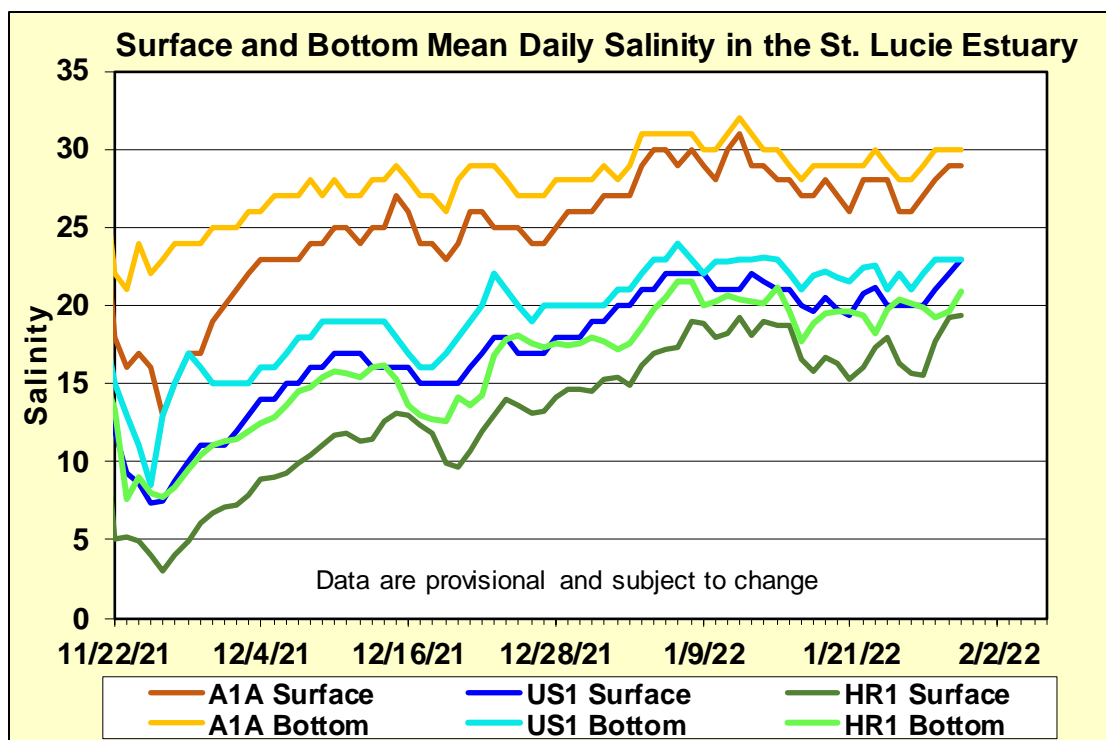


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

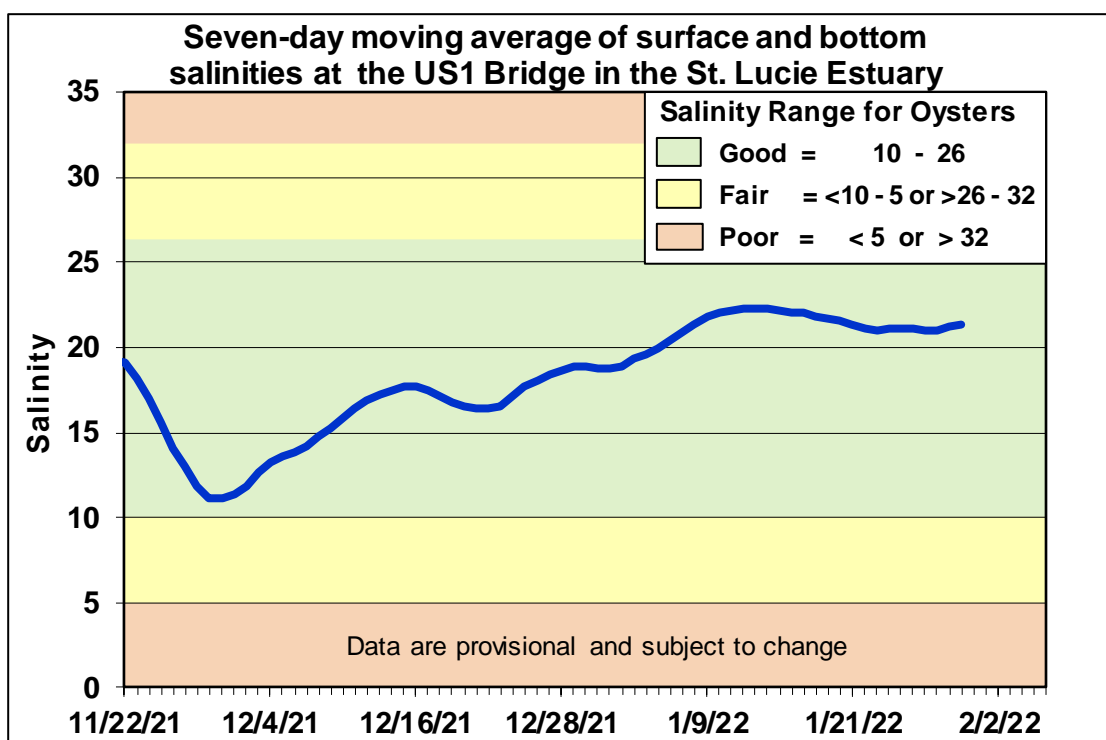


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

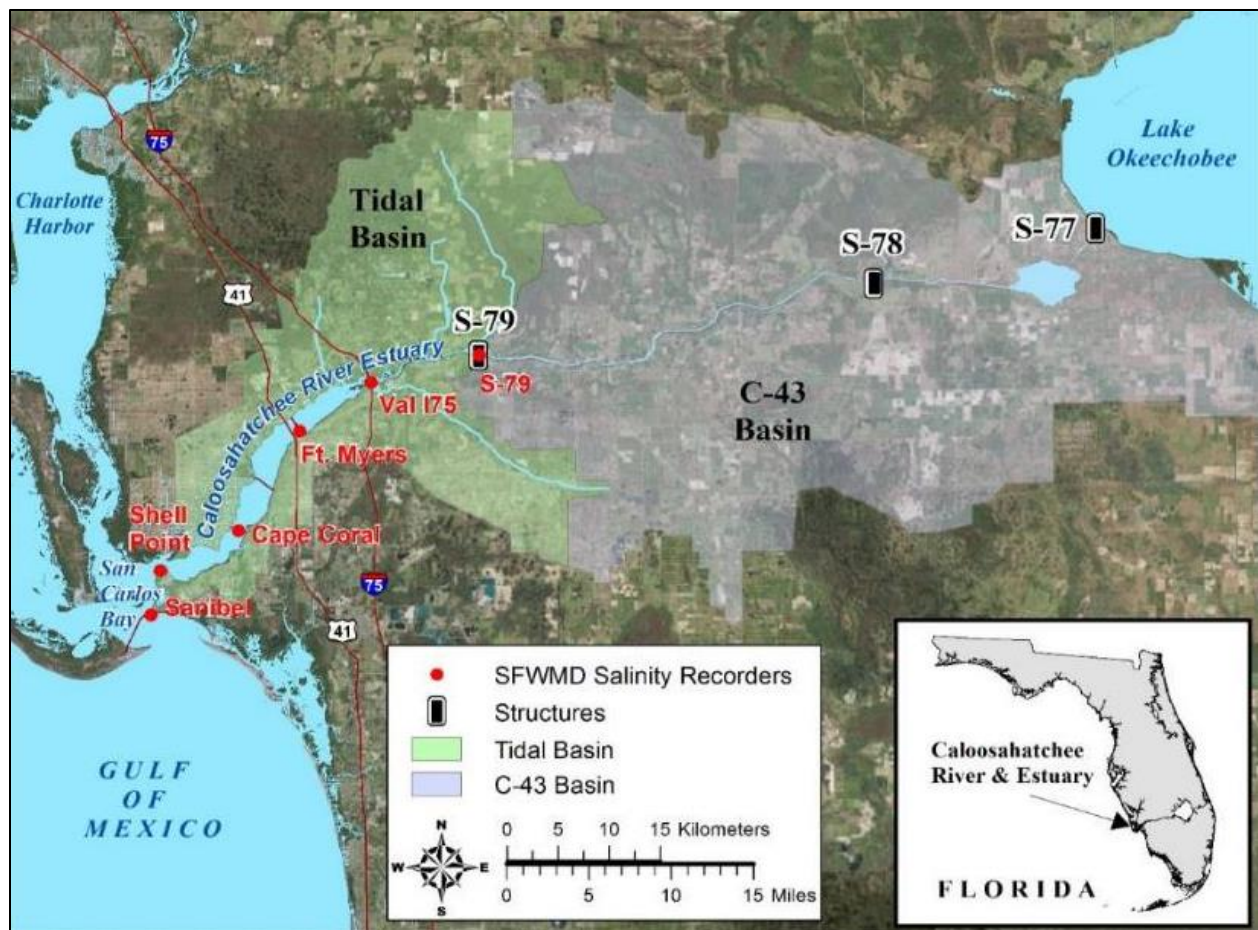


Figure ES-5. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

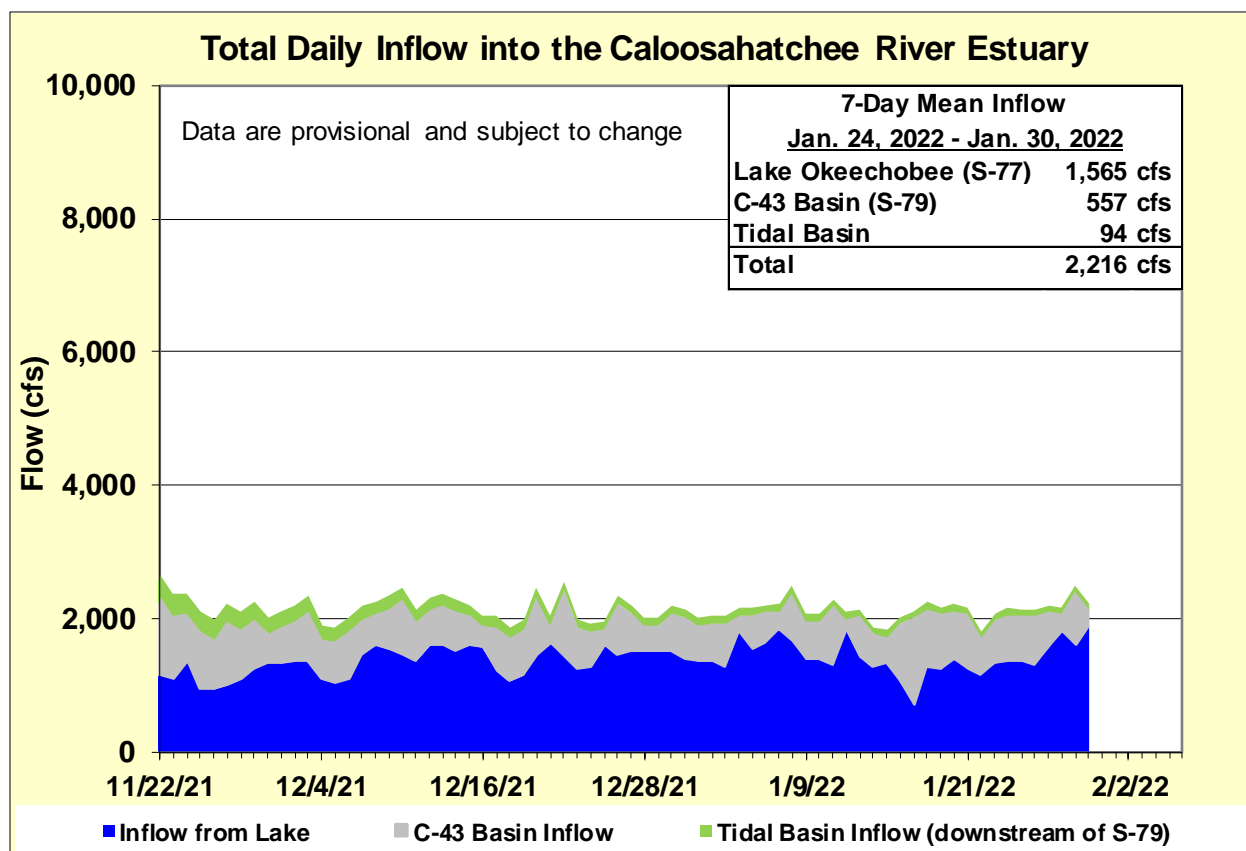


Figure ES-6. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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 at I-75 is for the protection of tape grass in the upper estuary and the envelope in the lower estuary is the preferred salinity range for adult eastern oysters (*Crassostrea virginica*). Data are provisional.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	0.2 (0.2)	0.2 (0.2)	NA ^a
Val I-75	0.3 (0.3)	0.5 (0.3)	0.0 – 5.0 ^b
Fort Myers Yacht Basin	2.5 (2.4)	4.4 (3.6)	NA ^a
Cape Coral	8.6 (9.1)	9.8 (10.1)	10.0 – 30.0
Shell Point	20.6 (20.9)	22.1 (22.1)	10.0 – 30.0
Sanibel	27.2 (27.1)	29.0 (28.8)	10.0 – 30.0

a. The envelope is not applicable.

b. The envelope is based on the predicted 30-day mean for the next two weeks.

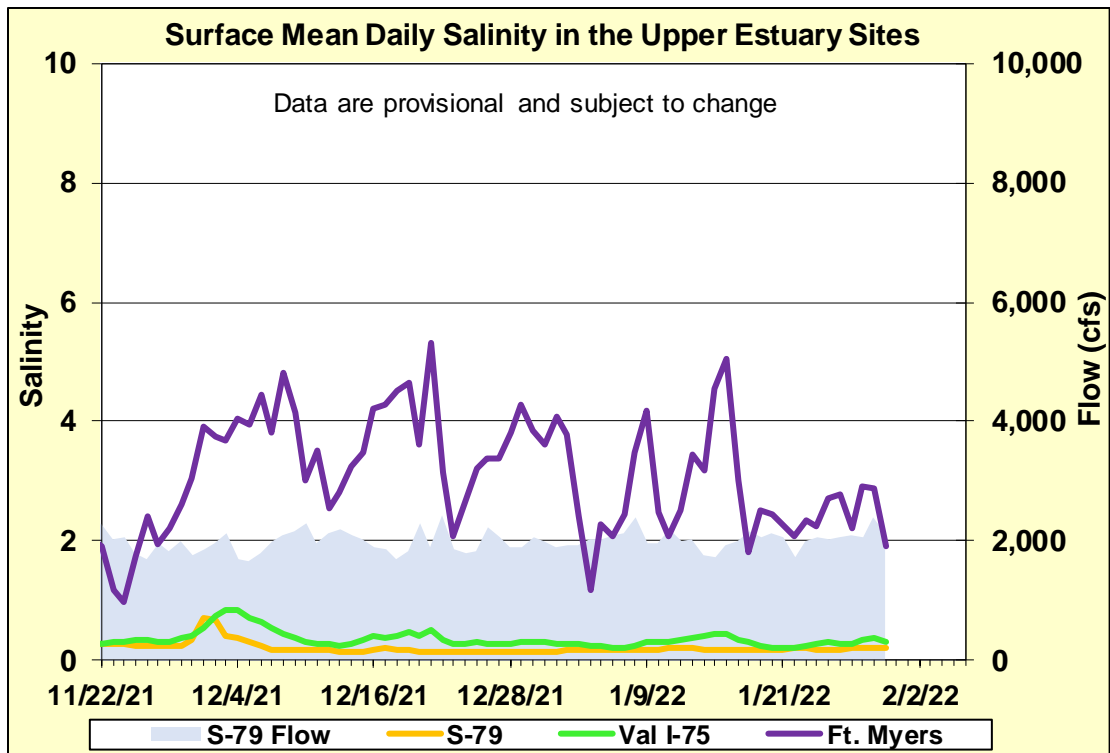


Figure ES-7. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

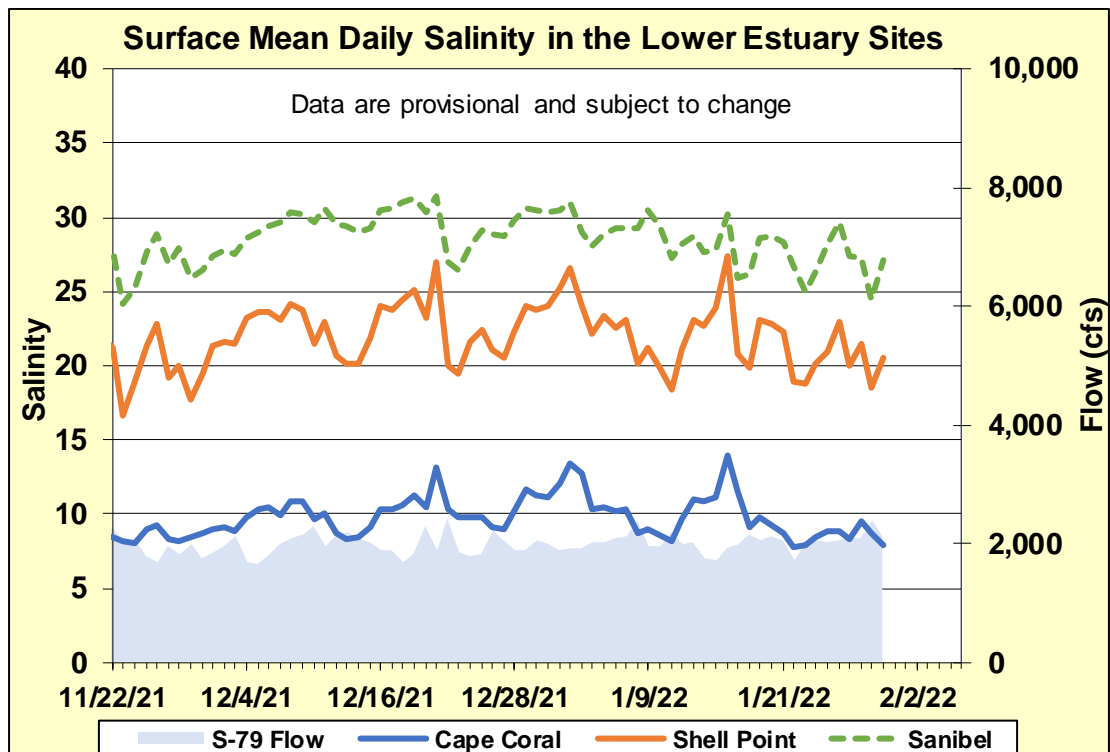


Figure ES-8. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

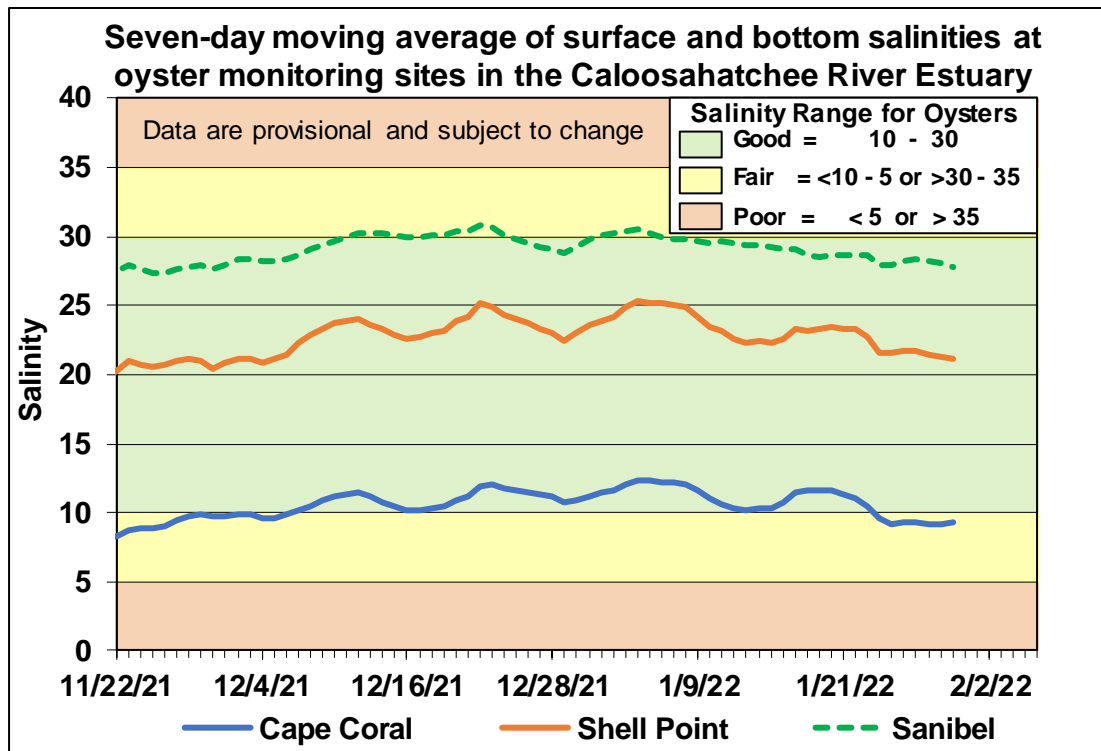


Figure ES-9. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

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	80	1.2	0.3
B	450	80	0.6	0.3
C	800	80	0.4	0.3
D	1000	80	0.3	0.3
E	1500	80	0.3	0.3
F	2000	80	0.3	0.3

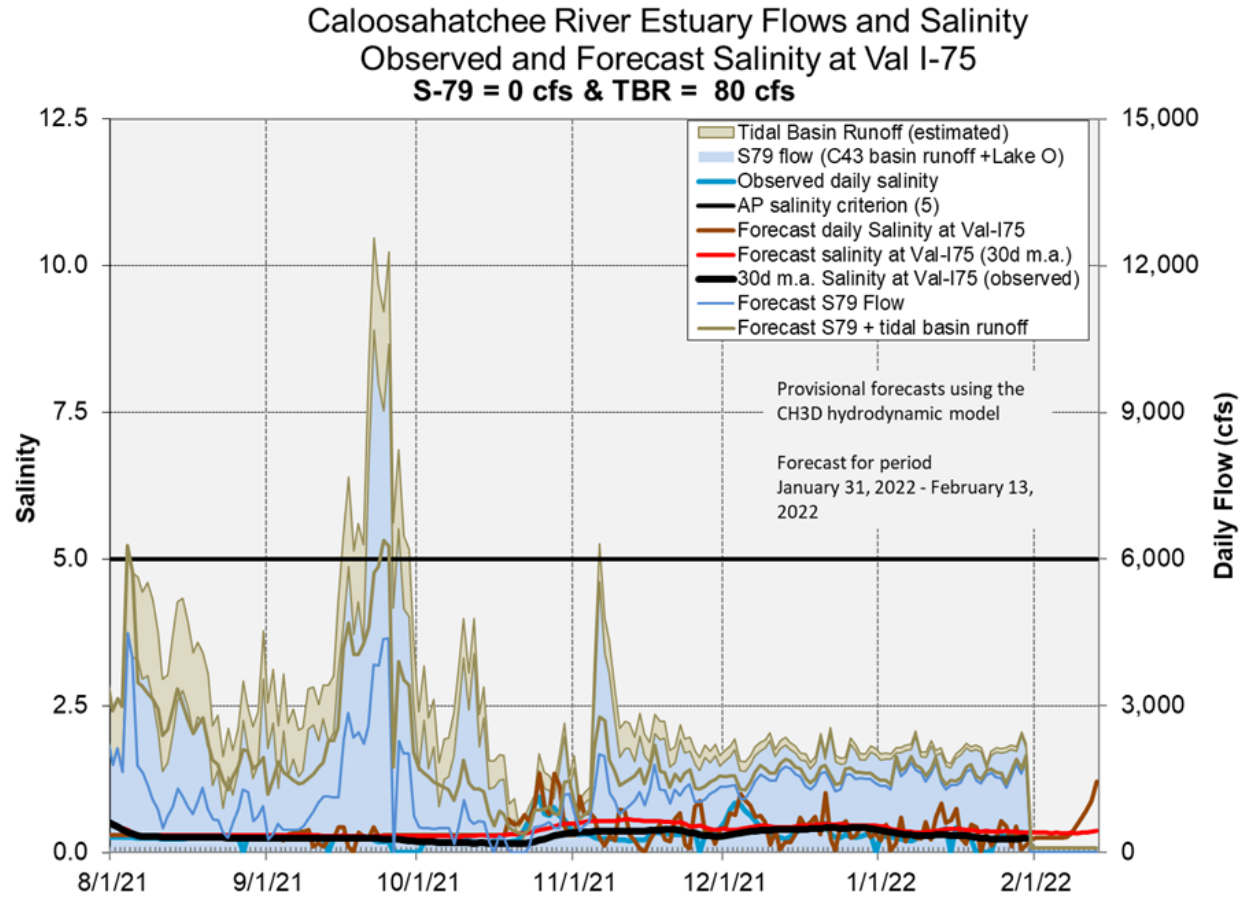


Figure ES-10. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Western Flow-way is offline for the Restoration Strategies project to fill and grade Cells 5 and 7, and the Eastern Flow-way is offline for vegetation management activities including rip-rap repairs related to Tropical Storm Eta. Operational restrictions are in place in STA-1E Central Flow-way for vegetation management activities. Online treatment cells are at or above target stage and vegetation in the flow-ways is stressed and highly stressed. The 365-day phosphorus loading rates (PLRs) is high for the Central Flow-way (**Figure S-1**).

STA-1W: Operational restrictions are in place in STA-1W Western, Eastern, and Northern Flow-ways due to construction activities. Most treatment cells are at or near target stage. Vegetation in the flow-ways is stressed and highly stressed. The 365-day PLRs for the Northern, Western, and Eastern Flow-ways are below 1.0 g/m²/year (**Figure S-2**).

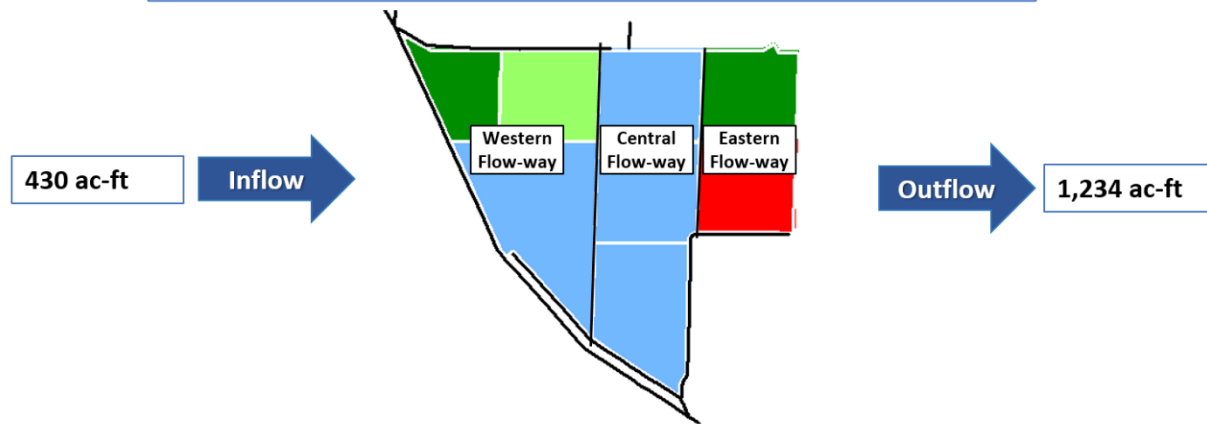
STA-2: STA-2 Flow-way 2 is offline for construction activities. Operational restrictions are in place in STA-2 Flow-ways 3 and 4 for vegetation management activities. Online treatment cells are at or near target stage. Vegetation in Flow-ways 1 and 3 is stressed, and in Flow-ways 2, 4 and 5 is highly stressed. The 365-day PLRs for Flow-ways 1, 4 and 5 are below 1.0 g/m²/year. The 365-day PLR for Flow-way 3 is high (**Figure S-3**).

STA-3/4: STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown. Most online treatment cells are at or near target stage. Vegetation in the Eastern and Central Flow-ways is highly stressed and in the Western Flow-way is stressed. The 365-day PLRs for the Central and Western Flow-ways are below 1.0 g/m²/year (**Figure S-4**).

STA-5/6: STA-5/6 Flow-way 4 is offline for vegetation management activities. Most treatment cells are below target stage. All treatment cells have highly stressed vegetation conditions except Flow-ways 7 and 8 which are healthy. The 365-day PLRs for flow-ways 1, 6, 7, and 8 are below 1.0 g/m²/year. The 365-day PLRs for flow-ways 4 and 5 are high. (**Figure S-5 and S-6**).

For definitions on STA operational language see glossary following figures.

STA-1E Weekly Status Report – 01/24/2022 through 01/30/2022














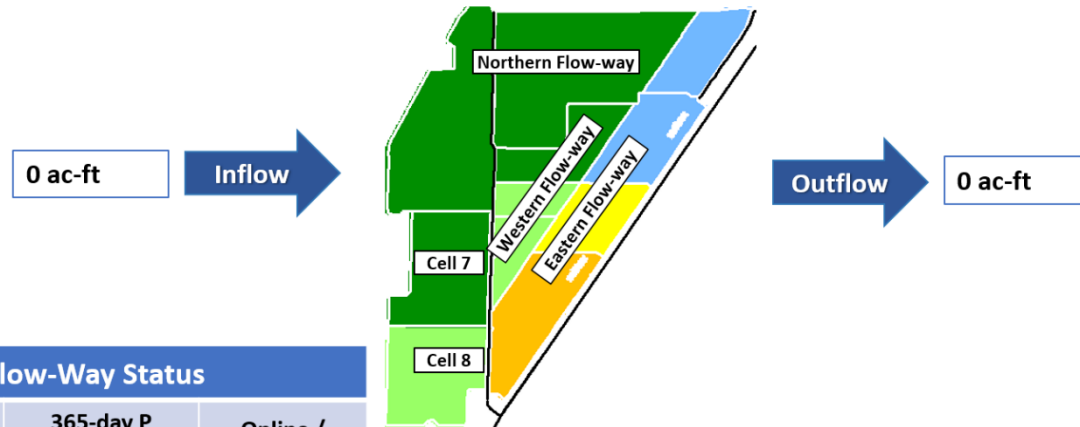
STA-1E Flow-Way Status				As of 01/30/2022				STA-1E Flow & Phosphorus Concentration			
Flow-Way	Vegetation Status <small>Healthy ----- Stressed</small> 	365-day P Loading Rate <small>(below 1.0 g P /m²/yr is optimal)</small>	Online / Offline / Restrictions	Stage Based: Relative to Target Stage (TS)					7-day	28-day	365-day
				 Deep Water Level (> 2.8' above TS)	 High Water Level (1.5' – 2.8' above TS)	 0.2' – 1.5' above TS	 Target Stage (TS +/- 0.2')				
Eastern	Offline, Tropical Storm Eta repairs starting 01/24/2022			Depth / Area Based: Percent of Area Dry							
Central			Vegetation Rehab	 0-25% Dry	 50-75% Dry						
Western	Offline, construction activities starting 11/01/2019			 25-50% Dry	 75-100% Dry						
								Total Inflow, ac-ft	430	2,963	179,321
								--Lake Inflow, ac-ft	0	N/A	5,800
								Total Outflow, ac-ft	1,234	1,408	151,460
								Inflow Conc., ppb	78	66	122
								Outflow Conc., ppb	27	27	23
								Includes Preliminary Data			

Figure S-1. STA-1E Weekly Status Report

STA-1W Weekly Status Report – 01/24/2022 through 01/30/2022



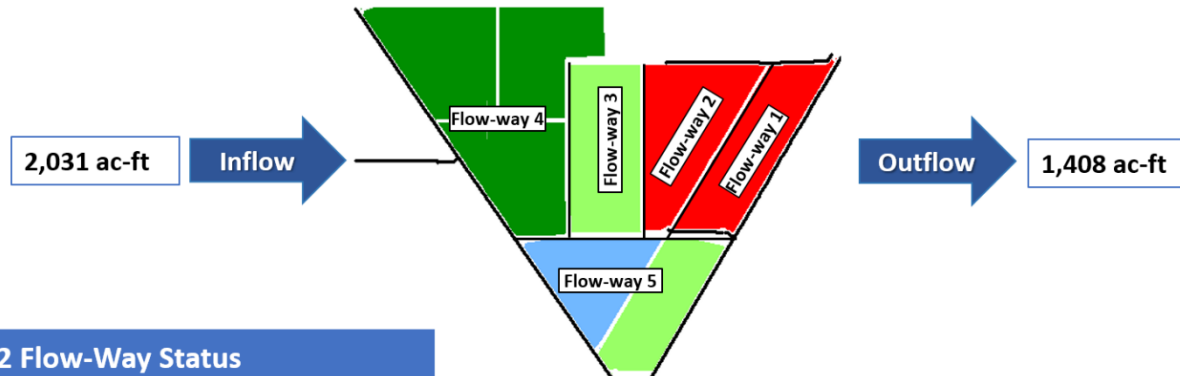
STA-1W Flow-Way Status			
Flow-Way	Vegetation Status Healthy --- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
Northern			Construction
Western			Construction
Eastern			Construction
Cell 7		N/A	Construction
Cell 8		N/A	Construction


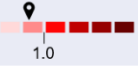

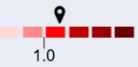

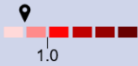

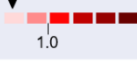
As of 01/30/2022	
Stage Based: Relative to Target Stage (TS)	
	Deep Water Level (> 2.8' above TS)
	High Water Level (1.5' – 2.8' above TS)
	0.2' – 1.5' above TS
	Target Stage (TS +/- 0.2')
	Low Water Level (<0.2' below TS)
Depth / Area Based: Percent of Area Dry	
	0-25% Dry
	25-50% Dry
	50-75% Dry
	75-100% Dry










STA-1W Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	0	1,894	53,421
--Lake Inflow, ac-ft	0	N/A	4,700
Total Outflow, ac-ft	0	781	53,060
Inflow Conc., ppb	N/A	99	169
Outflow Conc., ppb	N/A	26	24
Includes Preliminary Data			

Figure S-2. STA-1W Weekly Status Report

STA-2 Weekly Status Report – 01/24/2022 through 01/30/2022



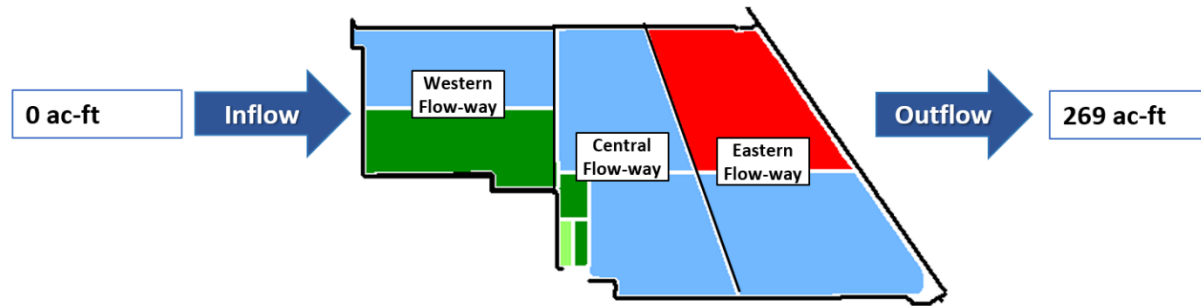
STA-2 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
1	←  →	 1.0	Online
2	Offline, construction activities as of 9/7/2021		
3	←  →	 1.0	Vegetation Rehab
4	←  →	 1.0	Vegetation Rehab
5	←  →	 1.0	Online

As of 01/30/2022	
Stage Based: Relative to Target Stage (TS)	
	Deep Water Level (> 2.8' above TS)
	High Water Level (1.5' – 2.8' above TS)
	0.2' – 1.5' above TS
	Target Stage (TS +/- 0.2')
	Low Water Level (<0.2' below TS)
Depth / Area Based: Percent of Area Dry	
	0-25% Dry
	25-50% Dry
	50-75% Dry
	75-100% Dry

STA-2 Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	2,031	7,361	328,383
--Lake Inflow, ac-ft	900	N/A	69,400
Total Outflow, ac-ft	1,408	4,969	335,027
Inflow Conc., ppb	39	47	86
Outflow Conc., ppb	9	12	16
Includes Preliminary Data			

Figure S-3. STA-2 Weekly Status Report

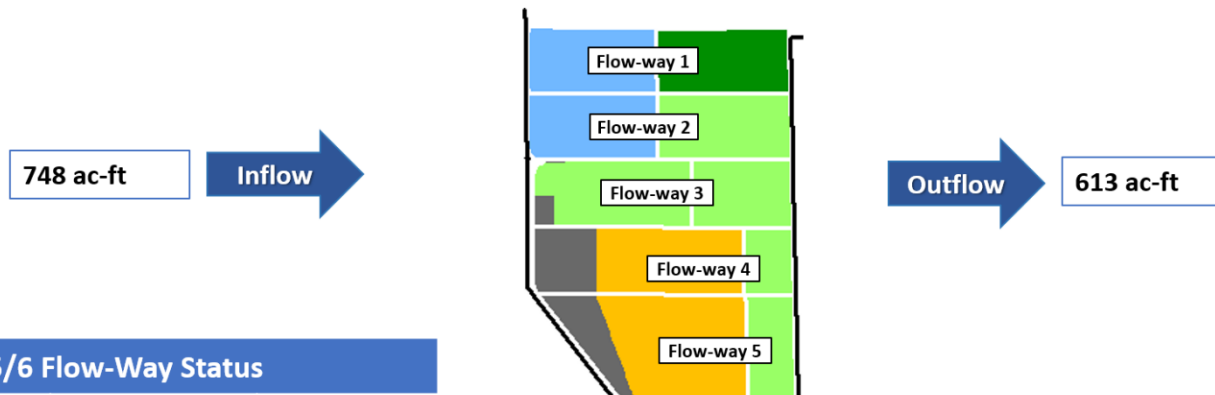
STA-3/4 Weekly Status Report – 01/24/2022 through 01/30/2022



STA-3/4 Flow-Way Status				STA-3/4 Flow & Phosphorus Concentration			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions	As of 01/30/2022			
				Stage Based: Relative to Target Stage (TS)			
Eastern	Offline, vegetation management drawdown as of 3/1/2021			Deep Water Level (> 2.8' above TS) High Water Level (1.5' – 2.8' above TS) 0.2' – 1.5' above TS Target Stage (TS +/- 0.2') Low Water Level (<0.2' below TS)			
				Depth / Area Based: Percent of Area Dry			
Central	← Healthy →	1.0	Online	0-25% Dry	50-75% Dry		
Western	← Healthy →	1.0	Online	25-50% Dry	75-100% Dry		
				7-day 28-day 365-day Total Inflow, ac-ft 0 125 360,022 --Lake Inflow, ac-ft 0 N/A 39,500 Total Outflow, ac-ft 269 1,280 316,231 Inflow Conc., ppb N/A 46 65 Outflow Conc., ppb 19 18 15 Includes Preliminary Data			

Figure S-4. STA-3/4 Weekly Status Report

STA-5/6 Weekly Status Report – 01/24/2022 through 01/30/2022



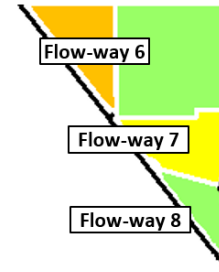
STA-5/6 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P / m ² /yr is optimal)	Online / Offline / Restrictions
1			Online
2		N/A	Online
3		N/A	Online
4	Offline, vegetation management starting 01/24/2022		
5			Online

As of 01/30/2022	
Stage Based: Relative to Target Stage (TS)	
	Deep Water Level (> 2.8' above TS)
	High Water Level (1.5' – 2.8' above TS)
	0.2' – 1.5' above TS
	Target Stage (TS +/- 0.2')
	Low Water Level (<0.2' below TS)
Depth / Area Based: Percent of Area Dry	
	0-25% Dry
	25-50% Dry
	50-75% Dry
	75-100% Dry

STA-5/6 Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	748	2,309	178,098
--Lake Inflow, ac-ft	0	N/A	9,000
Total Outflow, ac-ft	613	842	169,463
Inflow Conc., ppb	92	93	243
Outflow Conc., ppb	10	11	50
Includes Preliminary Data			

Figure S-5. STA-5/6 Weekly Status Report (Flow-ways 1 – 5)

STA-5/6 Weekly Status Report – 01/24/2022 through 01/30/2022



STA-5/6 Flow-Way Status				As of 01/30/2022	
Flow-Way	Vegetation Status Healthy ----- Stressed ←-----→	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions	Stage Based: Relative to Target Stage (TS)	
				<div>Deep Water Level (> 2.8' above TS)</div> <div>High Water Level (1.5' – 2.8' above TS)</div> <div>0.2' – 1.5' above TS</div> <div>Target Stage (TS +/- 0.2')</div> <div>Low Water Level (<0.2' below TS)</div>	
6	←-----→	1.0	Online		
7	←-----→	1.0	Online		
8	←-----→	1.0	Online		
				Depth / Area Based: Percent of Area Dry	
				<div>0-25% Dry</div> <div>25-50% Dry</div>	<div>50-75% Dry</div> <div>75-100% Dry</div>

Figure S-6. STA-5/6 Weekly Status Report (Flow-ways 6 – 8)

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

WCA-1: The 1-8C stage continues to fall slightly slower than the Zone A1 regulation line last week. The average on Sunday was 0.42 feet above. WCA-2A: Stage change at 2A-17 continued to fall faster than the slope of the regulation line last week; the average at that gauge on Sunday was 1.21 feet higher than the line. WCA-3A: Last week at the Three Gauge Average stage change fell faster than the slope of the Zone A regulation line; average stage was 0.67 feet below that line on Sunday. WCA-3A: Stage change at gauge 62 (Northwest corner) remained fairly flat last week, the average on Sunday was 0.91 feet below the regulation line. (**Figures EV-1 through EV-4**).

Water Depths

The SFWDAT tool indicates that water depths and hydro-patterns have been relatively stable in WCA-1 and WCA-2A over the last month. Within the WCAs water depths are the lowest in northeastern WCA-3A, where the spatial extent of stage below the soil surface continues to expand. North to South hydrologic connectivity has diminished but remains within Everglades National Park sloughs. The western marl prairies and southern BCNP are dry as is typical for this time of year (**Figure EV-5**). Comparing current WDAT water depths to the depth one month ago, stages are decreasing in the WCAs most significantly in southern WCA-2A. Eastern ENP is close to the same stage as one month ago. Looking back one year, most of the EPA is significantly lower in depth (particularly eastern WCA-3A) with only WCA-1 and northeastern ENP close to the same depth as last year. (**Figure EV-6**). Comparing current depths to the past 20 years, most of WCA-3A is near the 30 percentile while WCA-1 and northeastern ENP remain above the 90th percentile. (**Figure EV-7**).

Taylor Slough and Florida Bay

A spatial average of 0.26 inches of rain fell over Taylor Slough and Florida Bay during the week ending Sunday, 1/30, with most of that rain falling on Wednesday. Water deliveries to Taylor Slough have remained relatively high for this time of year with S-332C and S-332D still operating at relatively high levels. Water levels in Taylor Slough decreased an average of only 0.02 feet over the week as a result (**Figure EV-8 and Figure EV-9**). The Slough, as a whole, is 10 inches higher than average while the northern parts are 17 inches higher than average. Assuming the expectation of a drier than average dry season, maintaining water deliveries to the area would help to slow the recession in the slough so water movements south can be expedited when the wet season starts.

Salinities in Florida Bay averaged an increase of 0.5 over the week ending 1/30, with individual station changes ranging from -2.3 to +2.9 (**Figure EV-8**). Weekly creek flow from the 5 main creeks feeding Florida Bay was 3 times the historical average this past week confirming that increased water deliveries and above average water levels have been contributing to higher flows in recent weeks. These flows have helped to stabilize salinities within Florida Bay (**Figure EV-10**). Bay-wide salinities are only 1 higher than

the historical average now and the nearshore area is only 1.5 higher than the historical average.

Water Management Recommendations

Should conditions warrant the opening of S-10s, the S-10 Charlie structure has historically had the lowest upstream nutrient values and its use should be prioritized over the other two sister structures. Discharges at the S-10s of more than 500 cfs per structure can have deleterious downstream impacts. Flows directed across the northern perimeter of WCA-3A that assist in maintaining stage in that sub-basin then move downstream have an ecological benefit if those discharges can slow the recession rates in that sub-basin. If conditions allow discharges into both the western (to assist in maintaining current foraging conditions) and the eastern (i.e. S-150 to help maintain stage around the Alley North colony) WCA-3A water control structures have greater benefit than discharges to the west alone. Continued freshwater to the Taylor Slough area, a discharge amount that maintains stage will help expedite deliveries to the south when the wet season begins. Individual regional recommendations can be found in **Table EV-2**.

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

Everglades Region	Rainfall (inches)	Stage change (feet)
WCA-1	0.17	-0.05
WCA-2A	0.24	-0.13
WCA-2B	0.43	-0.09
WCA-3A	0.24	-0.11
WCA-3B	0.11	-0.08
ENP	0.15	-0.09

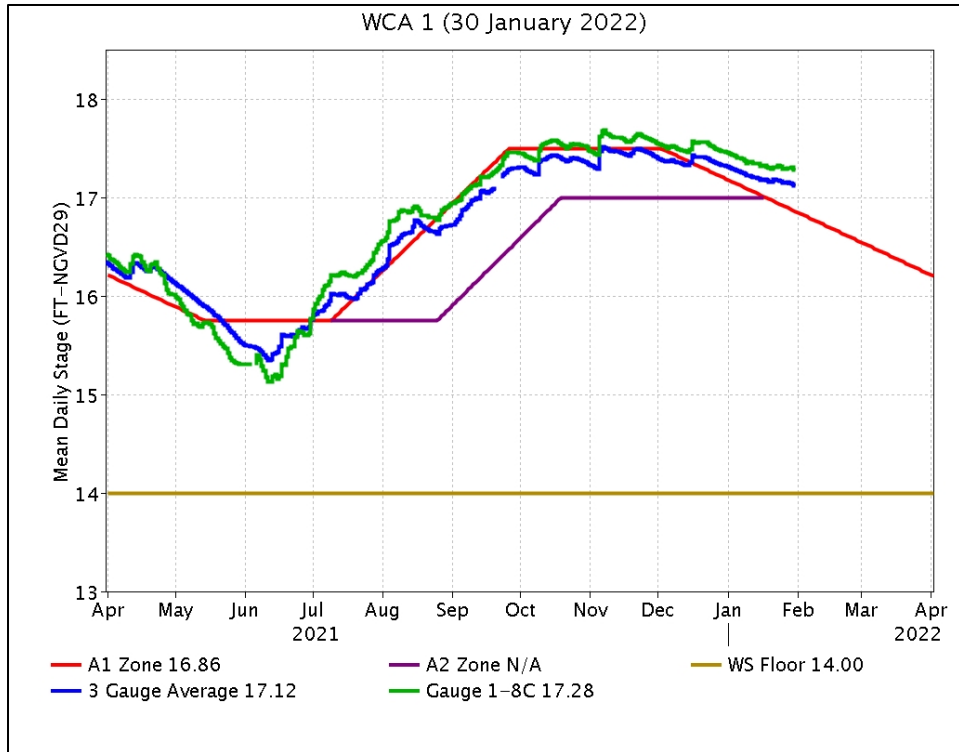


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

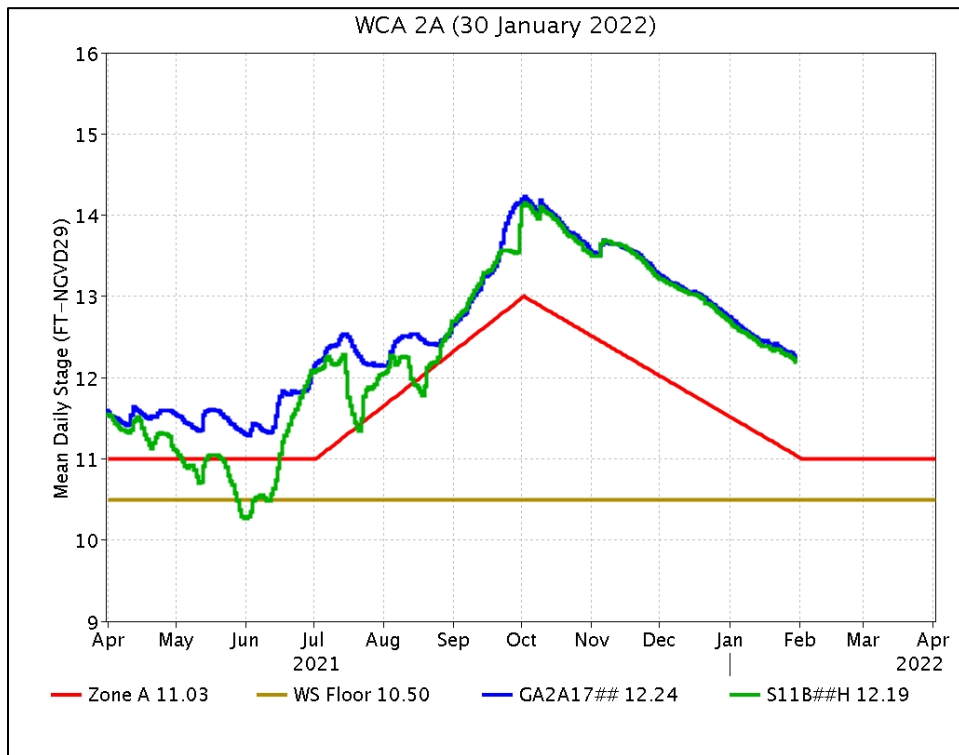


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

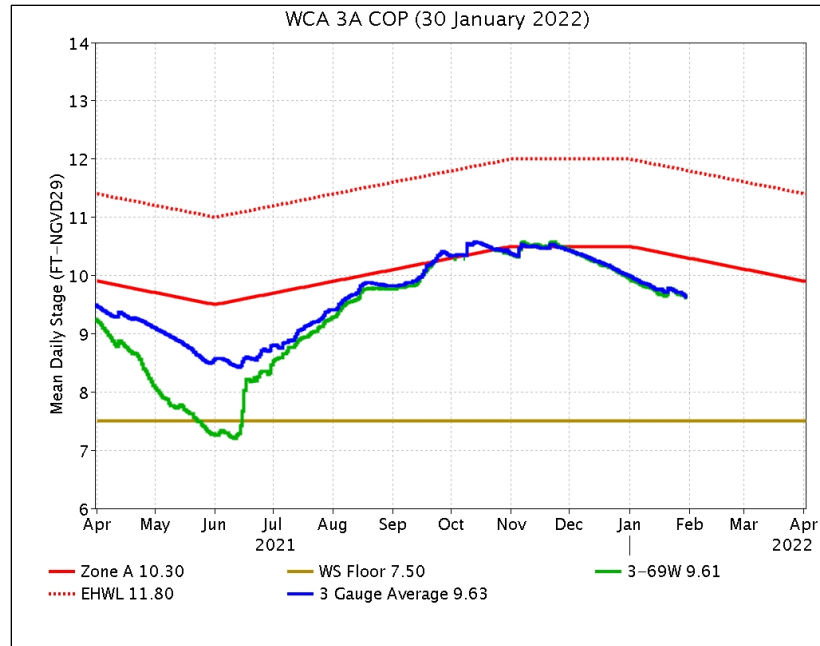


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, S-333 headwater) and regulation schedule.

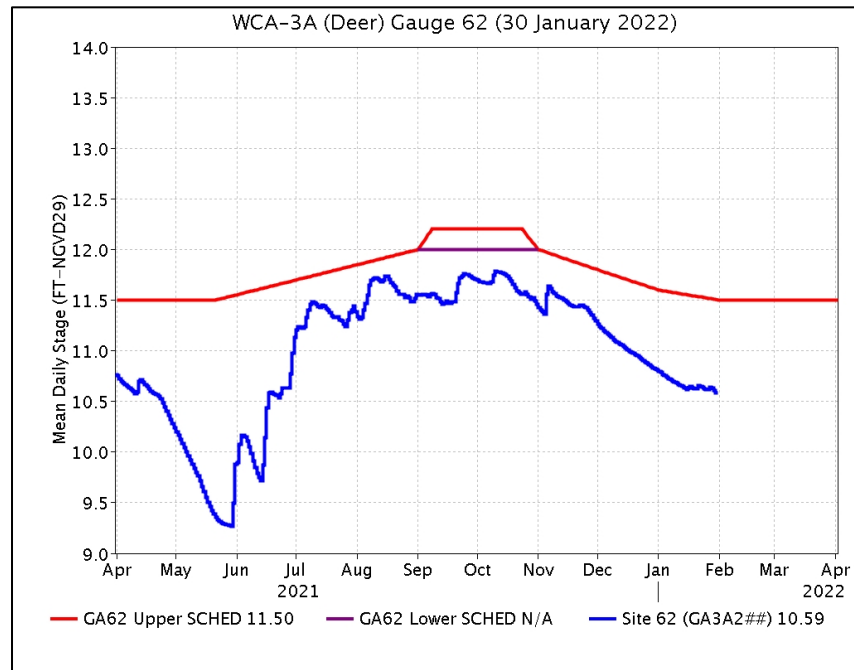


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and CA62 regulation schedule.

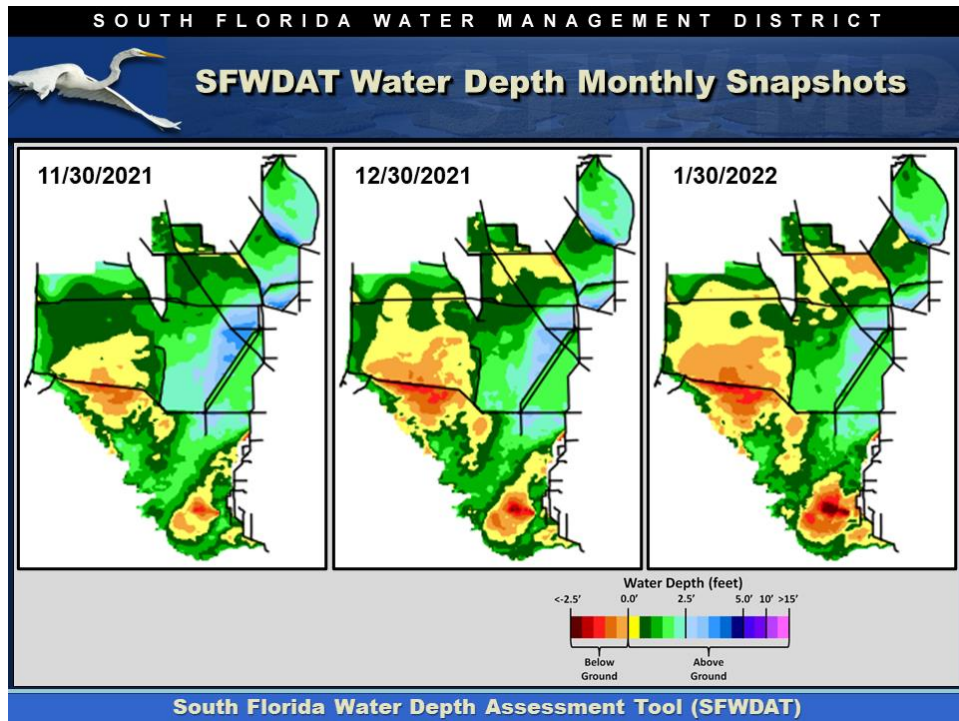


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

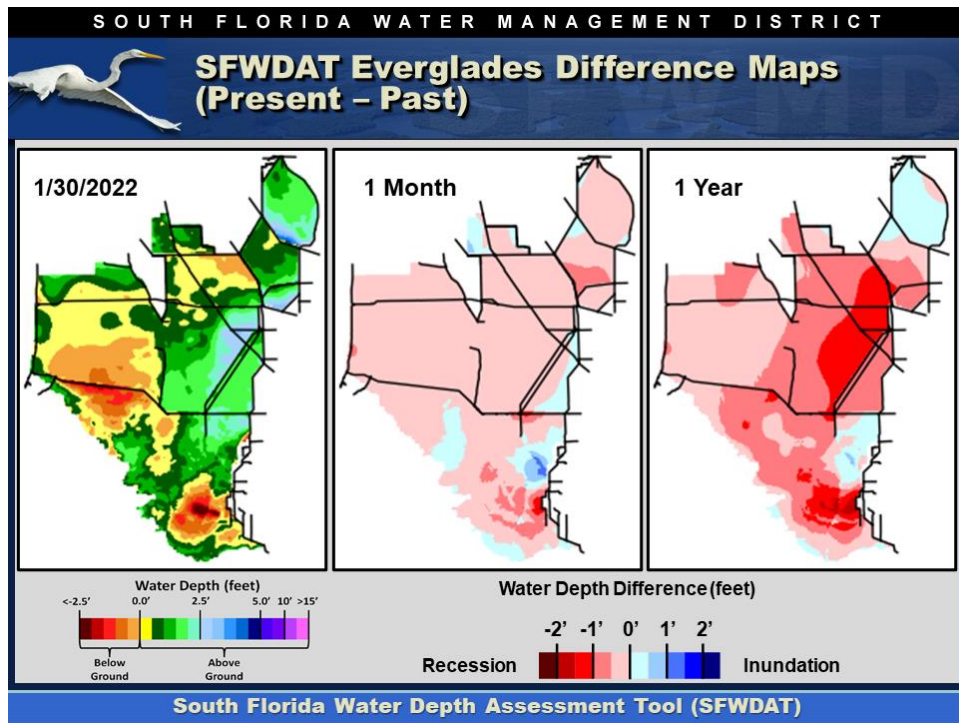


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

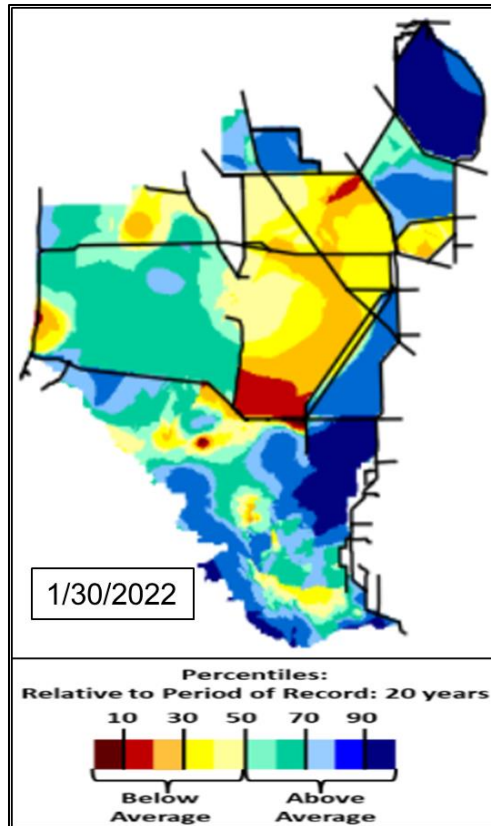


Figure EV-7. Present water depths compared to the day of year median over the previous 20 years.

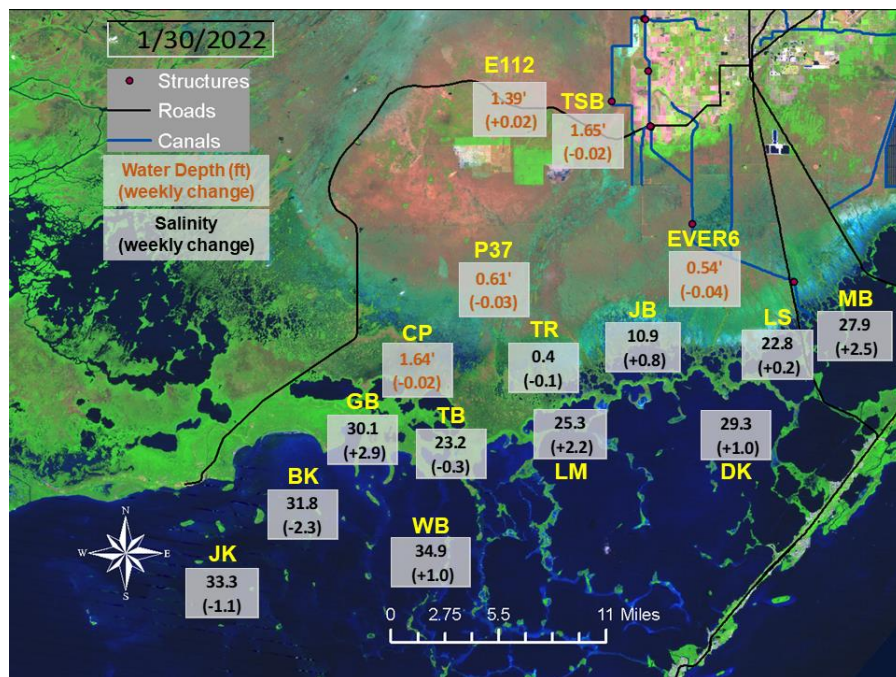


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

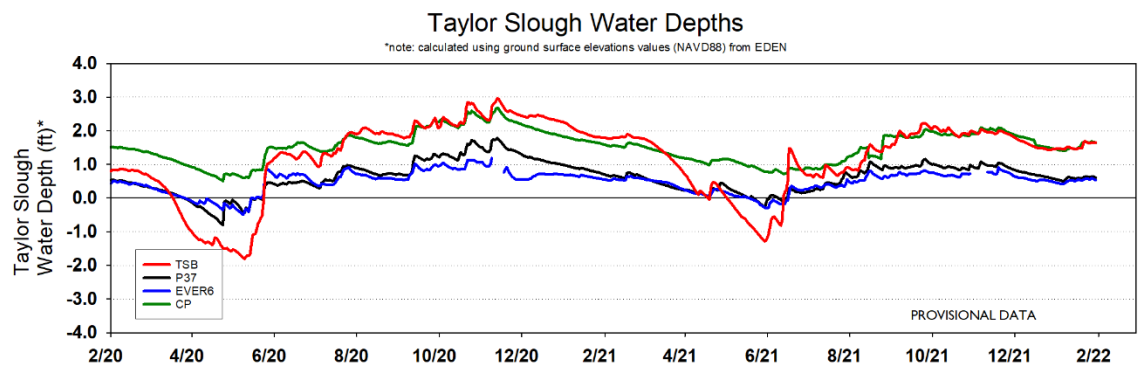


Figure EV-9. Taylor Slough water depth time series.

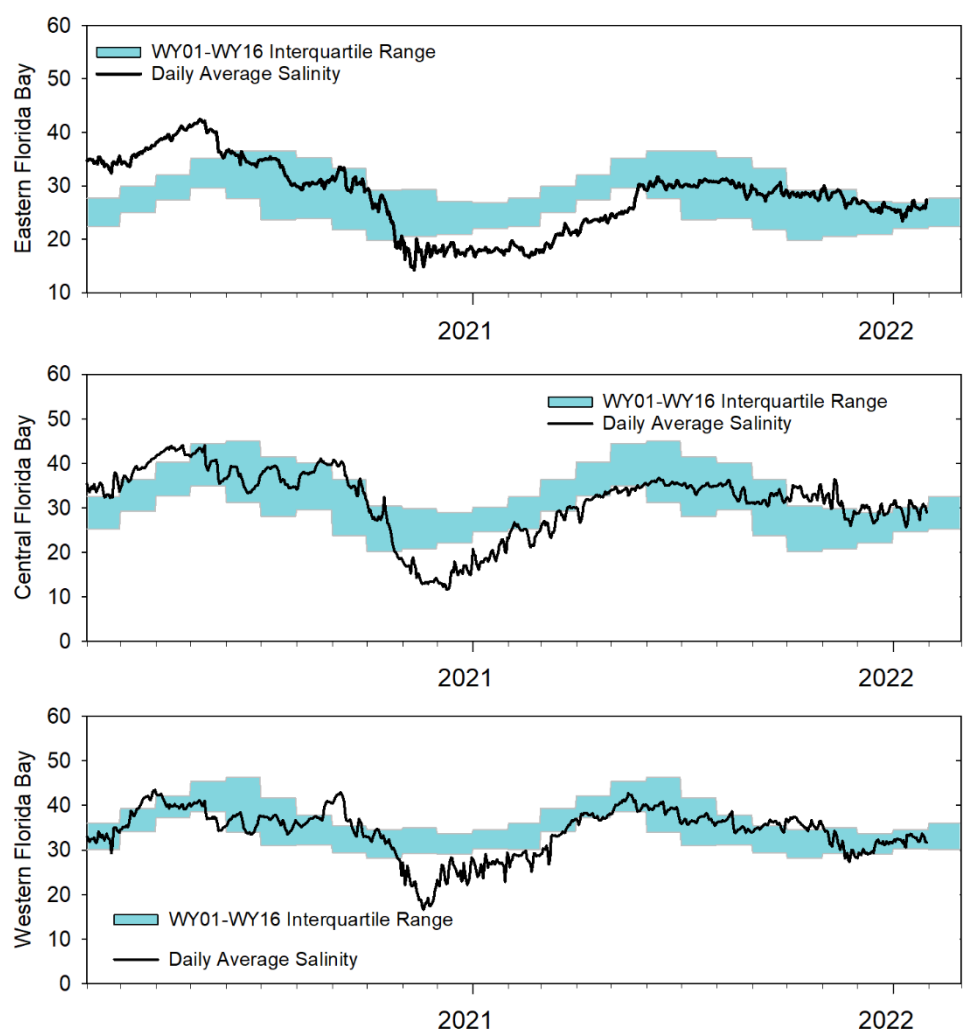


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with interquartile (25-75 percentile) ranges.

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

SFWMD Everglades Ecological Recommendations, January 25, 2022 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.05'	Conserve water in this basin letting the water move south when conditions allow.	Protect within basin and downstream habitat and wildlife. Anticipated La Nina dry season.
WCA-2A	Stage decreased by 0.13'	Conserve water in this basin letting the water move south when conditions allow, with northern WCA-3A as the priority for receiving discharge. Keeping a recession rate less than 0.10 feet per week has an ecological benefit.	Protect within basin and downstream habitat and wildlife. Protect wading bird foraging conditions in WCA-3A North.
WCA-2B	Stage decreased by 0.09'	Conserve water in this basin, maintain a minimum input to maintain stage while moving water south when conditions allow.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.10'	Conserve water in this basin, while letting the water move south when conditions allow. Keeping a recession rate less than 0.10 feet per week has an ecological benefit.	Protect within basin peat soils, wading bird foraging and downstream habitat and wildlife. Maintaining stage above 9.5' NGVD at 3A-3 (or gauge 63) prior to March 15 will increase the probability of successful nesting at the Alley North colony.
WCA-3A NW	Stage decreased by 0.05'	Conserve water in this basin letting the water move south when conditions allow. Keeping a recession rate less than 0.10 feet per week has an ecological benefit.	
Central WCA-3A S	Stage decreased by 0.14'	Return to a recession rate that is less than 0.10 feet per week. Allow flows to move south when conditions allow.	Protect within basin and downstream habitat and wildlife.
Southern WCA-3A S	Stage increased by 0.13'		
WCA-3B	Stage increased by 0.08'	Slow ascension rates in this basin letting the water move south when conditions allow.	Protect within basin and downstream habitat and wildlife.
ENP-SRS	Stage decreased by 0.09'	Make discharges to the Park according to COP and TTFF protocol while considering upstream and downstream ecological conditions.	Protect within basin and upstream habitat and wildlife.
Taylor Slough	Stage changes ranged from -0.04' to +0.02'	Move water southward as possible.	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged -2.3 to +2.9	Move water southward as possible.	When available, provide freshwater to maintain low salinity buffer and promote water movement.