MEMORANDUM

To: USACE Colonel James L. Booth, LTC Todd F. Polk, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Drew Bartlett, Jennifer Reynolds, Lawrence Glenn, DEP Secretary Shawn Hamilton

From: Periodic Scientists Conference Call Participants
Kevin Godsea & Avery Renshaw - J.N. "Ding" Darling National Wildlife Refuge (NWR) Complex
Holly Milbrandt & Dana Dettmar - City of Sanibel
Lesli Haynes & Lisa Kreiger - Lee County
Harry Phillips & Maya Robert - City of Cape Coral
Leah Reidenbach, Rick Bartleson PhD, & Matt Depaolis - SCCF (Sanibel-Captiva Conservation Foundation)

Subject: Caloosahatchee & Estuary Conditions Report

Reporting Period: **July 11 – 17, 2023**

This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity, and function of the system.

Caloosahatchee Conditions Summary: Flow to the Caloosahatchee Estuary had a 7-day average of **2,646 cfs** at **S-79** with a 7-day average of **263 cfs (10%)** coming from the lake at **S-77**. **The 14-day moving average flow at S-79 is 2,925 cfs and has been in the damaging** flow envelope (> 2,600 cfs; RECOVER 2020) for 19 days.

Recommendation: Lake Okeechobee is concerningly high and has developed large cyanobacterial blooms on the lake and at S-77. There is potential risk that the Caloosahatchee could experience damaging high Lake discharge events in addition to watershed runoff, resulting not only in increased nutrient loading and decreased salinity, but the transportation of harmful algae via S-77 to the estuary. We recommend that the Corps seek to utilize all outlets around the Lake to reduce rising Lake levels in an effort to prevent damaging high releases to the Caloosahatchee estuary and to confirm the absence of cyanobacteria at all lock structures before releases resume to avoid risk to environmental and human health.

USACE Action: With Lake Okeechobee stage within the Low Sub-band, the Tributary Hydrologic conditions in the Wet category, Lake stage within 1 ft of the Intermediate Sub-band, and the Seasonal Lake Okeechobee Net Inflow outlook in the Very Wet category, Part D of the 2008 LORS suggests "S-79 up to 3,000 cfs and S-80 up to 1,170 cfs". On 6/10/23 the USACE increased releases from Lake Okeechobee to the Caloosahatchee Estuary from the W.P. Franklin Lock and Dam (S-79) to 2,000 cfs. Releases to the St. Lucie Estuary (S-80) remain at 0 cfs.

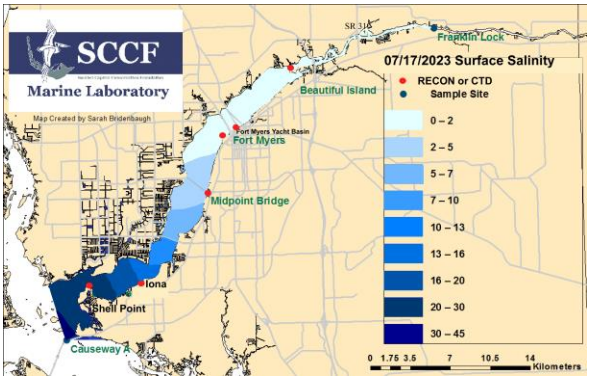
Lake Flows: In the past 7 days the total outflow from Lake Okeechobee was **3,696 AF** with **3,652 AF** to the Caloosahatchee through **S-77**, **44 AF** through **S-310** in Clewiston, and **0 AF** to the EAA through **S-351**, **S-352**, and **S-354**. The total net inflow to the Lake was **50,210 AF** (48,899 AF from Fisheating Creek, S-71, S-72, S-84s, S-65EX, and S-65EX1) with a total backflow volume of **1,311 AF** from **S310 and C10A**. Water conservation areas received flows of **8,368 AF**, **14,243 AF**, and **20,832 AF** at **WCA1, WCA2, and WCA3**, respectively. Everglades National Park received **10,570 AF**.

Lake Level: 14.92 ft (Low Sub-Band) **Last Week**: **14.87 ft** **Last Year: 12.96 ft**

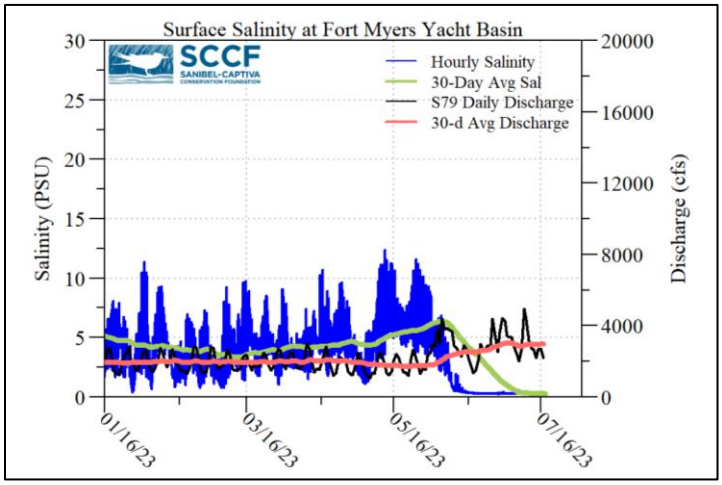
7-Day Lake Recession Rate: +0.05 ft/week

Lake Okeechobee Inflow: 3,549 cfs **Lake Okeechobee Outflow: 0 cfs**

Weekly Rainfall Total: **WP Franklin: 0.45"** **Ortona: ≥ 1.30"** **Moore Haven: 0.40"**



ACOE Daily Reports			
Date	**S79 Flow (cfs)**	**S78 Flow (cfs)**	**S77 Flow (cfs)**
7/11/23	**3171**	**1393**	**0**
7/12/23	**2714**	**1322**	**666**
7/13/23	**2690**	**1476**	**626**
7/14/23	**2178**	**1270**	**373**
7/15/23	**2660**	**1156**	**176**
7/16/23	**2728**	**1325**	**0**
7/17/23	**2380**	**1318**	**0**
7-day avg	**2646**	**1324**	**263**



Light Penetration

Site	25% Iz	Target Values	Turbidity	Target Values
	meters		NTU	
Fort Myers	ND	> 1	ND	< 18
Shell Point	ND	>2.2	ND	< 18
Causeway	2.1	> 2.2	1.1	< 5

25% Iz *is the depth (z) where irradiance (I) is 25% of surface irradiance. Target values indicate the depth of light penetration needed for healthy seagrass.*
[m] measured, [c] calculated

Cyanobacteria Status: On 7/17/23 sampling for cyanobacteria by the Lee County Environmental Lab reported the **presence** of *Microcystis* at **North Shore Park** as streaks with some accumulation along the shore and seawall, and at **Midpoint Bridge Park** as streaks with accumulation along the shore.

Upper Estuary Conditions: The 30-day average surface salinity at the Fort Myers Yacht Basin was 0.3 psu, within the suitable range for tape grass.

Lower Estuary Conditions: The average salinity at Shell Point RECON was 23 psu, in the optimal range for oysters, but below optimal for seagrass. On 7/14, over 5 million *Pseudo-nitzchia* cells/L and 21,000 *Pyrodinium* cells/L were found in a Sanibel beach sample.

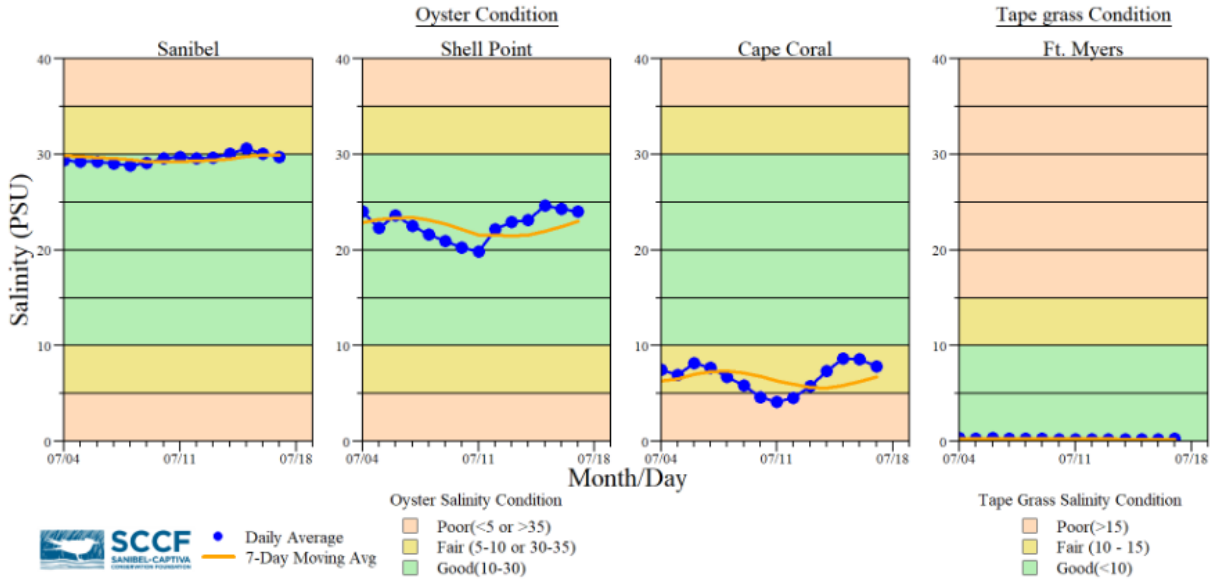
Water Quality Conditions:

Monitor Site	Salinity (psu)[a] [previous week]	Diss O_2 (mg/L)[b]	FDOM (qsde)[c]	Chlorophyll (µg/L)[d]
Beautiful Island	0.2 – 0.2 [0.2 – 0.2]	-------	-------	9.5
Fort Myers Yacht Basin	0.2 – 0.2 [--------]	-------	-------	-------
Shell Point	9.6 – 33 [11 – 32]	3.1 – 8.0	145	-------
McIntyre Creek	28.1 – 30.3 [26.6 – 29.7]	0.7 – 8.6	-------	-------
Tarpon Bay	26.8 – 32.1 [27.7 – 31.3]	2.1 – 9.3	3.5 – 6.4	1.5 – 5.2
Wulfert Flats	21.0 – 31.3 [28.7 – 30.5]	2.5 – 9.0	-------	3.4 – 35.5

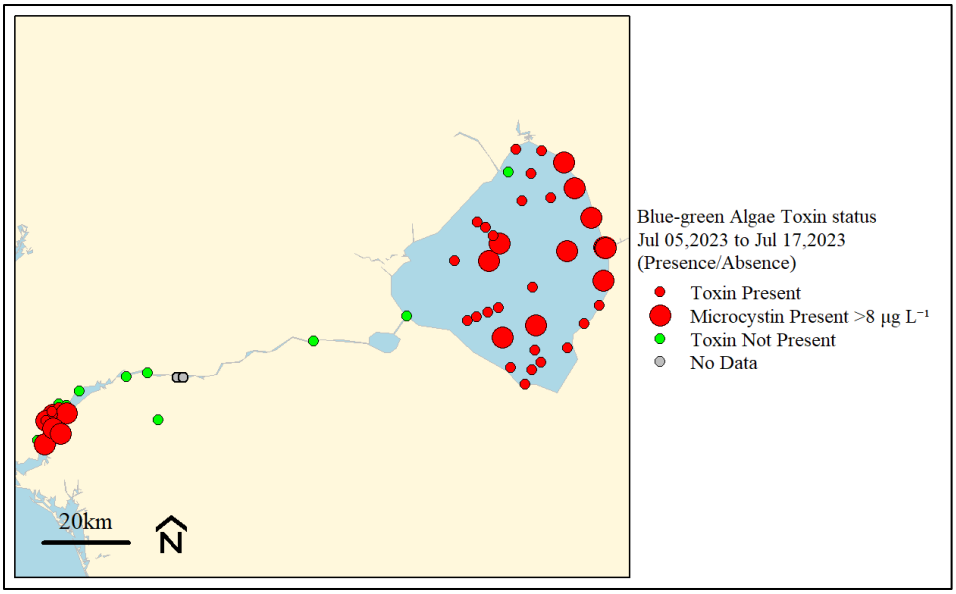
Red values are outside of the preferred range.
[a] Salinity target values: BI < 5, FM < 10, SP = 10 – 30
[b] Dissolved O_2 target values: all sites > 4
[c] FDOM target values: BI < 70, FM < 70, SP < 11
[d] Chlorophyll target values: BI < 11, FM < 11, SP < 11
[s] Single sonde lower and surface layer or surface grab lab measurement
------- no data

Red Tide: On 7/14/23, the FWC reported that over the past week the red tide organism, Karenia brevis, was detected at background concentrations in one sample from Pinellas County

Wildlife Impacts: In the past week, the CROW wildlife hospital on Sanibel received 2 patients with toxicosis symptoms: 1 juvenile black necked stilt (died) and one juvenile laughing gull (died).



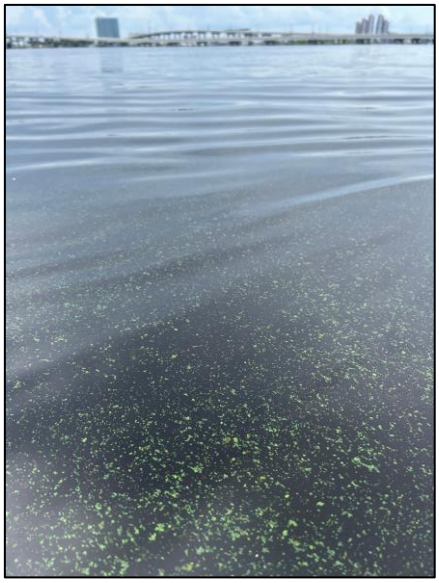
Daily average bottom salinity data for the last 14-days from sampling locations within the tidal Caloosahatchee River Estuary relative to oyster health (Sanibel, Shell Point and Cape Coral) and tape grass (*Vallisneria americana*) health (Ft. Myers only) conditions.
*Ft. Myers sensor is in the lower strata
Data are provisional and subject to change.



Blue-green Algae sampling results for the last 14-days for the 10 county area (Lee, Collier, Hendry, Glades, Okeechobee, Martin, Palm Beach, Broward, Miami-Dade and Monroe). Of the 78 samples collected, cyanobacteria was dominate in 61 samples, 58 samples had toxins present ranging from 0.43 to 170 µg L^{-1} (does not include non-detects).

*Data from FDEP Blue-green algae dashboard. Data are provisional and subject to change.

The SCCF Marine Lab sampled for blue green algae in the Caloosahatchee in Fort Myers on 7-17-23 along with water quality data and nutrient samples. Results pending.



Water clarity at Lighthouse Beach Park on 7/17/23 at 1:07 PM on a high tide (3.1 ft). Lighthouse Beach Park Virtual Tour.