

MEMORANDUM

To: USACE Colonel Andrew D. Kelly, LTC Todd F. Polk, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Drew Bartlett, Jennifer Reynolds, Lawrence Glenn, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants
 Kevin Godsea & Jeremy Conrad - 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
 James Evans, Leah Reidenbach, & Rick Bartleson PhD - SCCF (Sanibel-Captiva Conservation Foundation)

Subject: Caloosahatchee & Estuary Conditions Report

Reporting Period: **December 15 – 21, 2020**

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 Condition Summary: Flows to the Caloosahatchee estuary had a 7-day average of **3,502 cfs at S-79** with a 7-day average of **2,213 cfs coming from the lake at S-77**. The 14-day moving average flow at S-79 is **4,191 cfs** and has been in the **damaging flow envelope (>2,600 cfs; RECOVER 2020)** for the past **101 days**. With sustained flows >2,600 cfs at S-79, we expect low salinities to cause harm to marine organisms in the lower estuary. A red tide bloom persists in Lee and Collier Counties causing multiple fish kill events, dead and injured wildlife, and respiratory irritation in humans. Water clarity is slowly improving in North Pine Island Sound and Cape Coral. Minor accumulations of red drift algae have been observed on the west end beaches of Sanibel.

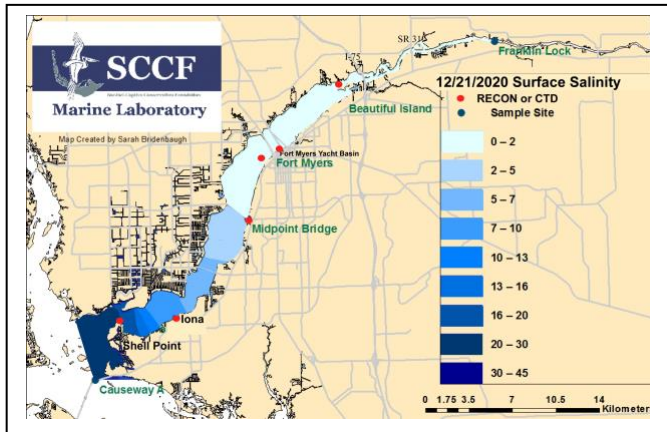
Recommendation: We recognize that the Corps is gradually reducing flows to the estuary. **For optimal ecological conditions** in the Caloosahatchee estuary, the RECOVER 2020 performance measure for salinity recommends **flows be maintained between 750 – 2,100 cfs at S-79**. We request that that flows at S-77 are reduced so that flows as measured at S-79 are reduced to <2,100 as soon as possible.

USACE Action: On Saturday 12/19/20 the USACE entered its third week in the gradual reduction of flows to the **Caloosahatchee Estuary** with a **7-day average target flow** (pulse) of 2,500 cfs as measured at the WP Franklin Lock & Dam (S-79). Starting on Saturday 12/26/20, targeted flows (constant) will be reduced to 1,500 cfs as measured at S-79. For the **St. Lucie Estuary**, the Corps will implement a multi-week release pattern, alternating between a 5-day pause on 12/17 – 12/21 followed by a 7-day average release of 1,500 cfs from S-80 on 12/22 – 12/28.

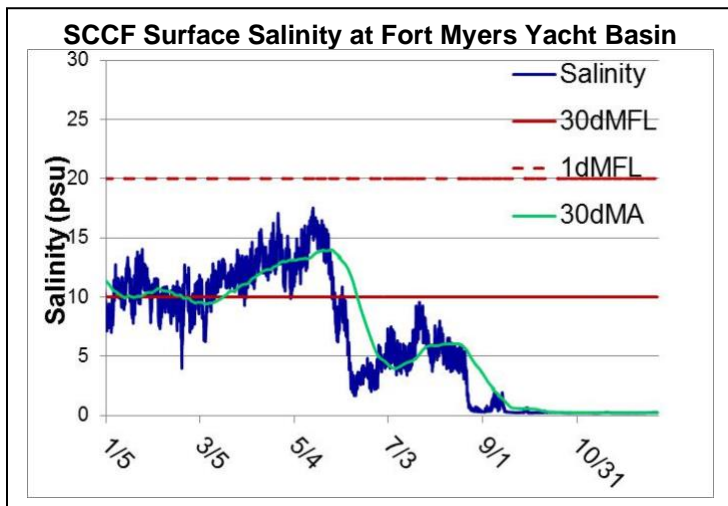
Lake Flows: In the past 7 days, **38,318 AF*** were discharged from Lake Okeechobee, with **29,545 AF (77%)** to the Caloosahatchee through **S-77**, **8,653 AF (23%)** to the St. Lucie River through **S-308**, **30 AF (<1 %)** through **S-310** in Clewiston, and **90 AF (<1%)** to the **EAA through S-351 and S-352**. There was a net flow of **3 AF** at the **L-8 canal**. Water conservation areas received flows of **2,993 AF**, **18,044 AF**, and **0 AF** at **WCA1, WCA2, and WCA3**, respectively. Everglades National Park received **82,093 AF**.

*data missing on 12/15 – 12/16 for S-310

Lake Okeechobee Level: 15.94 ft (Low sub-band) **Last Week:** 15.98 ft
Lake Okeechobee Inflow: 2,544 cfs **Lake Okeechobee Outflow:** NR
Weekly Rainfall Total: WP Franklin **≥0.40"** Ortona **≥0.00"** Moore Haven **≥0.01"**



ACOE Daily Reports			
Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
12/15/2020	4365	2321	2079
12/16/2020	3365	2318	2109
12/17/2020	3104	2190	2121
12/18/2020	2371	2083	2079
12/19/2020	3448	2095	2049
12/20/2020	3484	2814	2338
12/21/2020	4380	2811	2717
7 day avg	3502	2376	2213



Light Penetration

Site	25% I _z Target Values		Turbidity Target Values	
	meters		NTU	
Fort Myers	0.64	> 1	4.7	< 18
Shell Point	1.20	> 2.2	1.3	< 18
Causeway	1.64	> 2.2	1.1	< 5

25% I_z is the depth (z) where irradiance (I) is 25% of surface irradiance. Target values indicate the depth of light penetration needed for healthy seagrass.

Cyanobacteria Status: On 12/21/20, sampling by the Lee County Environmental Lab reported no cyanobacteria in the Caloosahatchee.

Upstream of S-79/Franklin Conditions: On 12/22/20 the Olga Water Treatment plant reported chlorides of **52 mg/L**, apparent color **146 CU** and turbidity **4.55 NTU**. No visible algae were reported at the plant intake the past week. The plant is online at **1800 GPM**.

Upper Estuary Conditions: The 30-day average surface salinity at the Fort Myers Yacht Basin was **0.2 psu**, within the suitable range for tape grass. No hypoxia was recorded during the week at the RECON sites.

Lower Estuary Conditions: Light levels were very low near the Causeway in San Carlos Bay due to dissolved organic matter. The average salinity at Shell Point RECON was 20, within the suitable range for oysters. Chlorophyll spikes to 10 µg/L were recorded and 25,000 *Karenia* cells per liter were present in a sample at the site on 12/21/20.

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]	6.2 – 7.4	-----	3.7
Fort Myers Yacht Basin	0.2 – 0.3 [0.2 – 0.2]	7.2 – 8.9	512	9.0
Shell Point	6.3 – 29 [2.9 – 29]	6.9 – 8.4	233	5.8
McIntyre Creek	-----	-----	-----	-----
Tarpon Bay	-----	-----	-----	-----
Wildlife Drive	-----	-----	-----	-----
Wulfert Flats	-----	-----	-----	-----

Red values are outside of the preferred range.

^a Salinity target values: BI < 5, FM < 10, SP = 25 – 32

^b Dissolved O₂ target values: all sites > 4

^c FDOM target values: BI < 70, FM < 70, SP < 11

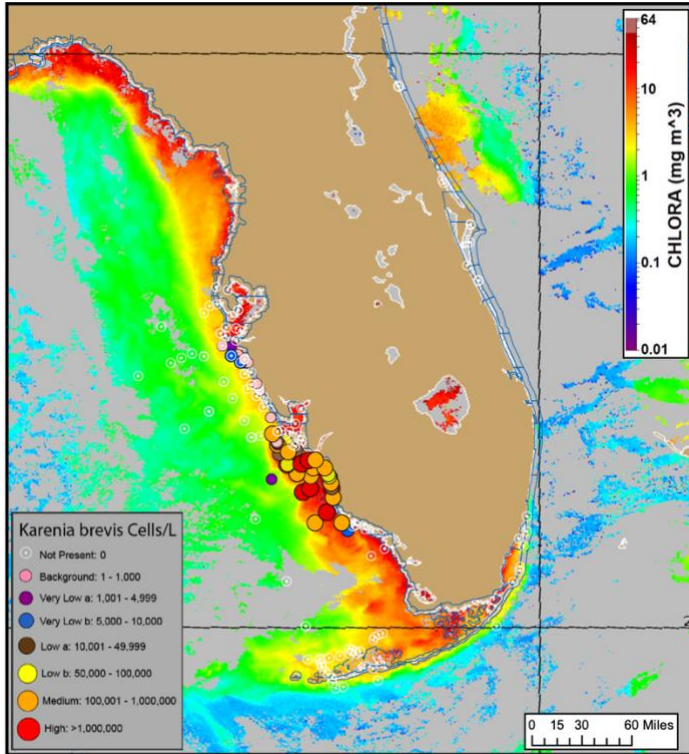
^d Chlorophyll target values: BI < 11, FM < 11, SP < 11

Red Tide: On 12/18/20 [FWC](#) reported that a patchy bloom of the red tide organism, *Karenia brevis*, persists in Southwest Florida. Background to high concentrations of *K. brevis* were detected in 54 samples over the past week. Bloom concentrations (>100,000 cells/liter) were observed in 26 samples collected in and offshore of Lee and Collier counties. *K. brevis* was observed at background or very low concentrations in and offshore of Manatee, Sarasota, and Charlotte counties. High concentrations were found in samples on the northeast side of Sanibel, while low and medium concentrations were found at the beaches 12/19 – 12/21/20 (SCCF samples).

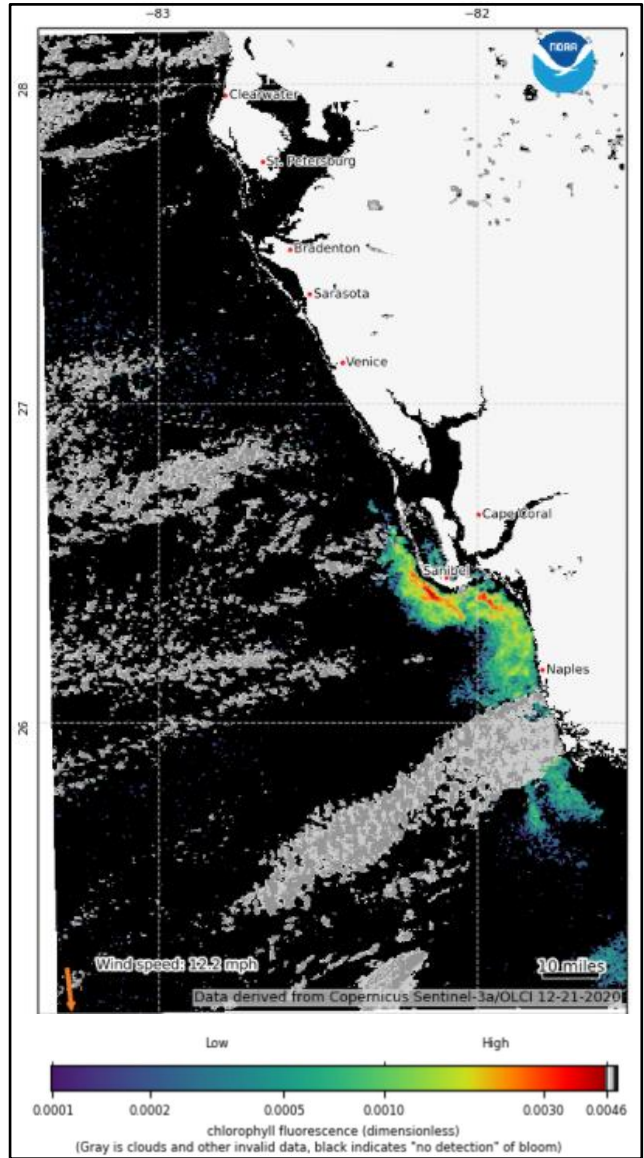
Shellfish Advisory: Shellfish harvest area #6232 Pine Island Sound Section 3 (Matlacha Pass South) Shellfish Harvest Area and #6212 Pine Island Sound Section 1 Aquaculture Use Zones and Leases (Public Reef is already closed) are **CLOSED** by the Florida Department of Agriculture and Consumer Services (FDACS) as of 12/22/20 due to presence of *Karenia brevis*, shellfish meat results and conditions defined in The Biotxin Management Plan.

Beach conditions: Since 12/13/20 the [FWC Fish Kill Hotline](#) has received **43 reports** in Lee County related to the red tide event and its associated effects. Affected areas reported over the past week include Sanibel, Bonita Beach, Fort Myers Beach, Fort Myers, Captiva, St. James City, Cape Coral, and Fort Myers Shore. Numerous species of fish and invertebrates have been found dead.

Wildlife Impacts: The past week, the CROW wildlife hospital on Sanibel **received 7 brevetoxicosis patients:** 1 laughing gull (still at CROW), 1 black scoter (died), 3 double-crested cormorants (3 still at CROW), 1 sanderling (died), 1 surf scoter (still at CROW).



[Satellite imagery](#) (VIIRS, 12/19) shows elevated to very high chlorophyll (2 to >20 µg/L) is intermittently present alongshore southwest Florida from Pinellas to Collier counties. A defined anomaly of dense chlorophyll with optical characteristics of *Karenia brevis* is present along- and up to 8 miles offshore Sanibel Island in central Lee County to Naples beach in norther Collier County, corresponding to increases in *K. brevis* concentrations from recent samples (12/11 – 12/17).



[NOAA National Center for Coastal Ocean Science](#) satellite imagery from 12/21. Red Band Difference (RBD) showing relative chlorophyll fluorescence from high (red) to low (violet).