

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Peter Antonacci, Terrie Bates, Susan Gray, Peter Doering, DEP Secretary Jon Steverson

From: Periodic Scientists Conference Call Participants  
 Paul Tritaik - J.N. "Ding" Darling National Wildlife Refuge (NWR) Complex  
 James Evans & Holly Milbrandt - City of Sanibel  
 Keith Kibbey & Lesli Haynes - Lee County  
 Rae Blake – Town of Fort Myers Beach  
 Connie Jarvis & Harry Phillips – City of Cape Coral  
 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **January 10 - 16, 2017**

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:** Discharges into the estuary at S-79 during the past week averaged **596 cfs**. **The MFL has been exceeded at Fort Myers for 17 days. Salinities are in the harmful range for tape grass at Fort Myers.** Lake Okeechobee discharges to the river, measured at S-77 averaged **863 cfs**.

**USACE Action:** The USACE continued flows to the Caloosahatchee with a 7-day average target of **650 cfs** measured at S-79 with no discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** **For the past 4 weeks the Caloosahatchee has received less than the target flows of 650 cfs resulting in rapidly rising salinities in the estuary, triggering an MFL exceedance. We recommend increasing pulse releases to provide adequate freshwater flows to prevent future MFL exceedances at Fort Myers. We request a Periodic Scientist call next week to discuss the insufficient flow to the Caloosahatchee through S-79 causing salinities to exceed the MFL.**

Lake Okeechobee Level: **14.00 ft. (Low Sub-Band)** Last week: **14.10 ft**

Lake Okeechobee Inflow: **259 cfs** Lake Okeechobee Outflow: **2,487 cfs**

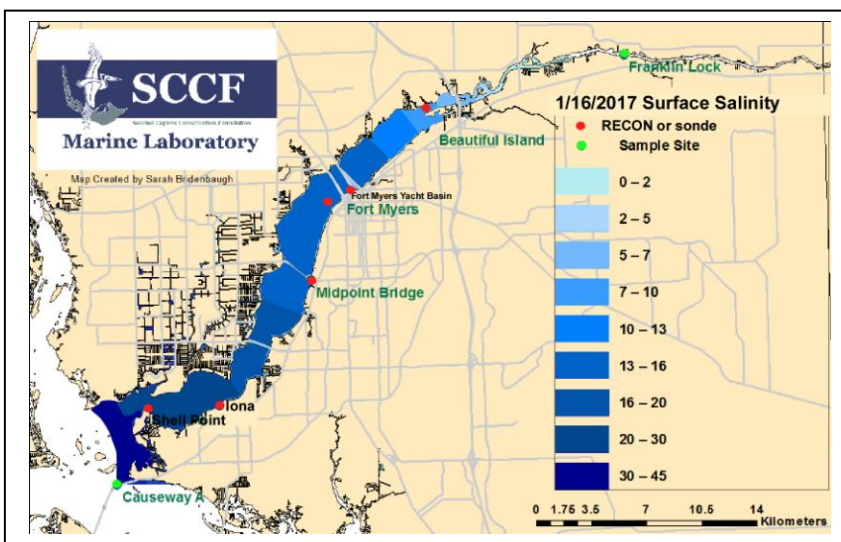
Weekly Rainfall: WP Franklin **0"** Ortona **0"** Moore Haven **0.01"**

Salinity Beautiful Island: **3.6 - 8.1 psu** (SCCF RECON Marker 18) Previous wk **3.8 - 6.5 psu**

Salinity Fort Myers: **6.9 - 15 psu** (SCCF Yacht Basin) Previous wk **2.7 - 14 psu**

MFL Status: **MFL Exceedance 30-day moving average >10 psu at surface for 17 days**

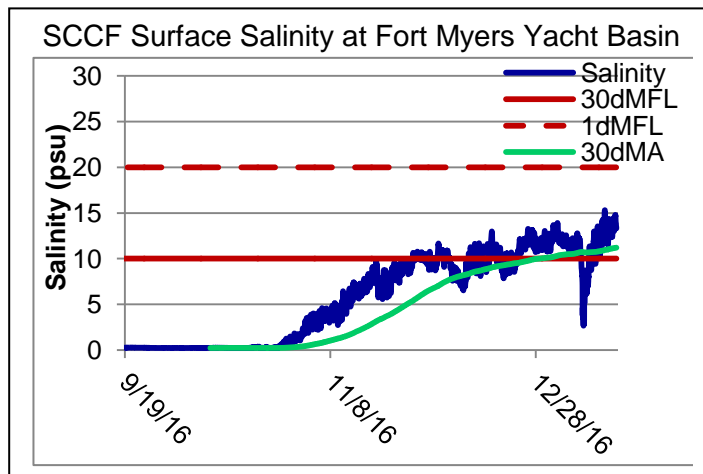
Salinity Shell Point: **22 - 32 psu** (SCCF RECON) Previous wk **19 - 33 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>3.6 - 8.1</b>	< 5 psu	<b>High</b>
Fort Myers	<b>6.9 - 15</b>	<10 psu	<b>MFL Ex</b>
Shell Point	<b>22 - 32</b>	25 - 32 psu	<b>In Range</b>
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	<b>1.48</b>	2.2 meters	<b>Low</b>
Causeway	<b>2.07</b>	2.2 meters	<b>Low</b>
Sanibel E	<b>2.19</b>	2.2 meters	<b>Low</b>

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **596 cfs**. Over the past 14 days **36%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **3%** was delivered to the St Lucie at S-308, **50%** was delivered south to the EAA, **10%** was directed to the L8 and **1%** was delivered thru S-310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
1/10/2017	Tues	486	267	578
1/11/2017	Wed	285	145	568
1/12/2017	Thur	76	115	553
1/13/2017	Fri	796	302	643
1/14/2017	Sat	920	715	1092
1/15/2017	Sun	852	767	1409
1/16/2017	Mon	754	584	1198
7 day Avg		596	414	863



**Upstream of S-79/Franklin Conditions:** On 1/17/17 the Olga Water Treatment plant chlorides measured **58 mg/L**, apparent color was **57 CU** and turbidity measured **1.77 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2,000 GPM.

**Upper Estuary Conditions:** **MFL exceeded at Fort Myers for 17 days. Salinities are in the harmful range for tape grass at Fort Myers.**

**Lower Estuary Condition:** **The average salinity at Shell Point (29 psu) was above the optimal range for oysters. Red, green and brown branching drift algae is accumulating in San Carlos Bay with accumulations four feet deep observed near Fisherman's Key .**

**Documentation:** The SCCF Marine Lab is working to quantify macroalgae abundance that has appeared following the 9.5 months of high water discharges out the Caloosahatchee in 2016 as a proxy for nutrient loading. ( Valiela et al. 1998). Large wind rows (30-100m wide, 1-2 km long, 1 m thick) of macroalgae are covering large areas of seagrass (*Thalassia testudinum*, *Syringodium filiformis*, *Halodule wrightii*).

**Method:** Using a 1 minute trawl at 10 locations, the abundance of macroalgae was measured and fish were sorted from the sample and the volume of water displaced by the macroalgae was measured. A sub-sample was collected to identify species of macroalgae and convert volume displaced to biomass (dry weights) at the lab.

**Findings:** Table 1 compares the volume of macroalgae from sites near the mouth of the Caloosahatchee in San Carlos Bay to 2 other sites located at increasing distances from the Caloosahatchee.

**Table 1. Macroalgae quantified using a 1 minute otter trawl.**

Location	Mean Macroalgae Volume (L) n=3
San Carlos Bay (S. Fisherman's Key)	52.57 L
Ding Darling (McIntyre Creek)	9.37 L
Captiva Island (S. Seas)	1.72 L



Resort workers clean up macroalgae on the beaches at Sanibel Harbor 1/16/17. Photo SCCF



Drift algae accumulations up to 4 ft deep along Fisherman's Key and San Carlos Bay shoreline. Photo 1/5/17 Wil Compton



Drift algae sample near Fisherman's Key, San Carlos Bay 1/11/17. Photo SCCF

**J.N. "Ding" Darling NWR:**

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	30.1 – 31.81	5.17 – 10.94	15.68 – 22.5	2.12 – 12.49
Tarpon Bay	30.58 – 31.48	6.09 – 8.88	12.23 – 25.26	2.75 – 35.42

**Red Tide:** On 1/13/16, FWC reported *Karenia brevis*, the Florida red tide organism, persists in patches from **Pinellas to Sarasota County with back-ground concentrations off Lee and Charlotte Counties.**

**Manatees:** Lee county park staff reported approximately **100 manatees** gathering in the warm water refuge of the Orange River and FPL discharge canal the past week.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Tarpon Bay	4.1	42.6	3.8	1.48
Causeway	2.5	15.0	2.9	2.07
Sanibel E	2.7	8.1	2.1	2.19

Target light penetration: **CE**- Caloosahatchee Estuary =1 m

**SCB**-San Carlos Bay = 2.2 meters

Definition of 25% I<sub>z</sub>: **z** where **I** is 25% of surface **I**.  
I = irradiance, z= depth