

**MEMORANDUM**

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

From: Periodic Scientists Conference Call Participants  
 Paul Tritaik & Joyce Palmer - 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: May 18 - 24, 2016

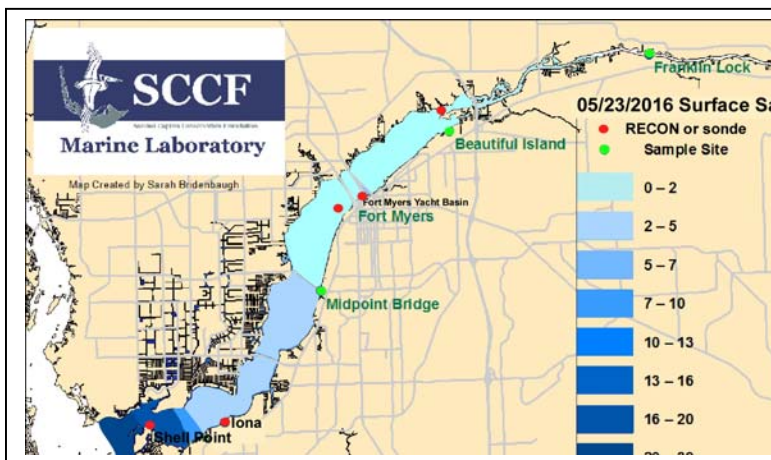
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** Discharges into the estuary at S-79 during the past week increased to an average of **4,183 cfs**, while discharges to the river from Lake Okeechobee at S-77 decreased to an average of **350 cfs**. Watershed inflows to the Franklin pool between S-78 and S-79 averaged **2,139 cfs**.

**USACE Action:** On May 19, 2016 the USACE continued pulse releases to the Caloosahatchee through S-79 to a weekly average of **2,000 cfs** and **650 cfs** to the St. Lucie measured at S-80.

**Recommendation:** We request flows be reduced to an average of 2,000 cfs at S-79 to improve a salinity gradient throughout the estuary and enhance conditions for spawning in the Caloosahatchee estuary. Consideration should be made for providing dry season flows to the Caloosahatchee in light of potential development of La Niña conditions.

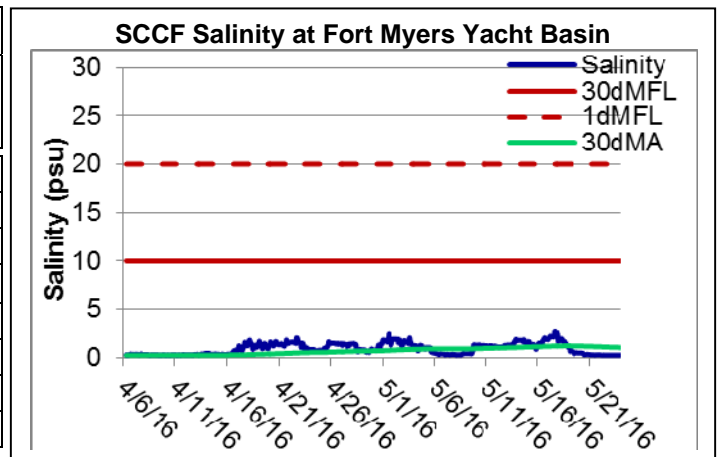
|                                   |   |   |
|-----------------------------------|---|---|
| <b>Lake Okeechobee Level:</b>     | <b>14.32 ft. (Low Sub-Band)</b>                                       | <b>Last week: 13.64 ft.</b>             |
| <b>Lake Okeechobee Inflow:</b>    | <b>12,486 cfs</b>   | <b>Lake Okeechobee Outflow: 997 cfs</b> |
| <b>Weekly Rainfall:</b>           | WP Franklin <b>0.23"</b> Ortona <b>1.24"</b> Moore Haven <b>0.72"</b> |   |
| <b>Salinity Beautiful Island:</b> | <b>0.2 – 0.3 psu (SCCF RECON Marker 18)</b>                           | Previous wk <b>0.2 – 0.3 psu</b>        |
| <b>Salinity Fort Myers:</b>       | <b>0.2 – 1.9 psu (SCCF Yacht Basin)</b>                               | Previous wk <b>0.8 – 1.9 psu</b>        |
| <b>Salinity Shell Point:</b>      | <b>8 – 32 psu (SCCF RECON)</b>  | Previous wk <b>12 – 32 psu</b>          |



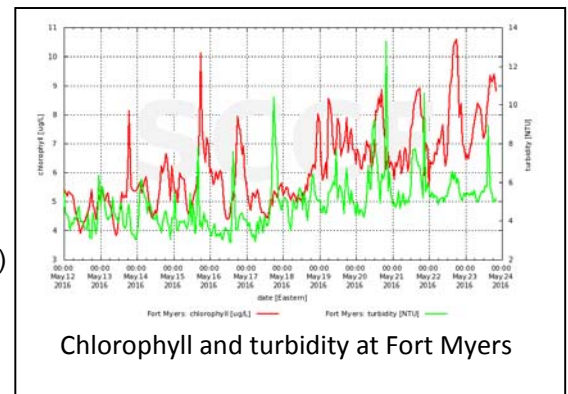
| <b>Salinity (psu)</b>                         |                      |                          |                 |
|---|----------------------|--------------------------|-----------------|
|   | <b>Current Value</b> | <b>Sustainable Range</b> | <b>High/Low</b> |
| <b>Beautiful Is</b>                           | <b>0.2 – 0.3</b>     | <b>&lt; 5 psu</b>        | <b>-</b>        |
| <b>Fort Myers</b>                             | <b>0.2 – 1.9</b>     | <b>&lt;10 psu</b>        | <b>-</b>        |
| <b>Shell Point</b>                            | <b>8 – 32</b>        | <b>25 - 31 psu</b>       | <b>Low</b>      |
| <b>Light (25% I<sub>z</sub> depth meters)</b> |                      |                          |                 |
| <b>Beautiful Is</b>                           | <b>0.76</b>          | <b>1 meter</b>           | <b>Low</b>      |
| <b>Fort Myers</b>                             | <b>0.74</b>          | <b>1 meter</b>           | <b>Low</b>      |
| <b>Cape Coral</b>                             | <b>0.75</b>          | <b>2.2 meters</b>        | <b>Low</b>      |

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S79 during the past seven days averaged **2,164 cfs**. Over the past 14 days **38%** of Lake Okeechobee outflows were directed to the Caloosahatchee, **12%** were delivered to the St Lucie at S308, **45%** of flows were discharged south to the EAA for irrigation demand, **5%** to the L8 and **0%** to S310.

| ACOE May 13 Pulse Release at S79 |     |              |                |                |                |
|----------------------------------|-----|--------------|----------------|----------------|----------------|
| Date                             | Day | Pulse Target | S79 Flow (cfs) | S78 Flow (cfs) | S77 Flow (cfs) |
| 5/13/2016                        | 1   | 2300         | 1666           | 1602           | 1921           |
| 5/14/2016                        | 2   | 2900         | 2612           | 2057           | 2567           |
| 5/15/2016                        | 3   | 2600         | 2838           | 2051           | 2616           |
| 5/16/2016                        | 4   | 2100         | 2242           | 1805           | 2358           |
| 5/17/2016                        | 5   | 1700         | 1784           | 1003           | 1200           |
| 5/18/2016                        | 6   | 1400         | 4779           | 1643           | 253            |
| 5/19/2016                        | 7   | 1000         | 6334           | 3477           | 18             |
| <b>7 day avg</b>                 |     | <b>2000</b>  |                |                |                |



**Upstream of S79/Franklin Conditions:** On 5/17/16 the Olga Water Treatment plant chlorides measured **47 mg/L**, apparent color was **148 CU** and turbidity measured **3.83 NTU**. Light algae showed up last Wednesday in the plant intake increased to medium over the weekend, and back to light Monday, medium levels today. Plant is on at 2000 GPM. Cyanobacteria was present at Alva and Olga.



**Upper Estuary Conditions:** Salinities in the upper estuary are in the suitable range for tape grass. Turbidity was elevated and cyanobacteria (*Microcystis* sp.) slicks were visible between Beautiful Island and Fort Myers 05/23/16.

**Lower Estuary Condition:** The average salinity at Shell Point (19 psu) was in the optimal range for oysters. The salinity at Iona was in the harmful range for oysters (4 psu) on 05/23/16.

**McIntyre Creek & Tarpon Bay in J.N. "Ding" Darling NWR:**

Salinities are in the low end of the preferred range for shoal grass and turtle grass (30 to 40 psu).

**Tarpon Bay:** Salinity: 26.5 – 33.8 psu; CDOM: 8.0 – 24.5 qsde; Dissolved oxygen: 4.5 – 7.3 mg/L; Chlorophyll: 1.2 – 7.0 µg/L.

**McIntyre Creek:** Salinity: 27.4 – 31.75 psu; CDOM: 4.9 – 8.7 qsde; Dissolved oxygen: 2.5 – 8.0 mg/L; Chlorophyll: 2.4 – 5.5 µg/L. Dissolved oxygen dropped below 3 mg/L one time over the last week at McIntyre Creek.

**Red tide:** Updated on May 20, 2016 FWC reported a bloom of *Karenia brevis*, the Florida red tide organism, persists along Pinellas, Sarasota, and Charlotte counties in Southwest Florida.

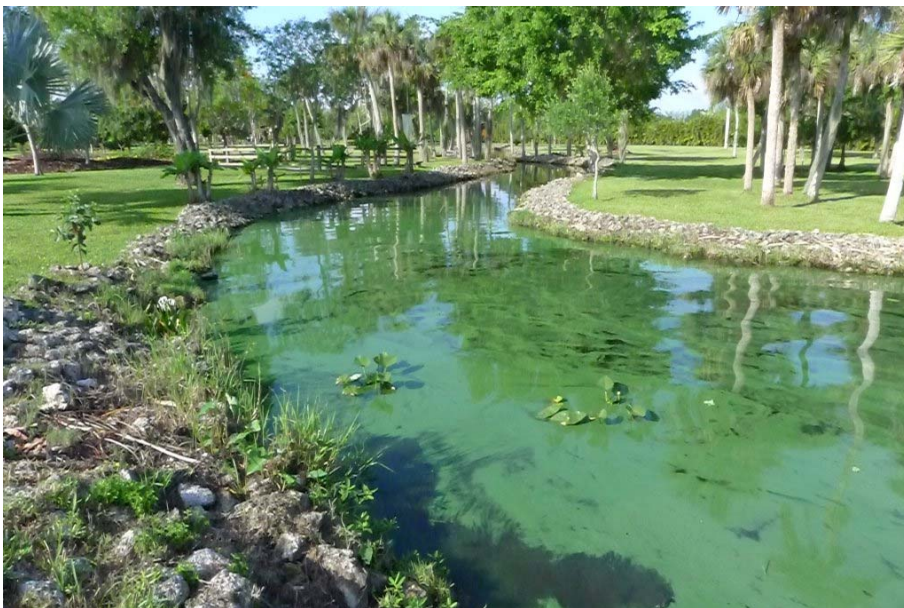
| Caloosahatchee Stations | Chlorophyll (µg/L) | CDOM (qse)        | Turbidity (NTU)    | 25% I <sub>0</sub> depth (meters) |
|-------------------------|--------------------|-------------------|--------------------|-----------------------------------|
| <b>Target Values</b>    | < 11               | CE <70<br>SCB <11 | CE < 18<br>SCB < 5 | CE = 1 m<br>SCB = 2.2m            |
| <b>Beautiful Is</b>     | 6.1                | 172               | 5.4                | 0.76                              |
| <b>Fort Myers</b>       | 14                 | 162               | 5.9                | 0.74                              |
| <b>Cape Coral</b>       | 11                 | 158               | 6.6                | 0.75                              |

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

| ACOE Daily Reports |            |                |                |                |
|--------------------|------------|----------------|----------------|----------------|
| Date               | Day        | S79 Flow (cfs) | S78 Flow (cfs) | S77 Flow (cfs) |
| 5/17/2016          | Tues       | 1784           | 1003           | 1200           |
| 5/18/2016          | Wed        | 4779           | 1643           | 253            |
| 5/19/2016          | Thur       | 6334           | 3477           | 18             |
| 5/20/2016          | Fri        | 5433           | 3352           | -12            |
| 5/21/2016          | Sat        | 4316           | 1742           | 80             |
| 5/22/2016          | Sun        | 3794           | 1702           | 513            |
| 5/23/2016          | Mon        | 2838           | 1389           | 395            |
| <b>7 Day</b>       | <b>Avg</b> |                |                |                |



Cyanobacteria slick downstream of Beautiful Island 05/23/16.



Cyanobacteria bloom in Alva oxbow (photo Mike Dove 5/23/16).