

**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 Stevenson

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: **December 20, 2016 - January 3, 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 two weeks decreased to a weekly average of **617 cfs**. **The MFL was exceeded at Fort Myers with salinity exceeding the 30 day moving average of 10 psu**. Lake Okeechobee discharges to the river, measured at S-77 averaged **845 cfs**. **Salinities have risen rapidly in the upper and middle estuary since November. Red tide persists in coastal waters.**

**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:** Rapidly rising salinities in the Caloosahatchee estuary have triggered an MFL exceedance. We recommend increasing pulse releases to provide adequate freshwater flows to prevent future MFL exceedances at Fort Myers.

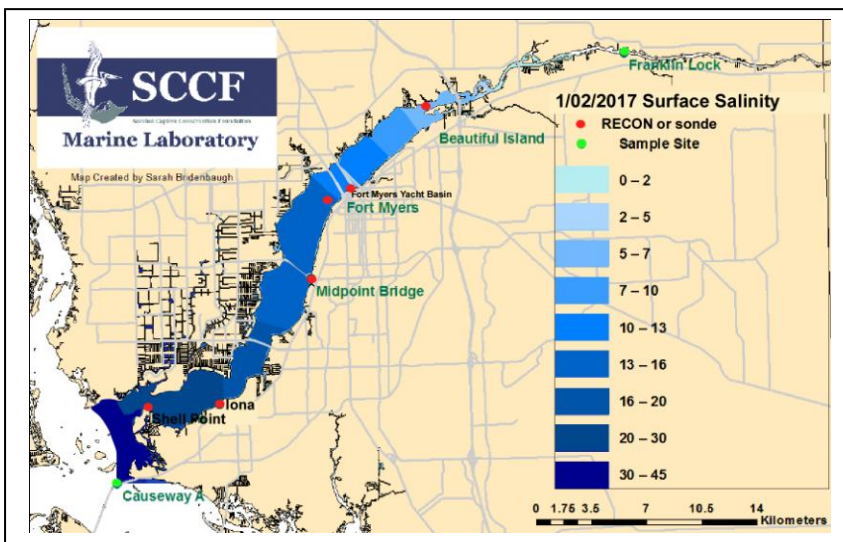
**Lake Okeechobee Level:** 14.25 ft. (Low Sub-Band) **Last week:** NR  
**Lake Okeechobee Inflow:** 403 cfs **Lake Okeechobee Outflow:** 2,114 cfs  
**Weekly Rainfall:** WP Franklin 0.29" Ortona 0" Moore Haven 0.42"

**Salinity Beautiful Island:** 5.2 - 8.3 psu (SCCF RECON Marker 18) **Previous wk** 0.7 – 5.3 psu

**Salinity Fort Myers:** 11 - 14 psu (SCCF Yacht Basin) **Previous wk** 6.5 – 13 psu

**MFL Status:** **MFL Exceedance 30-day moving average >10 psu at surface for 6 days**

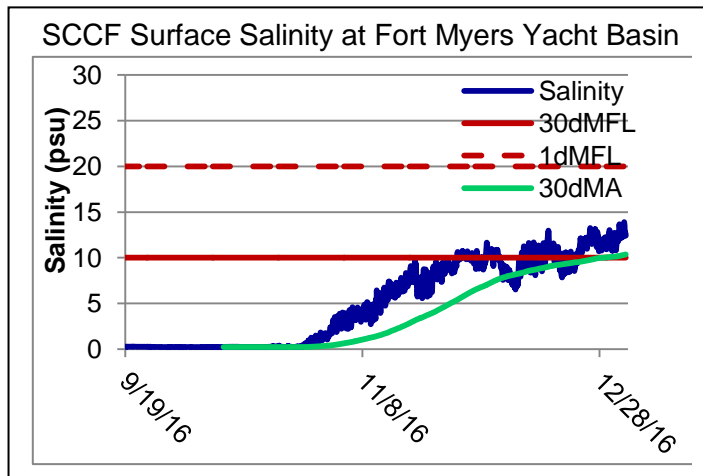
**Salinity Shell Point:** 22 - 33 psu (SCCF RECON) **Previous wk** 14 – 33 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	5.2 - 8.3	< 5 psu	High
Fort Myers	11 - 14	<10 psu	MFL Ex
Shell Point	22 - 33	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	1.82	2.2 meters	Low
Causeway	1.98	2.2 meters	Low
Sanibel E	2.21	2.2 meters	In Range

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **617 cfs**. Over the past 14 days **35%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **1%** was delivered to the St Lucie at S-308, **50.5%** was delivered south to the EAA, **12.5%** 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)
12/20/2016	Tues	576	240	593
12/21/2016	Wed	241	147	583
12/22/2016	Thur	256	146	577
12/23/2016	Fri	847	587	716
12/24/2016	Sat	1012	788	1006
12/25/2016	Sun	902	656	1079
12/26/2016	Mon	755	468	942
12/27/2016	Tues	465	460	967
12/28/2016	Wed	304	383	995
12/29/2016	Thur	264	286	765
12/30/2016	Fri	671	291	609
12/31/2016	Sat	811	533	905
1/1/2017	Sun	806	643	1120
1/2/2017	Mon	722	644	976
14 day Avg		617	448	845



**Upstream of S-79/Franklin Conditions:** On 1/3/17 the Olga Water Treatment plant chlorides measured **57 mg/L**, apparent color was **89 CU** and turbidity measured **1.86 NTU**. No visible algae was noted at the plant intake for the past two weeks. The plant is online at 2400 GPM.

**Upper Estuary Conditions:** **MFL exceedance. Salinities are above the suitable range for tape grass at Fort Myers Yacht Basin (30 dma over 10 psu for six days, SCCF sensor).**

**Lower Estuary Condition:** The average salinity at Shell Point (**29 psu**) was **above optimal for oysters**.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	30.5 – 32.1	3.2 – 9.3	12.4 – 22.8	1.6 – 5.8
Tarpon Bay	30.4 – 33.3	5.5 – 9.0	10.0 – 21.0	5.3 – 15.6

**Beach Conditions:** Water clarity continues to improve. Sparse strandings of red drift algae continue on Sanibel and Fort Myers beaches, with accumulations on portions of the beach and surf zone.

**Red Tide:** On 12/30/16, FWC reported *Karenia brevis*, the Florida red tide organism, persists in Southwest Florida from southern Pinellas to Lee County.

**Wildlife status:** The past two weeks, CROW, the wildlife rehabilitation clinic on Sanibel received **39 animals suffering from red tide poisoning**; **34 Double Crested Cormorants, 3 Brown Pelicans, 1 Common Loon and 1 Sandwich Tern. 10 Cormorants, 1 Pelicans and both the Loon and Tern died.** 9 Cormorants have recovered and been released.

**Manatees:** Lee County Park staff reported **30 manatees** congregating in the Orange River and FPL discharge canal over the past two weeks while water temperatures in the river ranged from 73 - 88° F.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Tarpon Bay	4.4	39.9	1.3	1.82
Causeway	3.0	29.0	1.6	1.98
Sanibel E	2.5	14.7	1.9	2.21

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

**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 Stevenson

From: Periodic Scientists Conference Call Participants  
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 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 3 - 9, 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 **623 cfs**. **The MFL has been exceeded with salinity exceeding the 30 day moving average of 10 psu at Fort Myers for 10 days**. Lake Okeechobee discharges to the river, measured at S-77 averaged **622 cfs**. **One day of rainfall dropped salinities temporarily.**

**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:** Rapidly rising salinities in the Caloosahatchee estuary have triggered 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: **14.10 ft. (Low Sub-Band)** Last week: **14.25 ft**

Lake Okeechobee Inflow: **260 cfs** Lake Okeechobee Outflow: **1,912 cfs**

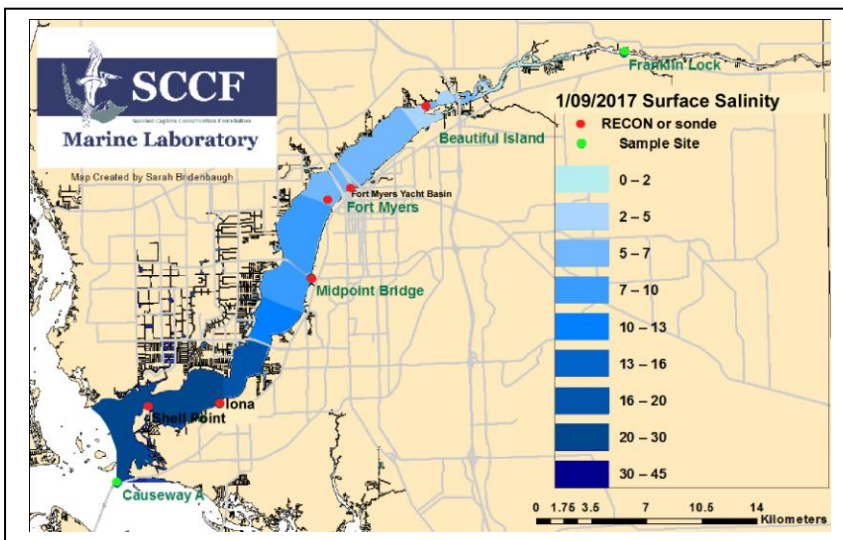
Weekly Rainfall: WP Franklin **0.49"** Ortona **0.28 "** Moore Haven **0.30"**

Salinity Beautiful Island: **3.8 - 6.5 psu** (SCCF RECON Marker 18) Previous wk **5.2 - 8.3 psu**

Salinity Fort Myers: **2.7 - 14 psu** (SCCF Yacht Basin) Previous wk **11 - 14 psu**

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

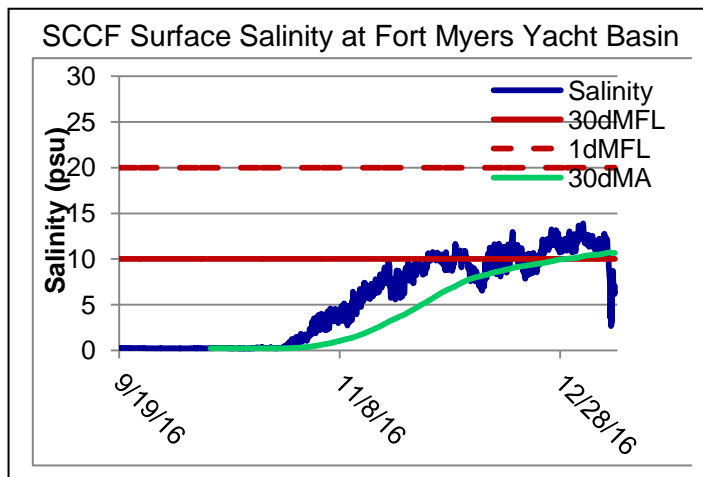
Salinity Shell Point: **19-33 psu** (SCCF RECON) Previous wk **22 - 33 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>3.8 - 6.5</b>	< 5 psu	In Range
Fort Myers	<b>2.7 - 14.0</b>	<10 psu	<b>MFL Ex</b>
Shell Point	<b>19 - 33</b>	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	<b>1.07</b>	2.2 meters	<b>Low</b>
Causeway	<b>1.15</b>	2.2 meters	<b>Low</b>
Sanibel E	<b>1.34</b>	2.2 meters	<b>Low</b>

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **623 cfs**. Over the past 14 days **36%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **0.8%** was delivered to the St Lucie at S-308, **50%** was delivered south to the EAA, **12%** was directed to the L8 and **1.2%** was delivered thru S-310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
1/3/2017	Tues	488	632	904
1/4/2017	Wed	618	NR	676
1/5/2017	Thur	326	NR	538
1/6/2017	Fri	736	444	554
1/7/2017	Sat	1016	567	551
1/8/2017	Sun	621	580	562
1/9/2017	Mon	556	570	567
7 day Avg		623	-	622



**Upstream of S-79/Franklin Conditions:** On 1/10/17 the Olga Water Treatment plant chlorides measured **51 mg/L**, apparent color was **71 CU** and turbidity measured **1.63 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 exceedance 30 dma over 10 psu for ten days.** Salinities are in the suitable range for tape grass downriver to Fort Myers.

**Lower Estuary Condition:** The average salinity at Shell Point (**25 psu**) was in 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.** SCCFs Marine Lab is working on a methodology to report biomass.

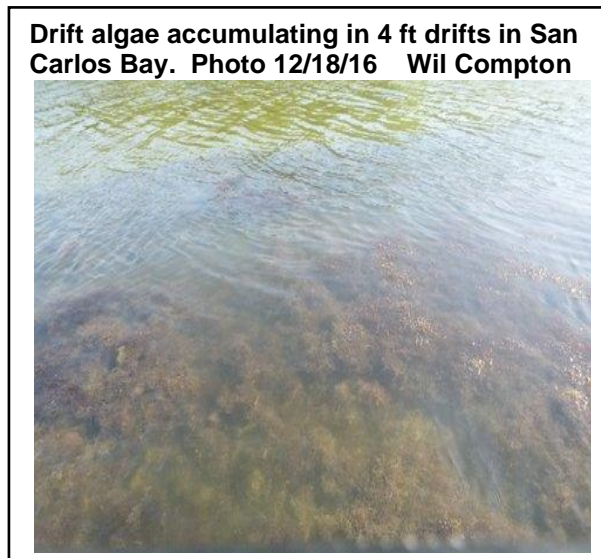
**J.N. "Ding" Darling NWR:**

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	30.5 – 32.2	3.6 – 11.5	12.5 – 29.3	1.6 – 5.5
Tarpon Bay	28.7 – 33.7	5.7 – 8.5	7.5 – 25.4	2.0 – 7.5

**Beach Conditions:** Fort Myers Beach experienced a two day event with 600 - 700 dead mullet washing up along the beach the past Thursday and Friday.

**Red Tide:** On 1/6/16, FWC reported *Karenia brevis*, the Florida red tide organism, persists in patches along Southwest Florida from **southern Pinellas to Lee County**.

**Wildlife status:** The past week, CROW, the wildlife rehabilitation clinic on Sanibel received **10 animals suffering from red tide poisoning; 8 Double Crested Cormorants (3 deceased), 1 Laughing Gull and 1 Ring Billed Gull.**



Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Tarpon Bay	5.0	48.3	9.2	1.07
Causeway	3.6	62.5	6.5	1.15
Sanibel E	5.1	28.5	6.9	1.34

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



**MEMORANDUM**

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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**

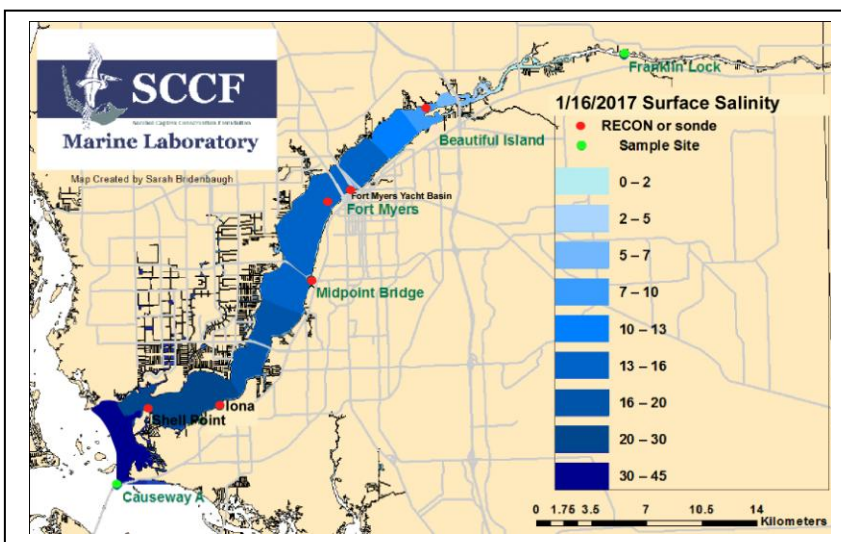
Weekly Rainfall: WP Franklin **0"** Ortona **0"** Moore Haven **0.01"**

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**

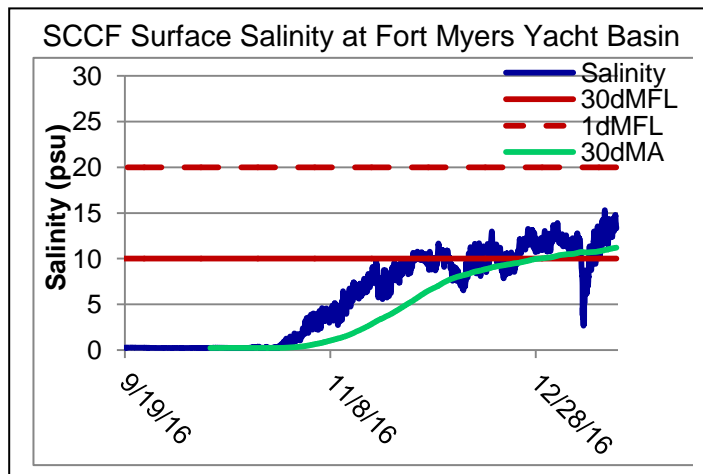
Salinity Shell Point: **22 - 32 psu** (SCCF RECON) Previous wk **19 - 33 psu**



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**.  
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Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **January 17 - 23, 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 **618 cfs**. **The MFL has been exceeded at Fort Myers for 23 days. Salinities are in the harmful range for tape grass at Fort Myers.** Lake Okeechobee discharges to the river, measured at S-77 averaged **702 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 5 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 request increasing freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks while we are exceeding the MFL.**

Lake Okeechobee Level: **13.99 ft. (Low Sub-Band)** Last week: **14.00 ft**

Lake Okeechobee Inflow: **392 cfs** Lake Okeechobee Outflow: **775 cfs**

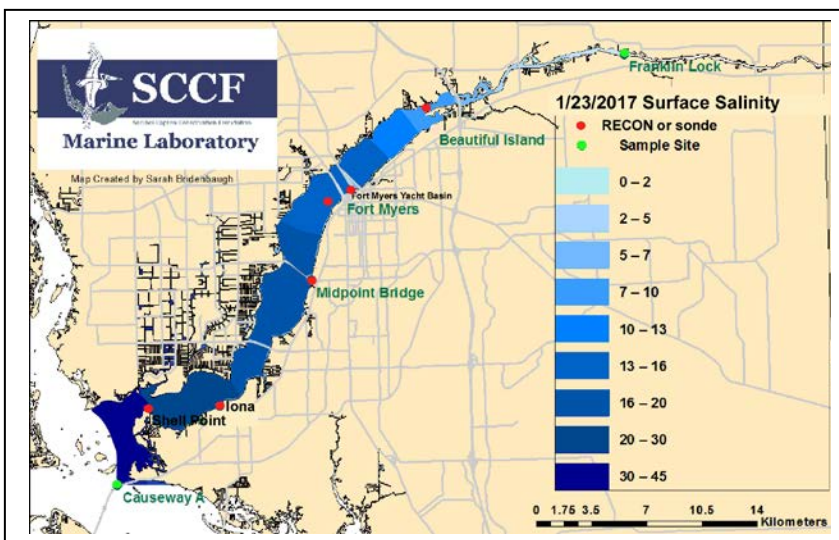
Weekly Rainfall: WP Franklin **0.55"** Ortona **0.14"** Moore Haven **0 "**

Salinity Beautiful Island: **6.5 – 12 psu** (SCCF RECON Marker 18) Previous wk **3.6 - 8.1 psu**

Salinity Fort Myers: **12 – 15 psu** (SCCF Yacht Basin) Previous wk **6.9 – 15 psu**

MFL Status: **MFL Exceedance 30-day moving average >10 psu at surface for 23 days**

Salinity Shell Point: **24 - 34 psu** (SCCF RECON) Previous wk **22 - 32 psu**

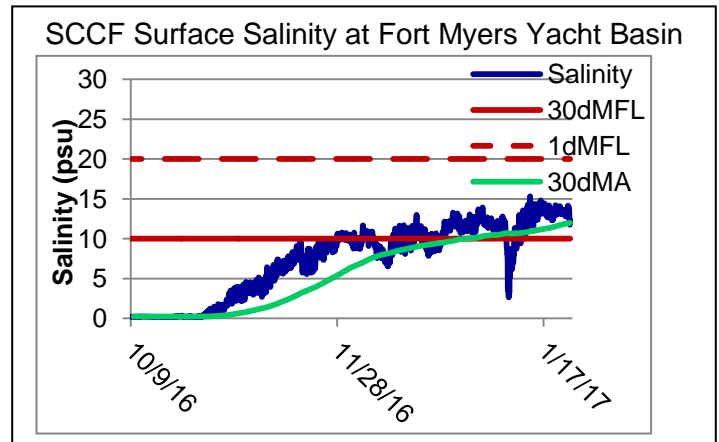


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>6.5 – 12</b>	< 5 psu	<b>High</b>
Fort Myers	<b>12 – 15</b>	<10 psu	<b>MFL Ex</b>
Shell Point	<b>24 - 34</b>	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	<b>1.70</b>	2.2 meters	<b>Low</b>
Causeway	<b>1.16</b>	2.2 meters	<b>Low</b>
Sanibel E	<b>1.45</b>	2.2 meters	<b>Low</b>



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **618 cfs**. Over the past 14 days **36%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **0%** was delivered to the St Lucie at S-308, **54%** was delivered south to the EAA, **9%** was directed to the L8 and **1%** was delivered at S-310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
1/17/2017	Tues	580	262	407
1/18/2017	Wed	307	104	380
1/19/2017	Thur	108	263	414
1/20/2017	Fri	649	1075	1489
1/21/2017	Sat	1236	871	1345
1/22/2017	Sun	562	593	729
1/23/2017	Mon	887	146	148
7 day Avg		618	473	702



**Upstream of S-79/Franklin Conditions:** On 1/24/17 the Olga Water Treatment plant chlorides measured **76 mg/L**, apparent color was **65 CU** and turbidity measured **1.36 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 23 days. Salinities are in the harmful range for tape grass from Beautiful Island to Fort Myers.**

**Lower Estuary Condition:** **The average salinity at Shell Point (31 psu) was above the optimal range for oysters. Red, green and brown branching drift algae is accumulating along the shoreline in San Carlos Bay.**

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	31.14 – 33.66	4.70 – 11.47	8.14 – 24.18	1.20 – 33.7
Tarpon Bay	31.76 – 34.03	5.85 – 7.56	7.62 – 16.43	1.49 – 61.31

**Beach Conditions:** Weekend storms washed up shellfish, starfish and crab traps on beaches of Sanibel and Fort Myers Beach.

**Oysters:** January sampling in the Caloosahatchee by FGCU reported larval recruitment ranged from **0 to 0.28 spat per shell**.

**Red Tide:** On 1/20/16, FWC reported *Karenia brevis*, the Florida red tide organism, persists in patches from **Pinellas to Lee County with background to very low concentrations in five samples collected from Lee County.**

**Wildlife:** The past week, CROW, the wildlife rehabilitation clinic on Sanibel received **4 animals suffering from red tide poisoning; 2 Double Crested Cormorants, 1 Osprey and 1 Brown Pelican.**

**Manatees:** Lee county park staff reported approximately **34 manatees** gathering in the warm water refuge of the Orange River and FPL discharge canal the past week. River temperatures were 76 - 80° F.



Shellfish and starfish washed up along Sanibel and Fort Myers Beaches, 1/24/17. F. Stanback

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Tarpon Bay	4.6	42.1	4.6	1.70
Causeway	2.5	5.2	24.1	1.16
Sanibel E	2.7	7.5	15.5	1.45

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



**Sanibel Beach 1/24/17. Fred Stanback**



**Sanibel Beach 1/24/17. Fred Stanback**

**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 24 - 30, 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 **749 cfs**. **The MFL has been exceeded at Fort Myers for 30 days. Salinities are in the harmful range for tape grass at Fort Myers.** Lake Okeechobee discharges to the river, measured at S-77 averaged **831 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:** **Insufficient freshwater flows to the Caloosahatchee estuary through S-79 has caused high salinities in the mid to upper estuary resulting in an MFL exceedance for the past month. We request increasing freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks while we are exceeding the MFL.**

Lake Okeechobee Level: **13.87 ft. (Low Sub-Band)** Last week: **13.99 ft**

Lake Okeechobee Inflow: **314 cfs** Lake Okeechobee Outflow: **683 cfs**

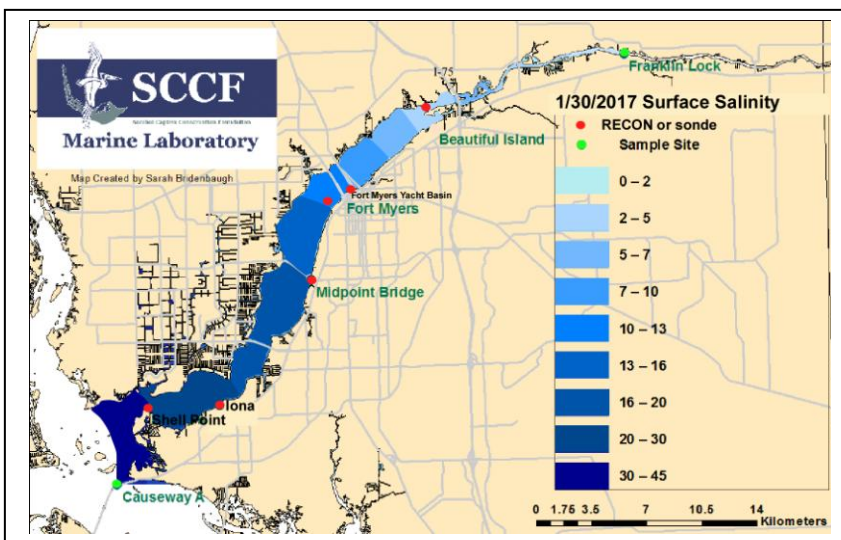
Weekly Rainfall: WP Franklin **0.27"** Ortona **0.72"** Moore Haven **0.70"**

Salinity Beautiful Island: **3.5 – 12 psu** (SCCF RECON Marker 18) Previous wk **6.5 – 12 psu**

Salinity Fort Myers: **9.8 – 14 psu** (SCCF Yacht Basin) Previous wk **12 – 15 psu**

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

Salinity Shell Point: **24 – 34 psu** (SCCF RECON) Previous wk **24 - 34 psu**

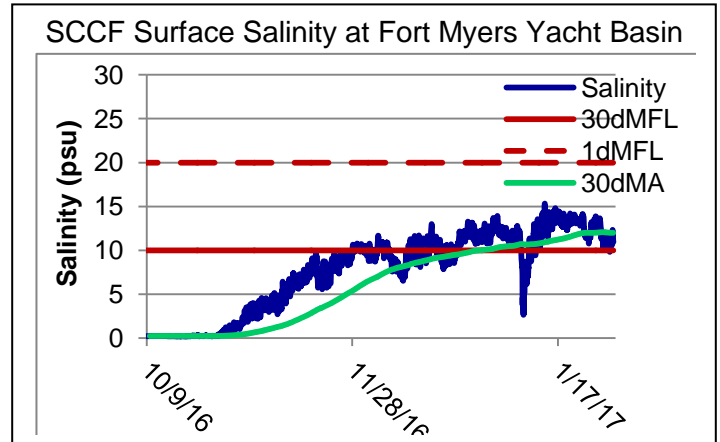


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>3.5 – 12</b>	< 5 psu	<b>High</b>
Fort Myers	<b>9.8 – 14</b>	<10 psu	<b>MFL Ex</b>
Shell Point	<b>24 - 34</b>	25 - 32 psu	<b>In Range</b>
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	<b>1.81</b>	2.2 meters	<b>Low</b>
Causeway	<b>1.87</b>	2.2 meters	<b>Low</b>
Sanibel E	<b>1.98</b>	2.2 meters	<b>Low</b>



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **749 cfs**. Over the past 14 days **49%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **0%** was delivered to the St Lucie at S-308, **42%** was delivered south to the EAA, **9%** was directed to the L8 and **<1%** was delivered at S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
1/24/2017	Tues	313	118	166
1/25/2017	Wed	116	174	337
1/26/2017	Thur	362	351	420
1/27/2017	Fri	1038	875	1849
1/28/2017	Sat	1317	1119	1687
1/29/2017	Sun	1289	673	853
1/30/2017	Mon	809	522	504
7 day Avg		749	547	831



**Upstream of S-79/Franklin Conditions:** On 1/31/17 the Olga Water Treatment plant chlorides measured **58 mg/L**, apparent color was **89 CU** and turbidity measured **3.09 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 30 days. Salinities are in the harmful range for tape grass around the Caloosahatchee Bridge in Fort Myers.**

**Lower Estuary Condition:** **The average salinity at Shell Point (30 psu) was above the optimal range for oysters.** Red, green and brown branching drift algae is accumulating along the shoreline in San Carlos Bay.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	32 - 33	4 - 9	11 - 21	2.1 - 8.7
Tarpon Bay	32 - 34	5.5 - 7	8 - 18.7	2.5 - 49.6

**Beach Conditions:** Drift algae was observed accumulating at mid-island on Fort Myers Beach.

**Red Tide:** On 1/27/16, FWC reported *Karenia brevis*, the Florida red tide organism, persists in patches from **Pinellas to Lee County with background to low concentrations in five samples collected from Lee County.**

**Manatees:** Lee county park staff reported up to 50 manatees gathering in the warm water refuge of the Orange River and FPL discharge canal the past week. River temperatures were 72 - 87° F.



**Drift macroalgae washing up on Fort Myers Beach 1/31/17. Photo Town of Fort Myers Beach**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Tarpon Bay	4.7	18.2	7.0	1.81
Causeway	2.4	25.4	5.5	1.87
Sanibel E	2.7	16.9	5.7	1.98

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



**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 31 - February 6, 2017**

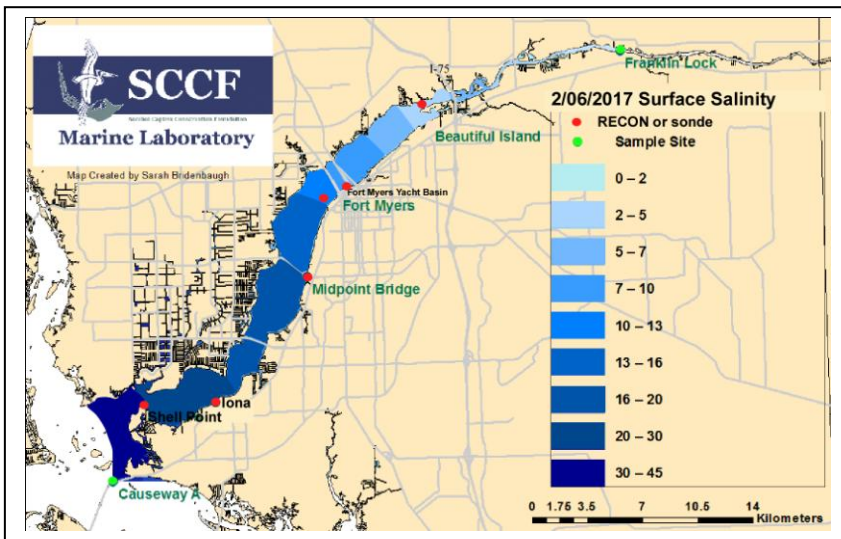
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** Discharges into the estuary at S-79 during the past week averaged **725 cfs**. **An MFL exceedance continues for 37 days. Salinities are in the harmful range for tape grass at Fort Myers.** Algae blooms are present at Fort Myers and Beautiful Island upstream and red tide persists downstream.

**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:** **Insufficient freshwater flows to the Caloosahatchee estuary through S-79 has caused high salinities in the estuary resulting in an MFL exceedance for the past five weeks.** We request increasing freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks while we are exceeding the MFL.

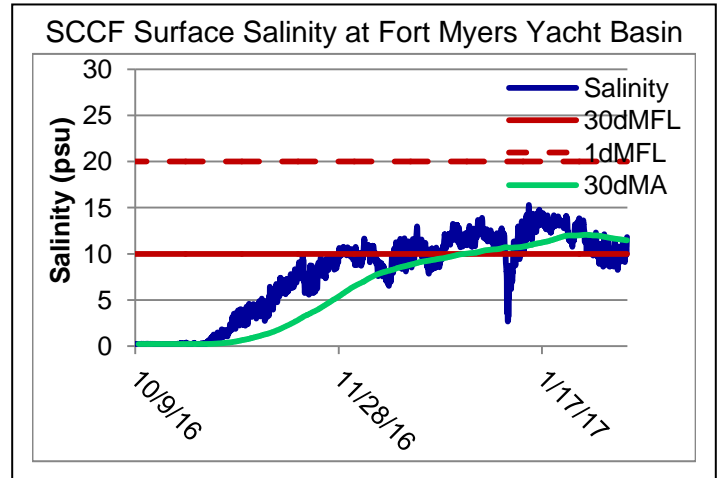
Lake Okeechobee Level: 13.78 ft. (Low Sub-Band) Last week: 13.87 ft  
 Lake Okeechobee Inflow: 561 cfs Lake Okeechobee Outflow: 1,929 cfs  
 Weekly Rainfall: WP Franklin 0" Ortona 0" Moore Haven 0"  
 Salinity Beautiful Island: 3.1 – 4.7 psu (SCCF RECON Marker 18) Previous wk 3.5 – 12 psu  
 Salinity Fort Myers: 8.6 – 12 psu (SCCF Yacht Basin) Previous wk 9.8 – 14 psu  
 MFL Status: **MFL Exceeded 30-day moving average >10 psu at surface for 37 days**  
 Salinity Shell Point: 22 – 32 psu (SCCF RECON) Previous wk 24 – 34 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	3.1 - 4.7	< 5 psu	In Range
Fort Myers	8.6 – 12	<10 psu	MFL Ex
Shell Point	22 - 32	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.72	1 meter	Low
Fort Myers	0.83	1 meter	Low
Tarpon Bay	1.94	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **725 cfs**. Over the past 14 days **56%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **0%** was delivered to the St Lucie at S-308, **35%** was delivered south to the EAA, **9%** was directed to the L8 and **398 cfs** was backflowed into the Lake at S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
1/31/2017	Tues	535	523	504
2/1/2017	Wed	400	452	509
2/2/2017	Thur	412	101	303
2/3/2017	Fri	859	713	834
2/4/2017	Sat	1079	996	1520
2/5/2017	Sun	961	665	1146
2/6/2017	Mon	827	522	730
<b>7 day Avg</b>		<b>725</b>	<b>567</b>	<b>792</b>



**Upstream of S-79/Franklin Conditions:** On 2/7/17 the Olga Water Treatment plant chlorides measured **58 mg/L**, apparent color was **69 CU** and turbidity measured **2.5 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 37 days. Salinities are in the harmful range for tape grass around the Caloosahatchee Bridge in Fort Myers.** Blooms of phytoplankton including cyanobacteria and dinoflagellates and benthic algae are present at Fort Myers and Beautiful Island.

**Lower Estuary Condition:** The average salinity at Shell Point (27 psu) was in the optimal range for oysters. Red, green and brown branching drift algae is accumulating along the shoreline in San Carlos Bay.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	31.1 - 33.3	4.7 - 10.8	12.9 - 19.6	2.1 - 5.1
Tarpon Bay	31.4 - 32.8	5.9 - 7.5	12.6 - 16.9	1.9 - 4.5

**Beach Conditions:** Drift algae was observed accumulating at mid-island on Fort Myers Beach.

**Red Tide:** On 2/3/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in Southwest Florida from southern Pinellas to northern Collier counties with background to high concentrations in 27 samples collected from Lee County.

**Manatees:** Lee county park staff reported up to **131 manatees including many mothers and calves** gathering in the warm water refuge of the Orange River and FPL discharge canal the past week. River temperatures were 71 - 80° F.



**Red drift macroalgae washing up mid-island on Fort Myers Beach, 2/4/17. Photo Town of Fort Myers Bch**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Beautiful Is</b>	49	162	2.0	0.72
<b>Fort Myers</b>	36	139	2.6	0.83
<b>Tarpon Bav</b>	4.5	26.8	3.6	1.94

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

**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 Ryan Matthews

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: **February 7 - 13, 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 **705 cfs**. **An MFL exceedance continues for 44 days. Salinities are in the harmful range for tape grass at Fort Myers. An algae bloom was detected by RECON at Beautiful Island upstream and red tide persists downstream.**

**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:** **Insufficient freshwater flow to the Caloosahatchee estuary through S-79 has caused high salinities in the estuary resulting in an MFL exceedance for the past six weeks. We request increasing freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks while we are exceeding the MFL.**

Lake Okeechobee Level: 13.66 ft. (Low Sub-Band) Last week: 13.78 ft

Lake Okeechobee Inflow: 129 cfs Lake Okeechobee Outflow: 2,935 cfs

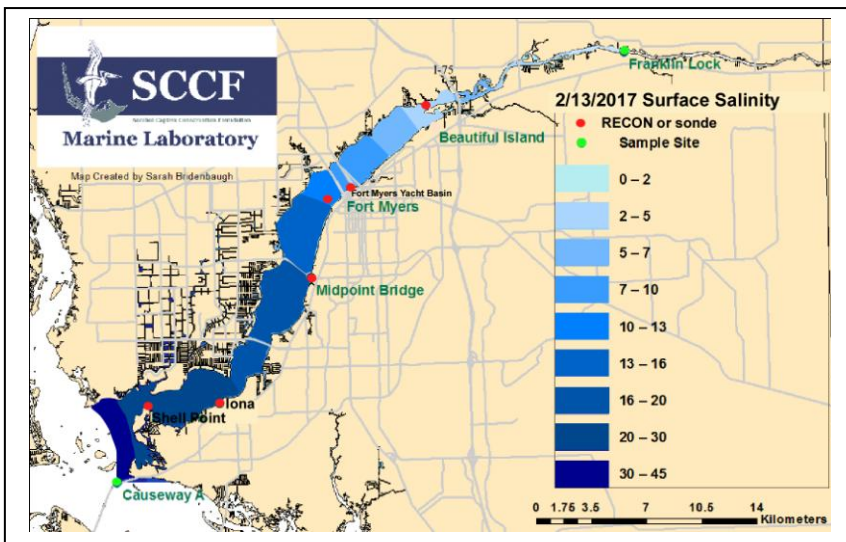
Weekly Rainfall: WP Franklin 0" Ortona 0" Moore Haven 0.05"

Salinity Beautiful Island: 3.1 – 5.6 psu (SCCF RECON Marker 18) Previous wk 3.1 – 4.7 psu

Salinity Fort Myers: 8.2 – 12 psu (SCCF Yacht Basin) Previous wk 8.6 – 12 psu

MFL Status: **MFL Exceeded 30-day moving average >10 psu at surface for 44 days**

Salinity Shell Point: 22 – 33 psu (SCCF RECON) Previous wk 22 – 32 psu

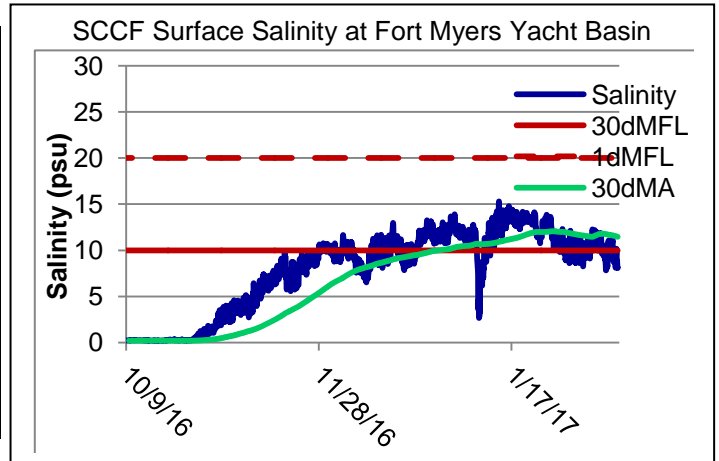


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	3.1 - 5.6	< 5 psu	High
Fort Myers	8.2 - 12	<10 psu	MFL Ex
Shell Point	22 - 33	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	1.69	2.2 meter	Low
Causeway	2.11	2.2 meter	Low
E Sanibel	1.48	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **705 cfs**. Over the past 14 days **46%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **0%** was delivered to the St Lucie at S-308, **44%** was delivered south to the EAA, **9%** was directed to the L8 and **<1%** through S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
2/7/2017	Tues	467	522	725
2/8/2017	Wed	380	510	725
2/9/2017	Thur	419	499	735
2/10/2017	Fri	899	406	882
2/11/2017	Sat	944	704	1280
2/12/2017	Sun	1005	861	1443
2/13/2017	Mon	822	498	814
7 day Avg		705	571	943



**Upstream of S-79/Franklin Conditions:** On 2/7/17 the Olga Water Treatment plant chlorides measured **51 mg/L**, apparent color was **71 CU** and turbidity measured **1.63 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 44 days. Salinities are in the harmful range for tape grass around the Caloosahatchee Bridge in Fort Myers.** A bloom of phytoplankton was detected at Beautiful Island on 2/12/17.

**Lower Estuary Condition:** The average salinity at Shell Point (29 psu) was in above the optimal range for oysters.

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

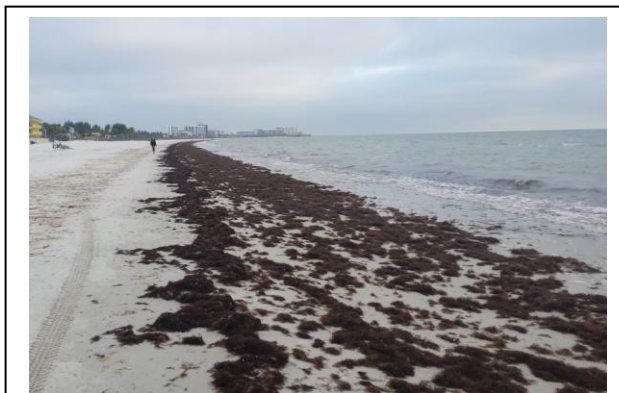
Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	31.5 - 33.2	3.5 - 9.1	10.6 - 20.5	1.8 - 6.3
Tarpon Bay	32.2 - 34.1	5.4 - 8.1	7.0 - 15.6	2.0 - 6.6

**Beach Conditions:** Drift algae continues accumulating near mid-island on Fort Myers Beach.

**Red Tide:** On 2/10/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from southern Pinellas to Lee Counties with background to high concentrations in Lee County.**

**Shellfish Harvesting Closure:** On 2/10/17 the Florida Department of Agriculture and Consumer Services **closed #6212 Pine Island Sound West Aquaculture Use Zones for the harvest of oysters, clams, and mussels due to the presence of *Karenia brevis*. In this context, shellfish does not include scallops, shrimp, or crabs.**

**Wildlife Impacts:** The past week, CROW, the wildlife rehabilitation clinic on Sanibel received **5 new cases of wildlife suffering from red tide poisoning: 3 Double-Crested Cormorants, 1 White pelican and 1 Brown Pelican.**



**Drift macroalgae along Fort Myers Beach 2/14/17. Photo Town of Fort Myers Beach**

**Manatees:** Lee county park staff reported manatees with nursing calves gathering in the warm water refuge of the Orange River and FPL discharge canal the past week. River temperatures were 72 - 84° F.

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	10.1	23.8	5.9	1.69
Causeway	2.4	26.1	2.5	2.11
E Sanibel	2.7	54.4	6.2	1.48

Target light penetration: **CE**- Caloosahatchee Estuary =1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: **z** where **I** is 25% of surface **I**.  
**I** = irradiance, **z**= depth



**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 Ryan Matthews

From: Periodic Scientists Conference Call Participants  
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 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: **February 14 - 20, 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:** Freshwater flow into the estuary at S-79 during the past week decreased to an average of 675 cfs. **An MFL exceedance continues for 51 days. Salinities are in the harmful range for tape grass at Fort Myers.** Drift algae is washing up on Fort Myers Beach. Red tide persists in coastal waters.

**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:** **An MFL exceedance continues for the seventh week in the Caloosahatchee at Ft Myers due to insufficient freshwater flow to the estuary.** We request increasing freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks while we are exceeding the MFL.

Lake Okeechobee Level: 13.49 ft. (Base Flow Sub-Band) Last week: 13.66 ft

Lake Okeechobee Inflow: -126 cfs Lake Okeechobee Outflow: 2,616 cfs

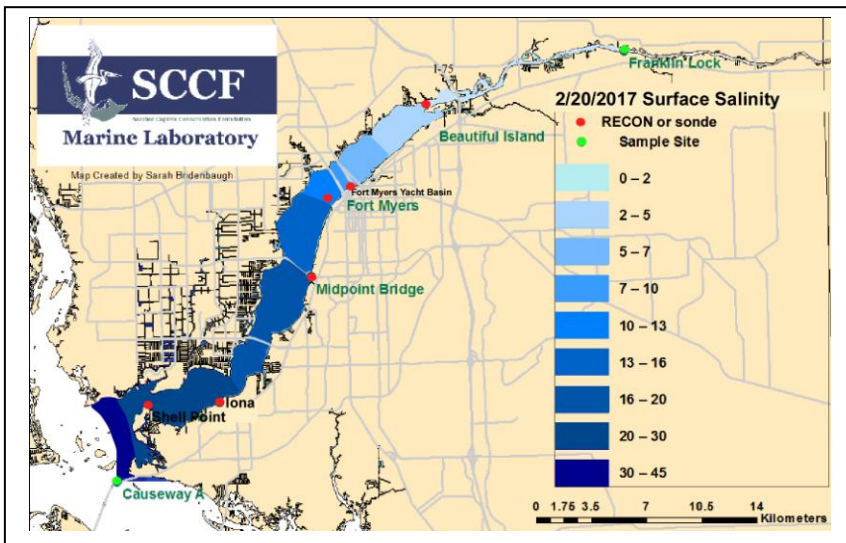
Weekly Rainfall: WP Franklin 0" Ortona 0.23" Moore Haven 0.23"

Salinity Beautiful Island: 1.8 – 4.9 psu (SCCF RECON Marker 18) Previous wk 3.1 – 5.6 psu

Salinity Fort Myers: 7.8 – 12 psu (SCCF Yacht Basin) Previous wk 8.2 – 12 psu

MFL Status: **MFL Exceeded 30-day moving average >10 psu at surface for 51 days**

Salinity Shell Point: 23 – 33 psu (SCCF RECON) Previous wk 22 – 33 psu

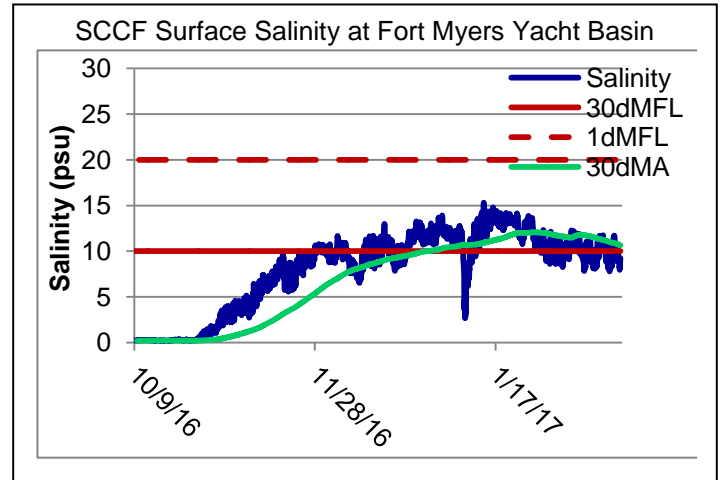


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	1.8 - 4.9	< 5 psu	In Range
Fort Myers	7.8- 12	<10 psu	MFL Ex
Shell Point	23 - 33	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	2.06	2.2 meter	Low
Causeway	2.24	2.2 meter	In Range
E Sanibel	2.13	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **675 cfs**. Over the past 14 days **37%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **0%** was delivered to the St Lucie at S-308, **54%** was delivered south to the EAA, **7%** was directed to the L8 and **2%** through S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
2/14/2017	Tues	470	340	613
2/15/2017	Wed	248	335	691
2/16/2017	Thur	288	336	763
2/17/2017	Fri	829	NR*	1043
2/18/2017	Sat	1071	838	1290
2/19/2017	Sun	1034	843	1414
2/20/2017	Mon	784	499	881
<b>7 day Avg</b>		<b>675</b>	<b>532*</b>	<b>956</b>

\* data missing



**Upstream of S-79/Franklin Conditions:** On 2/21/17 the Olga Water Treatment plant chlorides measured **63 mg/L**, apparent color was **68 CU** and turbidity measured **2.14 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 51 days**. The weekly average salinity was in the suitable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point (**28 psu**) was in the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	32.1 – 33.1	3.4 – 10.8	13.5 – 21.2	2.4 – 6.6
Tarpon Bay	32.2 – 34.0	5.6 – 7.9	7.5 – 16.7	2.1 – 10.3

**Beach Conditions:** Drift algae was observed accumulating near mid-island on Fort Myers Beach.

**Red Tide:** On 2/17/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from southern Pinellas to Collier Counties with background to medium concentrations in samples collected from Lee County**. Respiratory irritation was reported by beachgoers and boaters on Captiva over the holiday weekend.

**Shellfish Harvesting Closure:** On 2/16/17 the Florida Department of Agriculture and Consumer Services reopened **#6212 Pine Island Sound West Aquaculture Use Zones** for the harvest of oysters, clams, and mussels. In this context, shellfish does not include scallops, shrimp, or crabs. **The Public Shellfish Harvesting Area remains closed.**

**Wildlife Impacts:** The past week, CROW, the wildlife rehabilitation clinic on Sanibel received **3 new cases of wildlife suffering from red tide poisoning.**

**Manatees:** Lee county park staff reported tagged manatees and 1 release in the warm water refuge of the Orange River and FPL discharge canal the past week. River temperatures are unseasonably warm for this time of year ranging from 78 - 85° F.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Tarpon Bay</b>	2.4	23.2	3.7	2.06
<b>Causeway</b>	3.1	20.6	2.1	2.24
<b>E Sanibel</b>	2.8	26.9	2.0	2.13

Target light penetration: **CE**- Caloosahatchee Estuary = 1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: **z** where **I** is 25% of surface **I**.  
**I** = irradiance, **z**= depth



**Accumulation of drift algae at the Delmar Street public beach access on Fort Myers Beach, 2/16/17. Photo Town of Fort Myers Beach.**

**Dead pen shells accumulating on the northern half of Lovers Key 2/21/17. Photo Lee County.**





**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 Ryan Matthews

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: **February 21 - 27, 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:** Freshwater flow into the estuary at S-79 during the past week increased to an average of 790 cfs. Higher flows, averaging 729 cfs over the past five weeks reduced salinity below the MFL 10 psu harm threshold at Fort Myers after 53 days. Less drift algae is accumulating on Fort Myers Beach. Red tide persists in coastal waters, but no impacts were reported on Sanibel or Fort Myers Beach.

**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:** We request maintaining freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks.

Lake Okeechobee Level: 13.45 ft. (Base Flow Sub-Band) Last week: 13.49 ft

Lake Okeechobee Inflow: 599 cfs Lake Okeechobee Outflow: 2,280 cfs

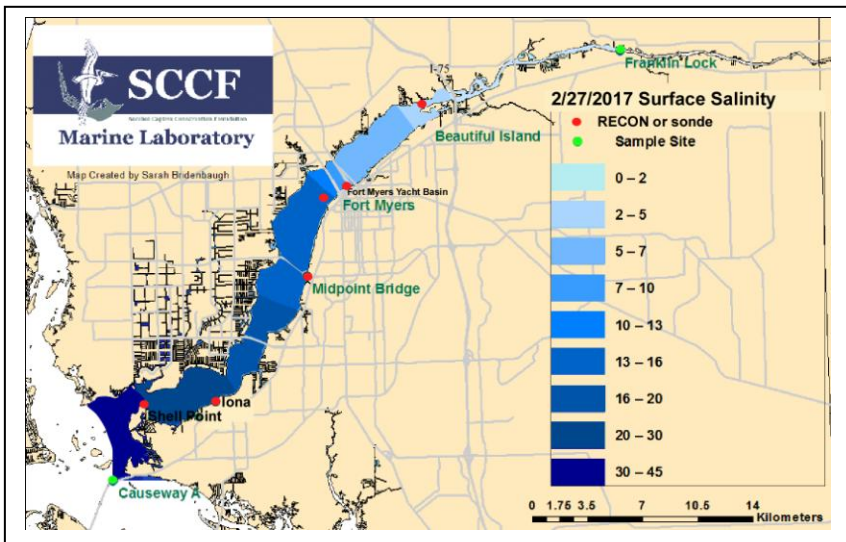
Weekly Rainfall: WP Franklin 0.51" Ortona 0.85" Moore Haven 0.65"

Salinity Beautiful Island: 1.6 – 4.5 psu (SCCF RECON Marker 18) Previous wk 1.8 – 4.9 psu

Salinity Fort Myers: 6.9 – 12 psu (SCCF Yacht Basin) Previous wk 7.8 – 12 psu

MFL Status: In compliance; 30-day moving average ≤10 psu at surface

Salinity Shell Point: ND (SCCF RECON) Previous wk 23 – 33 psu

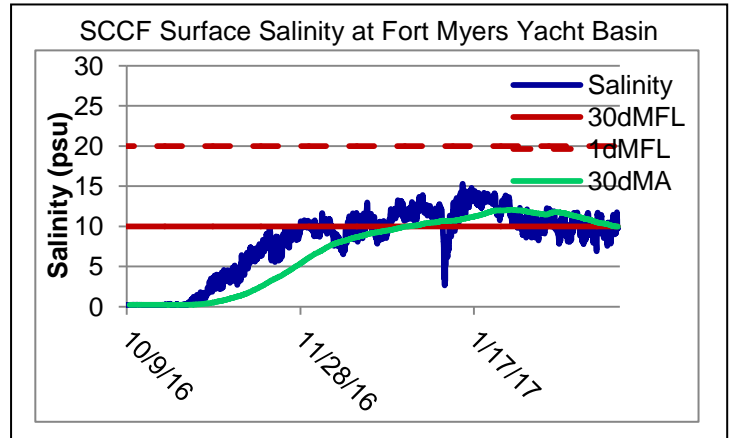


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	1.6 - 4.5	< 5 psu	In Range
Fort Myers	6.9 - 12	<10 psu	In Range
Shell Point	ND	25 - 32 psu	-
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.90	1 meter	Low
Causeway	2.20	2.2 meter	In Range
E Sanibel	2.26	2.2 meters	In Range



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **790 cfs**. Over the past 14 days **39%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **0%** was delivered to the St Lucie at S-308, **52%** was delivered south to the EAA, **8%** was directed to the L8 and **1%** through S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
2/21/2017	Tues	457	347	590
2/22/2017	Wed	252	348	327
2/23/2017	Thur	446	341	83
2/24/2017	Fri	1077	344	86
2/25/2017	Sat	1075	694	512
2/26/2017	Sun	1216	1028	912
2/27/2017	Mon	1006	782	911
<b>7 day Avg</b>		<b>790</b>	<b>555</b>	<b>489</b>



**Upstream of S-79/Franklin Conditions:** On 2/28/17 the Olga Water Treatment plant chlorides measured **57 mg/L**, apparent color was **67 CU** and turbidity measured **1.85 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2,000 GPM.

**Upper Estuary Conditions:** The weekly average salinity was in the suitable range for tape grass.

**Lower Estuary Condition:** Up until 2/24/17, the average salinity at Shell Point (**29 psu**) was above the optimal range for oysters.

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

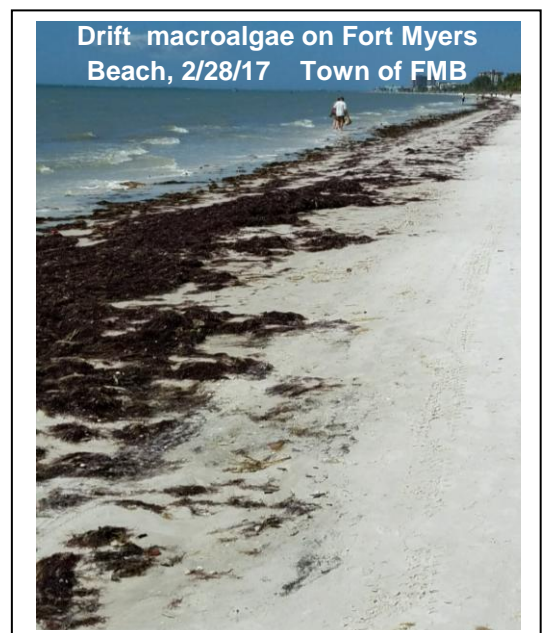
Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	31.7 - 33.1	3.8 - 9.6	10.5 - 21.2	2.3 - 9.2
Tarpon Bay	32.2 - 34.3	5.6 - 8.0	6.7 - 24.8	2.3 - 19.8

**Beach Conditions:** Accumulations of drift algae were slightly reduced the past week on Fort Myers Beach.

**Red Tide:** On 2/24/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from southern Pinellas to Collier Counties with background to low concentrations in samples collected from Lee County.**

**Wildlife Impacts:** The past two weeks CROW, the wildlife rehabilitation clinic on Sanibel received **5 animals suffering from red tide poisoning: 1 loggerhead sea turtle, 4 Double Crested Cormorants. 2 loggerhead sea turtles were found dead on Sanibel the past week.**

**Manatees:** Lee county park staff reported up to 8 manatees including a mother and calf in the warm water of the Orange River and FPL discharge canal the past week. River temperatures are unseasonably warm for this time of year ranging from **77 - 90° F.**



Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Beautiful Is</b>	6.6	170	2.0	0.90
<b>Causeway</b>	4.1	15.3	3.2	2.20
<b>E Sanibel</b>	3.5	0.8	5.8	2.26

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

**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 Ryan Matthews

From: Periodic Scientists Conference Call Participants  
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 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: **February 28 - March 6, 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:** Freshwater flow into the estuary at S-79 during the past week decreased to an average of **723 cfs**. Flows are currently meeting the MFL targets established for the Caloosahatchee. **Drift algae continues to accumulate in isolated areas on the northern end of Fort Myers Beach. Red tide persists in coastal waters, but no impacts were reported on Sanibel or Fort Myers Beach.**

**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:** We request maintaining freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks.

**Lake Okeechobee Level:** 13.24 ft. (Base Flow Sub-Band) **Last week:** 13.45 ft

**Lake Okeechobee Inflow:** 710 cfs **Lake Okeechobee Outflow:** 4,175 cfs

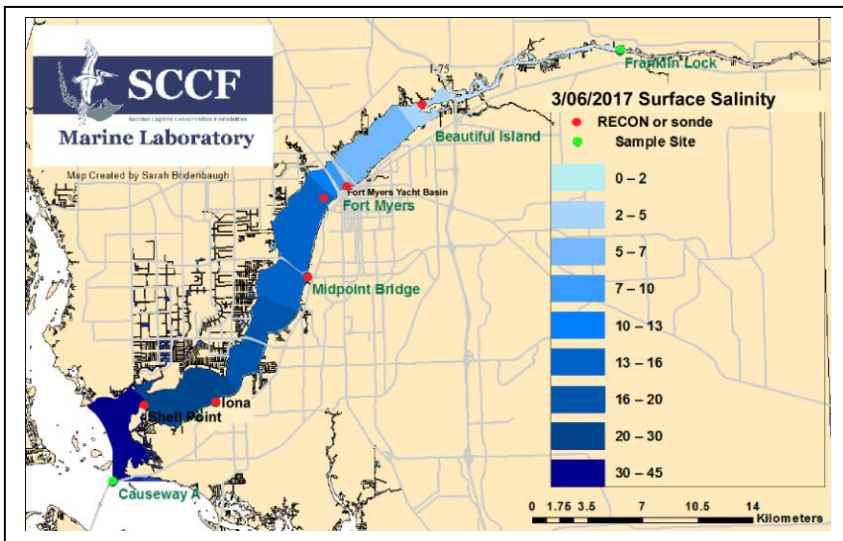
**Weekly Rainfall:** WP Franklin 0" Ortona 0" Moore Haven 0.05"

**Salinity Beautiful Island:** 1.9 – 5.0 psu (SCCF RECON Marker 18) **Previous wk** 1.6 – 4.5 psu

**Salinity Fort Myers:** 6.0 – 12 psu (SCCF Yacht Basin) **Previous wk** 6.5 – 12 psu

**MFL Status:** In compliance; 30-day moving average  $\leq 10$  psu at surface

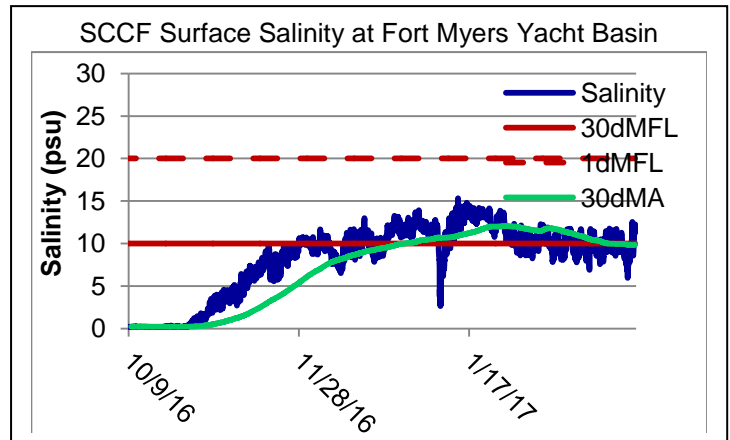
**Salinity Shell Point:** 19 – 33 psu (SCCF RECON) **Previous wk** ND



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	1.9 – 5.0	< 5 psu	In Range
Fort Myers	6.0 – 12	<10 psu	In Range
Shell Point	19 – 33	25 - 32 psu	In Range
Light (25% lz depth meters)			
Tarpon Bay	1.92	2.2 meter	Low
Causeway	2.03	2.2 meter	Low
E Sanibel	2.49	2.2 meters	In Range

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **723 cfs**. Over the past 14 days **37%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **5%** was delivered to the St Lucie at S-308, **49%** was delivered south to the EAA, **8%** was directed to the L8 and **<1%** through S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
2/28/2017	Tues	547	452	898
3/1/2017	Wed	326	240	784
3/2/2017	Thur	276	174	383
3/3/2017	Fri	923	657	644
3/4/2017	Sat	1192	862	1315
3/5/2017	Sun	782	1000	1363
3/6/2017	Mon	1018	1036	1282
<b>7 day Avg</b>		<b>723</b>	<b>632</b>	<b>953</b>



**Upstream of S-79/Franklin Conditions:** On 3/7/17 the Olga Water Treatment plant chlorides measured **60 mg/L**, apparent color was **65 CU** and turbidity measured **1.37 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2,000 GPM.

**Upper Estuary Conditions:** The weekly average salinity was above the suitable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point (**29 psu**) was in the optimal range for seagrass but **above the optimal range for oysters**. Significant accumulations of macroalgae continue to be observed on the bottom of shallow areas around the causeway and southern portion of Pine Island Sound and Matlacha Pass Aquatic Preserves.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	31.4 - 33.8	3.7 - 10.9	11.0 - 22.3	2.3 - 5.3
Tarpon Bay	31.1 - 34.4	5.5 - 8.0	7.3 - 18.1	1.8 - 11.4

**Beach Conditions:** Drift algae continued to wash up along the Diamondhead section of Fort Myers Beach.

**Red Tide:** On 3/3/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from southern Pinellas to Collier Counties with background to low concentrations in samples collected from Lee County.**

**Wildlife Impacts:** The past week CROW, the wildlife rehabilitation clinic on Sanibel treated **2 Double Crested Cormorants for red tide poisoning. Five sea turtles were impacted; 1 Kemps Ridley and 1 Loggerhead were rescued and sent to CROW, 2 dead loggerhead sea turtles were found on Captiva and one live green sea turtle was rescued in Redfish Pass with buoyancy issues and fibropapillomas.**

**Manatees:** Lee county park staff reported up to 6 manatees including a mother and calf in the warm water of the Orange River and FPL canal the past week. Lack of rain may be contributing to unseasonably warm river temperatures ranging from **71 - 90° F**.



Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Tarpon Bay</b>	3.8	27.2	4.0	1.92
<b>Causeway</b>	1.3	29.6	3.1	2.03
<b>E Sanibel</b>	2.0	7.9	3.0	2.49

Target light penetration: **CE**- Caloosahatchee Estuary =1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% Iz: **z** where **I** is 25% of surface **I**.  
**I** = irradiance, **z**= depth





Sanibel Lighthouse Beach 3/2/17 Jim Szabo



Water conditions around Sanibel Lighthouse during early discharges on 2/19/16  
Photo above City of Sanibel, below SCCF



**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 Ryan Matthews

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: **March 7 - 13, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **736 cfs**. **Flows are currently meeting the MFL targets established for the Caloosahatchee. Drift algae has reduced on Fort Myers Beach. Red tide persists in coastal waters, but no impacts were reported on Sanibel or Fort Myers Beach.**

**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:** We request maintaining freshwater pulses to provide adequate flows to prevent estuary harm. We request a Periodic Scientist call at least every two weeks.

**Lake Okeechobee Level:** 13.06 ft. (Base Flow Sub-Band) Last week: 13.24 ft

**Lake Okeechobee Inflow:** 669 cfs **Lake Okeechobee Outflow:** 4,780 cfs

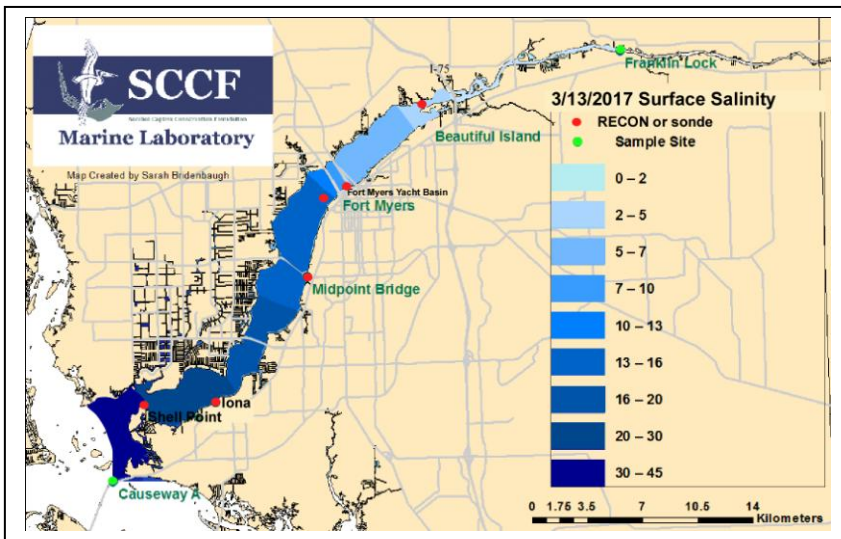
**Weekly Rainfall:** WP Franklin 0.15" Ortona 0.10" Moore Haven 0.08"

**Salinity Beautiful Island:** 2.2 – 5.5 psu (SCCF RECON Marker 18) Previous wk 1.9 – 5.0 psu

**Salinity Fort Myers:** 9.4 – 13 psu (SCCF Yacht Basin) Previous wk 6.0 – 12 psu

**MFL Status:** In compliance; 30-day moving average  $\leq 10$  psu at surface

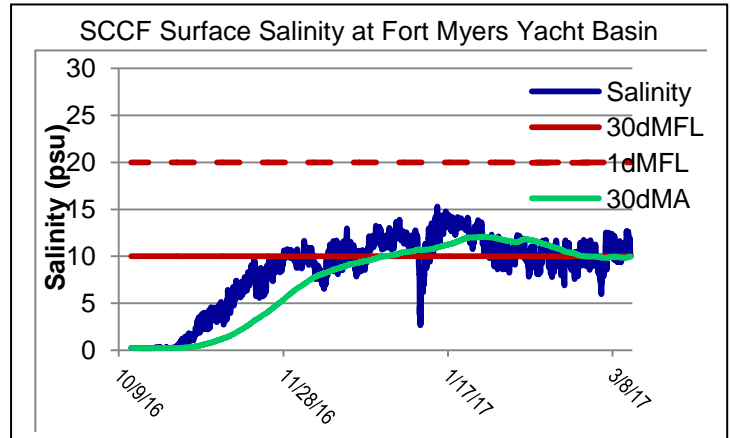
**Salinity Shell Point:** 24 – 34 psu (SCCF RECON) Previous wk 19 – 33 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	2.2 – 5.5	< 5 psu	In Range
Fort Myers	9.4 – 13	<10 psu	In Range
Shell Point	24 – 34	25 - 32 psu	High
Light (25% I <sub>z</sub> depth meters)			
Tarpon Bay	2.12	2.2 meter	Low
Causeway	2.05	2.2 meter	Low
E Sanibel	2.34	2.2 meters	In Range

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **736 cfs**. Over the past 14 days **30%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **10%** was delivered to the St Lucie at S-308, **54%** was delivered south to the EAA, **5%** was directed to the L8 and **1%** through S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
3/7/2017	Tues	683	543	968
3/8/2017	Wed	354	342	646
3/9/2017	Thur	348	343	746
3/10/2017	Fri	808	546	896
3/11/2017	Sat	1100	743	1107
3/12/2017	Sun	990	859	1314
3/13/2017	Mon	868	691	1094
<b>7 day Avg</b>		<b>736</b>	<b>581</b>	<b>967</b>



**Upstream of S-79/Franklin Conditions:** On 3/14/17 the Olga Water Treatment plant chlorides measured **56 mg/L**, apparent color was **50 CU** and turbidity measured **1.31 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2,000 GPM.

**Upper Estuary Conditions:** The weekly average salinity at Fort Myers (**11 psu**) was above the suitable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point (**30 psu**) was in the optimal range for seagrass but **above** the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	32.3 - 33.4	3.5 - 11.5	11.5 - 18.9	1.9 - 4.7
Tarpon Bay	32.9 - 34.8	5.7 - 8.6	5.7 - 14.6	1.8 - 5.8

**Beach Conditions:** Drift algae has reduced along Fort Myers Beach.

**Red Tide:** On 3/10/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from southern Pinellas to Lee Counties with background to low concentrations in samples collected from Lee County.**

**Manatees:** Lee county park staff reported up to **21 manatees** including **4 calves** in the warm water of the Orange River and FPL canal the past week. River temperatures ranging from **68 - 75° F** the past week.



Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Tarpon Bay</b>	5.8	22.1	2.1	2.12
<b>Causeway</b>	6.8	23.0	2.3	2.05
<b>E Sanibel</b>	2.5	12.6	3.1	2.34

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



**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 Ryan Matthews

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 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **March 14 - 20, 2017**

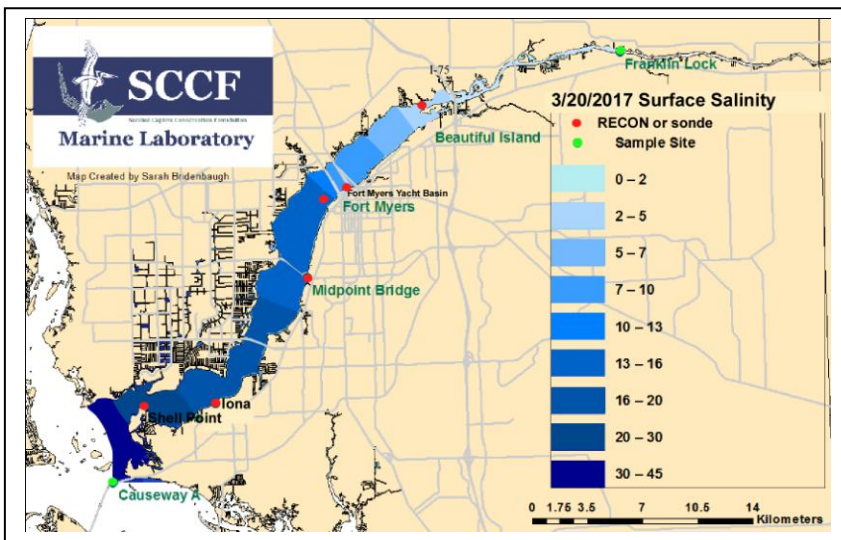
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** Freshwater flow into the estuary at S-79 during the past week decreased to an average of **706 cfs**. The Caloosahatchee is currently meeting its Minimum Flow & Level (MFL).

**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:** We request maintaining freshwater pulses to provide adequate freshwater flow to prevent estuary harm.

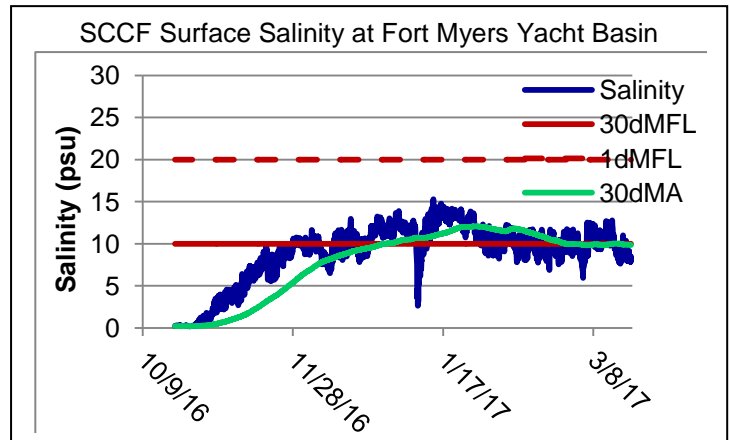
<b>Lake Okeechobee Level:</b>	<b>12.82 ft. (Base Flow Sub-Band)</b>	<b>Last week: 13.06 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>695 cfs</b>	<b>Lake Okeechobee Outflow: 3,802 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>0"</b> Ortona <b>0"</b>	Moore Haven <b>0 "</b>
<b>Salinity Beautiful Island:</b>	<b>2.3 – 6.3 psu</b> (SCCF RECON Marker 18)	Previous wk <b>2.2 – 5.5 psu</b>
<b>Salinity Fort Myers:</b>	<b>7.7 – 13 psu</b> (SCCF Yacht Basin)	Previous wk <b>9.4 – 13 psu</b>
<b>MFL Status:</b>	<b>In compliance; 30-day moving average <math>\leq</math>10 psu at surface</b>	
<b>Salinity Shell Point:</b>	<b>22 – 34 psu</b> (SCCF RECON)	Previous wk <b>24 – 34 psu</b>



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	2.3 – 6.3	< 5 psu	In Range
Fort Myers	7.7 – 13	<10 psu	In Range
Shell Point	22 – 34	25 - 32 psu	High
Light (25% I <sub>z</sub> depth meters)			
Iona	1.18	2.2 meter	Low
Causeway	1.84	2.2 meter	Low
E Sanibel	2.16	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **706 cfs**. Over the past 14 days **33%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **9%** was delivered to the St Lucie at S-308, **54%** was delivered south to the EAA, **3%** was directed to the L8 and **1%** through S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
3/14/2017	Tues	561	402	796
3/15/2017	Wed	372	NR	882
3/16/2017	Thur	256	346	902
3/17/2017	Fri	836	825	1330
3/18/2017	Sat	1071	1025	1701
3/19/2017	Sun	966	910	1608
3/20/2017	Mon	880	622	1120
<b>7 day Avg</b>		<b>706</b>	-	<b>1191</b>



**Upstream of S-79/Franklin Conditions:** On 3/21/17 the Olga Water Treatment plant chlorides measured **57 mg/L**, apparent color was **53 CU** and turbidity measured **1.31 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2,000 GPM.

**Upper Estuary Conditions:** The weekly average salinity at Fort Myers was **8.8 psu**, in the suitable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point was **27 psu**, in the optimal range for seagrass and oysters. Significant accumulations of macro algae continue at the mouth of the river around Fisherman's Key extending into the southern extent of Pine Island Sound and Matlacha Pass Aquatic Preserves.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	32.7 – 35.2	4.6 – 11.5	9.21 – 26.6	2.33 - 5.8
Tarpon Bay	32.4 - 34.9	5.9 – 8.7	6.2 – 16.44	1.8 – 6.1

**Red Tide:** On 3/17/17, FWC reported a patchy bloom of *Karenia brevis*, the Florida red tide organism, persists in Southwest Florida from southern Pinellas to Lee Counties with background to low concentrations in samples collected from Lee County.

**Wildlife Impacts:** The past week CROW, the wildlife rehabilitation clinic on Sanibel treated **1 Brown Pelican for red tide poisoning**.

**Manatees:** Lee county park staff reported over **100 manatees** in the warm water of the Orange River and FPL canal the past week. River temperatures ranging from **68 - 84° F** the past week.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Iona</b>	11.2	94.5	3.1	1.18
<b>Causeway</b>	2.2	48.4	1.3	1.84
<b>E Sanibel</b>	1.9	30.3	1.4	2.16

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

**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 Ryan Matthews

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: **March 21 - 27, 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:** Freshwater flow into the estuary at S-79 during the past week decreased to an average of **631 cfs**. The Caloosahatchee is currently meeting its Minimum Flow & Level (MFL), **but is expected to exceed the MFL over the course of the next week if flows remain at similar or reduced levels. Rising salinity at Fort Myers is above the suitable range for tape grass in the mid estuary and above the optimal range for oysters in the lower estuary.**

**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:** We request maintaining freshwater pulses to provide adequate flows to prevent estuary harm. **If reduced flows are implemented, reductions should be made to all users. We request weekly calls to provide input on current conditions.**

**Lake Okeechobee Level:** 12.65 ft. (Base Flow Sub-Band) **Last week:** 12.82 ft

**Lake Okeechobee Inflow:** 470 cfs **Lake Okeechobee Outflow:** 3,683 cfs

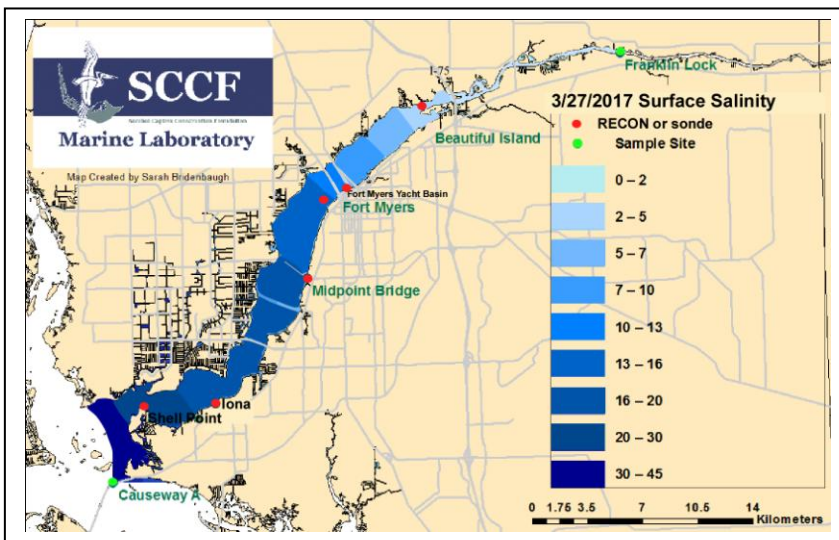
**Weekly Rainfall:** WP Franklin 0" Ortona 0.39" Moore Haven 0.05"

**Salinity Beautiful Island:** 2.1 – 5.6 psu (SCCF RECON Marker 18) Previous wk 2.3 – 6.3 psu

**Salinity Fort Myers:** 7.6 – 14 psu (SCCF Yacht Basin) Previous wk 7.7 – 13 psu

**MFL Status:** **In compliance; 30-day moving average ≤10 psu at surface**

**Salinity Shell Point:** 23 – 34 psu (SCCF RECON) Previous wk 22 – 34 psu

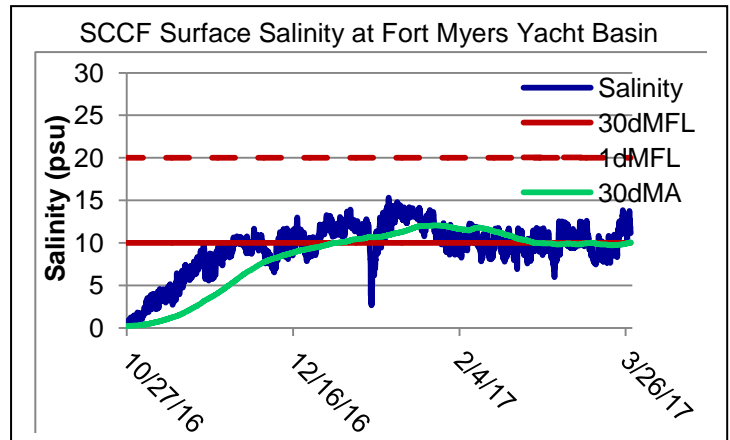


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	2.1 – 5.6	< 5 psu	In Range
Fort Myers	7.6 – 14	<10 psu	In Range
Shell Point	23 – 34	25 - 32 psu	High
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.93	1 meter	Low
Causeway	2.09	2.2 meter	Low
E Sanibel	2.02	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **631 cfs**. Over the past 14 days **33%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **9%** was delivered to the St Lucie at S-308, **56%** was delivered south to the EAA, **2%** was directed to the L8 and **1%** through S310.

ACOE Daily Reports				
Date	Day	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
3/21/2017	Tues	561	358	982
3/22/2017	Wed	326	173	940
3/23/2017	Thur	300	176	930
3/24/2017	Fri	793	915	1462
3/25/2017	Sat	1064	1005	1537
3/26/2017	Sun	979	876	1347
3/27/2017	Mon	396	341	474
<b>7 day Avg</b>		<b>631</b>	<b>549</b>	<b>1096</b>



**Upstream of S-79/Franklin Conditions:** On 3/28/17 the Olga Water Treatment plant chlorides measured **60 mg/L**, apparent color was **57 CU** and turbidity measured **1.45 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2,000 GPM.

**Upper Estuary Conditions:** The weekly average salinity at Fort Myers was **11.5 psu**, above the suitable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point was **29 psu**, in the optimal range for seagrass but above the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	33.6 – 35.4	3.5 – 11.4	8.3 – 17.7	2.1 - 5.9
Tarpon Bay	33.6 - 34.9	5.4 – 8.3	7.9 – 14.0	1.9 – 4.6

**Red Tide:** On 3/24/17, FWC reported a patchy bloom of *Karenia brevis*, the Florida red tide organism, persists in Southwest Florida from southern Pinellas to Lee Counties with background to low concentrations in samples collected from Lee County.

**Wildlife Impacts:** The past week two dead loggerhead sea turtles with prop scars stranded on Sanibel and Captiva Islands the past week.

**Manatees:** Lee county park staff reported over **11 manatees** in the warm water of the Orange River and FPL canal the past week. River temperatures ranging from **74 - 84° F** the past week.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Beautiful Is.</b>	10.5	155	1.6	0.93
<b>Causeway</b>	2.6	24.7	3.0	2.09
<b>E Sanibel</b>	3.2	22.0	4.2	2.02

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

**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 Ryan Matthews

From: Periodic Scientists Conference Call Participants  
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 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: **March 28 - April 3, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **650 cfs**. **The past week the Caloosahatchee salinity exceeded its Minimum Flow & Level (MFL) at Fort Myers. Rising salinity exceeded the suitable salinity level for tapegrass in the upper estuary and oysters in the lower estuary.**

**USACE Action:** On March 31, 2017 the USACE lowered targeted releases to the Caloosahatchee with a 7-day average target of **450 cfs** measured at S-79 and continued no discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request increasing freshwater pulses to provide adequate flows to prevent estuary harm. There is less than 10% chance of water shortage by June 1. So there is no reason to selectively cut back flows to the Caloosahatchee that cause harm. **Any flow reductions should be made to all users. We request weekly calls to provide input on current conditions.**

**Lake Okeechobee Level:** 12.47 ft. (Beneficial Use Sub-Band) Last week: 12.65 ft

**Lake Okeechobee Inflow:** 308 cfs **Lake Okeechobee Outflow:** 3,200 cfs

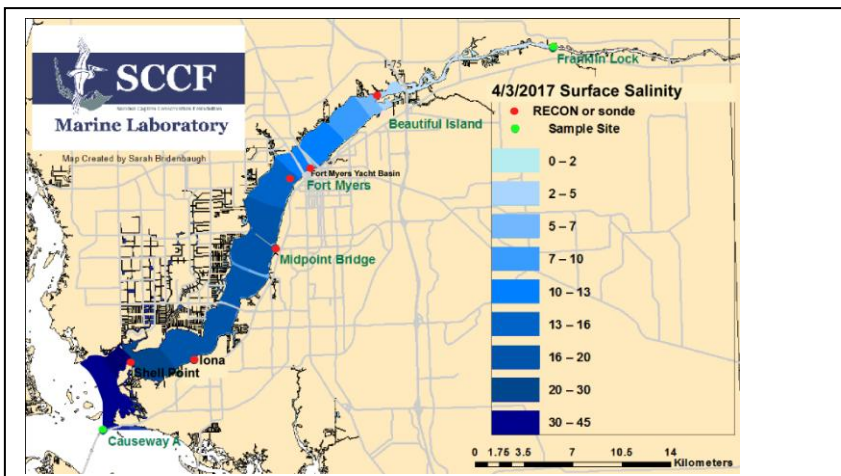
**Weekly Rainfall:** WP Franklin 0.37" Ortona 1.00" Moore Haven 1.55"

**Salinity Beautiful Island:** 3.2 - 7.4 psu (SCCF RECON Marker 18) Previous wk 2.1 – 5.6 psu

**Salinity Fort Myers:** 10 – 15 psu (SCCF Yacht Basin) Previous wk 7.6 – 14 psu

**MFL Status:** **MFL Exceedance; 30-day moving average  $\geq 10$  psu at surface**

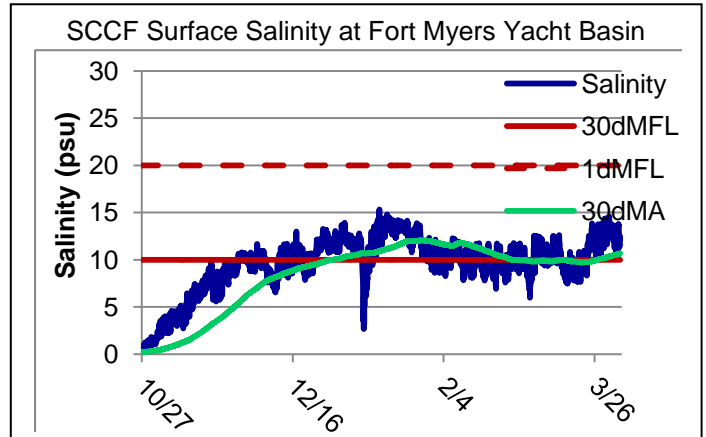
**Salinity Shell Point:** 26 – 35 psu (SCCF RECON) Previous wk 23 – 34 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	3.2 - 7.4	< 5 psu	High
Fort Myers	10 – 15	<10 psu	MFL Exceed
Shell Point	26 – 35	25 - 32 psu	High
Light (25% I <sub>z</sub> depth meters)			
31 Bridge	0.96	1 meter	Low
Fort Myers	1.03	1 meter	In Range
E Sanibel	1.91	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **650 cfs**. Over the past 14 days **24%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **11%** was delivered to the St Lucie at S-308, **62%** was delivered south to the EAA, **2.6%** was directed to the L8 and **<1%** through S310.

ACOE March 31 Release at S79					
Date	Day	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
3/28/2017		-	516	455	542
3/29/2017		-	503	458	1263
3/30/2017		-	384	344	1034
3/31/2017	1	850	652	556	1000
4/1/2017	2	1000	998	677	1350
4/2/2017	3	700	717	695	387
4/3/2017	4	300	778	521	0
<b>7 day Avg</b>		<b>450</b>	<b>650</b>	<b>529</b>	<b>797</b>

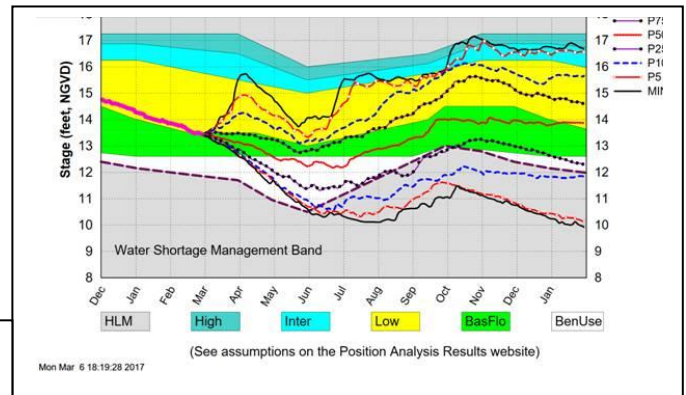


**Upstream of S-79/Franklin Conditions:** On 4/4/17 the Olga Water Treatment plant chlorides measured **57 mg/L**, apparent color was **61 CU** and turbidity measured **1.29 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2,000 GPM.

**Upper Estuary Conditions:** **The weekly average salinity at Fort Myers, 12.7 psu, exceeds the MFL and is above the suitable range for tape grass.** Freshwater deliveries were singularly cut back to the Caloosahatchee despite a forecast of less than a 10% chance of water shortage by June 1.

**Lower Estuary Condition:** The average salinity at Shell Point, **31 psu**, was in the optimal range for seagrass but **above the optimal range for oysters.**

SWFMD Position Analysis showing <10% chance of water shortage by 6/1/17.



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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	33.7 – 35.2	2.4 – 10.6	7.3 – 17.4	1.8 - 5.1
Tarpon Bay	34.3 – 35.3	5.0 – 7.8	5.1 – 15.8	2.1 – 6.1

**Beach Conditions:** Significant accumulations of drift algae were reported along the entire shoreline of Bunche Beach with drifts up to 50 ft wide along the beach at low tide on Sunday 4/2/17.

**Red Tide:** On 3/31/17, FWC reported a patchy bloom of *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from southern Pinellas to Lee Counties with background to medium concentrations in samples collected from Lee County.**

**Wildlife Impacts:** The past week CROW, the wildlife rehabilitation clinic on Sanibel treated **4 Double-Crested Cormorants for red tide poisoning.**



**Drift algae along Bunche Beach on 4/3/17. Photo SCCF**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>31 Bridge</b>	10.1	144	2.7	0.96
<b>Fort Myers</b>	6.1	140	1.6	1.03
<b>E Sanibel</b>	2.7	26.5	4.8	1.91

Target light penetration: **CE**- Caloosahatchee Estuary = 1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: **z** where **I** is 25% of surface **I**.  
**I** = irradiance, **z**= depth



**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 Ryan Matthews

From: Periodic Scientists Conference Call Participants  
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 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **April 4 - 10, 2017**

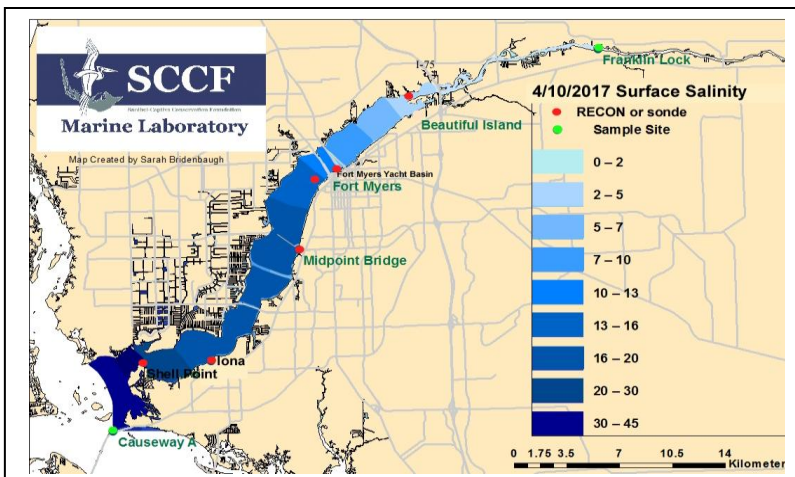
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** Freshwater flow into the estuary at S-79 during the past week increased to an average of 726 cfs. **The Caloosahatchee continues to exceed its Minimum Flow & Level (MFL) salinity at Fort Myers. Salinity is also above the suitable level for tapegrass in the middle and upper estuary and oysters in the lower estuary. Cyanobacteria was observed at the Alva Boat Ramp.**

**USACE Action:** On March 31, 2017 the USACE continued flows to the Caloosahatchee with a 7-day average target of 450 cfs measured at S-79 and no discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request maintaining freshwater pulses to provide adequate flows to prevent estuary harm. **If reduced flows are to be implemented, reductions should be made to all users. We request weekly calls to provide input on current conditions.**

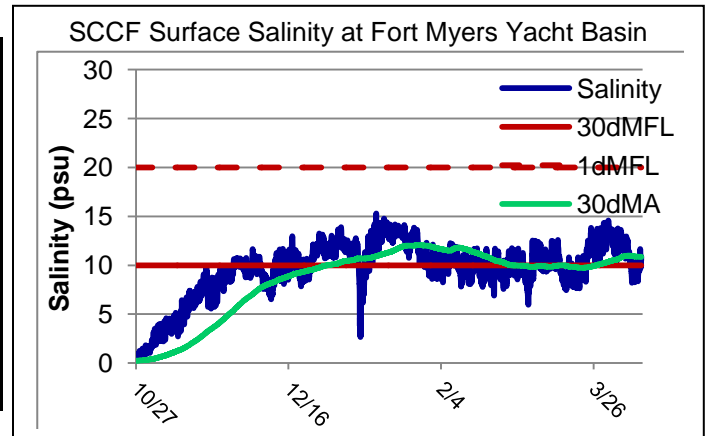
<b>Lake Okeechobee Level:</b>	<b>12.21 ft. (Beneficial Use Sub-Band)</b>	<b>Last week: 12.4 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>287 cfs</b>	<b>Lake Okeechobee Outflow: 4,309 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>0.05"</b> Ortona <b>0"</b>	Moore Haven <b>0.01"</b>
<b>Salinity Beautiful Island:</b>	<b>3.1 - 6.6 psu</b> (SCCF RECON Marker 18)	Previous wk <b>3.2 - 7.4 psu</b>
<b>Salinity Fort Myers:</b>	<b>8.2 - 14 psu</b> (SCCF Yacht Basin)	Previous wk <b>10 - 15 psu</b>
<b>MFL Status:</b>	<b>MFL Exceedance; 30-day moving average <math>\geq 10</math> psu at surface</b>	
<b>Salinity Shell Point:</b>	<b>25 - 35 psu</b> (SCCF RECON)	Previous wk <b>26 - 35 psu</b>



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	3.1 - 6.6	< 5 psu	High
Fort Myers	8.2 - 14	<10 psu	MFL Exceed
Shell Point	25 - 35	25 - 32 psu	High
Light (25% I <sub>z</sub> depth meters)			
Old Bridge	0.98	1 meter	Low
Causeway	2.33	1 meter	In Range
E Sanibel	2.41	2.2 meters	In Range

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **726 cfs**. Over the past 14 days **19.5%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **2.5%** was delivered to the St Lucie at S-308, **74%** was delivered south to the EAA, **2.5%** was directed to the L8 and **1.5%** to S310.

Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
4/4/2017	200	1093	531	0
4/5/2017	100	769	530	0
4/6/2017	0	780	451	0
4/7/2017	850	462	340	300
4/8/2017	1000	771	570	792
4/9/2017	700	792	690	960
4/10/17	300	416	689	932
7 day Avg	450	726	543	426



**Upstream of S-79/Franklin Conditions:** On 4/11/17 the Olga Water Treatment plant chlorides measured **58 mg/L**, apparent color was **53 CU** and turbidity measured **1.12NTU**. No visible algae was noted at the plant intake the past week. The plant is off line for maintenance.

**On 4/6/17 Lee County Environmental Lab found a small patch of cyanobacteria near the Alva Boat Ramp consisting of *Dolichospermum, Microcystis, Aphanizomenon*.**

**Upper Estuary Conditions:** The salinity at Fort Myers is above the suitable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point, **31 psu**, was in the optimal range for seagrass but **above** the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	35.1 – 36.4	2.2 – 8.7	6.4 – 18.2	2.7 - 78.4
Tarpon Bay	35.0 – 35.9	4.7 – 7.3	5.7 – 11.5	2.4 – 6.9

**Red Tide:** On 4/7/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from southern Pinellas to Lee Counties with background to low concentrations in samples collected from Lee County**. Respiratory irritation was reported at Bowman's Beach on Sanibel and fish kills were reported at Bonita Beach.

**Shellfish Advisory:** On 4/6/17 The Florida Department of Agriculture and Consumer Services is temporarily **closed #6212 Pine Island Sound West Aquaculture Use Zones** for the harvest of oysters, clams, and mussels due to presence of *Karenia brevis*. The closure does not include scallops, shrimp, or crabs.

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
Old Bridge	6.1	138	4.1	0.98
Causeway	3.0	8.6	3.8	2.33
E Sanibel	2.9	2.9	4.3	2.41

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

**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 Ryan Matthews

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 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **April 11 - 17, 2017**

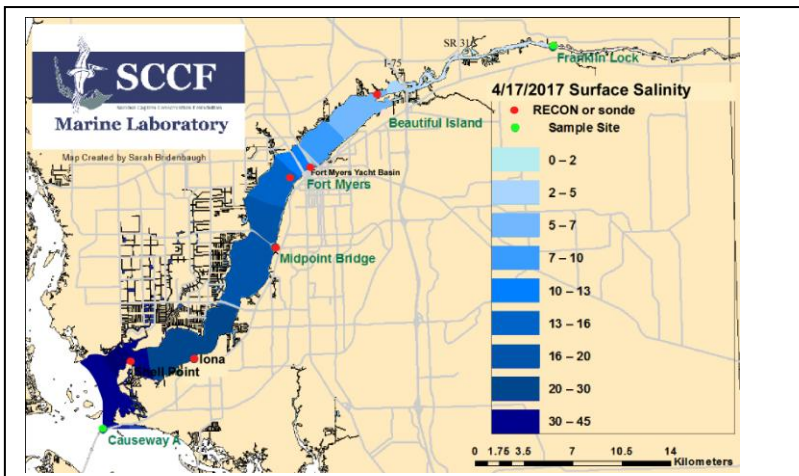
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** Freshwater flow into the estuary at S-79 during the past week dropped by two-fold to an average of **305 cfs**. **The Caloosahatchee continues to exceed its Minimum Flow & Level (MFL) salinity at Fort Myers. Salinity is also above the suitable level for tapegrass in the middle and upper estuary and oysters in the lower estuary. Cyanobacteria increased upstream of S79 and at the Alva Boat Ramp.**

**USACE Action:** On April 14, 2017 the USACE reduced flows to the Caloosahatchee with a 7-day average target of **300 cfs** measured at S-79. No discharge from the Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request maintaining freshwater pulses to provide adequate flows to prevent estuary harm. **If reduced flows are to be implemented, reductions should be made to all water users. We request weekly calls to provide input on current conditions.**

<b>Lake Okeechobee Level:</b>	<b>11.93 ft. (Beneficial Use Sub-Band)</b>	<b>Last week: 12.21 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>419 cfs</b>	<b>Lake Okeechobee Outflow: 7,253 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>0"</b>	Ortona <b>0.22"</b> Moore Haven <b>0"</b>
<b>Salinity Beautiful Island:</b>	<b>2.8 - 7.0 psu</b> (SCCF RECON Marker 18)	Previous wk <b>3.2 - 7.4 psu</b>
<b>Salinity Fort Myers:</b>	<b>9.4 - 16 psu</b> (SCCF Yacht Basin)	Previous wk <b>8.2 - 14 psu</b>
<b>MFL Status:</b>	<b>MFL Exceedance; 30-day moving average <math>\geq 10</math> psu at surface</b>	
<b>Salinity Shell Point:</b>	<b>27 - 35 psu</b> (SCCF RECON)	Previous wk <b>25 - 35 psu</b>

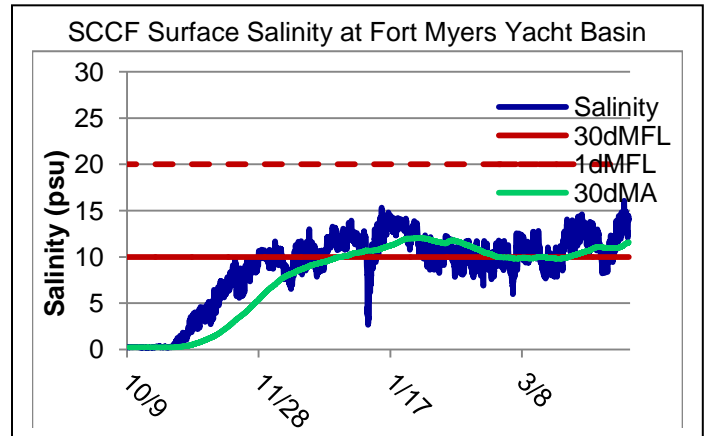


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	2.8 - 7.0	< 5 psu	High
Fort Myers	9.4 - 16	<10 psu	MFL Exceed
Shell Point	27 - 35	25 - 32 psu	High
Light (25% I <sub>z</sub> depth meters)			
Causeway	2.34	2.2 meters	In Range
E Sanibel	2.50	2.2 meters	In Range
Tarpon Bay	2.04	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **305 cfs**. Over the past 14 days **16%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **16%** was delivered to the St Lucie at S-308, **67%** was delivered south to the EAA, the L8 **back flowed** and **1.6%** to S310.

ACOE April 14 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
4/11/2017	200	234	342	904
4/12/2017	100	143	160	NR
4/13/2017	0	37	87	NR
4/14/2017	200	133	88	NR
4/15/2017	900	571	500	888
4/16/2017	500	619	859	1195
4/17/17	300	401	496	1080
7 day Avg	300	305	362	-



**Upstream of S-79/Franklin Conditions:** On 4/18/17 the Olga Water Treatment plant chlorides measured **59 mg/L**, apparent color was **57 CU** and turbidity measured **1.42 NTU**. No visible algae was noted at the plant intake the past week. The plant is online at 2000 GPM

**On 4/13/17 Lee County Environmental Lab found expanded coverage of cyanobacteria in the Caloosahatchee from the WP Franklin Lock to the Alva Boat Ramp consisting of three species; Dolichospermum, Microcystis and Aphanizomenon.**

**Upper Estuary Conditions:** The salinity at Fort Myers is above the suitable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point, **31 psu**, was in the optimal range for seagrass but **above** the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	34.5 – 36.1	4.2 – 10.4	8.1 – 14.3	2.1 - 71.4
Tarpon Bay	35.0 – 35.9	4.9 – 6.8	7.3 – 24.8	2.5 – 5.8

**Red Tide:** On 4/13/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in **Southwest Florida from Manatee to Lee Counties with background to low concentrations in samples collected from Lee County.** Respiratory irritation was reported at Bowman's Beach on Sanibel and fish kills were reported at Bonita Beach.

**Shellfish Advisory:** On 4/6/17 The Florida Department of Agriculture and Consumer Services is temporarily **closed #6212 Pine Island Sound West Aquaculture Use Zones** for the harvest of oysters, clams, and mussels due to presence of *Karenia brevis*. The closure does not include scallops, shrimp, or crabs.

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
Causeway	2.1	18	2.1	2.34
E Sanibel	2.7	7.8	2.7	2.50
Tarpon Bay	8.6	15	3.4	2.04

Target light penetration: **CE**- Caloosahatchee Estuary =1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% Iz: **z** where **I** is 25% of surface **I**.  
**I** = irradiance, **z**= depth

**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 Ryan Matthews

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: **April 18 - 24, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **325 cfs**. **Inadequate freshwater is raising salinity, continuing the Minimum Flow & Level (MFL) exceedance for 29 days at Fort Myers. Salinity is at lethal levels for tapegrass in the middle and upper estuary and above the optimal range for oysters in the lower estuary. Cyanobacteria coverage increased upstream of S79 and the Alva Boat Ramp.**

**USACE Action:** On April 14,2017 the USACE reduced flows to the Caloosahatchee with a 7-day average target of **300 cfs** measured at S-79. No discharge from the Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request freshwater pulse flows to provide adequate flows to prevent estuary harm. **In these dry conditions flow reductions should be made to all users not singularly directed at the Caloosahatchee where lethal levels of salinity are harming tapegrass. We request weekly calls to provide input on current conditions.**

Lake Okeechobee Level: **11.81 ft. (Beneficial Use Sub-Band)** Last week: **11.93 ft**

Lake Okeechobee Inflow: **271cfs** Lake Okeechobee Outflow: **1,485 cfs**

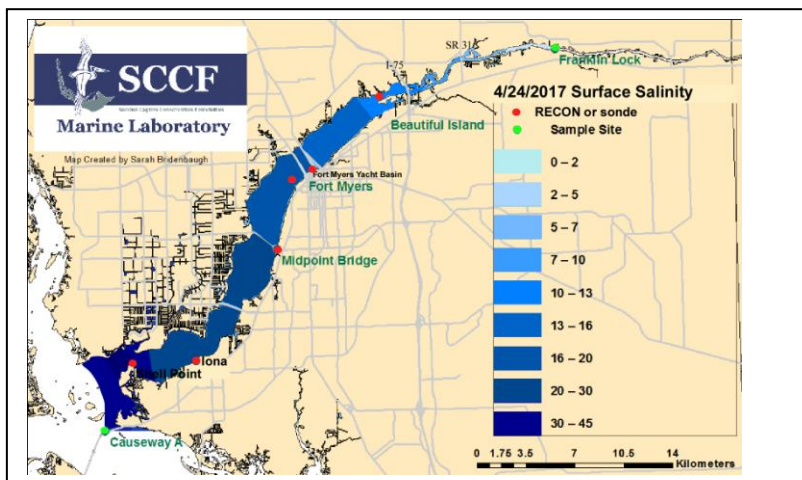
Weekly Rainfall: WP Franklin **0.61"** Ortona **0.71"** Moore Haven **0.52"**

Salinity Beautiful Island: **5.6 - 13 psu** (SCCF RECON Marker 18) Previous wk **2.8 - 7.0 psu**

Salinity Fort Myers: **12 - 18 psu** (SCCF Yacht Basin) Previous wk **9.4 - 16 psu**

MFL Status: **MFL Exceedance; 30-day moving average  $\geq$ 10 psu: 29 days since 3/28/17**

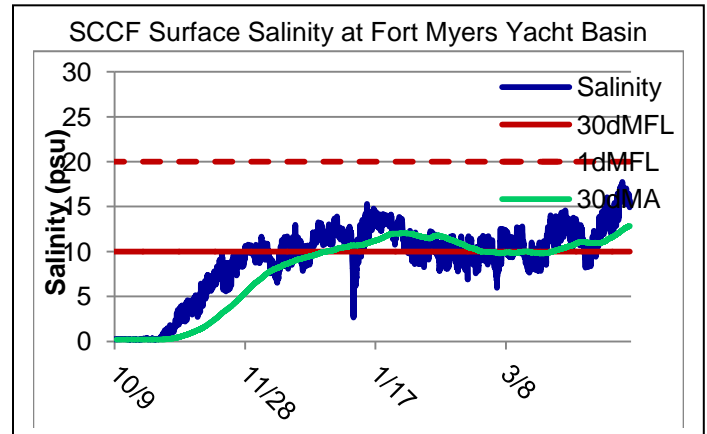
Salinity Shell Point: **26 - 36 psu** (SCCF RECON) Previous wk **27 - 35 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>5.6 - 13</b>	< 5 psu	<b>High</b>
Fort Myers	<b>12 - 18</b>	<10 psu	<b>MFL Exceed</b>
Shell Point	<b>26 - 36</b>	25 - 32 psu	<b>High</b>
Light (25% I <sub>z</sub> depth meters)			
Causeway	<b>2.37</b>	2.2 meters	In Range
E Sanibel	<b>2.36</b>	2.2 meters	In Range
Tarpon Bay	<b>1.83</b>	2.2 meters	<b>Low</b>

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **325 cfs**. Over the past 14 days **21%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **5%** was delivered to the St Lucie at S-308, **73%** was delivered south to the EAA, the L8 **back flowed** and **2%** to S310.

ACOE April 14 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
4/18/2017	200	262	222	924
4/19/2017	0	62	51	593
4/20/2017	0	0	0	475
4/21/2017	200	115	0	513
4/22/2017	900	114	481	943
4/23/2017	500	793	686	964
4/24/17	300	922	324	322
7 day Avg	300	324	252	676



**Upstream of S-79/Franklin Conditions:** On 4/25/17 the Olga Water Treatment plant chlorides measured **100 mg/L**, apparent color was **64 CU** and turbidity measured **1.28 NTU**. No visible algae was noted at the plant intake the past week. The plant is off line for repairs.

**On 4/20/17 Lee County Environmental Lab found abundant cyanobacteria in the Caloosahatchee at the Alva Boat Ramp consisting of three species; Dolichospermum, Microcystis and Aphanizomenon and the same 3 species present upstream of the WP Franklin Lock.**

**Upper Estuary Conditions:** The average salinity at Fort Myers, **16 psu is in the lethal range for tape grass.**

**Lower Estuary Condition:** The average salinity at Shell Point, **31 psu**, was in the optimal range for seagrass but **above the optimal range for oysters.**

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	34.0 – 35.9	3.3 -10.7	9.4 - 16.7	2.4 - 13.6
Tarpon Bay	34.1– 35.9	3.7– 5.5	7.3 – 13.6	2.3 – 7.2

**Red Tide:** On 4/13/17, FWC reported *Karenia brevis*, the Florida red tide organism, **persists in Southwest Florida from Pinellas to Lee Counties with background to very low concentrations in samples collected from Lee County.**

**Shellfish Advisory:** **Public shellfish harvesting areas remain closed in Pine Island Sound** for the harvest of oysters, clams, and mussels. In this context shellfish does not include scallops, shrimp, or crabs.

**Wildlife Impacts:** SCCF reports 1 loggerhead sea turtle stranding on Sanibel with no apparent cause of death

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
Causeway	1.6	12.7	3.1	2.37
E Sanibel	3.0	12.2	2.8	2.36
Tarpon Bay	5.2	38.6	2.5	1.83

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



**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 Ryan Matthews

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: **April 25 - May 1, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **357 cfs**. **Inadequate freshwater is causing salinity to rise and continuing the Minimum Flow & Level (MFL) exceedance for 36 days at Fort Myers. Salinity is at lethal levels for tapegrass in the middle and upper estuary and above the optimal range for oysters in the lower estuary. Cyanobacteria persists upstream of S79 and the Alva Boat Ramp.**

**USACE Action:** On April 28,2017 the USACE continued flows to the Caloosahatchee with a 7-day average target of **300 cfs** measured at S-79. No discharge from the Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request the District use adaptive management to provide sufficient freshwater flows to prevent estuary harm. There is sufficient water in the system to provide these flows and not harm the lake or other users. **In these dry conditions flow reductions should be made to all users not singularly directed at the Caloosahatchee where lethal levels of salinity are harming tapegrass. We request weekly calls to provide input on current conditions.**

Lake Okeechobee Level: **11.60 ft. (Beneficial Use Sub-Band)** Last week: **11.81 ft**

Lake Okeechobee Inflow: **229 cfs** Lake Okeechobee Outflow: **2,558 cfs**

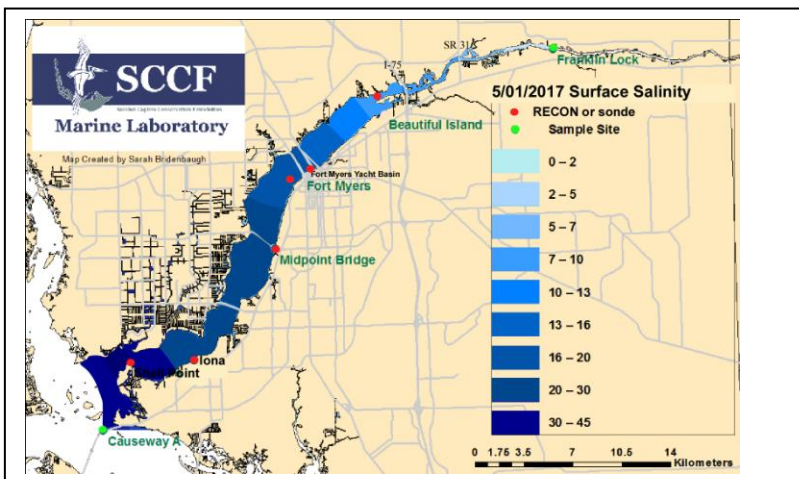
Weekly Rainfall: WP Franklin **0"** Ortona **0.31"** Moore Haven **0.20"**

Salinity Beautiful Island: **8.9 -13 psu** (SCCF RECON Marker 18) Previous wk **5.6 - 13 psu**

Salinity Fort Myers: **15 – 17 psu** (SCCF Yacht Basin) Previous wk **12 – 18 psu**

MFL Status: **MFL Exceedance; 30-day moving average  $\geq$ 10 psu: 36 days since 3/28/17**

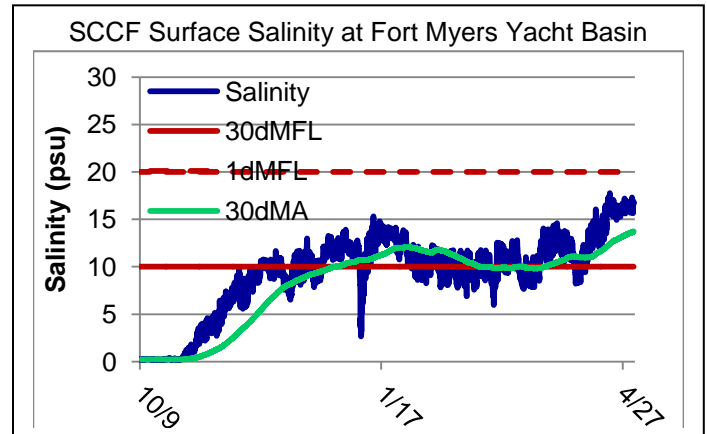
Salinity Shell Point: **27 – 35 psu** (SCCF RECON) Previous wk **26 – 36 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>8.9 -13</b>	< 5 psu	<b>High</b>
Fort Myers	<b>15 – 17</b>	<10 psu	<b>MFL Exceed</b>
Shell Point	<b>27 – 35</b>	25 - 32 psu	<b>High</b>
Light (25% lz depth meters)			
Causeway	<b>1.86</b>	2.2 meters	<b>Low</b>
E Sanibel	<b>2.01</b>	2.2 meters	<b>Low</b>
Tarpon Bay	<b>1.81</b>	2.2 meters	<b>Low</b>

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **357 cfs**. Over the past 14 days **25%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **7%** was delivered to the St Lucie at S-308, **65%** was delivered south to the EAA, the L8 **back flowed** and **2.5%** to S310.

ACOE April 28 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
4/25/2017	200	622	57	347
4/26/2017	0	49	0	180
4/27/2017	0	0	0	223
4/28/2017	200	133	239	565
4/29/2017	900	707	821	1246
4/30/2017	500	666	662	1144
5/1/17	300	321	271	658
7 day Avg	300	357	293	480



**Upstream of S-79/Franklin Conditions:** On 5/2/17 the Olga Water Treatment plant chlorides measured **102 mg/L**, apparent color was **58 CU** and turbidity measured **1.38 NTU**. **Slight traces of algae** were noted at the plant intake the past week. The plant is online at 2000 GPM. **On 4/27/17 Lee County Environmental Lab found cyanobacteria in the Caloosahatchee at the Alva Boat Ramp upstream of the WP Franklin Lock consisting of two species; Dolichospermum and Microcystis.**

**Upper Estuary Conditions:** The average salinity at Fort Myers, **16 psu**, is in the lethal range for tape grass. **North Shore Park beach on the Caloosahatchee was closed by the Health Department due to high bacteria.**

**Lower Estuary Condition:** The average salinity at Shell Point, **32 psu**, was in the optimal range for seagrass but **above the optimal range for oysters.**

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	34.2 – 35.9	2.4 - 8.3	5.4 - 16.8	2.5 - 13.6
Tarpon Bay	34.5 – 35.8	3.9 – 6.8	5.0 – 13.6	3.2 – 14.5

**Beach Conditions:** Similar conditions to those experienced this same week in 2006, red drift algae, *Ceramium spp*, accumulated in the surf zone and wrack line from the west to east end of Sanibel.

**Red Tide:** On 4/29/17, FWC reported *Karenia brevis*, the Florida red tide organism, **persists in Southwest Florida from Pinellas to Lee Counties with background to very low concentrations in samples collected from Lee County.**

**Wildlife Impacts:** The past week SCCFs sea turtle program reported 2 dead sea turtles. One loggerhead was stranded on Sanibel missing its flippers and a juvenile green stranded on Sanibel Causeway Island B with no evident wounds or abnormalities.

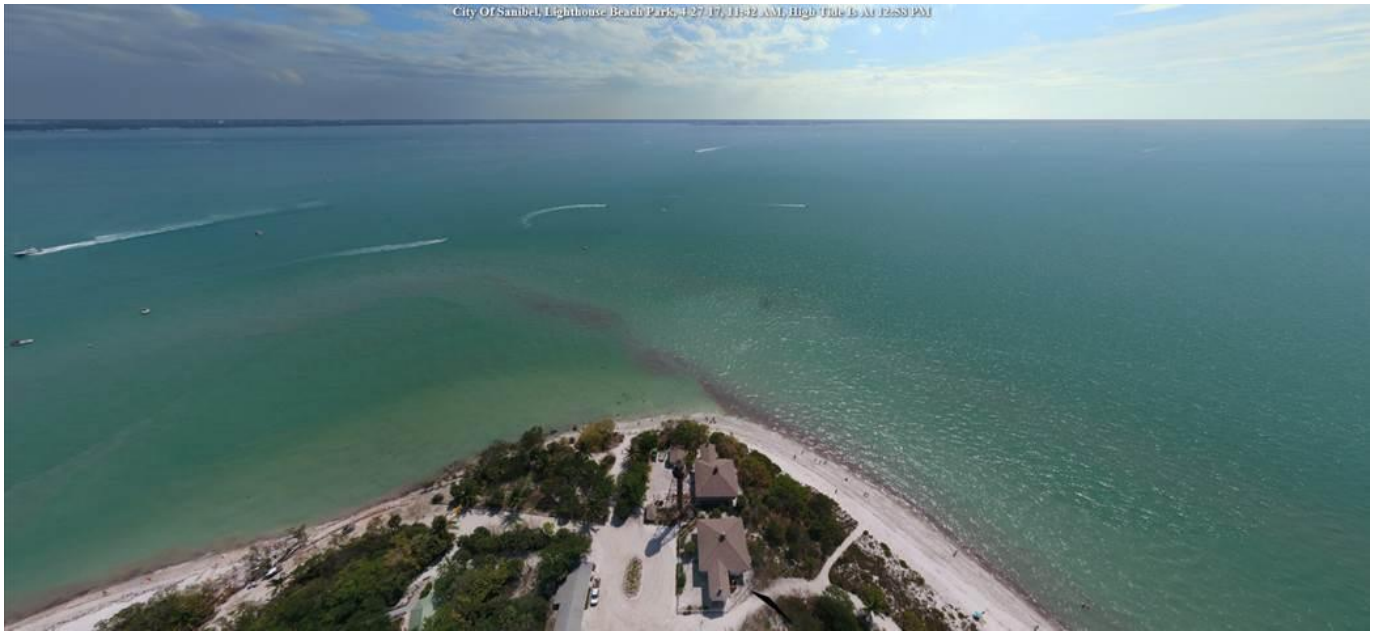


**Red drift algae *Ceramium spp.* accumulating on Sanibel Lighthouse beach on 4/27/17. Photo City of Sanibel.**

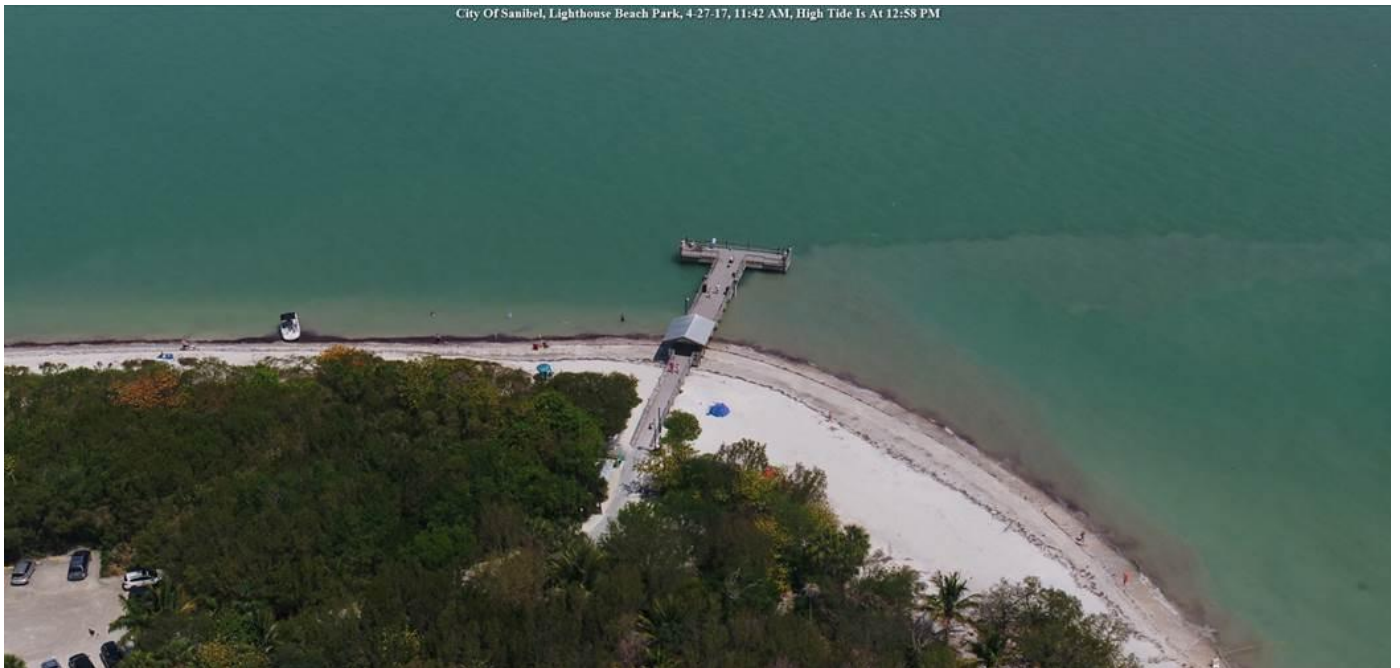
Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Causeway	4.3	12.1	7.7	1.86
E Sanibel	3.0	10.9	6.5	2.01
Tarpon Bay	6.8	37.7	2.4	1.81

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





City Of Sanibel, Lighthouse Beach Park, 4-27-17, 11:42 AM, High Tide Is At 12:58 PM



City Of Sanibel, Lighthouse Beach Park, 4-27-17, 11:42 AM, High Tide Is At 12:58 PM



City Of Sanibel, Lighthouse Beach Park, 4-27-17, 11:42 AM, High Tide Is At 12:58 PM



**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 Ryan Matthews

From: Periodic Scientists Conference Call Participants  
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 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 2 - 8, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **477 cfs**. **Inadequate freshwater is causing salinity to rise and continuing the Minimum Flow & Level (MFL) exceedance for 43 days at Fort Myers. Salinity is at lethal levels for tapegrass in the middle and upper estuary and above the optimal range for oysters in the lower estuary. Potentially toxic cyanobacteria persists upstream of S79 at two sites.**

**USACE Action:** On May 5, 2017 the USACE continued flows to the Caloosahatchee with a 7-day average target of **300 cfs** measured at S-79. No discharge from the Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request the District use adaptive management to provide sufficient freshwater pulse flows to the Caloosahatchee to prevent estuary harm. There is sufficient water in the system to provide these flows and not harm the lake and other users. **In these dry conditions flow reductions should be made to all users not singularly directed at the Caloosahatchee where lethal levels of salinity are harming tapegrass. We request weekly calls resume.**

Lake Okeechobee Level: **11.62 ft. (Beneficial Use Sub-Band)** Last week: **11.60 ft**

Lake Okeechobee Inflow: **161 cfs** Lake Okeechobee Outflow: **345 cfs**

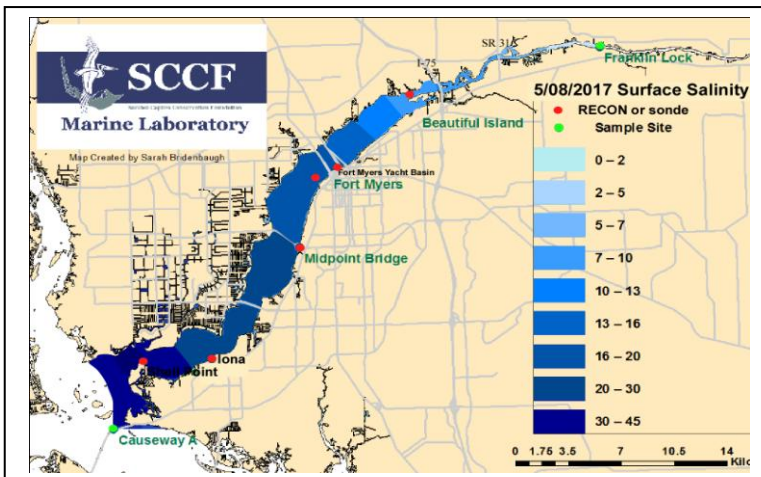
Weekly Rainfall: WP Franklin **0.23"** Ortona **0.22"** Moore Haven **1.51"**

Salinity Beautiful Island: **6.9 -11 psu** (SCCF RECON Marker 18) Previous wk **8.9 -13 psu**

Salinity Fort Myers: **13 – 17 psu** (SCCF Yacht Basin) Previous wk **15 – 17 psu**

MFL Status: **MFL Exceedance; 30-day moving average  $\geq 10$  psu: 43 days since 3/28/17**

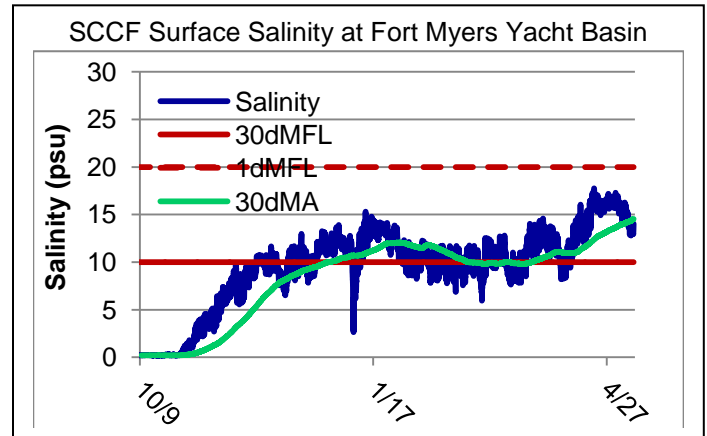
Salinity Shell Point: **28 – 36 psu** (SCCF RECON) Previous wk **27 – 35 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>6.9 - 11</b>	< 5 psu	<b>High</b>
Fort Myers	<b>13 - 17</b>	<10 psu	<b>MFL Exceed</b>
Shell Point	<b>28 - 36</b>	25 - 32 psu	<b>High</b>
Light (25% Iz depth meters)			
Beautiful Is.	<b>0.98</b>	1 meter	<b>Low</b>
Fort Myers	<b>1.20</b>	1 meter	<b>In Range</b>
E Sanibel	<b>1.97</b>	2.2 meters	<b>Low</b>

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **477 cfs**. Over the past 14 days **36%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **11%** was delivered to the St Lucie at S-308, **53%** was delivered south to the EAA, the L8 and S310 both **back flowed into the Lake**.

ACOE May 2 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
5/2/2017	200	203	171	528
5/3/2017	0	1354	174	136
5/4/2017	0	280	176	322
5/5/2017	200	0	176	217
5/6/2017	900	689	631	264
5/7/2017	500	548	255	572
5/8/17	300	268	103	376
7 day Avg	300	477	241	345



**Upstream of S-79/Franklin Conditions:** On 5/9/17 the Olga Water Treatment plant chlorides measured **120 mg/L**, apparent color was **90 CU** and turbidity measured **2.31 NTU**. **Slight traces of algae** were noted at the plant intake the past week. The plant is online at 2000 GPM.

**On 5/4/17 Lee County Environmental Lab found two species of cyanobacteria in the Caloosahatchee, Dolichospermum and Microcystis, at two locations; the Alva Boat Ramp and WP Franklin Lock.**

**Upper Estuary Conditions:** The average salinity at Fort Myers, **14 psu**, is in the harmful range for tape grass. **Tape grass transplants near Lochmoor Estates, North Fort Myers, were losing their roots on 5/4/17.**

On 5/4/17, the Lee County Dept of Health **closed North Shore Park beach on the Caloosahatchee due to high levels Enterococcus (fecal) bacteria** identified in routine testing.

**Lower Estuary Condition:** The average salinity at Shell Point, **32 psu**, was in the optimal range for seagrass but **above the optimal range for oysters.**

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	34.1 – 36.4	2.7 - 10.1	0.9 - 1.8	3.7 - 9.7
Tarpon Bay	33.8 – 35.6	3.8 – 6.2	6.8– 11.8	3.3 – 6.0

**Beach Conditions:** Water clarity along Sanibel and Fort Myers beaches the past week was good, see aerial photos.

**Red Tide:** On 5/5/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists at background to very low concentrations in Southwest Florida and was not found in samples collected from Lee County.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Beautiful Is.	11	132	3.7	0.98
Fort Myers	3.0	107	2.7	1.20
E Sanibel	4.3	7.9	7.1	1.97

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



**Clear water surrounding Sanibel Island May 3, 2017. Photos City of Sanibel**





**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 Ryan Matthews

From: Periodic Scientists Conference Call Participants  
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 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **May 9 - 15, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **276 cfs**. **Inadequate freshwater has caused an exceedance of the Minimum Flow & Level (MFL) at Fort Myers for the past 50 days. Salinity is at lethal levels for tape grass in the middle and upper estuary and above the optimal range for oysters in the lower estuary. Potentially toxic cyanobacteria persists upstream of S79 at two sites.**

**USACE Action:** On May 12, 2017 the USACE continued flows to the Caloosahatchee with a 7-day average target of **300 cfs** measured at S-79. No discharge from the Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request the District use adaptive management to provide sufficient freshwater pulse flows to the Caloosahatchee to prevent estuary harm. There is sufficient water in the system to provide these flows and not harm the lake and other users. **In these dry conditions flow reductions should be made to all users not singularly directed at the Caloosahatchee where lethal levels of salinity are harming tape grass. We request weekly calls resume.**

**Lake Okeechobee Level:** 11.39 ft. (Beneficial Use Sub-Band) Last week: 11.62 ft

**Lake Okeechobee Inflow:** 171 cfs **Lake Okeechobee Outflow:** 2973 cfs

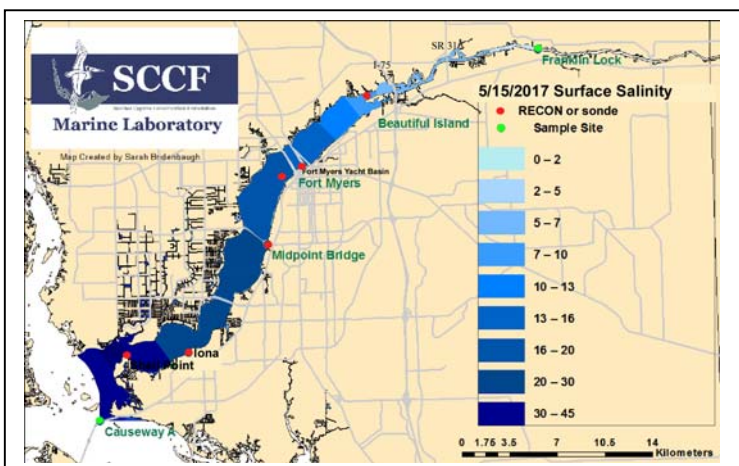
**Weekly Rainfall:** WP Franklin 0.05" Ortona 0.0" Moore Haven 0.0"

**Salinity Beautiful Island:** 6.2 -10 psu (SCCF RECON Marker 18) Previous wk 6.9 -11 psu

**Salinity Fort Myers:** 13 – 17 psu (SCCF Yacht Basin) Previous wk 13 – 17 psu

**MFL Status:** **MFL Exceedance; 30-day moving average  $\geq 10$  psu: 50 days since 3/28/17**

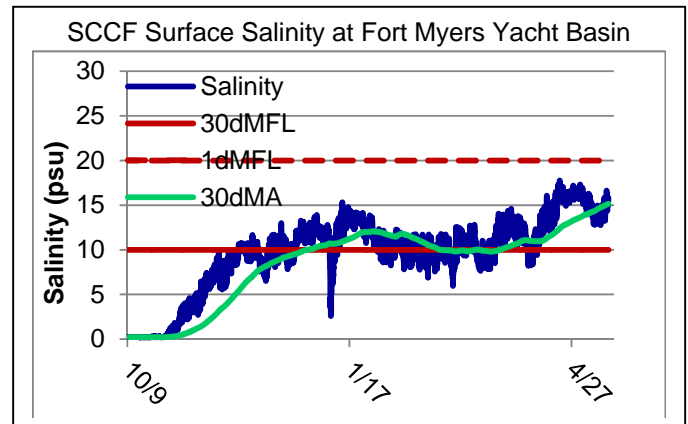
**Salinity Shell Point:** ND (SCCF RECON) Previous wk 28 – 36 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	6.2 - 10	< 5 psu	High
Fort Myers	13 - 17	<10 psu	MFL Exceed
Shell Point	ND	25 - 32 psu	-
Light (25% Iz depth meters)			
31 Bridge	0.76	1 meter	Low
Fort Myers	1.23	1 meter	In Range
E Sanibel	1.86	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **276 cfs**. Over the past 14 days **44%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **56%** was delivered south to the EAA, the L8, S308 and S310 both **back flowed into the Lake**.

ACOE May 9 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
5/9/2017	200	169	178	361
5/10/2017	0	37	176	604
5/11/2017	0	0	315	878
5/12/2017	200	106	525	980
5/13/2017	900	577	518	772
5/14/2017	500	701	524	1008
5/15/2017	300	342	525	1120
7 day Avg	300	276	394	818



**Upstream of S-79/Franklin Conditions:** On 5/16/17 the Olga Water Treatment plant chlorides measured **94 mg/L**, apparent color was **82 CU** and turbidity measured **2.42 NTU**. **Noticeable traces of algae** were noted at the plant intake the past week. The plant is online at 2000 GPM.

On 5/12/17 Lee County Environmental Lab found two species of cyanobacteria in the Caloosahatchee, *Dolichospermum* and *Microcystis*, at two locations; the Alva Boat Ramp and WP Franklin Lock. As well as a third species of cyanobacteria, *Aphanizomenon*; at the Alva Boat Ramp.

**Upper Estuary Conditions:** The average salinity at Fort Myers, **15 psu**, is in the harmful range for tape grass.

**Lower Estuary Condition:** On 5/15/17 the salinity at Shell Point, **32 psu**, was in the optimal range for seagrass but above the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	35.2 – 36.1	2.7- 9.5	6.9 – 14.8	2.5 – 4.9
Tarpon Bay	35.0 – 36.0	3.8 – 7.3	5.8– 10.8	2.9 – 6.0

**Beach Conditions:** Water clarity along Sanibel and Fort Myers beaches the past week was good.

**Red Tide:** On 5/12/17, FWC reported *Karenia brevis*, the Florida red tide organism, persists in background concentrations in two samples collected from Lee County.

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
31 Br.	14.4	159	10.5	0.76
Fort Myers	7.1	92	3.4	1.23
E Sanibel	4.3	7.9	8.1	1.86

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

**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 Ryan Matthews

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: **May 23 - 30, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **418 cfs**. **Inadequate freshwater is causing salinity to rise and continuing the Minimum Flow & Level (MFL) exceedance for the past 64 days at Fort Myers. Salinity is at lethal levels for tapegrass in the middle and upper estuary and above the optimal range for oysters in the lower estuary.**

**USACE Action:** On May 26, 2017 the USACE continued flows to the Caloosahatchee with a 7-day average target of **375 cfs** measured at S-79. No discharge from the Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request the District use adaptive management to provide sufficient freshwater pulse flows to the Caloosahatchee to prevent further harm to the estuary. There is sufficient water in the system to provide these flows and not harm the lake and other users. **In these dry conditions flow reductions should be made to all users not singularly directed at the Caloosahatchee where lethal levels of salinity are harming tape grass. We request weekly calls resume.**

Lake Okeechobee Level: **11.02 ft. (Beneficial Use Sub-Band)** Last week: **11.12 ft**

Lake Okeechobee Inflow: **121 cfs** Lake Okeechobee Outflow: **920 cfs**

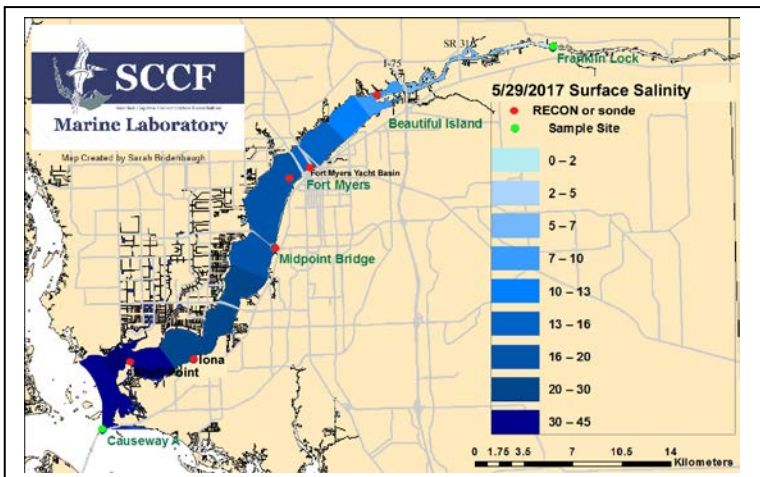
Weekly Rainfall: WP Franklin **0.81"** Ortona **0.58"** Moore Haven **0.89"**

Salinity Beautiful Island: **7.0 -13 psu** (SCCF RECON Marker 18) Previous wk **4.9 -9.3 psu**

Salinity Fort Myers: **13 – 16 psu** (SCCF Yacht Basin) Previous wk **12 – 17 psu**

MFL Status: **MFL Exceedance; 30-day moving average  $\geq 10$  psu: 64 days since 3/28/17**

Salinity Shell Point: **28 – 36 psu** (SCCF RECON) Previous wk **29 – 36 psu**

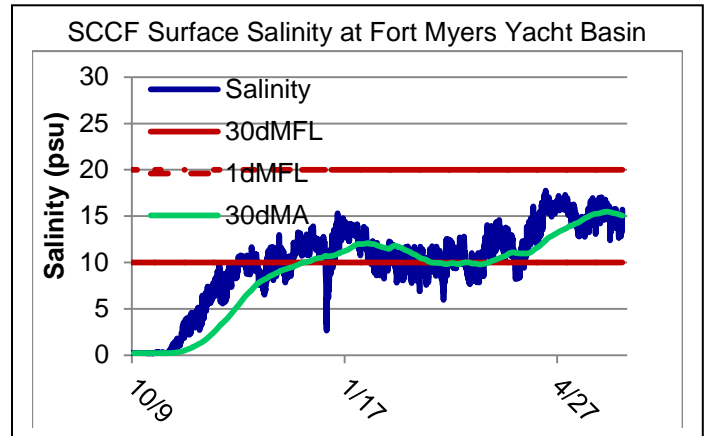


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	7.0 -12	< 5 psu	High
Fort Myers	13 – 16	<10 psu	MFL Exceed
Shell Point	28 – 36	25 - 32 psu	-
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	1.12	1 meter	In Range
Fort Myers	1.28	1 meter	In Range
E Sanibel	2.30	2.2 meters	In Range



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **418 cfs**. Over the past 14 days **26%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **73%** was delivered south to the EAA, 1% was directed to S-308, and the L8 **back flowed into the Lake**.

ACOE May 9 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
5/23/2017	300	243	337	472
5/24/2017	0	377	99	-5
5/25/2017	0	0	0	268
5/26/2017	450	414	145	-20
5/27/2017	975	876	NR	52
5/28/2017	600	658	514	152
5/29/2017	300	360	393	224
7 day Avg	375	418	NR	163



**Upstream of S-79/Franklin Conditions:** On 5/30/17 the Olga Water Treatment plant chlorides measured **93 mg/L**, apparent color was **84 CU** and turbidity measured **2.2 NTU**. **Significant algae** were noted at the plant intake the past 3 days. The plant is online at 2000 GPM.

**Upper Estuary Conditions:** The average salinity at Fort Myers, **14 psu**, is in the harmful range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point, **32 psu**, was in the optimal range for seagrass but above the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	35.9 – 36.7	2.8- 9.2	4.6 – 16.7	1.9 – 6.2
Tarpon Bay	35.5 – 36.2	3.4 – 6.4	5.0– 10.9	3.0 – 6.4

**Red Tide:** Recent samples collected alongshore southwest Florida from Pinellas to Collier counties indicate *Karenia brevis* is still present in "background" to "very low" concentrations (FWRI, SCHD, MML, CCPCD; 5/20-5/23). *Karenia brevis* was not present in samples collected in Charlotte Harbor and coastal Lee County. Detailed sample information and a summary of impacts can be obtained through FWC Fish and Wildlife Research Institute at:

<http://myfwc.com/redtidestatus>.

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
Beautiful Is	6.1	117	2.2	1.12
Fort Myers	3.0	103	1.1	1.28
E Sanibel	4.2	10.9	3.5	2.26

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

**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 Noah Valenstein

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: **May 30 - June 5, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **387 cfs**. **Inadequate freshwater is causing salinity to rise and continuing the Minimum Flow & Level (MFL) exceedance for the past 71 days at Fort Myers. Salinity is at lethal levels for tapegrass in the middle and upper estuary and above the optimal range for oysters in the lower estuary. Cyanobacteria blooms shut down the Olga Water Plant.**

**USACE Action:** On June 2, 2017 the USACE continued flows to the Caloosahatchee with a 7-day average target of **375 cfs** measured at S-79. No discharge from the Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request the District use adaptive management to provide sufficient freshwater pulse flows to the Caloosahatchee to prevent further harm to the estuary. There is sufficient water in the system to provide these flows and not harm the lake and other users. **Flow reductions should be made to all users not singularly directed at the Caloosahatchee where lethal levels of salinity are harming tape grass. We request weekly calls resume.**

Lake Okeechobee Level: **11.08 ft. (Beneficial Use Sub-Band)** Last week: **11.02 ft**

Lake Okeechobee Inflow: **303 cfs** Lake Okeechobee Outflow: **-1540 cfs**

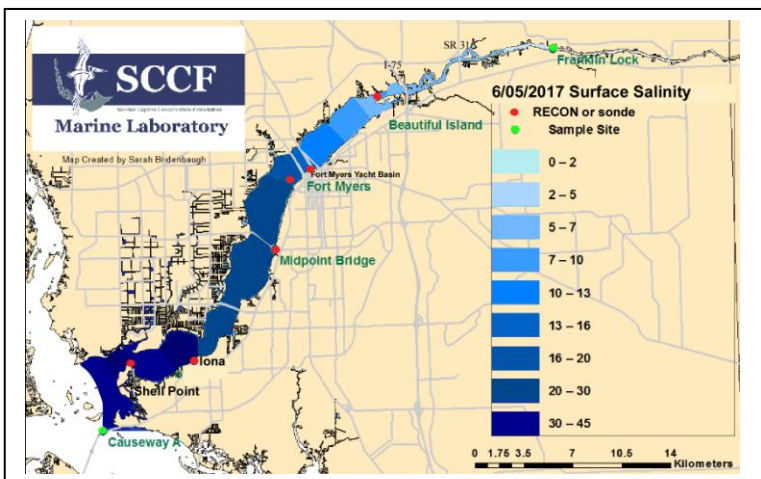
Weekly Rainfall: WP Franklin **2.53"** Ortona **5.70"** Moore Haven **3.12"**

Salinity Beautiful Island: **6.0 – 9.5 psu** (SCCF RECON Marker 18) Previous wk **7.0 -13 psu**

Salinity Fort Myers: **13 -16 psu** (SCCF Yacht Basin) Previous wk **13 – 16 psu**

MFL Status: **MFL Exceedance; 30-day moving average  $\geq 10$  psu: 71 days since 3/28/17**

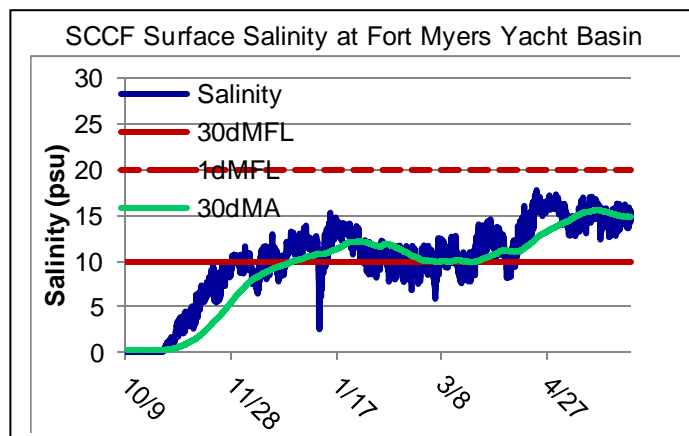
Salinity Shell Point: **29 – 36 psu** (SCCF RECON) Previous wk **28 – 36 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	<b>6.0 – 9.5</b>	< 5 psu	<b>High</b>
Fort Myers	<b>13 – 16</b>	<10 psu	<b>MFL Exceed</b>
Shell Point	<b>29 – 36</b>	25 - 32 psu	<b>High</b>
Light (25% Iz depth meters)			
Beautiful Is	<b>0.89</b>	1 meter	<b>Low</b>
Fort Myers	<b>1.15</b>	1 meter	<b>In Range</b>
E Sanibel	<b>2.30</b>	2.2 meters	<b>In Range</b>

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **387 cfs**. Over the past 14 days **12.3%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **85%** was delivered south to the EAA, **2.6%** to S-310. S-308 and the L8 **back flowed 16,387 acre feet into the Lake**.

ACOE June 2 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
5/30/2017	300	279	341	404
5/31/2017	0	91	343	232
6/1/2017	0	1	338	116
6/2/2017	450	598	141	-35
6/3/2017	975	825	0	0
6/4/2017	600	587	127	0
6/5/2017	300	331	329	0
7 day Avg	375	387	231	102

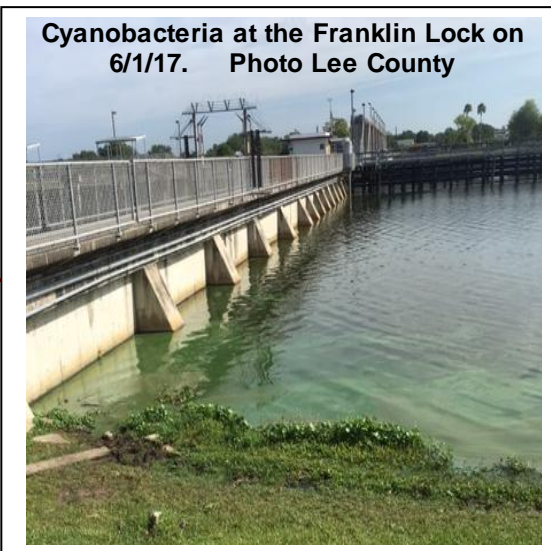


**Upstream of S-79/Franklin Conditions:** On 6/1/17 the Lee County Lab reported abundant cyanobacteria - *Dolichospermum* and *Microcystis* at the Alva Boat Ramp and accumulation upstream of the Franklin Lock.

On 6/6/17 the Olga Water Treatment plant chlorides measured **89 mg/L**, apparent color was **81 CU** and turbidity measured **2.58 NTU**. **Algae was present at the plant intake in lesser quantities over the past 3 days.** **The plant was taken offline due to algae on 5/30/17, and remains offline.**

**Upper Estuary Conditions:** The average salinity at Fort Myers, **15 psu**, is in the harmful range for tape grass. Chlorophyll was spiking at Beautiful Island, and dissolved oxygen concentrations were trending lower with **hypoxia detected at Fort Myers on 6/5/17.**

**Lower Estuary Condition:** The average salinity at Shell Point, **33 psu**, was in the optimal range for seagrass but **above the optimal range for oysters.**



**J.N. "Ding" Darling NWR: Hypoxia (<3mg/L) detected at McIntyre Creek three times over the last week.**

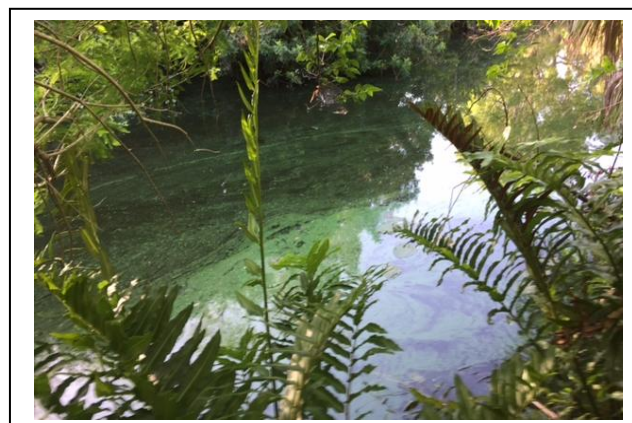
Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	35.7 – 36.7	2.3 – 9.1	6.2 – 14.2	3.0 – 7.1
Tarpon Bay	35.5 – 36.6	4.0 – 7.9	4.0– 16.6	2.5 – 6.9

**Red Tide:** On 6/2/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was observed at background concentrations in samples collected from Pinellas, Lee and Collier Counties.

**Wildlife Impacts:** The past week CROW, the Sanibel Wildlife hospital treated **2 brown pelicans** for probable brevetoxicosis. In the past 3 weeks on Sanibel, there have been **6 sea turtle** strandings: **5 Loggerheads** and **1 Kemps Ridley**.

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
Beautiful Is	12.4	161	2.2	0.89
Fort Myers	10.1	105	2.4	1.15
E Sanibel	3.0	14.2	2.9	2.30

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



**Cyanobacteria in canals upstream of Franklin Locks on 5/27/17. Photo Roxanne Gause**



**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 Noah Valenstein

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 Burns – 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: **June 6 - 12, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **5,609 cfs**. Within a week, inflows flipped from over two months of **too little water to excess - a net change of 5,222 cfs**. **All water came from the watershed with no flow from Lake Okeechobee.**

**USACE Action:** On June 3, 2017 the USACE discontinued flows to the Caloosahatchee due to significant rainfall throughout the region. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** To moderate the damaging high flows to the Caloosahatchee estuary (up to 10,000 cfs) from the watershed we request the Corps backflow water from S78 into the lake while low lake levels make this possible. As capacity becomes available we encourage as much water flow south to the WCAs as possible. **We request weekly calls resume.**

**Lake Okeechobee Level:** 11.79 ft. (Beneficial Use Sub-Band) Last week: 11.08 ft

**Lake Okeechobee Inflow:** 1,584 cfs **Lake Okeechobee Outflow:** -950 cfs

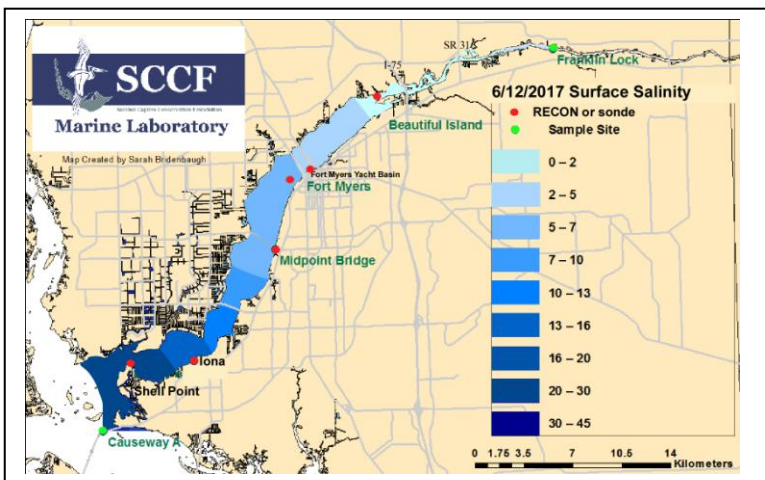
**Weekly Rainfall:** WP Franklin 6.09" Ortona 5.36" Moore Haven 5.95"

**Salinity Beautiful Island:** 0.3 – 9.2 psu (SCCF RECON Marker 18) Previous wk 6.0 – 9.5 psu

**Salinity Fort Myers:** 2.0 -16 psu (SCCF Yacht Basin) Previous wk 13 -16 psu

**MFL Status:** **MFL Exceedance of the 30-day moving average  $\geq 10$  psu: 78 days since 3/28/17**

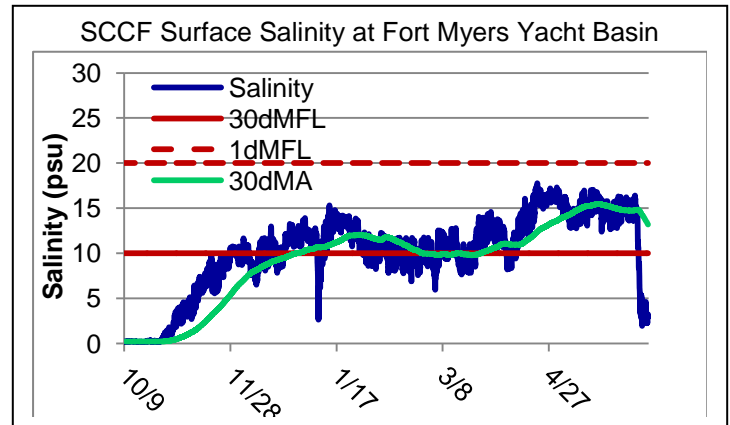
**Salinity Shell Point:** 13 - 36 psu (SCCF RECON) Previous wk 29 – 36 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	0.3 – 9.2	< 5 psu	High
Fort Myers	2.0 – 16	<10 psu	MFL Exceed
Shell Point	13 – 36	25 - 32 psu	Low/High
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.76	1 meter	Low
Fort Myers	0.73	1 meter	Low
Shell Pointe	1.25	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **5,609 cfs**. Over the past 14 days **24%** of Lake Okeechobee outflow was directed to the Caloosahatchee at S-77, **76%** was delivered south to the EAA. S-310, the L8 and S-308 **backflowed 92,689 acre feet into Lake Okeechobee**.

ACOE June 9 Releases at S79				
Date	Pulse Target	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
6/6/2017	300	1722	824	0
6/7/2017	0	5412	2557	0
6/8/2017	0	10000	NR	0
6/9/2017	450	6499	4490	0
6/10/2017	975	5233	2580	0
6/11/2017	600	6426	2961	0
6/12/2017	300	3970	2120	0
<b>7 day Avg</b>	<b>375</b>	<b>5609</b>	<b>2589</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 6/8/17 the Lee County Lab reported the presence of cyanobacteria, *Dolichospermum* and *Microcystis*, at the Alva Boat Ramp upstream of the Franklin Lock.

On 6/13/17 the Olga Water Treatment plant chlorides measured **51 mg/L**, apparent color was **84 CU** and turbidity measured **1.97 NTU**. The plant is off line for maintainance since 6/9/17.

**Upper Estuary Conditions:** The average salinity at Fort Myers, **4.7 psu**, was in the acceptable range for tape grass. Chlorophyll spiked to over **20 µg/L** at Beautiful Island on 6/6/17 but decreased as flows increased. Chlorophyll spiked to over **40 µg/L** at Fort Myers. Dissolved oxygen concentrations at Fort Myers RECON increased during a windy period and then fell as low as **1 mg/L** on 6/12/17 as a rapid increase in runoff increased stratification.

On 6/8/17 the Lee County Lab reported the presence of cyanobacteria, *Dolichospermum* and *Microcystis* at the Davis Boat Ramp.

**Lower Estuary Condition:** The average salinity at Shell Point, **21 psu**, was in the optimal range for oysters but **below** the optimal range for seagrass.

J.N. "Ding" Darling NWR:

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	28.4 – 35.8	3.1 – 8.5	5.0 – 18.2	2.1 – 6.1
Tarpon Bay	28.1 – 36.0	4.5 – 8.8	4.5 – 18.8	2.4 – 8.4

**Red Tide:** On 6/9/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was not observed in samples collected in Counties south of Sarasota.

**Shellfish Advisory:** On 6/8/17 the Florida Dept of Agriculture and Consumer Services temporarily **closed #6222 Pine Island Sound Section 2 Shellfish Harvest Area (Matlacha Pass)** for the harvest of oysters, clams, and mussels. In this context, shellfish does not include scallops, shrimp, or crabs.

**Wildlife Impacts:** The past week Sanibel reported **2 sea turtle** strandings: **1 loggerhead** and **1 Kemps Ridley**.

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
Beautiful Is	11.0	210	1.6	0.76
Fort Myers	30.5	177	4.5	0.73
Shell Point	4.1	92.6	3.7	1.25

Target light penetration: CE- Caloosahatchee Estuary =1 m

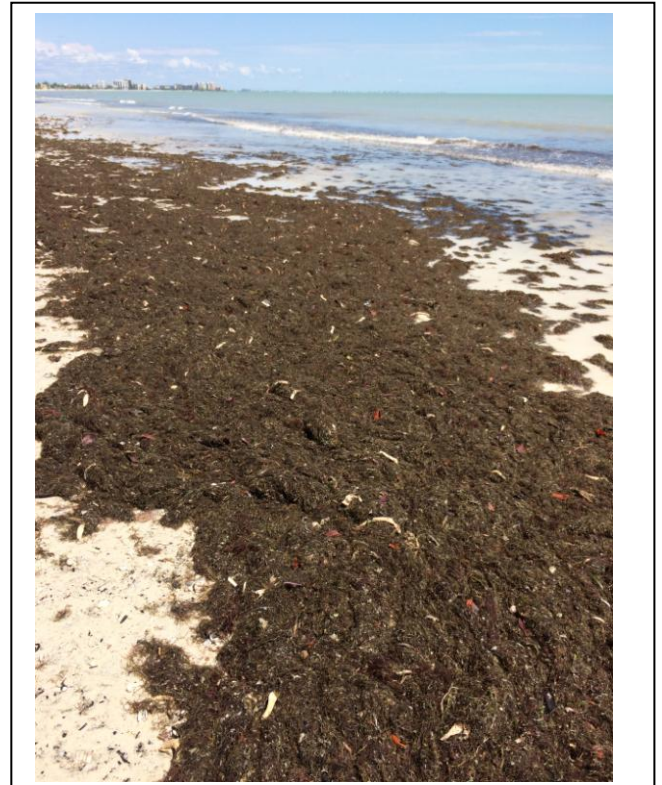
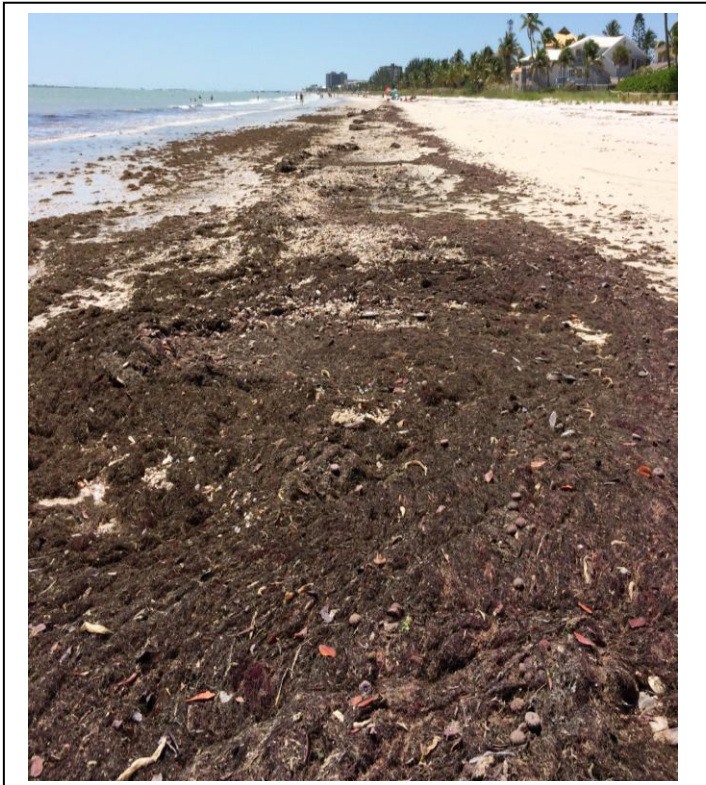
SCB-San Carlos Bay = 2.2 meters

Definition of 25% lz: z where I is 25% of surface I.  
I = irradiance, z= depth



Fort Myers Beach wrack line on 6/9/17. Red drift algae, pen shells, urchins, crabs. Photo Town of Fort Myers Beach.





**Wrack line accumulating at mid island on Fort Myers Beach, several feet wide and inches deep on 6/9/17. Photos Town of Fort Myers Beach.**



**Snowy plover chicks on Lovers Key. Photo Lee County**



**Black necked stilt chicks feeding in the Ani Pond at the DDNW Refuge Bailey Tract. Flooding from high rainfall has displaced black neck stilts from nests around Tarpon Bay. Photo Gail Campbell**



**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 Noah Valenstein

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 Burns – 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: **June 13 - 19, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **4,496 cfs**. Water color has darkened significantly with the higher runoff over the past 2 weeks. All water came from the watershed with no flow from Lake Okeechobee.

**USACE Action:** The USACE discontinued flows to the Caloosahatchee on June 3, 2017 due to significant rainfall throughout the region. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**Recommendation:** We request the Corps continue no releases to the Caloosahatchee from Lake Okeechobee until excessively high watershed flows subside. As capacity becomes available we encourage the use of as much watershed storage as possible.

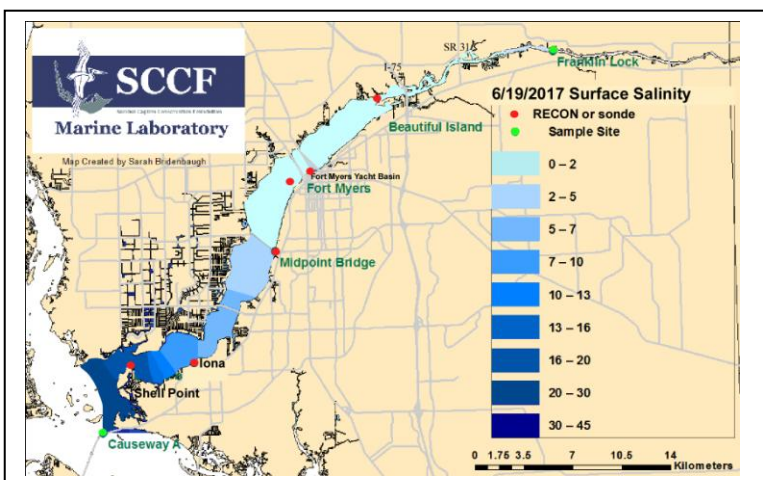
**Lake Okeechobee Level:** 12.15 ft. (Base Flow Sub-Band)      **Last week:** 11.79 ft  
**Lake Okeechobee Inflow:** 4,775 cfs      **Lake Okeechobee Outflow:** -1,458 cfs  
**Weekly Rainfall:** WP Franklin 4.32"      Ortona 1.85"      Moore Haven 1.87"

**Salinity Beautiful Island:** 0.3 - 0.7 psu (SCCF RECON Marker 18)      Previous wk 0.3 - 9.2 psu

**Salinity Fort Myers:** 0.4 - 3.3 psu (SCCF Yacht Basin)      Previous wk 2.0 - 16 psu

**MFL Status:** **MFL Exceedance of the 30-day moving average  $\geq 10$  psu: 85 days since 3/28/17**

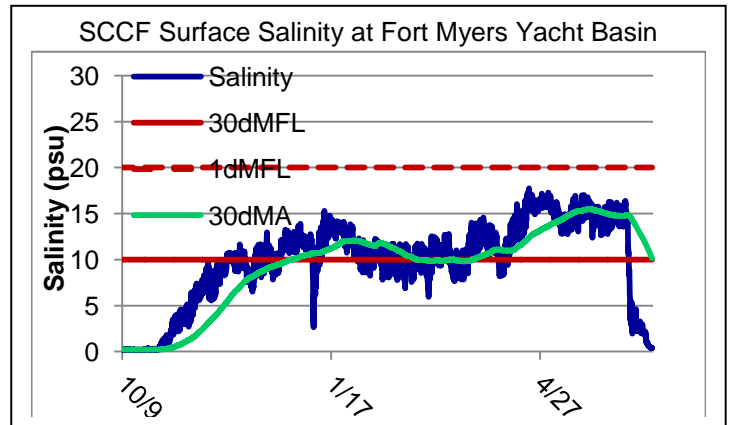
**Salinity Shell Point:** 7.8 - 31 psu (SCCF RECON)      Previous wk 13 - 36 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	0.3 – 0.7	< 5 psu	In Range
Fort Myers	0.4 - 3.3	<10 psu	In Range
Shell Point	7.8 - 31	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.75	1 meter	Low
Fort Myers	0.70	1 meter	Low
Shell Pointe	1.21	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **4,496 cfs**. Over the past 14 days **93,832 acre feet** back flowed into Lake Okechobee from all outlets except S-77. S-308 back flowed 55%, the L8 17%, S-310 16% and the EAA back flowed 12%.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
6/13/2017	3761	1630	0
6/14/2017	3732	1657	0
6/15/2017	4300	1650	0
6/16/2017	6053	1650	0
6/17/2017	6045	2269	0
6/18/2017	3520	1229	0
6/19/2017	4061	951	0
<b>7 day Avg</b>	<b>4496</b>	<b>1577</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 6/20/17 the Olga Water Treatment plant chlorides measured **52 mg/L**, apparent color was **167 CU** and turbidity measured **2.33 NTU**. No visible algae at the plant intake the last 5 days. The plant is off line for maintenance.

**Upper Estuary Conditions:** On 6/15/17 the Lee County Lab reported the presence of cyanobacteria, *Microcystis* and *Dolichospermum*, at the Davis Boat Ramp. The salinity at Fort Myers was in the acceptable range for tape grass. Chlorophyll from nanocyanos spiked to over **60 µg/L** at Fort Myers on 6/13/17 but decreased as salinity dropped. Dissolved oxygen concentrations at Beautiful Island RECON went hypoxic daily during the week, while at Fort Myers, the average concentration increased from 2 to 4 mg/L as salinities dropped.

**Lower Estuary Condition:** The average salinity at Shell Point, **20 psu**, was in the optimal range for oysters but **below** the optimal range for seagrass.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	27.4 – 29.0	3.3 – 9.6	13.4 – 17.2	2.1 – 6.1
Tarpon Bay	25.2 – 31.4	5.0 – 8.5	11.1 – 23.0	2.0 – 7.1

**Red Tide:** On 6/16/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was not observed in samples collected in Counties south of Sarasota.

**Shellfish Advisory:** On 6/8/17 the Florida Dept of Agriculture and Consumer Services temporarily **closed** #6222 Pine Island Sound Section 2 Shellfish Harvest Area (Matlacha Pass) for the harvest of oysters, clams, and mussels. In this context, shellfish does not include scallops, shrimp, or crabs.

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
Beautiful Is	12.1	210	2.0	0.75
Fort Myers	15.2	210	5.5	0.70
Shell Point	13.9	98.3	2.8	1.21

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

**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 Noah Valenstein

From: Periodic Scientists Conference Call Participants  
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 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: **June 20 - 26, 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:** Freshwater flow into the estuary at S-79 during the past week averaged **2,596 cfs**. **High Colored Dissolved Organic Matter (CDOM) has reduced light attenuation throughout the estuary.** **A bloom of *Skeletonema* sp. was present at Shell Point.** **Flows to estuary during the past week came entirely from the watershed, with no flow from Lake Okeechobee.**

**USACE Action:** The USACE discontinued flows to the Caloosahatchee on June 3, 2017 due to significant rainfall throughout the region. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. **The SFWMD initiated back pumping to Lake O from the EAA, 6/24/17.**

**Recommendation:** We recommend not making any releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of as much watershed storage as possible within distributed storage projects and other lands owned or under contract by the State.

**Lake Okeechobee Level:** 12.30 ft. (Beneficial Use Sub-Band) Last week: 12.15 ft

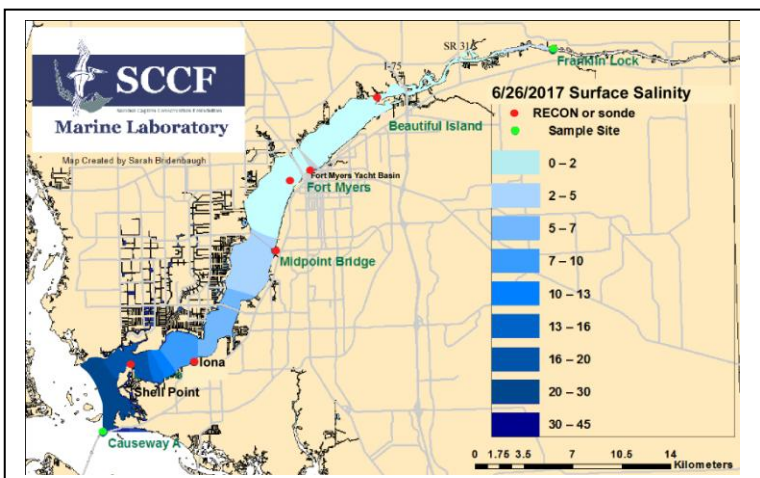
**Lake Okeechobee Inflow:** 4,795 cfs **Lake Okeechobee Outflow:** - 744 cfs

**Weekly Rainfall:** WP Franklin 1.06" Ortona 0.56" Moore Haven 0.41"

**Salinity Beautiful Island:** 0.3 - 0.4 psu (SCCF RECON Marker 18) Previous wk 0.3 - 0.7 psu

**Salinity Fort Myers:** 0.4 - 0.4 psu (SCCF Yacht Basin) Previous wk 0.4 - 3.3 psu

**Salinity Shell Point:** 9.9 - 33 psu (SCCF RECON) Previous wk 7.8 - 31 psu

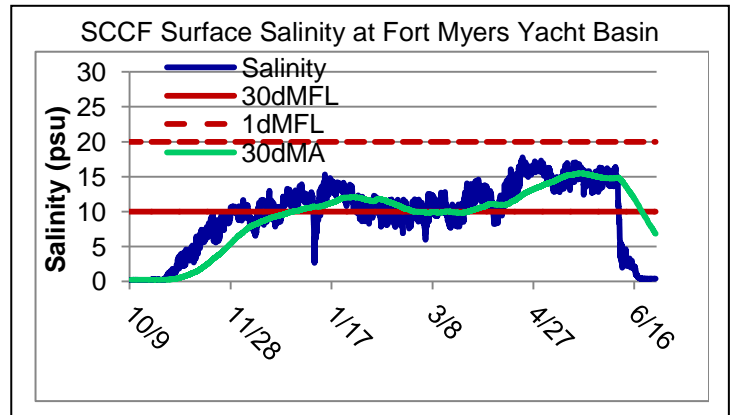


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	0.3 – 0.4	< 5 psu	In Range
Fort Myers	0.4 - 0.4	<10 psu	In Range
Shell Point	9.9 - 33	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.76	1 meter	Low
Fort Myers	0.70	1 meter	Low
Shell Pointe	0.92	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **2,596 cfs**. Over the past 14 days **43,553 acre feet** was back flowed into Lake Okeechobee from all outlets except S-77. S-308 back flowed 48%, the L8 23%, S-310 19% and the EAA backpumped 9% into Lake O at Belle Glade.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
6/20/2017	4182	1509	0
6/21/2017	3334	1229	0
6/22/2017	3098	882	0
6/23/2017	2284	891	0
6/24/2017	2420	876	0
6/25/2017	1811	588	0
6/26/2017	1043	372	0
<b>7 day Avg</b>	<b>2596</b>	<b>907</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 6/27/17 the Olga Water Treatment plant chlorides measured **55 mg/L**, apparent color was **179 CU** and turbidity measured **2.36 NTU**. Slight traces of algae at the plant intake the past week. The plant is off line for maintenance.

**Upper Estuary Conditions:** Salinity at Fort Myers was in the acceptable range for tape grass.

**Lower Estuary Condition:** Water column chlorophyll was spiking to as high as **20 µg/L** due to a bloom of *Skeletonema* sp. The average salinity at Shell Point, **24 psu**, was in the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	28.1 -31.7	3.0 – 6.9	9.6 – 18.1	2.1 – 5.2
Tarpon Bay	27.5 – 33.8	4.2 – 6.9	7.1 – 22.1	2.5 – 6.5

**Red Tide:** On 6/23/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was found in background to low concentrations in Manatee, Sarasota, Charlotte and Lee Counties.

**Shellfish Advisory:** On 6/22/17 the Florida Dept of Agriculture and Consumer Services **re-opened #6222 Pine Island Sound Section 2 Shellfish Harvest Area (Matlacha Pass)** for the harvest of oysters, clams, and mussels.

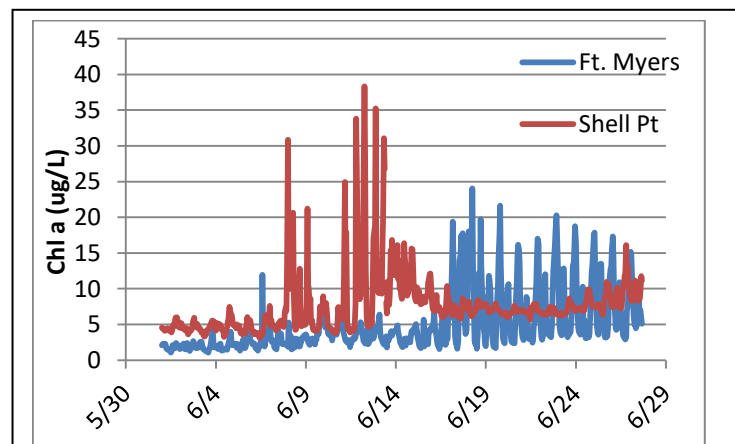
**Wildlife:** A baby manatee was spotted in Tarpon Bay with adult manatees who were eating mangrove leaves.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Beautiful Is</b>	12.5	210	1.5	0.76
<b>Fort Myers</b>	16.8	209	5.1	0.70
<b>Shell Point</b>	11.0	75.6	1.8	0.92

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



**Chlorophyll response to increased nutrients from runoff at Fort Myers and Shell Point RECONS. A spike in chlorophyll at Fort Myers started a couple days after the salinities started dropping, and took 9 days to appear at Shell Point.**

**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, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants  
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 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: **June 27 - July 3, 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:** Freshwater flow into the estuary at S-79 over the past week averaged **1,688 cfs. High Colored Dissolved Organic Matter (CDOM) has reduced light attenuation throughout the estuary. Flows to the estuary during the past 4.5 weeks originated from the watershed, with no flow from Lake Okeechobee.**

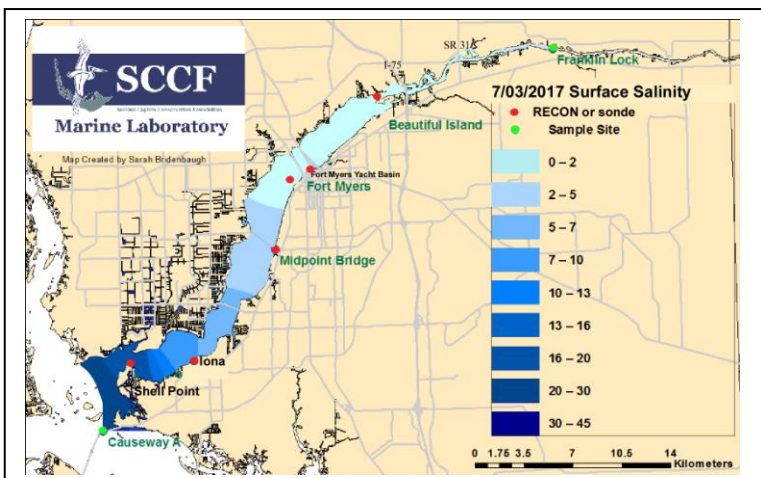
**USACE Action:** The USACE discontinued flows to the Caloosahatchee on June 3, 2017 due to significant rainfall throughout the region. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. **The SFWMD initiated back pumping to Lake O from the EAA, 6/24/17.**

**Recommendation:** We recommend not making any releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of as much watershed storage as possible within distributed storage projects and other lands owned or under contract by the State.

**Lake Okeechobee Level:** 12.42 ft. (Beneficial Use Sub-Band) Last week: 12.30 ft  
**Lake Okeechobee Inflow:** 3,649 cfs **Lake Okeechobee Outflow:** - 852 cfs  
**Weekly Rainfall:** WP Franklin 2.65" Ortona 0.91" Moore Haven 2.92"

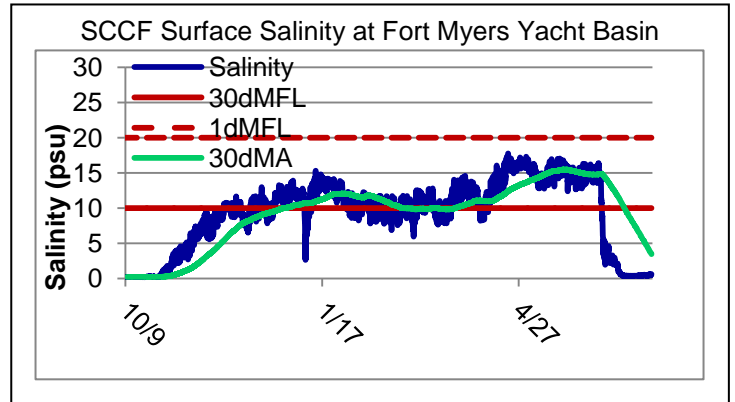
**Salinity Beautiful Island:** 0.2 - 0.3 psu (SCCF RECON Marker 18) Previous wk 0.3 - 0.4 psu  
**Salinity Fort Myers:** 0.4 - 0.7 psu (SCCF Yacht Basin) Previous wk 0.4 - 0.4 psu  
**Salinity Shell Point:** 9.7 - 30 psu (SCCF RECON) Previous wk 9.9 - 33 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	0.2 - 0.3	< 5 psu	In Range
Fort Myers	0.4 - 0.7	<10 psu	In Range
Shell Point	9.7 - 30	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.75	1 meter	Low
Fort Myers	0.71	1 meter	Low
Shell Pointe	1.23	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **1,688 cfs**. Over the past 14 days **35,838 acre feet** was back flowed into Lake Okeechobee from all outlets except S-77. S-308 back flowed 52%, the L8 32%, S-310 5% and the EAA backpumped 11% into Lake O at S-351.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
6/27/2017	1346	173	0
6/28/2017	1424	272	0
6/29/2017	2674	704	0
6/30/2017	1614	529	0
7/1/2017	1234	468	0
7/2/2017	1947	522	0
7/3/2017	1576	347	0
<b>7 day Avg</b>	<b>1688</b>	<b>431</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** Cyanobacteria, *Dolichospermum* and *Microcystis*, was present in samples taken by Lee County Environmental Lab upstream of the Franklin Lock on 6/29/17. On 7/5/17 the Olga Water Treatment plant chlorides measured **70 mg/L**, apparent color was **156 CU** and turbidity measured **2.00 NTU**. The plant is off line for maintenance.

**Upper Estuary Conditions:** Salinity at Fort Myers was in the acceptable range for tape grass. Dissolved oxygen levels at Beautiful Island RECON averaged below **3 mg/L** and dropped during the week at Fort Myers RECON to below **3 mg/L**. Chlorophyll levels were elevated at both sites.

**Lower Estuary Condition:** The average salinity at Shell Point, **21 psu**, was in the optimal range for oysters.

**Beach Conditions:** Water clarity along Fort Myers Beach and the bay side of Sanibel has decreased following increased freshwater flows from the Caloosahatchee watershed. Sparse accumulations of filamentous green and red drift algae are present along Fort Myers Beach around mid island.

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

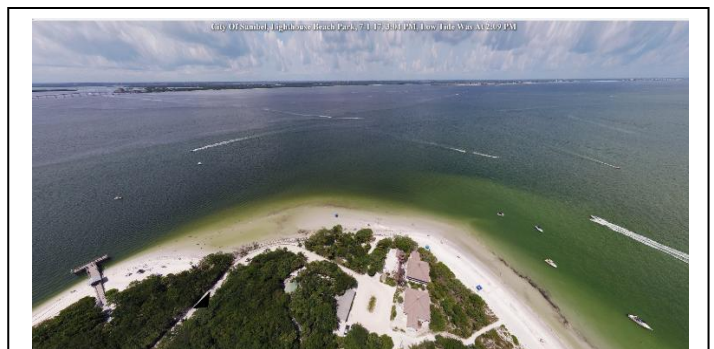
Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	29.9 – 26.3	3.1 – 9.3	14.8 – 19.6	3.2 – 8.4
Tarpon Bay	25.6 – 30.1	3.2 – 7.5	16.5 – 26.7	3.1 – 6.6

**Red Tide:** On 6/30/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was found in background concentrations only in Pinellas County the past week.

**Wildlife Impacts:** SCCF reports **4 sea turtle deaths** the past 2 weeks. **1 juvenile green sea turtle** death from a boat strike on the Sanibel causeway, **2 sub-adult loggerheads** hit by boats on Sanibel and **1 Kemp's ridley** on Sanibel with no visible cause of death.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Beautiful Is</b>	12	210	2.4	0.75
<b>Fort Myers</b>	17	203	5.8	0.71
<b>Shell Point</b>	7.3	92.6	3.4	1.23

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



Aerial photo of Sanibel Lighthouse Beach Park taken on 7/1/17. Water clarity has decreased throughout San Carlos Bay following increased freshwater flows from the watershed. Photo San-Cap Aerial, City of Sanibel.



**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, DEP Secretary Noah Valenstein

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 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **July 4 - 10, 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:** Freshwater flow into the estuary at S-79 over the past week averaged **860 cfs**. **High Colored Dissolved Organic Matter (CDOM) has increased light attenuation throughout the estuary.**

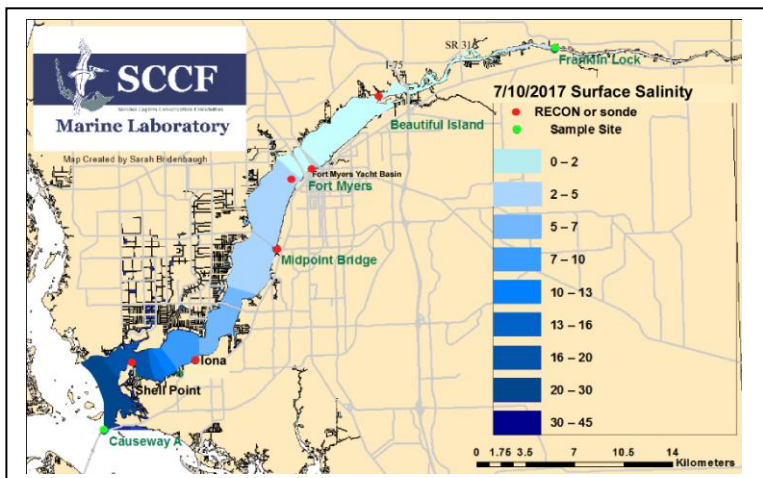
**USACE Action:** The USACE discontinued flows to the Caloosahatchee on June 3, 2017 due to significant rainfall throughout the region. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. **The SFWMD stopped back pumping to Lake O from the EAA on 7/5/17.**

**Recommendation:** We recommend not making any releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of as much watershed storage as possible within distributed storage projects and other lands owned or under contract by the State to avoid the drastic changes in salinity being experienced by the estuary.

**Lake Okeechobee Level:** 12.45 ft. (Beneficial Use Sub-Band) Last week: 12.42 ft  
**Lake Okeechobee Inflow:** 1,661 cfs **Lake Okeechobee Outflow:** - 772 cfs  
**Weekly Rainfall:** WP Franklin 0.24" Ortona 0" Moore Haven 2.73"

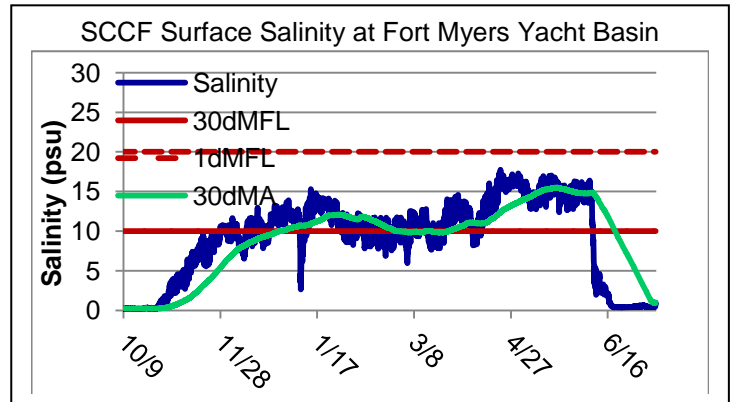
**Salinity Beautiful Island:** 0.2 - 0.3 psu (SCCF RECON Marker 18) Previous wk 0.2 - 0.3 psu  
**Salinity Fort Myers:** 0.4 - 0.7 psu (SCCF Yacht Basin) Previous wk 0.4 - 0.7 psu  
**Salinity Shell Point:** 9.8 - 30 psu (SCCF RECON) Previous wk 9.7 - 30 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	0.2 - 0.3	< 5 psu	In Range
Fort Myers	0.4 - 0.7	<10 psu	In Range
Shell Point	9.8 - 30	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Beautiful Is	0.52	1 meter	Low
Fort Myers	0.51	1 meter	Low
Shell Pointe	1.27	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **860 cfs**. Over the past 14 days **23,851 acre feet of water was back flowed into Lake Okeechobee; 50% each from S-308 and L8**. Only **2,952 AF** of water was discharged from the Lake. **S-310 received 80% and 20% was discharged to S-77**.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
7/4/2017	1044	173	0
7/5/2017	1452	174	0
7/6/2017	897	107	102
7/7/2017	500	0	154
7/8/2017	608	0	24
7/9/2017	590	NR	0
7/10/2017	930	NR	0
<b>7 day Avg</b>	<b>860</b>	<b>-</b>	<b>40</b>



**Upstream of S-79/Franklin Conditions:** Cyanobacteria including *Microcystis*, was present in samples taken by Lee County Environmental Lab upstream of the Franklin Lock on 7/6/17. On 7/11/17 the Olga Water Treatment plant chlorides measured **55 mg/L**, apparent color was **156 CU** and turbidity measured **1.83 NTU**. No visible algae in the plant intake the past week. The plant is off line for maintenance.

**Upper Estuary Conditions:** Salinity at Fort Myers was in the acceptable range for tape grass. **Dissolved oxygen levels at Beautiful Island RECON averaged below 3 mg/L again and dropped during the week at Fort Myers RECON to below 3 mg/L**. Chlorophyll, phycoerythrin (estuarine cyanobacteria) and FDOM levels were elevated at both sites reducing available light for tape grass and widgeon grass.

**Lower Estuary Condition:** SCCF Marine Lab staff identified a dinoflagellate bloom of *Ceratium* sp near the dock in Tarpon Bay on Sanibel. The average salinity at Shell Point, **21 psu**, was in the optimal range for oysters.

**Beach Conditions:** Water clarity along Fort Myers Beach and the bay side of Sanibel continues to be dark. Sparse accumulations of filamentous green and red drift algae are present along Fort Myers Beach.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	26.1 – 28.6	2.3 – 7.7	12.7 – 21.0	3.6 – 8.4
Tarpon Bay	25.0 – 30.9	3.2 – 6.4	12.6 – 27.5	3.1 – 8.0

**Red Tide:** On 7/7/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was found in background concentrations in the Gulf only in Franklin County (NW Florida) the past week.

**Shellfish Advisory:** On 7/11/17 The Florida Department of Agriculture and Consumer Services temporarily **closed #6222 Pine Island Sound Section 2 (Matlacha Pass) Shellfish Harvest Area due to excessive rainfall**. **WILD OYSTER HARVEST SEASON IS CLOSED FOR THE MONTHS OF JULY - SEPTEMBER FROM PINELLAS TO COLLIER COUNTIES**.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Beautiful Is</b>	12.2	350	1.6	0.52
<b>Fort Myers</b>	16.5	343	3.6	0.51
<b>Shell Point</b>	7.3	92.6	2.2	1.27

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

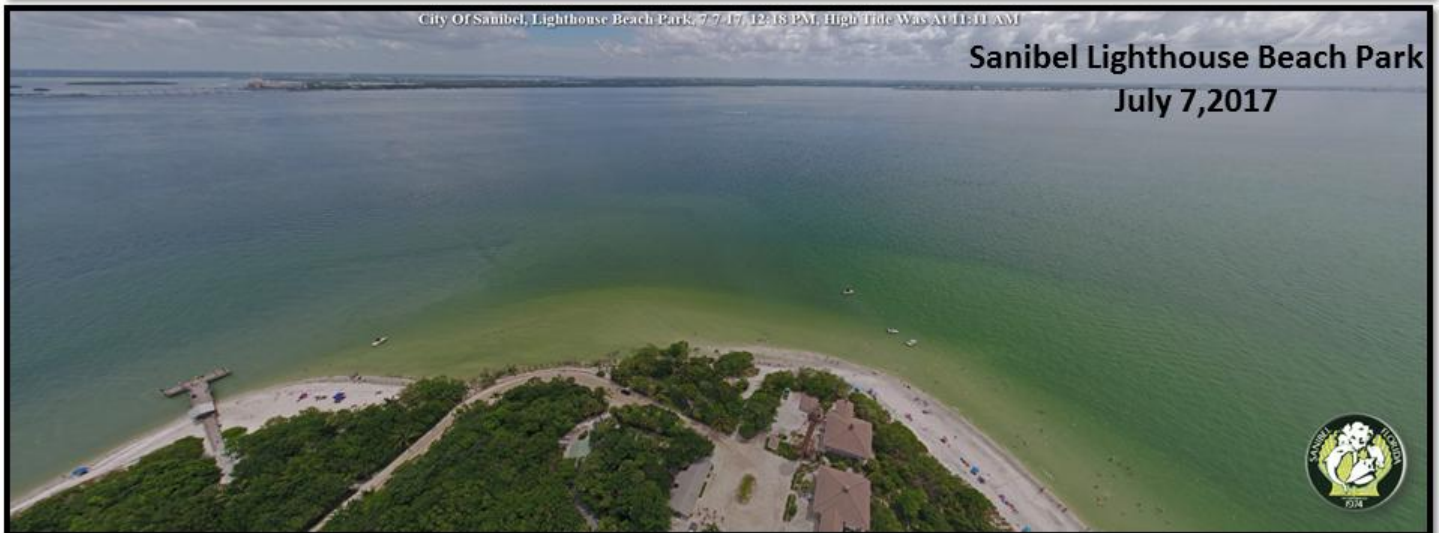
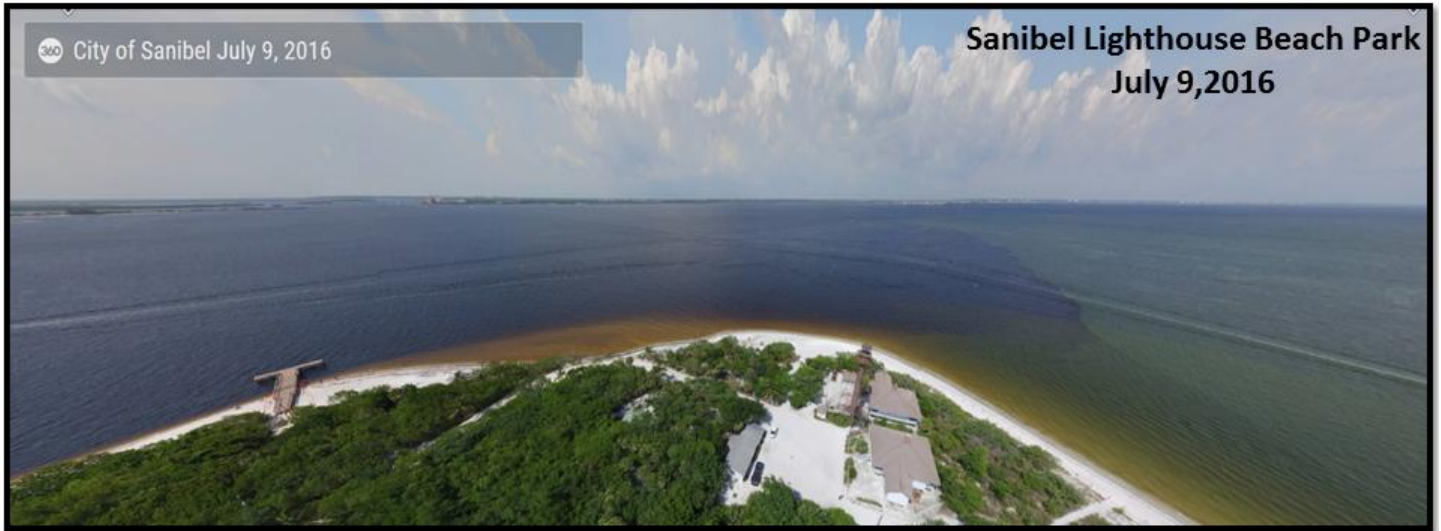
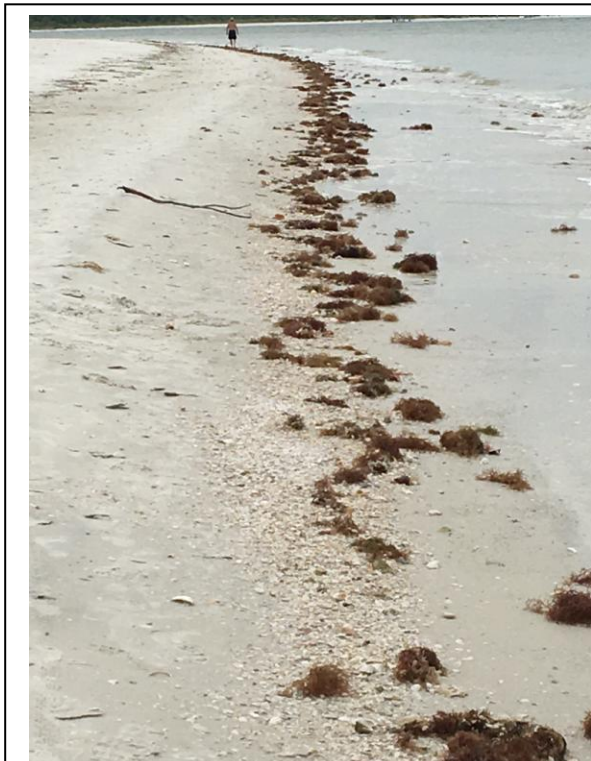


Photo comparison of water conditions at Sanibel's Lighthouse Beach in July 2016 and 2017. Photo San-Cap Aerial, City of Sanibel



Accumulations of red drift and filamentous green algae on Fort Myers Beach 7/11/17. Photo left Lee County, Below Town of Fort Myers Beach.





**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, DEP Secretary Noah Valenstein

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 Burns – 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: **July 11 - 17, 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:** Freshwater flow into the estuary at S-79 over the past week averaged **1,346 cfs**. **High Colored Dissolved Organic Matter (CDOM) has increased light attenuation throughout the estuary.**

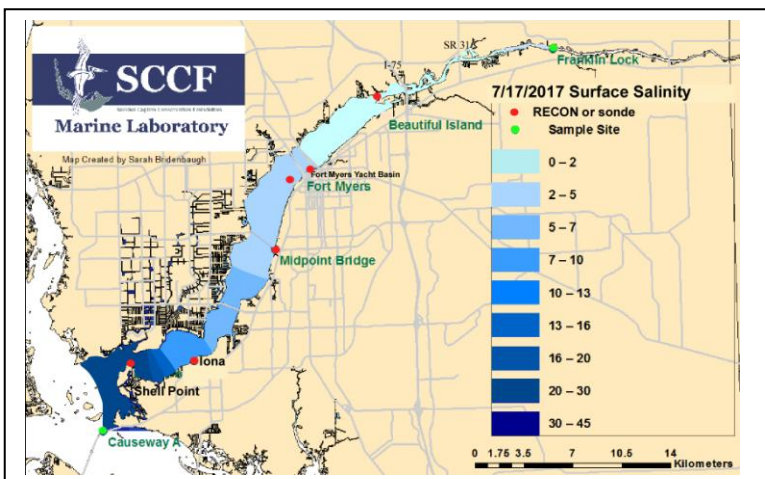
**USACE Action:** The USACE discontinued flows to the Caloosahatchee on June 3, 2017 due to significant rainfall throughout the region. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. **The SFWMD stopped back pumping to Lake O from the EAA on 7/5/17.**

**Recommendation:** We recommend continuing no releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of all available watershed storage capacity within distributed storage projects and other lands owned or under contract by the State to avoid drastic changes in estuary salinity.

**Lake Okeechobee Level:** 12.58 ft. (Beneficial Use Sub-Band) Last week: 12.45 ft  
**Lake Okeechobee Inflow:** 2,160 cfs **Lake Okeechobee Outflow:** - 484 cfs  
**Weekly Rainfall:** WP Franklin 2.04" Ortona 1.48" Moore Haven 1.64"

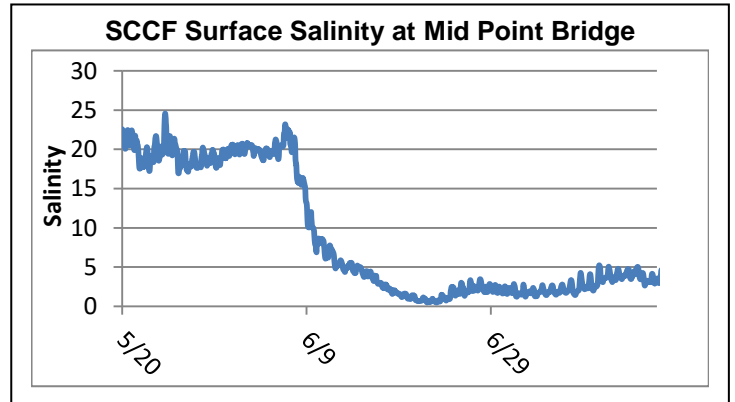
**Salinity Beautiful Island:** ND (SCCF RECON Marker 18) Previous wk 0.2 - 0.3 psu  
**Salinity Fort Myers:** 0.3- 5.1 psu (SCCF RECON) Previous wk 0.3 - 2.9 psu  
**Salinity Shell Point:** 11- 30 psu (SCCF RECON) Previous wk 9.8 - 30 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.3 - 5.1	<10 psu	In Range
Shell Point	11 - 30	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.62	1 meter	Low
Shell Pointe	1.27	2.2 meters	Low
Causeway	1.67	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged 1,346 cfs. Over the past 14 days 25,017 acre feet of water was back flowed into Lake Okeechobee; 51% from S-308, 42% from L8 and 7% from S-310. Only 2,955 AF of water was discharged from the Lake; 46% to the EAA, 34% to S310 and 20% to S-77.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
7/11/2017	888	274	0
7/12/2017	935	353	0
7/13/2017	1361	350	0
7/14/2017	1417	357	0
7/15/2017	1578	531	0
7/16/2017	1722	665	0
7/17/2017	1518	658	0
<b>7 day Avg</b>	<b>1346</b>	<b>455</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** Cyanobacteria including *Microcystis* and *Dolichospermum* were present in samples taken by Lee County Environmental Lab upstream of the Franklin Lock on 7/13/17. On 7/11/17 the Olga Water Treatment plant chlorides measured 55 mg/L, apparent color was 155 CU and turbidity measured 1.38 NTU. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** *Microcystis* cyanobacteria was in samples taken by Lee County Environmental Lab at the Davis Boat Ramp on 7/13/17. Salinity at Fort Myers was in the acceptable range for tape grass. Dissolved oxygen levels at the Fort Myers RECON dropped below 3 mg/L several times during the week, and dropped below 2 mg/L on 7/17 while chlorophyll was spiking above 11 from 7/13 to 7/17.

**Lower Estuary Condition:** Water column chlorophyll levels were elevated in much of Pine Island Sound because of diatoms with *Chaetoceros* spp. most abundant. Dinoflagellates including *Prorocentrum* sp. were found with the diatoms in Rocky Channel near mid Sound. The average salinity at Shell Point, 21 psu, was in the optimal range for oysters.

**Beach Conditions:** Coastal water clarity continues to be dark due to freshwater runoff from the watershed. Sparse accumulations of filamentous green and red drift algae are present along Sanibel. On Fort Myers Beach water is dark with a slight green hue. Red drift and filamentous green algae is appearing through the mid and south sections of the island with thicker deposits occurring along the south end.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	25.5 – 27.5	2.3 – 9.5	16.7 – 23.3	3.5 – 9.1
Tarpon Bay	25.2 – 30.1	3.5 – 7.0	15.8 – 29.3	3.1 – 8.3

**Red Tide:** On 7/14/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was found in background concentrations in Pinellas, Manatee and Lee Counties the past week.

**Shellfish Advisory:** On 7/11/17 The Florida Department of Agriculture and Consumer Services temporarily **closed** #6222 Pine Island Sound Section 2 (Matlacha Pass) Shellfish Harvest Area. **WILD OYSTER HARVEST SEASON IS CLOSED FOR THE MONTHS OF JULY - SEPTEMBER FROM PINELLAS TO COLLIER COUNTIES.**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	22	237	6.1	0.62
<b>Shell Point</b>	3.1	92.6	3.5	1.27
<b>Causeway</b>	3.0	40.4	5.2	1.67

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

**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, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants  
 Paul Tritaik - J.N. "Ding" Darling National Wildlife Refuge (NWR) Complex  
 James Evans & Holly Milbrandt - City of Sanibel  
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 Rae Burns – 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: **July 18 - 24, 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:** Freshwater flow into the estuary at S-79 over the past week averaged **2,018 cfs**. **Water came entirely from watershed runoff, with no flow from Lake Okeechobee. High Colored Dissolved Organic Matter (CDOM) continues to attenuate light throughout the estuary.**

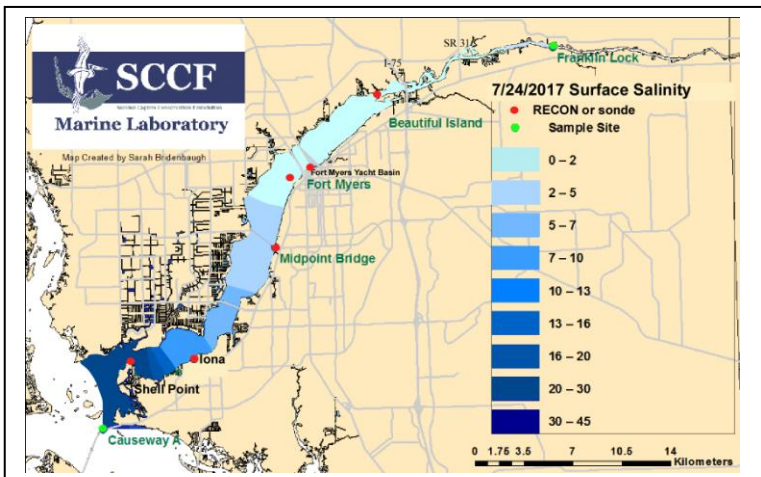
**USACE Action:** The USACE discontinued flows to the Caloosahatchee on June 3, 2017 due to significant rainfall throughout the region. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. **The SFWMD stopped back pumping to Lake O from the EAA on 7/5/17.**

**Recommendation:** We recommend continuing no releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of all available watershed storage capacity within distributed storage projects and other lands owned or under contract by the State to avoid drastic changes in estuary salinity.

**Lake Okeechobee Level:** 12.71 ft. (Base Flow Sub-Band) Last week: 12.58 ft  
**Lake Okeechobee Inflow:** NR cfs **Lake Okeechobee Outflow:** - 469 cfs  
**Weekly Rainfall:** WP Franklin 1.38" Ortona 0.95" Moore Haven 1.03"

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18) Previous wk ND  
**Salinity Fort Myers:** 0.3 - 5.1 psu (SCCF RECON) Previous wk 0.3 - 5.1 psu  
**Salinity Shell Point:** 12 - 30 psu (SCCF RECON) Previous wk 11 - 30 psu

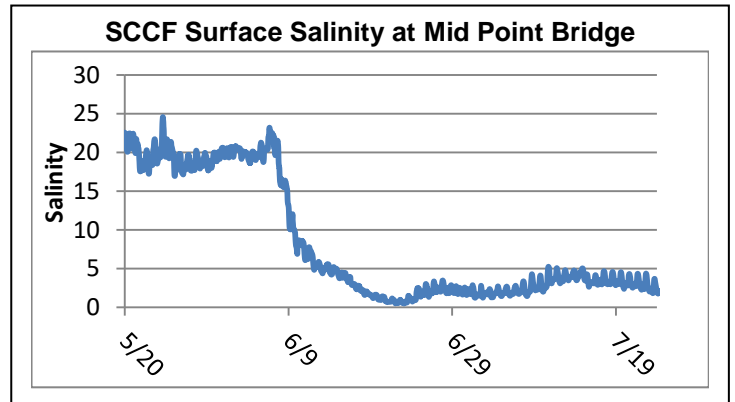


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.3 - 5.1	<10 psu	In Range
Shell Point	12 - 30	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.53	1 meter	Low
Shell Pointe	1.19	2.2 meters	Low
Causeway	1.32	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **2,018 cfs**. Over the past 14 days **22,622 acre feet of water was back flowed into Lake Okeechobee**; 52% from S-308, 33% from L8 and 15% from S-310. Only **1,706 AF** of water was discharged from the Lake; 97% to the EAA and 3% to S-77.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
7/18/2017	1824	657	0
7/19/2017	1513	666	0
7/20/2017	1766	660	0
7/21/2017	1936	663	0
7/22/2017	2434	769	0
7/23/2017	2333	820	0
7/24/2017	2320	852	0
<b>7 day Avg</b>	<b>2018</b>	<b>727</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 7/25/17 the Olga Water Treatment plant chlorides measured **58 mg/L**, apparent color was **118 CU** and turbidity measured **0.91 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** Salinity at Fort Myers was in the acceptable range for tape grass. **Dissolved oxygen levels at the Fort Myers RECON were below 3 mg/L for the first part of the week.**

**Lower Estuary Condition:** The average salinity at Shell Point, **20 psu**, was in the optimal range for oysters.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	25.8 – 27.6	2.0 – 7.9	16.5 – 21.12	4.3 – 9.5
Tarpon Bay	26.5 – 31.6	3.3 – 7.3	12.8 – 27.1	3.0 – 10.1

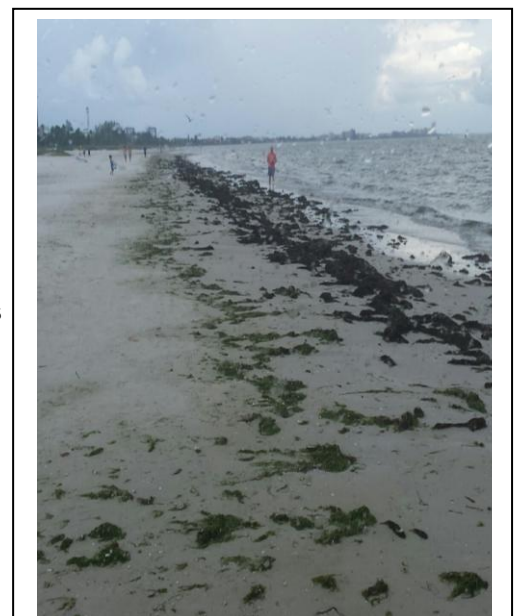
**Beach Conditions:** Red drift and green filamentous algae were present along Fort Myers Beach the past week. Red drift algae was accumulating along the north end beaches and in the swash zone along Sanibel.

**Red Tide:** On 7/21/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, in background concentrations in Gulf and Pinellas Counties only the past week.

**Shellfish Advisory:** On 7/21/17 The Florida Department of Agriculture and Consumer Services **Reopened #6222 Pine Island Sound East Matlacha Pass Shellfish Harvest Area**. **OYSTER HARVEST SEASON IS CLOSED UNTIL OCTOBER 1<sup>ST</sup>**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	12	325	4.4	0.53
<b>Shell Point</b>	7.0	98.3	3.6	1.19
<b>Causeway</b>	6.1	84.7	2.7	1.32

Target light penetration: **CE**- Caloosahatchee Estuary =1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: **z where I is 25% of surface I.**  
 I = irradiance, z= depth



**Red drift and green filamentous algae accumulating mid island on Fort Myers Beach 7/19/17. Photo Town of Fort Myers Beach**



**Red drift algae washing up on Blind Pass Beach (above) and in the swash zone (below) along Sanibel on 7/25/2017. Photos City of Sanibel**



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **July 25 - 31, 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: Rainfall associated with Tropical Storm Emily resulted in undesirable flows of 3,531 cfs at S79 on 7/31/17.** During the past week freshwater flows at S-79 averaged 1,480 cfs. **High colored dissolved organic matter (CDOM) continues to attenuate light throughout the estuary.**

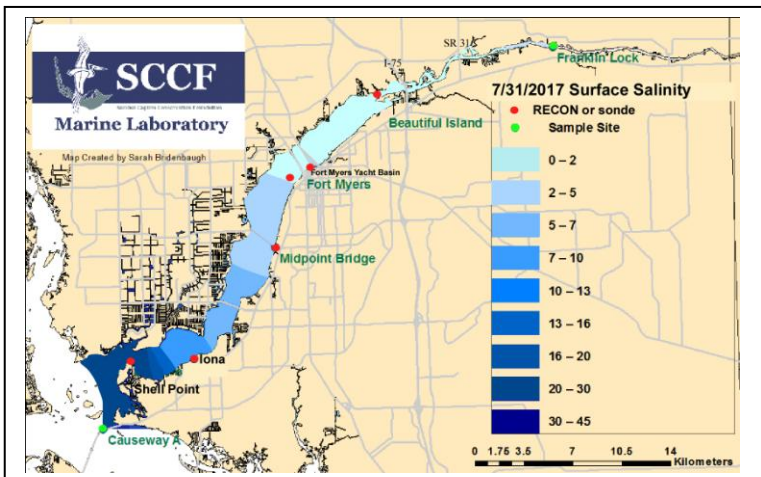
**USACE Action:** The USACE delivered minimal flows of **50 cfs** to the Caloosahatchee the past week. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. The SFWMD stopped back pumping to Lake O from the EAA on 7/5/17.

**Recommendation:** We recommend continuing no releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of all available watershed storage capacity within distributed storage projects and other lands owned or under contract by the State to avoid harmful flows to the estuary.

**Lake Okeechobee Level:** 12.81 ft. (Base Flow Sub-Band)      **Last week:** 12.71 ft  
**Lake Okeechobee Inflow:** 3,089 cfs      **Lake Okeechobee Outflow:** 0 cfs  
**Weekly Rainfall:** WP Franklin 1.72"      Ortona 2.38"      Moore Haven 1.80"

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18)      Previous wk ND  
**Salinity Fort Myers:** 0.3 - 2.0 psu (SCCF RECON)      Previous wk 0.3 - 5.1 psu  
**Salinity Shell Point:** 10 - 30 psu (SCCF RECON)      Previous wk 12 - 30 psu

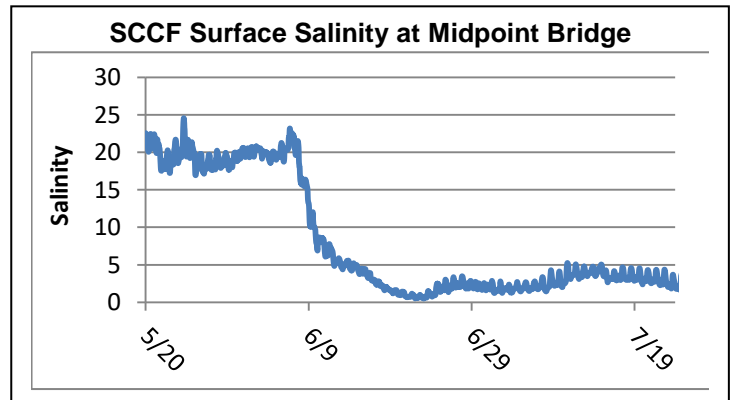


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.3 - 2.0	<10 psu	In Range
Shell Point	10 - 30	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.53	1 meter	Low
Shell Pointe	1.29	2.2 meters	Low
Causeway	1.60	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged 1,480 cfs. Over the past 14 days more than 12,688 acre feet of water backflowed into Lake Okeechobee; 53%\* from S-308 some records NA, a net outflow of 30% from L8 and a net outflow of 18% from S-310. Only 1,048 AF of water was discharged from the Lake; 28% to the EAA and 72% to S-77. (\* Flow records not available).

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
7/25/2017	1992	499	0
7/26/2017	1500	317	0
7/27/2017	1137	307	0
7/28/2017	798	193	202
7/29/2017	639	146	126
7/30/2017	765	264	19
7/31/2017	3531	974	0
<b>7 day Avg</b>	<b>1480</b>	<b>386</b>	<b>50</b>



**Upstream of S-79/Franklin Conditions:** On 7/27/17 Lee County Environmental Lab detected the presence of *Microcystis cyanobacteria* upstream of the Franklin Locks. On 8/1/17 the Olga Water Treatment plant chlorides measured 55 mg/L, apparent color was 141 CU and turbidity measured 1.14 NTU. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 7/27/17 Lee County Environmental Lab detected the presence of *Microcystis cyanobacteria* downstream of the Franklin Locks and at the Davis Boat Ramp. Salinity at Fort Myers was in the acceptable range for tape grass. Dissolved oxygen at the Fort Myers RECON sensor dropped into the hypoxic range daily during the week.

**Lower Estuary Condition:** The average salinity at Shell Point, 21 psu, was in the optimal range for oysters.

**J.N. "Ding" Darling NWR:** Dissolved oxygen fell below 3mg/L three days during the past week in McIntyre Creek.

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	26.1 – 28.1	2.6 – 9.1	15.9 – 20.3	3.7 – 8.5
Tarpon Bay	26.9 – 30.3	3.4 – 7.7	15.7 – 26.0	2.5 – 7.2

**Beach Conditions:** Red drift and green *Ulva* sp were present and accumulating along Fort Myers Beach from mid island to the southern end the past week.

**Red Tide:** On 7/28/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, in background concentrations in Gulf and Pinellas Counties the past week.

**Wildlife Impacts:** On 7/22/17 SCCF found one severely decomposed loggerhead sea turtle on Captiva Island with no flippers or obvious cause of death.

**Shellfish Advisory:** Wild oyster harvest season is closed until October.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	14	335	2.7	0.53
<b>Shell Point</b>	6.2	92.6	2.0	1.29
<b>Causeway</b>	4.2	43.5	5.5	1.60

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





Red drift algae accumulating at the Lighthouse at the end of Sanibel on 8/1/17. Photo City of Sanibel



Lake Okeechobee cyanobacteria bloom accumulating at the Pahokee Marina on 7/28/17. Bloom first reported in Lake Okeechobee on 7/12/17. Photo Paul Gray



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Rae Ann Wessel & Rick Bartleson, Ph.D. -Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **August 1 - 7, 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:** The past week freshwater flows at S-79 averaged **3,030 cfs**. **High colored dissolved organic matter (CDOM) continues to attenuate light throughout the estuary.**

**USACE Action:** The USACE delivered minimal flows of **87 cfs** to the Caloosahatchee the past week. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. The SFWMD stopped back pumping to Lake O from the EAA on 7/5/17.

**Recommendation:** We recommend continuing no releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of all available watershed storage capacity within distributed storage projects and other lands owned or under contract by the State to avoid harmful flows to the estuary.

**Lake Okeechobee Level:** 13.09 ft. (Base Flow Sub-Band)      **Last week:** 12.81 ft

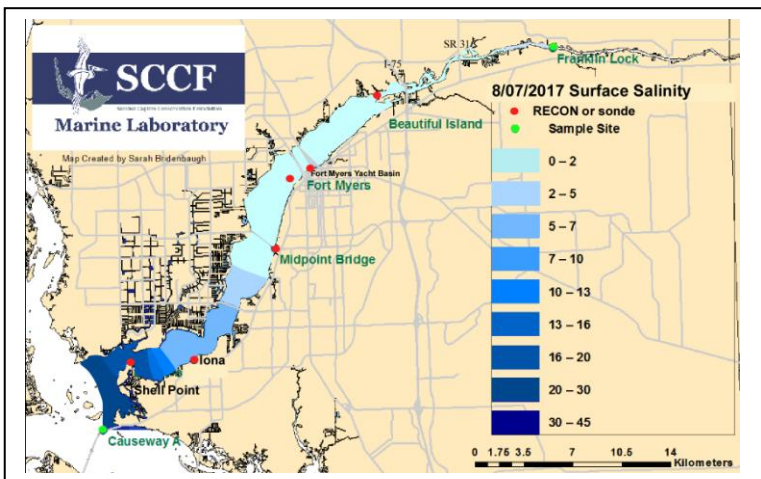
**Lake Okeechobee Inflow:** 4,013 cfs      **Lake Okeechobee Outflow:** 481 cfs

**Weekly Rainfall:** WP Franklin **0.84"**      Ortona **3.36"**      Moore Haven **0.67"**

**Salinity Beautiful Island:** **ND** (SCCF RECON Marker 18)      Previous wk **ND**

**Salinity Fort Myers:** **0.3 - 0.8 psu** (SCCF RECON)      Previous wk **0.3 - 2.0 psu**

**Salinity Shell Point:** **8 - 28 psu** (SCCF RECON)      Previous wk **10 - 30 psu**

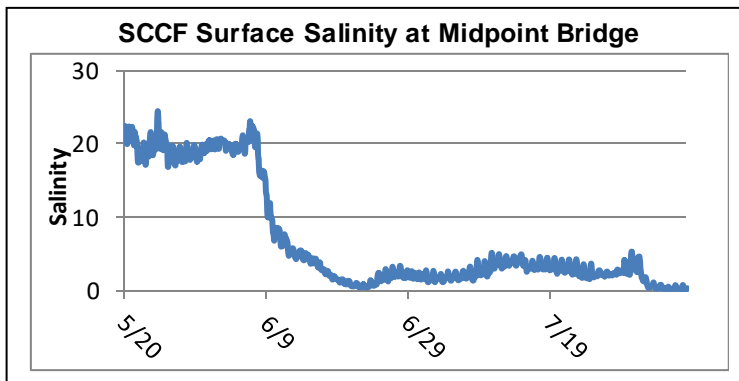


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.3 - 0.8	<10 psu	In Range
Shell Point	8 - 28	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.51	1 meter	Low
Shell Pointe	1.21	2.2 meters	Low
Causeway	1.26	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **3,030 cfs**. Over the past 14 days **more than 14,374 acre feet of water backflowed into Lake Okeechobee**; approximately **70%\*** from S-308, a net backflow of 12% from L8 and a net backflow of 18% from S-310. Only 1,907 AF of water was discharged from the Lake; 51% to the EAA and 49% to S-77. (\* Flow records not available).

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
8/1/2017	3342	1042	0
8/2/2017	3378	1268	0
8/3/2017	4428	1940	0
8/4/2017	3382	1527	0
8/5/2017	2909	814	0
8/6/2017	1847	746	0
8/7/2017	1923	630	87
<b>7 day Avg</b>	<b>3030</b>	<b>1138</b>	<b>12</b>



**Upstream of S-79/Franklin Conditions:** On 8/3/17 Lee County Environmental Lab detected the presence of *Microcystis*, *Planktothrix* and *Dolichospermum* cyanobacteria upstream of the Franklin Locks. On 8/8/17 the Olga Water Treatment plant chlorides measured **77 mg/L**, apparent color was **127 CU** and turbidity measured **0.67 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 8/3/17 Lee County Environmental Lab detected the presence of *Microcystis* cyanobacteria downstream of the Franklin Locks. Salinity at Fort Myers was in the acceptable range for tape grass. Dissolved oxygen at the Fort Myers RECON sensor dropped into the hypoxic range daily since 8/3/17 despite the lack of stratification.

**Lower Estuary Condition:** The average salinity at Shell Point, **19 psu**, was in the optimal range for oysters, but below optimal for seagrasses.

**J.N. "Ding" Darling NWR:** Dissolved oxygen fell below 3mg/L three days during the past week in McIntyre Creek.

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	24.9 – 28.1	2.8 – 8.4	15.3 – 27.0	3.5 – 8.8
Tarpon Bay	22.9 – 29.2	3.6 – 7.0	17.0 – 33.3	2.6 – 7.1

**Beach Conditions:** Red drift and green algae was present along Fort Myers Beach. Sanibel beaches had red drift algae accumulating in the surf zone with little accumulation on the beaches.

**Red Tide:** On 8/4/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, in **background concentrations in Lee, Okaloosa and Gulf Counties** the past week.

**Wildlife Impacts:** Two double crested cormorants were treated for red tide poisoning the past week at CROW the wildlife hospital on Sanibel.

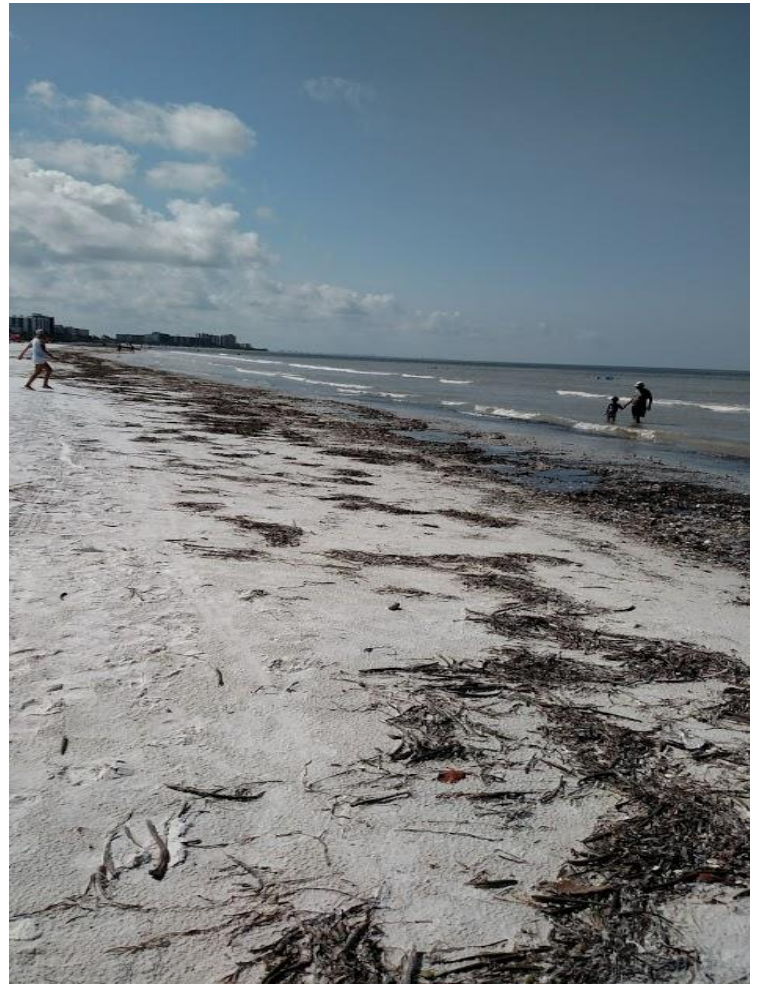
Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE < 70 SCB < 11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	11	350	3.2	0.51
<b>Shell Point</b>	7.2	103	2.1	1.21
<b>Causeway</b>	4.4	96.7	2.4	1.26

Target light penetration: **CE**- Caloosahatchee Estuary = 1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: **z** where **I** is 25% of surface **I**.  
**I** = irradiance, **z**= depth





Red drift algae along Sanibel Lighthouse beach from Pointe Ybel to the fishing Pier, 8/4/17. City of Sanibel



Red drift and green algae washing up along Fort Myers Beach 8/4/17. Photo Town of Fort Myers Beach



Red drift algae along Tarpon Bay Beach and in the surf zone 8/8/17. Photo City of Sanibel



Red drift algae within the surf zone along the entire length of Sanibel's West Gulf beach without much accumulation on the beach 8/8/17. Photo City of Sanibel



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **August 8 - 14, 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:** The past week freshwater flows at S-79 averaged **1,287 cfs**. **High colored dissolved organic matter (CDOM) continues to attenuate light throughout the estuary.**

**USACE Action:** The USACE delivered minimal flows of **47 cfs** to the Caloosahatchee the past week. No discharge from Lake Okeechobee to the St Lucie estuary at S-80.

**DEP Emergency Order:** On 6/23/17 DEP issued an emergency order to allow temporary operational changes to minimize flooding south of Lake Okeechobee. The SFWMD stopped back pumping to Lake O from the EAA on 7/5/17.

**Recommendation:** We recommend continuing no releases to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of all available watershed storage capacity within distributed storage projects and other lands owned or under contract by the State to avoid harmful flows to the estuary.

**Lake Okeechobee Level:** 13.31 ft. (Base Flow Sub-Band) Last week: 13.09 ft

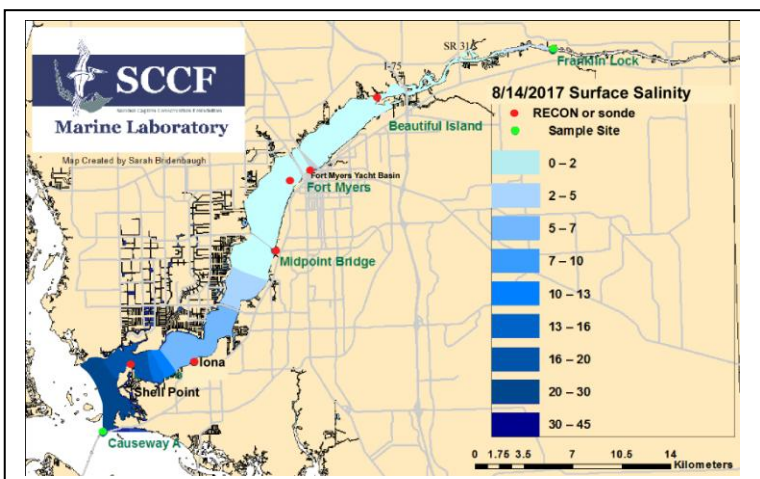
**Lake Okeechobee Inflow:** 5,138 cfs **Lake Okeechobee Outflow:** NR

**Weekly Rainfall:** WP Franklin 1.63" Ortona 2.18" Moore Haven 2.49"

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18) Previous wk ND

**Salinity Fort Myers:** 0.3 - 0.6 psu (SCCF RECON) Previous wk 0.3 - 0.8 psu

**Salinity Shell Point:** 10 - 28 psu (SCCF RECON) Previous wk 8 - 28 psu

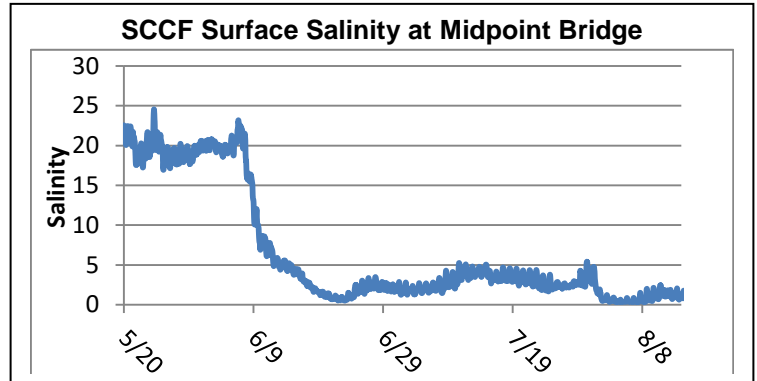


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.3 - 0.6	<10 psu	In Range
Shell Point	10 - 28	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.51	1 meter	Low
Shell Point	1.17	2.2 meters	Low
Causeway	1.49	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **1,287 cfs**. Over the past 14 days **more than 14,610 acre feet of water backflowed into Lake Okeechobee**; approximately **72%\*** from S-308, a net backflow of 9% from L8 and a net backflow of 18% from S-310. Only 5,933 AF of water was discharged from the Lake; 77% to the EAA and 15% to S-77 and 8% from the L8. (\*Flow records not available).

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
8/8/2017	1302	396	99
8/9/2017	826	93	0
8/10/2017	339	0	102
8/11/2017	1038	0	128
8/12/2017	1108	393	0
8/13/2017	1755	881	0
8/14/2017	2639	1244	0
<b>7 day Avg</b>	<b>1287</b>	<b>430</b>	<b>47</b>



**Upstream of S-79/Franklin Conditions:** On 8/10/17 Lee County Environmental Lab detected *Microcystis cyanobacteria* upstream of the Franklin Locks. On 8/15/17 the Olga Water Treatment plant chlorides measured **60 mg/L**, apparent color was **158 CU** and turbidity measured **2.22 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 8/10/17 Lee County Environmental Lab detected *Microcystis cyanobacteria* downstream of the Franklin Locks and at the Davis Boat Ramp. Salinity at Fort Myers was in the acceptable range for tape grass. Dissolved oxygen at the Fort Myers RECON sensor dropped into the hypoxic range during the week and averaged below 50% saturation for the 5<sup>th</sup> week in a row.

**Lower Estuary Condition:** The average salinity at Shell Point, **19 psu**, was in the optimal range for oysters, but below optimal for seagrasses.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	24.2 – 26.5	2.1 – 8.2	18.2 – 25.3	3.0– 7.6
Tarpon Bay	24.2 – 28.4	3.1 – 7.7	20.9 – 30.7	2.5 – 6.4

**Beach Conditions:** Sight accumulations of red drift and green algae on Sanibel and Fort Myers Beaches.

**Red Tide:** On 8/11/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in Pinellas and Franklin Counties but was not found in Southwest Florida the past week.

**Wildlife Impacts:** SCCF reported **2 sea turtle deaths**. One juvenile loggerhead with no obvious cause of death and one small green on the causeway with prop wounds.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Fort Myers	15	350	3.0	0.51
Shell Point	7.6	104	2.8	1.17
Causeway	3.4	73.6	1.9	1.49

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



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **August 15 - 21, 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.

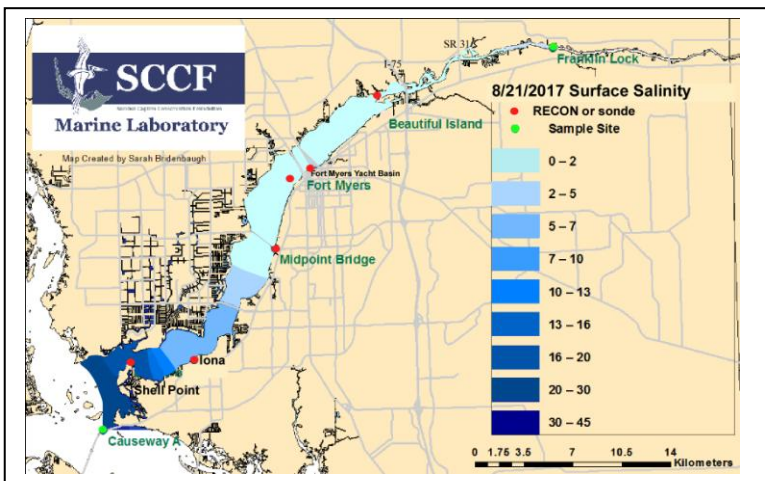
**Caloosahatchee Condition Summary:** The past week freshwater flows at S-79 averaged 1,658 cfs. **High colored dissolved organic matter (CDOM) continues to attenuate light throughout the estuary. A parcel of turbid water with slightly elevated numbers of phytoplankton, mainly diatoms dominated by *Chaetoceros* sp. was identified in the Gulf off Sanibel.**

**USACE Action:** No discharges were made from Lake Okeechobee to the Caloosahatchee at S-77 or to the St Lucie estuary at S-80.

**Recommendation:** We thank the Corps for **continuing no releases** to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of all available watershed storage capacity within distributed storage projects and other lands owned or under contract by the State to avoid harmful flows to the estuary.

**Lake Okeechobee Level:** 13.39 ft. (Base Flow Sub-Band)      **Last week:** 13.31 ft  
**Lake Okeechobee Inflow:** 4,415 cfs      **Lake Okeechobee Outflow:** 0  
**Weekly Rainfall:** WP Franklin 0.94"      Ortona 0.98"      Moore Haven 2.75"

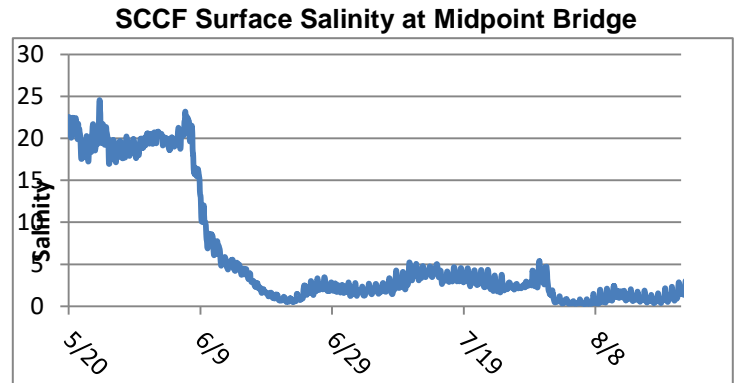
**Salinity Beautiful Island:** ND (SCCF RECON Marker 18)      Previous wk ND  
**Salinity Fort Myers:** 0.3 - 0.9 psu (SCCF RECON)      Previous wk 0.3 - 0.6 psu  
**Salinity Shell Point:** 8 - 28 psu (SCCF RECON)      Previous wk 10 - 28 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.3 - 0.9	<10 psu	In Range
Shell Point	8 - 28	25 - 32 psu	In Range
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.46	1 meter	Low
Shell Point	1.19	2.2 meters	Low
Causeway	1.38	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged 1,658 cfs. Over the past 14 days more than 13,993 acre feet of water back flowed into Lake Okeechobee; approximately 82%\* from S-308, a net backflow of 8.5% from S-310. Only 5,701 AF of water was discharged from the Lake; 63% to the EAA and 12.5% to S-77 and 24% to the L8. (\*Flow records not available).

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
8/15/2017	2772	935	0
8/16/2017	1732	797	0
8/17/2017	2012	763	0
8/18/2017	1484	221	0
8/19/2017	945	0	0
8/20/2017	1156	218	0
8/21/2017	1507	313	0
<b>7 day Avg</b>	<b>1658</b>	<b>464</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 8/17/17 Lee County Environmental Lab detected *Microcystis cyanobacteria* upstream of the Franklin Locks. On 8/22/17 the Olga Water Treatment plant chlorides measured 62 mg/L, apparent color was 139 CU and turbidity measured 1.1 NTU. Slight visible algae in the plant intake on Sunday. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 8/17/17 Lee County Environmental Lab detected *Microcystis cyanobacteria* downstream of the Franklin Locks and at the Davis Boat Ramp. Salinity at Fort Myers was in the acceptable range for tpe grass.

**Lower Estuary Condition:** The average salinity at Shell Point, 21 psu, was in the optimal range for oysters, but below optimal for seagrasses. Patches of water with elevated levels of diatoms (*Chaetoceros* spp. dominant, 2.3 million chain fragments/L) were present near the beach on Sanibel, and the diatom *Thalassiosira* sp. was present at the Causeway.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	24.0 – 26.6	2.6 – 7.7	20.9 – 26.4	3.2– 7.6
Tarpon Bay	23.1 – 29.1	4.3 – 8.0	17.8 – 32.8	2.5 – 8.1

**Beach Conditions:** *Trichodesmium* was reported on Sanibel's West Gulf Drive beach on 8/17/17. A dark freshwater plume from the Caloosahatchee discharge is reaching Sanibel Lighthouse Beach on outgoing tides. Green algae continues to accumulate on Fort Myers Beach.

**Red Tide:** On 8/18/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was **not detected** throughout Florida the past week.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	11	414	1.7	0.46
<b>Shell Point</b>	7.2	100	3.1	1.19
<b>Causeway</b>	3.5	82.4	2.6	1.38

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



*Trichodesmium* sp. on West Gulf Beach Sanibel on 8/17/17. Photo City of Sanibel





A parcel of turbid water with slightly elevated numbers of phytoplankton, mainly diatoms dominated by *Chaetoceros* sp. photographed on 8/20/17 in the Gulf off Sanibel. Photo J. Cassani



Diatoms (*Chaetoceros* sp. and others) in Sanibel beach sample 8/21/17, 400x. Photo SCCF



Dark water plume from the Caloosahatchee reaching Sanibel Lighthouse Beach on outgoing tide, 8/20/17. Photo J. Cassani

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **August 22 - 28, 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.

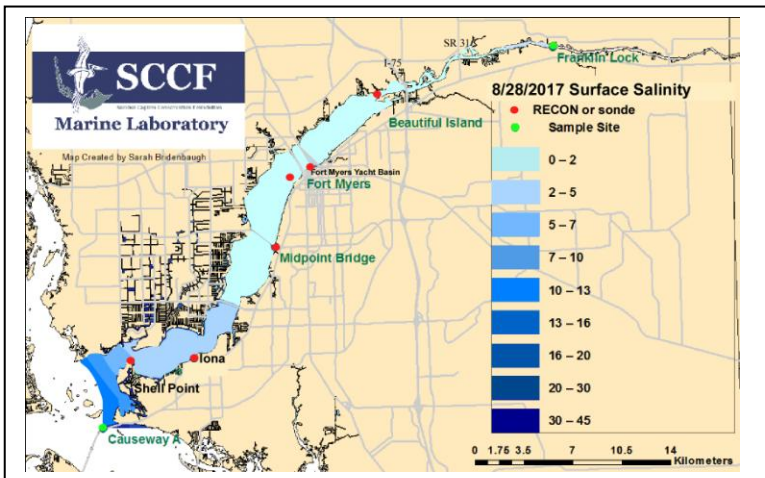
**Caloosahatchee Condition Summary:** The past week freshwater flows at S-79 averaged **2,123 cfs with all water from the watershed. A tropical disturbance, Invest 92, dropped over 12 inches of rain in the watershed. High colored dissolved organic matter (CDOM) continues to attenuate light throughout the estuary.**

**USACE Action:** No discharge from Lake Okeechobee to the Caloosahatchee at S-77 or to the St Lucie estuary at S-80 the past week.

**Recommendation:** We thank the Corps for **continuing no releases** to the Caloosahatchee from Lake Okeechobee while the Lake is relatively low and the Caloosahatchee is receiving adequate freshwater flow from the watershed. We encourage the use of all available watershed storage capacity within distributed storage projects and other lands owned or under contract by the State to avoid harmful flows to the estuary.

**Lake Okeechobee Level:** 13.51 ft. (Base Flow Sub-Band) Last week: 13.39 ft  
**Lake Okeechobee Inflow:** 4,178 cfs **Lake Okeechobee Outflow:** - 617  
**Weekly Rainfall:** WP Franklin 5.30" Ortona 1.63" Moore Haven 1.07"

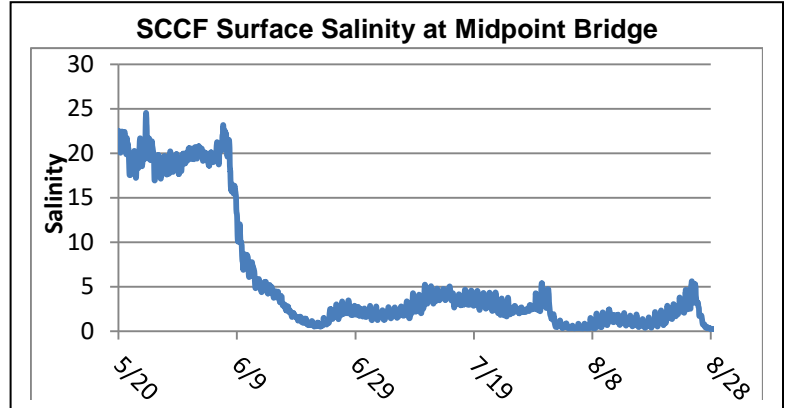
**Salinity Beautiful Island:** ND (SCCF RECON Marker 18) Previous wk ND  
**Salinity Fort Myers:** 0.2 – 3.0 psu (SCCF RECON) Previous wk 0.3 - 0.9 psu  
**Salinity Shell Point:** 1.2 – 29 psu (SCCF RECON) Previous wk 8 - 28 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2 - 0.3	<10 psu	In Range
Shell Point	1.2 - 29	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.46	1 meter	Low
Shell Point	0.83	2.2 meters	Low
Causeway	0.89	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **2,123 cfs**. Over the past 14 days **more than 16,456 acre feet of water back flowed into Lake Okeechobee**; approximately **81% from S-308**, a net backflow of **12% from L8\*** and **7% from S-310**. Only **45 AF** of water was discharged from the Lake entirely through **S-77**. (\*Flow records not available).

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
8/22/2017	780	91	0
8/23/2017	324	0	0
8/24/2017	905	239	0
8/25/2017	2709	332	0
8/26/2017	2560	339	0
8/27/2017	3156	336	0
8/28/2017	4427	332	0
<b>7 day Avg</b>	<b>2123</b>	<b>238</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 8/24/17 Lee County Environmental Lab detected *Microcystis*, *Planktothrix* and *Aphanocapsa cyanobacteria* upstream of the Franklin Locks. On 8/29/17 the Olga Water Treatment plant chlorides measured **58 mg/L**, apparent color was **141 CU** and turbidity measured **1.46 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 8/24/17 Lee County Environmental Lab detected *Microcystis cyanobacteria* at the Davis Boat Ramp. Salinity at Fort Myers was in the acceptable range for tape grass.

**Lower Estuary Condition:** The average salinity at Shell Point was **17 psu**, in range for oysters but below the optimal range for seagrasses.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	19.3 – 29.5	2.2 – 8.0	20.9 – 26.4	2.1– 7.8
Tarpon Bay	19.7 – 31.4	4.0 – 8.4	12.0 – 25.0	2.0 – 4.5

**Beach Conditions:** Dark water plume from the Caloosahatchee discharge reaching Sanibel Lighthouse Beach at high tides.

**Red Tide:** On 8/25/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was **not detected** throughout Florida the past week.

**Shellfish Advisory:** On 8/26/17 the Florida Dept of Agriculture Consumer Services **CLOSED Shellfish Harvest Area #6222 Pine Island Sound Section 2 (Matlacha Pass) and #6212 Pine Island Sound Section 1 AUZ and Leases**. Wild oyster harvest season is closed until October 1.

**Wildlife Impacts:** SCCF reported one Kemps Ridley sea turtle stranding on Sanibel 8/24/17 with no obvious cause of death (missing all flippers and head)

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	9.4	400	4.6	0.46
<b>Shell Point</b>	8.2	160	7.3	0.83
<b>Causeway</b>	4.2	156	5.9	0.89

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





Dark water plume from the Caloosahatchee at high tide on 8/28/17 passing Sanibel's Lighthouse Beach.  
Photo City of Sanibel



Wrack line accumulating drift algae, seagrass and marine organisms following the storm Invest 92 on Fort Myers Beach (left) and Lovers Key State Park Beach (right) on 8/29/17.

Photos Town of Fort Myers Beach and Lee County



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants  
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 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: **August 29 - September 4, 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:** The past week freshwater flows at S-79 averaged **2,859 cfs** with all water from the watershed. High colored dissolved organic matter (CDOM) continues to attenuate light throughout the estuary.

**USACE Action:** No discharge from Lake Okeechobee to the Caloosahatchee at S-77 or to the St Lucie estuary at S-80 the past week.

**Recommendation:** With Hurricane Irma forecast to raise Lake O levels 3 - 5 ft we support the Corps decision to stop all backflow into the lake and the public safety need to discharge up to 4,000 cfs to the Caloosahatchee and 1,800 cfs to the St. Lucie.

**Lake Okeechobee Level:** 13.67 ft. (Base Flow Sub-Band) Last week: 13.51 ft

**Lake Okeechobee Inflow:** 5,220 cfs **Lake Okeechobee Outflow:** 0

**Weekly Rainfall:** WP Franklin 0.86" Ortona 0.63" Moore Haven 1.00"

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18)

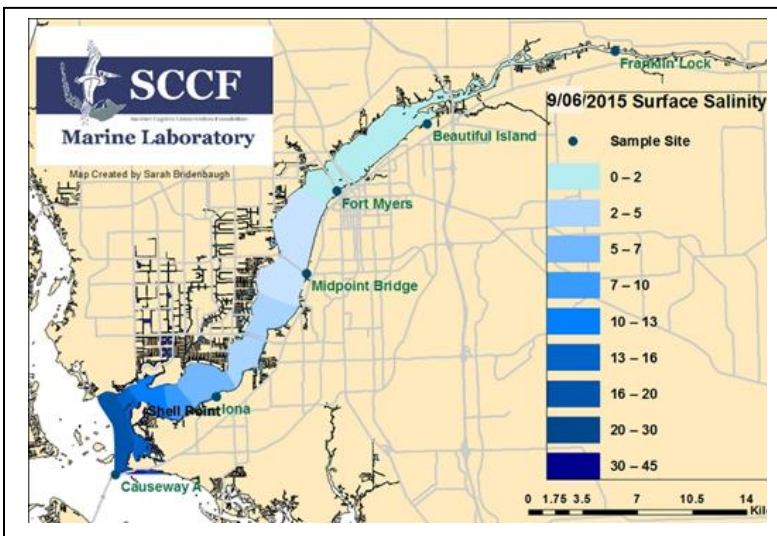
Previous wk ND

**Salinity Fort Myers:** 0.2 – 0.2 psu (SCCF RECON)

Previous wk 0.3 - 3.0 psu

**Salinity Shell Point:** 6.1 – 28 psu (SCCF RECON)

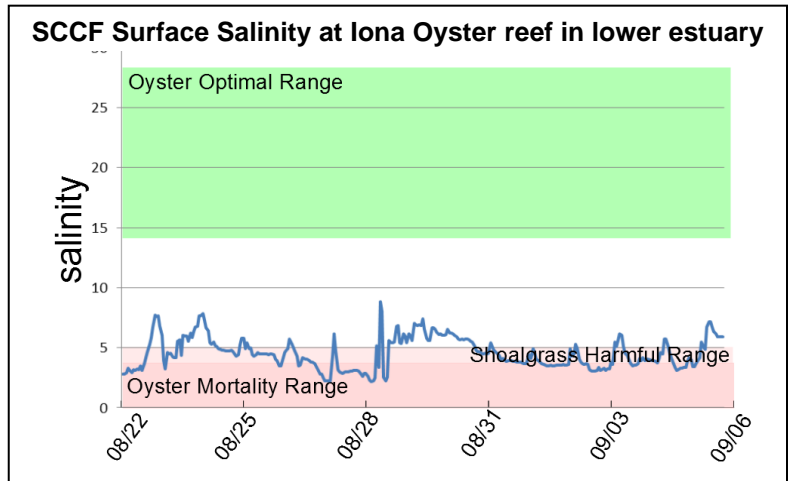
Previous wk 1.2 - 29 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2	<10 psu	In Range
Shell Point	6.1 - 28	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.79	1 meter	Low
Shell Point	0.76	2.2 meters	Low
Causeway	0.97	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **2,859 cfs**. Over the past 14 days **more than 8,142 acre feet of water back flowed into Lake Okeechobee**; approximately 93% from S-308\*, a net backflow of 7% from L8\* from S-310. Only 2,340 AF of water was discharged from Lake O, 96% to the EAA at S-352 a net outflow of 2.3% through S-310\* and 1.8% to S-77. (\*Flow records not available).

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
8/29/2017	3512	338	0
8/30/2017	3088	225	0
8/31/2017	1768	0	0
9/1/2017	2218	119	0
9/2/2017	3144	438	0
9/3/2017	3268	634	0
9/4/2017	3013	624	0
<b>7 day Avg</b>	<b>2859</b>	<b>340</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 8/29/17 the Olga Water Treatment plant chlorides measured **50 mg/L**, apparent color was **199 CU** and turbidity measured **0.57 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

Salinities in the upper estuary are in the suitable range for tape grass but are **too low for oysters upstream of the Cape Coral Bridge**.

**Lower Estuary Condition:** Salinity was below the optimal range for oysters at Iona (5.7 psu on 9/6/15) and within the optimal range at Shell Point (17 psu weekly average). Water column chlorophyll was elevated at the Causeway on 9/6/15.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	13.3 – 23.0	2.4 – 10.2	19.1 – 35.0	4.8 – 15.6
Tarpon Bay	15.3 – 24.5	3.0 – 9.0	24.8 – 40.4	2.5 – 18.8

**Beach Conditions:** Fort Myers Beach experienced significant dark water from excessive rainfall driven stormwater in the Estero Bay basin the past week. Dark water from the Caloosahatchee discharge reached Sanibel Lighthouse Beach.

**Red Tide:** On 9/1/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present on the northwest and east coasts of Florida but not in local Gulf waters.

**Shellfish Advisory:** On 8/31/17 the Florida Dept of Agriculture Consumer Services Reopened ONLY #6212 Pine Island Sound Section 1 AUZ and Leases. Shellfish Harvest Area remain CLOSED for clams. Wild oyster harvest season is closed until October 1.

**Wildlife Impacts:** SCCF reported one loggerhead sea turtle stranding on Sanibel last 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
Fort Myers	5.6	195	2.0	0.79
Shell Point	3.9	204	2.5	0.76
Causeway	15.2	106	4.1	0.97

Target light penetration: CE- Caloosahatchee Estuary =1 m  
 SCB-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: z where I is 25% of surface I.  
 I = irradiance, z= depth



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **September 5 - 18, 2017**

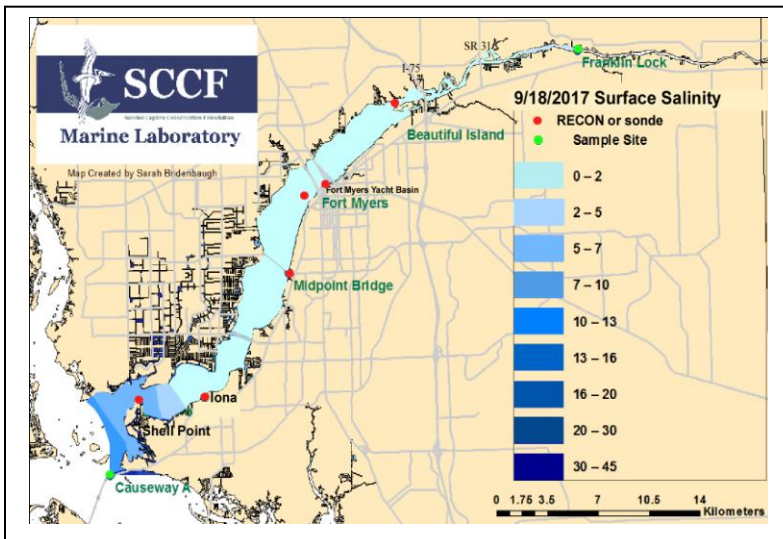
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** The past two weeks freshwater flows at S-79 averaged over **10,045 cfs** and **13,643 cfs** resulting from lake discharges and high rainfall in advance of and during Hurricane Irma. The past week extremely high flows originated entirely from watershed runoff with no discharge from Lake Okeechobee at S-77. A dark wall of freshwater extends several miles offshore into the Gulf of Mexico.

**USACE Action:** The past 2 weeks there was limited discharge from Lake Okeechobee to the Caloosahatchee at S-77. Lake discharges to the St Lucie estuary at S-80 the past week were initiated to help lower lake levels in advance of Hurricane Irma.

**Recommendation:** With Hurricane Irma impacts still expected to raise Lake Okeechobee levels an additional 2 feet or more we understand the need to move water out of the lake and urge the Corps to equitably discharge water in all directions. We question the continued back flowing of water into the lake particularly from the L8 and urge the Corps and SFWMD to stop all backflow into the lake.

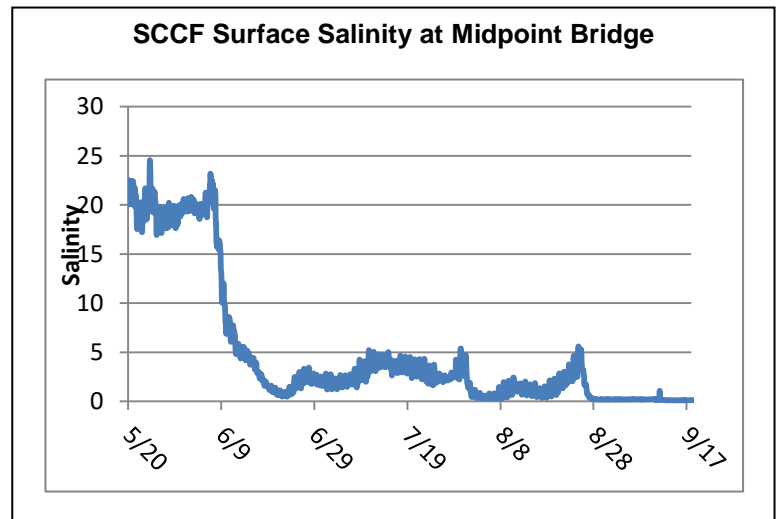
<b>Lake Okeechobee Level:</b>	<b>15.66 ft. (Low Sub-Band)</b>	<b>Last week: 15.63 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>26,413 cfs</b>	<b>Lake Okeechobee Outflow: NR cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>0.17"</b> Ortona <b>1.42"</b>	Moore Haven <b>0.65"</b>
<b>Salinity Beautiful Island:</b>	<b>ND</b> (SCCF RECON Marker 18)	Previous wk <b>ND</b>
<b>Salinity Fort Myers:</b>	<b>0.1 - 0.2 psu</b> (SCCF RECON)	Previous wk <b>0.2 – 0.2 psu</b>
<b>Salinity Shell Point:</b>	<b>0.1 – 25 psu</b> (SCCF RECON)	Previous wk <b>6.1 – 28 psu</b>



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.1 - 0.2	<10 psu	In Range
Shell Point	0.1 - 25	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.55	1 meter	Low
Shell Point	0.66	2.2 meters	Low
Causeway	0.69	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **13,643 cfs**. Over the past 14 days **22,678 acre feet of water back flowed into Lake Okeechobee at the same time estuary releases are being increased to reduce lake levels**; 89% of back flow from the L8 and a net backflow of 11% from S-310. 54,830 AF of water was discharged from Lake O, 59% to S-308 and 41% to S-77\*. (\*Flow data missing).

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
9/5/2017			932
9/6/2017	8382	5177	3464
9/7/2017	8805	5542	3536
9/8/2017	8155	5250	3312
9/9/2017	3792	1476	0
9/10/2017	13398	NR	0
9/11/2017	27783	4942	0
<b>7 day Avg</b>	<b>10045</b>	<b>4477</b>	<b>1606</b>
9/12/2017	22967	5214	0
9/13/2017	13728	4931	0
9/14/2017	11328	3996	0
9/15/2017	10920	3687	0
9/16/2017	14834	3778	0
9/17/2017	11760	3334	0
9/18/2017	9962	2669	0
<b>7 day Avg</b>	<b>13643</b>	<b>3944</b>	<b>0</b>



**Upstream of S-79/Franklin Conditions:** On 9/19/17 the Olga Water Treatment plant chlorides measured **35 mg/L**, apparent color was **225 CU** and turbidity measured **2.55 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2400 GPM.

**Upper Estuary Conditions:** Salinities in the upper estuary are in the suitable range for tape grass. **Surface dissolved oxygen levels ranged from anoxic at 31 Bridge, to hypoxic at Fort Myers, to 3.5 mg/L at the Midpoint Bridge.**

**Lower Estuary Conditions:** Salinity was below the optimal range for oysters at Shell Pont (5 psu). The lower layer of the water column at the Gulf RECON has been hypoxic since 8/17/17.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	7.2 – 19.2	1.7 – 6.9	offline	5.2 – 22.8
Tarpon Bay	9.9 – 21.7	3.5 – 8.4	31.8 – 47.2	6.5 – 24.0

**Beach Conditions:** Accumulations of red drift algae, starfish and sea urchins washed up on Fort Myers Beach. Both Sanibel and Fort Myers Beach have freshwater fish including plecostomus catfish and tilapia where water is totally fresh.

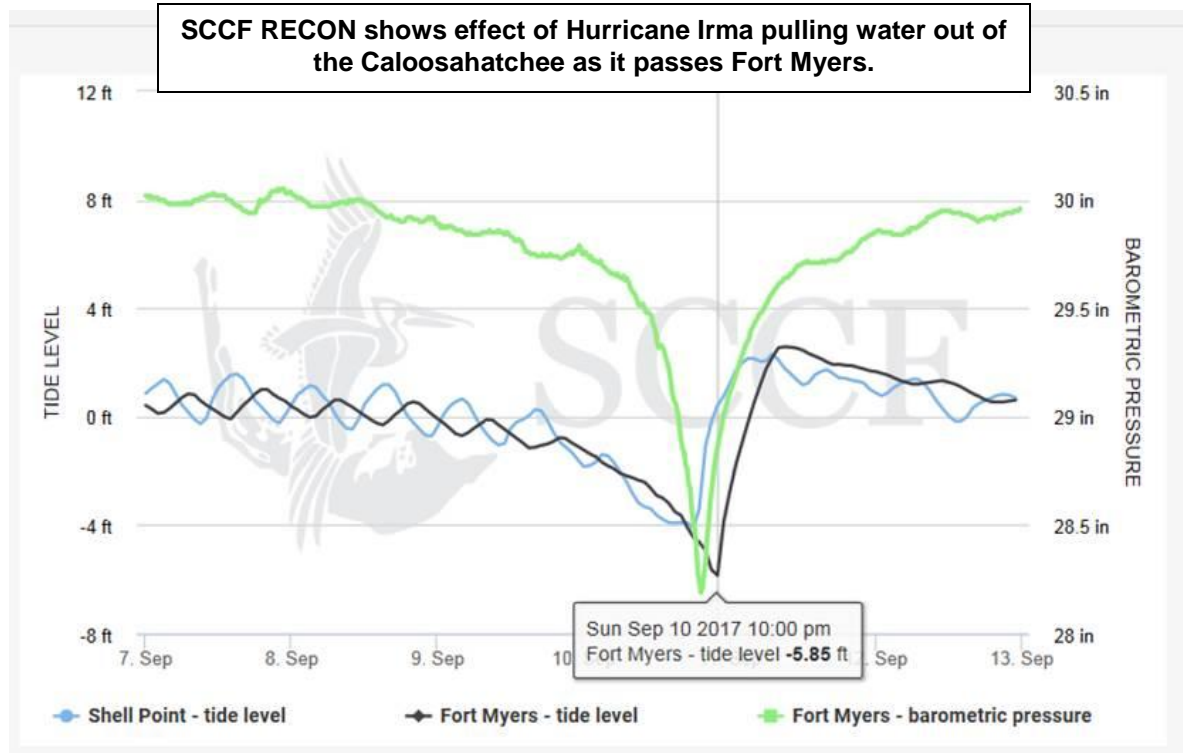
**Red Tide:** No report due to Hurricane Irma

**Shellfish Advisory:** On 9/7/17 the Florida Dept of Agriculture Consumer Services **CLOSED #6212 Pine Island Sound Section 1 AUZ and Leases due to Hurricane Irma.**

**Wildlife Impacts:** One adult and one juvenile manatee were found dead on Sanibel.

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
Fort Myers	12	324	1.3	0.55
Shell Point	11	250	3	0.66
Causeway	10	239	2.7	0.69

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



**Dark freshwater following Hurricane Irma pushed out into the Gulf of Mexico several miles on 9/12/17. Effect extended from the Sanibel Lighthouse to Gasparilla Island. Note color change on the horizon where dark freshwater meets clear Gulf water. Photo Lee County**

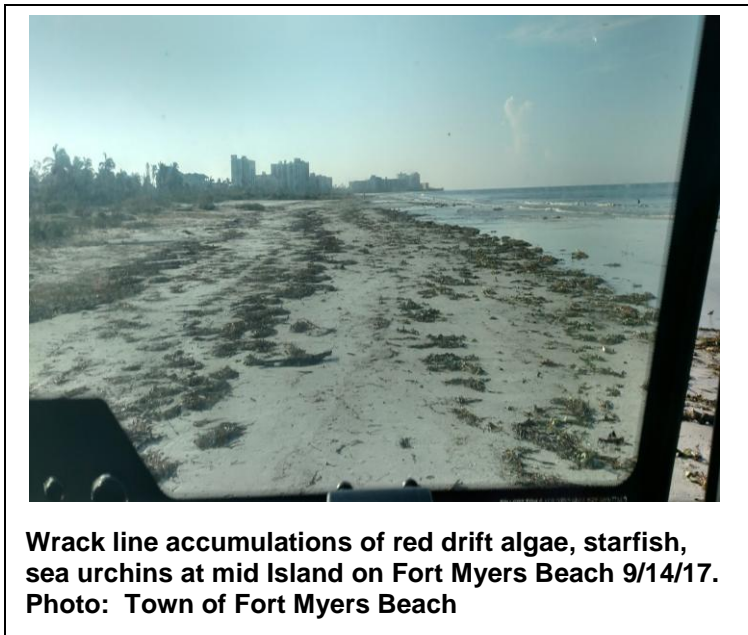




Pre and post Hurricane Irma images and corresponding flows at S-79 off the Sanibel Lighthouse. Photos City of Sanibel



Sailboat stranding at the southern end of on Fort Myers Beach on 9/12/17. Note darkly colored water. Photo Lee County



Wrack line accumulations of red drift algae, starfish, sea urchins at mid Island on Fort Myers Beach 9/14/17. Photo: Town of Fort Myers Beach

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **September 19 - 25, 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:** The past week freshwater flows from Lake Okeechobee and the watershed averaged **8,902 cfs** at S-79, **over 3 times the harm threshold**. **A dark wall of freshwater extends several miles offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee to the Caloosahatchee at S-77 averaged **4,614 cfs**. Lake discharges to the St Lucie estuary at S-80 the past week averaged **over 2,808 cfs\***.

**Recommendation:** With Lake Okeechobee water levels anticipated to continue rising into the high sub-band, we understand the need to move water out of the lake and urge the Corps to equitably discharge water in **all directions** and to **utilize all options to reduce harmful discharges to the estuaries.**

**Lake Okeechobee Level:** 16.21 ft. (Intermediate Sub-Band)      **Last week:** 15.66 ft

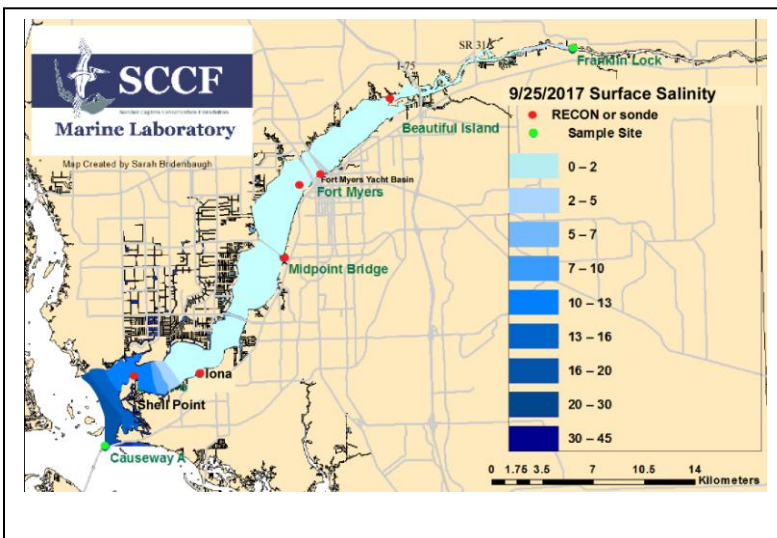
**Lake Okeechobee Inflow:** 18,024 cfs      **Lake Okeechobee Outflow:** 3,770 cfs

**Weekly Rainfall:** WP Franklin 2.53"      Ortona 0.65"      Moore Haven 0.0"

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18)      Previous wk ND

**Salinity Fort Myers:** 0.1 – 0.2 psu (SCCF RECON)      Previous wk 0.1 – 0.2 psu

**Salinity Shell Point:** 0.2 – 25 psu (SCCF RECON)      Previous wk 0.1 – 25 psu

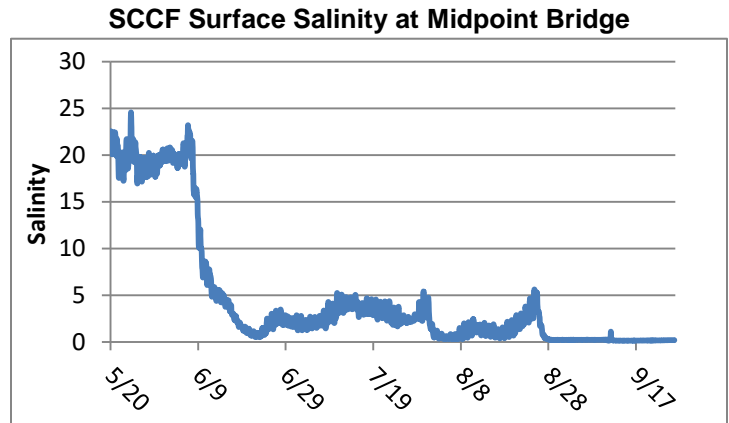


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.1 - 0.2	<10 psu	In Range
Shell Point	0.2 - 25	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.54	1 meter	Low
Shell Point	0.70	2.2 meters	Low
Causeway	0.76	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **8,902 cfs**. Over the past 14 days **19,874 acre feet of water back flowed into Lake Okeechobee at the same time harmful estuary releases are being used to reduce lake levels; 88% of back flow from the L8 and a net backflow of 12% from S-310. 97,052 AF of water was discharged from Lake O, 55% to S-77\* and 45% to S-308\*.** \*Flow data missing

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
9/19/2017	9743	4729	1940
9/20/2017	9979	5100	3520
9/21/2017	11118	5592	4324
9/22/2017	11289	6511	5668
9/23/2017	10738	6398	5744
9/24/2017	10323	6393	5804
9/25/2017	9450	5918	5301
<b>7 day Avg</b>	<b>8902</b>	<b>5806</b>	<b>4614</b>



**Upstream of S-79/Franklin Conditions:** On 9/26/17 the Olga Water Treatment plant chlorides measured **35 mg/L**, apparent color was **262 CU** and turbidity measured **0.52 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2400 GPM.

**Upper Estuary Conditions:** Salinities in the upper estuary are in the suitable range for tape grass. **Hypoxia was recorded from Olga to Whiskey Creek in Fort Myers on 9/25/17 (Mote/SCCF).**

**Lower Estuary Conditions:** Salinity was below the optimal range for oysters at Shell Point (**10 psu**). Water column chlorophyll and phycoerythrin concentrations were elevated in Iona Cove where clumps of phytoplankton were visible on 9/22/17. **The Gulf RECON has been recording hypoxia in the lower layer of the water column since 9/17/17.**

**J.N. "Ding" Darling NWR:** **Dissolved oxygen at McIntyre Creek fell below 3 mg/L seven times, presenting a milky white anoxic appearance to the water. A cyanobacteria bloom appeared in an isolated freshwater pond in the refuge.**

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	11.6 – 17.2	1.5 – 6.8	28.0 – 34.5	7.7 – 25.0
Tarpon Bay	11.1 – 23.9	3.5 – 10.3	28.0 – 43.8	5.0 – 27.6

**Beach Conditions:** The past week moon jellyfish have been washing up on Sanibel and Fort Myers Beaches. Red drift algae is continuing to wash ashore on Fort Myers Beach, although quantities have been reduced.

**Red Tide:** On 9/22/17 the Florida Fish and Wildlife Conservation Commission reported NO red tide in samples collected throughout Florida the past week.

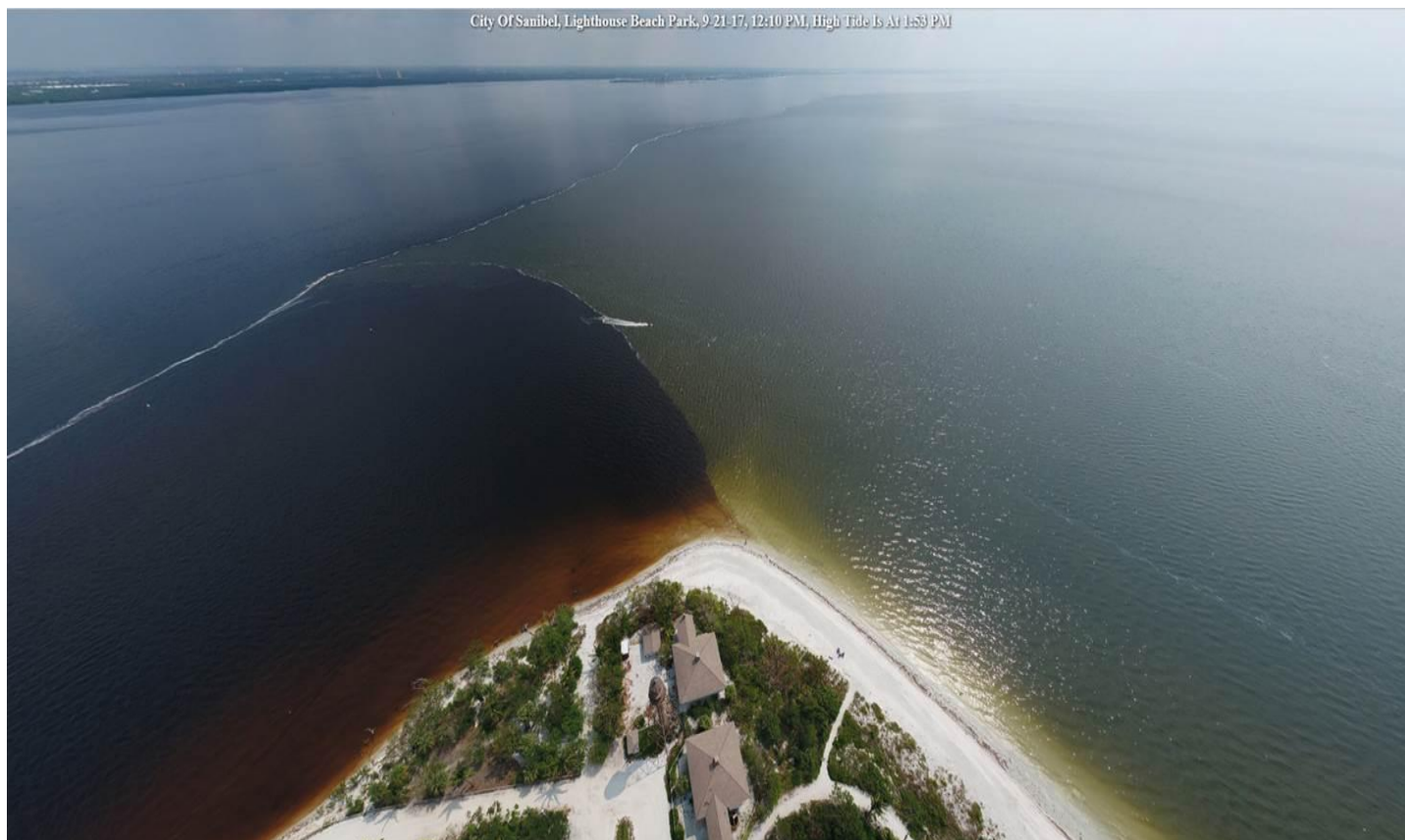
**Shellfish Advisory:** On 9/7/17 the Florida Dept of Agriculture Consumer Services **CLOSED #6212 Pine Island Sound Section 1 AUZ and Leases** for the harvest of oysters, clams, and mussels due to Hurricane Irma.

**Wildlife Impacts:** CROW, the wildlife hospital on Sanibel, treated **8 patients for red tide poisoning the past week: 3 ruddy turnstones, 2 sanderlings, 1 blue winged teal, 1 mottled duck and 1 double crested cormorant.**

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
Fort Myers	12	325	2.9	0.54
Shell Point	11	230	2.7	0.70
Causeway	8.1	212	2.6	0.76

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





**Dark water discharges observed at City of Sanibel Lighthouse Beach Park on 9/21/17 approximately an hour and a half before high tide.**  
Photo City of Sanibel

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants  
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 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **September 26 - October 2, 2017**

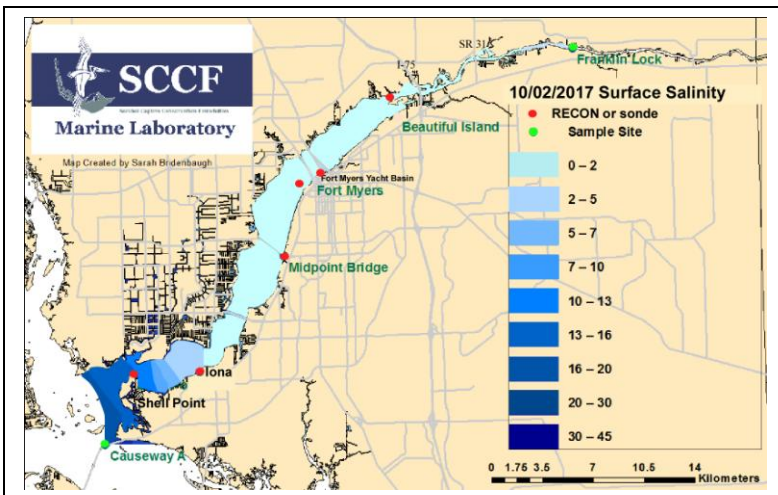
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** The past week freshwater flows from Lake Okeechobee and the watershed averaged **10,934 cfs** at S-79, **almost 4 times the harm threshold**. **Hypoxic conditions continue for the third week at Ft Myers and over two weeks at the Gulf of Mexico RECON sensors**. **A dark wall of freshwater extends several miles offshore into the Gulf of Mexico on outgoing tides.**

**USACE Action:** The past week discharges from Lake Okeechobee increased to the maximum amount practicable with average flows of **6,788 cfs** to the Caloosahatchee at S-77. Discharges to the St Lucie estuary at S-80 the past week averaged over **3,406 cfs**.

**Recommendation:** With Lake Okeechobee water levels continuing to rise into the high sub-band, we urge the Corps to equitably discharge water in **all directions** and to **utilize all options to reduce harmful discharges to the estuaries**.

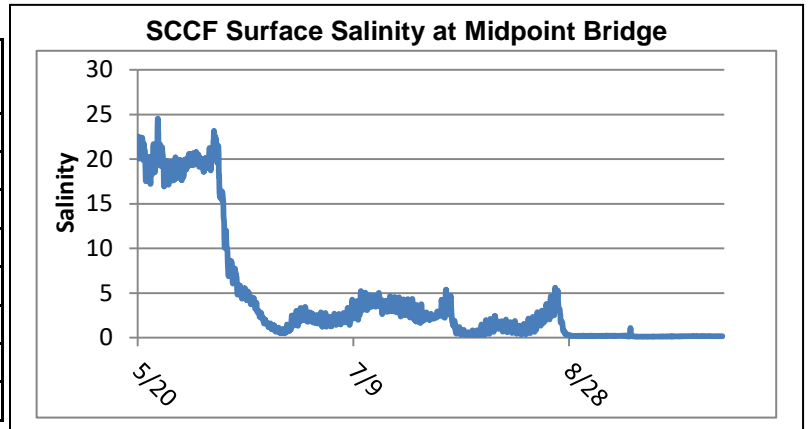
<b>Lake Okeechobee Level:</b>	<b>16.50 ft. (High Sub-Band)</b>	<b>Last week: 16.21 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>19,902 cfs</b>	<b>Lake Okeechobee Outflow: 8,568 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>1.25"</b> Ortona <b>2.00"</b>	Moore Haven <b>1.30"</b>
<b>Salinity Beautiful Island:</b>	<b>ND</b> (SCCF RECON Marker 18)	Previous wk <b>ND</b>
<b>Salinity Fort Myers:</b>	<b>0.2 psu</b> (SCCF RECON)	Previous wk <b>0.1 – 0.2 psu</b>
<b>Salinity Shell Point:</b>	<b>0.5 – 29 psu</b> (SCCF RECON)	Previous wk <b>0.2 – 25 psu</b>



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2 - 0.2	<10 psu	In Range
Shell Point	0.5 - 29	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.50	1 meter	Low
Shell Point	1.02	2.2 meters	Low
Causeway	0.90	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **10,934 cfs**. Over the past 14 days **232,989 AF of water was discharged from Lake O, 67% to S-77 and 33% to S-308\***. The **L8 back flowed 3,932 acre feet of water into Lake Okeechobee at the same time harmful estuary releases are working to reduce lake levels.** (\*Flow data missing)

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
9/26/2017	9312	5938	5297
9/27/2017	8958	5559	5400
9/28/2017	8759	5074	4533
9/29/2017	10948	7051	6674
9/30/2017	13074	7886	7387
10/1/2017	12976	8023	7462
10/2/2017	12512	7983	7626
<b>7 day Avg</b>	<b>10934</b>	<b>6788</b>	<b>6340</b>



**Upstream of S-79/Franklin Conditions:** On 9/28/17 Lee County Environmental Lab detected *Microcystis* and *Planktothrix* cyanobacteria upstream of the Franklin Lock at the Alva Boat Ramp. On 10/3/17 the Olga Water Treatment plant chlorides measured **40 mg/L**, apparent color was **263 CU** and turbidity measured **1.39 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 9/28/17 Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria at the Davis Boat Ramp and *Microcystis* at the Midpoint Bridge Park in Cape Coral. Salinities in the upper estuary are in the suitable range for tape grass. **Dissolved oxygen ranged from 2.4 mg/L surface to 2.3 mg/L at 3 meters at Fort Myers on 10/1/17; the third week of total water column hypoxic readings.**

**Lower Estuary Conditions:** Salinity was below the optimal range for oysters at Shell Point (**13 psu**). **The Gulf RECON has been recording hypoxia in the lower layer of the water column since 9/17/17.**

**J.N. "Ding" Darling NWR:** **Dark water and hypoxic dissolved oxygen levels continue. An algal bloom appears to be forming in West end of the refuge.**

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	15.9 – 22.9	1.0 – 7.0	23.7 – 36.2	5.9 – 20.9
Tarpon Bay	15.1 – 20.7	1.3 – 7.11	23.6 – 46.3	3.7 – 20.8

**Beach Conditions:** A combination of low water levels during hurricane Irma, that dried out sea grasses, and dark water have contributed to large rafts of seagrass washing up onto area beaches. Red drift algae continues to wash ashore on Fort Myers Beach. Dark water from high discharges surrounds the beaches of Sanibel and Fort Myers Beach.

**Red Tide:** On 9/29/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in background concentrations in samples from Sarasota and Charlotte Counties.

**Shellfish Advisory:** On 9/7/17 the Florida Dept of Agriculture Consumer Services **CLOSED #6212 Pine Island Sound Section 1 AUZ and Leases** for the harvest of oysters, clams, and mussels due to Hurricane Irma.

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
Fort Myers	8.8	354	5.3	0.50
Shell Point	9.2	123	4.0	1.02
Causeway	9.7	159	3.1	0.90

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





**Voluminous sea grass washing up on the bayside of Sanibel at Bailey Beach on 10/3/17. Photo City of Sanibel**



**Red drift algae accumulations along Fort Myers Beach on 10/3/17.**

**Photo Town of Fort Myers Beach**

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **October 3 - 9, 2017**

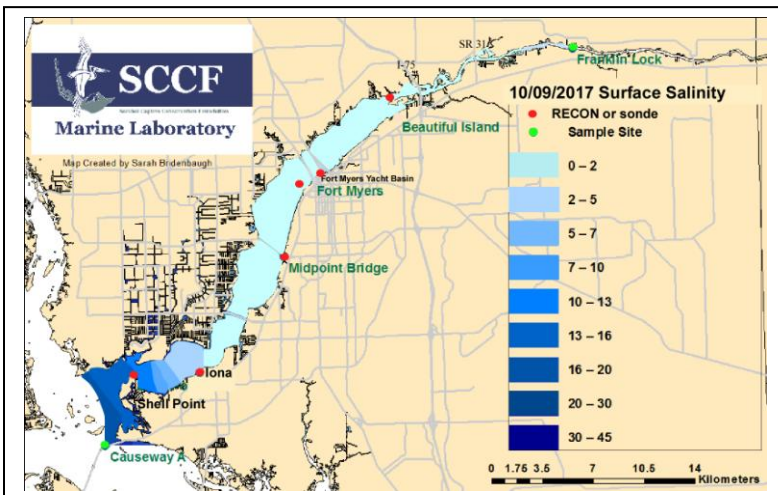
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** The past week freshwater flows from Lake Okeechobee and the watershed increased to an average of **13,800 cfs** at S-79, **nearly 5 times the harm threshold**. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends several miles offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee continued at maximum practicable with average flows of **6,995 cfs** to the Caloosahatchee at S-77. Discharges to the St Lucie at S308 were reduced to accommodate high tides influencing estuary water levels. Discharges at S-80 the past week were averaged over **2,543 cfs**.

**Recommendation:** With Lake Okeechobee water levels in the high sub-band, we urge the Corps to continue maximum discharges in all directions, where practicable to return lake levels below 16 ft to **reduce harmful discharges to the estuaries later in the spring when spawning occurs.**

<b>Lake Okeechobee Level:</b>	<b>17.19 ft. (High Sub-Band)</b>	<b>Last week:</b>	<b>16.50 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>17,455 cfs</b>	<b>Lake Okeechobee Outflow:</b>	<b>9,504 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>2.43"</b>	Ortona <b>2.40"</b>	Moore Haven <b>2.08"</b>
<b>Salinity Beautiful Island:</b>	<b>ND (SCCF RECON Marker 18)</b>	<b>Previous wk</b>	<b>ND</b>
<b>Salinity Fort Myers:</b>	<b>0.2 psu (SCCF RECON)</b>	<b>Previous wk</b>	<b>0.2 – 0.2 psu</b>
<b>Salinity Shell Point:</b>	<b>0.2 – 28 psu (SCCF RECON)</b>	<b>Previous wk</b>	<b>0.5 – 29 psu</b>

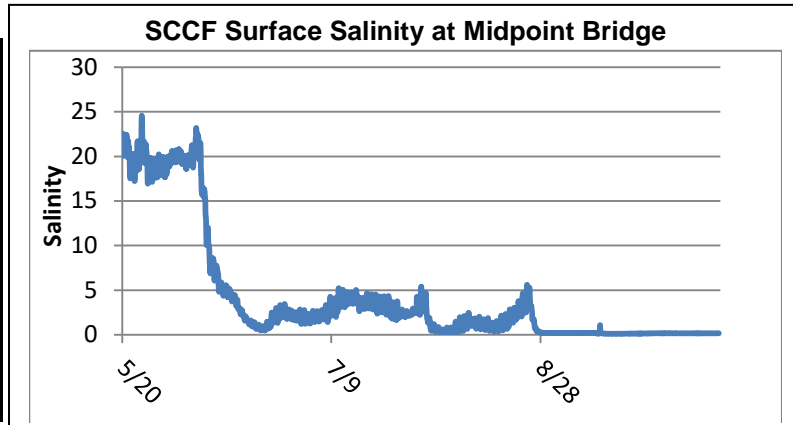


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2 - 0.2	<10 psu	In Range
Shell Point	0.2 - 28	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.47	1 meter	Low
Shell Point	0.80	2.2 meters	Low
Causeway	0.82	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **13,800 cfs**. Over the past 14 days **256,493 AF of water was discharged from Lake O, 70% to S-77 and 30% to S-308\***. **No water was discharged south to the EAA. A net -5750 AF of water back flowed from the L8 into Lake Okeechobee at the same time harmful, maximum releases to reduce lake levels are harming the estuaries.** (\*Flow data missing)

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
10/3/2017	12499	8072	7255
10/4/2017	14025	8363	7869
10/5/2017	14053	8338	6593
10/6/2017	14732	8204	6555
10/7/2017	14224	8185	6496
10/8/2017	14552	8164	6805
10/9/2017	12512	8367	7389
<b>7 day Avg</b>	<b>13800</b>	<b>8242</b>	<b>6995</b>



**Upstream of S-79/Franklin Conditions:** On 10/10/17 the Olga Water Treatment plant chlorides measured **45 mg/L**, apparent color was **264 CU** and turbidity measured **2.96 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 10/5/17 Lee County Environmental Lab detected *Microcystis* and *Dolichospermum* cyanobacteria at the Davis Boat Ramp in east Fort Myers. Salinities in the upper estuary were in the suitable range for tape grass. **Elevated turbidity and colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.**

**Lower Estuary Conditions:** The average salinity was in the optimal range for oysters at Shell Point (**14 psu**). **Light levels and salinities are below optimal for seagrasses in much of the lower estuary. Hypoxia was recorded in the lower layer of the water column at the Gulf RECON site on 10/02/17.** Twenty knot winds increased mixing for several days.

**J.N. "Ding" Darling NWR:** Dark opaque water throughout the refuge. **Visibility is zero and neither seagrass or bottom is visible in 2 ft of water.**

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	13.3 – 28.5	1.3 – 6.9	16.1 – 37.6	3.7 – 27.4
Tarpon Bay	11.1 – 31.4	4.4 – 8.7	10.5 – 50.4	3.9 – 31.1

**Beach Conditions:** Dark freshwater from high discharges surrounds the beaches of Sanibel and Fort Myers Beach. Large amounts of seagrass continue to wash up on Sanibel's bayside beaches. The Donax Street Beach Access on Sanibel had 20 ug Chl a/L and 625,000 dinoflagellates/L with some *Noctiluca* sp. which may be the source of observed bioluminescence.

**Red Tide:** On 10/6/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in background concentrations in samples from Manatee, Sarasota, Charlotte and Lee Counties.

**Shellfish Advisory:** On 9/6/17 the Florida Dept of Agriculture Consumer Services **Re-opened #6212 Pine Island Sound Section 1 AUZ and Leases** for the harvest of oysters, clams, and mussels.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	9.6	375	7.2	0.47
<b>Shell Point</b>	8.4	188	4.0	0.80
<b>Causeway</b>	6.7	179	5.1	0.82

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

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

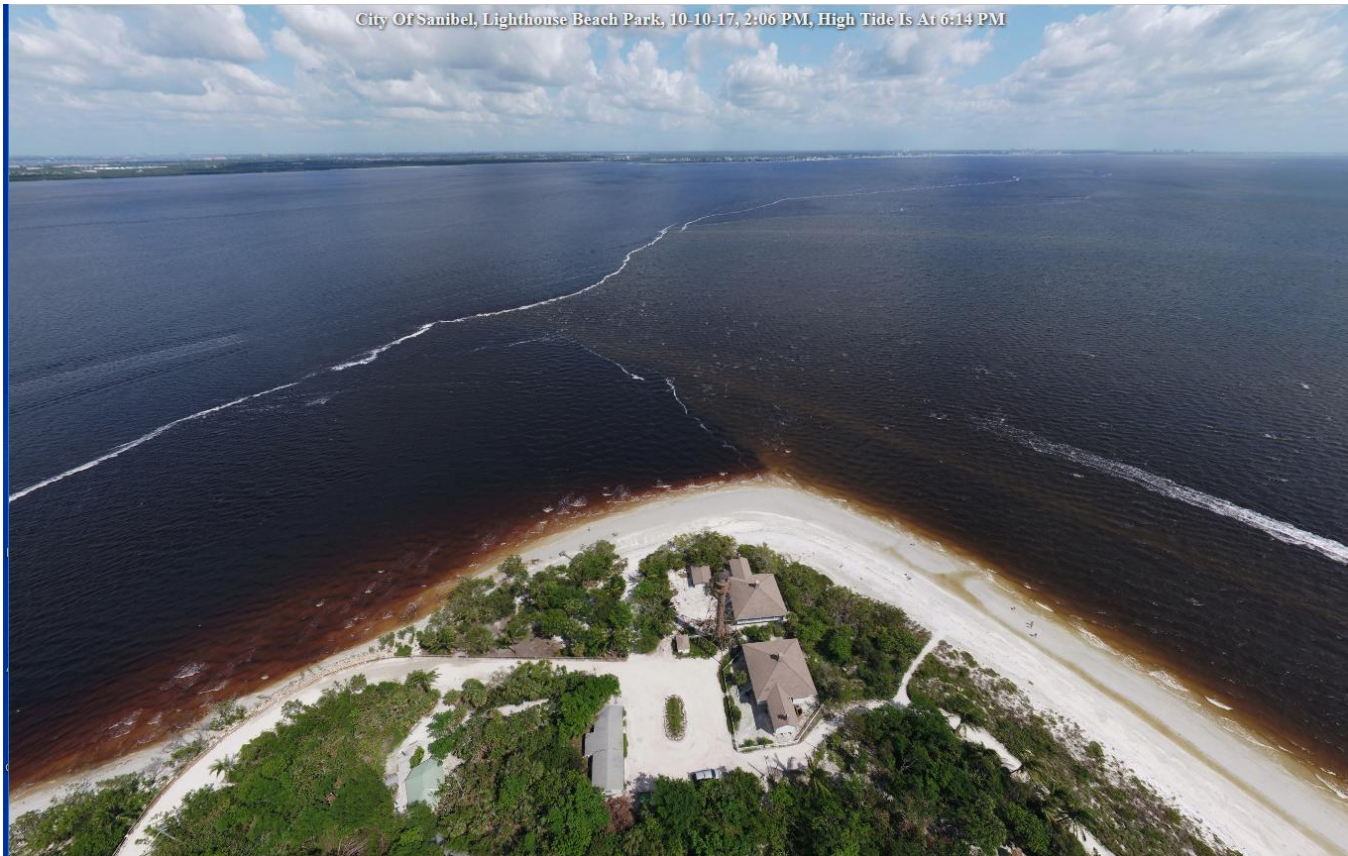
Definition of 25% I<sub>z</sub>: z where I is 25% of surface I.

I = irradiance, z= depth





**Coastal flooding at Blind Pass on Sanibel from high tides and wind driven water from Hurricane Nate on 10/7/17. Photos City of Sanibel**



**Dark freshwater discharge at Lighthouse Beach Park on Sanibel extending miles offshore into the Gulf of Mexico at mid tide on 10/10/17. Photo City of Sanibel**

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **October 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:** The past week freshwater flows from Lake Okeechobee and the watershed decreased slightly to an average of **10,405 cfs** at S-79, **nearly 4 times the harm threshold**. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends several miles offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee continued at maximum practicable releases with average flows of **7,219 cfs** to the Caloosahatchee at S-77. Discharges at S-80 the past week averaged **4,600 cfs**.

**Recommendation:** With Lake Okeechobee water levels in the high sub-band, we urge the Corps to continue maximum discharges in all directions, where practicable to return lake levels below 16 ft to reduce harmful discharges to the estuaries later in the spring when spawning occurs.

**Lake Okeechobee Level:** **17.16 ft. (High Sub-Band)** **Last week: 17.19 ft**

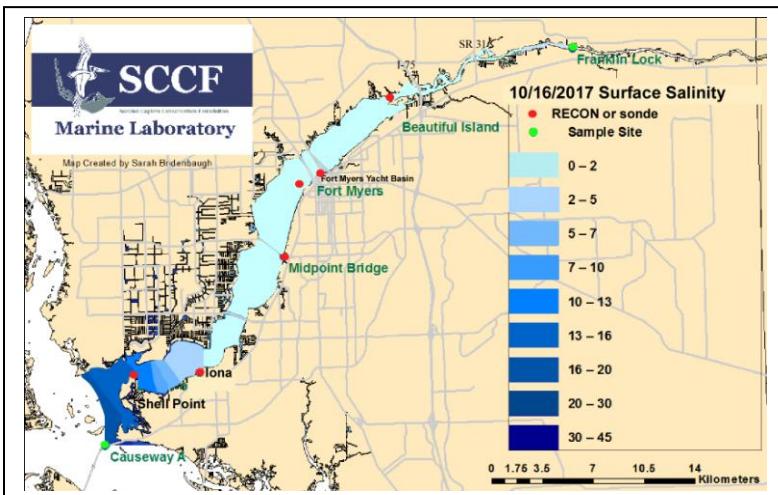
**Lake Okeechobee Inflow:** **8,530 cfs** **Lake Okeechobee Outflow: 9,661 cfs**

**Weekly Rainfall:** WP Franklin **0.57"** Ortona **0.09"** Moore Haven **0.06"**

**Salinity Beautiful Island:** **ND** (SCCF RECON Marker 18) **Previous wk ND**

**Salinity Fort Myers:** **0.2 psu** (SCCF RECON) **Previous wk 0.2 – 0.2 psu**

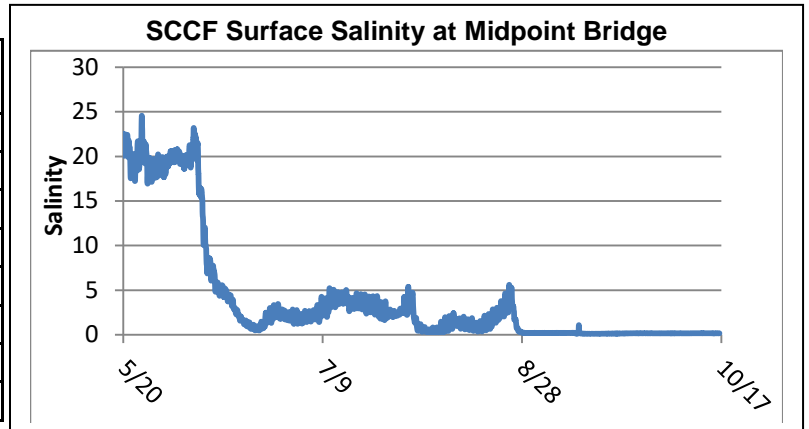
**Salinity Shell Point:** **0.7 – 26 psu** (SCCF RECON) **Previous wk 0.2 – 28 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2 - 0.2	<10 psu	In Range
Shell Point	0.7 - 26	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.46	1 meter	Low
Shell Point	0.79	2.2 meters	Low
Causeway	0.87	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **10,405 cfs**. Over the past 14 days **273,152 AF of water was discharged from Lake O**, 68% to S-77 and 32% to S-308. **No water was discharged south to the EAA. A net - 5,712 AF\* of water back flowed from the L8 into Lake Okeechobee while harmful, maximum releases to reduce lake levels are harming the estuaries.** (\*Flow data missing)

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
10/10/2017	10994	7926	7394
10/11/2017	10835	7803	7332
10/12/2017	10524	7688	7114
10/13/2017	10222	7728	7258
10/14/2017	10172	7679	7209
10/15/2017	10062	7627	7133
10/16/2017	10029	7570	7090
<b>7 day Avg</b>	<b>10405</b>	<b>7717</b>	<b>7219</b>



**Upstream of S-79/Franklin Conditions:** On 10/10/17 the Olga Water Treatment plant chlorides measured **48 mg/L**, apparent color was **260 CU** and turbidity measured **2.90 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM.

**Upper Estuary Conditions:** On 10/12/17 Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria at the Davis Boat Ramp in east Fort Myers. Salinities in the upper estuary were in the suitable range for tape grass. **Elevated turbidity and colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.**

**Lower Estuary Conditions:** The average salinity was below the optimal range for oysters at Shell Point (13 psu). At Shell Point diatoms were the dominant phytoplankton group. **Light levels and salinities were below optimal for seagrasses in much of the lower estuary.** Chlorophyll concentrations were elevated in parts of Pine Island Sound (up to 43 ug Chl a/L) with the bioluminescent dinoflagellate *Gonyaulax spinifera* dominant.

**J.N. "Ding" Darling NWR:** Dark opaque water throughout the refuge. **Visitors reported a fish kill of minnow size fishes along the west end of the refuge.**

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	15.4 – 22.3	1.5 – 6.9	24.7 – 37.9	4.9 – 27.3
Tarpon Bay	13.8 – 25.8	4.0 – 7.2	24.2 – 46.2	4.0 – 16.4

**Beach Conditions:** Dark freshwater from high discharges extends beyond the Sanibel lighthouse surrounding the beaches of Sanibel and Fort Myers Beach.

**Red Tide:** On 10/13/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in background concentrations in samples from Manatee, Sarasota, Charlotte and Lee Counties.

**Wildlife Impacts:** CROW, the wildlife hospital on Sanibel treated 5 patients for suspected harmful algal bloom (HAB) toxins: 3 double crested cormorants, 1 anhinga and 1 brown pelican.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	8.2	380	8.0	0.46
<b>Shell Point</b>	5.7	201	3.0	0.79
<b>Causeway</b>	4.5	171	3.7	0.87

Target light penetration: **CE**- Caloosahatchee Estuary =1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: **z** where **I** is 25% of surface **I**.  
**I** = irradiance, **z**= depth



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants  
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 James Evans & Holly Milbrandt - City of Sanibel  
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 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: **October 17 - 23, 2017**

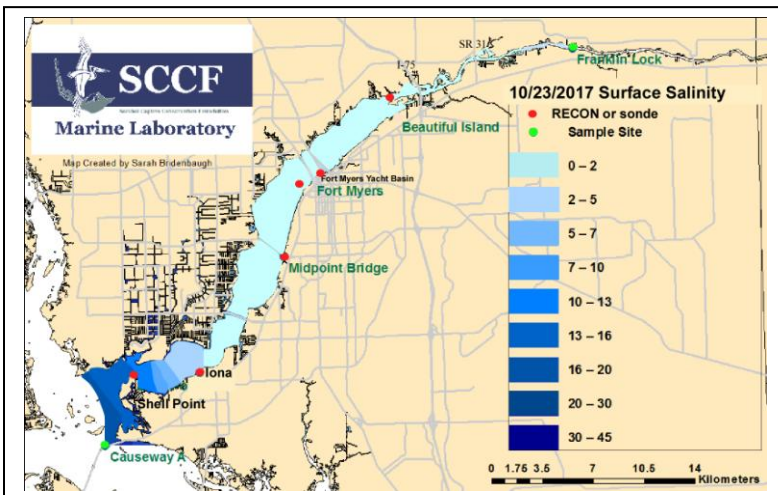
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** The past week freshwater flows from Lake Okeechobee and the watershed decreased slightly to an average of **9,028 cfs** at S-79, **over 3 times the harm threshold**. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends several miles offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee continued at maximum practicable releases with average flows of **7,026 cfs** to the Caloosahatchee at S-77. Discharges at S-80 the past week averaged **4,242 cfs**.

**Recommendation:** With Lake Okeechobee water levels in the high sub-band, we urge the Corps to continue maximum discharges in all directions, where practicable to return lake levels below 16 ft to reduce harmful discharges to the estuaries later in the spring when spawning occurs.

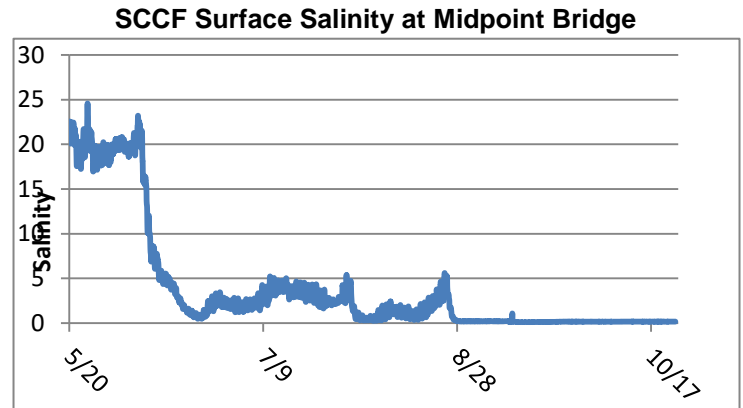
<b>Lake Okeechobee Level:</b>	<b>16.95 ft. (High Sub-Band)</b>	<b>Last week: 17.16 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>5,837 cfs</b>	<b>Lake Okeechobee Outflow: 9,263 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>1.62"</b> Ortona <b>1.15"</b>	Moore Haven <b>1.70"</b>
<b>Salinity Beautiful Island:</b>	<b>ND (SCCF RECON Marker 18)</b>	Previous wk <b>ND</b>
<b>Salinity Fort Myers:</b>	<b>0.2 psu (SCCF RECON)</b>	Previous wk <b>0.2 – 0.2 psu</b>
<b>Salinity Shell Point:</b>	<b>1.2 – 29 psu (SCCF RECON)</b>	Previous wk <b>0.7 – 26 psu</b>



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2 - 0.2	<10 psu	In Range
Shell Point	1.2 - 29	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.50	1 meter	Low
Shell Point	1.04	2.2 meters	Low
Causeway	1.17	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **9,028 cfs**. Over the past 14 days **303,218 AF of water was discharged from Lake O, 59% to S-77 and 41% to S-308. No water was discharged south to the EAA. A net -184 AF\* of water back flowed from the L8 into Lake Okeechobee while harmful, maximum releases to reduce lake levels are harming the estuaries.** (\*Flow data missing)

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
10/17/2017	9604	6950	7003
10/18/2017	9060	6891	7052
10/19/2017	8708	7002	7086
10/20/2017	8822	6948	7081
10/21/2017	9091	7173	7132
10/22/2017	8930	7210	7038
10/23/2017	8978	6834	6793
<b>7 day Avg</b>	<b>9028</b>	<b>7001</b>	<b>7026</b>



**Upstream of S-79/Franklin Conditions:** On 10/24/17 the Olga Water Treatment plant chlorides measured **46 mg/L**, apparent color was **246 CU** and turbidity measured **3.80 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2000 GPM. The WP Franklin Lock park remains closed to public access and water sampling.

**Upper Estuary Conditions:** On 10/19/17 Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria at the Davis Boat Ramp in east Fort Myers. Salinities in the upper estuary were in the suitable range for tape grass. Elevated turbidity and colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.

**Lower Estuary Conditions:** The average salinity was in the optimal range for oysters at Shell Point (**14 psu**). Light levels and salinities were below optimal for seagrasses in much of the lower estuary.

**J.N. "Ding" Darling NWR:** Dark opaque water continues to obscure light causing low oxygen levels in the impoundments.

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	17.7 – 28.3	2.0 – 6.9	19.8 – 32.2	3.0 – 5.1
Tarpon Bay	17.0 – 32.6	4.0 – 6.8	8.3 – 44.2	2.1 – 5.4

**Beach Conditions:** Dark freshwater from high discharges extends beyond the Sanibel lighthouse surrounding the beaches of Sanibel and Fort Myers Beach.

**Red Tide:** On 10/20/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in Northwest and Southwest Florida but not south of Sarasota the past week.

**Wildlife Impacts:** CROW, the wildlife hospital on Sanibel treated **2 patients for harmful algal bloom (HAB) toxins: 1 laughing gull and 1 double crested cormorant who later died.**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	4.8	350	8.0	0.50
<b>Shell Point</b>	5.7	115	6.0	1.04
<b>Causeway</b>	3.6	104	4.1	1.17

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

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 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: **October 24 - 30, 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:** The past week freshwater flows from Lake Okeechobee and the watershed increased to an average of **10,862 cfs** at S-79 as Tropical Depression Phillip passed over southern Florida. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends several miles offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee continued at maximum practicable releases with average flows of **6,623 cfs** to the Caloosahatchee at S-77. Discharges at S-80 the past week averaged **4,481 cfs**.

**Recommendation:** With Lake Okeechobee water levels in the high sub-band, we urge the Corps to continue maximum discharges in all directions, where practicable to return lake levels below 16 ft to reduce harmful discharges to the estuaries later in the spring when spawning occurs.

**Lake Okeechobee Level:** **17.02 ft. (High Sub-Band)** **Last week: 16.95 ft**

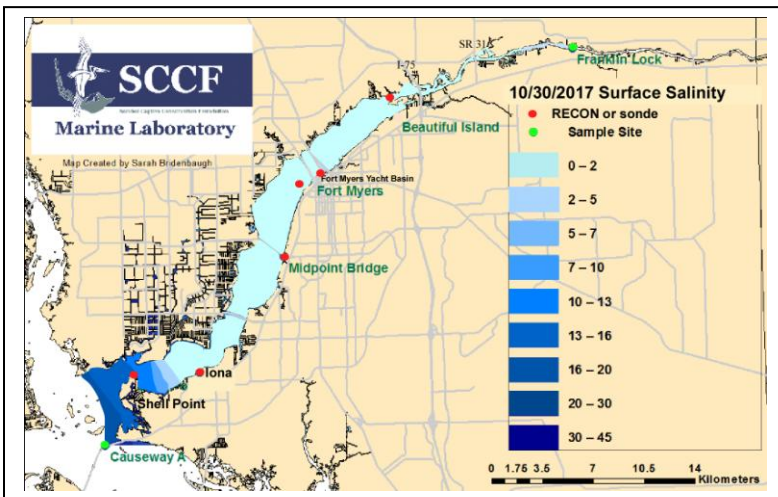
**Lake Okeechobee Inflow:** **13,528 cfs** **Lake Okeechobee Outflow: 7,371 cfs**

**Weekly Rainfall:** WP Franklin **1.93"** Ortona **2.89"** Moore Haven **3.22"**

**Salinity Beautiful Island:** **ND (SCCF RECON Marker 18)** **Previous wk ND**

**Salinity Fort Myers:** **0.2 psu (SCCF RECON)** **Previous wk 0.2 – 0.2 psu**

**Salinity Shell Point:** **0.5- 29 psu (SCCF RECON)** **Previous wk 1.2 – 29 psu**

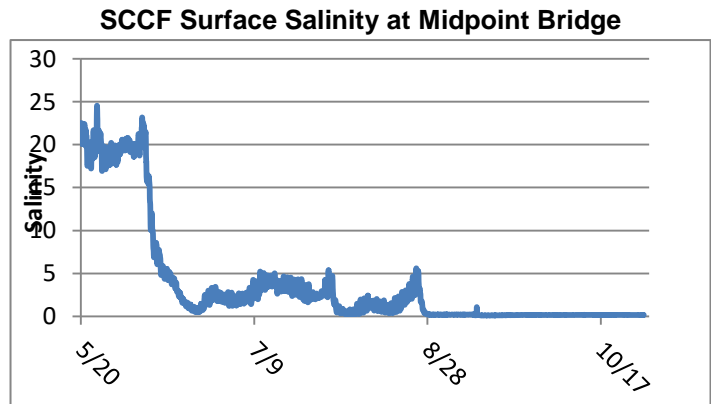


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2 - 0.2	<10 psu	In Range
Shell Point	0.5 - 29	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.54	1 meter	Low
Shell Point	0.79	2.2 meters	Low
Causeway	0.75	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **10,862 cfs**. Over the past 14 days **310,276 AF of water was discharged from Lake O, 59% to S-77 and 41% to S-308. No water was discharged south to the EAA.** A net **351 AF** was discharged through L8 and **351 AF** through S310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
10/24/2017	9220	6754	6678
10/25/2017	9634	7100	6773
10/26/2017	10055	7753	7082
10/27/2017	9664	7615	7196
10/28/2017	10451	7382	7166
10/29/2017	13907	7455	6106
10/30/2017	13104	7520	5362
<b>7 day Avg</b>	<b>10,862</b>	<b>7368</b>	<b>6623</b>



**Upstream of S-79/Franklin Conditions:** On 10/31/17 the Olga Water Treatment plant chlorides measured **51 mg/L**, apparent color was **235 CU** and turbidity measured **4.36 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2200 GPM. **The WP Franklin Lock park remains closed to public access and water sampling.**

**Upper Estuary Conditions:** On 10/26/17 Lee County Environmental Lab detected *Microcystis*, at the Davis Boat Ramp in east Fort Myers. Salinities in the upper estuary were in the suitable range for tape grass. **Elevated turbidity and colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.**

**Lower Estuary Conditions:** The average weekly salinity was in the optimal range for oysters at Shell Point (**15 psu**) though the **daily average was as low as 6.2 psu**. Light levels and salinities were **below optimal for seagrasses in much of the lower estuary**. On 10/29/17 during 30 knot winds, the 25% light depth measured at Iona was **0.15 meters** and the salinity was **0.8 psu**.

**J.N. "Ding" Darling NWR:** Dark opaque water continues to obscure light causing low oxygen levels in the impoundments.

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	16.4 – 27.3	3.5 – 9.8	14.8 – 35.0	3.4 – 10.9
Tarpon Bay	17.7 – 25.2	3.8 – 9.6	22.2 – 43.1	4.2 – 13.7

**Coastal Conditions:** Spikes in chlorophyll concentrations were detected at both Tarpon Bay and MacIntyre Creek RECON sensors the past week. **Samples at the mouth of Tarpon Bay revealed a bloom dominated by the diatom *Skeletonema* sp.** Dark, freshwater from high discharges extends beyond the Sanibel lighthouse surrounding the beaches of Sanibel and Fort Myers Beach.

**Red Tide:** On 10/27/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in samples collected in Pinellas, Manatee, Sarasota and Collier Counties in Southwest Florida the past week.

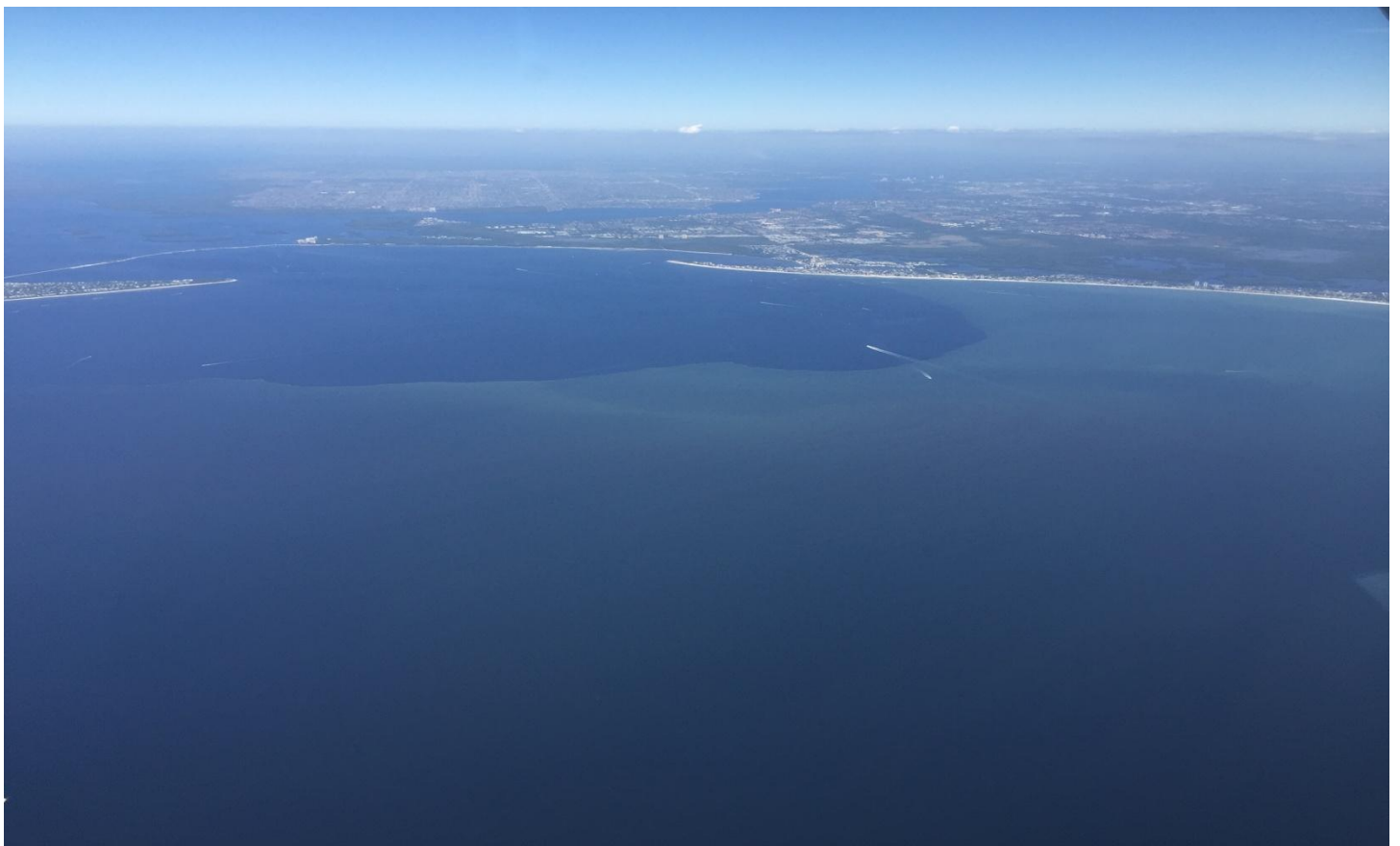
**Wildlife Impacts:** CROW, the wildlife hospital on Sanibel treated **11 patients with probable brevetoxicosis: 10 double crested cormorants and 1 white ibis.**

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
Fort Myers	4.1	330	4.1	0.54
Shell Point	5.7	190	6.0	0.79
Causeway	6.5	180	10	0.75

Target light penetration: **CE**- Caloosahatchee Estuary =1 m  
**SCB**-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: **z** where **I** is 25% of surface **I**.  
 I = irradiance, z= depth



**Dark chocolate colored water from Caloosahatchee discharges extending north in the Gulf of Mexico along Sanibel Island's West Gulf Drive/Rabbit Road on 10/30/17. Photo: Bob Holder, homeowner**



**A dark plume of freshwater discharging out the Caloosahatchee into the Gulf of Mexico along Fort Myers Beach, on the right, Sanibel Causeway and east end at left, on 10/27/17. Photo: Pilot Curt Brown**

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **October 31 - November 6, 2017**

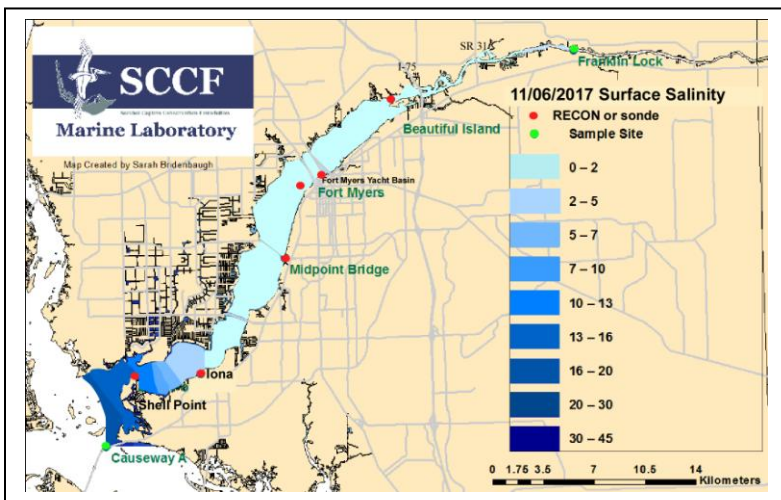
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** The past week freshwater flows from Lake Okeechobee and the watershed decreased to an average of **10,160 cfs** at S-79. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends several miles offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee continued at maximum practicable releases with average flows of **6,125 cfs** to the Caloosahatchee at S-77. Discharges at S-80 the past week averaged **4,788 cfs.**

**Recommendation:** With Lake Okeechobee water levels in the high sub-band, we urge the Corps to continue maximum discharges in all directions, where practicable to return lake levels below 16 ft to reduce harmful discharges to the estuaries later in the spring when spawning occurs.

<b>Lake Okeechobee Level:</b>	<b>16.91 ft. (High Sub-Band)</b>	<b>Last week: 17.02 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>5,625 cfs</b>	<b>Lake Okeechobee Outflow: 7,894 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>0.0"</b> Ortona <b>0.08"</b>	Moore Haven <b>0.02"</b>
<b>Salinity Beautiful Island:</b>	<b>ND</b> (SCCF RECON Marker 18)	Previous wk <b>ND</b>
<b>Salinity Fort Myers:</b>	<b>0.2 psu</b> (SCCF RECON)	Previous wk <b>0.2 – 0.2 psu</b>
<b>Salinity Shell Point:</b>	<b>0.2 - 27 psu</b> (SCCF RECON)	Previous wk <b>0.5 - 29 psu</b>

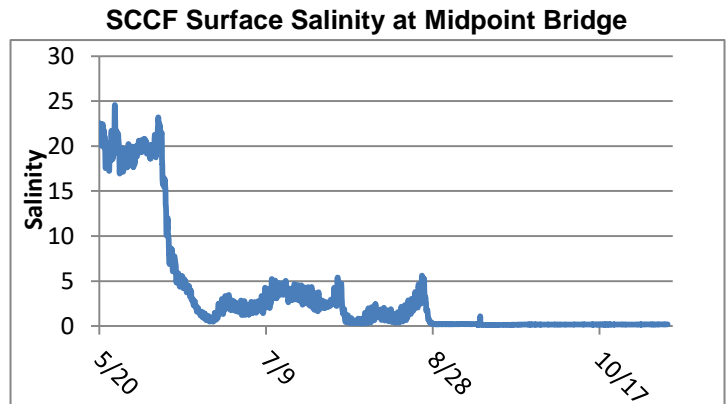


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2 - 0.2	<10 psu	In Range
Shell Point	0.2 - 27	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.52	1 meter	Low
Shell Point	0.83	2.2 meters	Low
Causeway	0.82	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **10,160 cfs**. Over the past 14 days **301,912 AF of water was discharged from Lake O, 57% to S-77 and 43% to S-308. No water was discharged south to the EAA.** A net **277 AF** was discharged through L8 and **225 AF** through S310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
10/31/2017	12476	7633	6393
11/1/2017	12199	8043	6622
11/2/2017	11374	7926	7189
11/3/2017	10605	7898	7149
11/4/2017	8588	6292	5335
11/5/2017	8200	5774	5051
11/6/2017	7680	6025	5133
<b>7 day Avg</b>	<b>10160</b>	<b>7084</b>	<b>6125</b>



**Upstream of S-79/Franklin Conditions:** On 11/7/17 the Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria upstream of the Franklin Lock in east Fort Myers. On 11/7/17 the Olga Water Treatment plant chlorides measured **62 mg/L**, apparent color was **187 CU** and turbidity measured **2.88 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2200 GPM.

**Upper Estuary Conditions:** On 11/7/17 the Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria downstream of the Franklin Lock and at the Davis boat ramp in east Fort Myers. Salinities in the upper estuary were in the suitable range for tape grass. **Elevated turbidity and colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.**

**Lower Estuary Conditions:** The average weekly salinity was below the optimal range for oysters at Shell Point (**13 psu**). **Light levels and salinities were below optimal for seagrasses in much of the lower estuary.**

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	17.7 – 25.4	3.0 – 8.7	23.2 – 35.1	4.4 – 11.3
Tarpon Bay	15.8 – 27.4	4.9 – 8.7	23.3 – 44.0	4.1 – 12.0

**Coastal Conditions:** Dark, freshwater from high discharges extends beyond the Sanibel lighthouse surrounding the beaches of Sanibel and Fort Myers Beach. A significant number of dead pen shells washed up dead along the north end of Lovers Key on 11/6/17 possibly a result of a 2 day cold front.

**Red Tide:** On 11/3/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in samples collected in Southwest Florida Counties Pinellas, Hillsborough, Manatee and Sarasota, but not in local waters the past week.

**Wildlife Impacts:** CROW the wildlife hospital on Sanibel treated **4 patients with suspected brevetoxicosis: 3 double crested cormorants and 1 brown pelican.**



**Dead pen shells washed up on Lovers Key on 11/6/17. Photo Lee County**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	5.2	340	5.2	0.52
<b>Shell Point</b>	7.9	190	4.7	0.83
<b>Causeway</b>	9.0	159	3.9	0.82

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

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **November 7 - 13, 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:** The past week freshwater flows from Lake Okeechobee and the watershed decreased to an average of **8,336 cfs** at S-79. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends several miles offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee continued at maximum practicable releases with average flows of **6,368 cfs** to the Caloosahatchee at S-77. Discharges at S-80 the past week averaged **4,141 cfs.**

**Recommendation:** We urge the Corps to continue maximum discharges in all directions, where practicable to return lake levels below 16 ft to minimize harmful discharges to the estuaries during the spring spawning season.

**Lake Okeechobee Level:** 16.67 ft. (Intermediate Sub-Band) **Last week: 16.91 ft**

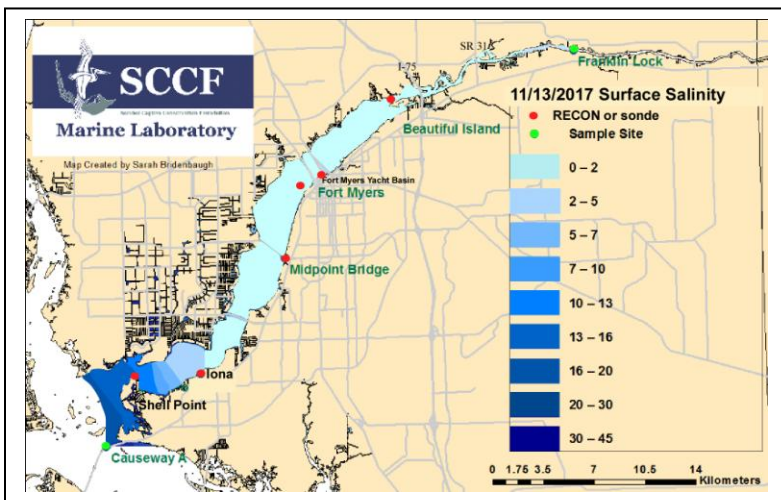
**Lake Okeechobee Inflow:** 5,107 cfs **Lake Okeechobee Outflow:** 8,117 cfs

**Weekly Rainfall:** WP Franklin **0.0"** Ortona **0.43"** Moore Haven **0.06"**

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18) **Previous wk ND**

**Salinity Fort Myers:** 0.2 psu (SCCF RECON) **Previous wk 0.2 – 0.2 psu**

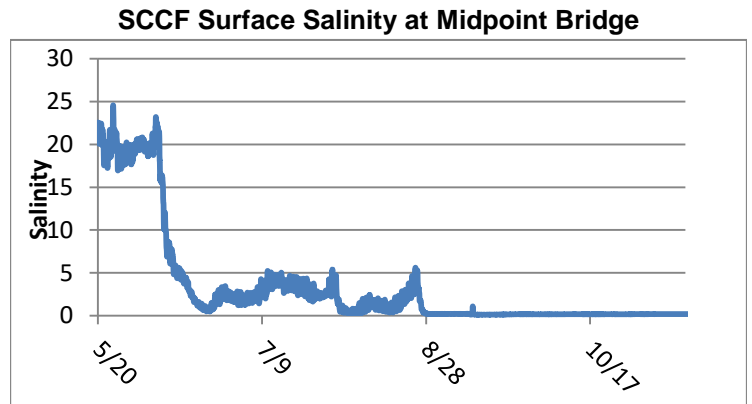
**Salinity Shell Point:** 2.0 - 28 psu (SCCF RECON) **Previous wk 0.2 - 27 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2	<10 psu	In Range
Shell Point	0.2 - 28	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.56	1 meter	Low
Shell Point	0.80	2.2 meters	Low
Causeway	1.14	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **8,226 cfs**. Over the past 14 days **303,061 AF of water was discharged from Lake O, 57% to S-77 and 43% to S-308. No water was discharged south to the EAA.** A net **368 AF** was discharged through L8 and **161 AF** through S310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
11/7/2017	7704	5976	5608
11/8/2017	8964	6714	6495
11/9/2017	8894	6561	6507
11/10/2017	8916	6552	6457
11/11/2017	8052	6623	6461
11/12/2017	7940	6331	6480
11/13/2017	7884	6332	6568
<b>7 day Avg</b>	<b>8336</b>	<b>6441</b>	<b>6368</b>



**Upstream of S-79/Franklin Conditions:** On 11/7/17 the Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria upstream of the Franklin Lock in east Fort Myers. On 11/14/17 the Olga Water Treatment plant chlorides measured **54 mg/L**, apparent color was **216 CU** and turbidity measured **3.18 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2200 GPM.

**Upper Estuary Conditions:** On 11/7/17 the Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria downstream of the Franklin Lock and at the Davis boat ramp in east Fort Myers. Salinities in the upper estuary were in the suitable range for tape grass. Colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.

**Lower Estuary Conditions:** The average weekly salinity was within the optimal range for oysters at Shell Point (**15 psu**). Light levels and salinities were below optimal for seagrasses in much of the lower estuary.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	18.8 – 22.8	3.0 – 9.6	21.5 – 30.6	4.2 – 11.6
Tarpon Bay	17.3 – 25.3	4.9 – 7.2	28.0 – 42.3	3.8 – 9.3

**Coastal Conditions:** Dark, freshwater from high discharges extends beyond the Sanibel lighthouse surrounding Sanibel on outgoing tides.

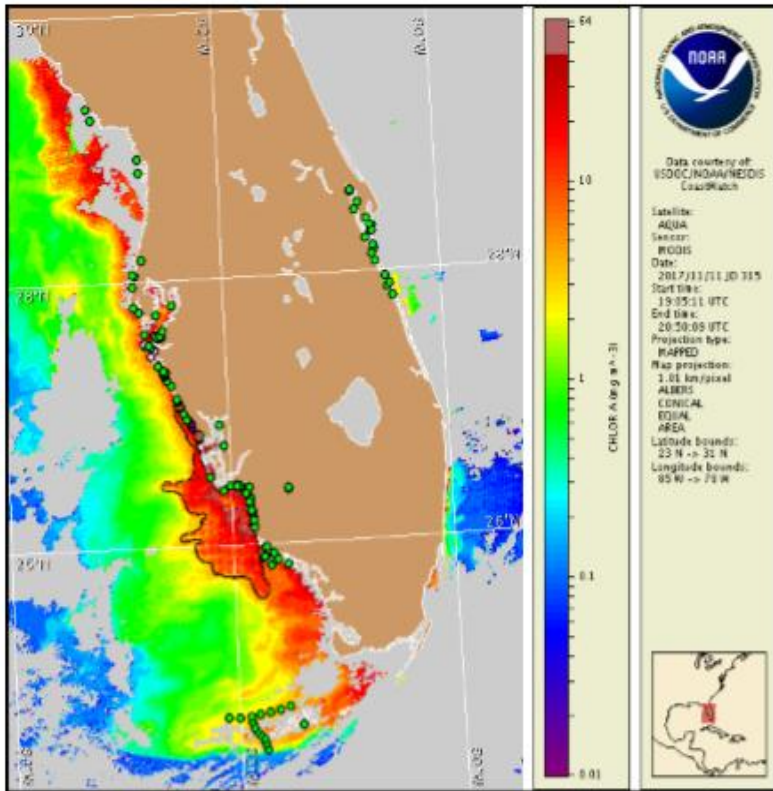
**Red Tide:** On 11/9/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in samples collected in Pinellas, Manatee, Sarasota and Charlotte Counties in Southwest Florida the past week. *Karenia* sp. was detected in low concentrations in Blind Pass on 11/9/17 (SCCF).

**Wildlife Impacts:** CROW the wildlife hospital on Sanibel treated **2 double crested cormorants with suspected brevetoxicosis.**

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	4.0	320	3.9	0.56
<b>Shell Point</b>	7.6	188	4.5	0.80
<b>Causeway</b>	3.3	125	1.3	1.14

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





Satellite chlorophyll image with possible *K. brevis* HAB areas shown by red polygons, NOAA Gulf of Mexico Harmful Algal Bloom Bulletin map 11/13/17.

Sampling by FWC reports background to low concentrations of red tide along the southwest coast.

Aerial view of dark, freshwater plume off Sanibel's Lighthouse Beach 11/7/17.  
Photo City of Sanibel



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants  
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 Rae Burns – 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: **November 14 - 20, 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:** This past week freshwater flows from Lake Okeechobee and the watershed decreased to an average of **7,569 cfs** at S-79. **Light remains limited throughout the river and estuary from dark freshwater discharge, which continues to extend offshore into the Gulf of Mexico.**

**USACE Action:** The past week discharges from Lake Okeechobee continued at maximum practicable releases with average flows of **6,103 cfs** to the Caloosahatchee at S-77. Discharges at S-80 the past week averaged **3,288 cfs.**

**Recommendation:** We urge the Corps to continue maximum discharges in all directions, where practicable, to return lake levels below 16 ft to minimize harmful discharges to the estuaries during the spring spawning season.

Lake Okeechobee Level: **16.42 ft. (Intermediate Sub-Band)** Last week: **16.67 ft**

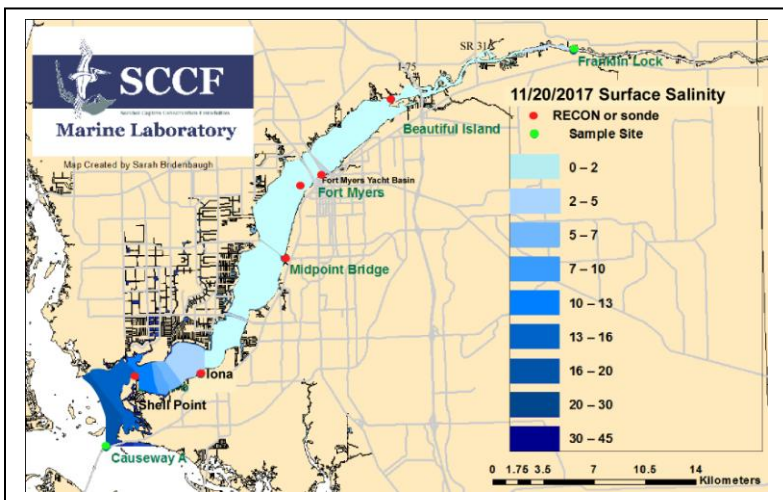
Lake Okeechobee Inflow: **2,893 cfs** Lake Okeechobee Outflow: **7,690 cfs**

Weekly Rainfall: WP Franklin **0.01"** Ortona **0.18"** Moore Haven **0.20"**

Salinity Beautiful Island: **ND** (SCCF RECON Marker 18) Previous wk **ND**

Salinity Fort Myers: **0.1 – 0.2 psu** (SCCF RECON) Previous wk **0.2 – 0.2 psu**

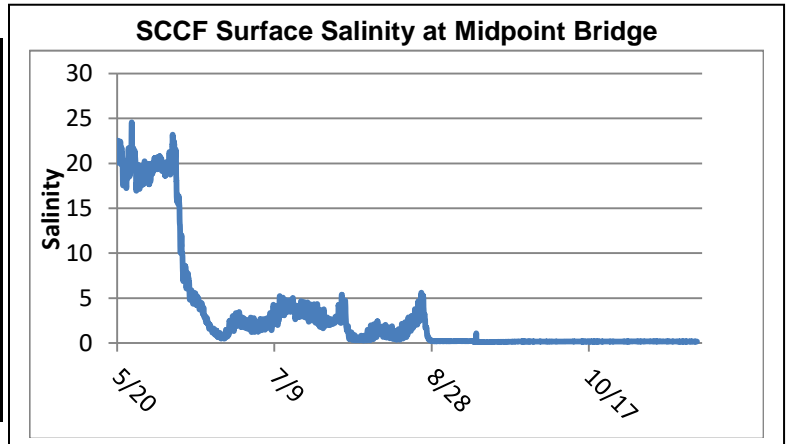
Salinity Shell Point: **2.0 – 28 psu** (SCCF RECON) Previous wk **0.2 - 28 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.1 - 0.2	<10 psu	In Range
Shell Point	<b>2.0 - 28</b>	25 - 32 psu	<b>Low</b>
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	<b>0.54</b>	1 meter	<b>Low</b>
Shell Point	<b>0.63</b>	2.2 meters	<b>Low</b>
Causeway	<b>0.65</b>	2.2 meters	<b>Low</b>

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **7,569 cfs**. **80% of estuary flows originated from Lake Okeechobee**. Over the past 14 days **287,552 AF of water was discharged from Lake O**, 60% to S-77 and 40% to S-308. **No water was discharged south to the EAA**. A net 277 AF was discharged through L8 and a net 201 AF through S-310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
11/14/2017	7850	6516	6453
11/15/2017	6835	5568	5455
11/16/2017	7407	6224	6257
11/17/2017	7713	6263	6253
11/18/2017	7854	6179	6158
11/19/2017	7888	6144	5957
11/20/2017	7435	6248	6187
<b>7 day Avg</b>	<b>7569</b>	<b>6163</b>	<b>6103</b>



**Upstream of S-79/Franklin Conditions:** On 11/21/17 the Olga Water Treatment plant chlorides measured **52 mg/L**, and turbidity measured **5.39 NTU**. No visible algae in the plant intake during the past week. The plant is online running at 2200 GPM.

**Upper Estuary Conditions:** Salinities in the upper estuary were in the suitable range for tape grass. Colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.

**Lower Estuary Conditions:** The average weekly salinity was within the optimal range for oysters at Shell Point (**14 psu**), but within the lethal range for oysters at Peppertree Point Marina in Iona. **Light levels and salinities were below optimal for seagrasses in much of the lower estuary.**

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	19.1 – 26.0	3.7 – 7.8	20.0 – 30.2	3.1 – 9.3
Tarpon Bay	17.6 – 26.8	5.7 – 8.0	26.0 – 43.4	3.4 – 12.8

**Coastal Conditions:** Dark freshwater from high discharges extends beyond the Sanibel lighthouse surrounding Sanibel on outgoing tides (See Fig. 1). Dark water extends from the north end to mid island on Fort Myers Beach.

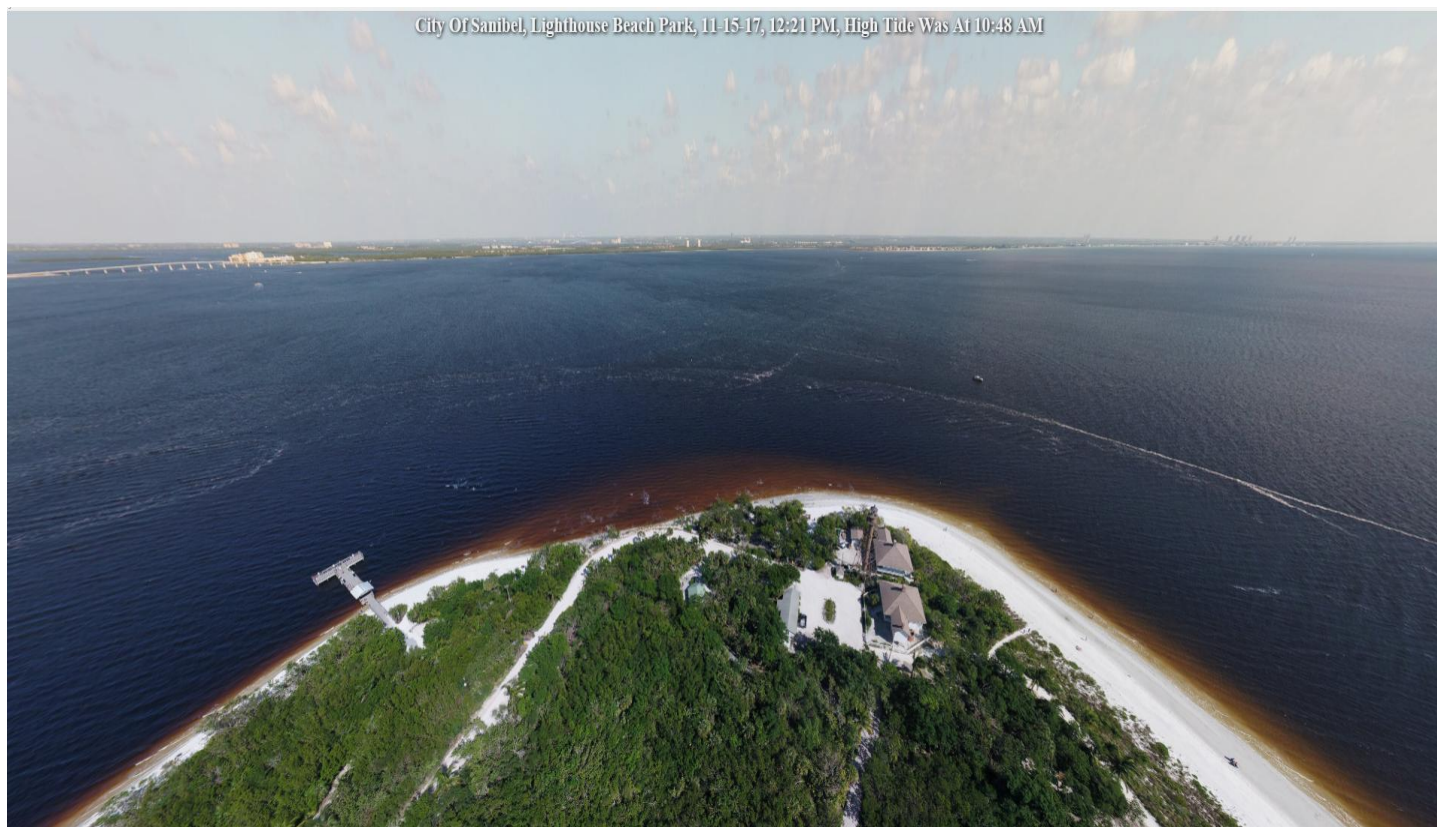
**Red Tide:** On 11/17/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, *Karenia brevis*, was present in samples collected in Manatee, Sarasota and Charlotte Counties and in background to high concentrations in Lee County the past week. **SCCF sampling detected medium concentrations of *Karenia* sp. along the west side of Sanibel and Captiva from 11/15/17-11/17/17, and on the south side at Tarpon Beach on 11/20/17. On 11/21/17, SCCF samples had 112,500 *Karenia* cells/L at the Gulf of Mexico RECON off Ft. Myers Beach.**

**Wildlife Impacts:** The past week, CROW the wildlife hospital on Sanibel treated **10 double crested cormorants with suspected brevetoxicosis**. A dead green sea turtle was found on Sanibel with no obvious wounds. Suspect cause of death may be red tide related.

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
Fort Myers	7.9	313	6.6	0.54
Shell Point	7.6	265	4.2	0.63
Causeway	5.5	251	5.2	0.65

Target light penetration: CE- Caloosahatchee Estuary =1 m  
 SCB-San Carlos Bay = 2.2 meters  
 Definition of 25% lz: z where I is 25% of surface I.  
 I = irradiance, z= depth





**Aerial view of dark water surrounding Sanibel Lighthouse Beach Park and extending into the Gulf on 11/15/17. Photo City of Sanibel**

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **November 21 - 27, 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:** The past week freshwater flows from Lake Okeechobee and the watershed decreased to an average of **7,497 cfs** at S-79. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends offshore into the Gulf of Mexico and along the east end beaches of Sanibel. Red tide moved onshore along Sanibel Island causing fish kills.**

**USACE Action:** On 11/17/17 the Army Corps reduced discharges from Lake Okeechobee to **6,500 cfs** to the west measured at **S-77** and **2,800 cfs** to the St Lucie at S-80.

**Recommendation:** As Lake Okeechobee water levels recede we urge the Corps to continue stepping down discharges to the Caloosahatchee estuary with a target of **4,500 cfs measured at S-79** over the next week.

**Lake Okeechobee Level:** 16.21 ft. (Low Sub-Band) **Last week: 16.42 ft**

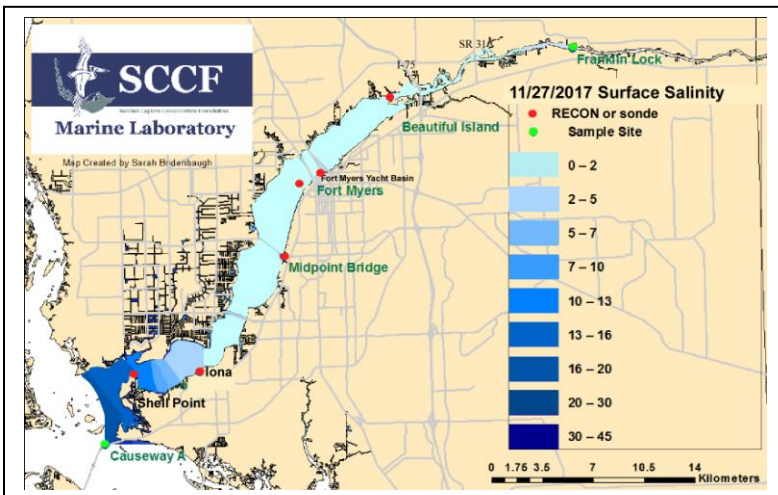
**Lake Okeechobee Inflow:** 2,101 cfs **Lake Okeechobee Outflow:** 7,692 cfs

**Weekly Rainfall:** WP Franklin 0.37" Ortona 0.45" Moore Haven 0.30"

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18) Previous wk ND

**Salinity Fort Myers:** 0.1 – 0.2 psu (SCCF RECON) Previous wk 0.1 – 0.2 psu

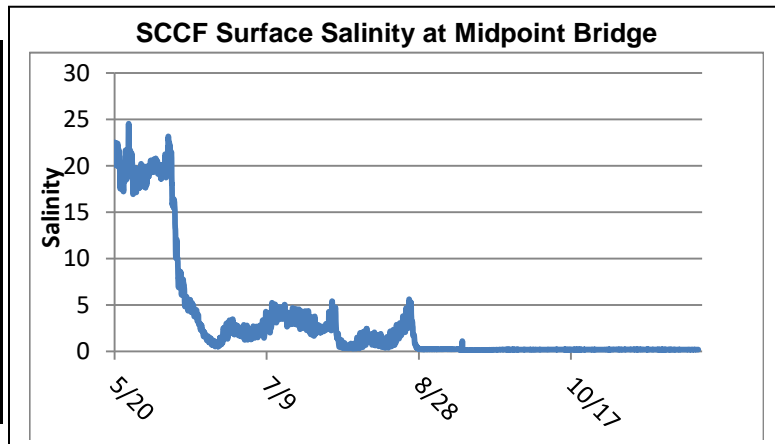
**Salinity Shell Point:** 1.6 - 29 psu (SCCF RECON) Previous wk 2.0 - 28 psu



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.1 - 0.2	<10 psu	In Range
Shell Point	1.6 - 29	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.57	1 meter	Low
Shell Point	0.75	2.2 meters	Low
Causeway	1.02	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **7,497 cfs** with **80% of flows to the estuary originating from Lake Okeechobee**. Over the past 14 days **252,681 AF** of water was discharged from Lake O, **67% to S-77** and **32% to S-308**. For the first time since **Sept 1st**, **365 AF** of water was discharged south thru **S-354 to the EAA**. A net **175 AF** was discharged through L8 and a net **652 AF** through S310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
11/21/2017	7454	6162	6107
11/22/2017	7877	6238	6080
11/23/2017	7324	6314	5936
11/24/2017	8114	6296	5873
11/25/2017	7170	6256	5987
11/26/2017	7386	6038	5988
11/27/2017	7156	5971	6062
<b>7 day Avg</b>	<b>7497</b>	<b>6182</b>	<b>6005</b>



**Upstream of S-79/Franklin Conditions:** On 11/28/17 the Olga Water Treatment plant chlorides measured **52 mg/L**, and turbidity measured **3.86 NTU**. No visible algae in the plant intake the past week. The plant is online running at 2200 GPM.

**Upper Estuary Conditions:** Salinities in the upper estuary were in the suitable range for tape grass. Colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.

**Lower Estuary Conditions:** The average weekly salinity was within the optimal range for oysters at Shell Point (**15 psu**), but **within the lethal range for oysters at Peppertree Point Marina in Iona**. Light levels and salinities were below optimal for seagrasses in much of the lower estuary.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	19.2 – 24.8	2.9 – 8.4	17.0 – 26.9	3.5 – 16.0
Tarpon Bay	18.7 – 29.9	4.7 – 7.4	15.1 – 37.6	3.3 – 16.1

**Coastal Conditions:** Red tide causing fish kills along Sanibel beaches. Dark, freshwater from high discharges extends beyond the Sanibel lighthouse surrounding Sanibel beaches at the east end on outgoing tides.

**Red Tide:** On 11/22/17 the Florida Fish and Wildlife Conservation Commission reported the Florida red tide organism, **Karenia brevis**, was present from very low to high concentrations in samples collected in Lee County. **K. brevis** was detected in high concentrations on the west side of Captiva and medium concentrations in Pine Island Sound, Blind Pass, Redfish Pass, Captiva Pass, and Boca Grande Pass. **SCCF sampling detected medium concentrations of Karenia sp. along the west and south side of Sanibel on 11/22/17 and high concentrations of Karenia sp. along the southeast side of Sanibel from 11/25/17 to 11/27/17**. Dead mullet observed 11/27/17 on the Gulfside of Sanibel.

**Wildlife Impacts:** The past week, CROW, the wildlife hospital on Sanibel, treated **12 new patients with suspected brevetoxicosis; 11 double crested cormorants and 1 brown pelican**. SCCF reported **two sea turtle strandings** one immature green with fibropapillomas was found on Sanibel, a second adult, tagged female loggerhead with a severe boat strike wound was found on Captiva.

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
Fort Myers	6.4	302	4.6	0.57
Shell Point	5.9	215	3.7	0.75
Causeway	3.4	143	2.2	1.02

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





Dark brown color in swash zone on the south side of Sanibel is from high concentrations ~25 million cells/L of *Karenia* on 11/27/17. Photo courtesy of Curt Brown.



Swash zone at Gulfside City Beach on Sanibel colored by 125 million *Karenia* cells/L on 11/26/17. Photo SCCF

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **November 28 - December 4, 2017**

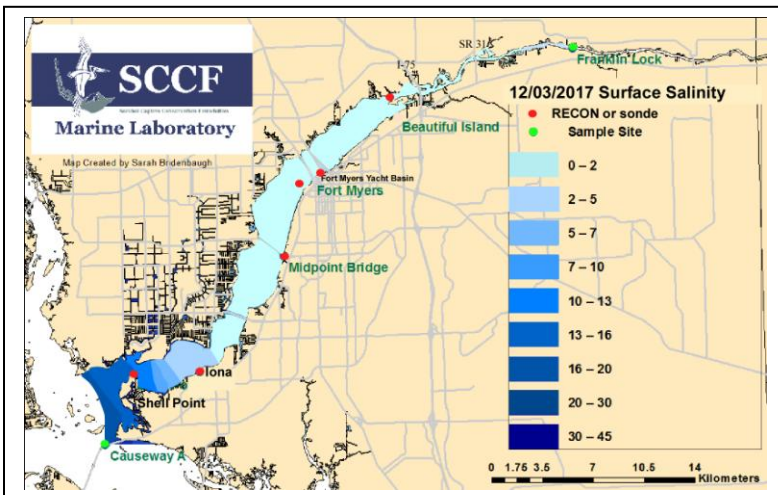
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** The past week freshwater flows from Lake Okeechobee and the watershed decreased to an average of **5,999 cfs** at S-79. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends offshore into the Gulf of Mexico and along the east end beaches of Sanibel. Red tide moved onshore along Sanibel Island causing fish kills.**

**USACE Action:** On 11/30/17 the Army Corps reduced discharges from Lake Okeechobee to **4,000 cfs** to the west measured at **S-77** and **1,800 cfs** to the St Lucie at S-80.

**Recommendation:** As Lake Okeechobee water levels recede we urge the Corps to continue stepping down discharges to the Caloosahatchee estuary with a target of **3,000 cfs measured at S-79** over the next week.

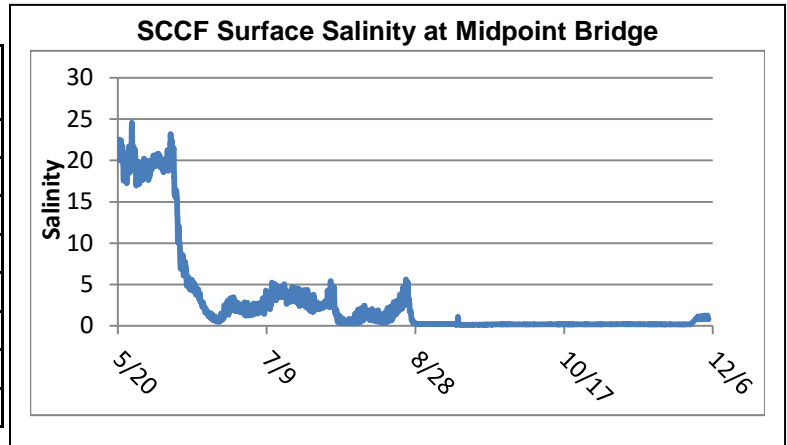
<b>Lake Okeechobee Level:</b>	<b>15.94 ft. (Low Sub-Band)</b>	<b>Last week: 16.21 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>1,341 cfs</b>	<b>Lake Okeechobee Outflow: 7,539 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>0.0"</b> Ortona <b>0.0"</b>	Moore Haven <b>0.0"</b>
<b>Salinity Beautiful Island:</b>	<b>ND</b> (SCCF RECON Marker 18)	Previous wk <b>ND</b>
<b>Salinity Fort Myers:</b>	<b>0.2 psu</b> (SCCF RECON)	Previous wk <b>0.1 – 0.2 psu</b>
<b>Salinity Shell Point:</b>	<b>2.7- 29 psu</b> (SCCF RECON)	Previous wk <b>1.6 – 29 psu</b>



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2	<10 psu	In Range
Shell Point	2.7 - 29	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.57	1 meter	Low
Shell Point	0.75	2.2 meters	Low
Causeway	1.08	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **5,999 cfs**. Over the past 14 days **198,061 AF** of water was discharged from Lake O, **78% to S-77** and **17% to S-308**. **A total of 7,872 AF, 4%, was discharged south to the EAA thru S351, S-352 and S-354**. A net 157 AF was discharged through L8 and a net 1,109 AF through S310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
11/28/2017	7131	5960	6088
11/29/2017	7183	5966	6043
11/30/2017	7024	5948	5989
12/1/2017	5646	4634	4889
12/2/2017	4980	3964	4383
12/3/2017	5033	4010	4297
12/4/2017	4994	4050	4373
<b>7 day Avg</b>	<b>5999</b>	<b>4933</b>	<b>5152</b>



**Upper Estuary Conditions:** On 11/30/17 the Lee County Environmental Lab detected *Microcystis*, *Dolichospermum* and *Planktothrix* cyanobacteria upstream of the Franklin Lock in east Fort Myers. Salinities in the upper estuary were in the suitable range for tape grass. Colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.

**Lower Estuary Conditions:** The average weekly salinity was within the optimal range for oysters at Shell Point (17psu), but within the lethal range for oysters at Peppertree Point Marina in Iona. Light levels and salinities were below optimal for seagrasses in much of the lower estuary.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	19.4 – 23.3	2.9 – 7.8	22.6 – 42.9	4.4 – 10.6
Tarpon Bay	18.5 – 30.2	5.2 – 7.7	15.6 – 39.6	4.0 – 11.9

**Red Tide:** On 12/1/17 the Florida Fish and Wildlife Conservation Commission reported a bloom of the Florida red tide organism, *Karenia brevis*, was present in background to medium concentrations in Charlotte and Lee Counties. Fish kills were reported along Lee County on 11/26 and 11/29. Slight respiratory irritation has been reported in some areas of Lee County over the past week. SCCF reported low levels of *Karenia* spp. along the beaches of Sanibel on 11/30 and 12/1/17.

**Forecasts for Southwest Florida** by the [USF-FWC Collaboration for Prediction of Red Tides](#) predict net offshore movement of surface waters and southern, onshore movement of subsurface waters from Pinellas to Lee counties over the next three days.

**Manatees:** Lee County park staff report up to a dozen manatees in the warm water of the Orange River and FPL canal the past week. Water temperatures ranged from 72 -74° F.

Caloosahatchee Stations	Chlorophyll (µg/L)	fDOM (qse)	Turbidity (NTU)	25% I <sub>0</sub> depth (meters)
<b>Target Values</b>	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
<b>Fort Myers</b>	8.1	288	7.5	0.57
<b>Shell Point</b>	6.8	211	3.9	0.75
<b>Causeway</b>	4.5	124	3.1	1.08

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



**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

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 Burns – 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: **December 5 - 11, 2017**

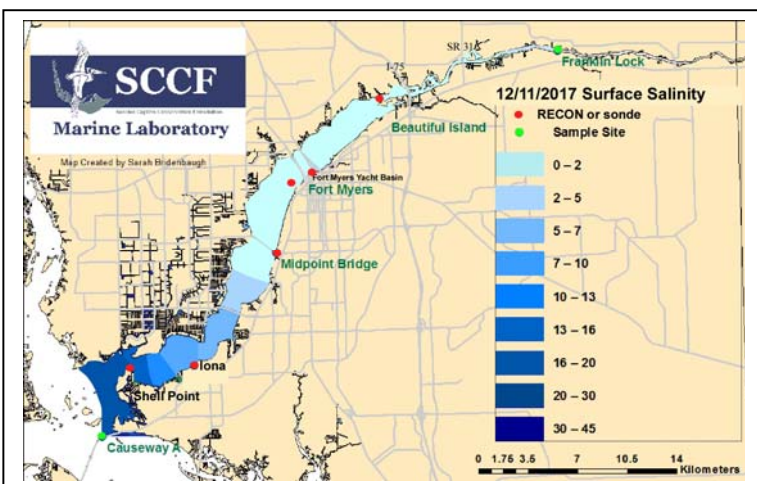
This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

**Caloosahatchee Condition Summary:** The past week freshwater flows from Lake Okeechobee and the watershed decreased to an average of **4,434 cfs** at S-79. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends offshore into the Gulf of Mexico and along the east end beaches of Sanibel. Red tide moved onshore along Sanibel Island causing fish kills.**

**USACE Action:** On 12/8/17 the Army Corps reduced discharges from Lake Okeechobee to **3,000 cfs** to the west measured at **S-79** and **1,170 cfs** to the St Lucie at S-80.

**Recommendation:** As Lake Okeechobee water levels recede we urge the Corps to continue stepping down discharges to the Caloosahatchee estuary with a target of **1,500 cfs measured at S-79** over the next week.

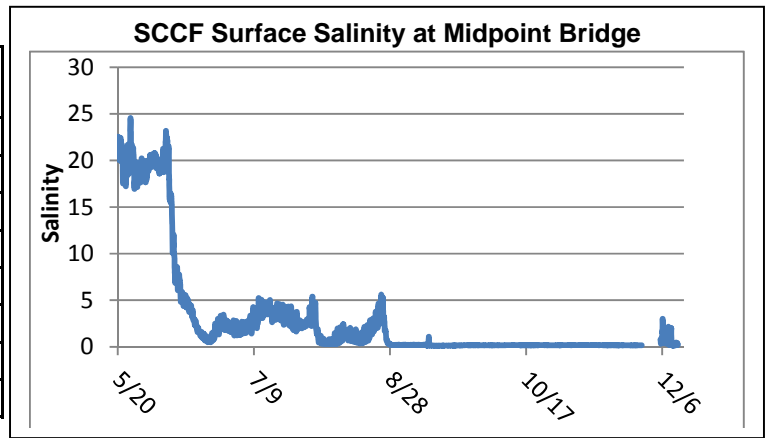
<b>Lake Okeechobee Level:</b>	<b>15.85 ft. (Low Sub-Band)</b>	<b>Last week:</b>	<b>15.94 ft</b>
<b>Lake Okeechobee Inflow:</b>	<b>2,166 cfs</b>	<b>Lake Okeechobee Outflow:</b>	<b>3,367 cfs</b>
<b>Weekly Rainfall:</b>	WP Franklin <b>0.98"</b>	Ortona <b>1.20"</b>	Moore Haven <b>0.88"</b>
<b>Salinity Beautiful Island:</b>	<b>ND</b> (SCCF RECON Marker 18)	<b>Previous wk</b>	<b>ND</b>
<b>Salinity Fort Myers:</b>	<b>0.2 psu</b> (SCCF RECON)	<b>Previous wk</b>	<b>0.2 psu</b>
<b>Salinity Shell Point:</b>	<b>3.1 - 30 psu</b> (SCCF RECON)	<b>Previous wk</b>	<b>2.7- 29 psu</b>



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	0.2	<10 psu	In Range
Shell Point	3.1 - 30	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.57	1 meter	Low
Shell Point	1.09	2.2 meters	Low
Causeway	1.29	2.2 meters	Low

**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **4,434 cfs**. Over the past 14 days **184,097 AF** of water was discharged from Lake O, **63% to S-77** and **32% to S-308**. **Over 7,574\* AF (4%) of water from Lake O was discharged south to the EAA**. **240 AF** was discharged through L8 and **1,199 AF** through S310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
12/5/2017	4866	4014	NR
12/6/2017	5363	3978	4197
12/7/2017	5204	3986	4279
12/8/2017	3732	3339	3346
12/9/2017	4504	3021	2766
12/10/2017	3978	3106	2415
12/11/2017	3388	2490	2115
7 day Avg	4434	3419	3186



**Upper Estuary Conditions:** On 12/12/17 The Olga Water Treatment plant reported chlorides **52 mg/l**, apparent color **217 CU** and turbidity **5.16 NTU**. No visible algae was reported at the plant intake the past week. The plant is online running at 2200 GPM. Salinities in the upper estuary were in the suitable range for tape grass. Colored dissolved organic matter contributed to low light availability for tape grass and widgeon grass.

**Lower Estuary Conditions:** The average weekly salinity was within the optimal range for oysters at Shell Point (**18 psu**). Light levels and salinities were below optimal for seagrasses in much of the lower estuary.

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	22.4 – 29.8	3.1 – 9.3	13.6 – 27.3	3.8 – 13.6
Tarpon Bay	22.7 – 32.9	5.4 – 9.2	7.7 – 31.5	3.4 – 14.9

**Red Tide:** On 12/8/17 the Florida Fish and Wildlife Conservation Commission reported a bloom of the Florida red tide organism, *Karenia brevis*, along Charlotte and Lee Counties in background to high concentrations.

Forecasts for Southwest Florida by the [USF-FWC Collaboration for Prediction of Red Tides](#) predict net offshore movement of surface waters and southern, onshore movement of subsurface waters from Pinellas to Lee counties over the next three days.

**Shellfish Harvesting:** On 12/8/17 the Florida Department of Agriculture and Consumer Services temporarily closed #6222 Pine Island Sound Section 2 (Matlacha Pass) Shellfish Harvest Area due to presence of *Karenia brevis*.

**Manatees:** Lee County park staff reported approximately **nine manatees** in the warm water of the Orange River and FPL canal the past week. Water temperatures ranged from **69 - 75.49° F**. Temperatures dropped with a cold front on 12/9/17.

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
Fort Myers	6.9	285	8.2	0.57
Shell Point	6.5	114	4.0	1.09
Causeway	3.8	92	2.8	1.29

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

**MEMORANDUM**

To: USACE Colonel Jason A. Kirk, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants  
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 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: **December 19 - 25, 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.

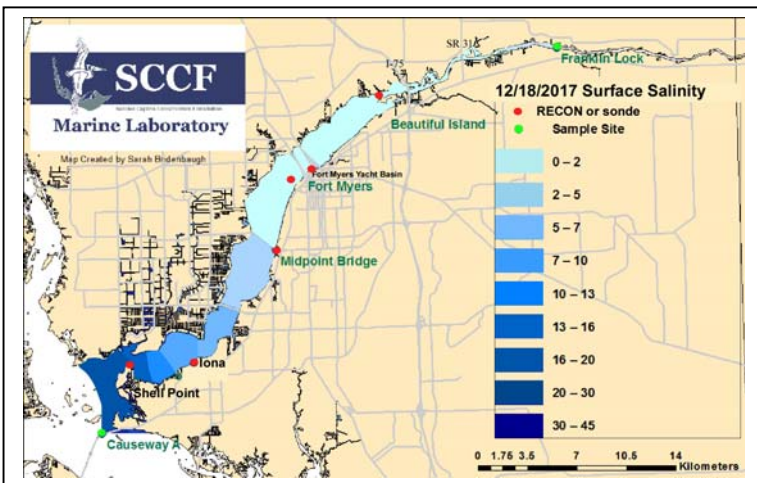
**Caloosahatchee Condition Summary:** The past week freshwater flows from Lake Okeechobee and the watershed decreased to an average of **3,062 cfs** at S-79. **Light remains limited throughout the river and estuary from dark, freshwater discharge that extends offshore into the Gulf of Mexico and along the east end beaches of Sanibel. Red tide moved onshore along Sanibel Island causing fish kills.**

**USACE Action:** On 12/14/17 the Army Corps maintained discharges from Lake Okeechobee at **3,000 cfs** to the west measured at **S-79** and **1,170 cfs** to the St Lucie at S-80.

**Recommendation:** As Lake Okeechobee water levels recede we urge the Corps to continue stepping down discharges to the Caloosahatchee estuary with a target of **2,000 cfs measured at S-79** over the next week.

**Lake Okeechobee Level:** 15.71 ft. (Low Sub-Band) **Last week:** 15.85 ft.  
**Lake Okeechobee Inflow:** 1,762 cfs **Lake Okeechobee Outflow:** 4,286 cfs  
**Weekly Rainfall:** WP Franklin 0.00" Ortona 0.00" Moore Haven 0.00"

**Salinity Beautiful Island:** ND (SCCF RECON Marker 18) Previous wk ND  
**Salinity Fort Myers:** psu (SCCF RECON) Previous wk 0.2 psu  
**Salinity Shell Point:** 6.1 – 30 psu (SCCF RECON) Previous wk 3.1 - 30psu

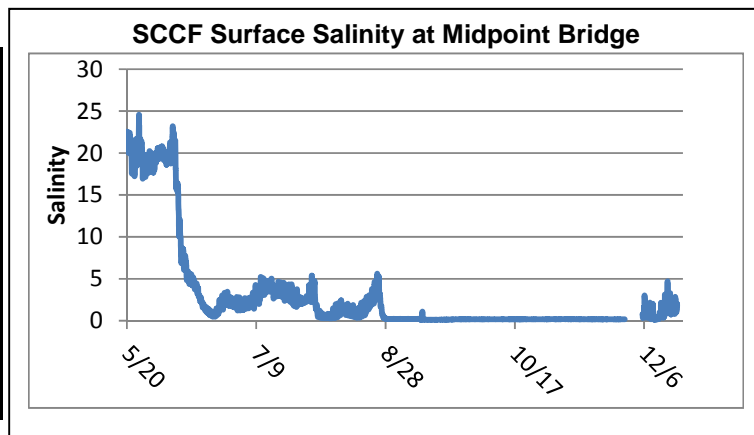


Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	-
Fort Myers	ND	<10 psu	In Range
Shell Point	6.1 - 30	25 - 32 psu	Low
Light (25% I <sub>z</sub> depth meters)			
Fort Myers	0.60	1 meter	Low
Shell Point	0.97	2.2 meters	Low
Causeway	1.27	2.2 meters	Low



**Flow & Water Quality:** Flows to the Caloosahatchee Estuary at S-79 during the past seven days averaged **3,062 cfs**. Over the past 14 days **103,540 AF** of water was discharged from Lake O, **66% to S-77** and **31% to S-308**. **About 2,037 AF of water from Lake O was discharged south to the EAA**. **190 AF** was discharged through L8 and **688 AF** through S310.

Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
12/12/2017	2431	1977	1784
12/13/2017	2517	1737	1550
12/14/2017	1463	1009	1142
12/15/2017	3022	1988	1731
12/16/2017	4524	3299	3387
12/17/2017	4068	3019	3204
12/18/2017	3411	2401	2540
7 day Avg	3062	2204	2191



**Upper Estuary Conditions:** On 12/12/17 The Olga Water Treatment plant reported chlorides **51 mg/l**, apparent color **198 CU** and turbidity **5.36 NTU**. No visible algae was reported at the plant intake the past week. The plant is online running at 2200 GPM.

**Lower Estuary Conditions:** The average weekly salinity was within the optimal range for oysters at Shell Point (**20 psu**). **Light levels and salinities were below optimal for seagrasses in much of the lower estuary.**

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

Monitor Site	Salinity (psu)	Diss O <sub>2</sub> (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	Offline	3.4 – 9.2	12.8 – 20.0	4.1 – 12.0
Tarpon Bay	24.8 – 31.0	5.9 – 9.3	13.0 – 28.8	4.9 – 17.4

**Red Tide:** On 12/13/17 the Florida Fish and Wildlife Conservation Commission reported a bloom of the Florida red tide organism, **Karenia brevis**, along **Charlotte in background to medium concentrations and Lee Counties in background to high concentrations**. *Karenia* spp. concentrations along Sanibel beaches ranged from low to medium on 12/15/17 (SCCF). Satellite color images showed patches of *Karenia* that were larger than Sanibel about 10 miles west of Fort Myers Beach.

**Wildlife Impacts:** Heather Barron at CROW reported 9 new admissions for red tide toxins from 12/4/17 to 12/12/17 and 5 new cases of suspected red tide toxins in this past week (4 DCCOs Double-crested Cormorant and 1 ring-billed gull). Kelly Sloan, at Sanibel Captiva Conservation Foundation, reported one sea turtle stranded on Sanibel beach. The female loggerhead had no obvious wounds or abnormalities.

**Manatees:** Lee County park staff reported about 30 **manatees** daily in the warm water of the Orange River and FPL canal the past week. Water temperatures ranged from **61 - 70.9° F**. Temperatures dropped with a cold front on 12/9/17.

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
Fort Myers	7.5	266	7.8	0.60
Shell Point	11	120	6.4	0.97
Causeway	8.9	88	2.4	1.27

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