

BEFORE THE STATE OF FLORIDA DIVISION OF ADMINISTRATIVE HEARINGS

CITY OF SANIBEL, )  
TOWN OF FORT MYERS BEACH, and )  
CITY OF CAPE CORAL )  
 )  
Petitioners, )  
v. ) CASE NO.  
 )  
SOUTH FLORIDA WATER )  
MANAGEMENT DISTRICT, )  
 )  
 )  
Respondent. )

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**JOINT PETITION TO CHALLENGE PROPOSED RULE**

1. Pursuant to Florida Statute 120.56(2), the City of Sanibel, Town of Fort Myers Beach, and City of Cape Coral jointly file this Petition challenging the validity of the South Florida Water Management District's proposed amendments to Rule 40E-8.221(2), Florida Administrative Code (the "Proposed Rule"), a true and correct copy of which is attached as Exhibit A.

2. The name and address of the Agency is:  
  
South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, Florida 33406

3. The name and address of the Petitioners are:  
  
City of Sanibel  
800 Dunlop Road  
Sanibel, FL 33957  
  
Town of Fort Myers Beach  
2525 Estero Boulevard  
Fort Myers Beach, FL 33931

City of Cape Coral  
1015 Cultural Park Boulevard  
Cape Coral, FL 33990

4. The name, address and telephone number of the Petitioners' legal representative are:

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**Standard for Challenging Proposed Rule**

5. This Petition is filed pursuant to Florida Statute 120.56(2)(a), which, in pertinent part, states as follows:

A petition alleging the invalidity of a proposed rule shall be filed...within 10 days after the final public hearing is held on the proposed rule....The petitioner has the burden to prove by a preponderance of the evidence that the petitioner would be substantially affected by the proposed rule. The agency then has the burden to prove by a preponderance of the evidence that the proposed rule is not an *invalid exercise of delegated legislative authority*.

*(emphasis added)*

6. Thus, Petitioners, City of Sanibel ("Sanibel"), Town of Fort Myers Beach ("Fort Myers

Beach”), and City of Cape Coral (“Cape Coral”) must demonstrate they have timely filed this Petition and have standing to do so, after which the Respondent, South Florida Water Management District (“District”), must prove the Proposed Rule “is not an invalid exercise of delegated legislative authority.”

7. In the definitions section of Chapter 120, Section 120.52, “invalid exercise of delegated legislative authority” is defined as including any one of six applications, including the following:

(d) The rule is vague, fails to establish adequate standards for agency decisions....

(e) The rule is arbitrary or capricious. A rule is arbitrary if it is not supported by logic or the necessary facts; a rule is capricious if it is adopted without thought or reason or is irrational....

8. In the present case, the final public hearing held on the Proposed Rule was September 13, 2018 (the “Final Hearing”). While 10 days after the public hearing would initially appear to create a filing deadline of September 23, 2018, such date is a Sunday. Pursuant to Rule 28-106.103, Computation of Time, if “[t]he last day of the period...is a Saturday, Sunday, or legal holiday...the period shall run until the end of the next day which is not a Saturday, Sunday or legal holiday. Thus, the filing of the Petition on September 24, 2018 is a timely filing.

9. As demonstrated below, Sanibel, Fort Myers Beach, and Cape Coral clearly have standing and establish they would be substantially affected by the proposed rule.

10. As also demonstrated below, the District cannot prove by a preponderance of the evidence that the Proposed Rule is not an invalid exercise of delegated authority, as the Proposed Rule is vague, arbitrary, and capricious, each of which demonstrate per se invalid exercises of delegated legislative authority, pursuant to the applicable law.

## Background

11. Lake Okeechobee and the Caloosahatchee River Watershed together serve as the headwaters of an expansive estuary and marine ecosystem in Southwest Florida that includes San Carlos Bay, Matlacha Pass Aquatic Preserve, Pine Island Sound Aquatic Preserve, and Ding Darling National Wildlife Refuge. An accurate depiction of the Caloosahatchee River Watershed is attached as Exhibit B.
12. The hydrology of the Caloosahatchee River Watershed has been significantly altered by various engineering efforts, including dredging and channelization, the building of dams and excavation of canals. Two salient features of the existing system are (1) the Caloosahatchee River's connection to Lake Okeechobee via a canal cut from its marshland headwaters over 100 years ago, which acts as a primary drain for the lake; and (2) the W.P. Franklin Lock and Dam ("S-79"), built over 50 years ago, which acts as a barrier to salt-water intrusion further upstream. The Caloosahatchee River Estuary ("CRE") is considered the area downstream of S-79.
13. High salinity levels are harmful to aquatic vegetation in the CRE, particularly *Vallisneria americana* tape grasses, a complex submerged aquatic habitat which have been identified by the District scientists as a "Valued Ecosystem Component" and a biological indicator of ecosystem health in the CRE. Tape grass serves as primary habitat and direct food sources for manatees, birds, turtles, and dozens of fish species, as well as provide a habitat for complex food webs for many other organisms. Furthermore, tape grasses serve as great stabilizers of sediment and shorelines, remove nutrients, and are natural filters for water, all of which function to improve the clarity and quality of the waters in, around, and downstream of tape grass habitats.

14. As a result of the previously-described changes to the hydrology of the Caloosahatchee River Watershed, certain amounts of fresh water must be released from Lake Okeechobee during the dry season in order to maintain appropriate salinity levels in the CRE, which in turn will support the tape grass habitats and other aquatic life.

#### **Caloosahatchee Minimum Flows and Levels**

15. Minimum Flows and Levels (“MFL” or “MFLs”) are established to prevent “significant harm to the water resources or to the ecology of the area.” Rule 40E-8.011(2), Florida Administrative Code (the “Caloosahatchee MFL Rule”). The District is statutorily mandated to establish MFLs pursuant to Section 373.042(2), Florida Statutes.
16. The Caloosahatchee MFL Rule governs, among other things, freshwater flows to the CRE from Lake Okeechobee. More specifically, the current Caloosahatchee MFL Rule establishes maximum salinity levels (measured in parts per thousand (ppt)) and minimum flows (measured in cubic feet per second (cfs)) for the Caloosahatchee River at S-79. The Caloosahatchee MFL Rule in its present form (the “Current Rule”) states as follows:

*A minimum mean monthly flow of 300 CFS is necessary to maintain sufficient salinities at S-79 in order to prevent a MFL exceedance. A MFL exceedance occurs during a 365 day period, when: (a) A 30-day average salinity concentration exceeds 10 parts per thousand at the Ft. Myers salinity station (measured at 20% of the total river depth from the water surface at a location of latitude 263907.260, longitude 815209.296; or (b) A single, daily average salinity exceeds a concentration of 20 parts per thousand at the Ft. Myers salinity station. Exceedance of either paragraph (a) or (b), for two consecutive years is a violation of the MFL.*

17. The Caloosahatchee MFL Rule provides that MFLs are to be “based on existing best available information, and will be periodically reviewed, at least every five years, based on new information and changing water resource conditions.”
18. Despite this mandate to review the MFLs every *five* years, the current MFL was adopted

for the Caloosahatchee in 2001—*seventeen* years ago—and did not undergo a meaningful review until this past year.

19. Significant among the changes to the Proposed Rule attached as Exhibit A are the following:
  - (a) Increasing minimum mean monthly flows from 300cfs to 400cfs;
  - (b) Eliminating as a MFL exceedance any daily salinity exceedance of 20ppt;
  - (c) Eliminating a unit of measurement for salinity; and
  - (d) Requirement that salinity measurements occur at mean low water.
20. Although the first of these four enumerated changes—increasing minimum monthly flows from 300cfs to 400cfs—is a modest improvement for the CRE and Petitioners, the improvement is not enough to make a meaningful difference. The remaining three enumerated changes are all to the clear detriment of the CRE and Petitioners.

#### **Petitioners' Standing and Substantial Interest**

21. Sanibel is a barrier island sanctuary in Lee County, and a duly formed municipality with a population of more than 6,000. Sanibel is situated at the mouth of the Caloosahatchee River, within the Caloosahatchee's greater estuarine area (see Exhibit B).
22. Fort Myers Beach on Estero Island in Lee County is also a barrier island community and duly formed municipality with a population of more than 6,000. Fort Myers Beach is situated just south of the mouth of the Caloosahatchee River and on the southeastern edge of the Caloosahatchee's greater estuarine area.
23. Cape Coral is a duly formed municipality in Lee County and is the largest city between Tampa and Miami, with a population in excess of 150,000. Cape Coral is bordered on the south by the Caloosahatchee River and has over 400 miles of navigable canals and

waterways, all of which are within the Caloosahatchee's greater estuarine area.

24. With toxic blue-green algae flowing down the Caloosahatchee River from Lake Okeechobee and a more persistent red tide intruding from the Gulf of Mexico, the importance of water quality to Petitioners and to the entirety of Southwest Florida has never been so apparent. The toxins from these harmful algal blooms are negatively impacting human health and keeping them away from the water. Marine life is being devastated. On Sanibel's shores and waters alone, more than 400 *tons* of dead marine life has been picked up in the two-month period from late July through mid-September 2018.
25. Sanibel is known primarily for its natural beauty, including clear blue waters, shell beaches, world-class sport fisheries, and wildlife refuges. This is, without a doubt, the most significant reason why tourists come from around the globe to visit Sanibel, and why Sanibel's residents move (or remain) here.
26. In addition to living on or near the water, a substantial number of Petitioners' residents engage in water-based recreational activities such as swimming, fishing, boating, kayaking, paddle boarding, bird watching and nature observation in and around the Caloosahatchee's greater estuarine area. The tourist-based economy upon which Petitioners and much of Southwest Florida rely is highly dependent on the health of the waterways. That tourist-based economy has been and continues to be devastated by poor water quality plaguing Southwest Florida in 2018, as reports of thick layers of algae clogging the waterways and pictures of dead sea turtles, manatees, dolphin, and other sea life are shown on national news. There is little doubt the current and lasting effects to Petitioners related to this water quality crisis will be far more significant and lasting than that of the 2010 BP Oil Spill that received so much deserved attention.

27. The economic impact to Petitioners linked to poor water quality is extraordinary to its citizens, its business, and to the Petitioners themselves, which lose money from decreased revenues from tolls, parking, gas tax, and bed tax, among others.
28. Although the current blue-green algae crisis is directly related to too much water in the wet season, too little water in the dry season is also a significant problem. In fact, it can be equally harmful to the CRE and coastal waters and is a contributing cause to our current water crisis. Indeed, this is because a lack of sufficient fresh water being released from Lake Okeechobee during the dry season causes the Caloosahatchee below S-79 to become too salty, which in turn causes the tape grass habitats, oysters, clams and other natural filtration systems to die off, reducing the ability of the Caloosahatchee to function as an ecological filter, as it should. Further, if not enough water is released in the dry season, it also results in more water being held in Lake Okeechobee and released during the wet season.
29. The health of the CRE and coastal waters is directly tied to water management policies administered by the District and the US Army Corps of Engineers. The Caloosahatchee River routinely receives too much water during the wet season (decisions made by Corps of Engineers), and too little during the dry season (decisions made by the District). Each high or low-flow event that occurs impacts important ecosystem services, including habitat for fish and wildlife, water quality benefits, and recreational opportunities.
30. The water issues currently facing Petitioners and Southwest Florida are obviously complicated and will require a number of different solutions. However, making certain that this Proposed Rule is correctly drafted and followed is one piece of the solution that is sorely needed by Sanibel and by all of Southwest Florida. Recognizing these truths, Sanibel



has been an active participant in voicing its opinion on the Proposed Rule from its inception through the Final Hearing on September 13, 2018, where Sanibel's Mayor, Kevin Ruane, and City Councilman Chauncey Goss appeared and spoke in opposition to the deficiencies related to the MFLs. Additionally, Sanibel submitted two technical comment letters during the MFL development, dated August 29, 2017 and June 15, 2018, true and correct copies of which are attached hereto as Exhibit C1 and Exhibit C2, respectively. As well, Sanibel's Natural Resources Director, James Evans, attended numerous public and technical meetings associated with the development of the Proposed Rule, speaking on the record at each of the MFL public meetings prior to it coming to the Governing Board on September 13, 2018.

31. Despite this opposition, the District's Board voted to adopt the Proposed Rule.
32. In summary, there is no doubt Petitioners are substantially affected by the Proposed Rule and all other laws and rules related to or affecting water quality in Southwest Florida. The shortfalls of the Proposed Rule are certain to result in continued significant harm to the CRE and directly-correlated economic interests of Petitioners and Southwest Florida.

#### **Invalidity of the Proposed Rule**

33. The Proposed Rule is an invalid exercise of delegated legislative authority for at least two independent grounds, including the following:
  - a. The Proposed Rule is vague and fails to establish adequate standards for District decisions (Section 120.52(8)(d), Fla. Stat.); and
  - b. The Proposed Rule is arbitrary and capricious (Section 120.52(8)(e), Fla. Stat.).
- A. **The Proposed Rule is Vague and Fails to Establish Adequate Standards**
34. The Proposed Rule is vague and fails to establish adequate standards, because it fails to

specify any unit of measure for salinity. Specifically, subpart (2)(a) of the Proposed Rule states as follows:

*A MFL exceedance occurs during a 365-day period when the 30-day moving average flow at S-79 is below 400 cfs and the 30-day moving average salinity exceeds 10 at the Ft. Myers salinity monitoring station....*

*(emphasis added)*

With regard to salinity, this bare reference to the number 10 immediately begs the question, “10 what?” What unit of measure is to be used when measuring salinity—parts per thousand, parts per million (ppm), or something else? There is no readily apparent answer. While the Current Rule establishes “parts per thousand” or “ppt” for salinity measurements, the Proposed Rule removes such references and is silent on the unit of measurement to be used. This is significant, because there are many established salinity measurement scales currently in use, including but not limited to the ppt scale, ppm scale, the practical salinity scale 1978 (PSS-78) often denoted by “PSU” or practical salinity units, and the thermodynamic equation of seawater 2010 (TEOS-10), which expresses absolute salinity as a mass fraction, in grams per kilogram of solution.

35. There is no doubt this significant omission makes the Proposed Rule fail on its face, as the ambiguity created makes it impossible to determine with any certainty the standard of measure to be used when measuring salinity. Thus, the Proposed Rule is an invalid exercise of delegated legislative authority, pursuant to Florida Statute 120.52(8)(d), which explicitly states a proposed rule is invalid if “[t]he rule is vague [or] fails to establish adequate standards for agency decisions....”

**B. The Proposed Rule is Arbitrary and Capricious**

36. “A rule is arbitrary if not supported by logic or necessary facts; a rule is capricious if it is

adopted without thought or reason or is irrational.” Section 120.52(8)(e), Fla. Stat.

37. In the present case, the District was presented with competent, substantial, and un rebutted evidence at and before the Final Hearing that MFLs measured at 650 cubic feet per second (cfs) were inadequate during the 2018 dry season (from January to May), and in previous years, to maintain salinity levels at or below the Current Rule’s requirement of 10 ppt over a thirty day moving average. Thus, even assuming for the sake of argument that the District *intended* to use the same ppt measurement in the Proposed Rule as it did in the Current Rule (which the City does not concede, since the Proposed Rule is silent on the unit of measure), it is illogical and irrational to believe a MFL of 400cfs (250cfs below the 650cfs level) would be adequate to ensure the salinity levels average at or below 10 ppt.
38. In addition to the importance of keeping salinity levels at or below a 10 ppt average over 30 days, there is also competent, substantial, and un rebutted evidence recognizing the importance of avoiding short term spikes in salinity levels, which can also result in significant harm. While the Current Rule protects against short-term salinity spikes by identifying as a MFL exceedance any daily salinity in excess of 20ppt, the Proposed Rule eliminates it. Thus, under the Proposed Rule, it would be lawful if the District allowed salinity levels to reach well over 20ppt for 10 consecutive days or more, so long as salinity levels for the remaining 30 days were low enough for the 30-day mean to be at or below 10ppt. The results of such a scenario would be undeniably lethal to tape grass habitats and an irrational and illogical result of a rule intended to, among other things, protect the ecology of the CRE.
39. Finally, the requirement that salinity measurements be taken at mean low tide is not supported by logic, if the actual intent is to determine a true 30-day mean salinity. This is

because taking measurements only at low tide will result in falsely low readings over any 30-day mean period. Salinity readings fluctuate with the tide—reading lowest at low tide (with the salty tide in its furthest retreat) and highest at high tide (with the salty tide reaching further inland). Thus, determining a true and accurate mean salinity for a 30-day period would require taking daily measurements not at the daily low point but rather at its midpoint, which would be accomplished by taking salinity measurements at the *midpoint* between tides, not the low-point/mean low tide.

40. Accordingly, the Proposed Rule is an invalid exercise of delegated legislative authority, pursuant to Florida Statute 120.52(8)(e), because a proposed minimum flow of 400cfs, a proposed elimination of single-day MFL exceedances, and requirement to measure salinity at the lowest point of the tidal cycle are each irrational and illogical results which make the Proposed Rule unlawfully arbitrary and capricious.

#### **Disputed Issues of Material Fact**

41. As detailed above, there are four significant disputed issues of material fact, pertaining to proper unit of measure for salinity, proper timing of salinity measurements, need for a maximum daily salinity limit, and necessary and proper minimum flows.
42. Whether the District believes the Proposed Rule’s language referencing when “salinity exceeds 10 at the Ft. Myers salinity monitoring station...” is clear or was an inadvertent omission, Petitioners submit that such guidance is rendered useless by its ambiguity in omitting the unit of measure to apply, as there are many standards by which salinity can be measured.
43. While Petitioners recognize the Proposed Rule makes a minor improvement in the MFLs from the Current Rule (from 300cfs to 400cfs), the proposed 400cfs is still grossly deficient

to maintain a healthy CRE during the dry months and prevent further significant harm to what remains of the tape grass habitats and other ecology in the CRE. Notably, over half (in excess of 1000 acres) of the tape grass habitat that existed twenty years ago have been killed off—an example of serious harm, above and beyond significant harm. Poor management by the District over the 17-year period under the Current Rule from 2001 to present has prevented recovery. Such unprecedented losses and the lack of conditions conducive to recovery are directly attributable to the District's failure to provide minimum flow levels during dry season. Thus, while the District maintains 400cfs is sufficient to prevent further harm, Petitioners dispute the same and maintains the actual necessary and appropriate figure is above 650cfs.

44. With respect to the timing of any measurements of salinity, Petitioners dispute the District's position that an accurate measure of daily salinity (used to determine an accurate 30-day mean salinity) would be taken only at its daily low point, at the mean low tide.
45. Finally, Petitioners dispute the wisdom and any factual support the District might put forth for eliminating as a MFL exceedance any single-day salinity exceedance of 20ppt, as salinity at or above 20ppt for less than 30 days can also be lethal to tape grass habitats but would be lawful under the Proposed Rule so long as the 30-day mean limitation was not exceeded.

#### **Relief Requested**

Petitioners respectfully request the Division of Administrative Hearings enter a final order declaring that South Florida Water Management's proposed changes to Rule 40E-8.221(2), Fla. Admin. Code, are an invalid exercise of delegated legislative authority, and awarding attorney's fees under Section 120.595(2), Florida Statutes, because the District's actions were not

substantially justified nor do special circumstances exist which would make the award unjust.

Respectfully submitted on this 24th day of September, 2018.

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By:   
Dolores D. Menendez, Esq.  
FL Bar No. 296554

**CERTIFICATE OF SERVICE**

I CERTIFY that a true copy of the foregoing has been electronically filed with the Division of Administrative Hearings and also served by facsimile to the South Florida Water Management District Clerk at 561-682-6010 on this 24th day of September, 2018.

  
John D. Agnew, Esq.  
FL Bar No. 27377

*Draft Rule Language dated July 12, 2018*

**40E-8.221 Minimum Flows and Levels (MFLs): Surface Waters.**

The MFLs contained in this Part identify the point at which further withdrawals would cause significant harm to the water resources, or ecology, of the area as applicable, pursuant to Sections 373.042 and 373.0421, F.S. It is the District's intent to correct or prevent the violation of these MFLs through management of the water resources and implementation of a recovery strategy.

(1) No Change.

(2) Caloosahatchee River. The MFL for the Caloosahatchee River is the 30-day moving average flow of 400 cubic feet per second (cfs) at S-79. A minimum mean monthly flow of 300 CFS is necessary to maintain sufficient salinities at S-79 in order to prevent a MFL exceedance. A MFL exceedance occurs during a 365-day period, when:

(a) A MFL exceedance occurs during a 365-day period when the 30-day moving average flow at S-79 is below 400 cfs and the 30-day moving average salinity exceeds 10 at the Ft. Myers salinity monitoring station (located at latitude 26° 38' 57.84" N, longitude 81° 52' 5.68" W). Salinity at the Ft. Myers salinity monitoring station shall be measured at 20% of the total river depth at mean low water. A 30-day average salinity concentration exceeds 10 parts per thousand at the Ft. Myers salinity station (measured at 20% of the total river depth from the water surface at a location of latitude 263907.260, longitude 815209.296); or

(b) A MFL violation occurs when a MFL exceedance occurs more than once in a 5-year period. A single, daily average salinity exceeds a concentration of 20 parts per thousand at the Ft. Myers salinity station. Exceedance of either paragraph (a) or (b), for two consecutive years is a violation of the MFL.

(3)-(5) No Change.

*Rulemaking Authority §§ 9, 10 P.L. 83-358, 373.042, 373.044, 373.113, 373.119, 373.129, 373.136, 373.171 FS. Law Implemented 373.016, 373.036, 373.042, 373.0421, 373.175, 373.216, 373.219, 373.223, 373.246, 373.709 FS. History—New 9-10-01, Amended 4-1-03, 12-12-06.*

EXHIBIT A



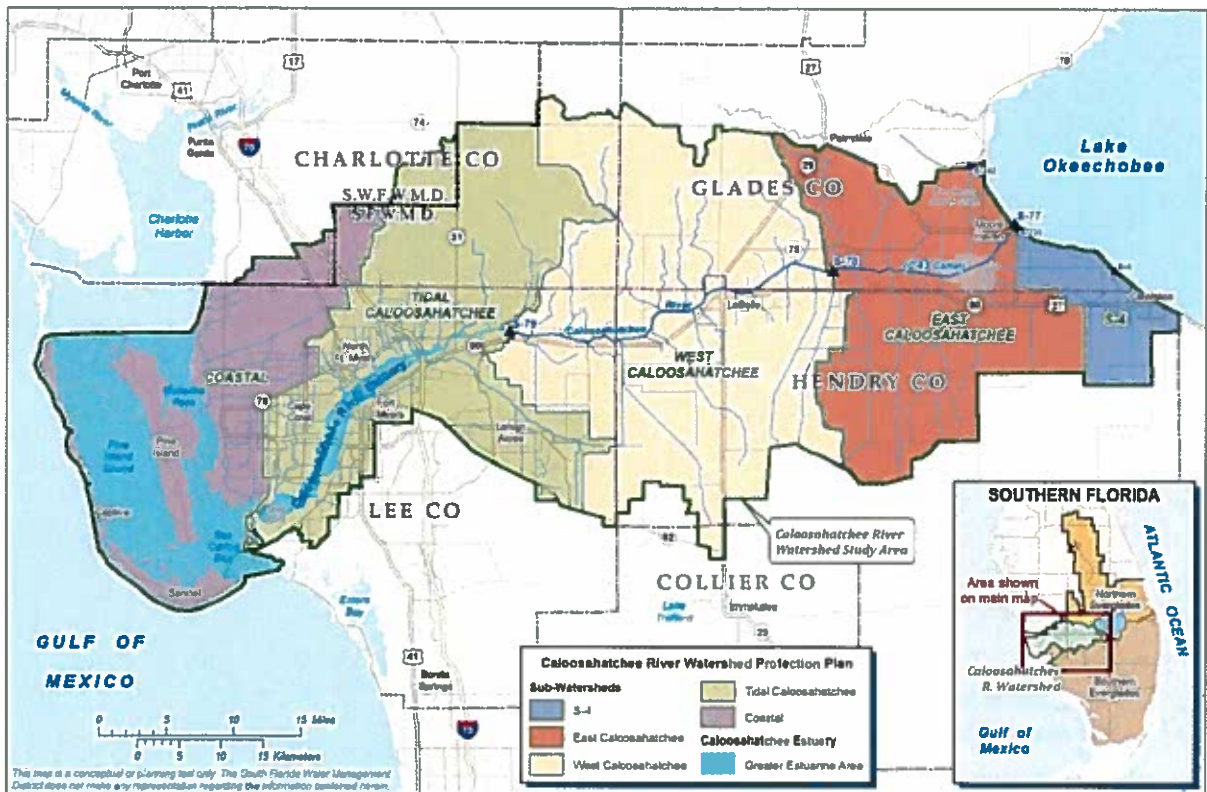


Figure 1. Sub-watersheds of the Caloosahatchee River Watershed.

## City of Sanibel ♦ Sanibel Captiva Conservation Foundation

August 29, 2017

Ms. Toni Edwards, Senior Scientist  
South Florida Water Management District

*Transmitted by email: [tedwards@sfwmd.gov](mailto:tedwards@sfwmd.gov)*

*Submitted <https://www.sfwmd.gov/science-data/web-boards>*

Re: Public Peer Review Session for the Caloosahatchee MFL Reevaluation

Dear Ms. Edwards:

Thank you for the opportunity to provide comments on the proposed Caloosahatchee Minimum Flow and Level (MFL) reevaluation. These comments are provided by the City of Sanibel and Sanibel Captiva Conservation Foundation (SCCF) to the SFWMD and peer review committee.

We do not support the proposed MFL, which provides inadequate flows needed to prevent further "harm" in the mid to upper estuary. Specifically, our concerns regarding the proposed MFL include:

- loss of 1,000 acres of freshwater tapegrass habitat under the current MFL
- shifting baseline resulting from loss of tapegrass further reduces protection with proposed MFL
- use of modeled data over extensive periods of record mask impacts to living metrics
- use and expansion of modeled estuary inflow that is not based on measured real-time conditions
- need to evaluate and set the MFL at a living time scale
- need to adjust the wet and dry seasons to reflect actual regional meteorological conditions
- modeling does not capture impacts on water from explosive growth, increased consumptive use permits, loss of groundwater recovery and sea level rise

The proposed MFL criteria:

- A mean monthly flow of 400 cubic feet per second (cfs) measured at the S-79 structure
- An MFL exceedance occurs during a 365-day period when the mean monthly flow at S-79 declines below 400 cfs unless:
  - (a) the Caloosahatchee River (C-43) West Basin Storage Reservoir is not yet operational or
  - (b) the daily average salinity concentration at the Ft. Myers salinity monitoring station has not been greater than 10 for more than 55 consecutive days
- An MFL violation occurs when an exceedance occurs more than once in a five-year period.

### **Caloosahatchee Serious Harm at MFL of 450 cfs**

The MFL is defined in Florida statute as the "limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area." MFLs are a water resource management tool, set at the harm threshold to protect water resources from significant harm from withdrawals. The SFWMD defines "significant harm" as the "temporary loss of water resource functions which result from a change in surface or groundwater hydrology, that takes more than two years to recover, but which is considered less severe than serious harm." Serious harm is defined as the permanent or irreversible loss of water resource functions.

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Under the MFL both significant and serious harm conditions are supposed to trigger Phase III and IV water shortage cutbacks respectively to permitted users. However, the MFL exempted the SFWMD from implementing any phased water restrictions to permitted water users until the Prevention and Recovery Strategy is available. The Prevention and Recovery Strategy established in 2001 as part of the MFL is a reservoir, which will not be available until 2022 at the earliest and will provide about one third of the storage needed to meet dry season estuary flows.

Without an implementable Prevention and Recovery Strategy and no statutory reservation for the river to protect fish and wildlife, the estuary is at the mercy of the SFWMD with no alternative for recovery. This has created a shifting baseline where critical submerged aquatic habitat existing in the year 2000 is reduced to the extent that exists today. This does not meet the intent of an MFL because it constitutes "serious harm" to the resource, not just significant harm.

A significant concern expressed at the public meeting on August 17, 2017 is related to the fact that although an MFL was established in 2001, it has not prevented the permanent and irreversible loss of over 1,000 acres of a key ecological metric, freshwater tapegrass habitat, due to insufficient minimum flows - the definition of serious harm.

The permanent, irrecoverable loss of over 1,000 acres of tapegrass habitat west of the US 41 bridges extends approximately 6 miles downstream on both the northern and southern shorelines of the river, Figure 1. This loss resulted from an MFL target of 450 cfs which includes modeled estimates for tidal basin inflows of 150 cfs during droughts, a volume which is neither confirmed by actual measured inflow data nor consistent with measured salinity data at the designated MFL measurement point at the Fort Myers Yacht Basin. The current MFL has caused serious harm with the loss of 1,000 acres of habitat resulting in a shifting baseline from the year 2000 base case.

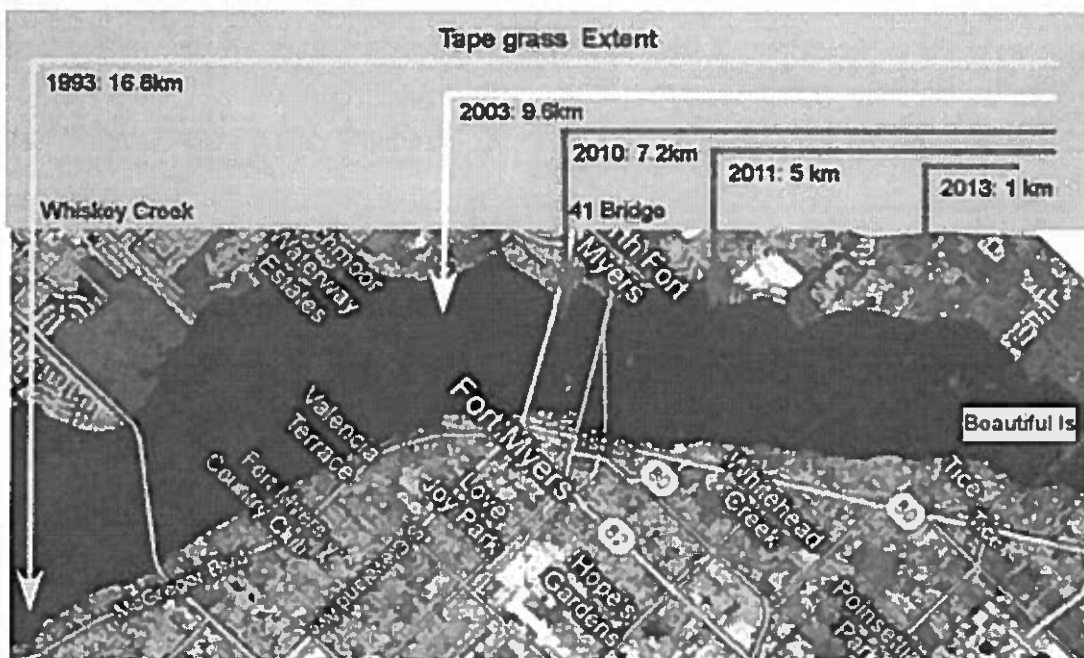


Figure 1: Documented loss of freshwater tapegrass habitat extent from 1993 to present

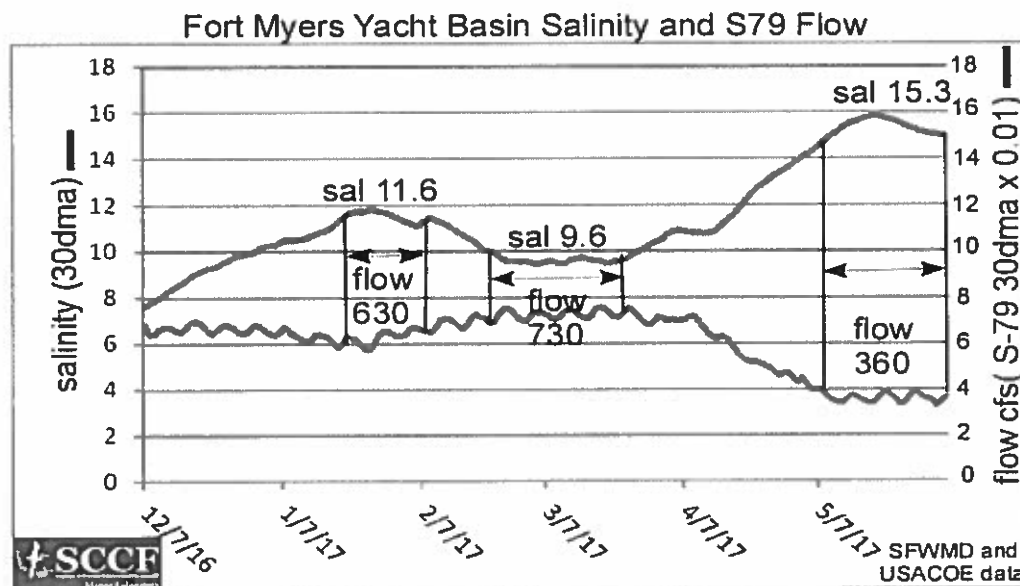
## City of Sanibel ♦ Sanibel Captiva Conservation Foundation

We question how the permanent loss of habitat is not considered when setting MFL thresholds? Should the State be held accountable for restoring a resource that was impacted through water management decisions e.g., Val beds in the upper Caloosahatchee Estuary?

### Evaluate Real Time Data

Actual, real-time data and monitoring clearly reveals that the current MFL target of 450 cfs is not sufficient to meet the water flow needed currently to maintain 10 psu on a 30 day moving average. Further reductions in the proposed MFL will only exacerbate the harm, not address or reduce it.

**We echo the sentiments of Dr. James Pinckney at the public meeting that it is very difficult to model conditions in a complex estuary system as there are always unknowns. For this reason ask the committee and District to provide a parallel analysis using existing, real time, monitored flow and salinity data on shorter time scales to clearly reflect the variability and responses of the natural system to varying conditions.**



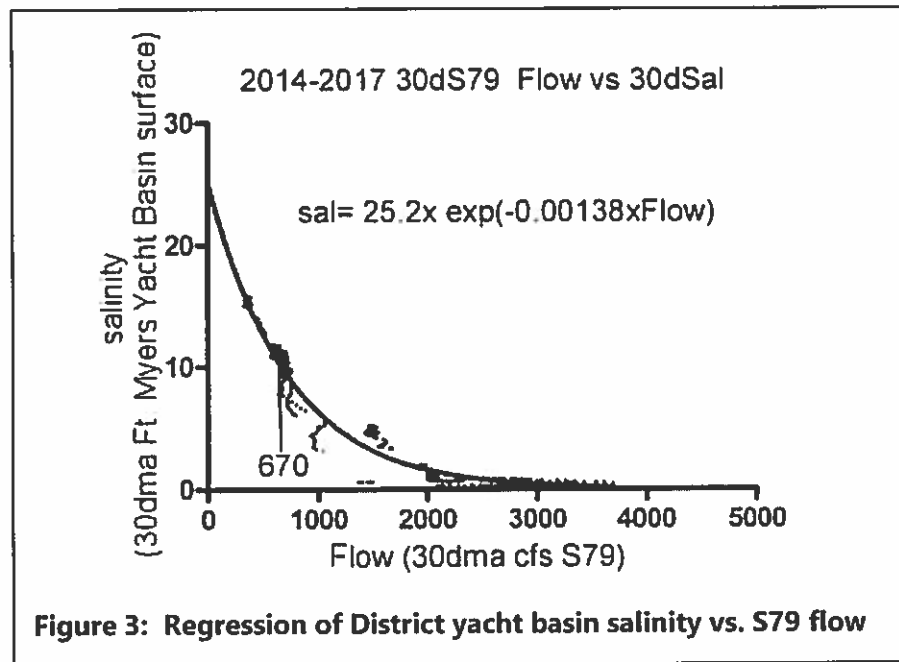
**Figure 2: Flows of 360 - 630 cfs insufficient to meet the MFL.**

SCCF performed an analysis of monitored conditions and system responses in the 2016-2017 dry season time cycle to illustrate that flows of 360 - 630 cfs were not sufficient to meet the salinity target of 10 psu at the Fort Myers Yacht Basin and that it took approximately 730 cfs to return rising salinities to the MFL target. Figure 2.

The method used in the SFWMD *Draft Technical Document to Support Reevaluation of the Minimum Flow Criteria for the Caloosahatchee River Estuary* to generate the curves for each year (Report Fig. A14) can result in erroneous results. For example, when flows are high (10,000 cfs) for an extended period, and then they quickly recede, very little flow would be needed for a monthly average salinity of 10 psu at the yacht basin. It would be best to use steady flow periods, as we did in the graph of the last few years as shown in Figure 3.

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Also the flow for 2011 is incorrect- (Report Figure A14s) shows a reasonable curve, but the exponent 0.0049, which was apparently used to calculate the flow on Report Table A7 and Figure A15, is not the exponent that defines the curve. All of the other exponents in Report Figure A14 are around 0.001. This one is 4 times the others. This low flow (125 cfs) helps give the illusion that there is variability around an average low flow needed. We suggested that a trend analysis should be performed, but this should only be done after errors are corrected and data from periods of highly variable flow are removed from the datasets used for the yearly regressions.



### Shorter Time Scale Modeling with Actual Data

The use of shorter time scales, even annual, highlights the significant responses that are lost or masked by averaging over long periods of record. Longer periods of record also mask current conditions affected by significant increases in impervious land cover, increased consumptive use permitting, losses in groundwater recovery that historically provided base flows of freshwater to the river and estuary and rising sea level that increases the tidal force of higher salinity marine water into the estuary.

In 2010, the SFWMD contracted FGCU to study the effects of freshwater flows needed to provide a low salinity zone in the mid to upper estuary recognizing that the western most dam, the S-79 structure, is a hard barrier defining the upper estuary boundary. The study determined that flows of 800- 1,000 cfs were needed to avoid freshwater habitat compression and loss of phyto and zooplankton.

Excerpt from Tolley et al. (2010), p. 93

4. As mentioned previously, a number of estuarine species collected during this study (including fishes, mysids, commercial shrimp, and isopods) responded to reduced freshwater inflow by moving upstream into the narrow portion of the tidal Caloosahatchee above Beautiful Island during the dry season. Although these organisms may experience

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greater overall dispersion as a result of this movement, Peebles and Greenwood (2009) cautioned that such gains in habitat extent may be offset by losses in habitat volume due to the inherent geomorphology (i.e., funnel shape) of tidal rivers. This upstream movement in response to reduced inflow into the more restricted region of the tidal Caloosahatchee resulted in a potential second source of habitat compression. By concentrating aquatic organisms in a reduced volume of habitat, habitat compression increases competitive interactions among and within species and enhances predator-prey encounters in the same habitat (Prince and Goodyear 2006). This can result in habitat overlap, higher predation rates, decreased prey availability, and reduced growth rates (Crowder 1986, Eby and Crowder 2002). Based on the compiled regressions of organism center of abundance vs. freshwater inflow, it appears that a number of these species would be relocated downstream of this restricted portion of the tidal river at inflows of 800–1,000 cfs.

Tolley, S.G., D. Fugate, M.L. Parsons, S.E. Burghart, E.B. Peebles (2010) The responses of turbidity, CDOM, benthic microalgae, phytoplankton and zooplankton to variation in seasonal freshwater inflow to the Caloosahatchee Estuary. Final Report to SFWMD, 99 pp.

### MFL Duration Based on Living Time Scale & Minimum Habitat Volume

**We recommend that evaluations need to be made at a living time scale to protect resources for which salinities at and above 10 psu are lethal.** There is no justification for moving away from the existing 10 psu 30-day moving average “harm” salinity criteria to a 55 consecutive day standard. **We ask the SFWMD to provide scientific literature to support the 55 consecutive day threshold and to provide justification for dropping the 20 psu 1-day harm threshold.** Would other species be impacted if salinity in Fort Myers reaches 20 psu?

The current MFL is set as 10 psu on a 30 day moving average a level that begins to affect freshwater tapegrass. Setting the MFL at 400 cfs with a 55 consecutive day standard has the potential to further reduce suitable freshwater tapegrass habitat by another 600 acres as shown in Figure 4.

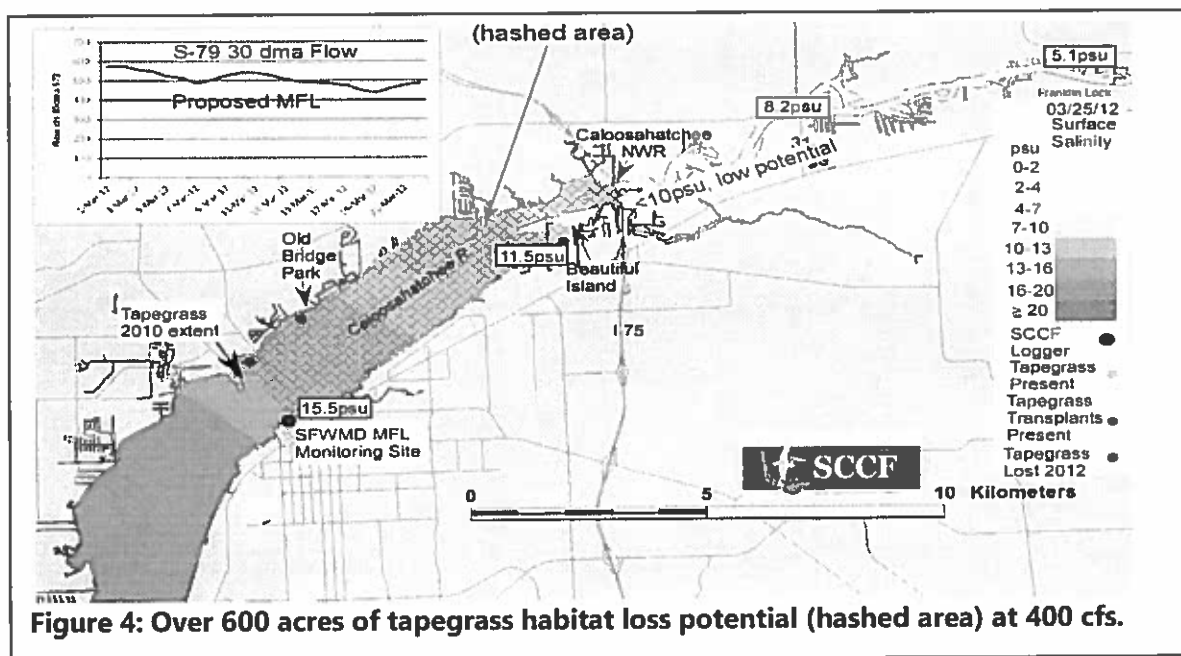


Figure 4: Over 600 acres of tapegrass habitat loss potential (hashed area) at 400 cfs.

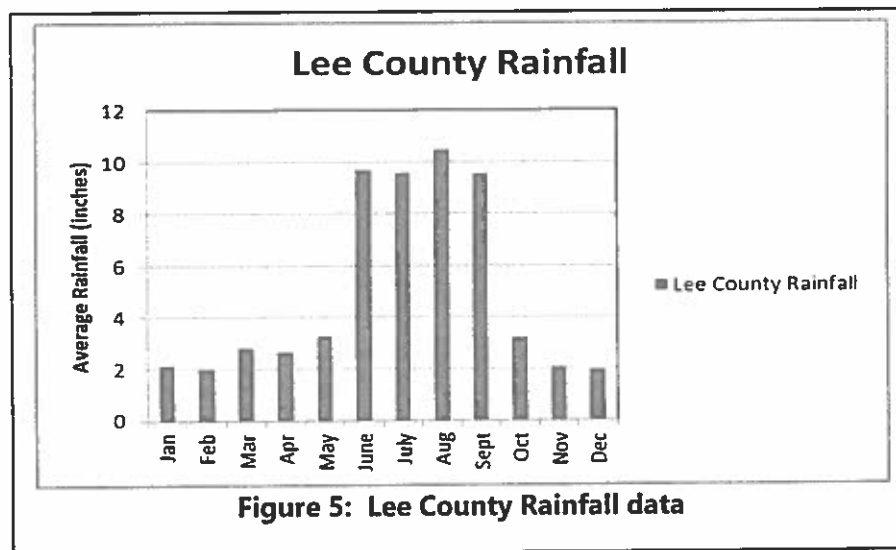
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**We suggest adding a low-salinity zone as a physical spatial target based on a specified “minimum habitat volume” downstream of S-79.** A specific habitat volume could easily be established, where, if the volume is reduced below the minimum for more than an established time period it would constitute a violation of the MFL rule. The goal would be to maintain a continuous salinity gradient downstream of S-79, when possible, to provide productive habitat for fish and invertebrates and to minimize impingement of ecologically and economically important species. This physical spatial indicator could be used to complement existing/proposed indicators.

We question why modeled phytoplankton data and modeled *Vallisneria Americana* data were given the same weight in the component analysis as measured data? **Measured data should be given more credence than modeled data, especially if the modeled data would be less protective of the resource.** There does not appear to be a margin of safety incorporated into the MFL, which is already a harm standard.

### Wet/Dry Seasons

In the document, wet season is defined as May-Oct. and dry season is defined as Nov.-Apr (page 18). In the Caloosahatchee watershed, May and October are historically dry months when MFL violations are frequently experienced. Local rainfall data collected by Lee County at Page Field from 1994 to present, report mean rainfall in May as only 3.27” and mean rainfall in October as 3.2”. Whereas, the rainfall from June-September averaged more than 9.5”, Figure 5. Rainfall in May and October more closely resembles average dry season rainfall than wet season rainfall. Dry season studies could be flawed if using Nov.-Apr. to define the “dry season”. **We encourage the use of local rainfall data in your analyses to establish seasonal, ecological targets for the estuary.**



### Additional specific comments:

#### Reviewer: Eric Milbrandt

Error and uncertainty of the *Vallisneria* simulation model is not reported. A major part of the MFL was derived from field and lab data showing percent (%) loss of tapegrass (*Vallisneria*) and # of days. The loss term was published in Doering and Chamberlain 2001 with error bars. The simulation model

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predicts % gain and # days < 10 and while it may have been calibrated, the uncertainty of the predictions are not specified. For example, if the regrowth simulation has 30 percent error in the regrowth predictions, the # days could change from 2 years (in the MFL rule) to 1-3 years. The assumption of natural systems failure when hydrologic conditions are more severe than 1 in 10 year drought is questionable. This is a highly managed system and will be, there cannot be a natural systems failure when all of the freshwater resources are allocated to agricultural, residential, and urban users. This is a failure not of the natural system but a failure to manage water among existing users and failure to store and move water resources. A plan should be included with this MFL to implement water shortage cutbacks to all users, not just natural systems. It seems unreasonable that a living resource can tolerate a MFL exceedance longer than 30 days. A 55 day criteria for tapegrass means you lose 75% of the resource. We know from previous droughts (2001 and 2007) that the 2 year recovery is not correct because the tapegrass has not shown large recovery within 2 years. Tidal basin flows estimated from a land use model are not guaranteed and real monitoring data suggests that zero flow from the tidal basin occurs in between dry-period rain events and adding flows from the model to S79 is inappropriate, all MFL water should come from S79 (650 cfs based on monitoring (not modeled) data)

### **Detailed Comments:**

#### **Chapter 1: Introduction**

Lines 1600-1602: If the SFWMD Governing Board has authority to not consider historical conditions if the water body has been significantly altered, then the SFWMD cannot expect a "natural systems failure" to occur during droughts as the system cannot be expected to retain a historical flow based on 'natural' groundwater or surface water inputs.

Line 1722: Tidal Caloosahatchee modeled flows 150-200cfs.. What is the probability of this happening? How frequently is rainfall required to sustain 150-200, what happens if no rainfall, then SFWMD can supplement through S-79 and this should be specified in the MFL. Models should be reported with confidence intervals.

1727: estimated tidal basin inflow has great uncertainty

#### **Chapter 2:**

Line 1991: The definition of dry and wet periods can change the analysis. Actual rainfall data indicate that SFWMD should consider that May and October as dry months which will greatly change the hydrological conditions and should be re-analyzed and presented with in the MFL. It should be expected that S79 flows will be closer to 650 cfs to achieve a salinity of 10 at the Fort Myers Yacht Basin Source: Lee County Average Monthly Rainfall data 1994-2016

#### **Chapter 3**

Line 2317: The model for simulation of tidal basin flows should report error and uncertainty along with predictions. If rainfall between wet (10 inches) and dry (3 inches) periods is proportionally 3.3 times the water in wet vs. dry. This model predicts that 245 cfs during dry and 613 cfs during wet which is only proportionally 2.5 times water in wet v. dry. It would make more sense if these proportions lined up such that if 613 cfs during wet then there would only be an average of 185 cfs during dry period (613/3.3) from the tidal basin therefore at least 60 cfs would be needed from S79 is to achieve MFL to meet the salinity of 10 target at fort Myers. The recently completed USACOE Hydrology Metrics and Targets (2016) indicate 450 cfs at S79 is needed; why is SFWMD



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recommending a lower flow for MFL than other independent research studies? (HydroPlan LLC and CERP RECOVER)

### Chapter 4:

Figure 15: Figure states map is from 2001 but cites Hoffaker 1994? This is a 1994 map as much of the red tapegrass was wiped out in 1998 by the inability to maintain salinities below 10 at Fort Myers Yacht basin. Vallisneria is present upstream of 41 bridges but no longer downstream. Given the resources committed by the SFWMD Governing Board to MFL, it is surprising that an accurate map of resources from the last 5 years is not available. Observations suggest that very little SAV exists above Shell Point.

### Chapter 5:

**Line 2672:** The multi- and interdisciplinary assessment is the best available science, but the component studies should be weighted based on relevance to the MFL. Tapegrass are the most threatened (2003 MFL) resource and will have lethal effects if salinities are above 10.

RESULT Summary (p. 55)

**2996:** Using a multiple indicator approach could be powerful if the species and habitats were weighted for the final analysis. Some of the science presented makes little sense as and MFL target species (e.g. oysters are an indicator of high flow targets but are resilient to high salinities and tolerant of low flows).

**3291:** . A hyperbolic function curve was derived from model outcomes and not from experimental data. While the simulation model is the basis for the recovery curve; the uncertainty of the model prediction or an error term for the recovery is not included. The model calibration data were not included to see how the tapegrass growth model performed.

**3364:** The duration term was based on a simulation model for Vallisneria recovery. It would be nice to include duration terms from other component studies to corroborate. The field and mesocosm studies demonstrated exposure and loss of Vallisneria. Recovery 'data' was from a simulation model. Actual recovery has not occurred in the Caloosahatchee since major droughts of 2001 and 2007 suggesting that the recovery estimated by the simulation model is optimistic.

Sincerely,

signatures waived to expedite delivery

Eric Milbrandt, PhD Marine Lab Director  
Sanibel Captiva Conservation Foundation

Rick Bartleson, PhD, Senior Scientist  
Sanibel Captiva Conservation Foundation

Rae Ann Wessel, Policy Director  
Sanibel Captiva Conservation Foundation

James Evans, Natural Resource Director  
City of Sanibel

cc: Donald Medellin, SFWMD

**Attachments: Commenter Bios**

Peer Reviewers:

Edward J. Buskey, Ph.D., Chairman - University of Texas at Austin, Marine Science Institute

Jennifer Beseres Pollack, Ph.D. – Texas A & M University, Corpus Christi

Wu-Seng Lung, Ph.D., P.E. – University of Virginia, Department of Civil and Environmental Engineering

James L. Pinckney, Ph.D. – University of South Carolina, Institute for Marine and Coastal Sciences

Jian Shen, Ph.D. - College of William and Mary, Virginia Institute of Marine Sciences

## City of Sanibel ♦ Sanibel Captiva Conservation Foundation

### **Commenter's Bios:**

#### **Dr. Eric Milbrandt, SCCF Marine Laboratory Director**

[emilbran@sccf.org](mailto:emilbran@sccf.org)

Dr. Eric Milbrandt received his PhD from the University of Oregon to study at the Oregon Institute of Marine Biology in Charleston, OR. During his Ph.D., Eric received a Graduate Research Fellowship from the South Slough National Estuarine Research Reserve to study the microbial ecology of the South Slough Estuary. In 2011, Dr. Milbrandt was named the third SCCF Marine Laboratory Director. Dr. Milbrandt has been instrumental in the establishment of RECON (River Estuary Coastal Observing Network) which is providing Real-time data. RECON also enhances research at the lab including in numerous water quality studies around Sanibel and Captiva Islands and in cooperation with the USFWS in J.N. "Ding" Darling National Wildlife Refuge.

#### **Dr. Rick Bartleson, SCCF Research Scientist**

[rbartleson@sccf.org](mailto:rbartleson@sccf.org)

Dr. Rick Bartleson received a B.A. in Biology from the University of South Florida, M.S. from the Ecosystems Ecology division of the Environmental Engineering Sciences program at the University of Florida and received his Ph.D. from the Marine, Estuarine and Environmental Studies program at the University of Maryland, College Park. He has studied the effects of seagrass on sedimentation and constructed a simulation model of seagrass growth and its effect on currents and sedimentation and researched ecosystem effects of increased fresh water flow in Florida Bay. He worked on a project showing effects of diverting fresh water flow on the Savanna River ecosystems and a simulation model of the Chesapeake Bay as a Senior Faculty Research Assistant at the University of Maryland's Horn Point Environmental Lab, to increase the understanding of how water column nutrients affect seagrass health. He worked as a postdoc with the Lake Okeechobee Research unit at the South Florida Water Management District, conducting microcosm research on the effects of submersed plants on nutrients and constructing a simulation model of submersed plant growth

#### **Rae Ann Wessel, SCCF Natural Resource Policy Director**

[rawessel@sccf.org](mailto:rawessel@sccf.org)

Rae Ann Wessel is a limnologist and marine scientist with over 35 years of experience working in the environmental field in South Florida. She currently serves as the Natural Resource Policy Director for SCCF, the Sanibel-Captiva Conservation Foundation. For the past 23 years she has been involved with identifying critical Caloosahatchee and Everglades issues and building support for sustainable, science based restoration solutions. In addition, she is involved in oxbow research and restoration in the Caloosahatchee and its estuary.

#### **James T. Evans III, M.S., City of Sanibel Director of Natural Resources**

[james.evans@mysanibel.com](mailto:james.evans@mysanibel.com)

Director Evans has been employed with the City of Sanibel for more than 17 years and has over 20 years of experience in south Florida ecosystems and expertise in water quality, marine biology, estuarine ecology, coastal systems, environmental restoration, land management and grant acquisition and management. He has held several positions with the City including, Conservation Officer, Environmental Planner, and Environmental Health and Water Quality Specialist, before becoming Director of Natural Resources. Prior to working with the City of Sanibel, James was employed by the Center for Environmental Studies where he monitored tape grass, oysters, and water quality in the Caloosahatchee River and estuary as part of the South Florida Water

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Management District's Valued Ecosystem Component Study. He has a B.A. in Environmental Studies and a M.S. in Environmental Science from Florida Gulf Coast University.

**City of Sanibel ♦ Sanibel Captiva Conservation Foundation ♦**  
**Conservancy of Southwest Florida**

June 15, 2018

Toni Edwards  
Senior Scientist  
South Florida Water Management District  
P.O. Box 24680  
West Palm Beach, FL 33406

*Transmitted via email*

Re: Comments on Caloosahatchee MFL Reevaluation

Dear Ms. Edwards,

The undersigned appreciate the opportunity to provide additional comments on the Caloosahatchee Minimum Flow and Level (MFL) reevaluation and proposed rule development. There have been several workshops and meetings on this topic, and the ongoing dialogue between the South Florida Water Management District (SFWMD) staff and the west coast stakeholders has been a welcome avenue for communicating concerns, feedback, and recommendations on the proposed MFL rule. We want to thank you and your team for taking the time to meet with us during the technical discussion to attempt to resolve some of our concerns with the proposed MFL.

Throughout the commenting process, the concerns conveyed dealt with all three aspects of the proposed MFL: the magnitude, duration, and frequency components. In addition, during the past two meetings on May 7 and June 1, the concept and definition of "recovery" was discussed at length, and how it is applied in the context of the MFL. Based on the conclusion of the workshop on June 1, we understand that the SFWMD is reevaluating and analyzing two items at the stakeholders' request: the 55 consecutive day duration component of the MFL, and the SFWMD data pertaining to MFL exceedance and violations since 2007 when flows met or surpassed the proposed magnitude of 400 cfs.

**Duration Criteria**

The 55 consecutive day duration component remains one of the central concerns about the proposed MFL and the undersigned strongly recommend the SFWMD retain the 30-day moving average in the current rule. High salinities have been shown to be lethal to both tapegrass and oysters with 30 days of high salinities in the Caloosahatchee estuary.

SFWMD staff indicated during the May 7 and June 1 meetings that the modeling predicts approximately 80% of the resource would be lost after 55 days of exceeding the MFL. By setting the duration to this period of time, the proposed rule could allow for essentially the complete loss of the resource, which is supposed to be protected from significant harm. This also raises the question of how any recovery could be accomplished, when *preventing* harm would enable recovery success. However, the MFL does not clearly define the base condition from which recovery would be measured.

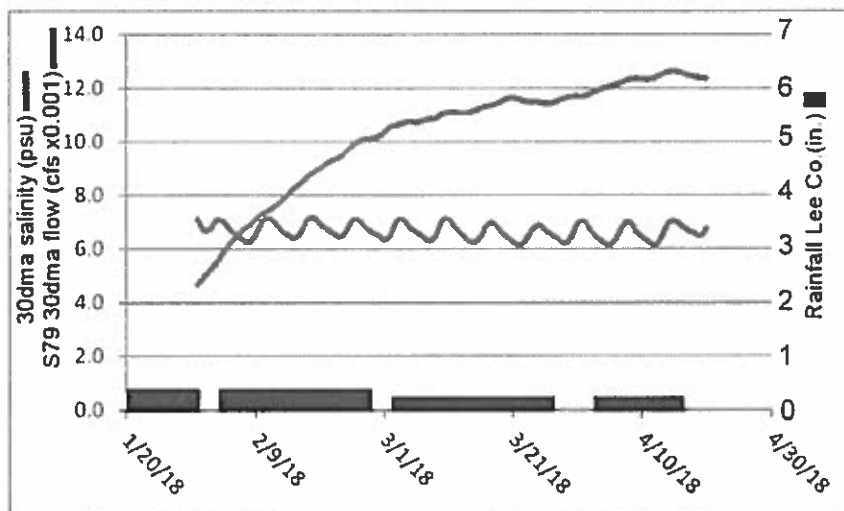
## Magnitude Criteria

The undersigned look forward to reviewing the data and analysis regarding MFL exceedance and violations when the flow met or surpassed the 400 cfs. It is important to point out that the District's assessments of organism responses to salinity conditions were based on mesocosm studies and modeled data, which do not adequately replicate the conditions of the estuary. Real-time monitoring of conditions demonstrate dramatically different salinity levels based on the same flows.

We have submitted the estuary monitoring data in prior written and verbal comments describing in detail how flow rates of 650 cfs have failed to maintain salinities below 10 psu at the Fort Myers station on many documented occasions. Furthermore, these data are provided to the District in weekly Caloosahatchee Condition Reports prepared by the west coast stakeholders <http://www.sccf.org/water-quality/caloosahatchee-condition-reports>. Therefore, even with the benefit of the C-43 West Basin Reservoir augmenting freshwater flows to 400 cfs measured at S-79, the available data indicate the MFL will not be able to meet the salinity target to prevent significant harm. For this and the other reasons stated in prior comments, we cannot support a flow magnitude of 400 cfs.

Included in this letter is a review of salinity responses to flow and rainfall for the past 3.5 months, during the time the estuary experienced 89-days of MFL exceedance.

In January, starting with low salinity after high releases related to Hurricane Irma were discontinued, the 30-day moving average (DBHYDRO) salinity increased above 10 psu after 25 days of receiving 670 cfs 30-day moving average flow. Salinity continued to rise above 10 psu for 70 days.



Fort Myers Yacht Basin salinity vs. a dry season S79 flow of 670 cfs

## Baseline/Condition X

The concept of "condition x" as the recovery target after an MFL violation requires a more specific definition. For example, we understand that "recovery" in the context of the duration criteria, would mean the recovery of the loss of 80% of *Vallisneria*. Since, "condition x" is based upon a suite of different indicators over a period of record, it is nearly impossible to define as a specific recovery point. Alternatively, if "condition x" were to include a geospatial extent of habitat for a recovery target (e.g., geospatial extent of the low-salinity zone), this would allow for recovery to be measured with a greater degree of accuracy.

## **MFL Compliance**

We are very concerned about how compliance may be interpreted as simply achieving a flow through S-79 with no metrics for assessing the health and survivability of existing resources, with recovery language that would be applied to a non-defined recovery standard. Since the current MFL (2001) has been in effect, the estuary has experienced harm greater than *significant harm*, it has experienced *serious harm* with the permanent loss of 1,000 acres of tapegrass habitat.

## **Conclusion**

We believe that real-time monitoring and response of the system should be considered more representative of system responses than mesocosm study modeling. We do not agree with the 400 cfs flow target and the 55 consecutive day duration criteria proposed and reiterate our concerns that the proposed MFL does not clearly establish a baseline condition from which to establish *significant harm* and does not define recovery, and thus will not protect the low-salinity zone and ecologically critical habitat remaining in the upper Caloosahatchee estuary.

Finally, given that the modeling benefits depend upon the availability and operation of the Prevention and Recovery Strategy—the C43 West Basin Reservoir—and given that that project is at least four years away from completion, we suggest delaying rule adoption until a pilot project can assess estuary conditions over the next two years, before reservoir operational testing begins. Flow monitoring stations being installed by Lee County in the tidal Caloosahatchee may help quantify flow contributions and resolve some of the issues related to flow and salinity in the upper estuary.

We hope that you will consider our comments and we look forward to seeing the results of your reevaluation of the 55 consecutive day duration component of the MFL, and the SFWMD data pertaining to MFL exceedance and violations since 2007 when flows met or surpassed the proposed magnitude of 400 cfs.

Sincerely,

*Signatures waived to expedite delivery*

James Evans, Natural Resource Director  
City of Sanibel

Rick Bartleson, PhD, Senior Scientist  
Sanibel Captiva Conservation Foundation

Rae Ann Wessel, Policy Director  
Sanibel Captiva Conservation Foundation

Marisa Carrozzo, Sr. Environmental Policy Specialist  
Conservancy of Southwest Florida

cc: Don Medellin