

Governing Board Meeting

October 10, 2019

Minimum Flows and Levels Criteria for the Caloosahatchee River

Don Medellin
Principal Scientist
Applied Sciences Bureau

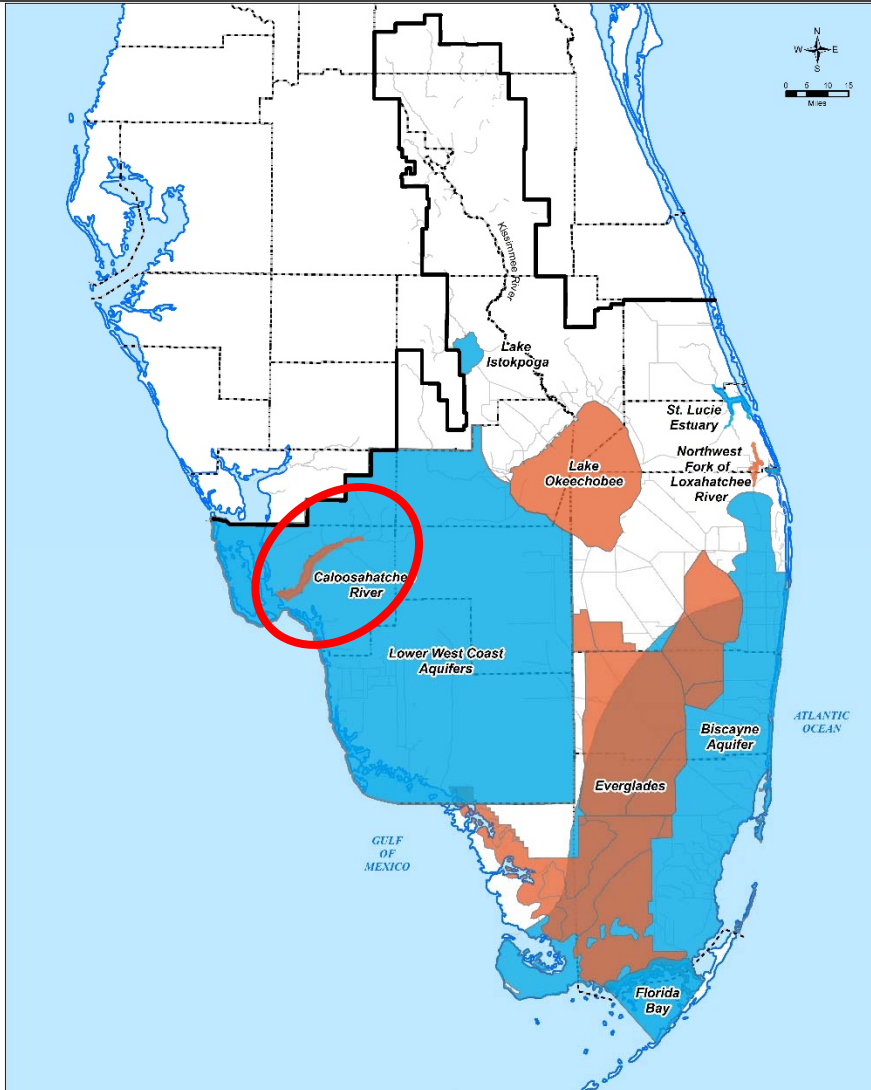
Minimum Flows and Levels (MFL)

Statutory Authority: Chapter 373.042
Florida Statutes (F.S.)

- Department or Governing Board shall establish a minimum flow or water level for surface water courses, aquifers and lakes...
- **Minimum Flows and Levels** - Identifies the point at which further withdrawals will cause "significant harm" to the water resources or ecology of an area
- **Significant Harm:** Temporary loss of water resource functions that takes more than two years to recover...(40E-8.021(31), FAC)



Existing MFLs



■ MFL Prevention Waterbodies

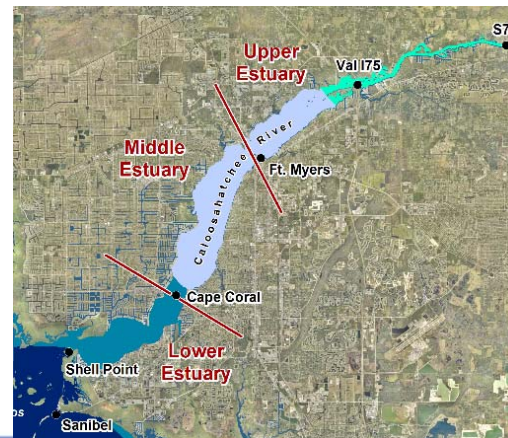
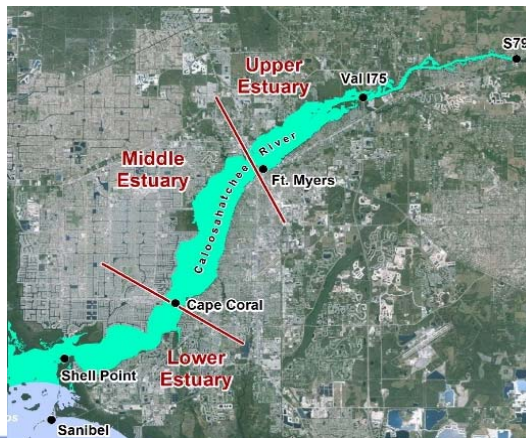
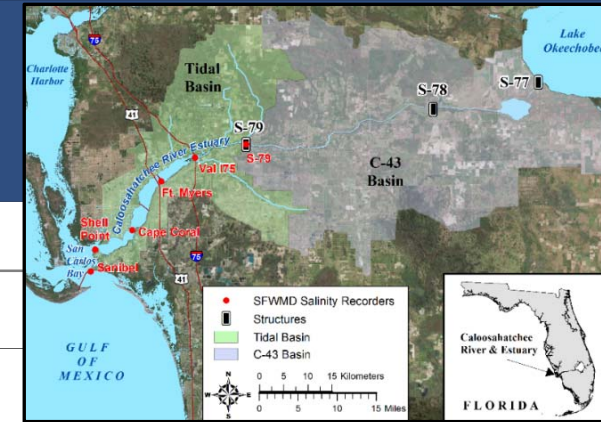
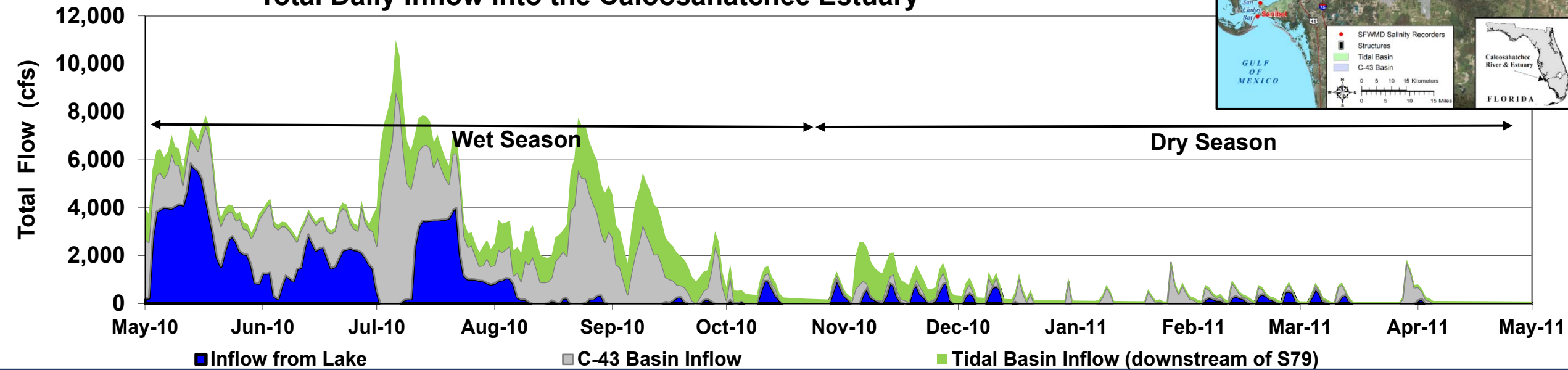
- Biscayne aquifer
- Lower West Coast aquifers
- St Lucie Estuary
- Lake Istokpoga
- Florida Bay

■ MFL Recovery Waterbodies

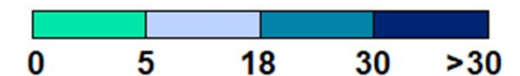
- Lake Okeechobee
- Everglades
- Caloosahatchee River
- Northwest Fork of Loxahatchee River

Caloosahatchee River Estuary

Total Daily Inflow into the Caloosahatchee Estuary

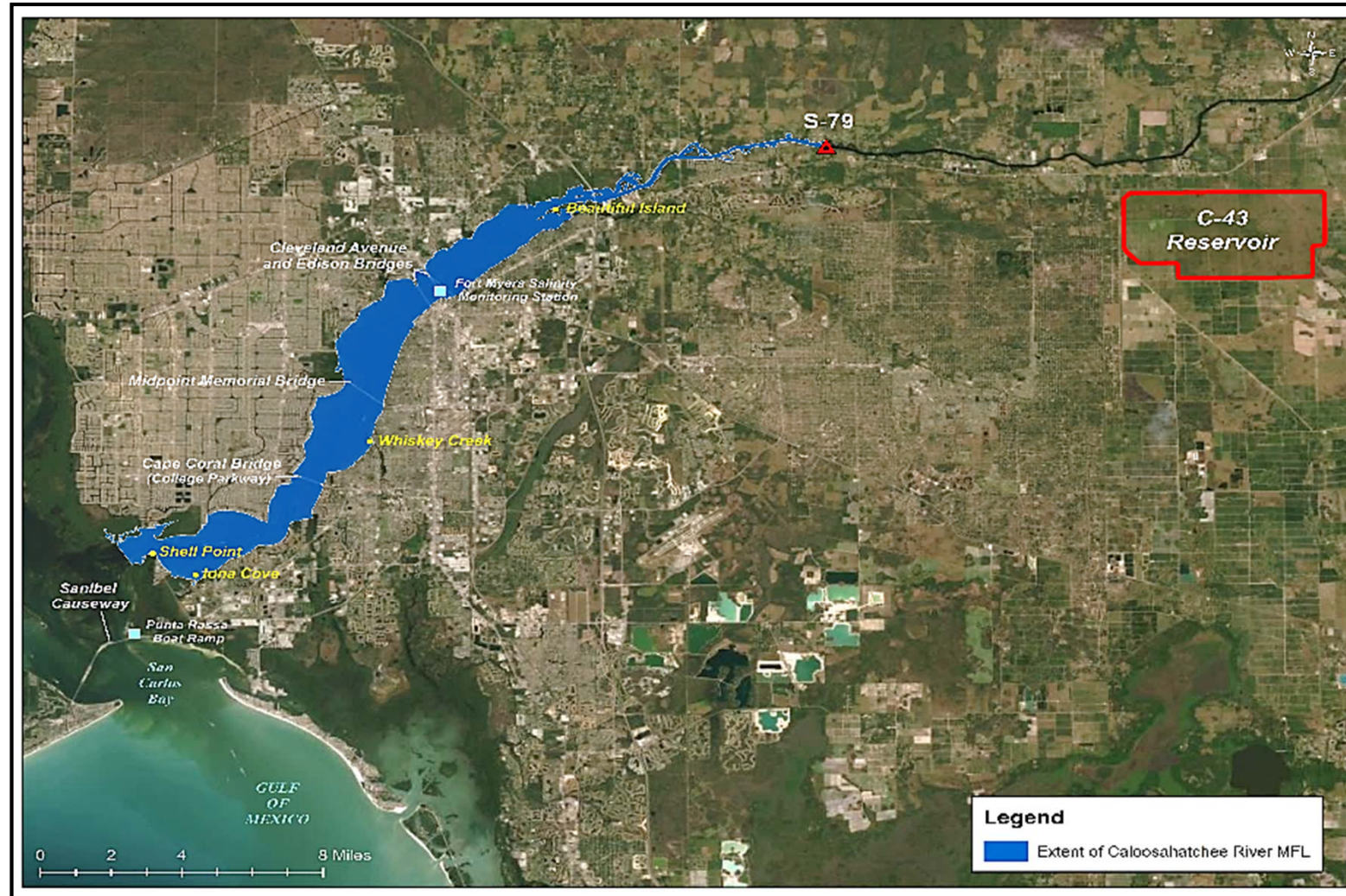


Salinity Ranges



Existing MFL Criteria

- MFL rule initially adopted in 2001
- Mean monthly flow of 300 cfs at S-79
- MFL exceedances are based on salinity criteria
- 2000 peer review recommendation: MFL should be set on a suite of additional indicators within the upper and lower estuary



Science Advanced Through a Transparent and Open Public Process

- 2010-2016 – Monitoring and research period
- 2016 - Completed comprehensive science assessment based on 11 different indicators
- 2016 - 2-Day Science Symposium
- 2017 - Science Document finalized
- 2017 - Draft MFL Technical document completed
- 2017 - Public Peer Review Session with panel of experts
- 2017 - Peer Review Report supports science approach

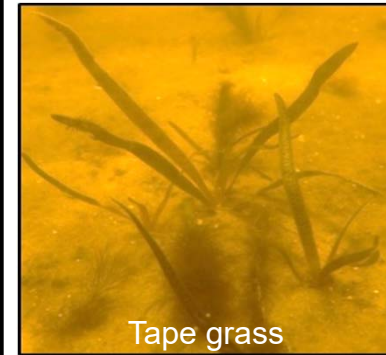


Rule Development Public Process

- December 2017 – Rule Development authorized
- February – June 2018 – Completed two public workshops and two additional public meetings
- September 2018 – Proposed Rule Adopted by the Governing Board



Blue crab



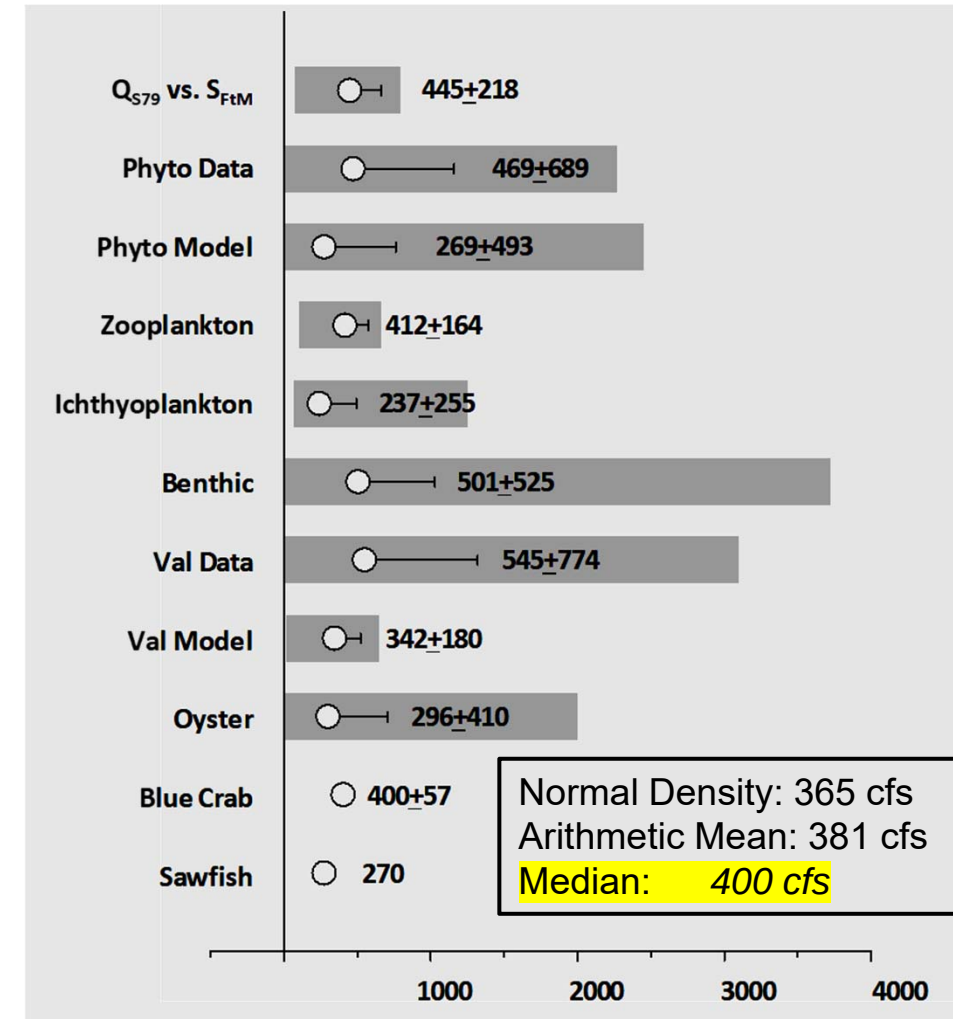
Tape grass



Oysters

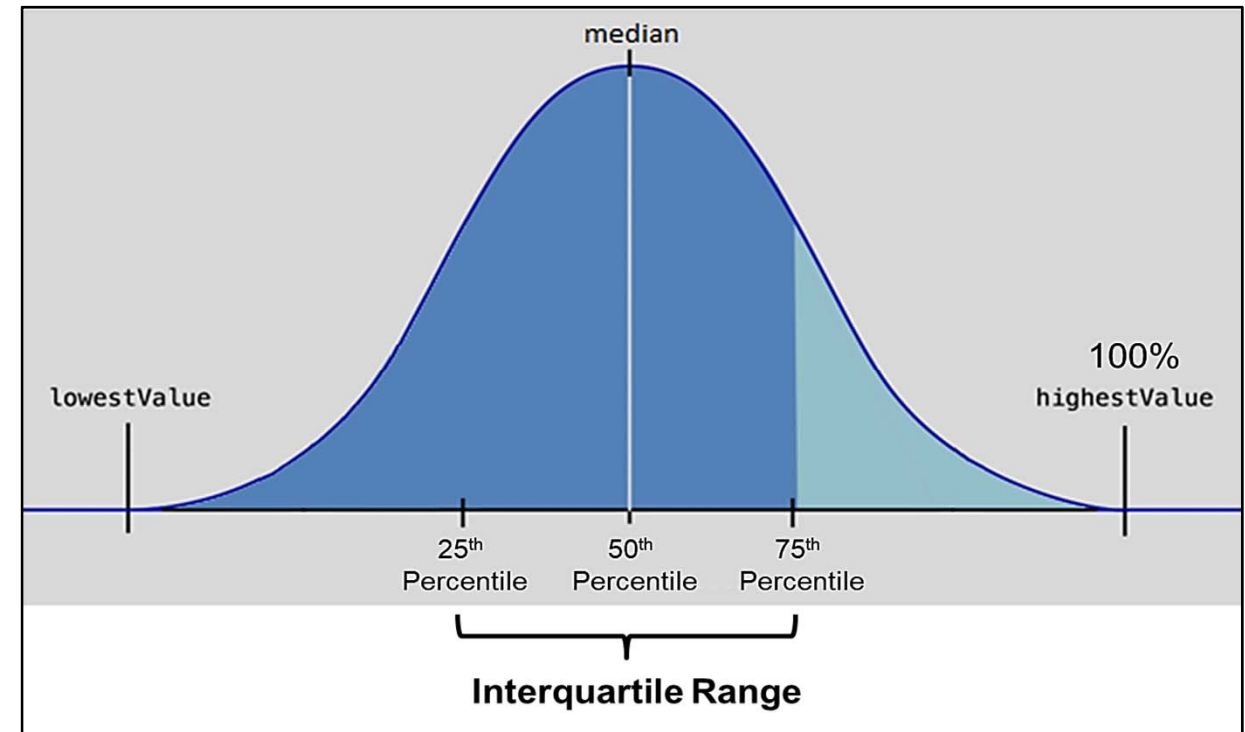
Rule Development Public Process

- September 2018 – Rule Challenge Filed
- October 2018 – Two-day administrative trial
- March 2019 – Final Order received - valid exercise of delegated legislative authority
- April 2019 – Governing Board directed staff to further engage with stakeholders
- May 31, 2019 – Workshop #3
- June 20, 2019 – Workshop #4
- September 20, 2019 – Workshop #5

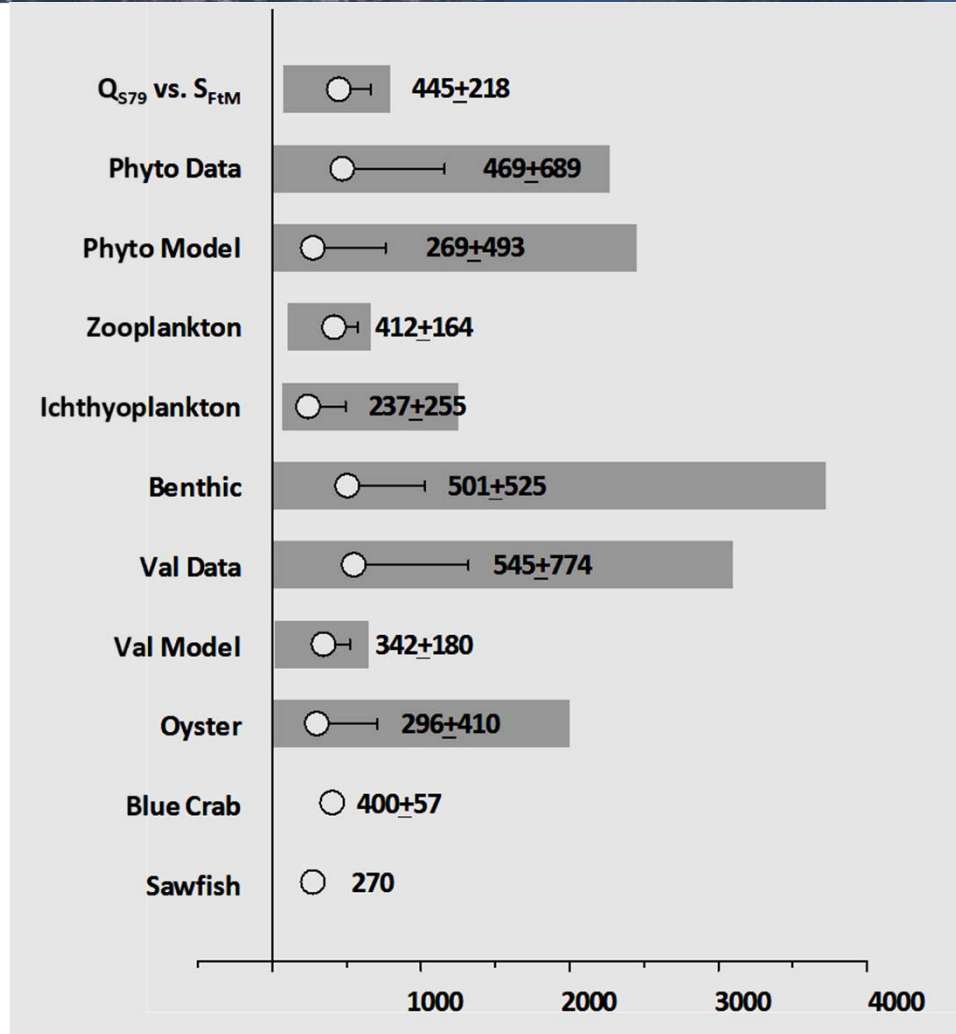


Minimum Flow Recommendation

- Minimum flow of 457 cfs at S-79
- Interquartile approach for the median
- Accounts for 75% of the variability about the median of indicators
- More conservative approach to prevent significant harm from occurring



Minimum Flow Recommendation



➤ Accounts for 75 percent of the variability about the median for all indicators

Rule incorporates a two-prong evaluation:

➤ Flow Component - needed for the suite of ecological indicators – based on science, and;

➤ Biological Component – provides additional assessment of indicator responses to flow

Caloosahatchee MFL Revised Draft Rule

The MFL for the Caloosahatchee River is the 30-day moving average flow of 457 cubic feet per second (cfs) at S-79.

- (a) A MFL exceedance occurs during a 365-day period when the 30-day moving average flow at S-79 is below 457 cfs.
- (b) A MFL violation occurs when a MFL exceedance occurs more than once in a 5-year period.

The flow, combined with tributary contributions below S-79, shall be sufficient to maintain a salinity gradient that prevents significant harm to mobile and immobile indicator species within the Caloosahatchee River. If significant harm occurs once the Caloosahatchee MFL recovery strategy is fully implemented and operational, the recovery strategy and MFL will be reviewed in accordance with Rule 40E-8.421, F.A.C. Mobile and immobile species shall be monitored as described in the recovery strategy.

Modified MFL Recovery Strategy Components

Completed	Near Term (2020-2024)	Long Term (2022-2027)
Obtain project funding and initiate construction of the C-43 Reservoir	Implement baseline MFL Research and Monitoring Plan (2020-2024)	If needed, evaluate project(s) to meet potential unmet requirements – storage, volume, and type (2022-2023)
Establish water reservation rule for the C-43 Reservoir	Complete construction of the C-43 Reservoir (2020-2023)	Select additional project(s) and obtain federal and/or state funding for selected project(s), if needed (2024)
	Develop C-43 Reservoir Water Control Plan (2021)	Complete C-43 Reservoir testing (2024)
	Re-assess C-43 Reservoir performance (2022)	Implement post-operation MFL research and monitoring plan (2025-2027)
		Design and construct selected project(s) (2024-2027)

Research and Monitoring Plan

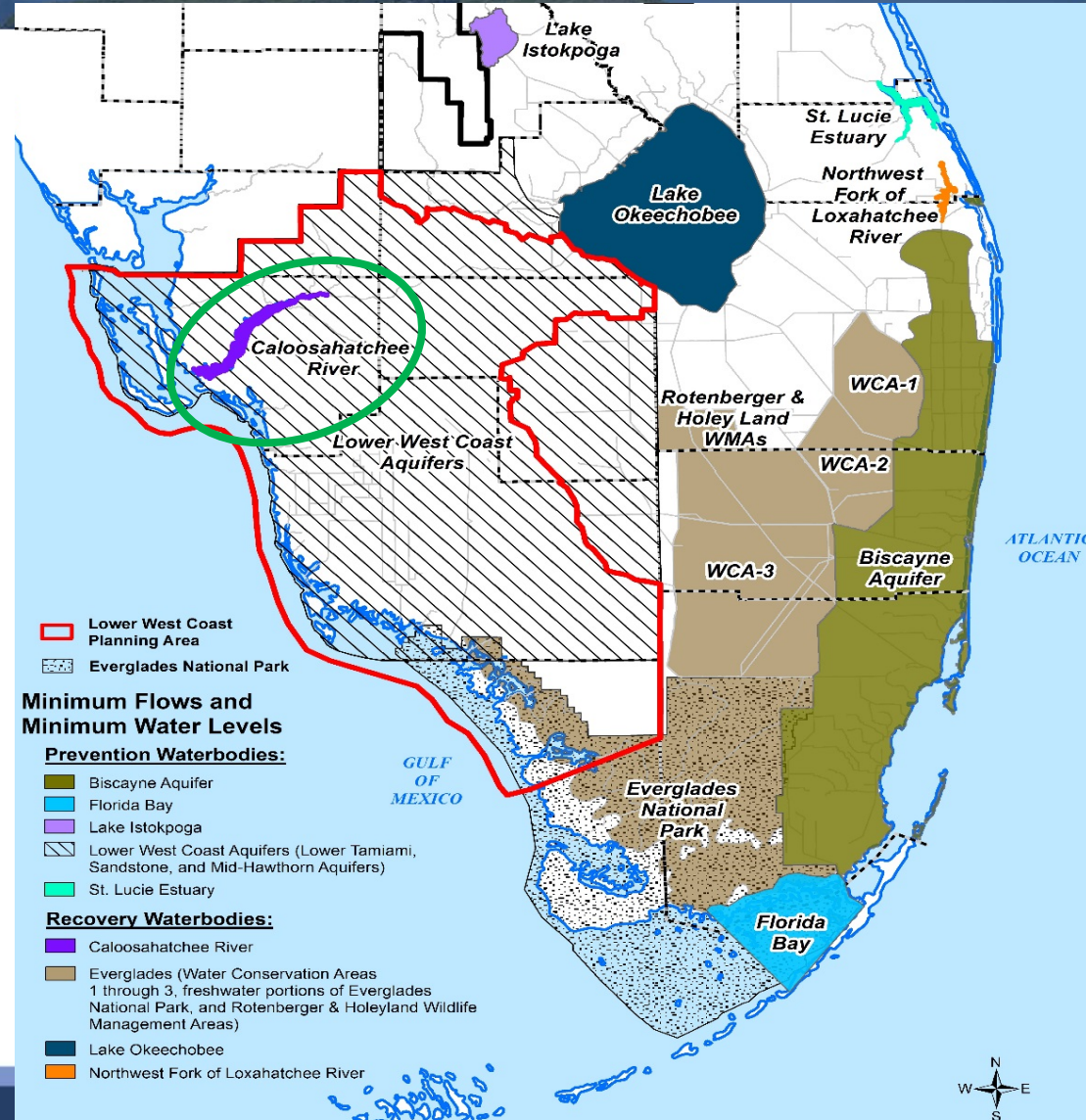
- Monitor multiple indicators in the meso and oligohaline zones
- Additional experimental research on indicator species
- Links estuary conditions with indicator responses

Project	Time Frame							
	Baseline Period					Reservoir Operational Period		
Fiscal Year	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
New Monitoring/Research								
Estuary Water Quality Responses to Managed Flows	\$27K	\$27K	\$27K	\$27K	\$27K	\$27K	\$25K	\$27K
Clam (<i>Rangia cuneata</i>) Monitoring	\$60K	\$60K	\$60K	\$60K	\$60K	\$60K	\$60K	\$60K
Zooplankton and Ichthyoplankton Monitoring	\$150K	\$150K	\$150K	\$150K	\$150K	\$150K	\$150K	\$150K
SUBTOTAL	\$237K	\$237K	\$237K	\$237K	\$237K	\$237K	\$237K	\$237K
Current Monitoring/Research								
Submerged Aquatic Vegetation Monitoring (RECOVER funded)	\$80K	\$80K	\$80K	\$80K	\$80K	\$80K	\$80K	\$80K
Oyster Monitoring (RECOVER funded)	\$70K	\$70K	\$70K	\$70K	\$70K	\$70K	\$70K	\$70K
Tape Grass (<i>Vallisneria americana</i>) & Clam (<i>Rangia cuneata</i>) Salinity Stress Response Study (2-year study)	\$35K	\$35K						
SUBTOTAL	\$185K	\$185K	\$150K	\$150K	\$150K	\$150K	\$150K	\$150K
TOTAL	\$422K	\$422K	\$387K	\$387K	\$387K	\$387K	\$387K	\$387K

Background to Amend Water Supply Plan

- In December 2017, Governing Board approved the 2017 Lower West Coast Water Supply Plan Update
- Water Supply Plans include:
 - 20-year planning horizon
 - Water resource and water supply development projects
 - Minimum Flows and Levels waterbodies in planning region
 - Recovery or prevention strategies
- The Caloosahatchee River MFL and associated recovery strategy is located in this planning region

Lower West Coast Planning Region



Purpose and Rule Requirements

- The revised MFL criteria of 457 cfs at S-79 for the Caloosahatchee River requires the recovery strategy to be modified
- Rule 62-40.473, F.A.C. requires simultaneous modification of the recovery strategy if MFL is revised
- Amendment applies solely to Appendix C related to Caloosahatchee MFL recovery strategy
- Modified MFL recovery strategy includes:
 - Complete construction of the C-43 reservoir
 - Develop water control plan
 - Implement a research and monitoring plan
 - Conduct evaluations for additional storage, and if needed, project identification, design, and construction



Discussion

Recommended Actions

1. Adopt Amendments with Changes, revising the MFL criteria for the Caloosahatchee River in Rule 40E-8.221, Florida Administrative Code
2. Enter a Final Order amending Appendix C of the 2017 Lower West Coast Water Supply Plan Update to modify the Caloosahatchee River MFL Recovery Strategy

THANK YOU

Caloosahatchee River MFL Project Team

- Cassondra Armstrong, Ph.D
- Amanda Kahn, Ph.D
- Detong Sun, Ph.D
- Jenifer Barnes
- Toni Edwards
- Jennifer Brown
- Laura Scala-Olympio
- Laura Cole
- Kim Chuirazzi
- Nathan Kennedy, Ph.D

Managers:

- Lawrence Glenn
- Susan Gray, Ph.D

Previous Staff:

- Peter Doering, Ph.D
- Christopher Buzzelli, Ph.D
- Fawen Zheng, Ph.D
- Terrie Bates