SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lower West Coast Water Supply Plan Public Meeting
March 21, 2018

Protecting Water Resources in the South Florida Water Management District

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sfwmd.gov

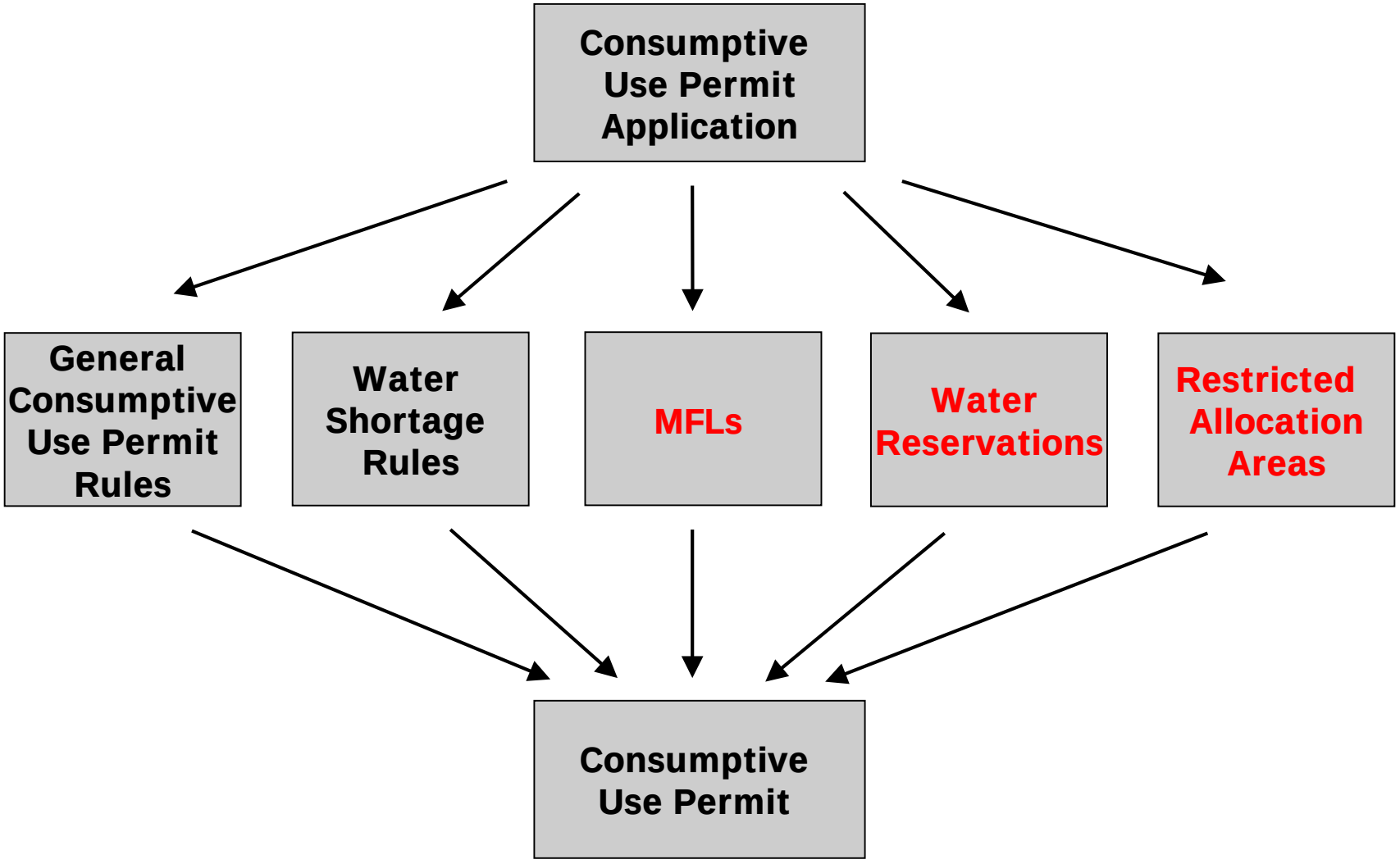
Water Resource Protection Tools

Florida Bay
From: National Geographic at https://goo.gl/images/eSnAVD

- **Minimum Flows and Minimum Water Levels (MFL)** – ***new name in Ch. 373, Florida Statutes (F.S.), same acronym (MFL)***
- **Water Reservations**
- **Restricted Allocation Areas (RAA)**

All three are adopted by rule in the Florida Administrative Code (F.A.C.)

Factors Considered in CUP Permitting



Minimum Flows and Minimum Water Levels (MFL)

Statutory Authority:

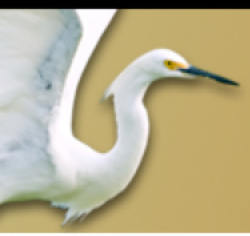
Chapter 373, F.S.

Defined in 40E-8.021, F.A.C.

- **Minimum Flows and Minimum Water Levels** - 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, but is less severe than serious harm
- May be adopted for both surface waters and ground waters

Everglades National Park
From: Eldridgephoto.com available at https://goo.gl/images/I5qkCF

Water Resource Protection Conceptual Model



Water Levels/Flow Decreasing

Drought Severity Increasing

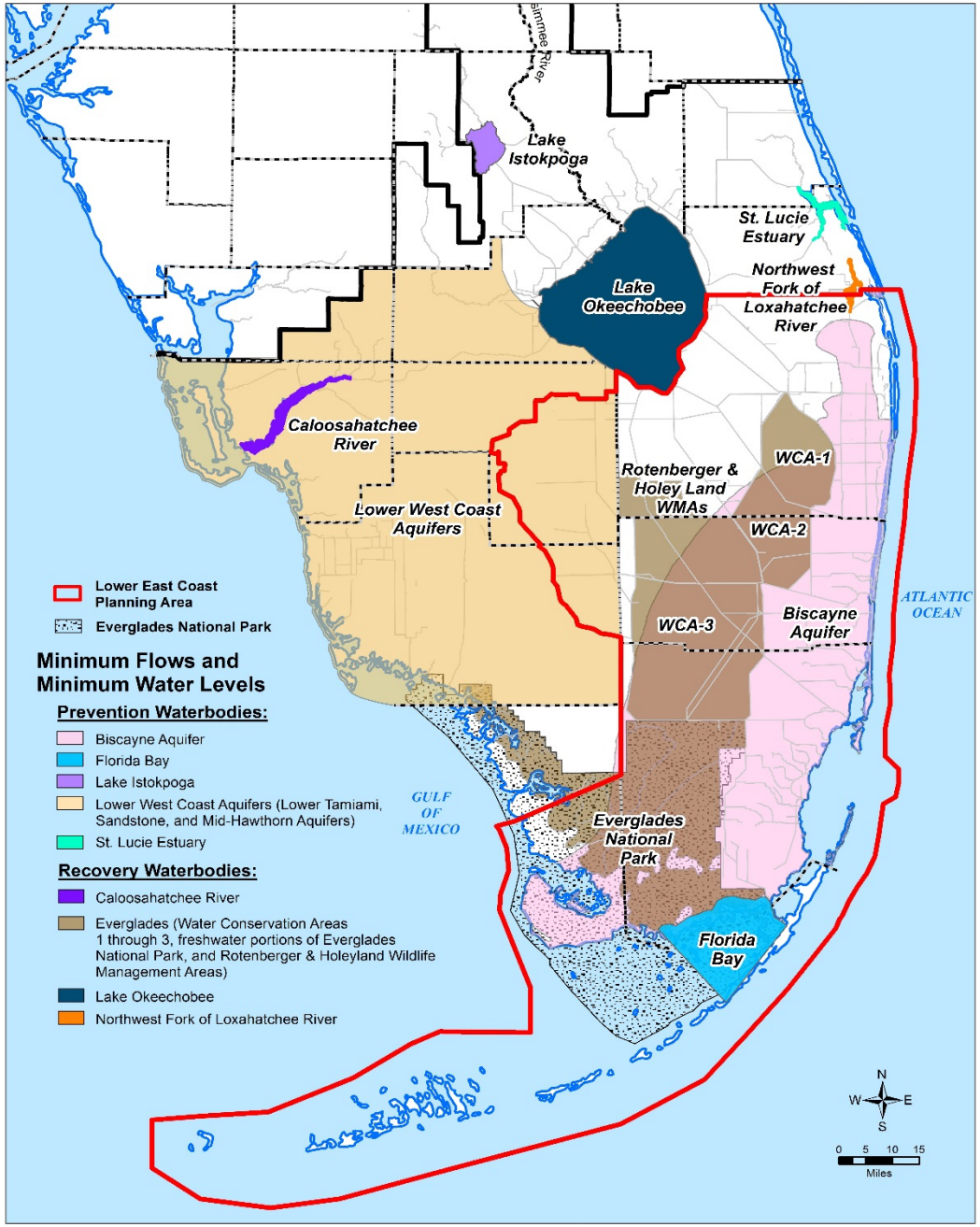
Water Resource Protection Tools	Water Resource Protection Standards	Observed Impacts
Permittable Water Reservation of Water	NO HARM (1-in-10 Level of Certainty*)	Normal Permitted Operations Environmental Restoration
Phase I Water Shortage Phase II Water Shortage	HARM	Temporary loss of water resource functions taking 1 to 2 years to recover
MINIMUM FLOWS & MINIMUM WATER LEVELS		
Phase III Water Shortage	SIGNIFICANT HARM	Water resource functions require multiple years to recover (> 2 year)
Phase IV Water Shortage	SERIOUS HARM	Permanent or irreversible loss of water resource functions

** 1-in-10 Level of Certainty – Reasonable assurance that the proposed use will not harm water resources or interfere with existing legal water users up to a 1-in-10 year drought condition (a drought condition that occurs only once in 10 years).*

MFL
Recovery and Prevention Strategies

Subsection 373.0421(2), F.S.

- **Recovery Strategy** for waterbodies not meeting the MFL at the time of adoption
  - Achieve recovery to the established MFL as soon as practicable
- **Prevention Strategy** for waterbodies that are meeting the MFL but are not expected to meet it in 20 years (regional water supply planning horizon)
  - Prevent the existing flow or level from falling below the established MFL
- **In SFWMD:**
  - Strategies adopted simultaneously with MFL rule adoption for all MFL waterbodies
  - Prevention strategies are also adopted for waterbodies meeting the MFL which are also expected to meet it in 20 years



Minimum Flows and Minimum Water Levels in the SFWMD

With Prevention Strategies

- Biscayne Aquifer – 2001
- Lower West Coast Aquifers – 2001
- St Lucie Estuary – 2002
- Florida Bay – 2006
- Lake Istokpoga – 2006

With Recovery Strategies

- Caloosahatchee River – 2001
- Everglades – 2001
- Lake Okeechobee – 2001
- Northwest Fork of Loxahatchee River – 2003

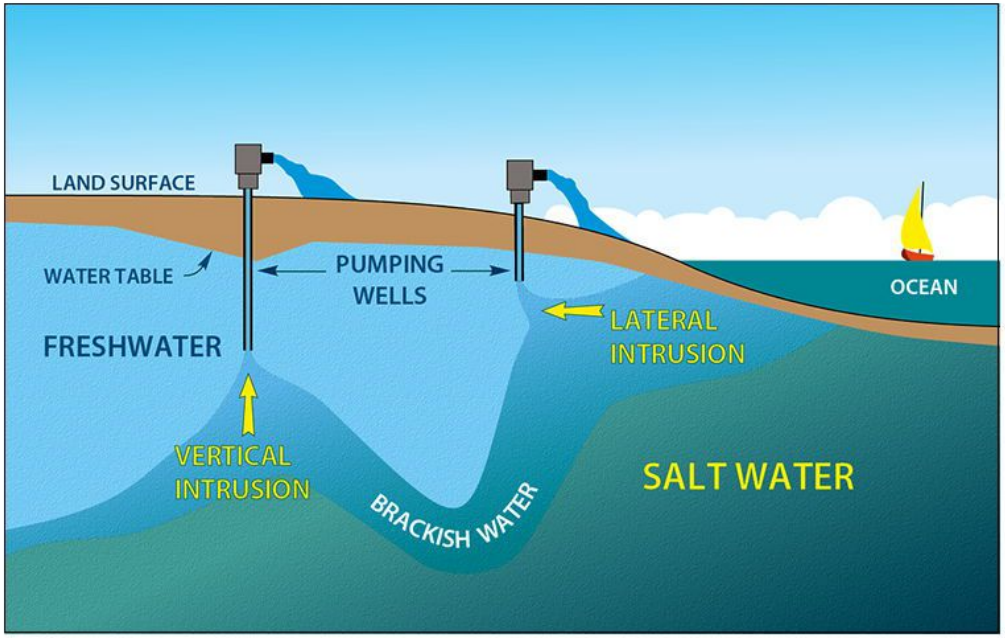
Cover > 6.6 million acres districtwide

Biscayne Aquifer Adopted MFL

Section 40E-8.231, F.A.C.

MFL Criterion: "The minimum level for the Biscayne Aquifer is the level that results in movement of the saltwater interface landward to the extent that groundwater quality at an established withdrawal point is insufficient to serve as a water supply source"

Interpretation: The minimum groundwater level needed in the aquifer to prevent saltwater intrusion from making the aquifer insufficient as a water supply source



Graphic from SJRWMD Floridaswater.com

An MFL violation occurs when water level in the aquifer produces this degree of saltwater movement at any point in time

Biscayne Aquifer Prevention Strategy

Subsection 40E-8.421(3), F.A.C. and Lower East Coast (LEC) Water Supply Plan

- Maintain coastal canal stages at no less than minimum operation levels

Canal/Structure	Minimum Canal Operation Levels to Protect Against MFL Violations (ft. NGVD)
C-51/S-155	7.80
C-16/S-41	7.80
C-15/S-40	7.80
Hillsboro/G-56	6.75
C-14/S-37B	6.50
C-13/S-36	4.00
N.N. River/G-54	3.50
C-9/S-29	2.00
C-6/S-26	2.50
C-4/S-25B	2.50
C-2/S-22	2.50

Biscayne Aquifer Prevention Strategy, cont.

- Apply conditions for permit issuance to prevent harmful movement of saltwater interface
  - Consumptive use permitting criteria in Rule 40E-2, F.A.C.
- Maintain groundwater monitoring network and utilize data to initiate water shortage actions
  - Pursuant to Rule 40E-8.441, F.A.C. and Chapters 40E-21 and 40E-22, F.A.C.

Biscayne Aquifer Prevention Strategy, cont.

- Construct and operate water supply development projects
  - 2008 regional water availability rule (limits aquifer withdrawals; requires water reuse and conservation, and development of alternative water sources)
  - Countermeasures to saltwater intrusion through Everglades restoration
- Conduct research in high risk areas to identify where saltwater interface is adjacent to existing and future potable water sources
  - District periodically maps saltwater intrusion into coastal aquifers

Florida Bay Adopted MFL

Covers “Northeast Subregion of Florida Bay”

Subsection 40E-8.221(5), F.A.C.

A net minimum flow into Florida Bay, over a 365-day period, of 105,000 acre-feet

- MFL is a flow criterion with a salinity performance indicator (e.g., flow needed to maintain a salinity of $\leq$ 30 at the Taylor River salinity monitoring station)

2014 MFL Reevaluation: Concluded MFL criteria were adequate for preventing significant harm

Florida Bay
Adopted MFL, cont.

An MFL "exceedance" occurs when:

- The average salinity over ≥ 30 consecutive days is > 30 at the Taylor River salinity monitoring station (event)
- Multiple events occurring within a single calendar year are considered a single exceedance

An MFL violation occurs when an exceedance occurs during each of two consecutive years, more often than once in a 10-year period (return frequency)

Florida Bay Prevention Strategy

Subsection 40E-8.421(8), F.A.C.

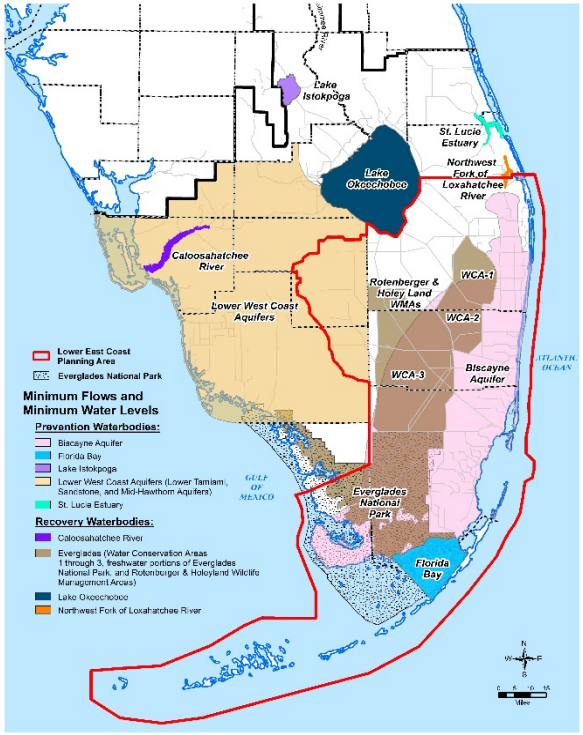
- Projects for delivering more water to Florida Bay, specifically:
  - Modified Water Deliveries to Everglades National Park Project (ModWaters)
  - Comprehensive Everglades Restoration Plan (CERP) C-111 Spreader Canal Western Project
  - C-111 South Dade Project
- Other projects supporting the MFL and prevention strategy:
  - Central Everglades Planning Project (CEPP) *
- Continued field monitoring and research to assess salinity, water levels, and flow conditions, and biological resource responses in the region

** Includes six components of CEPP: Everglades Agricultural Storage Reservoirs; WCA 3 Decompartmentalization and Sheetflow Enhancement; S-356 Pump Station Modifications; L-31N Improvements for Seepage Management; System-wide Operational Changes – Everglades Rain-Driven Operations; and Flow to Northwest and Central WCA-3A.*

Everglades Adopted MFL

Subsection 40E-8.221(3), F.A.C

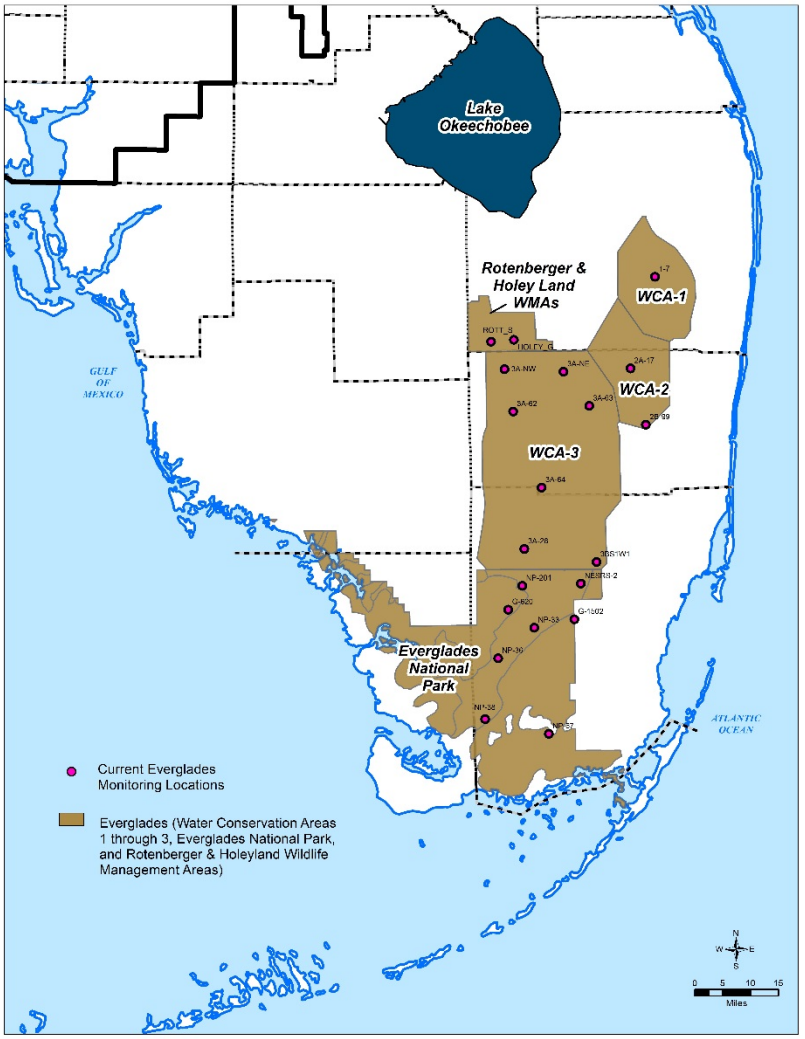
Includes the lands and waters of the Water Conservation Areas, the Holeyland/Rotenberger wildlife management areas, and the freshwater portions of Everglades National Park (brown area on map)



Everglades National Park
Photographer: Paul Marcellini available at https://goo.gl/images/Mr6fQ8

Everglades
Adopted MFL, cont.

- Based upon water levels in peat-forming and marl-forming wetlands in the Everglades
- Specify limits on the decline of water levels below ground during defined periods of time (worst case scenario)
- MFL compliance is assessed at the 20 Everglades sites listed in Table 1 of Rule 40E-8.221, F.A.C.



Everglades Adopted MFL, cont.

MFL Criteria:

MFL Component	Peat-Forming Wetlands	Marl-Forming Wetlands	Status
Period (consecutive days water level has been below ground)	30 days	90 days	
MFL			
Depth	≥ 1 foot below ground	1.5 feet below ground	Exceedance (Significant Harm)
Duration	≥ 1 day	≥ 1 day	
Range of Site Specific Exceedance Return Frequencies*	1 exceedance in 2 to 10 years	1 exceedance in 2 to 5 years	Violation

* Listed in Table 1 of Rule 40E-8.221, F.A.C.

Everglades Recovery Strategy

Subsection 40E-8.421(2), F.A.C.

- Implementing measures in the LEC Water Supply Plan and CERP to more closely approximate “pre-drainage” conditions
- Applying consumptive use and water shortage requirements
- Removing conveyance limitations
- Implementing revised Central and Southern Florida Project for Flood Control and Other Purposes (C&SF Project)
- Storing additional freshwater, reserving water for the protection of fish and wildlife, and developing alternative sources for water supply

Lake Okeechobee Adopted MFL

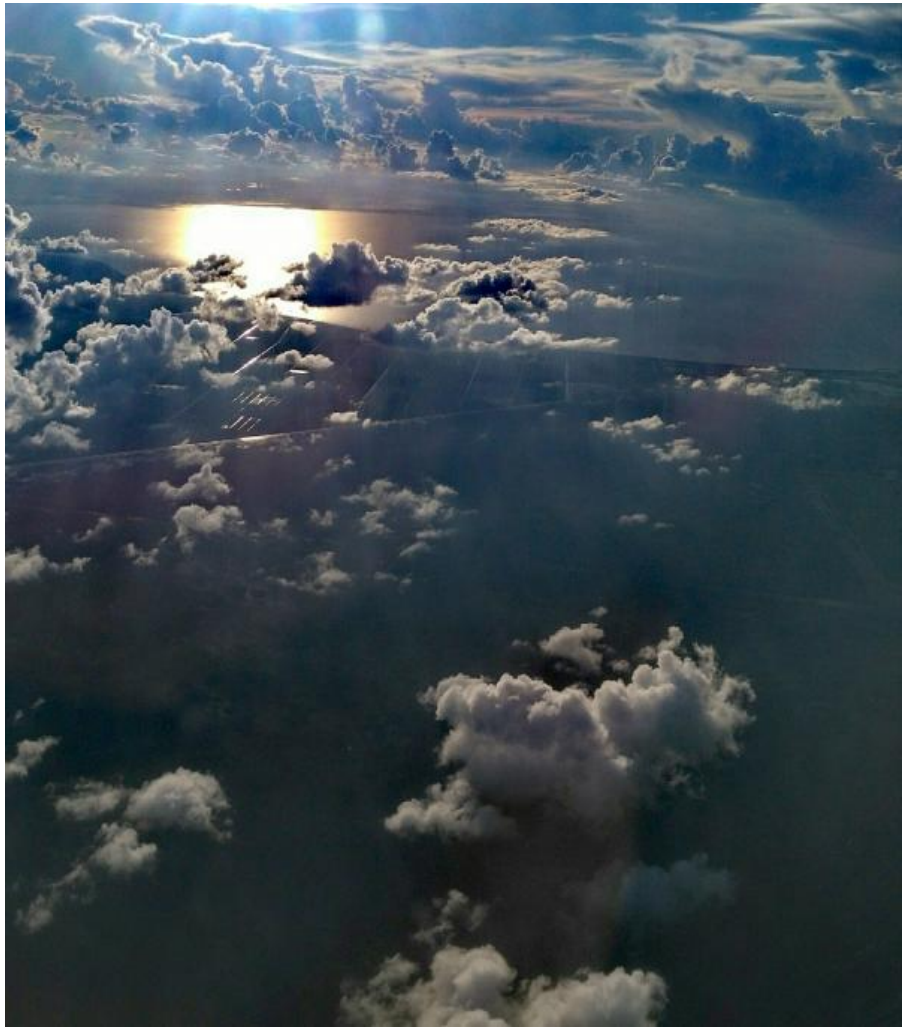
Subsection 40E-8.221(1), F.A.C

Lake level of 11' NGVD

An MFL "exceedance" occurs when:

- Lake level declines below 11', for > 80 consecutive or non-consecutive days, during an 18-month period
- 18 month period shall not include more than one wet season (May 31 through October 31)

An MFL violation occurs when an exceedance occurs more than once every 6 years (return frequency)



Lake Okeechobee at 10,000 feet.
Photographer: Stephen Bazydola, SFWMD

Lake Okeechobee Recovery Strategy

Subsection 40E-8.421(2), F.A.C.

- Environmental Enhancement Projects
  - ➢ Native vegetation planting, sediment scraping, prescribed burns, etc.
- Lake Water Consumptive Use Constraints
  - ➢ Restricted Allocation Areas
- Water Restrictions
  - ➢ Phases 1 through 4 as needed
- Capital Projects to Improve Storage Capacity in and adjacent to lake
  - ➢ Lake Okeechobee Watershed Restoration Project

Prescribed Burn in Moonshine Bay Marsh of Lake Okeechobee
Conducted by FWC, SFWMD, USACE, and Florida Forest Service, Nov. 02, 2015
From: https://flic.kr/s/aHsknUyZQ6

NW Fork of Loxahatchee River Adopted MFL

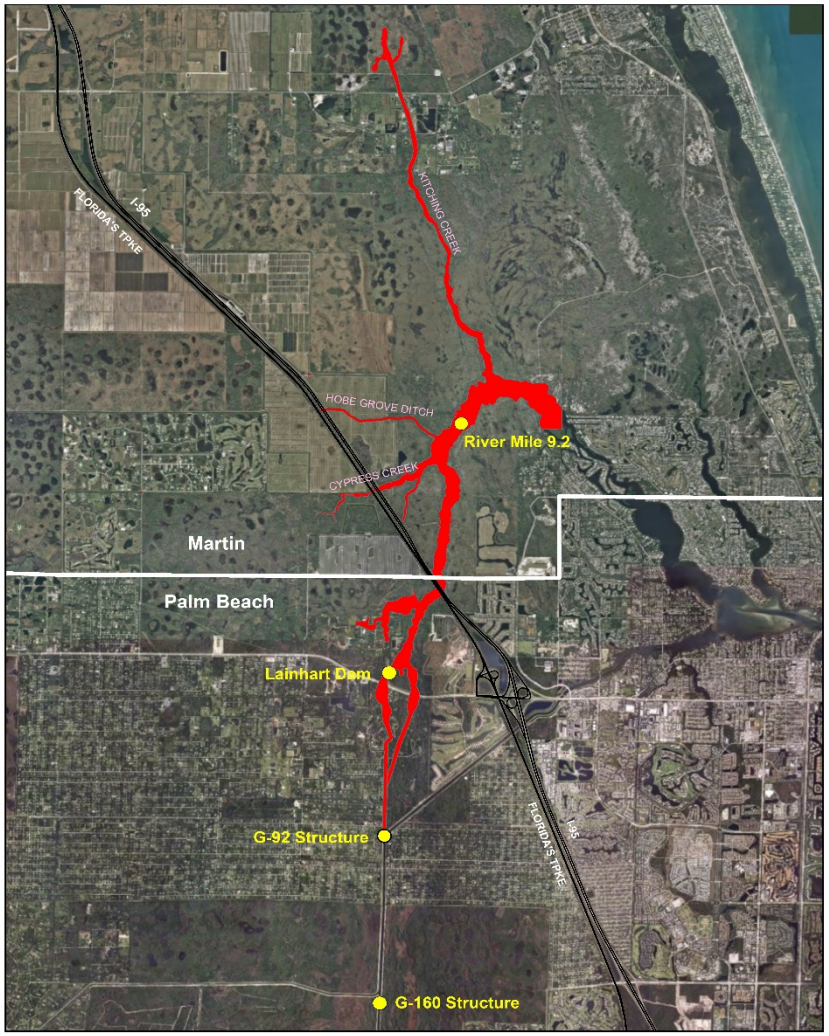
Subsection 40E-8.221(4), F.A.C.

Flow of 35 cfs over Lainhart Dam; and average daily salinity of ≤ 2 at river mile 9.2

An MFL exceedance occurs when:

- Flows decline below 35 cfs for > 20 consecutive days; or
- Salinity, expressed as 20-day rolling average, is > 2 at river mile 9.2

An MFL violation occurs when an exceedance occurs more than once in a 6-year period



Northwest Fork of the Loxahatchee River (in red)

NW Fork of Loxahatchee River Recovery Strategy

Subsection 40E-8.421(6), F.A.C.

- Structural Improvements to increase water storage and delivery capabilities
  - G-160 and G-161 Structure Projects
  - Loxahatchee River Watershed Restoration Project
- Operational Protocols at G-92 to provide flows ≥ 50 cfs at Lainhart Dam when supplies are available
- Regulatory Activities - SFWMD regulatory program, water shortage plans, and the North Palm Beach County /Loxahatchee River Watershed Restricted Allocation Area

Water Reservation Functions and Considerations

Statutory Authority: Chapter 373, F.S.

- Reserves water for the protection of fish and wildlife or public health and safety
- Prevents use of reserved water for consumptive uses
- Protects existing legal uses unless they are contrary to the public interest
- Required for CERP projects per federal Water Resources Development Act of 2000
- May be used as MFL recovery or prevention strategy

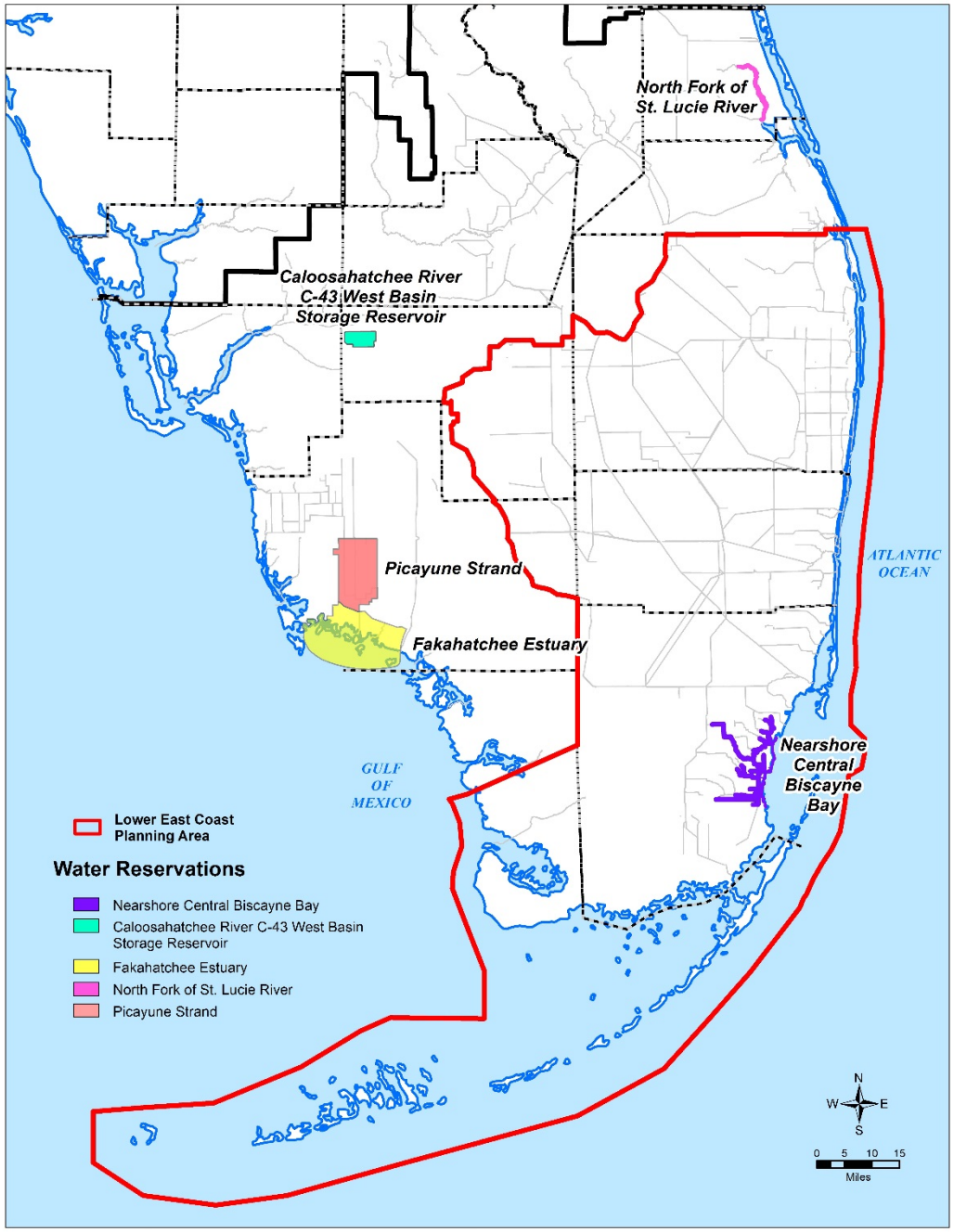
Osprey, *Pandion haliaetus,* and bass, *Micropterus* sp. on Merritt's Mill Pond
From: http://nykography.weebly.com

Water Reservations Do Not…..

- Prevent use of unreserved water or water allocated under CUPs
- Establish an operating regime
- Drought-proof the natural system
- Ensure wildlife proliferation

American aliigator *Alligator mississipiensis*
From http://www.photodrom.com

Top photo: SFWMD S-26 water control structure; Bottom photo: Drought conditions
From: http://sfwmd.gov



Water Reservations in the SFWMD

- Fakahatchee Estuary – 2009
- Picayune Strand – 2009
- North Fork of the St. Lucie River – 2010
- Nearshore Central Biscayne Bay – 2013
- Caloosahatchee River C-43 West Basin Storage Reservoir – 2014

Cover 344,574 acres districtwide

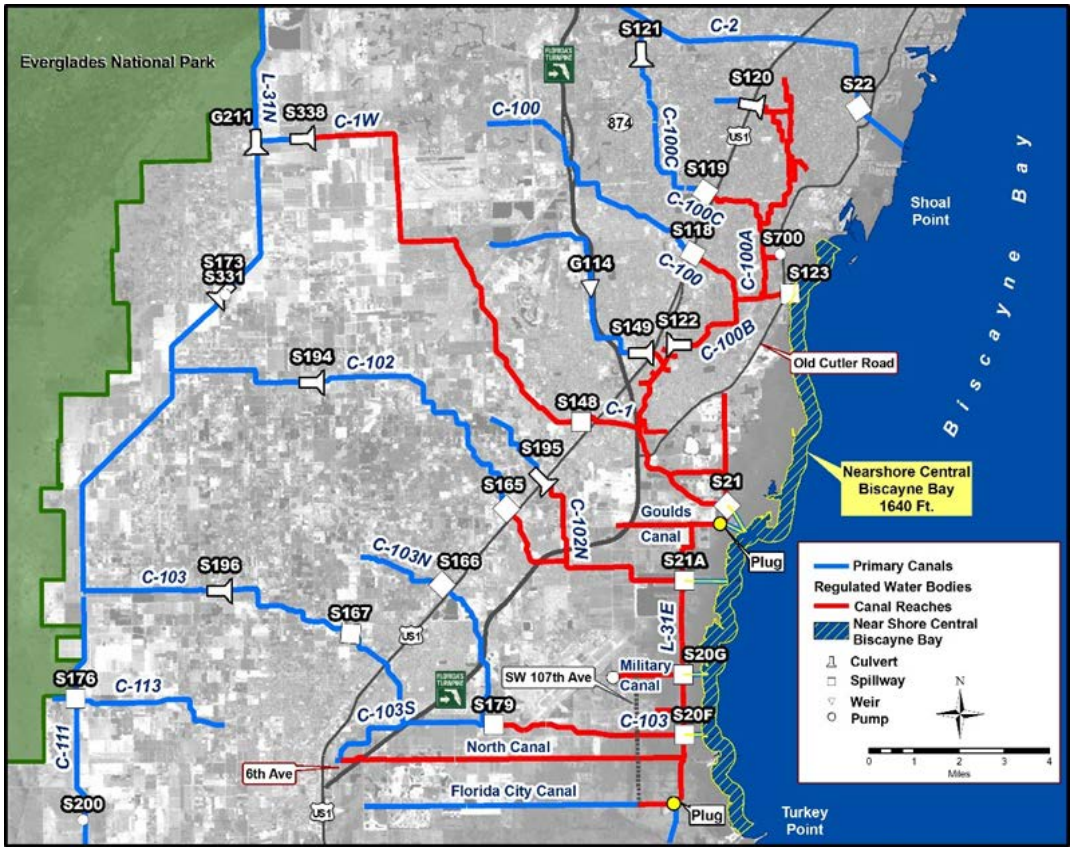
Nearshore Central Biscayne Bay Adopted Water Reservation

Subsection 40E-10.061 (1) and (2), F.A.C.

All surface water contained within Nearshore Central Biscayne Bay, and;

Surface water flowing into Nearshore Central Biscayne Bay

- Reservation adopted for protection of fish and wildlife
- Protects water needed for CERP Biscayne Bay Coastal Wetlands Project – Phase 1



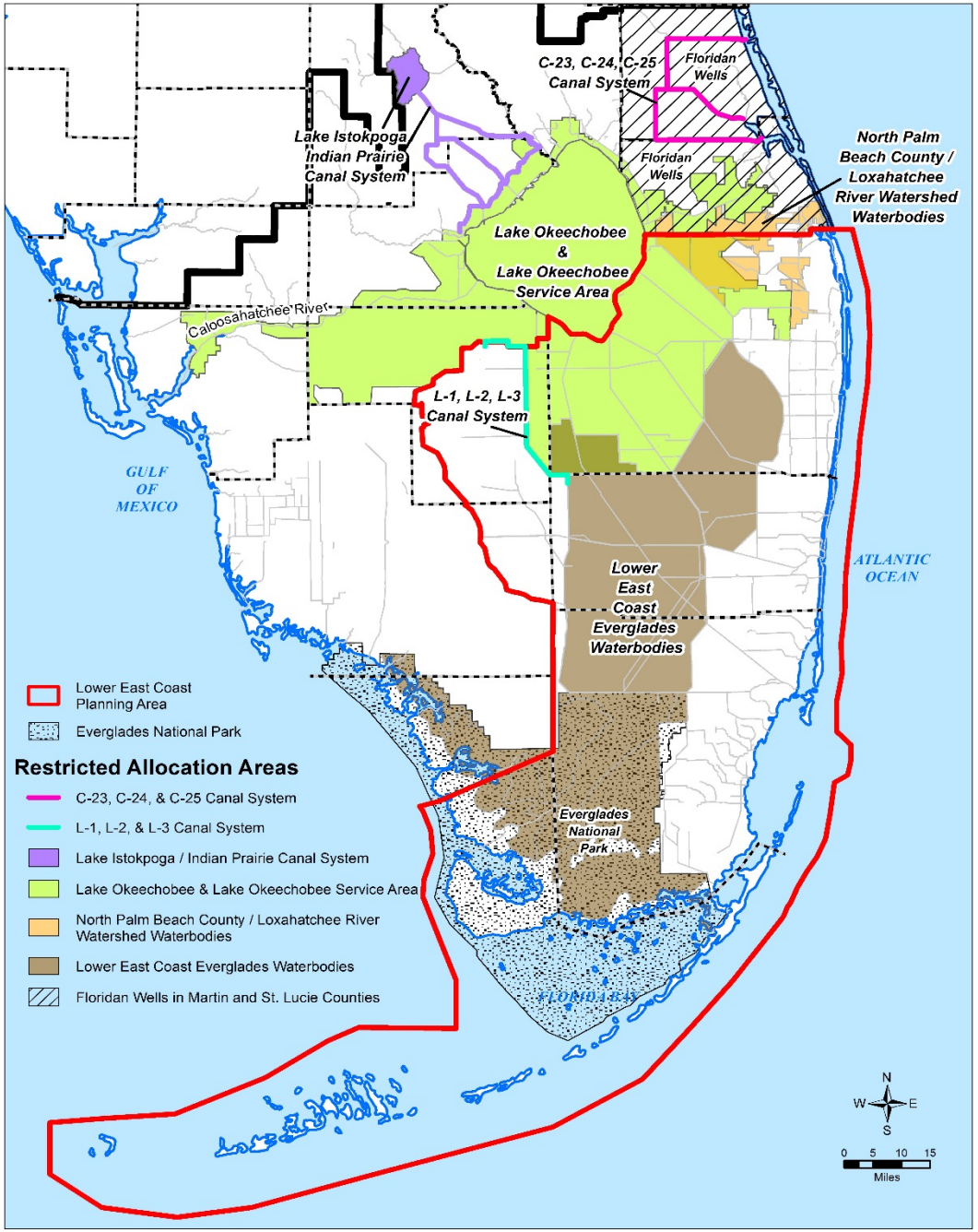
Nearshore Central Biscayne Bay: Area within Biscayne Bay up to 1,640 feet (500 meters) from the shoreline beginning south of Shoal Point and extending southward to north of Turkey Point

Restricted Allocation Areas (RAA)

Areas from which new or increased water allocations are restricted

- Implemented where there is a lack of water available to meet the projected needs of the region
- Protects water for natural systems and future restoration projects (CERP)
- May be designated as part of MFL recovery or prevention strategies
- Listed in Section 3.2.1 of the *Applicant's Handbook,* incorporated by reference in Rule 40E-2.091, F.A.C.

Wild American flamingos, *Phoenicopterus ruber*, in Stormwater Treatment Area 2
From: http://whqeps02p:8085/wildlife/#/asset/1353 (SFWMD website)



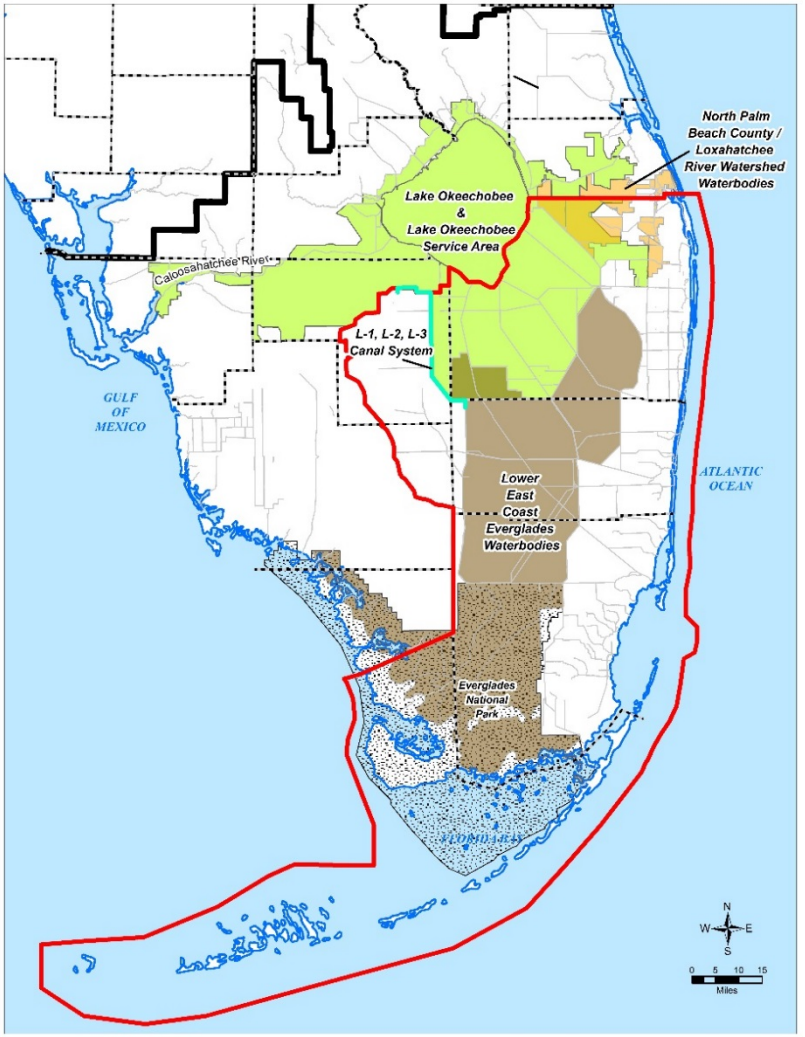
Restricted Allocation Areas in the SFWMD

- C-23, C-24, & C-25 Canal System- 1981
- L-1, L-2, & L-3 Canal System - 1981
- Lake Istokpoga/Indian Prairie Canal System - 1981
- Lower East Coast Everglades Waterbodies – 2007
- North Palm Beach County /Loxahatchee River Watershed - 2007
- Pumps on Floridan Wells in Martin and St. Lucie Counties - 2007
- Lake Okeechobee & Lake Okeechobee Service Area – 2008

Cover > 4.3 million acres districtwide

Restricted Allocation Areas in the Lower West Coast Planning Area

RAA	Water Allocations Are Limited To:
L-1, L-2 & L-3 Canal System	Existing allocations permitted at the time of RAA adoption (**1981**) with no increases in surface water pump capacity
Lower East Coast Everglades Waterbodies	Historic water use permitted as of **April 1, 2006**
North Palm Beach County /Loxahatchee River Watershed	Historic water use permitted as of **April 1, 2006**
Lake Okeechobee and Lake Okeechobee Service Area	Historic water use that occurred from **April 1, 2001 to January 1, 2008**



LEC Waterbodies Protected by Multiple Tools

Lake Okeechobee

- MFL
- Lake Okeechobee and LOSA Restricted Allocation Area

Everglades and Biscayne Aquifer

- MFL
- Lower East Coast Everglades Waterbodies Restricted Allocation Area

Northwest Fork of Loxahatchee River

- MFL
- North Palm Beach County/Loxahatchee River Watershed Restricted Allocation Area

These tools protect 7.4 million acres, or about 69%, of the SFWMD

Questions?

For more information contact:

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https://www.sfwmd.gov/our-work

Intertidal Mangroves
From: Florida Sportsman https://goo.gl/images/hZ9xXH