SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Reservation for Caloosahatchee Estuary

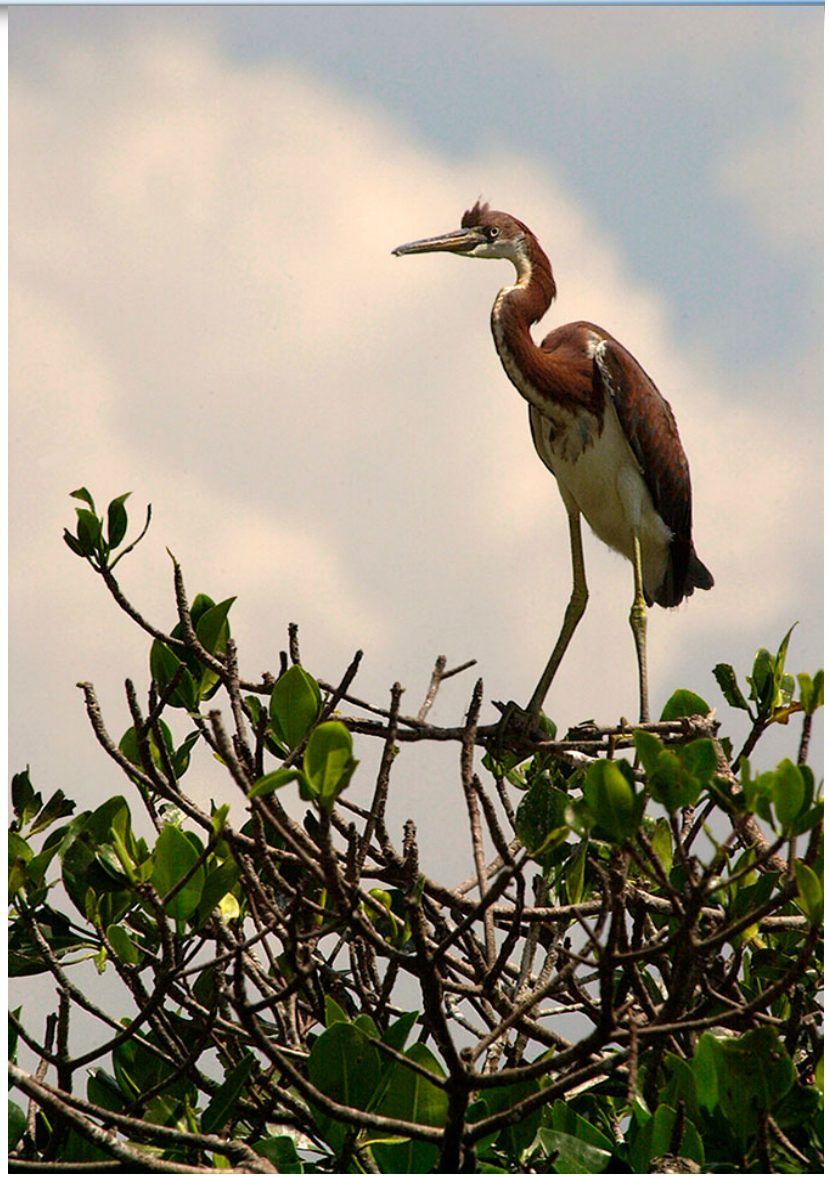
April 16, 2010

Caloosahatchee Estuary Reservation Team
Everglades Restoration and Capital Projects
Office of Counsel

sfwmd.gov

Presentation Overview

- ***Why and What are Water Reservations?***
- Rule Implementation
- Scope and Scedule
- Technical Approach



Why Protect the Water through a Water Reservation?

- State required to protect water for natural system using its **reservation or allocation** authority.
- WRDA 2000 requires the reservation or allocation to be complete prior to signing a Project Partnership Agreement to receive federal funding for project construction and operation.
- Governing Board Approved Initiating Rule Development in December 2009.

What is a Water Reservation?

- A water reservation is a legal mechanism to set aside water for the protection of fish and wildlife or the public health and safety (Authority: F.S. 373.223(4)).

What is a Water Reservation? (Cont.)

- "The Governing Board or the Department, by regulation, may reserve from use by permit applicants, water in such locations and quantities, and for such seasons of the year, as in its judgment may be required for the protection of fish and wildlife or the public health and safety.
- Such reservations shall be subject to periodic review and revision in the light of changed conditions.
- However, all presently existing legal uses of water shall be protected so long as such use is not contrary to the public interest." *s. 373.223(4), Fla. Stat.*

Application of Florida Law for Water Reservation

- Ensure a healthy and sustainable native fish & wildlife community currently present in ecosystem
- Include permitted users in models in order to confirm Existing Legal Uses are consistent with the public interest

What does a Reservation do

- Prevents new uses from accessing reserved water

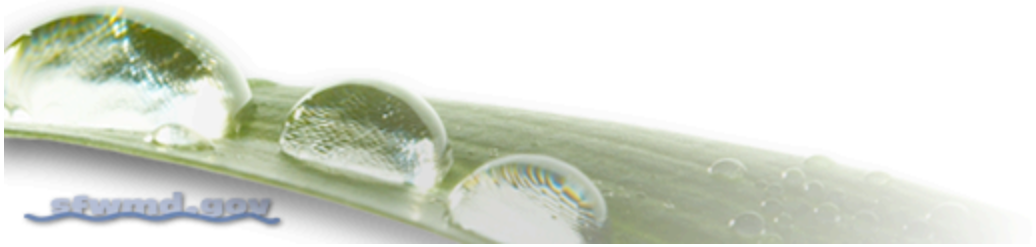
What a Reservation doesn't do

- Establish an operating regime by rule
- Drought proof the natural system
- Ensure the fish and wildlife goals of the project are achieved

How is a Reservation established?

- By Rule

1. Governing Board initiates rule development
   - Public participates to develop rule concepts
     - Public Workshops with stakeholders
     - WRAC and Governing Board meetings
     - Coordination with Florida Department of Environmental Protection (FDEP) and Federal Agencies
     - Intent is to resolve issues prior to rulemaking process

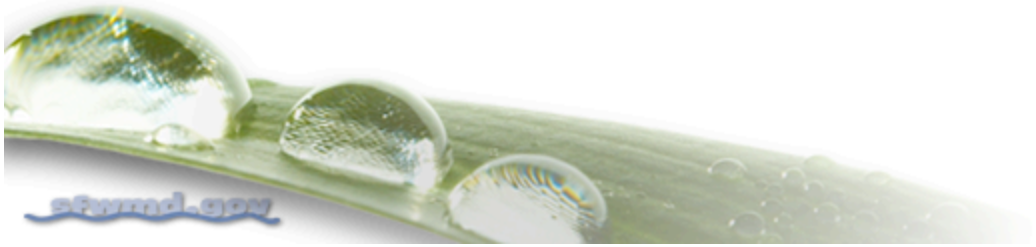


How is a Reservation established (Cont'd)?

2. District staff develops technical basis for identifying reservation
   - Publish a draft technical document capturing all technical data, methods, models and assumptions used to identify the reservation
   - Conduct scientific peer review
   - Present results of peer review at public workshops, WRAC and Governing Board meetings
   - Revise technical document based on peer review and public comments; publish final document
   - Findings from technical document basis for draft rule language

How is a Reservation established? (Cont.)

3. Rulemaking
   - Governing Board Authorizes Notice of Rulemaking
     - Additional opportunity for public comment
     - Statement of Estimated Regulatory Costs
   - Rule Adoption Hearing by Governing Board
   - Governing Board Adopts Rule
   - Rule becomes effective 20 days after filing with the Department of State



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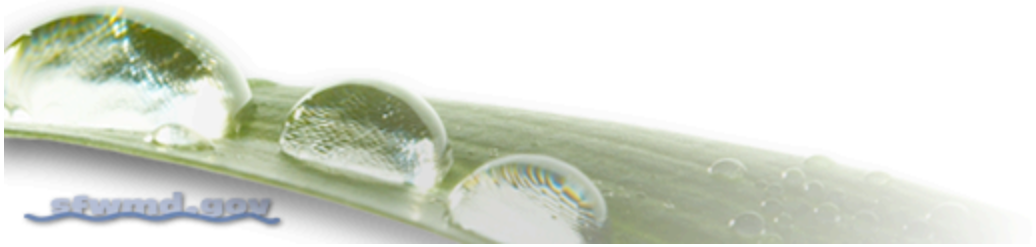
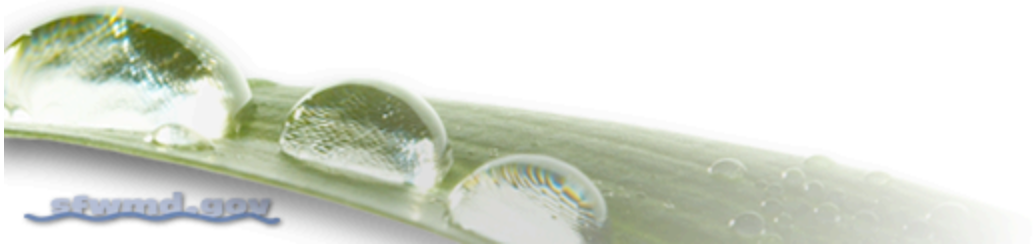
What does the Rule look like?

- Chapter 40E-10, F.A.C., Protection of Natural Systems Water from Consumptive Use
  - New chapter containing reservations by planning area
- Chapters 40E- 2 and 40E-20, F.A.C., Consumptive Use
- Water Use Basis of Review
  - Criteria used by permit applicants to demonstrate compliance with rule



Rule Implementation

- Identify how permit applicants meet reasonable assurances
  - Reserved water will not be withdrawn by existing legal users
  - Modeling or other information
- Non-reserved water can be allocated
- Potentially varying types of technical demonstrations
- Renewals, modifications, new uses



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- ***Scope and Schedule***
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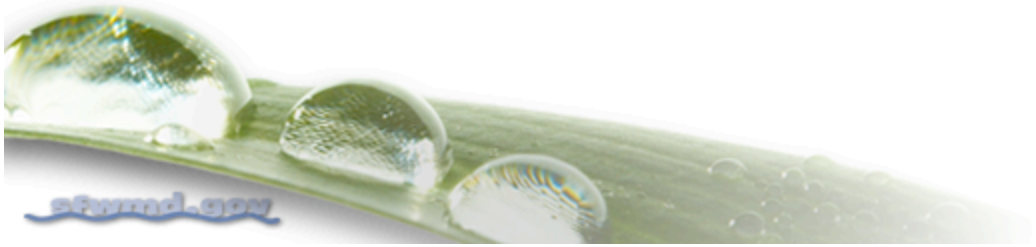
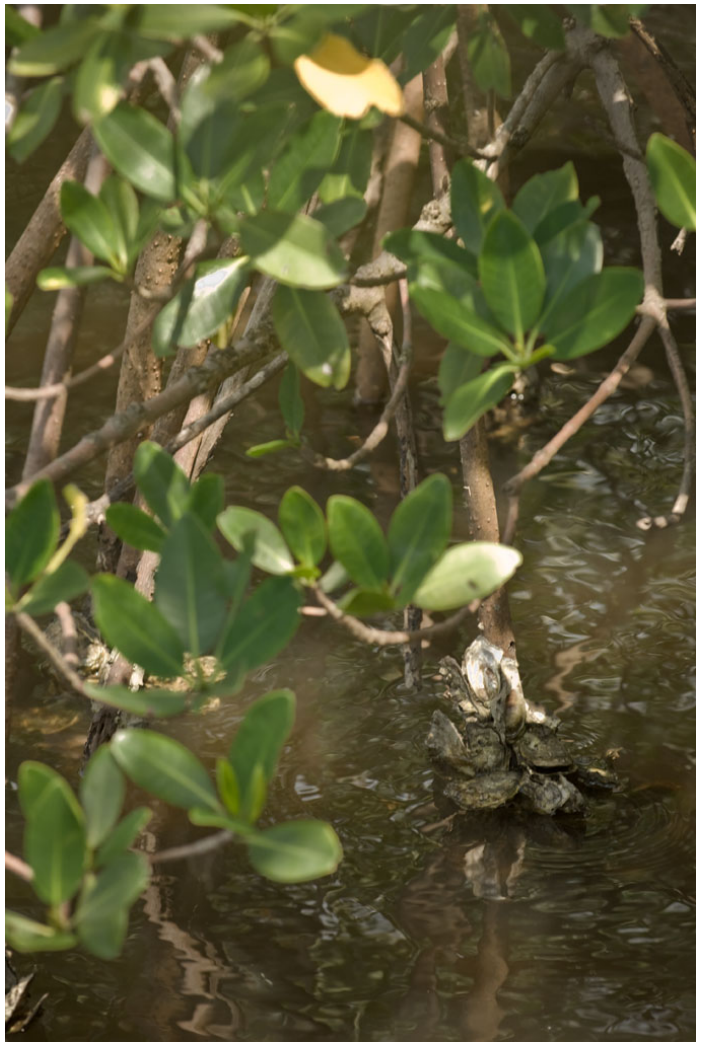
Reservation Rule Development – Scope

- DEP Rule 62-40.474, F.A.C., guidance for programmatic consistency
- Scientific Peer Review
- Determine if the proposed linkage between hydrology and water for fish & wildlife is scientifically sound
- Best available information
- All data, methods, assumptions and models subject to review



Reservation Rule Development – Scope (Cont.)

- Reservation to focus on flows provided by the CERP project and existing flows from the basin required for the protection of fish and wildlife



Current Schedule

- Complete Draft Technical Report: Fall 2010
- Peer Review: Winter 2010/2011
- Rule Development Public Workshops: May through Spring 2011
- Present Draft Rule to Governing Board: Summer 2011

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

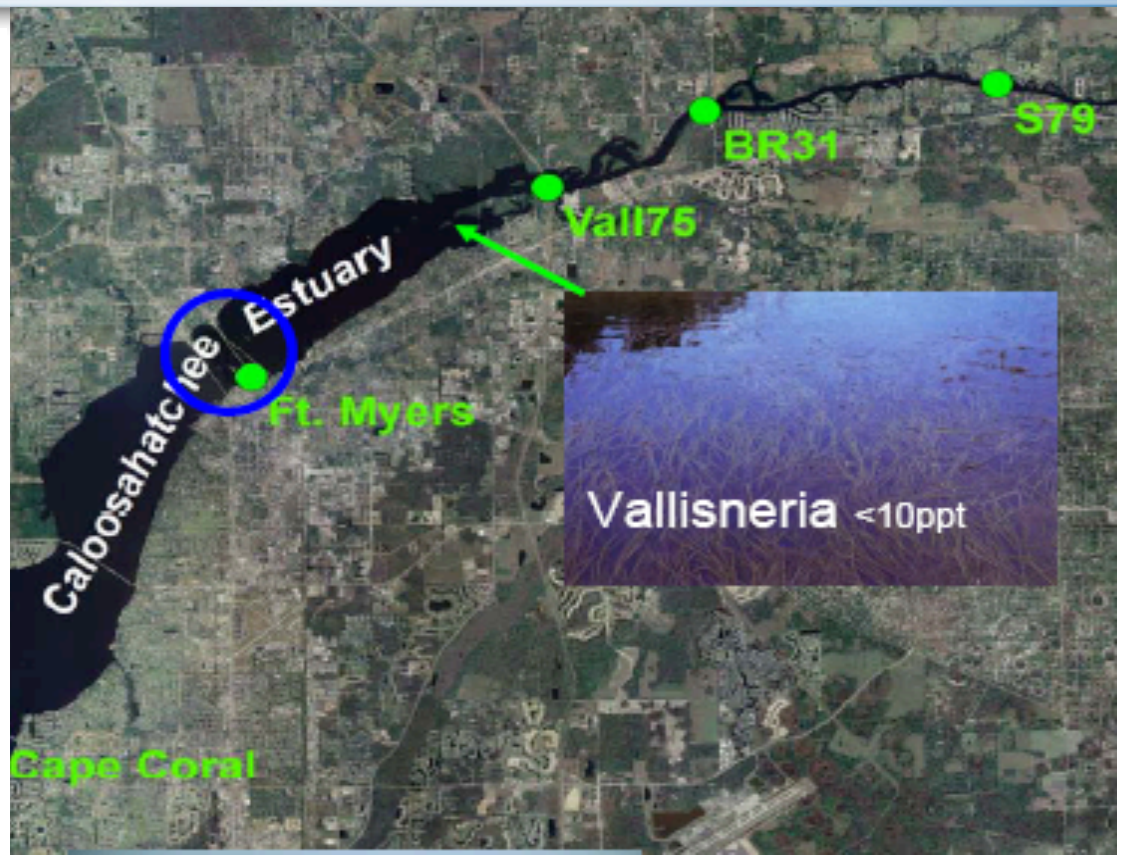
Overview of Caloosahatchee Watershed

Caloosahatchee Estuary: Hydrologic Issues

- Caloosahatchee Estuary experiences widely fluctuating salinity gradients due to variable freshwater inflows
- Caloosahatchee River Protection Plan, completed January 1, 2009
- Caloosahatchee River (C-43) West Basin Storage Reservoir Project (Phase 1 PIR) purpose:
- Improve the salinity balance in downstream estuary
- Attenuate peak flows during the wet season
- Provide essential flows during the dry season

Caloosahatchee River MFL Established 2001

- Protect Tape Grass, Vallisneria americana, from significant harm
- Salinity Criteria:
- 30-day average salinity exceeds 10 psu at Ft. Myers salinity station
- Daily average exceeds 20 psu at Ft. Myers salinity station



- Violation: Either criteria exceeded for two consecutive years

MFL Peer Review Recommendations (2000)

- Develop a Mass Balance Hydrodynamic Model
- Develop a numeric population model for Vallisneria
- Conduct field and lab studies to better understand ecology of Vallisneria
- Investigate effects of MFL flows on downstream organisms
- *Quantify habitat value of Vallisneria beds*
- Update evaluation and revise report in 2003

Major Results of MFL Report Update 2003

- On Average,
- A discharge of 300 cfs at S-79 produces a salinity of 10 ppt at Ft. Myers.
- When discharge at S-79 is 300 cfs, about 150-200 cfs enters downstream (west) of S-79
- Under dry conditions when supplemental water is required to meet MFL, 300 cfs at S-79 is unlikely to be enough to meet salinity criteria because the Tidal Basin input is nil.

Key Steps to Establish a Water Reservation to Protect Fish and Wildlife

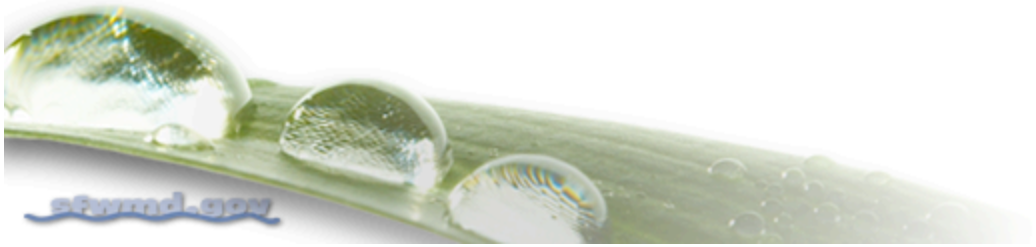
1. Identify habitats sensitive to low flows, i.e., inflow of water

2. Identify fish and wildlife resources to be protected

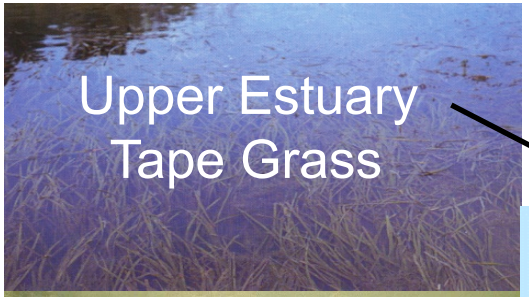
3. Identify salinity performance measures and link to flow target

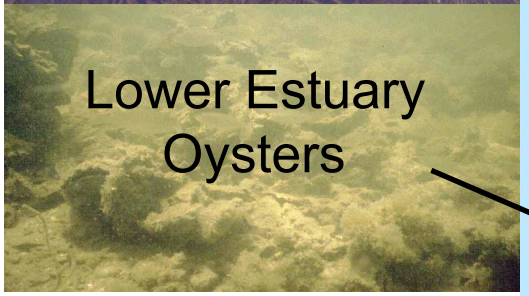
4. Quantify water that contributes to meeting flow targets

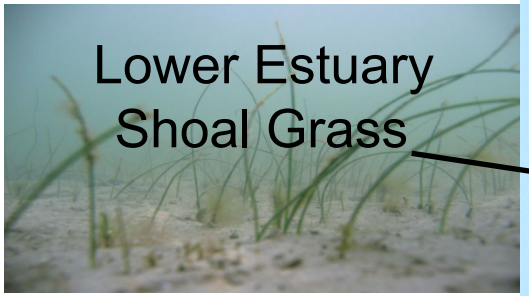
5. Identify quantity of water to be reserved to protect fish and wildlife

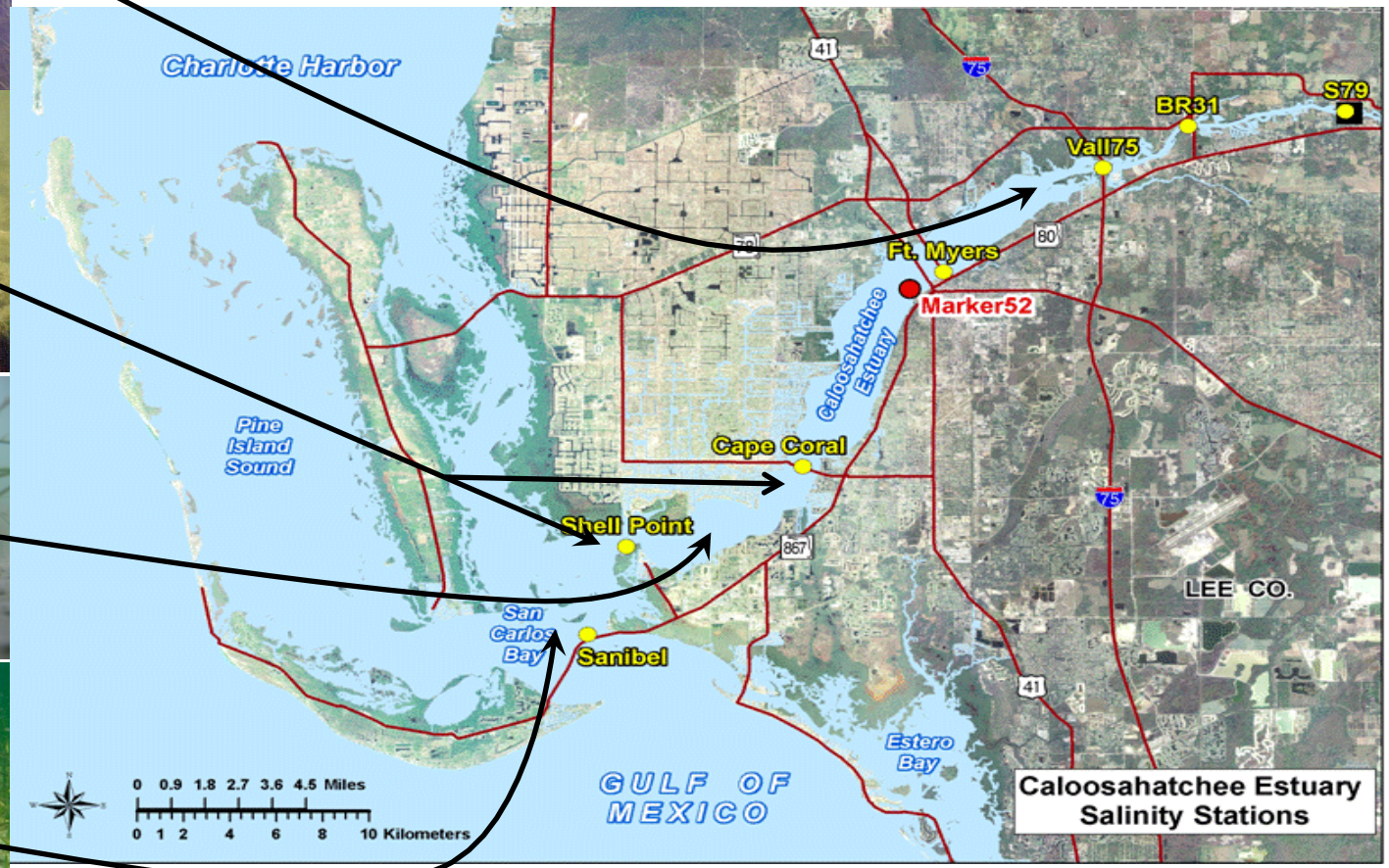


Steps 1 & 2: Identify Habitat, Fish and Wildlife Sensitive to Low Flows

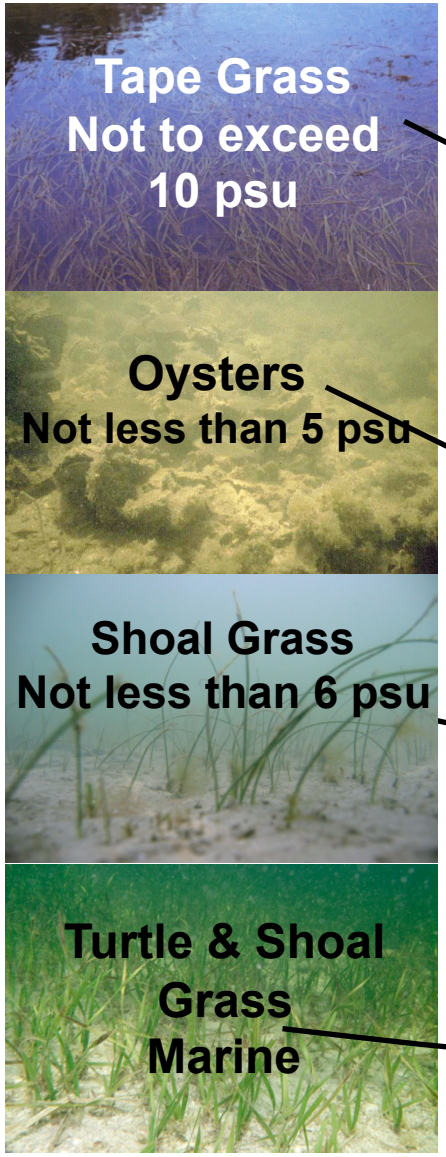


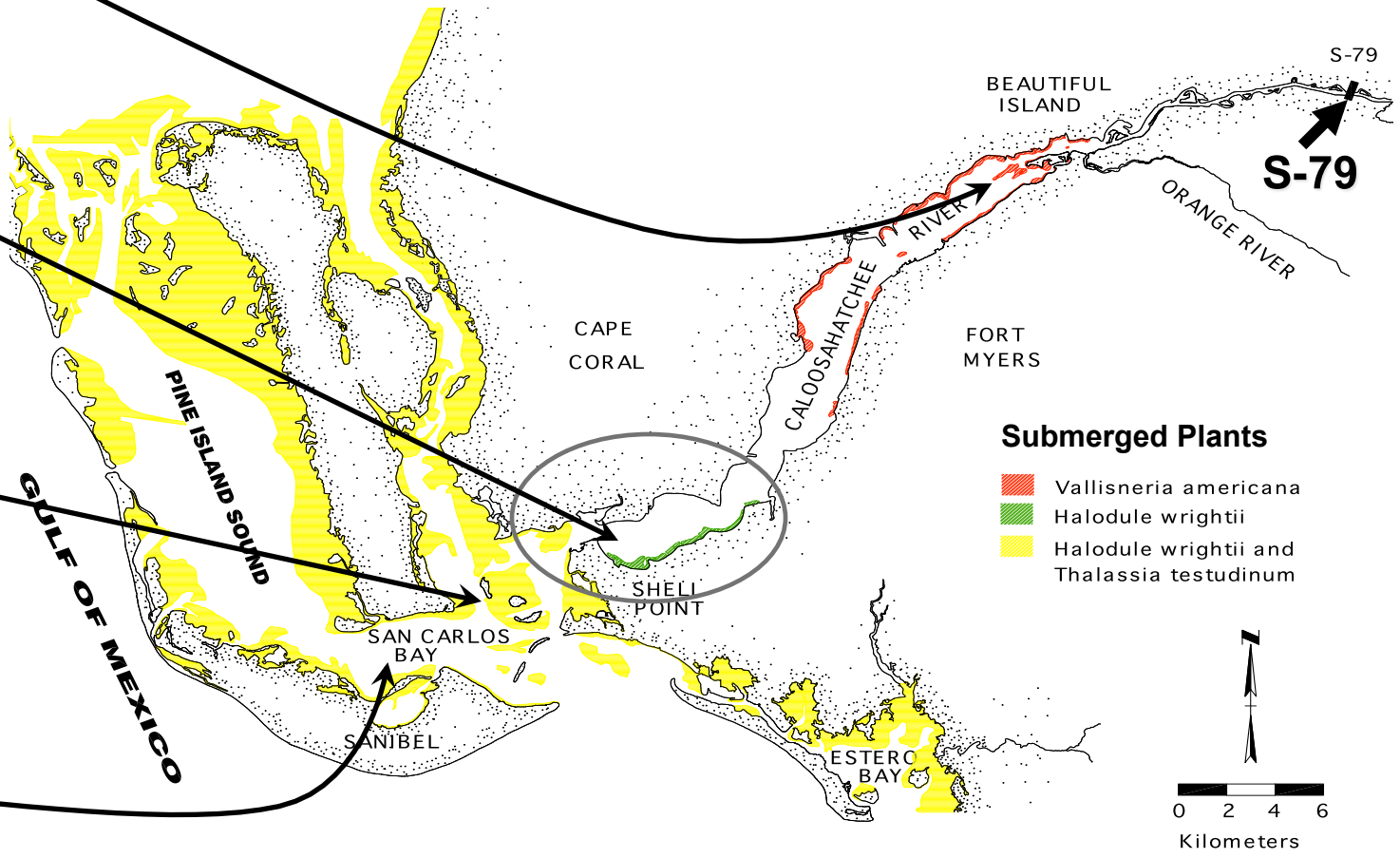






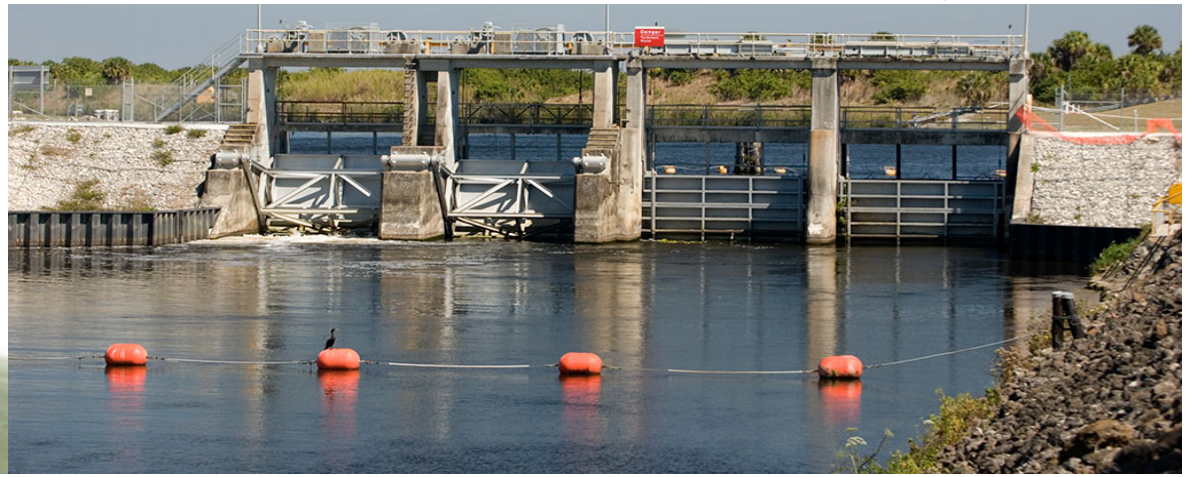
Step 3a: Identify Salinity Performance Measures (ranges)





Step 3b: Identify Flow Target (Cont.)

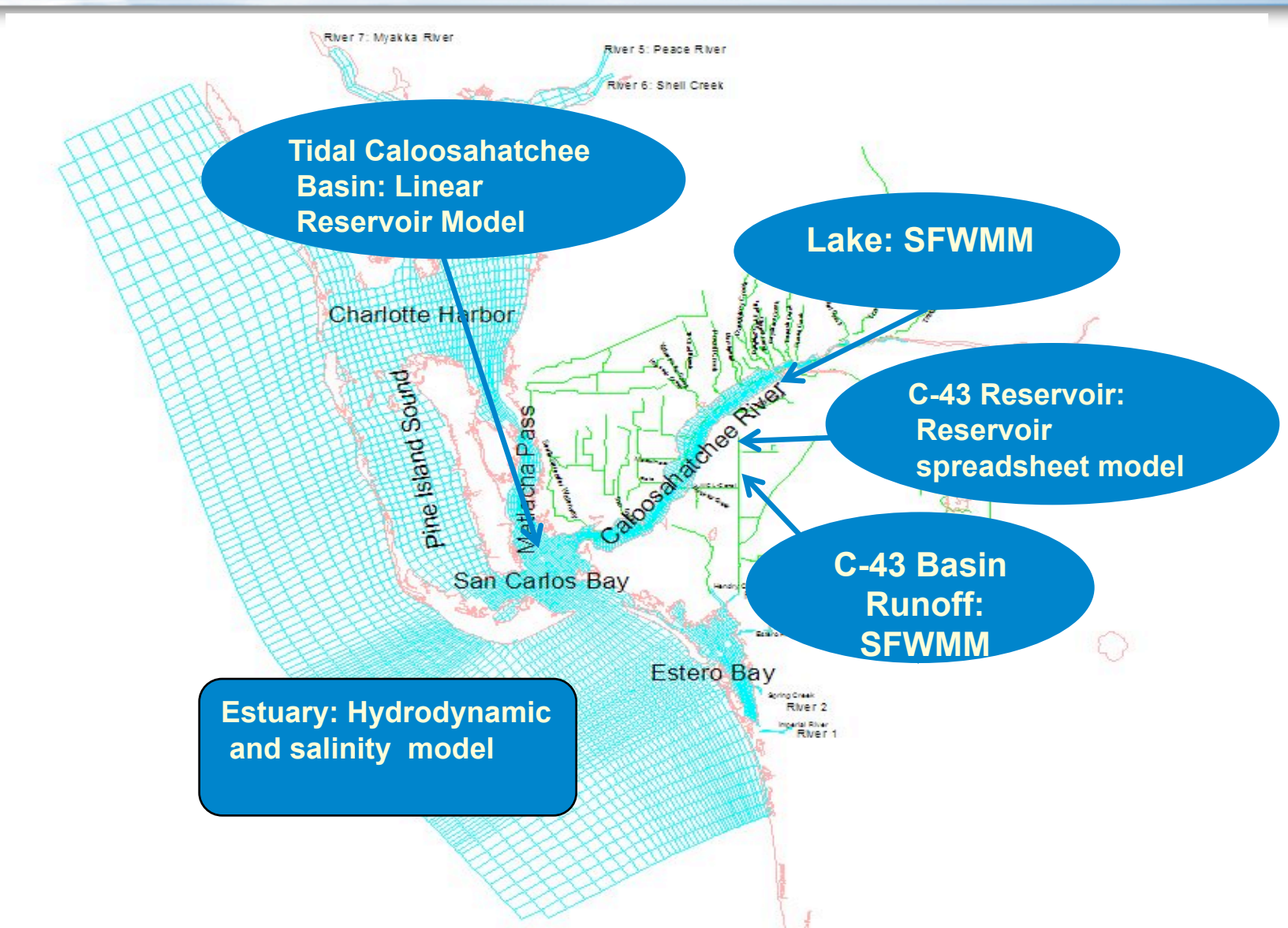
- Rainfall and runoff naturally moves salinity isohaline to different locations in estuary and bay
- Flow target time series in PIR resulted in flow envelope at S-79
- Reflects mean monthly flow distribution based on numerous species salinity tolerances; target flows not less than 450 cfs
- PIR flow target is commensurate with MFL salinity criteria.



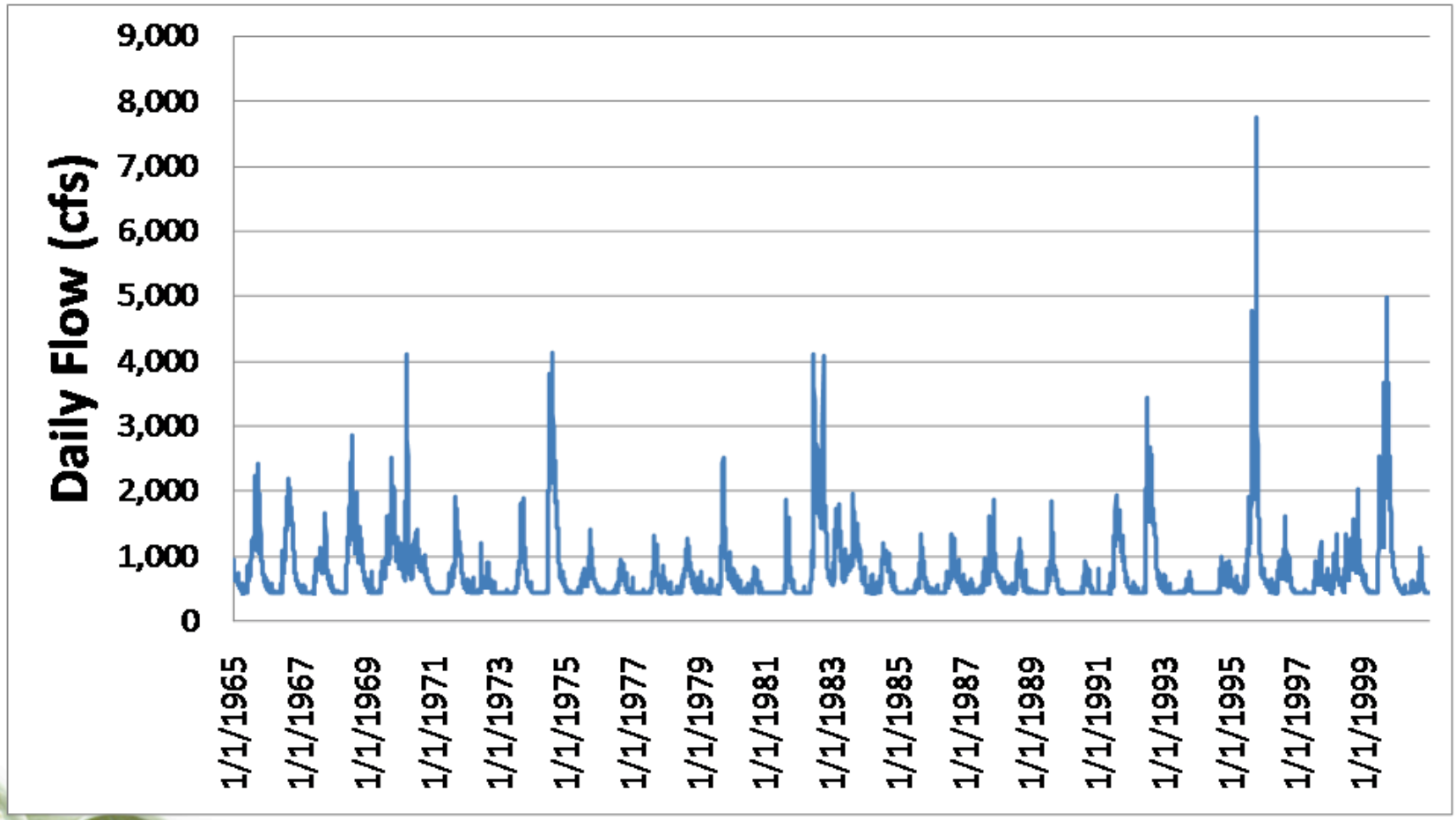
Step 3b: Identify Flow Target (Cont.)

- Update flow target using models to identify flow target time series that moves isohaline to preferred location
- Apply ecological models to confirm reserved water has no detrimental effects to downstream biota

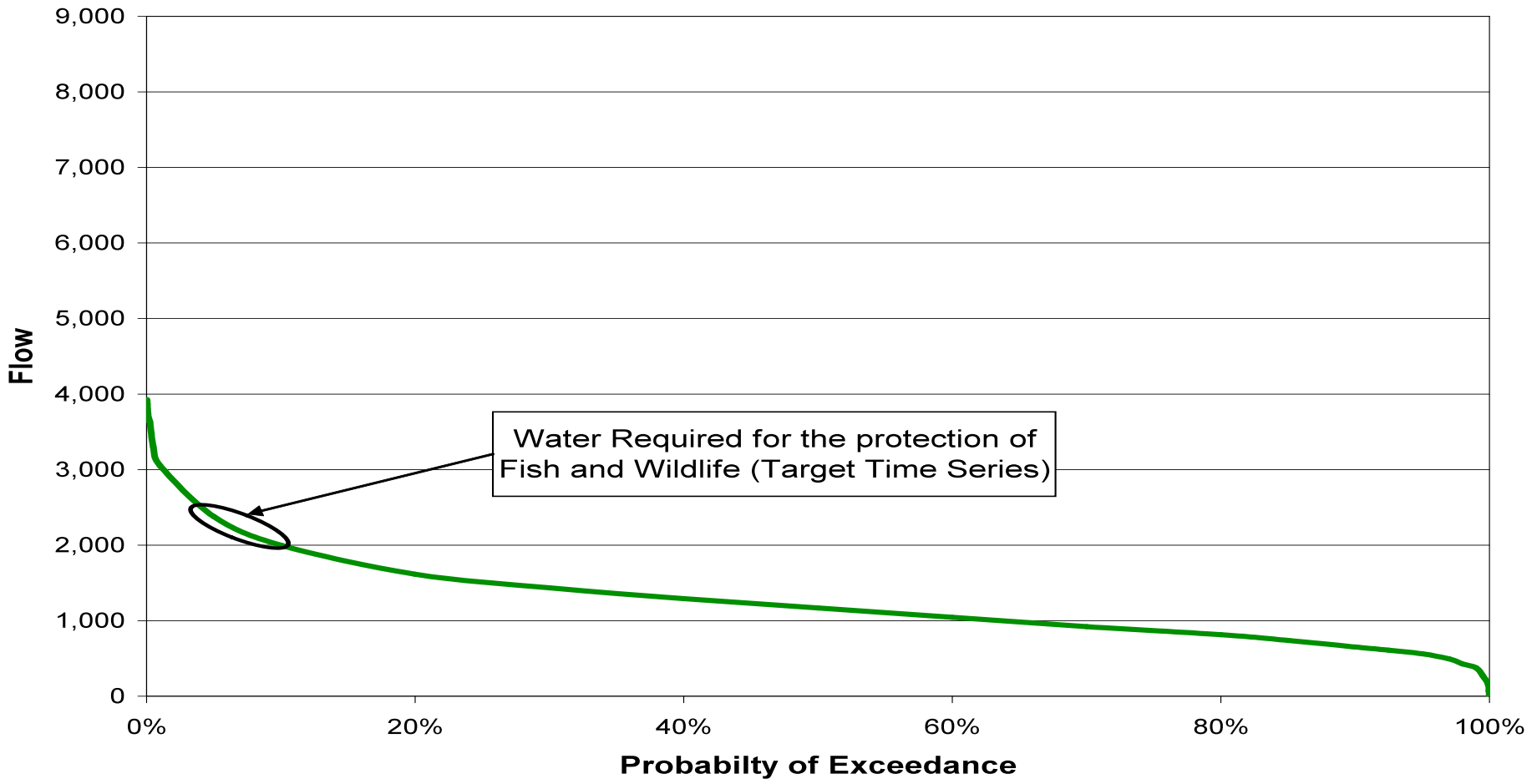
Relationship between Models Applied to Simulate Inflows and Salinity Response



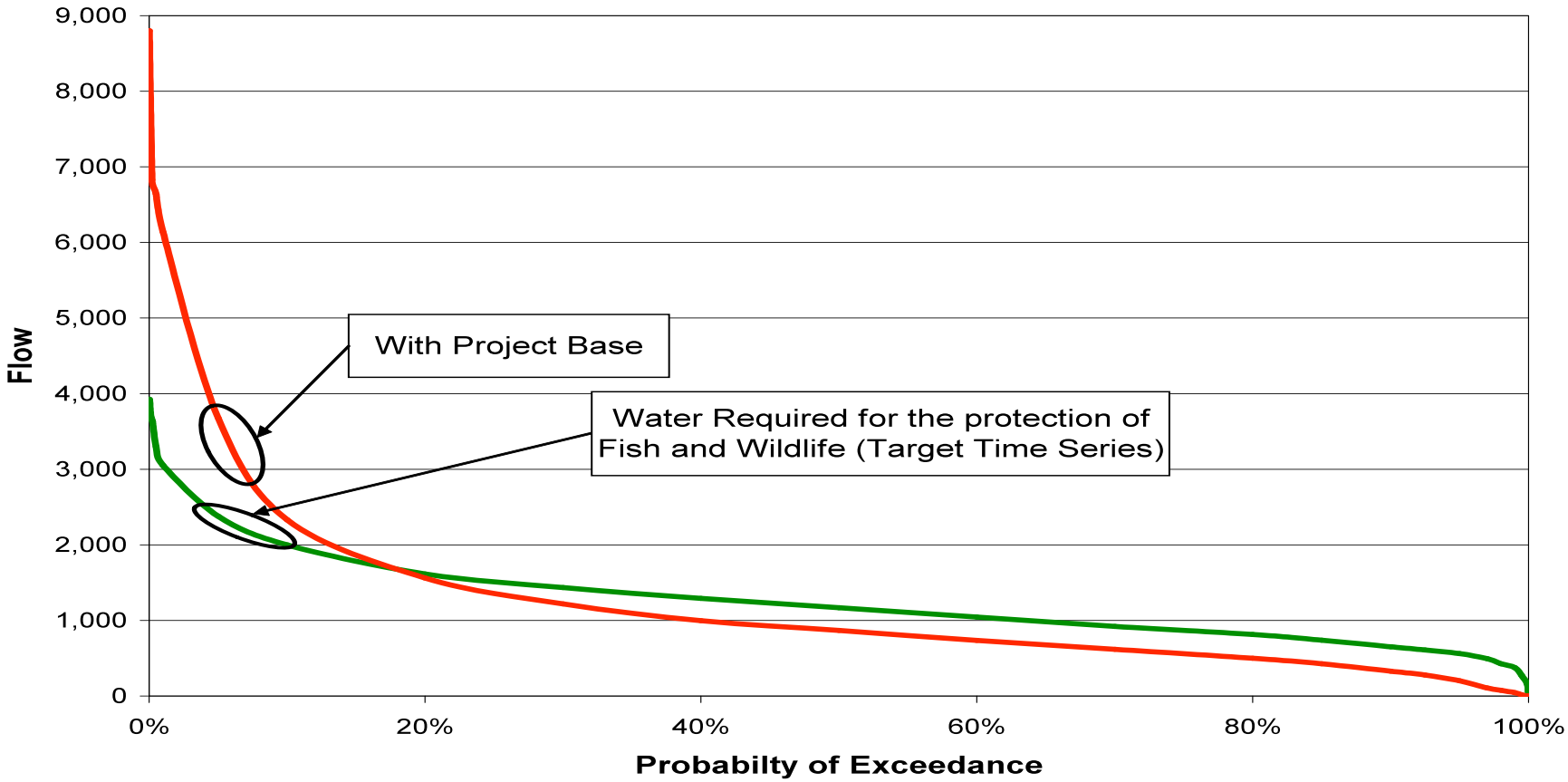
Flow Target Time Series (example)



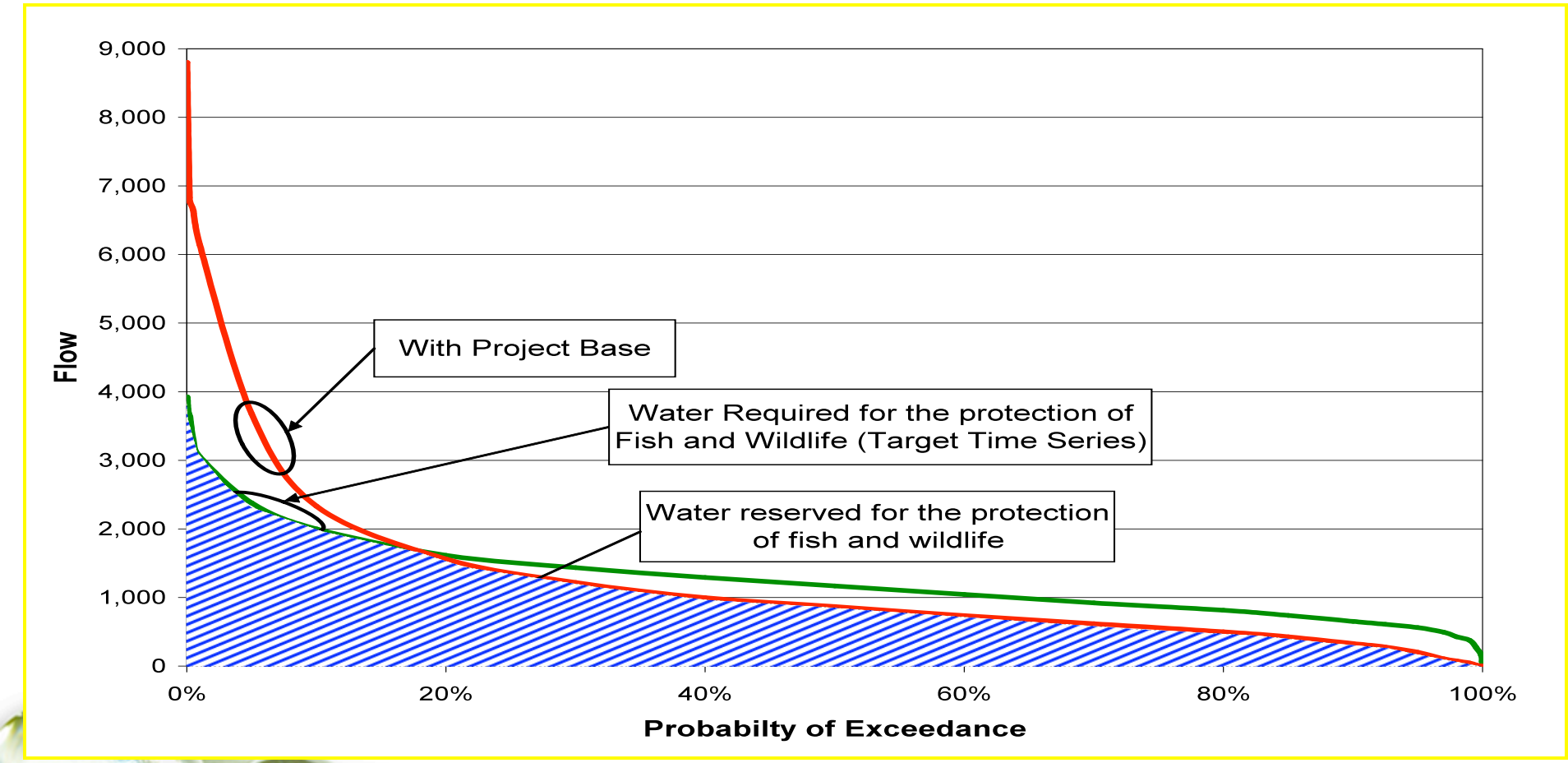
Step 4: Quantify Water contributing to Flow Target - Update results in PIR



Step 5: Identify Water to be Reserved to Protect Fish and Wildlife



Step 5: Identify Water to be Reserved to Protect Fish and Wildlife (Cont.)



Key Assumptions

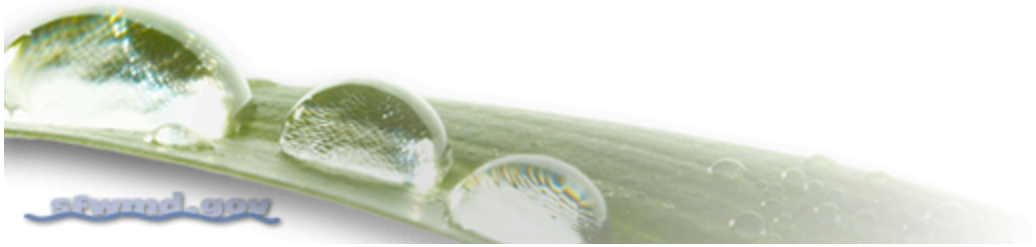
- Project implementation report identified water delivered at S-79 by the project to meet the flow target for the Caloosahatchee Estuary to be reserved
- New scientific information and models available since completion of project implementation report.
- Applied to improve hydrologic characterization of basin and salinity performance measures for fish and wildlife
- Revised flow target may result, which will be applied to revise the quantity to be reserved identified in the project implementation report

Key Assumptions (Cont.)

- Although flow target used in PIR included entire range of flows – high and low flows - the rule will only reserve water necessary to protect fish & wildlife, which is water to meet salinity performance measures
- Analysis (models) based on Existing Conditions (2010)
- Include permitted users in models in order to confirm Existing Legal Uses are consistent with the public interest
- Apply Lake Okeechobee Regulation Schedule 2008

What's Next for Staff?

- Conduct literature review
- Incorporate new scientific findings regarding the salinity tolerances of key valued ecosystem components
- Review life cycle of tape grass and oysters
- Identify additional species to support salinity ranges
- Update flow target to support salinity ranges
- Define a return frequency for drought events



What's Next and How can I Participate?

- Stakeholder briefings today
- WRAC status update - May 6
- First rule development workshop May /June
- Additional public workshops at key steps during development of technical report
- Peer Review Public Workshop Winter 2010/ 2011
- Web Page – front page of www.sfwmd.gov
- Rule drafts, workshop notices, presentations, supporting documentation

Questions?

Water Reservations Rule - FAC

- Focus- Protection of Fish and Wildlife
- Under what circumstance can a reservation be used?
- ***Aid in a recovery of prevention strategy for a water resource with an established minimum flow and level***
- Aid in restoration of natural systems which provide fish and wildlife habitat
- Protect flow or levels that support fish and wildlife before harm occurs
- Protect fish and wildlife within an Outstanding Florida Water, an Aquatic Preserve, a state park, or other publicly owned conservation lands with significant ecological value
- Prevent withdrawals in any other circumstance required to protect fish and wildlife

Conditions in Caloosahatchee Estuary

- 30-day average salinity criterion of 10 psu was exceeded in 2002, 2004, 2006, 2007, 2008 and 2009
- The daily average criterion of 20 psu was exceeded in 2006, 2007 and 2008