



Kissimmee River Basin Water Reservations

Chip Merriam, Deputy Executive Director
April 9, 2009 Governing Board Meeting (item 44)



Purpose of Presentation

- Update on activities associated with development of reservation rules for Kissimmee Basin waterbodies
- Obtain Governing Board guidance on policy matters resulting from technical analysis
 - Foundation for rule drafting
- Describe upcoming activities and schedules





Presentation Outline

- **Overview of Water Reservations**
- Summary of Technical Analysis
- Policy Concepts
- What's Next?





I. Overview of Kissimmee Basin Water Reservations

- Reservation of water for the protection of fish and wildlife (s. 373.223(4), F.S.)
 - Water in such locations, quantities, and seasons
 - Withholds reserved water from allocation to users
 - Subject to periodic review for changed conditions
 - Existing legal uses protected unless contrary to the public interest
 - Reservation rule does not direct operations, but operations do affect water availability





I. Overview of Kissimmee Basin Water Reservations

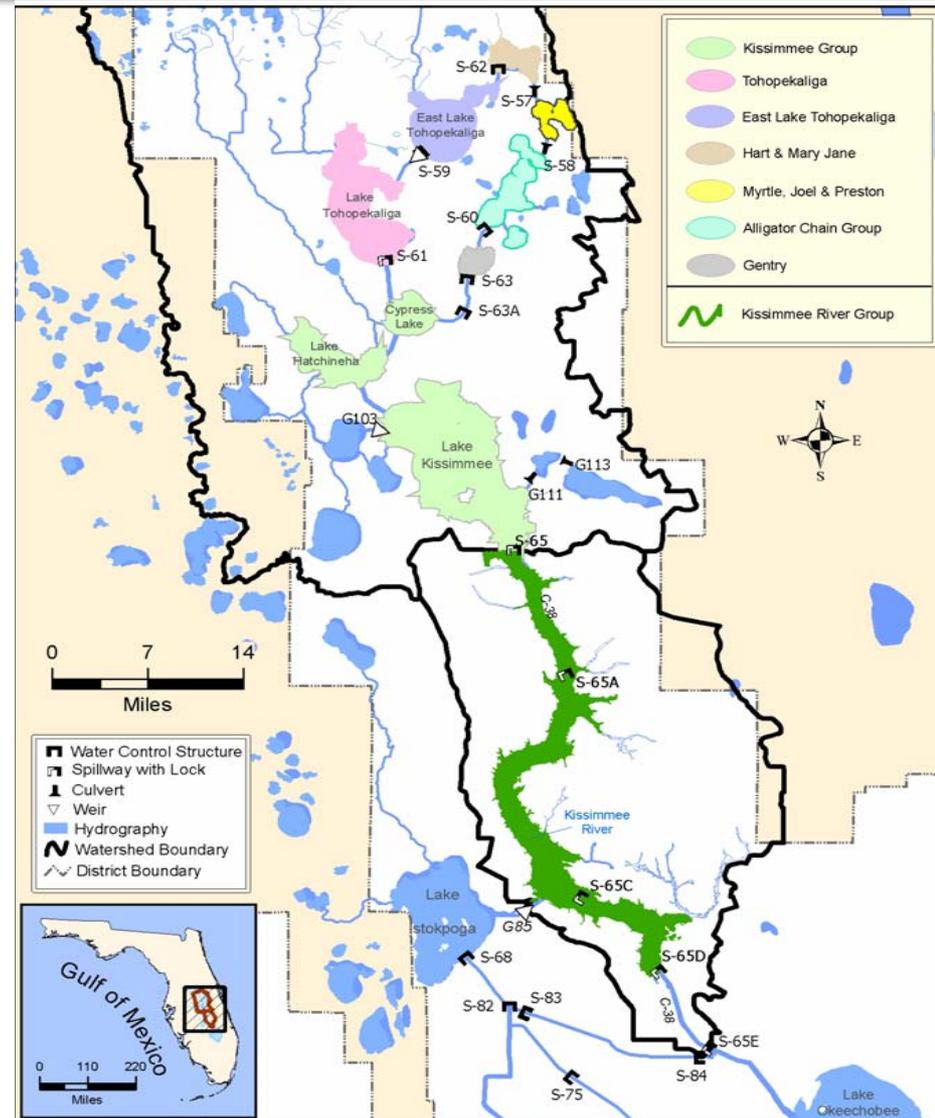
- Based on best available information
- Governing Board given discretion
 - ‘In the judgment’ of the Governing Board
 - Balancing of agency missions
 - Water for protection of fish and wildlife is not a unique answer
 - Biologic diversity
 - Hydrologic variability





Reservation Waterbodies: Kissimmee River and the Chain of Lakes

- 7 lake management areas (19 lakes)
- Restored Kissimmee River and floodplain (S-65 to S-65E)
 - 103 miles of River and floodplain
 - 27,000 acres wetland habitat





Multiple Objectives Served by the Reservation Waterbodies

- Environment / Habitat
 - Diverse fish and wildlife
- Recreation
- Water Supply
- Flood Control
- Regional economic 'driver'





Foundational Assumptions of the Kissimmee Basin Water Reservations

- Existing Corps regulation schedules / operations for Upper Chain of Lakes waterbodies
- Headwaters Revitalization regulation schedule / operations for Lower Chain of Lakes (Kissimmee – Hatchineha – Cypress)
- Kissimmee River with fully restored floodplain



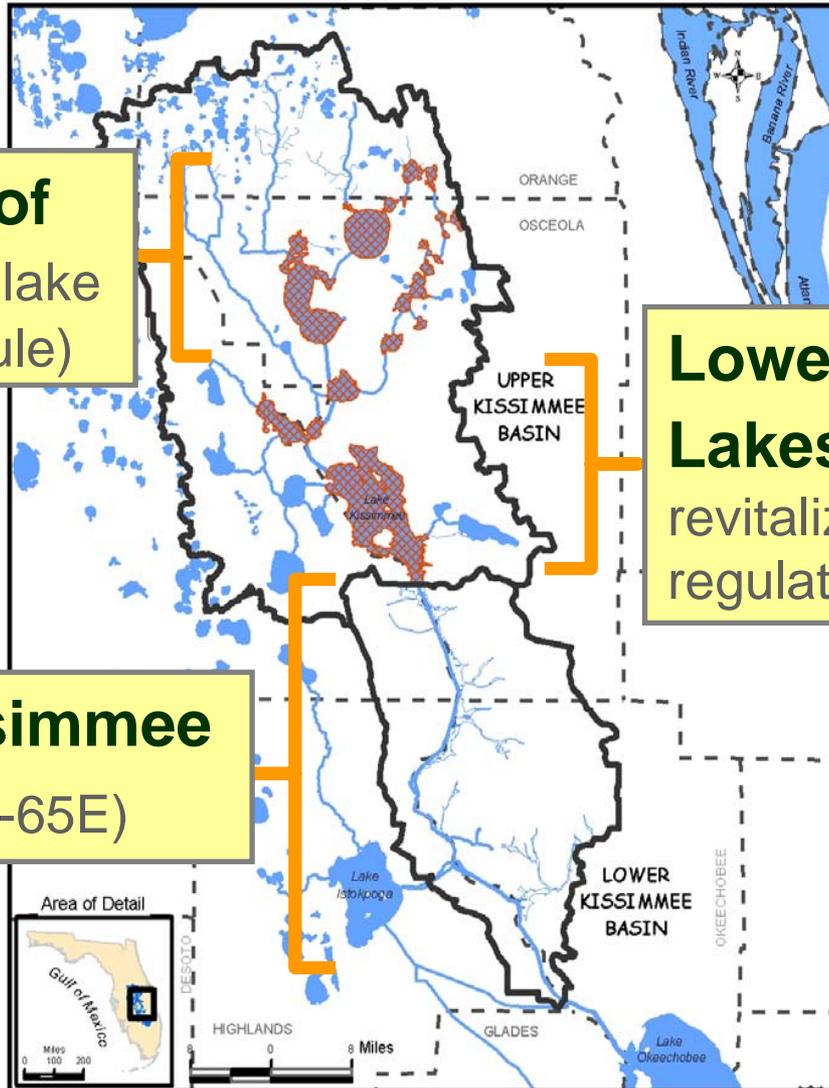


Foundational Assumptions (cont.)

Upper Chain of Lakes (existing lake regulation schedule)

Lower Chain of Lakes (Headwaters revitalization regulation schedule)

Restored Kissimmee River (S-65 to S-65E)





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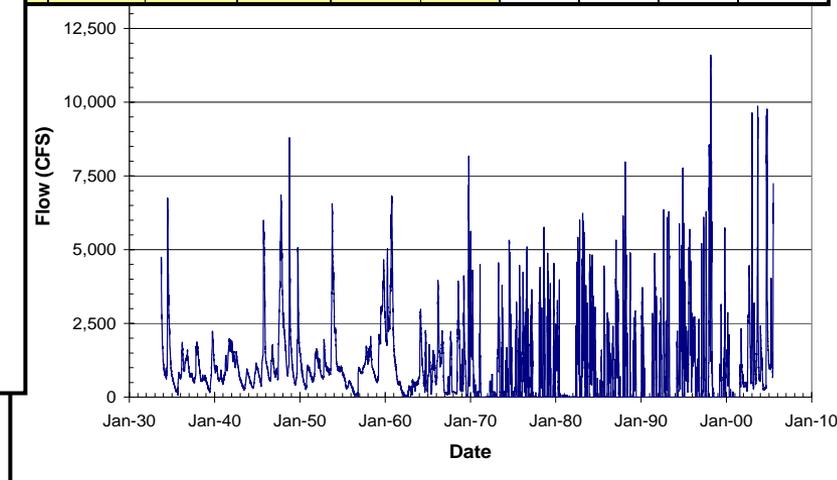
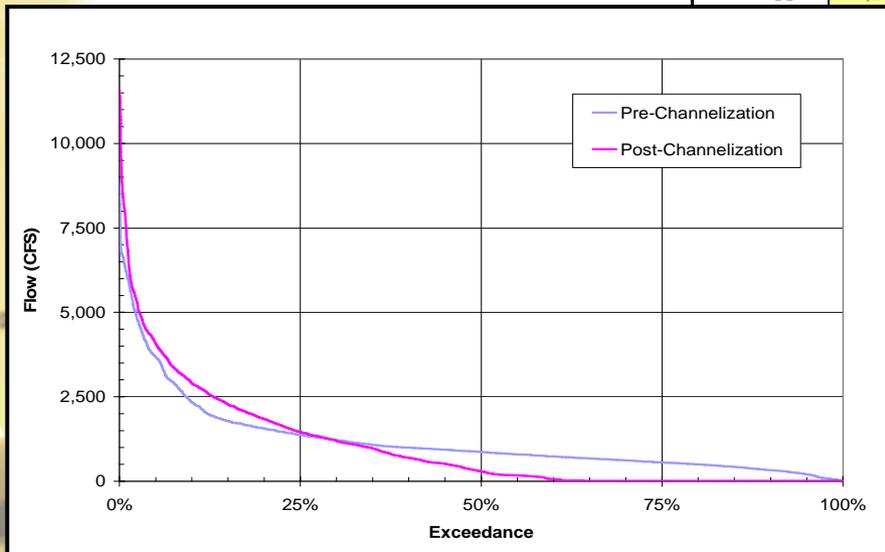




II. Summary of Technical Analysis

Complex System Complex Science

Threshold	Frequency of Events									
	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Lakes Myrtle Joes and Preston (Acre-Feet)										
Upper	241	106	None	None	None	None	None	None	None	None
Lower	460	347	261	188	153	None	None	None	None	None
Lakes Hart and Mary Jane (Acre-Feet)										
Upper	2,212	1,507	1,038	342	None	None	None	None	None	None
Lower	2,212	1,507	1,050	647	334	None	None	None	None	None
East Lake Tohopekaliga (Acre-Feet)										
Upper	16,244	12,708	10,167	7,654	5,007	3,591	1,259	None	None	None
Lower	18,814	15,936	13,536	10,958	8,946	7,037	5,660	3,820	2,475	None
Lakes Okechobee and Kissimmee (Acre-Feet)										
Upper	8	15,200	9,962	5,977	2,019	None	None	None	None	None
Lower	2	17,128	12,157	8,051	4,160	2,033	None	None	None	None





Hydrologic System Complexities

- Rainfall, evapotranspiration, surface water overland flow,
- Managed system of lakes, canals, structures and the river
 - Both existing and future Corps regulation schedules

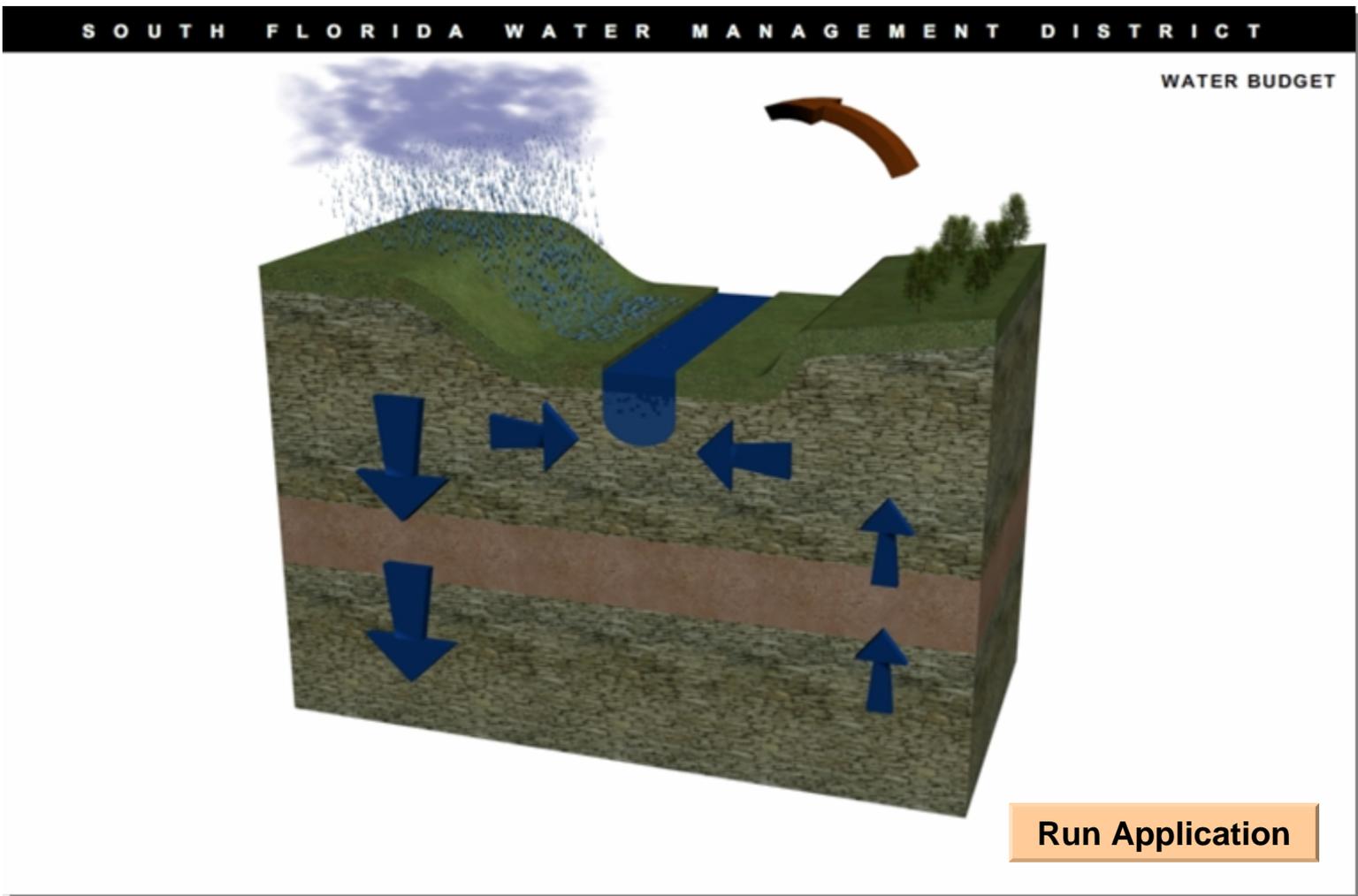
Groundwater interactions, surficial aquifer, intermediate confining zone, Floridan aquifer

- Hydrologic system varies constantly
- Evaluations at both individual water body scale and system wide scale





Biologic dependencies on water cycles



Run Application





Biologic System Complexities

- Lakes and river habitat and wildlife are stage and flow dependent
 - Water drives habitat
 - Habitat drives foraging and nesting opportunities
 - Foraging and nesting success drives sustainable fish and wildlife systems





Biologic/hydrologic relationships within the Kissimmee Basin





Biologic/hydrologic relationships within the Kissimmee Basin





Evaluation of Hydrologic and Biologic Systems

- Developed calibrated, integrated hydrologic models for the lake and river system
 - 41 years of hydrologic variation
 - Surface and ground water integrated
 - Evaluates both flows and stages (Daily)
- Developed performance measures that describe amounts, locations and variations of water needed to protect fish and wildlife
 - Translated performance measures into terms for evaluation by hydrologic modeling tools





“Range of Acceptability”

- Water for protection of fish and wildlife is not a unique value
- Decision makers need opportunity to consider balancing mission elements
- “Range of Acceptability”
 - Defined here as a set of bounds within which decision makers are equally sure that the desired response will occur
 - Allows for consideration of risk and balancing of public policies when making management decisions



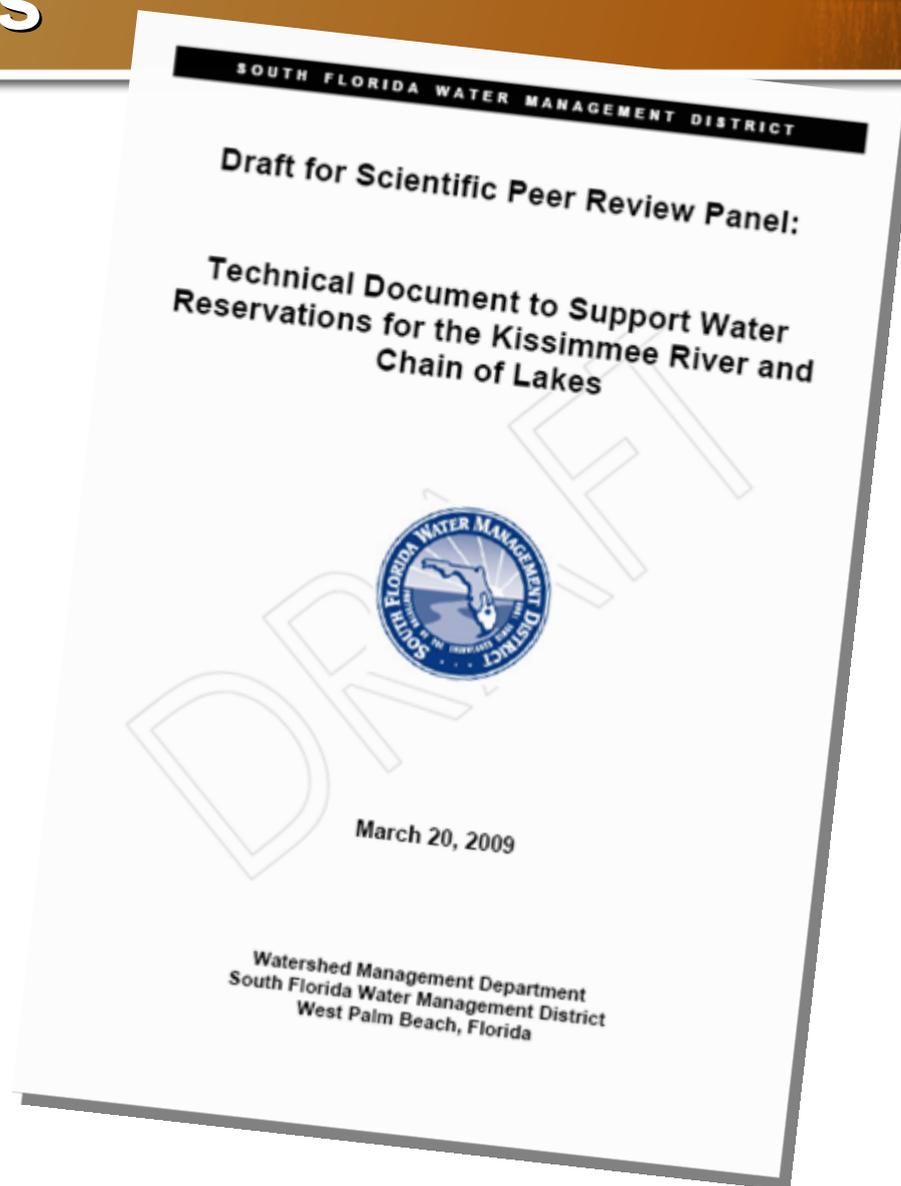
“Range of Acceptability”

- Upper and lower range of values defined for the hydrologic/biologic performance measures
 - For each of the lakes
 - For the restored river
- Analysis conducted to determine if the upper and lower range provide equivalent protection of fish and wildlife





Technical Document to Support Water Reservations





Scientific Peer Review

- Conducted peer review to review all data, methodologies, analyses, and assumptions
- 5 nationally recognized experts representing:
 - Avian ecology
 - Aquatic vegetation / wetland ecology
 - Water resource engineering / modeling
 - Fisheries / limnology
 - Stream ecology





Scientific Peer Review

- Panel's Preliminary Findings:
 - Modeling sound
 - Biologic linkages to hydrology sound
 - Approach to defining water for protection of fish and wildlife (performance measures) sound
 - Range of Acceptability provides equivalent levels of protection with the exception of Kissimmee-Hatchineha-Cypress
- Chairman to present panel's findings to Governing Board
- Some stakeholder concerns over the lower range of acceptability in Lake Toho



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Existing Legal Uses

- Existing legal uses do not have a significant impact on the water identified for the protection of fish and wildlife
- No need to restrict existing legal uses under the proposed water reservation rule





Groundwater

- Floridan Aquifer System is not a contributing source of water to the Upper Chain of Lakes or the River
 - No need to regulate under the proposed water reservation rule
- Surficial Aquifer System is a significant source of water identified for the protection of fish and wildlife
 - Should be regulated under the proposed water reservation rule





Tributaries and Other Contributing Surface Water Bodies

- Several tributaries and other surface water bodies (25 total) were found to contribute significant flows into the reservation waterbodies
 - These waterbodies are identified in Section 3 of the Technical Document
 - Examples include: Reedy Creek, Shingle Creek, Tiger Lake, Lake Rosalie, Chandler Slough, etc.
- Should be regulated under the proposed rule





Surface Water: River

- The flows and stages in the River are equivalent or slightly below the targets for protection of fish and wildlife
 - Detailed analysis identifies few periods when water exceeds targets (high flow conditions, infrequent and short duration)
- All flows across S-65 and all waters within the river and floodplain should be reserved





Surface Water: Lakes

- When looked at on an individual lake by lake scale, surface water occasionally occurs in excess of the defined fish and wildlife protection targets in some of the lakes
- Availability of water above the recommended water reservation limits is sporadic
 - Not every year, not all year
 - Characterized by short durations with high volumes
 - More so for larger lakes than smaller lakes (excluding lakes Kissimmee-Cypress- Hatchineha)
- Further evaluation needed to better define excess water





Surface Water: Lakes (cont.)

- Lower potential for surface water in excess of the defined fish and wildlife protection targets exists when looked at on a system wide scale
 - Potential exists to improve fish and wildlife deficits if excess water (when available) is moved to downstream lakes/river with deficits
 - Kissimmee, Cypress, Hatchineha have large fish and wildlife deficits due to the Headwaters Revitalization schedule, some opportunities to meet deficits in the River may also occur
 - Additional system wide evaluation needed to account for operation and structural considerations





Surface Water: Lakes (cont.)

- Opportunity exists to balance water supply mission objective with environmental protection in managing the Upper Chain of Lakes and River
- Staff Recommendation:
 - Draft rule to balance excess water to meet
 - downstream environmental deficits
 - future water supply needs of the region
 - Water available for allocation should be explicitly defined in rule in addition to the water reserved from allocation for fish and wildlife



Public Involvement

- More than 100 stakeholders, business and property owners, citizens and state and federal representatives have so far provided input on water reservations
 - 3 rule development workshops held in December, February and March
 - A two-day independent scientific peer review with public workshops was held in March and April
 - All rule development workshops are webcast to broaden accessibility
- Additional upcoming workshops
 - April 16 – 10 a.m. to 3 p.m., Osceola County Commission Chambers, Kissimmee
 - May 5 – 10 a.m. to 3 p.m., Osceola County Commission Chambers, Kissimmee



Upcoming Presentations to Local Governments

- April 21 - Kissimmee City Commission 6pm
- April 22 – Polk County Commission 9am
- April 23 – St. Cloud City Council 630pm
- April 27 – Orlando City Commission 10 am
- April 28 – Orange County Commission morning
- May 12 – Windermere Town Council 7pm
- April 27 - Osceola County Commission 1:30pm



Kissimmee River Restoration – Water Reservations Website

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KISSIMMEE RIVER RESTORATION – WATER RESERVATIONS

Important notice:
At the South Florida Water Management District Governing Board meeting on Thursday, **April 9**, board members will receive a presentation regarding Kissimmee Basin and Upper Chain of Lakes Water Reservations. The meeting begins at 9 a.m. at St. Cloud City Hall, 1300 Ninth Street, St. Cloud. This topic previously appeared on the Governing Board meeting agenda for Wednesday, April 8.

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KISSIMMEE RIVER RESTORATION – WATER RESERVATIONS

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Background
Ensuring the availability of water is a key component of environmental restoration and management affecting the Upper Chain of Lakes and the Kissimmee River and floodplain. Together, these remarkable Central Florida water bodies shelter 45 species of fish, 68 species of wetland-dependent birds, 24 species of reptiles and amphibians and mammals including the marsh rabbit, river otter and round-tailed muskrat. Ultimately, all of these species are as dependent on the water as they are on the success of other wildlife in their shared habitat.

To assure water for the protection of fish and wildlife within the Upper Chain of Lakes and restored Kissimmee River and floodplain, the South Florida Water Management District Governing Board began the development of rules to reserve water for those purposes in 2008. The District, State of Florida and the United States government have provided substantial support for restoration of these ecosystems. To date, \$620 million has been invested in projects encompassing 19 lakes and 103 miles of river and floodplain. This accounts for 27,000 acres of wetland habitat critical to the protection of fish and wildlife, including endangered or threatened species. Reservations will guarantee that the water needed to keep these ecosystems thriving will not be allocated for consumptive use.

A water reservation is a legal mechanism to set aside water for the protection of fish and wildlife or public health and safety. When a water reservation is in place, volumes and timing of water at specific locations are protected for the natural system ahead of consumptive uses such as new development.

This web site has been established to provide information to the public regarding water reservation development, including meeting schedules and notices, technical analysis and reports, presentations and draft rule language.

UPCOMING PUBLIC WORKSHOP
The South Florida Water Management District invites you to participate in the Water Reservation Development Workshop for the Kissimmee Basin Water Reservation, **Thursday, March 26, 2009** Kissimmee, Florida

RELATED MATERIALS

- Workshops, Meetings and Calendar
- Presentations and Discussions
- News Releases, Fact Sheets and eNewsletters
- Modeling and Science (includes Peer Review and DRAFT Technical Document)
- Rule Development
- Kissimmee River & Upper Chain of Lakes links (Web site)
- Kissimmee River restoration progress (Web site)
- Kissimmee Basin - Water supply planning (Web site)

