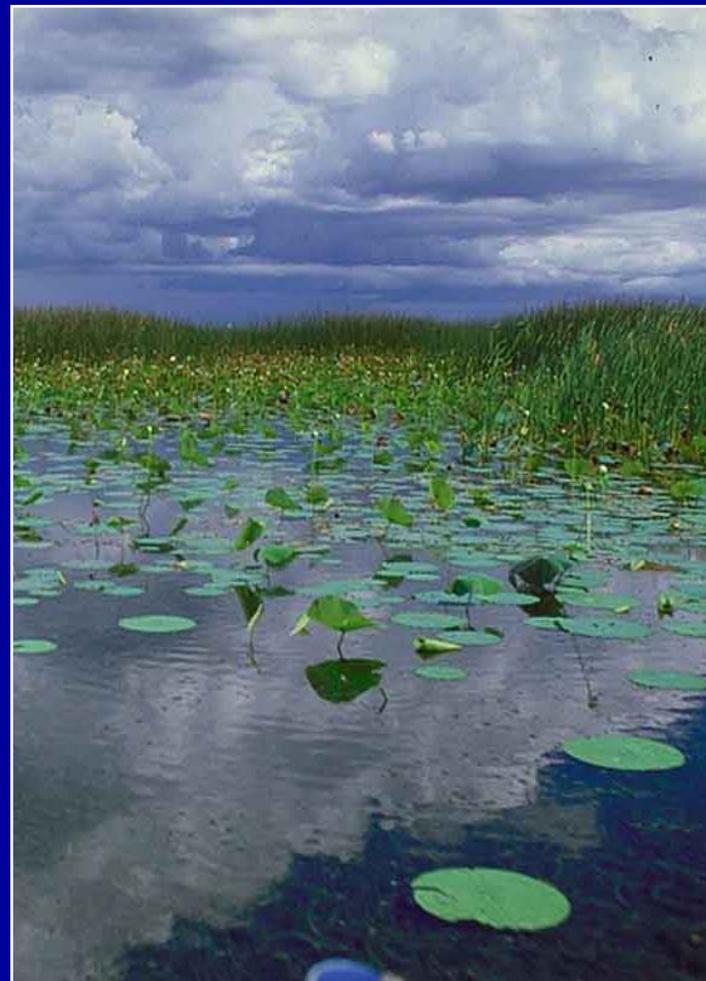


# Lake Okeechobee Regulation Schedule & Adaptive Protocols: June 2003 Update

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**Lake Okeechobee Division**





# Outline

- **Review of WSE Regulation Schedule**
- **Review of Adaptive Protocols**
- **Operation of the Lake in 2002-2003**
- **Ecological Conditions, related to Lake operations**
- **Conclusions / where we go from here**

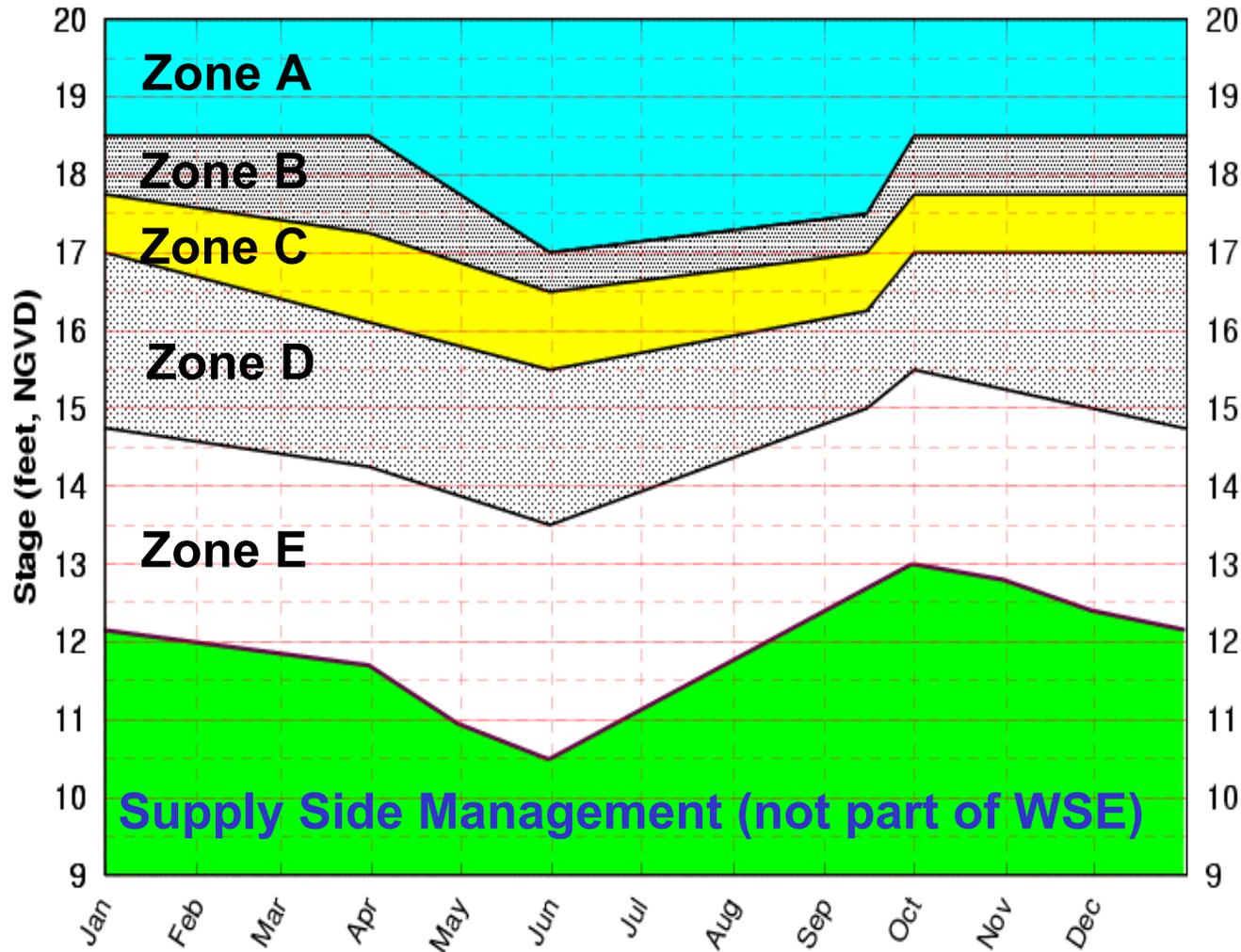
# **Lake Okeechobee Regulation Schedule WSE (Water Supply and Environment)**

- **WSE is the most recent regulation schedule for Lake Okeechobee (implemented July 2000)**
- **WSE was designed to “optimize environmental benefits at minimal or no impact to competing lake purposes.”**
- **WSE was developed due to concerns about ecological damage to the lake under the earlier schedule of operations.**
- **WSE improves performance of the lake, but it is not the complete solution for existing problems.**

# Major Features of WSE

- **Initiates discharges at lower stages under special conditions to WCAs & estuaries**
- **Pulse releases made to estuaries for extended periods when very large inflows are expected**
- **Discharges not required when drier conditions are expected - protects water supply**
- **Provides more flexibility in release decisions**
  - **Uses climate forecasting**
  - **Decision trees are part of the schedule**
  - **Outflow rules provide ranges vs fixed rates**

# WSE Schedule



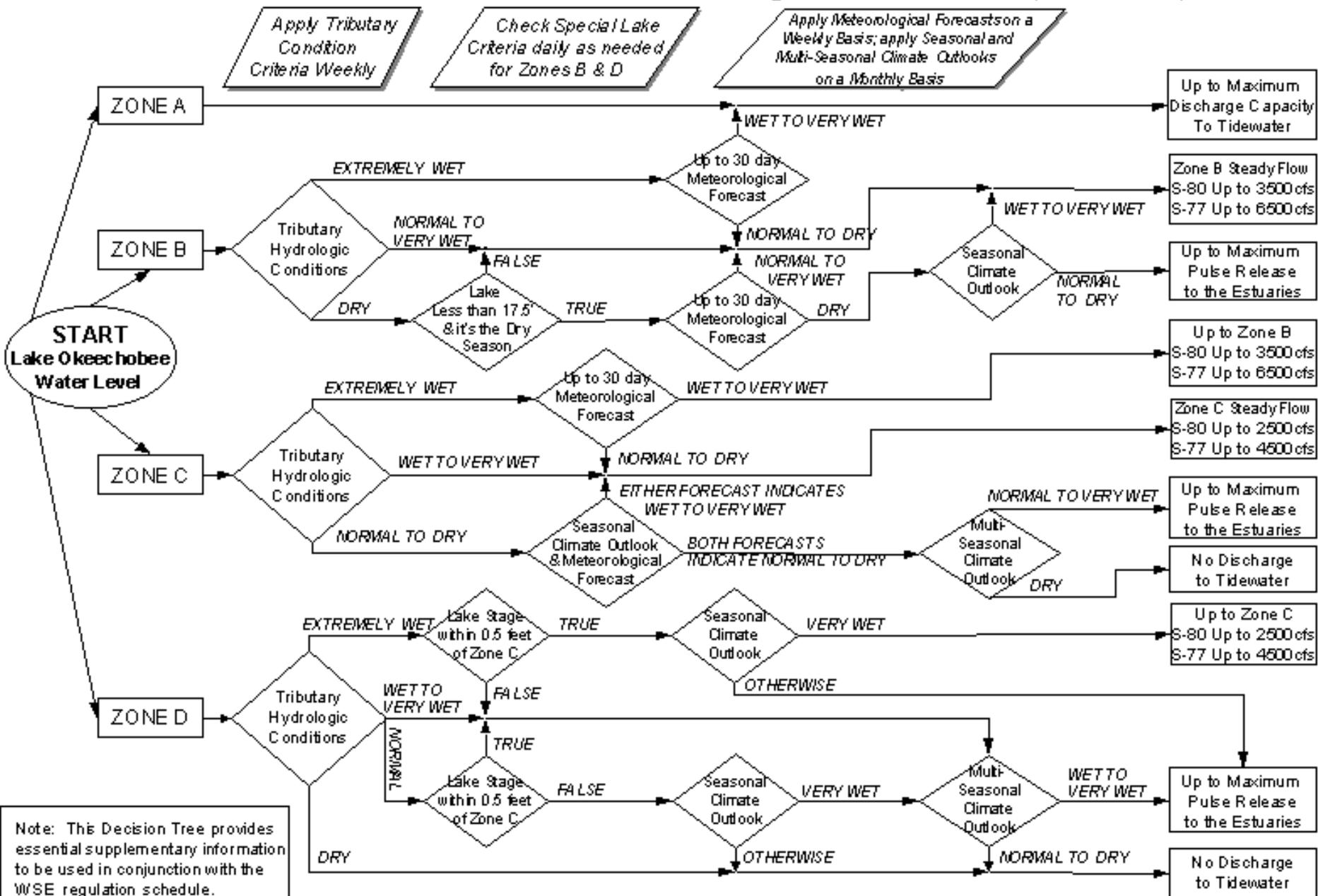
**A,B,C,D --  
Regulatory  
Release  
Zones**

**E – No  
Regulatory  
Releases**

**Supply Side Management (not part of WSE)**

# WSE Operational Guidelines Decision Tree

## Part 2: Define Lake Okeechobee Discharges to Tidewater (Estuaries)



# Adaptive Protocols

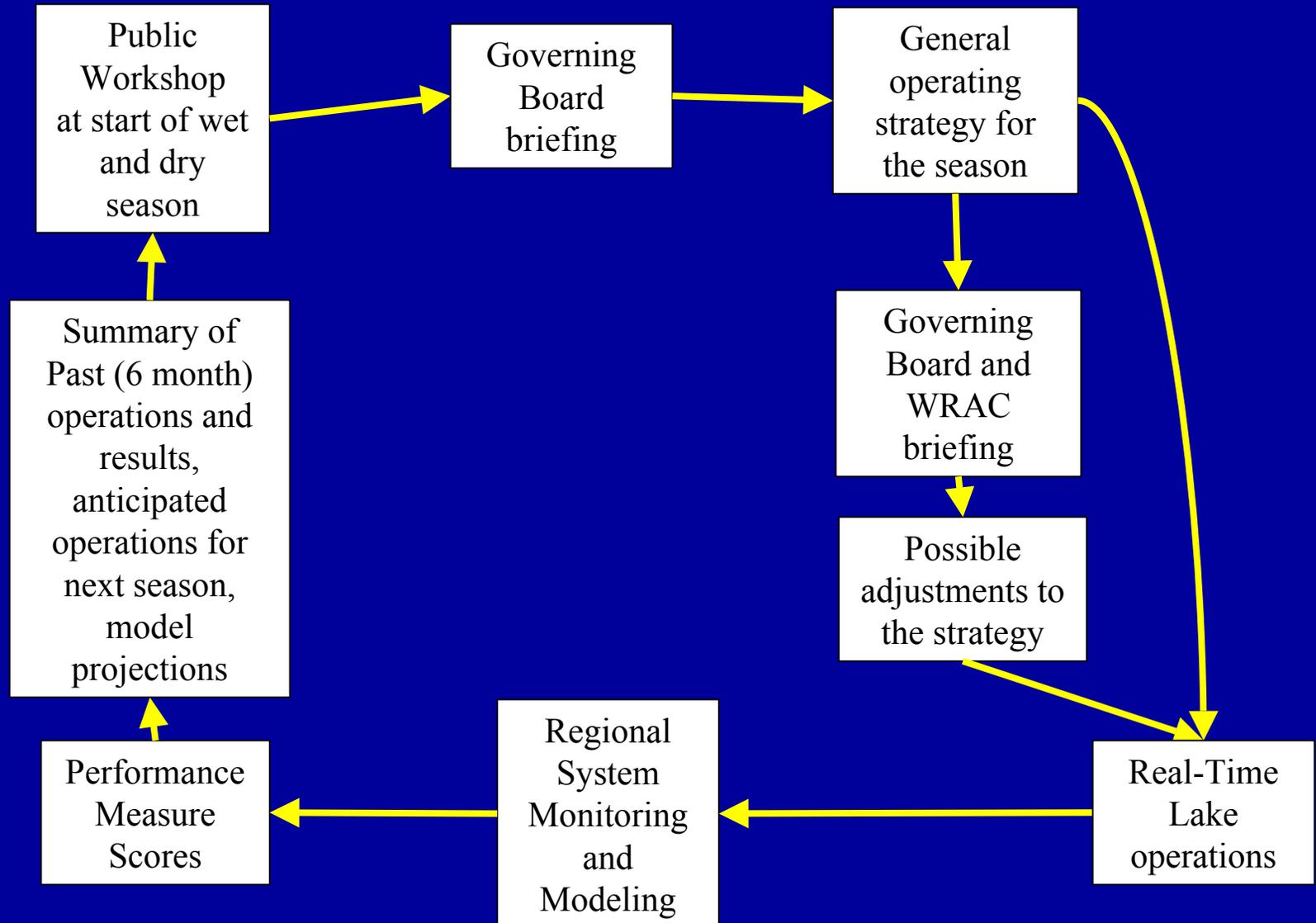
- provide guidelines for determining specific volumes for regulatory discharges under the WSE Schedule
- also include procedures for making discharges to protect downstream ecosystems (e.g., salinity impacts in Caloosahatchee River)
- occur in a highly transparent process with frequent venues for public input
- developed with assistance from Water Resources Advisory Committee (WRAC)
- accepted by Governing Board in January 2003

# WRAC Recommendations

(incorporated into the final protocols)

- *protocols should include the option of making environmental water deliveries to downstream ecosystems, but not exceeding 300 cfs unless approved by the Governing Board, and only in Zone D or above*
- *take advantage of opportunities where the WSE schedule calls for releases to the WCAs to provide freshwater to meet demands of the estuaries*

# Adaptive Protocols - Public Process

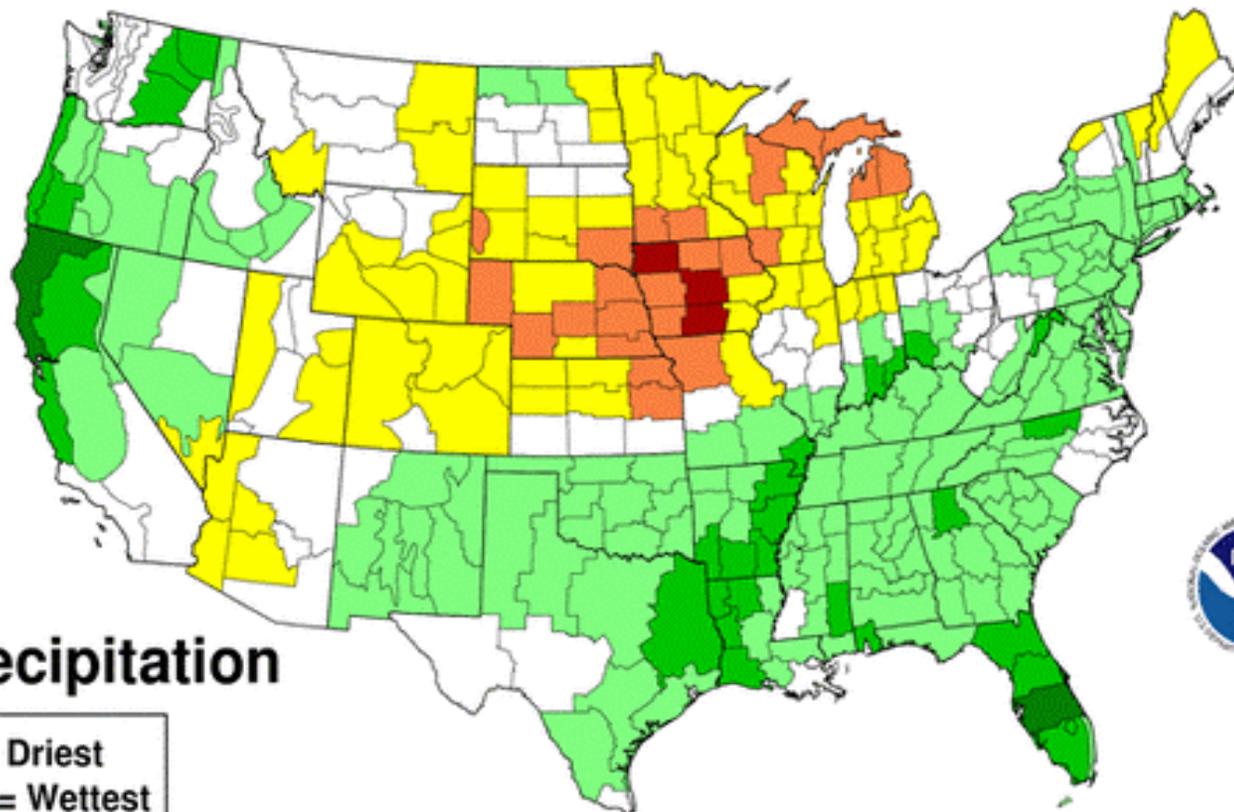


# **Lake Operations in 2002-2003**

**Key factors this year included El Nino, intense rainfall during December in the Kissimmee valley, dry period in January, freshwater demands by Caloosahatchee Estuary, and constraints to water flow from the lake to the WCAs due to STA construction, high WCA schedules, and concerns about causing stage reversals in WCAs**

# Dec 2002 Divisional Ranks

National Climatic Data Center/NESDIS/NOAA



## Precipitation

1 = Driest  
108 = Wettest



Record  
Driest



Much  
Below  
Normal



Below  
Normal



Near  
Normal



Above  
Normal



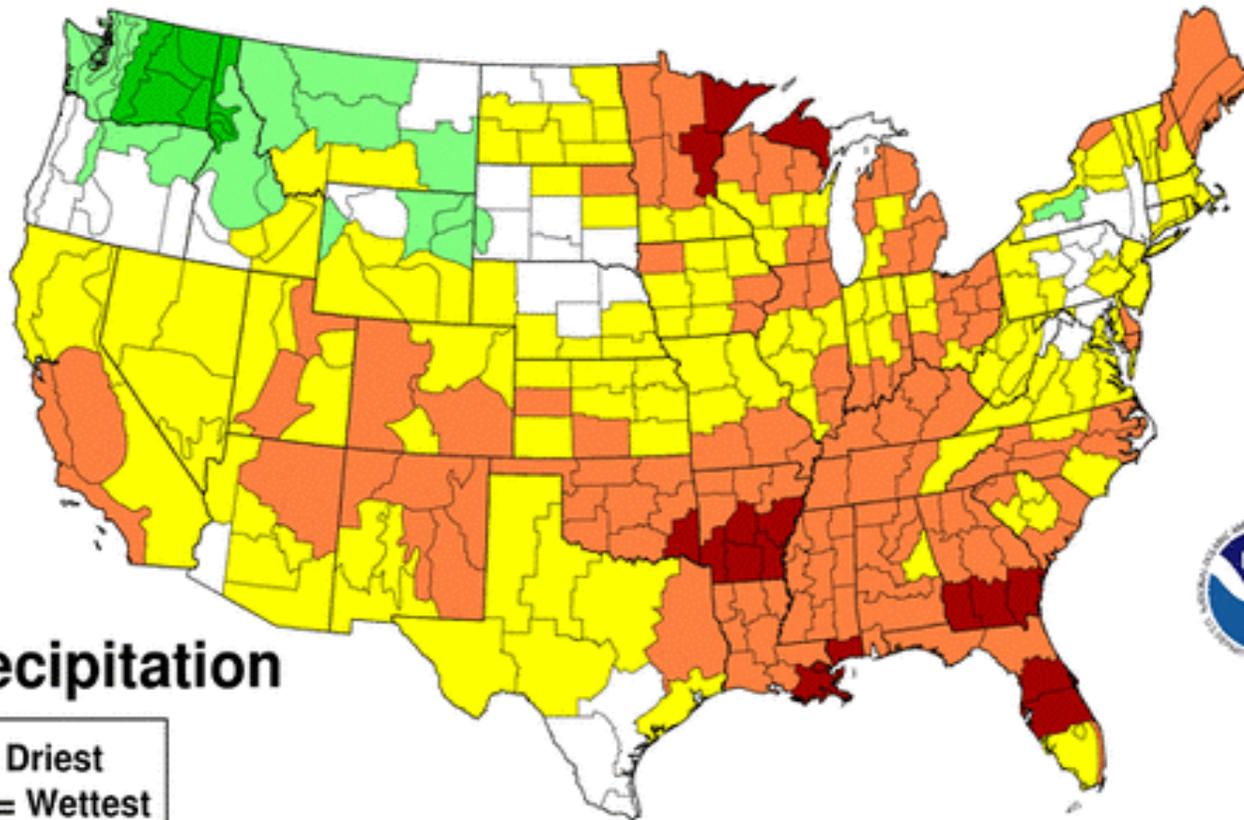
Much  
Above  
Normal



Record  
Wettest

# Jan 2003 Divisional Ranks

National Climatic Data Center/NESDIS/NOAA



## Precipitation

1 = Driest  
109 = Wettest



Record Driest



Much Below Normal



Below Normal



Near Normal



Above Normal

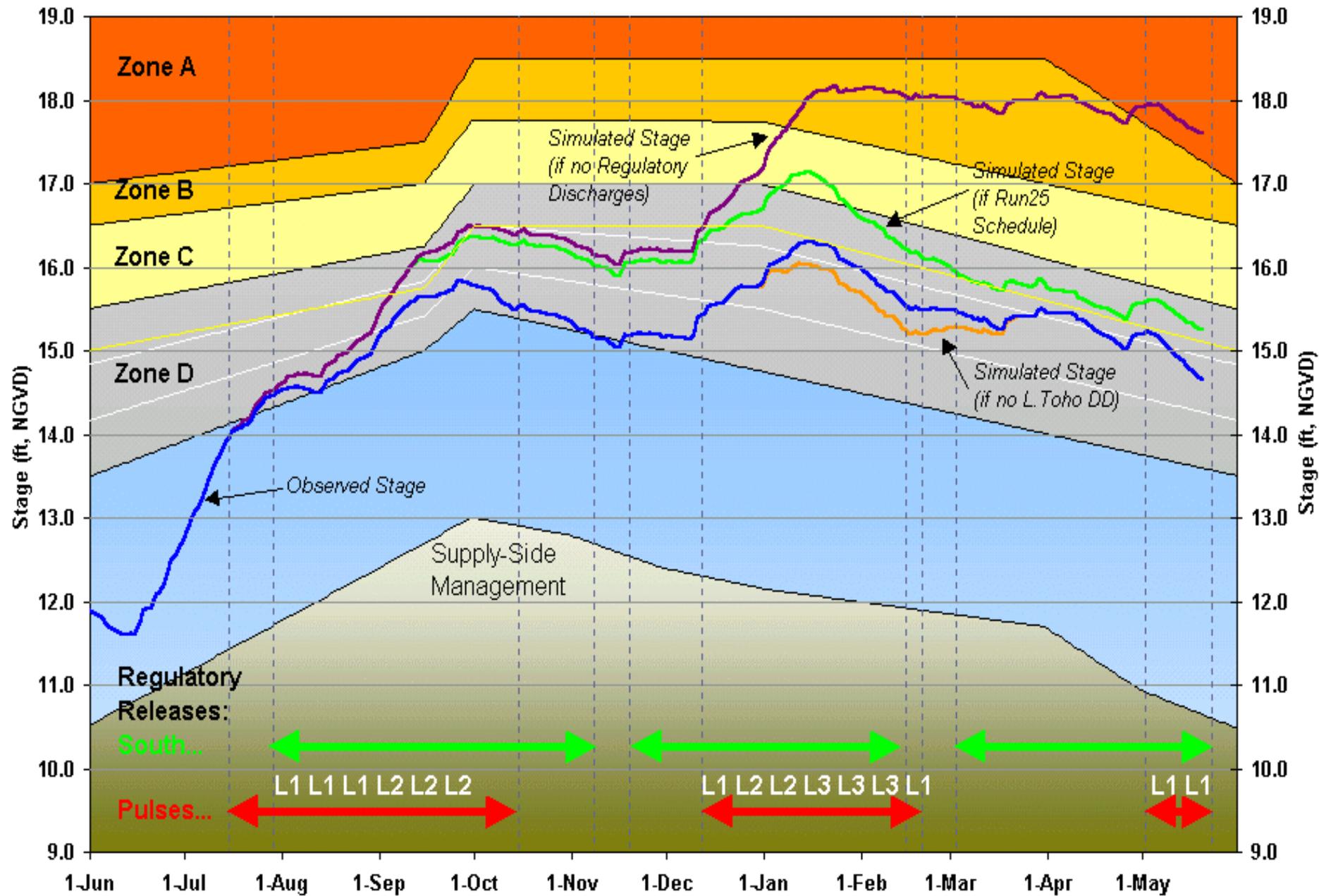


Much Above Normal

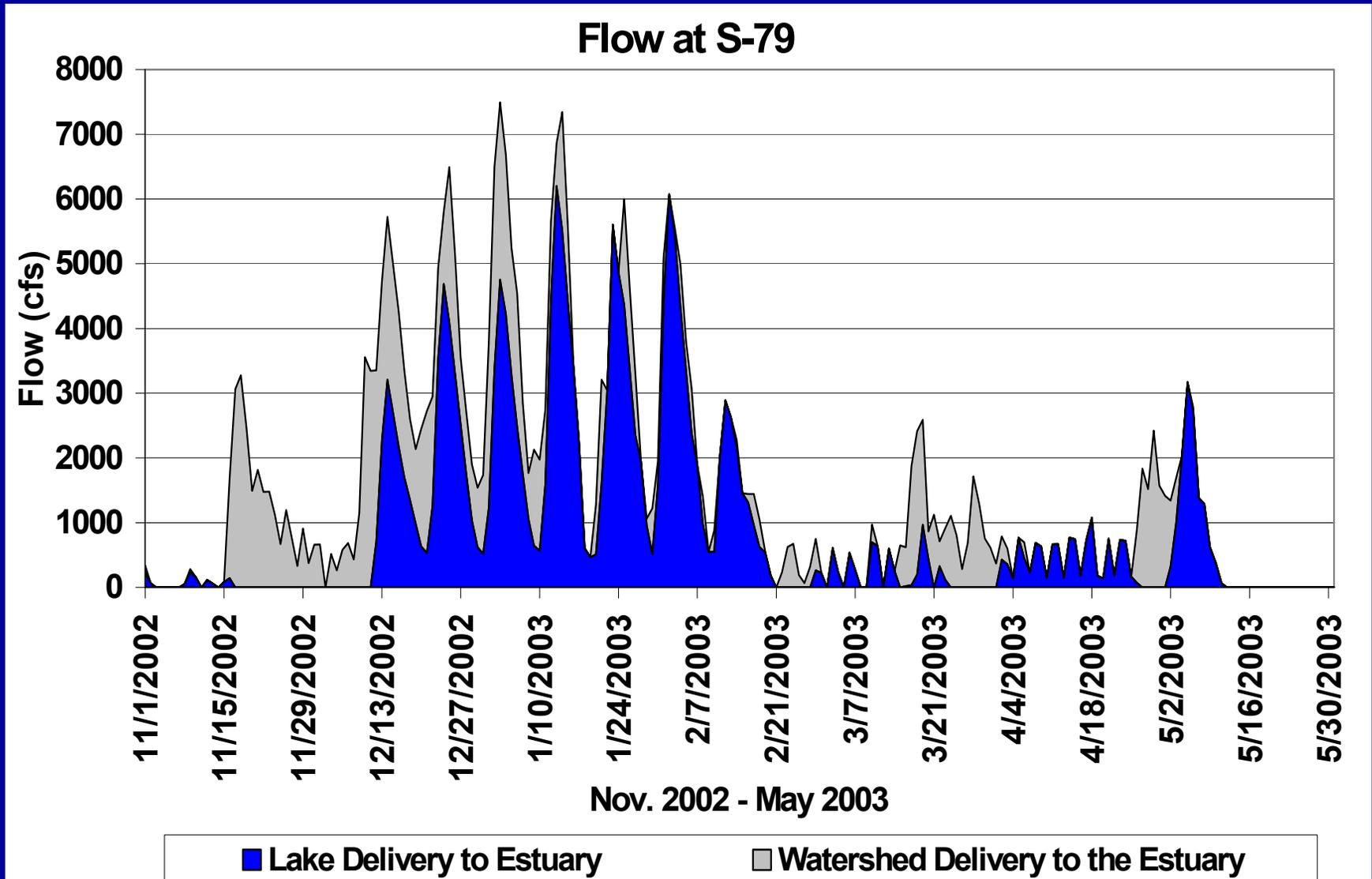


Record Wettest

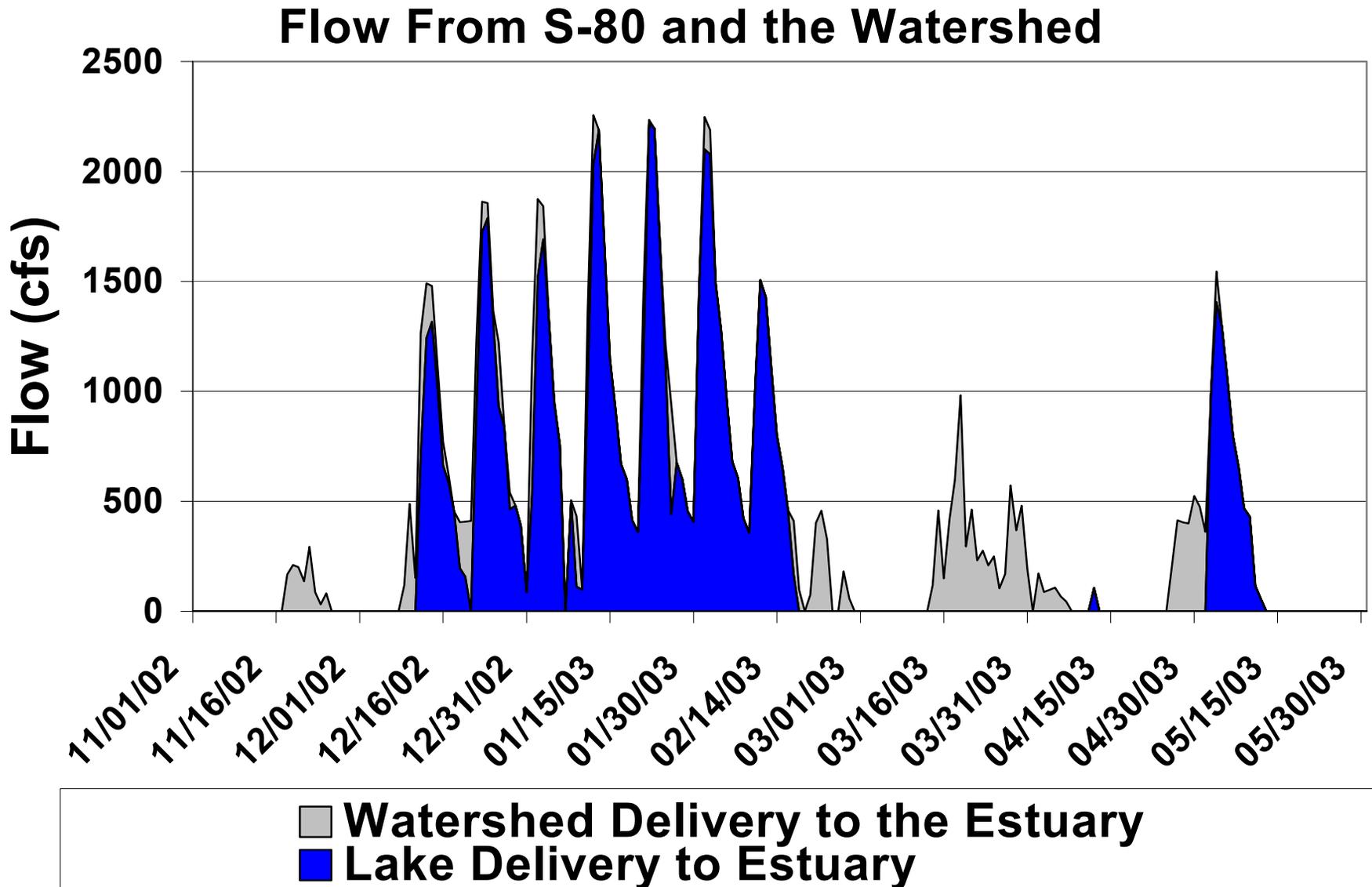
# Lake Okeechobee Stage Comparison



# Regulatory Pulses and Environmental Deliveries To the Caloosahatchee Estuary



# Regulatory Pulses to the St. Lucie Estuary



# Estuary Responses

- **regulatory pulses caused short-term decrease in estuary salinity, but then recovery when pulses ended**
- **some impacts to seagrass in Caloosahatchee**
- **ecological benefits for eelgrass in the river from low volume deliveries**
- **no observed impacts on oysters or grasses in St. Lucie Estuary**
- **pulse releases have reduced the risk for higher volume discharges later this year**

# WCA Responses

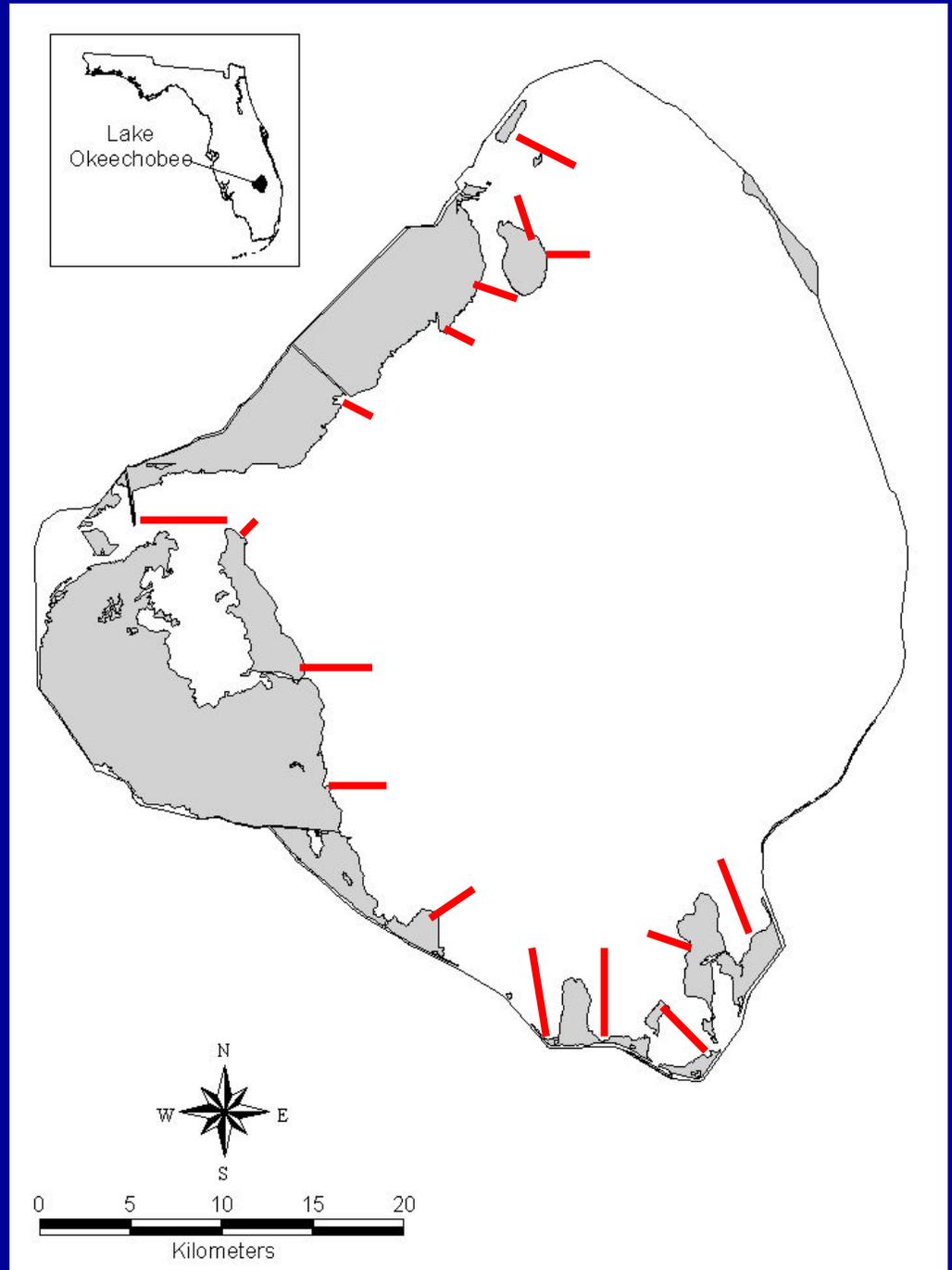
- impacts minimized by sending water from the lake through STAs, to treat the water
- deliveries from Lake to WCAs were somewhat constrained by STA construction and high stages of WCAs
- there were stage reversals in the WCAs this year and nest abandonment by wading birds, but this was due to direct rainfall, not Lake Okeechobee releases

# Lake Okeechobee Conditions

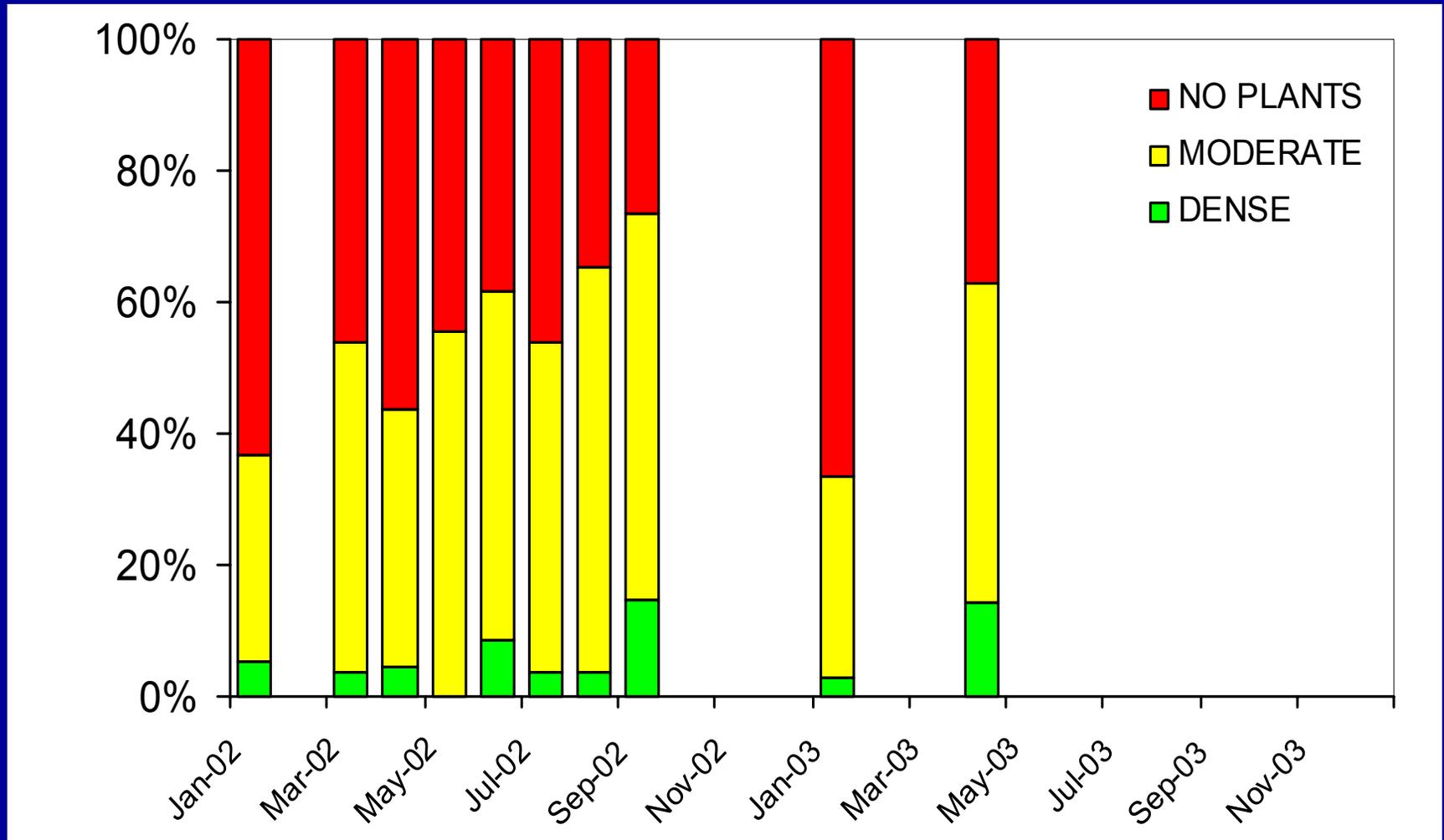
- submerged vegetation biomass remained high this year, despite stages over 16 ft in January
- the community is robust and resistant to stress, unless stress becomes extreme or prolonged
- some loss of emergent plants (bulrush, shoreline grass beds) documented
- high water has hindered control of torpedograss in littoral zone this year

# Quarterly transects for submerged plant sampling

(red lines)



# Quarterly Assessment Results (since Jan 2002)



Note: data are available from April 1999 to May 2003 on the SFWMD website

# Conclusions

- **implementation of the WSE Schedule and Adaptive Protocols provided flexibility to make environmental deliveries to Caloosahatchee Estuary, kept maximal Lake level about 1 ft lower, had little or no impacts downstream, and did not increase risk for water supply**
- **however, water levels in the lake remain higher than desired, due to rainfall conditions and risks of discharging more water downstream**

# Conclusions

- **staff at the SFWMD will continue to work with stakeholders and other agencies to refine / optimize the process**
- **the Working Group will be kept appraised of any substantive changes that are proposed**

**sfwmd.gov**