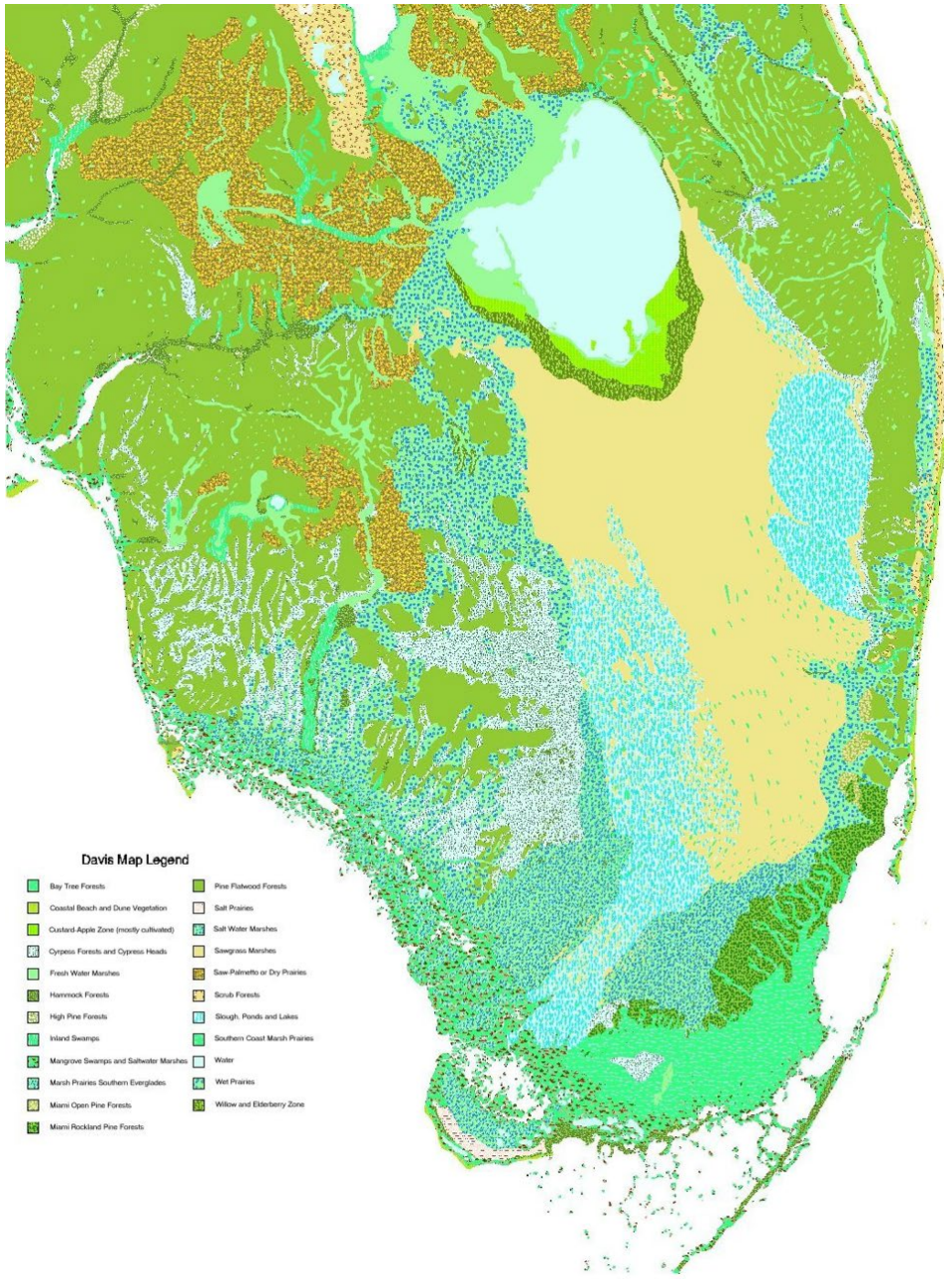
Everglades Restoration

Historical and Indigenous Traditional Ecological Knowledge Perspective
On Everglades Restoration Projects

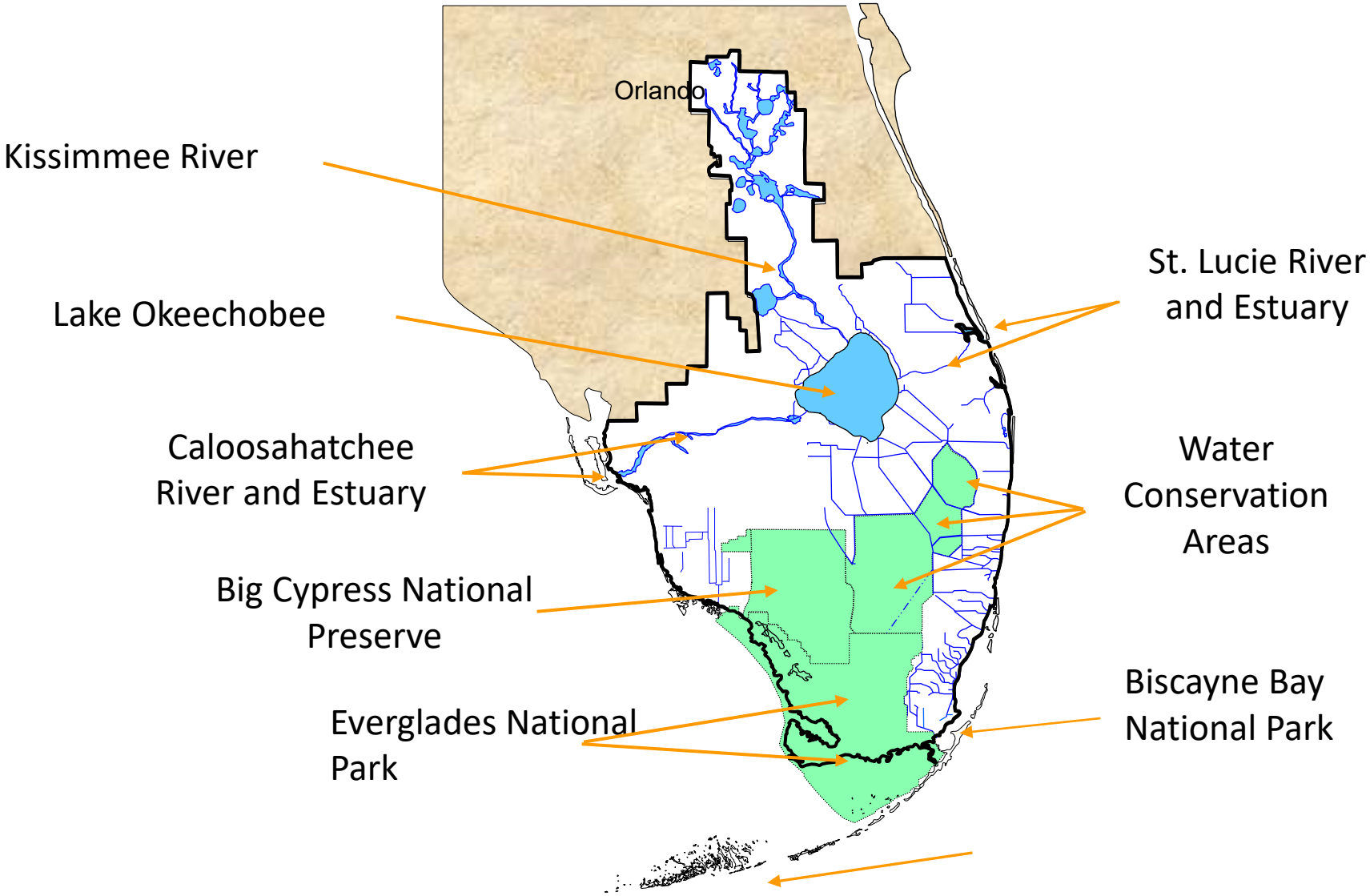
February 22, 2022

Historic Everglades

- Richardson (2009) and others have documented that waterfalls pouring out of the Everglades, upwellings from numerous springs at the edge of the Everglades, and freshwater bubbling up in Biscayne Bay in the early 1900s clearly indicates an Everglades that maintained a large hydrologic freshwater head on the landscape and originally relied heavily on base flow, a much different hydrology than the one we see today.
- Historically, Lake Okeechobee levels in excess of 20 ft (6 m) were measured in the lake in the 1850s and as late as the early 1900s, and it was reported that when lake levels exceed 22 ft (approximately 20.6 ft NGVD) water would spill over the soil bank on the southern part of the lake into the Everglades (Steinman et al. 2002)
- At that time, Seminole Tribe was dependent upon water levels and water quality of the Everglades to provide healthy sustenance (as shown by the irregular boundary line of Brighton Reservation) .



Greater Everglades Footprint Today



In the Beginning: Euphoria

The Road to Comprehensive Everglades Restoration Plan (CERP) Authorization

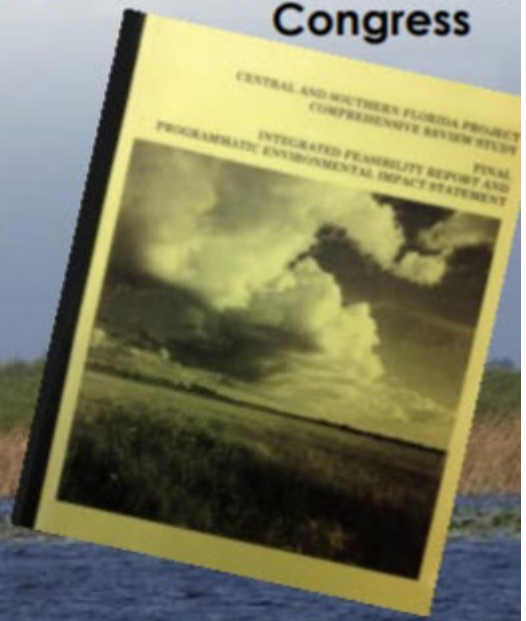
1996
Feasibility Study of Central and Southern Florida Project Authorized

1997
Feasibility Study Start

1998

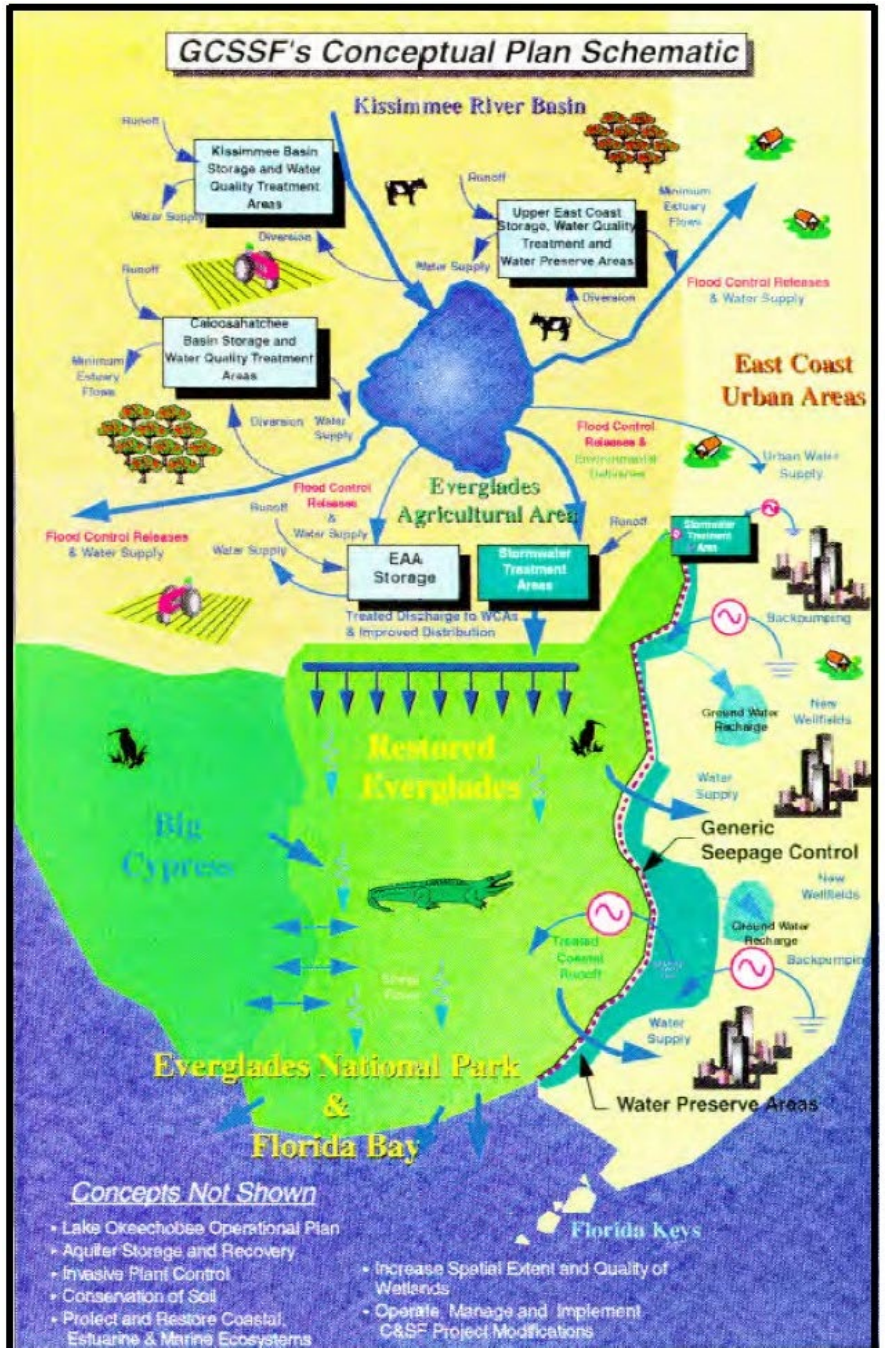
1999
Feasibility Report Completed

2000
CERP or "Yellow Book" authorized by Congress



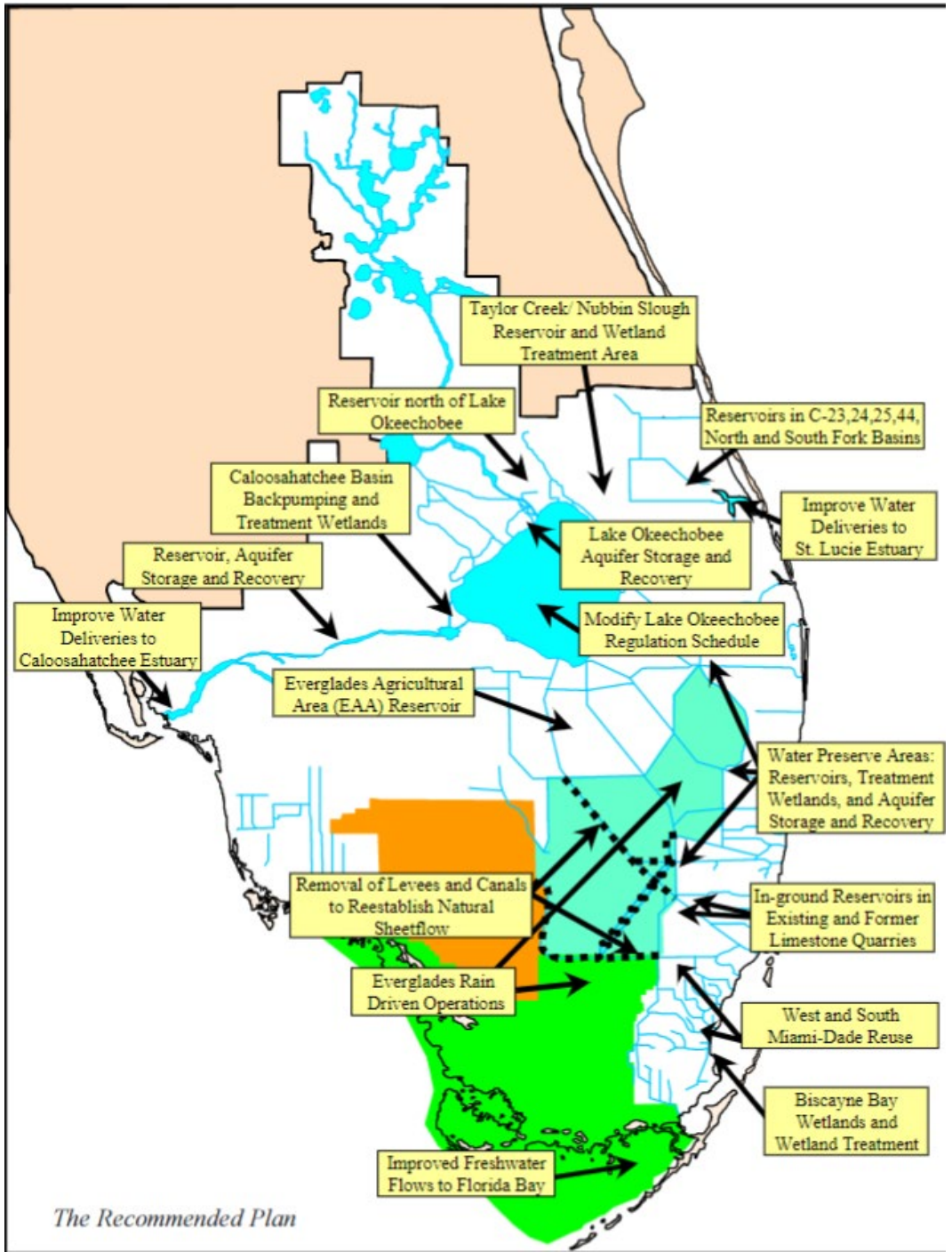
1999 Governors Commission on Sustainable South Florida (GCSSF)

- All Comprehensive Everglades Restoration Projects are part of Yellow Book or Restudy
- As part of the Restudy process, this schematic of Everglades Restoration was prepared as a blueprint for “Restoration” by GCSSF



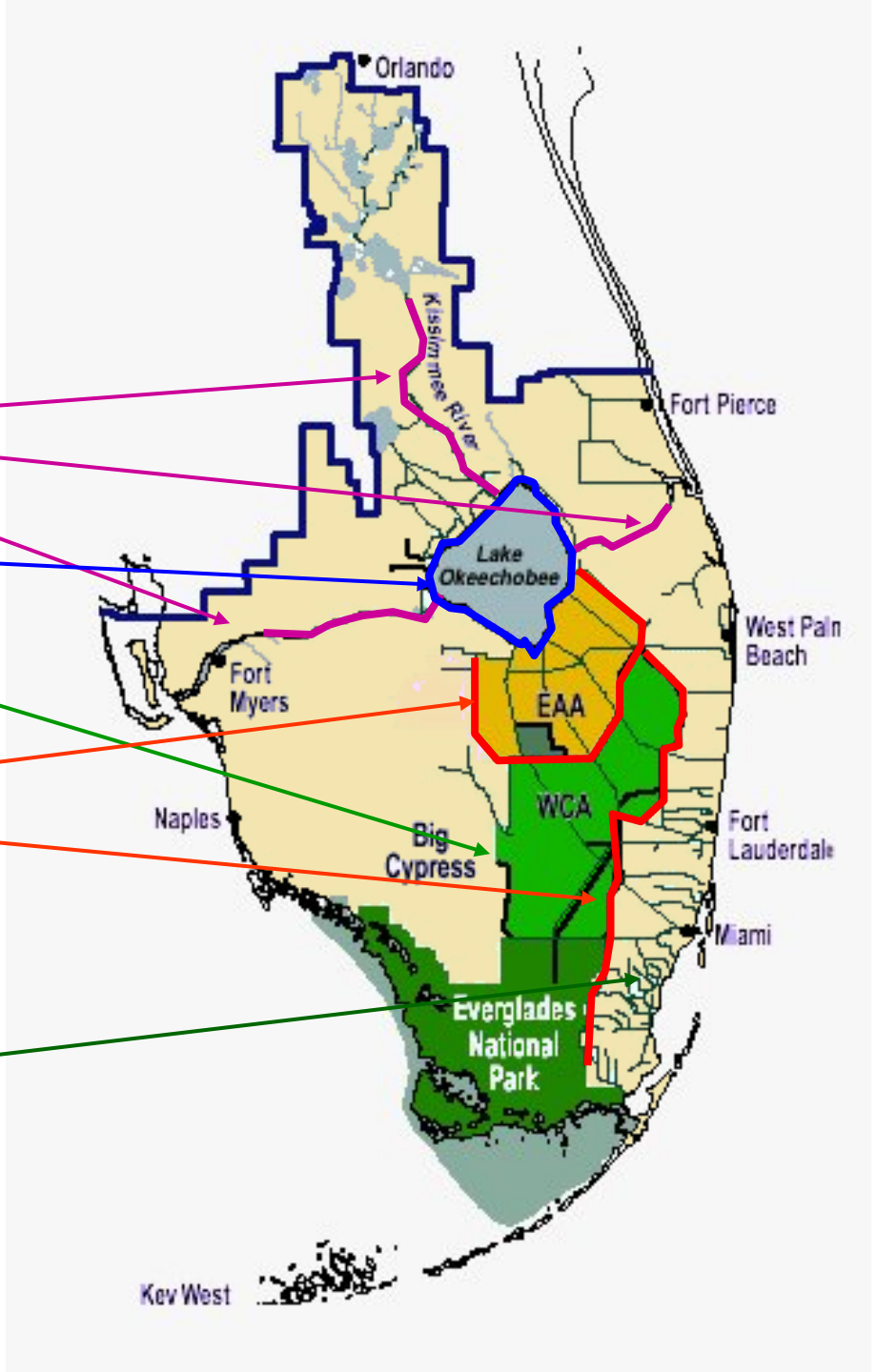
Restudy Recommended Plan

- Highly Engineered System with Reservoirs, STAs, and Aquifer Storage and Recovery Systems
- The “Good Aspects” still remain in the Decompartmentalize features of project to restore historic sheetflow.

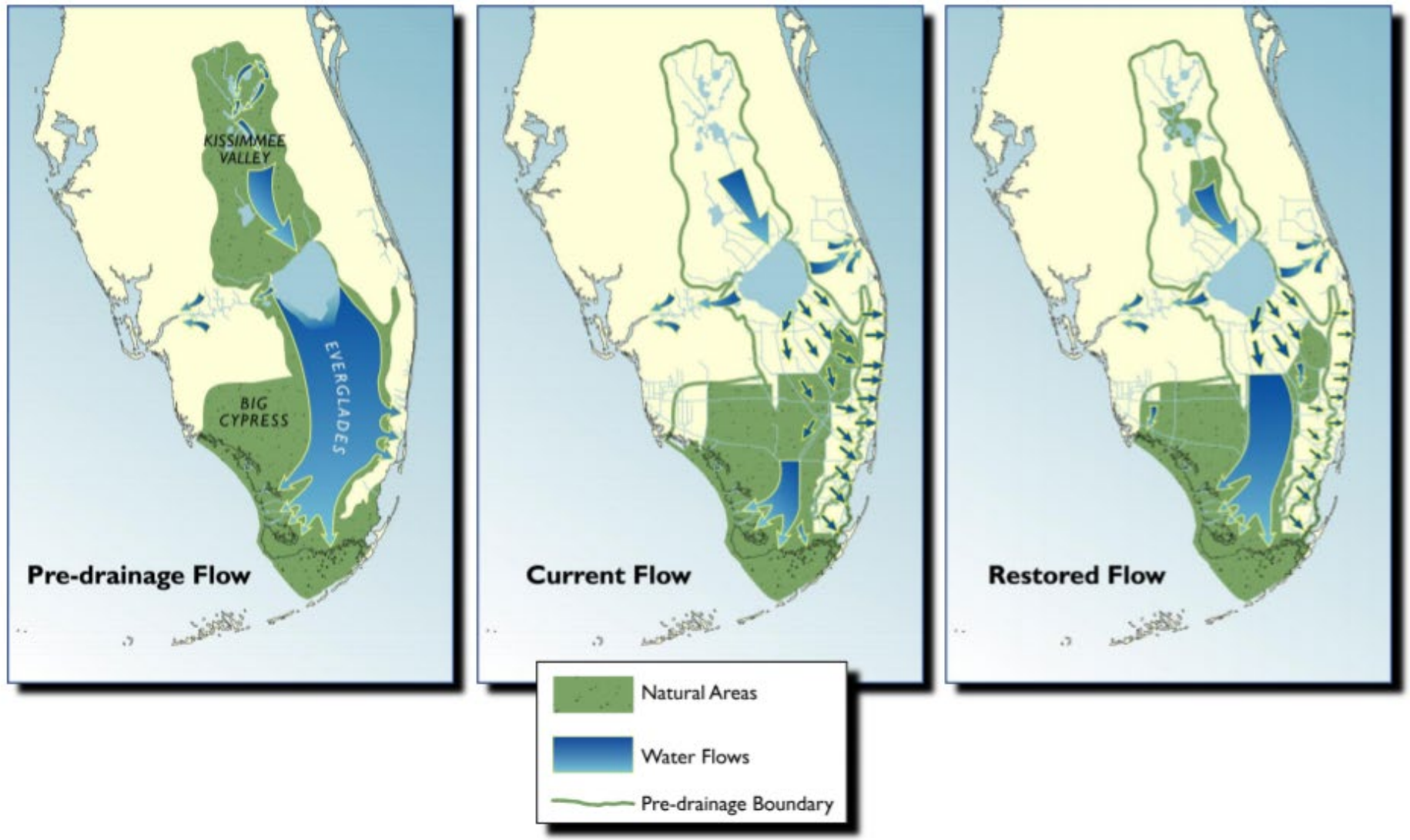


Central & Southern Florida Project

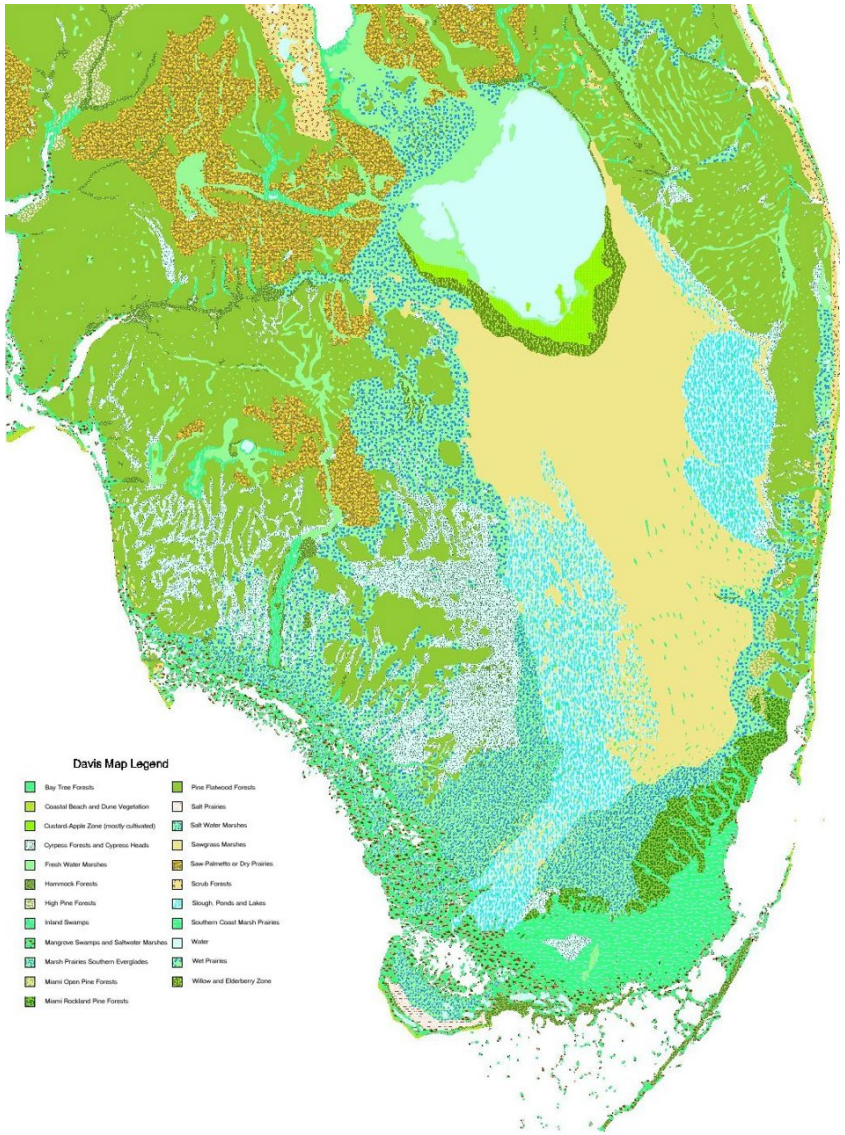
- River Channelization
- Herbert Hoover Dike
- Water Conservation Areas
- Protective Levees
  - Everglades Agricultural Area
  - Lower East Coast
- Drainage Network
  - Salinity Structures

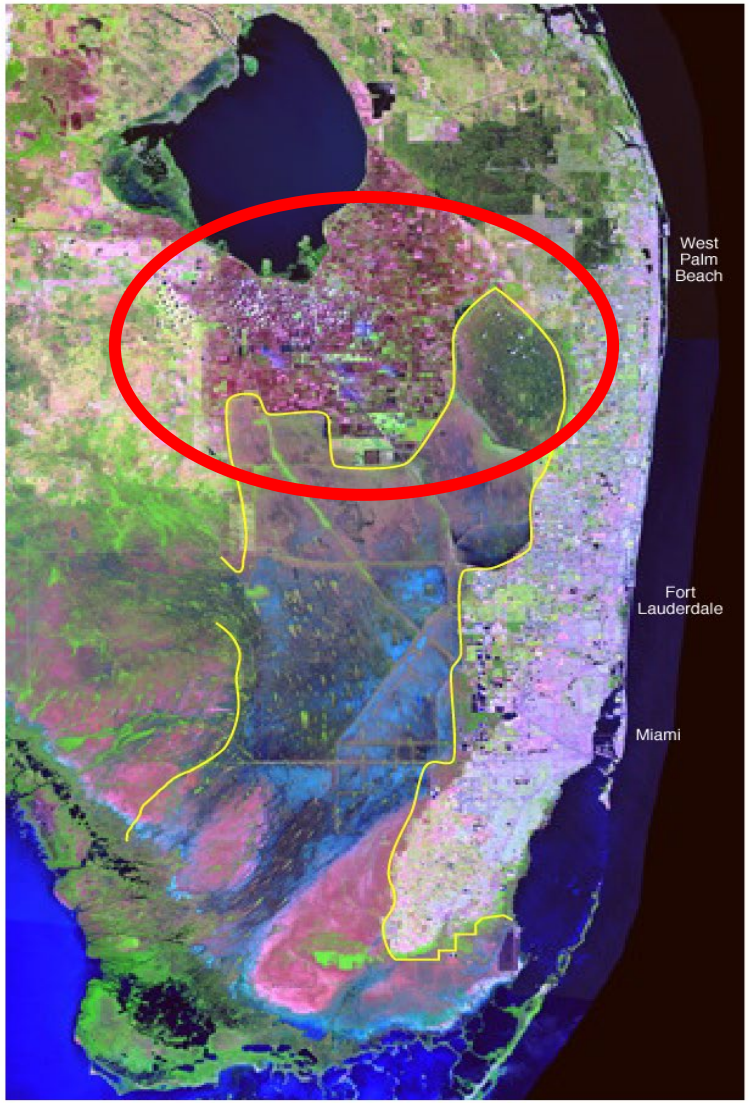


The Goal


KISSIMMEE VALLEY
BIG CYPRESS
EVERGLADES
Pre-drainage Flow
Current Flow
Restored Flow
Natural Areas
Water Flows
Pre-drainage Boundary

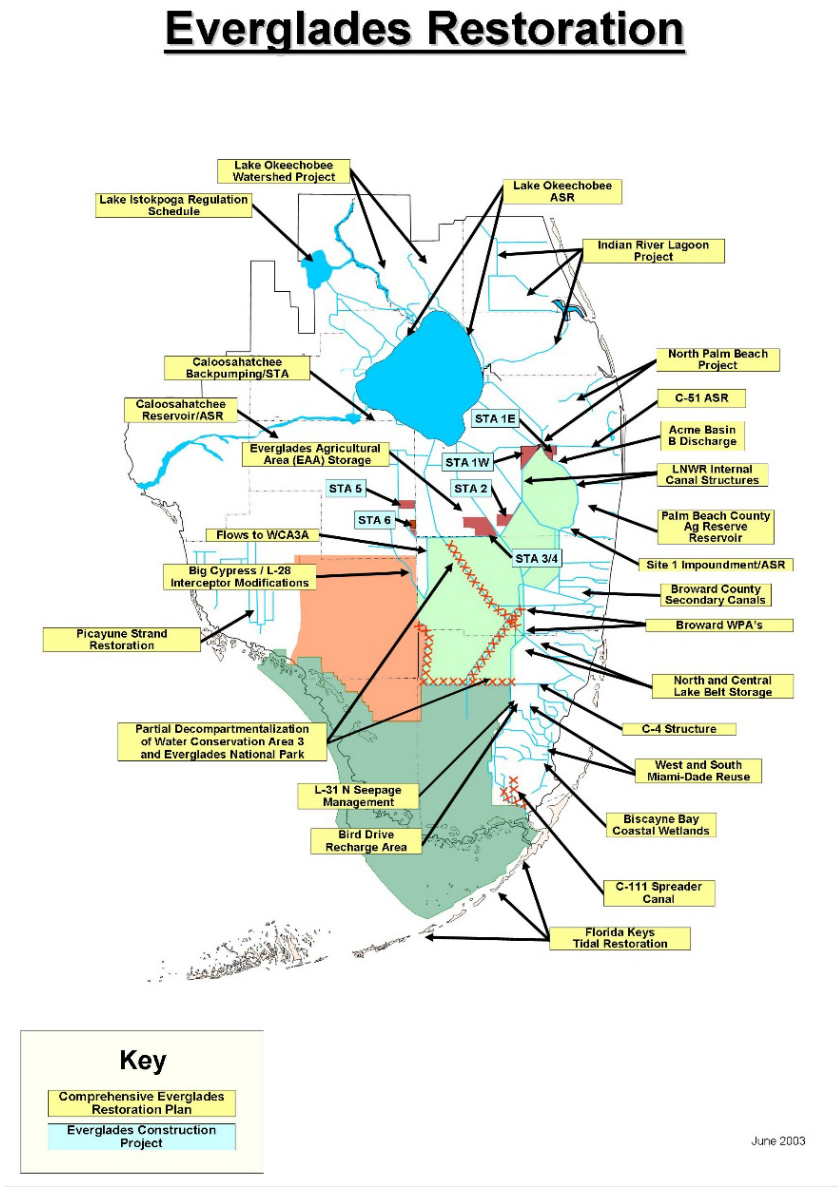
Are we really restoring this Ecosystem?

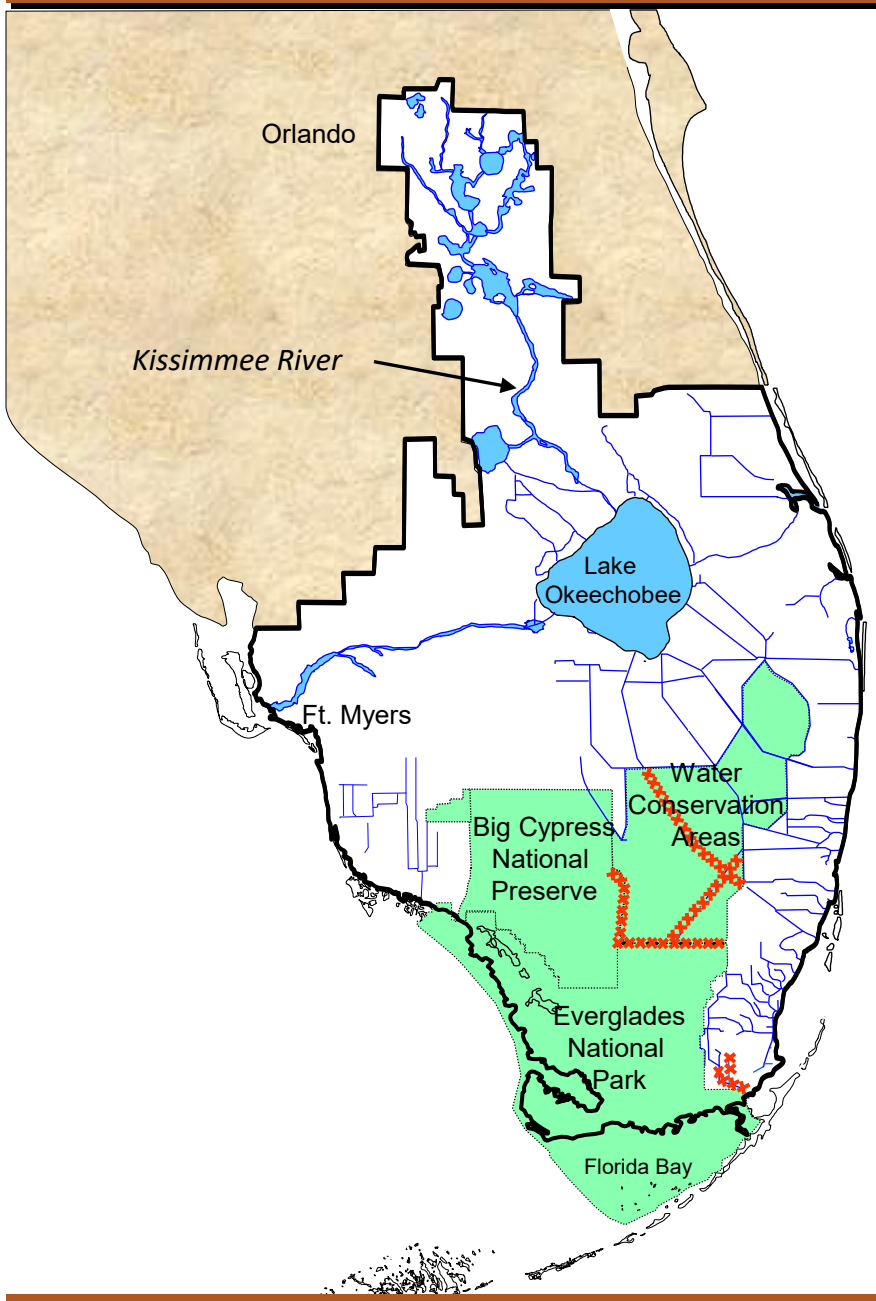




Comprehensive Everglades Restoration Plan

- *1999 Plan included 68 components to be completed over 35 years. 45 - 46 components still remain to be implemented.*

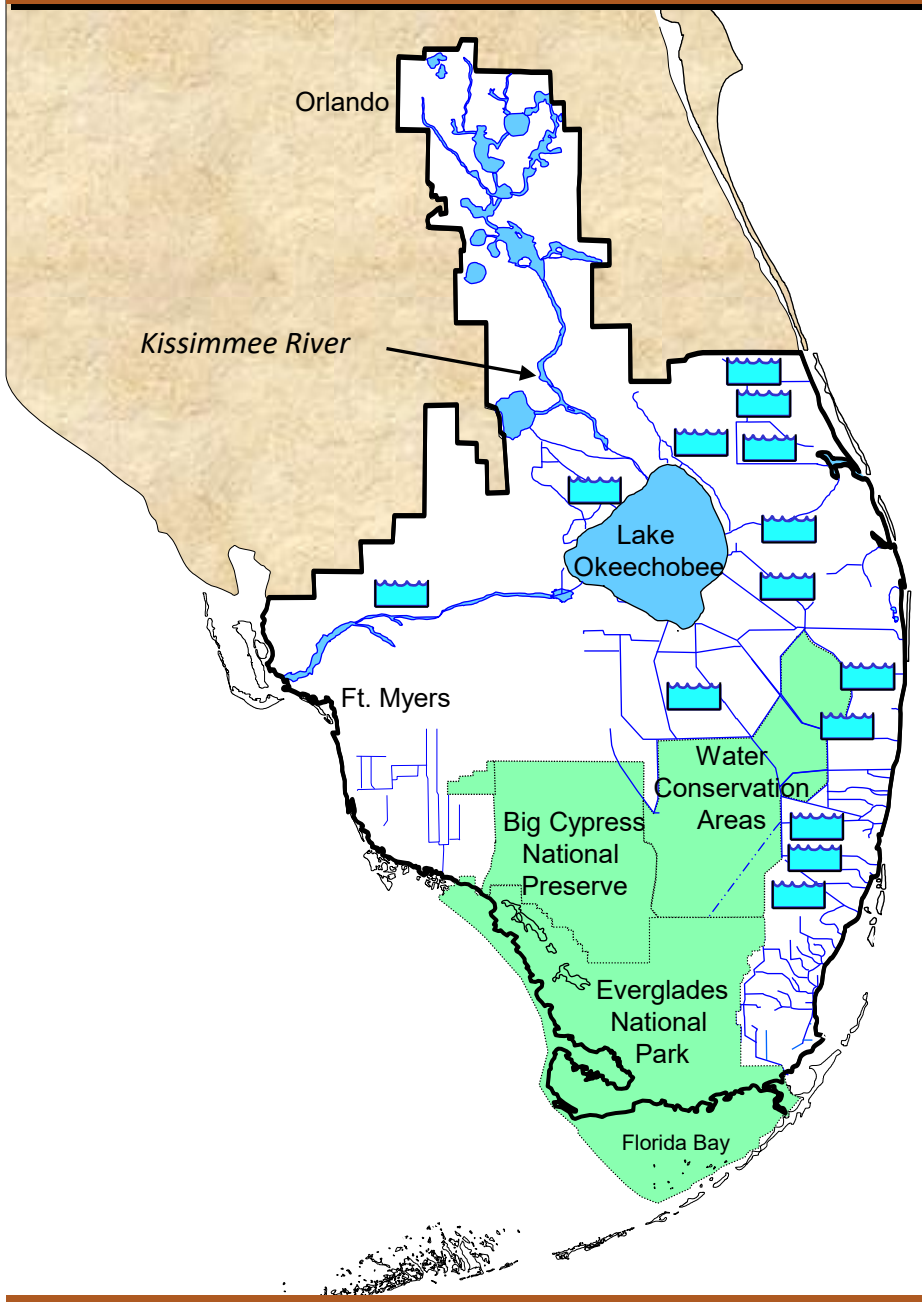




Comprehensive Everglades Restoration Plan

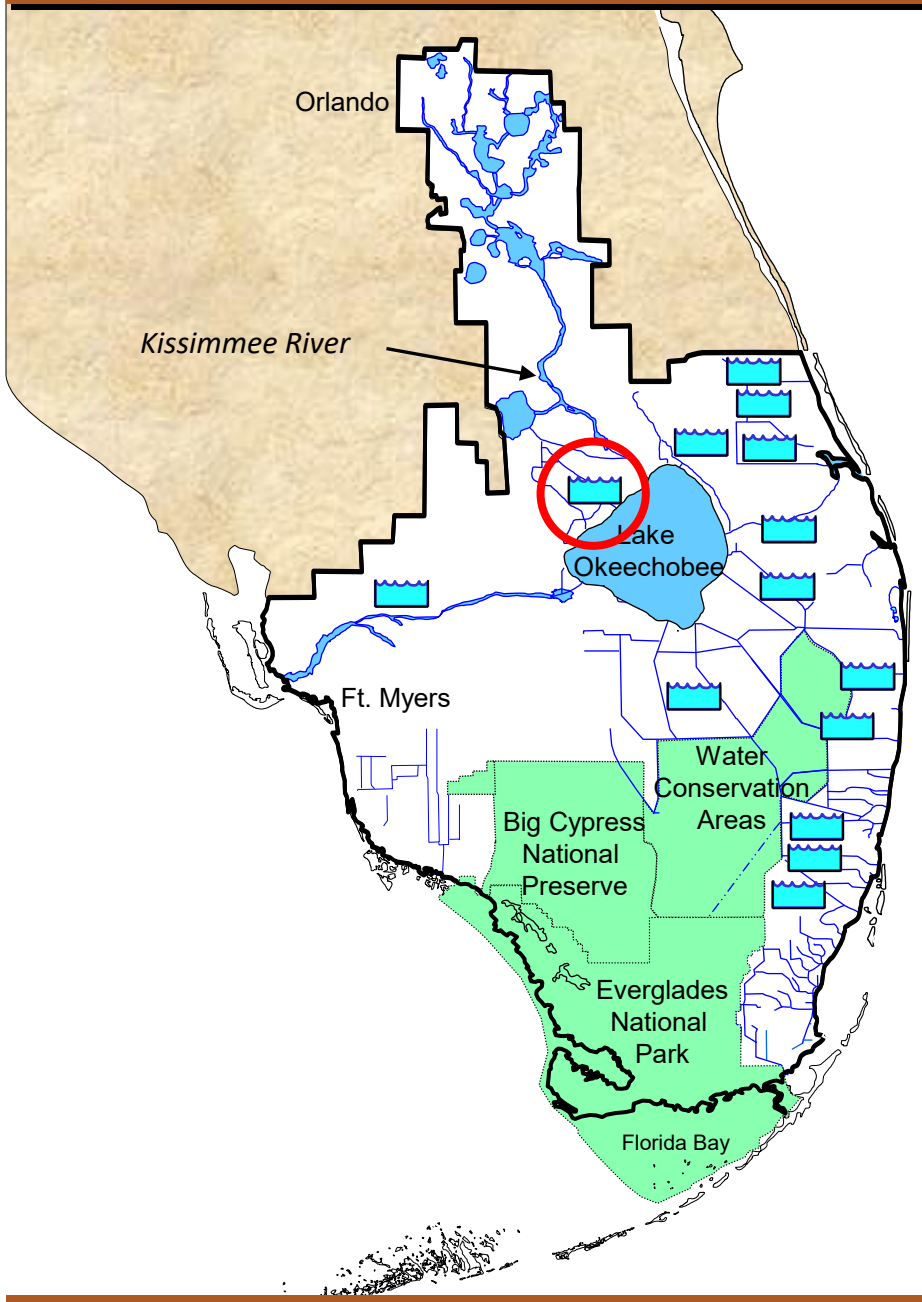
The GOOD: Actual Restoration!

Removing Barriers to Sheet Flow



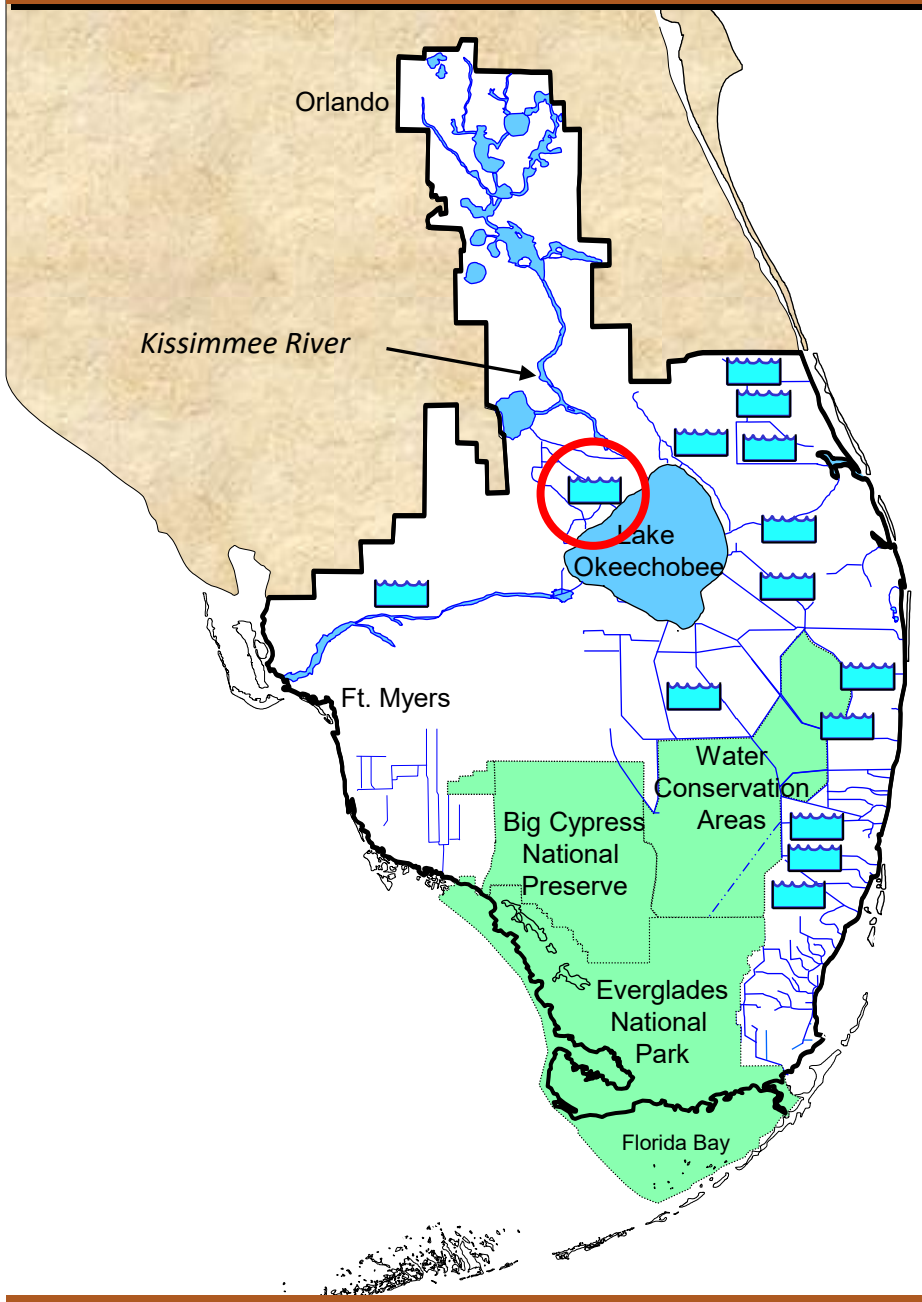
Comprehensive Everglades Restoration Plan

The Bad: 15+ Surface Water Storage Reservoirs



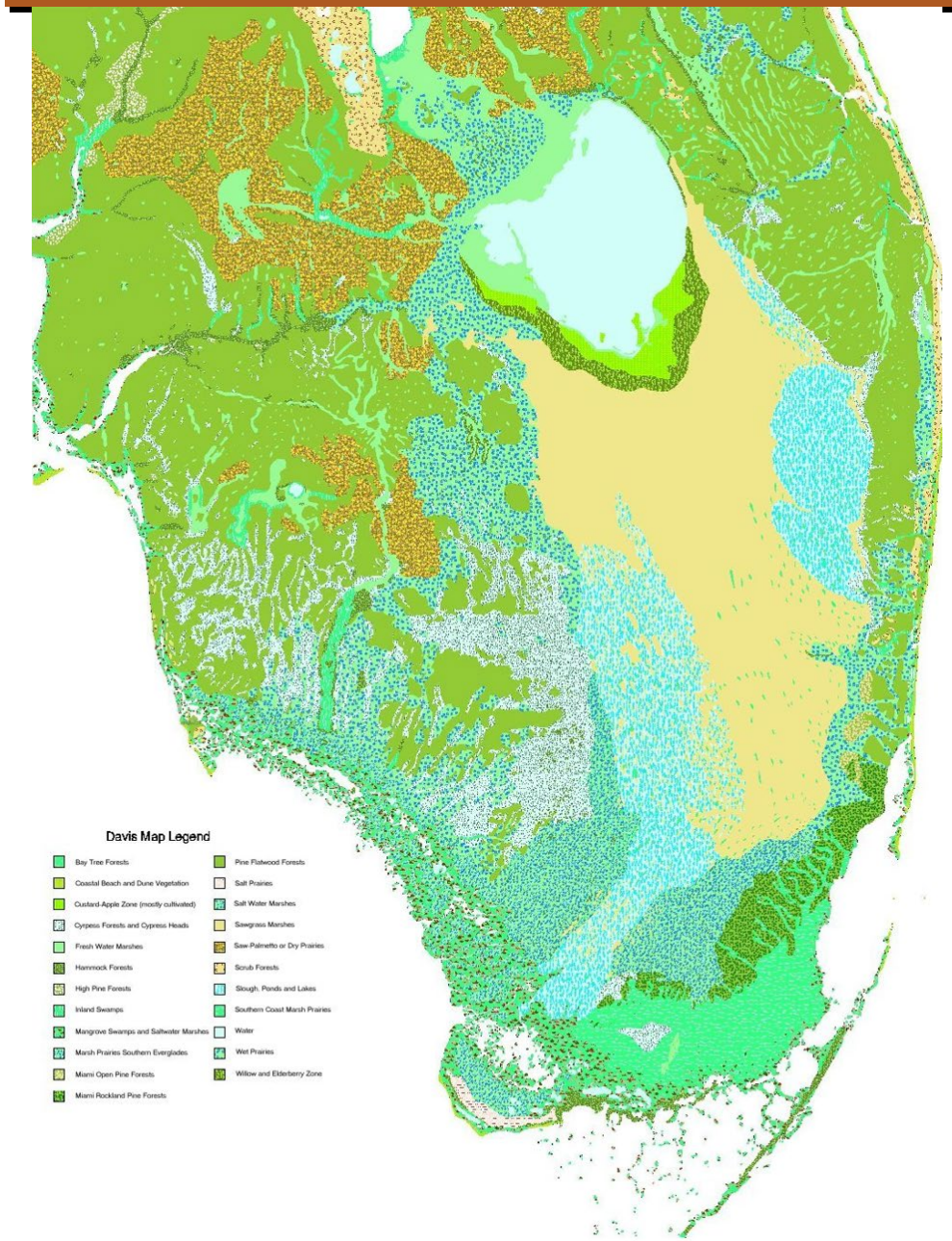
Comprehensive Everglades Restoration Plan

- Reservoir features for historic restoration? How is this restoration?
- Seminole Tribe environmental justice experience with Lake Okeechobee Water Restoration Project (LOWRP) north of Lake Okeechobee
  - The primary water-storage capacity for the project is ASR wells, which can store up to 448,000 acre-feet per year. The storage capacity of the Reservoir (aka-Wetland Attenuation Feature (WAF)) is a comparatively small 46,000 acre-feet – about 10% of the planned annual capacity of the ASR wells.
  - Lake Okeechobee stores an amount of water vastly greater than the volume of the WAF Reservoir. The entire volume of the WAF Reservoir (46,000 acre-feet) is equivalent to only 1 inch of water in Lake Okeechobee. Since Lake Okeechobee would be, in effect, the storage reservoir for 69% of the ASR wells, why not consider making Lake Okeechobee the storage reservoir for all ASR wells, and eliminate the WAF? Is 1-inch of temporary control of the Lake Okeechobee water level worth $1 billion to taxpayers?
  - Environmental Justice Issue for Seminole Tribe: Threat of levee breach of Reservoir would devastate Brighton Reservation from flooding. Concerns of cultural and burial resources impacts from WAF Reservoir.
- USACE HQ agreed with Tribe and removed Reservoir (WAF) from project features. Project now is only a ASR and Wetland Restoration featured project.



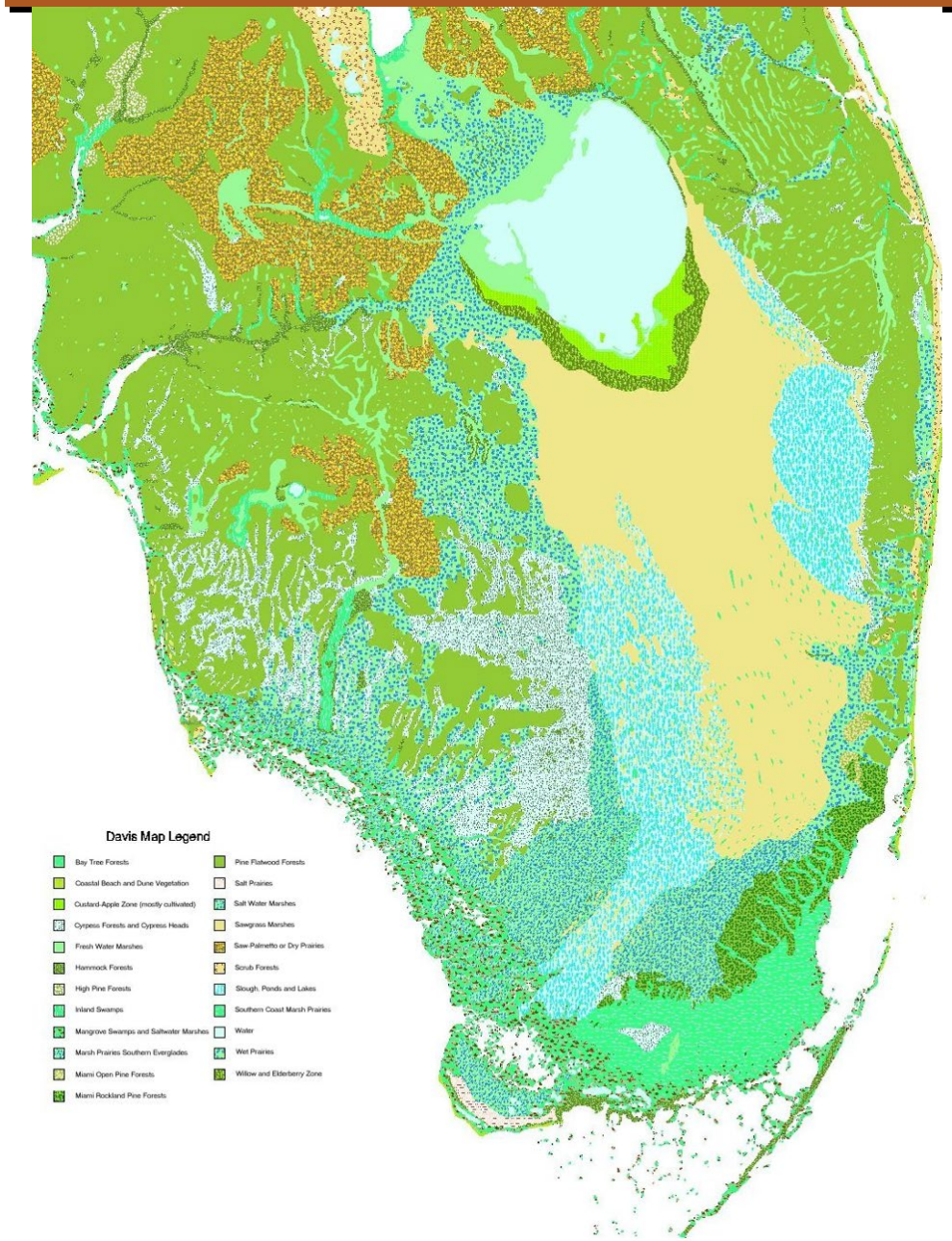
How we deviated from the original goal?

- Other flood control related projects became integrated into CERP
- Projects not directly related to original restoration goals took priority
  - **Original goals: Remove the levees, restore sheet flow and improve the water quality**
  - Tended to provide for flood control along developing coastal areas instead of meeting original goals for restoration.



How do we restore it?

- **Incorporation of Principles of Indigenous Traditional Ecological Knowledge (ITEK)**



ITEK Principles for Everglades Restoration

- Preservation of Remaining Habitats is key
- *True Restoration not Highly Engineered Water Control Improvements*
  - *Restoration: backfilling of ditches, removal of levees, water quality improvement, restoring sheet flow*
  - *Versus: Engineered Water control improvements: Reservoirs, STAs, new canals, etc.*
- *Only a small part of this restored system is really natural while the remaining "restoration" is comprised of man-made and operated systems (unnatural) that are designed to mitigate the impacts of the CS&F project and can only mitigate to a certain degree. Never ending money pit. Expensive to build and expensive to operate*
- *Respect for Cultural and Burial Resources*
  - *With assumption of Section 404 CWA review to the State by USACE, there could be further erosion to ITEK*
  - *Biden Administration has shown a willingness to incorporate ITEK into Federal Policy*
- *Allow Nature to heal itself as Creator saw fit*