Water Management in South Florida: Can the Everglades Be Restored While Meeting Other Water Demands?

Web site for more information: www.evergladesplan.org

Reading for next week: Ch. 15
**Drainage History**

**FIRST LARGE SCALE DRAINAGE EFFORT IN SOUTH FLORIDA**

**HAMILTON DISSTON CONSTRUCTION 1881-1894**

**Drainage History**

**ST. LUCIE CANAL CONSTRUCTED 1916 TO 1928**

**CALOOSAHATCHEE RIVER DREDGED**

**AGRICULTURAL CANALS DREDGED**

**EVERGLADES DRAINAGE DISTRICT WORKS 1905-1928**

**Drainage History**

“River of grass” replaced (now) by sugar cane fields and “water conservation areas”

[Map of drainage efforts and diagrams showing the timeline of different projects.]

[Images of landscapes showing changes from wetland to agricultural fields.]
Drainage History

Continued Expansion of Agriculture and Urban Areas

Dramatic Change in Flows

Environmental Consequences

CENTRAL & SOUTHERN FLORIDA (C&S) PROJECT

1,000 miles of canals
720 miles of levees
~200 water control structures

Areas Flooded in 1947

Too dry in Everglades National Park

Too wet in the water conservation areas

Loss of tree islands

Loss of wading and water birds
The “CERP” Approved in the Water Resources Development Act of 2000

Includes more than 60 elements
Will take more than 30 years to construct
Will cost an estimated $7.8 billion

Constraints

Urban Water Supply and Flood Control
Agriculture
Lake Okeechobee
Invasive Species
Water Quality

Principal Features

- Surface Water Storage Reservoirs
- Aquifer Storage Recovery
- Stormwater Treatment Areas
- Reuse Wastewater
- Seepage Management
- Removing Barriers to Sheetflow
- Operational Changes to Structures
Aquifer Storage Recovery (ASR) Idealized System

CERP ASRs will include over 300 wells each with a capacity of 5 million gallons per day

Major Questions
- Effects on regional groundwater flow and pressures below confining unit
- Efficiency of recovery after long storage periods

Additional Questions
- Fate of potential contaminants (e.g. microbes, mercury, nutrients) that are present in source water
- Geochemical and biogeochemical reactions due to mixing and water rock interactions
Most Important Question

- Will recovered water be of suitable quality for the ecosystem?
  "Pilot" projects to address these questions

Seepage Barriers

- Conversion of remnant mining pits, 60-80 feet deep, to reservoirs
  Requires isolation from surrounding aquifer!

Additional Seepage Barriers

- Pilot studies to evaluate technology
  Limit subsurface flow out of central Everglades

Implications for Success of Restoration Efforts

- Importance of characterizing hydrogeologic and hydrogeochemical properties
- Well designed pilot projects will require 5-10 years to yield results
- Hydrogeologic conditions may limit storage options
- Need for contingency planning now