

RESTORING THE Everglades

Myriad projects comprise the Comprehensive Everglades Restoration Plan, and planning and managing those projects is proving as challenging as the restoration work itself.

By John Miller, Col. Robert Carpenter, M.SAME, USACE, and Charles Padera

To say that planning for and restoring the Florida Everglades—America's only subtropical preserve—to its original, natural state is a major challenge would be the ultimate understatement. The \$8 billion plan is as immense as it is ambitious. With 68 projects grouped into more than 50 inter-related structural or operational changes, all are designed to benefit more than 2.4 million-acres of South Florida's ecosystem.

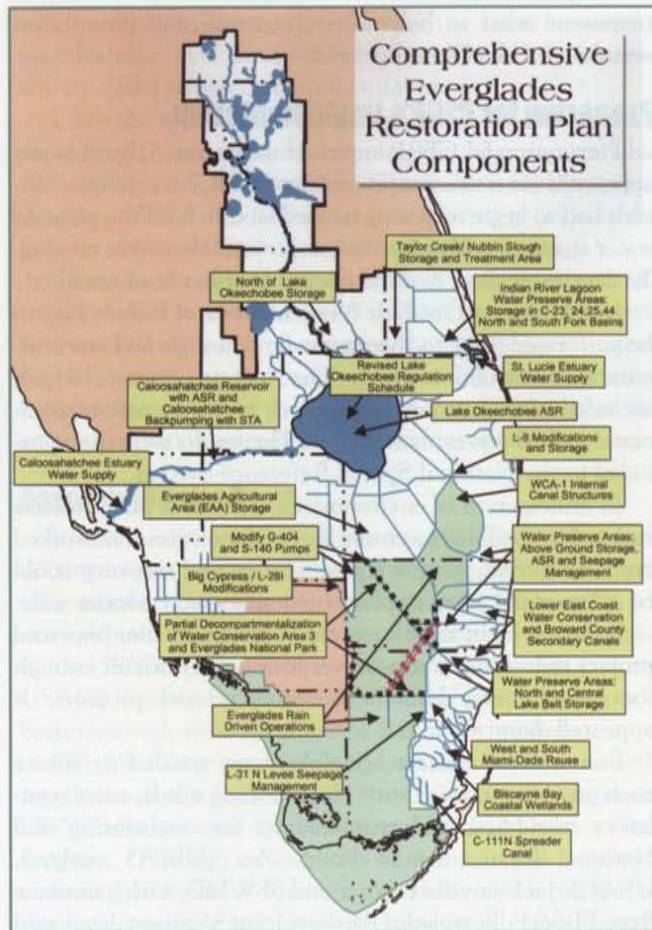
The Comprehensive Everglades Restoration Plan (CERP) got its start in the 1990s, when it became apparent that flood control, water supply, navigation and environmental preservation projects dating back to the 1940s had damaged the Everglades and the South Florida ecosystem. The U.S. Army Corps of Engineers (USACE) developed CERP after the agency was charged with two tasks: restore, preserve and protect the Everglades and the South Florida ecosystem; and simultaneously provide for the region's urban and agricultural water supply, water conditions and flood control needs. USACE teamed with the South Florida Water Management District (SFWMD) on CERP to complete the projects over a 30-year period.

Environmental Balancing Act

CERP's overarching goal is to restore more natural water flows that approach historic conditions. The idea is that by so doing, the ecosystem will once again effectively support a variety of wildlife species. And, with proper planning, the region's long-term water usage needs can be met.

The key to CERP is to balance the quantity, quality, timing and distribution of water among various restoration projects. To achieve that balance, planned CERP projects include developing more than 170,000-acres of new reservoirs and 37,000-acres of wetland-based water treatment areas, as well as wastewater reuse plants and seepage management projects. Manmade levees and canals in natural areas will be removed as well so that waterways can exist in their natural states.

Over time, the projects are expected to improve habitats enough to promote the recovery of native plants and animals. Nearly 70 endangered and threatened species, including the West Indian manatee, Florida panther, and numerous birds and reptiles, exist in the region today.



Pre-CERP Restoration

Prior to CERP's approval, design and work began on seven environmental reconstruction projects within the South Florida Ecosystem—projects deemed so critical they could not wait for the initiation of CERP.

Three of those projects have been completed:

- **Ten Mile Creek**, which provided an above-ground reservoir and pump station with a gated water-level control to store stormwater, along with a stormwater treatment area to further enhance water quality prior discharge.
- **East Coast Canal Structures**, which provided gated control

structures to raise water levels to prevent Everglades drainage and enhance regional water supplies.

- **Western C-11 Water Quality Improvement**, which improved the quality and timing of stormwater discharges to the Everglades Protection Area by separating seepage from stormwater runoff and pumping relatively clean seepage waters into a reservoir.

The remaining pre-CERP projects underway include making structural modifications to the Southern Corkscrew Regional Ecosystem Watershed/Imperial River Flow Way to re-establish natural water flow patterns; adding culverts along the Western Tamiami Trail in the Ten Thousand Island National Wildlife Refuge, the Big Cypress National Preserve and Everglades National Park; dredging more than 8-million-cu-yd of organic sediment in Lake Trafford and re-using it on agricultural lands; and building stormwater treatment areas to help water retention and phosphorus removal at Lake Okeechobee.

Preparing for CERP's Implementation

Preparation for CERP implementation, once the plan was approved, was a massive project unto itself. For example, officials had to begin acquiring needed land to hold the planned water storage and land-intensive projects that were coming. To date, more than half the needed land has been obtained.

In addition, a Geodetic Vertical Control Survey had to be performed prior to the vast scale of design and environmental construction work. The survey program, which included route reconnaissance, set or recovered approximately 1,000 survey monuments. The results were then provided to the National Spatial Reference System.

In anticipation of environmental concerns, pilot projects had to be scheduled to ensure that technologies that worked on a small scale, such as aquifer storage and recovery, could be as successful when implemented on a much grander scale.

Another main issue was how to establish timelines and project milestones to track everything. It's difficult enough for one project, but for 68 inter-related projects, it appeared daunting.

Standardized project schedules were needed to ensure each project complied with programming needs, strict regulatory mandates, and requirements for engineering and National Environmental Policy Act (NEPA) analyses. USACE-Jacksonville District and SFWMD, with assistance from PBS&J's Everglades Partners Joint Venture, developed a CERP Project Template and Master Implementation Sequencing Plan (MISP). The template provides project teams with an agreed-upon process of action that sequences milestones and activities into a single schedule. The MISP groups and sequences CERP projects to meet goals with the best use of time, staff and funding.

Accelerating Projects

Given the perceived length of time involved in planning and executing CERP projects, based on the template and MISP, SFWMD identified eight projects that would begin immediately and follow a "dual-track" mode. Projects in

this group, dubbed the "Acceler8 Program," receive initial funding from SFWMD and begin even though the federal planning and approval process is continuing. Accelerating this group of projects is expected to speed completion of CERP projects by several years.

The "Acceler8" projects are in different planning or review stages.

- **Biscayne Bay Coastal Wetlands, Phase 1:** A component of a larger project that expands and restores wetlands adjacent to Biscayne Bay.
- **C-111 Spreader Canal:** Provides more natural sheetflow to Florida Bay, eliminates harmful freshwater discharges, and improves freshwater and tidal wetlands and near-shore habitat.
- **C-43 West Storage Reservoir:** Controls stormwater and freshwater flow to the Caloosahatchee Estuary using a 160,000-acre-ft reservoir.
- **C-44 Reservoir/Stormwater Treatment Area:** Adds a 6,100-acre stormwater treatment area and a 3,550-acre above ground reservoir to capture and treat excess stormwater runoff before it enters the St. Lucie Estuary and Indian River Lagoon.
- **Everglades Agricultural Area Reservoir Phase 1/Bolles and Cross Canals:** Adds a 190,000-acre-ft above ground reservoir to capture and store Lake Okeechobee releases and agricultural runoff to protect coastal estuaries.
- **Everglades Agricultural Area Stormwater Treatment Area Expansion:** Expands existing state-built stormwater treatment areas by 4,560-acres.
- **Picayune Strand (Southern Golden Gate Estates):** Restores natural water flows to 85-sq-mi of land drained in the 1960s for land development.
- **Five Water Preserve Areas:** Diverts urban runoff into above ground impoundments to improve Everglades water quality and increase the spatial extent of wetlands adjacent to the Everglades.

Feeding a River of Grass

The Florida Everglades, sometimes referred to as a "river of grass," is part of an ecosystem that covers 16 counties over an 18,000-sq-mi area. CERP's ultimate goal is to restore the South Florida ecosystem while addressing the water supply and flood protection needs of a highly populated region. The large number of projects, spread over an extensive geographic area, required to achieve these bold goals may appear overwhelming at first glance. But with careful planning and the productive Corps/SFWMD partnership, CERP's goals appear to be within reach. The 21st century may well see the historic "river of grass" once again in concert with a thriving South Florida. TME

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