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South Florida Ecosystem Restoration and the Comprehensive Everglades Restoration Plan

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Summary

The Everglades, a unique network of subtropical wetlands, is now half its original size. Many factors have contributed to its decline, including flood control projects and agricultural and urban development. As part of a larger restoration program for South Florida, the U.S. Army Corps of Engineers (Corps) and other federal, state, tribal, and local agencies collaborated to develop a Comprehensive Everglades Restoration Plan (CERP or the plan). CERP focuses on increasing storage of wet season waters to provide more water during the dry season for both the natural system and urban and agricultural users. The plan consists of 68 projects estimated to take more than 30 years and $10.9 billion (in 2004 dollars) to complete. The Water Resources Development Act (WRDA) of 2000 (P.L.106-541) authorizes $1.4 billion for initial construction projects and their operation and maintenance. The federal government will pay half the plan's costs and an array of state, tribal, and local agencies the other half. Major issues associated with the plan include project priorities, timely completion of restoration, phosphorous mitigation, effectiveness of restoration efforts, uncertainties in technologies and costs, and effect on the Corps budget. This report outlines the history and current conditions of the Everglades, CERP legislation, and associated issues. It will be updated as events warrant.

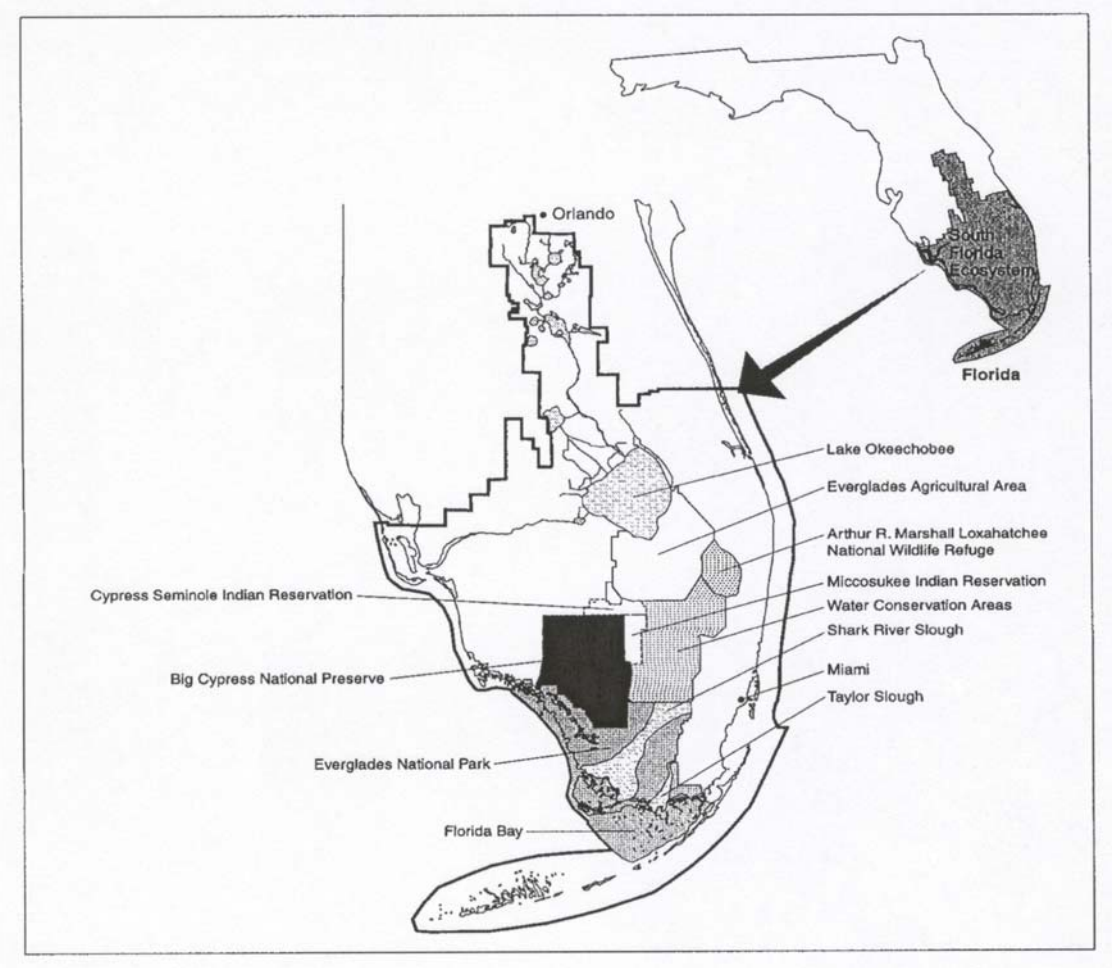
Introduction

The Water Resources Development Act of 2000 (Title VI, P.L. 106-541)[1] authorized involvement of the U.S. Army Corps of Engineers (Corps) in projects to restore the Everglades; these projects are coordinated under a planning framework — the Comprehensive Everglades Restoration Plan (CERP or the plan). The Everglades is the

[1] The 109th Congress is considering a Water Resources Development Act — H.R. 2864. The House and Senate both passed different versions of H.R. 2864, and conferees were named in September 2006. For more information, see CRS Report RL33504, *Water Resources Development Act (WRDA): Corps of Engineers Authorization Issues*, coordinated by Nicole T. Carter. Hereafter referred to as *WRDA Report*.

defining component of the South Florida ecosystem (see **Figure 1**), which incorporates 16 national wildlife refuges and four national park units. South Florida is also home to more than six million people and a large agricultural economy. There is wide agreement that major changes in water quantity, quality, timing, and distribution since the 1950s have significantly altered the region's ecology. During the dry season, the current water regime in South Florida is unable to sufficiently supply freshwater to meet both natural system needs and urban and agricultural demand. Water shortages are expected to become more frequent as demand by urban and agricultural consumers increases.

Figure 1. Principal Components of the South Florida Ecosystem



Source: Adapted from an illustration prepared by the South Florida Ecosystem Restoration Task Force.

Everglades History

The Everglades is a network of subtropical wetland landscapes that once stretched 220 miles from Orlando to Florida Bay. Several hundred lakes fed slow-moving creeks, called sloughs, that joined the Kissimmee River. Depending on rainfall, water flowed south down the river or topped the river's banks and flowed through 40,000 acres of marsh to Lake Okeechobee. During the summer rainy season, the lake would overflow its southern shore, spilling water into the Everglades. Due to flat topography, this water moved slowly south to Florida Bay through a shallow 40-mile wide, 100-mile long sawgrass marsh. These wetlands acted as natural filters and retention areas that recharged

underlying aquifers. The Everglades' combination of abundant moisture, rich soils, and subtropical temperatures supported a vast array of species. However, by the mid-1800s, many in South Florida viewed the Everglades as an unproductive swamp. Flood control and reclamation efforts that manipulated the Everglades hydrology promoted development of the East Coast of Florida and permitted agriculture on reclaimed marshland. Principal among the human interventions affecting the Everglades is the Corps' Central and Southern Florida (C&SF) project, which was first authorized by Congress in 1948 to control floods and to satisfy other water management needs of South Florida. Water flows in South Florida are now directed by 1,000 miles of canals, 720 miles of levees, and almost 200 water control structures.

Current Conditions and Recent Restoration Efforts

Management and development activities have markedly changed the Everglades' water regime. Because of the C&SF project, water that once flowed from Lake Okeechobee across the Everglades in a slow-moving sheet is directed into canals and rivers discharging directly to the ocean. Experts now believe that the Everglades ecosystem has changed because it now receives less water during the dry season and more during the rainy season. The altered water regime combined with urban and agricultural development have reduced the Everglades to half its original size. Habitat loss has threatened or endangered numerous plant and animal species.

The Everglades is also harmed by degraded water quality. Pollutants from urban areas and agricultural runoff, including excess nutrients (such as phosphorous and nitrogen), metals, and pesticides, have harmed plant and animal populations. Nutrients entering the Everglades have caused a decline in native vegetation and an overabundance of invasive exotic species. Changes in the quantity, quality, and timing of freshwater flows have also disrupted the equilibrium of coastal estuaries and reef systems.

The federal government and the State of Florida have undertaken many restoration activities, such as acquiring lands and preparing a multi-species recovery plan. The South Florida Ecosystem Restoration Task Force (Task Force), which was formalized by the Water Resources Development Act of 1996 (P.L. 104-303), coordinates the numerous restoration activities. The Task Force facilitates restoration using the following goals: (1) "get the water right," (2) restore, preserve, and protect natural habitats and species, and (3) foster compatibility of built and natural systems. Achieving these goals for South Florida is estimated to cost nearly $20 billion, of which $10.9 billion would be spent under CERP. This plan is the principal mechanism under the broader restoration program for "getting the water right," i.e., restoring natural hydrologic functions and water quality, and providing water supplies.

Comprehensive Everglades Restoration Plan

CERP focuses on water quantity, quality, timing, and distribution. The plan is designed to capture and store freshwater, which is currently discharged to the ocean, for use during the dry season; an *estimated* 80% of the captured water would be directed to the natural system, and the remaining 20% would be for agricultural and urban consumption. CERP calls for removing 240 miles of levees and canals, and building a

network of reservoirs, underground storage wells, and pumping stations that would capture water and redistribute it to replicate natural flow.

Authorizations and Appropriations. Title VI of the Water Resources Development Act (WRDA) of 2000 approved CERP as contained in the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement*, as modified by the act. It also authorized $700 million in federal funds for an initial set of CERP projects. As other CERP projects are prepared, they will be proposed for authorization in the subsequent WRDAs, which are often biennial.[2] Since WRDA 2000, no additional CERP projects have been authorized. The 109th Congress is considering in proposed legislation the authorizations of the Indian River Lagoon and Picayune Strand restoration projects (estimated total costs of $1.2 billion and $363 million, respectively).

Title VI of WRDA 2000 established that construction as well as operation and maintenance costs of CERP projects would be equally shared by Floridian stakeholders and the federal government.[3] CERP authorization was achieved after years of delicate negotiations among federal, state, local, and tribal stakeholders. Federal agencies responsible for components of CERP receive appropriations for these activities through their annual appropriations bills. Information on the status of appropriations for CERP activities performed by the Corps is available in CRS Report RL33346, *Energy and Water Development: Appropriations for FY2007*, coordinated by Carl Behrens. Appropriations status for CERP activities performed by Department of the Interior agencies is available in CRS Report RL33399, *Interior, Environment, and Related Agencies: FY2007 Appropriations*, coordinated by Carol Hardy-Vincent.

Current CERP Issues

While support for CERP approval was rather broad, some reservations remain over implementation. Recent concerns have included how projects are being prioritized, the pace of federal efforts and investments, and the pace of phosphorus mitigation efforts. Other issues include effectiveness of restoration efforts; uncertainties in technologies and their costs; and the plan's effect on the budget of the Corps.

Project Priorities and Costs. Federal investments in water resources projects are intended to be made in the national interest. Analyses of projects are to consider the national benefits, with local and regional benefits playing a minor role in analyses. Under WRDA 2000, Congress approved the CERP framework because of its overall national benefits. A concern among some observers is that some specific projects proposed for authorization or under development have primarily local benefits. For example, there are differing opinions on the level of federal participation in the Indian River Lagoon project. Proponents for authorizing appropriations for the Indian River Lagoon Project (IRL)[44]

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[2] No WRDA has been enacted since WRDA 2000.

[3] Operation and maintenance costs are estimated at more than $180 million annually for the completed plan.

[4] The IRL has been altered by unnaturally large and poorly timed freshwater discharges. One consequence of these discharges is the accumulation of muck on the bottom of the estuary, which

(continued...)

argue that restoring the IRL should be a national priority, because it is an estuary of national significance and will restore the seabed floor, revive bottom-dwelling communities, and enable excess freshwater to be stored in reservoirs, instead of being dumped into the ocean. Some critics contend that the restoration of IRL would largely serve local interests, primarily because it aims to benefit agricultural and recreational interests, and that environmental benefits will largely be contained and not spread throughout the Everglades ecosystem.[5] One reason that the issue of who benefits from IRL authorization has received some attention is that the project's estimated costs have increased since its original formulation under CERP.

Timely Completion of Restoration. There exists serious concern that delays or changes to related projects or CERP components may jeopardize the plan's feasibility. Delays in the completion of the Modified Waters Deliveries Project is an example of this issue. Without this project, the water flows needed to undertake CERP components on the eastern side of the Everglades National Park cannot be met. WRDA 2000 established that no funds for parts of CERP can be appropriated until the modified waters project is complete. No CERP projects have been completed since enactment, and all 15 CERP components scheduled for completion in 2005 have been delayed.[6]

Phosphorus Mitigation. Another area of controversy that is related to potential delays in restoration stems from a May 2003 Florida state law (Chapter 2003-12).[7] The law authorizes a plan to mitigate phosphorus pollution reaching the Everglades. Some critics of the law argue that the plan extends previously established phosphorus mitigation deadlines and may compromise restoration efforts. The law's proponents argue that the plan represents a realistic strategy for curbing phosphorus. In the Interior and Related Agencies Appropriations Act, FY2006 (P.L. 109-54) there are several provisions that condition funds for restoration on the achievement of water quality standards in federal properties.[8] These provisions were also included in the FY2004 and FY2005 Interior appropriations. If water quality standards are not achieved, appropriations for restoration may be reduced according to provisions in these acts. The enacted language indicates

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[4] (...continued)
has resulted in reduced water transparency and altered communities of seagrass beds. These discharges also bring unnaturally high levels of phosphorus and nitrogen into the estuary, which, according to scientists, alters native vegetation and habitat for native wildlife.

[5] For more information, see *WRDA Report*.

[6] National Research Council, *Progress Toward Restoring the Everglades: The First Biennial Review, 2006*, Prepublication version (Washington, DC: Sept. 27, 2006). Hereafter known as the *First Biennial Review*.

[7] This law amends the Everglades Forever Act of 1994 (Florida Statutes §373.4592). Excess phosphorus is one of the primary water pollutants in the Everglades and is generally attributed to agricultural runoff. Excessive levels of phosphorus and other nutrients stimulate the conversion of native sawgrass marshes and sloughs to vegetation stands dominated by cattails. This conversion has resulted in less habitat for wading birds and other wildlife.

[8] For information on FY2007 Interior Appropriations, see CRS Report RL33399, *Interior, Environment, and Related Agencies: FY2007 Appropriations*, coordinated by Carol Hardy-Vincent.

congressional interest in overseeing the achievement of water quality standards for waters entering federal lands in Florida.

Restoration Effectiveness. Some environmental groups question the extent to which CERP contributes to Everglades restoration and whether so complicated and costly a plan is necessary. There is also concern that the plan does not include enough measures to improve water quality in the Everglades. Some groups and federal agencies have expressed concern that CERP does not explicitly give natural systems precedence in water allocation, and that it is focused first on water supply rather than ecological restoration. To address this point, the Corps revised the project implementation sequencing to include restoration activities in earlier phases. These changes have not satisfied some groups and scientists who continue to oppose CERP. Some environmental groups, which support CERP and Florida's financial participation in the effort, have expressed concern about the source of Florida's contribution. They argue against using funds designated for the purchase of land needed for restoration to finance other types of CERP projects. These groups contend that land acquisition is essential for successful Everglades restoration. A report by the National Research Council also suggests that acquiring needed land early in the restoration process is important for lowering the potential for *irreversible damage* due to development within the Greater Everglades.[9]

Technological and Cost Uncertainties. Ecosystem restoration is a relatively young science, and, in many cases, the technologies and scientific data to support it are still being developed. As a tool to manage the resulting uncertainty, CERP is being implemented using *adaptive management* — a flexible learning-based approach to implementation that integrates new information into the restoration effort as it proceeds. Consequently, CERP is not as detailed as a typical Corps feasibility proposal. Another mechanism for coping with uncertainty is the use of pilot projects. Title VI authorized funding of four pilot projects, including projects to test aquifer storage and recovery (ASR), a technology that has never been used on such a large scale as proposed under CERP. ASR uses underground aquifers as reservoirs to store surface water that will be withdrawn later during dry periods. These pilot projects have not been completed, and as a result, there are uncertainties in the effectiveness of early water storage projects.[10]

Corps Budget. Some stakeholders are concerned that the commitment of federal funds to CERP might limit the funds for other Corps projects across the nation. The sponsors and beneficiaries of traditional Corps projects that provide navigation and flood control are concerned that not only Everglades restoration but also other large-scale restoration activities, such as wetlands restoration in coastal Louisiana, may divert funds away from their projects.

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[9] National Research Council, *Re-engineering Water Storage in the Everglades: Risks and Opportunities* (Washington, DC: Jan. 2005).

[10] *First Biennial Review*.