Chapter 7A: Comprehensive Everglades Restoration Plan Annual Report

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SUMMARY

The overarching purpose of the Comprehensive Everglades Restoration Plan (CERP) is to restore, protect, and preserve the South Florida ecosystem while providing for other water-related needs of the region.

The restoration of the South Florida ecosystem is a challenging goal, and the implementing agencies, the U.S. Army Corps of Engineers (USACE) and the South Florida Water Management District (District or SFWMD), are moving forward with the knowledge that engineering and ecological uncertainties abound. Uncertainties will be reduced to the extent possible by pilot studies, field tests, and the incorporation of adaptive management strategies during project planning and design. Monitoring for water quantity, quality, and ecological benefits will take place during and after construction to help managers optimize overall performance.

Many individual projects comprise CERP, and will work together to improve both the natural and human environment. The focus of CERP is on the natural system of lakes, wetlands, forests, estuaries and bays, but the South Florida ecosystem also includes people. As such, CERP is designed to benefit both the people and natural system of South Florida as a whole.

REPORT CONTENTS

As an update to the previous consolidated reports, this chapter reports on the progress of CERP implementation since the *2006 South Florida Environmental Report* (SFER). Because the South Florida ecosystem is large and includes many habitat types, discussion is organized geographically as follows: Northern Estuaries, Lake Okeechobee, Everglades, Southern Estuaries, and Water Supply/Flood Protection. Ecological issues and problems are described, followed by projects that will provide benefits to the region.

The CERP Annual Report – 470 Report, developed by the District in partnership with the Florida Department of Environmental Protection (FDEP), is included as Appendix 7A-1 of this volume. The CERP Annual Report includes financial information and discusses implementation progress for FY2006 (October 1, 2005 through September 30, 2006).

Subsequent paragraphs in this summary section highlight initiatives that support CERP and the progress in implementing CERP during FY2006. It should be noted that the summary and remaining chapter sections also consider CERP in relation to Acceler8 (a state initiative consistent with the objectives of CERP), in response to a 2006 SFER peer review request. Further information on CERP is available on the website at http://www.evergladesplan.org.

STATE OF FLORIDA INITIATIVES THAT HELP TO IMPLEMENT CERP

Acceler8 is a state initiative that provides a mechanism for implementing CERP and other Everglades restoration projects. It was initiated with full support of, and coordination with, the USACE and the U.S. Department of Interior (USDOI).

The CERP plan approved by the U.S. Congress in 2000 included more than 60 components. Congress conditionally authorized ten components considered important to the early restoration effort; these components provide significant and immediate benefits to the South Florida ecosystem. The initially authorized components include reservoirs for capturing water now lost to the Atlantic Ocean and Gulf of Mexico, water treatment areas to clean water delivered to estuaries and the Everglades, and other important wetland restoration projects.

Eight of the ten initially authorized CERP components, along with additional stormwater treatment areas (STAs) that are part of the state of Florida's Long-Term Plan for Achieving Water Quality Goals (Long-Term Plan) and wetland restoration projects, are being expedited by the Acceler8 initiative. Acceler8 will also construct the Acme Basin B CERP Project, which was programmatically approved by Congress in the Water Resources Development Act (WRDA) 2000, and became part of the Long-Term Plan in 2006. Key to the Acceler8 initiative is development of a funding mechanism for the design and construction of the eight restoration projects.

For the sixth straight year, the U.S. Congress adjourned in 2006 without passing a WRDA bill. Thus, neither final authorization nor fund appropriation was realized for construction of two pivotal CERP projects: the Indian River Lagoon (IRL) – South and the Picayune Strand Hydrologic Restoration. Significant efforts produced the completed Project Implementation Reports (PIRs) needed for final congressional authorization, but design and construction of projects stalled due to lack of a WRDA bill. To maintain the momentum of the restoration efforts, the District moved forward with financing project construction with Certificates of Participation (COPs), a type of revenue bond.

During FY2006, the State of Florida and the District initiated the Lake Okeechobee and Estuaries Recovery (LOER) Program. Through LOER, several restoration projects will be constructed to improve environmental conditions for Lake Okeechobee and the estuaries. LOER activities are documented under the Lake Okeechobee Protection Program (see Chapter 10 of this volume).

LOER includes the construction of another initially authorized CERP project, the Taylor Creek and Nubbin Slough Reservoir and STAs. This CERP project will store and clean water entering Lake Okeechobee from the Taylor Creek and Nubbin Slough basins. Funded through a separate and distinct state appropriation, the Acceler8 staff at the District will complete the design and construction of this project.

Acceler8 and LOER thus will implement all or portions of eight of the ten CERP projects initially authorized by the U.S. Congress in 2000. These projects were identified as important early pieces of the restoration challenge. In addition, Acceler8 will design and construct the Acme Basin B Discharge CERP project, the C-43 CERP Reservoir, portions of the Biscayne Bay Coastal Wetlands CERP Project, and the Picayune Strand (Southern Golden Gates Estates) Restoration CERP Project. Consistent with CERP goals and objectives, the priority for water allocation under the Acceler8 initiative will be for ecological restoration and enhancement.

OVERALL CERP PROGRESS

Significant progress has occurred in planning for CERP projects and in constructing the Critical Restoration Projects (CRPs) that provide part of the foundation for CERP. CRPs were authorized in WRDA 1996 to develop specific water quality related projects essential to the restoration of the Florida Everglades. Several of these necessary precursors to CERP are substantially completed, including:

- Reservoirs and STAs constructed in the Taylor Creek and Nubbin Slough basins of Okeechobee County and in the Ten Mile Creek Basin of St. Lucie County to improve the timing and quality of water deliveries from these watersheds
- Culverts installed under the Tamiami Trail in Collier County to improve sheetflow to the Ten Thousand Islands area
- Pumps and divide structures constructed in the C-11 basin in Broward County to improve the quality of water being pumped to the Everglades

Since February 2006, through the Acceler8 program, the state has expanded three Everglades Agricultural Area (EAA) STAs and has begun construction on the C-43 (Caloosahatchee River) West Storage Reservoir, the C-44 (St. Lucie Estuary) Canal Reservoir and STA, the Acme Basin B Discharge Project, and the EAA Reservoir.

The Site 1 Impoundment (Fran Reich Preserve), Broward County Water Preserve Areas (WPAs) Project, Acme Basin B, and EAA Reservoir PIRs are drafted and under federal and state review. Congressional approval of these PIRs will allow federal appropriations, with eventual cost-sharing of land acquisition and construction being completed by the state. A map displaying the major components of CERP is presented in **Figure 7A-1**.

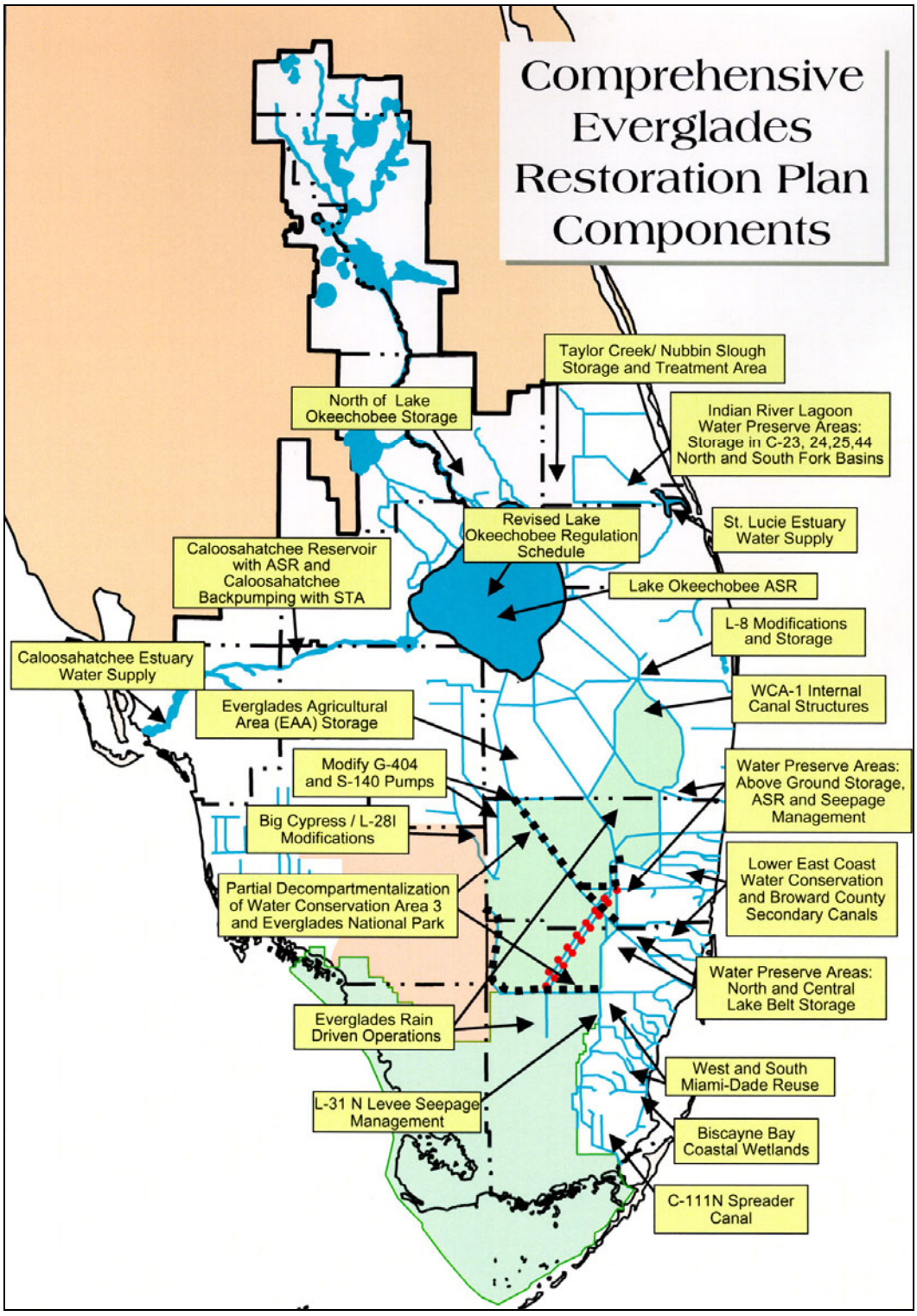

Figure 7A-1. Components of the Comprehensive Everglades Restoration Plan (CERP).

INTRODUCTION

The South Florida ecosystem has been altered by over 100 years of drainage and by the effects of urban and agricultural development. Some more recent alterations have occurred due to the construction of the Central and Southern Florida (C&SF) Project. The C&SF Project, which first was authorized by the U.S. Congress in 1948 to provide flood control, water supply, and fish and wildlife protection, has had unintended environmental impacts.

The South Florida ecosystem was compartmentalized by construction of the Herbert Hoover Dike around Lake Okeechobee, creation and drainage of the Everglades Agricultural Area (EAA), and construction of levees around the EAA and Water Conservation Areas (WCAs), which contain much of the remaining Everglades sawgrass and ridge and slough habitat.

CERP was developed in the 1990s through extensive planning and scientific study, and with widespread public participation. Public meetings and the input of thousands of people resulted in a widely supported final plan that balanced numerous competing interests. CERP modifies the C&SF Project, which was constructed by the USACE and is now operated largely by the District. CERP is intended to restore more natural flows of water, including Everglades sheetflow; to improve water quality; and to produce more natural hydroperiods in the remaining Everglades.

One of the most important initial steps in CERP is to capture and store a portion of the daily average 1.7 billion gallons of fresh water that is currently released into the Atlantic Ocean and Gulf of Mexico, and to clean this water, where needed, before delivering to the Everglades, the estuaries and Lake Okeechobee. The water storage projects allow water managers to capture harmful peak discharges and allow delivery of water when it is beneficial.

Seven principal features of CERP are designed to improve water quality, quantity, timing, and distribution. Each CERP project includes one or more of these features:

- **Surface Water Storage Reservoirs.** A total of 181,300 acres of aboveground and in-ground reservoirs to store millions of gallons of water.
- **Aquifer Storage and Recovery (ASR).** More than 300 underground water storage wells to store up to 1.6 billion gallons of treated water a day in confined aquifers.
- **Stormwater Treatment Areas (STAs).** Constructed wetlands totaling 35,600 acres to remove pollutants from water before it is discharged to the Everglades.
- **Wastewater Reuse.** Two advanced treatment plants to recycle more than 220 million gallons of wastewater per day, adding a new source of high quality water for the southern Everglades.
- **Seepage Management.** Barriers to stop the rapid underground seepage of water from the Everglades and so end the loss of millions of gallons of water each year.
- **Removing Barriers to Sheetflow.** Potential removal of more than 240 miles of canals and levees to restore the historic overland sheetflow through the Everglades wetlands. Sections of Tamiami Trail will be elevated to handle increased water flows contributed by CERP project features.
- **Operational Changes.** Changes in the regional water management system to benefit Lake Okeechobee, the Everglades, and the coastal estuaries.

BACKGROUND

The greater Everglades ecosystem historically included the Kissimmee River south of Orlando, through Lake Okeechobee, with the Caloosahatchee Estuary to the west, the St. Lucie Estuary to the east, and the Biscayne and Florida bays to the south. The Everglades covered a vast area of diverse habitats. Management of the Everglades and its estuaries and bays for human purposes began just over 100 years ago.

The size of the ecosystem has been substantially and irreversibly reduced, including loss of approximately half of the true Everglades. Before people intervened, most rainwater soaked into the ground in the region's great wetlands. As South Florida developed, the canal system worked very effectively but drained water off the land too quickly. As a result, approximately 1.7 billion gallons of fresh water per day on average is discharged to the Atlantic Ocean and the Gulf of Mexico.

Continual loss of water to the tide results in insufficient water for the environment and people during the dry season, although at times there may be too much water during the wet season. In addition, canals and highways that crisscross the Everglades interrupt the historic overland sheetflow. Further, water quality throughout South Florida has deteriorated as some untreated urban and agricultural storm water is sent directly to wetlands and estuaries.

An over-abundance or scarcity of water and degraded water quality affects plants and wildlife that require specific water levels and flows during different seasons. The remaining Everglades, and indeed the entire South Florida ecosystem, no longer exhibit the functions, richness, and area that defined the pre-drainage system.

The goal of Everglades restoration in South Florida is to recover an Everglades-type of ecosystem. What made the Everglades unique was its vast size and water flow through a single interconnected system. This created a variety of habitats needed by numerous plants and animals. A restored Everglades will be one that is defined by such characteristics as sheetflow across continuous interconnected wetlands, vast colonies of nesting wading birds, healthy and complex tree islands and seagrass meadows, a clean Lake Okeechobee, and ample habitat for endangered species such as the American crocodile (*Crocodylus acutus*) and snail kite (*Rostrhamus sociabilis*). The Everglades will not recover its defining characteristics if it continues to be treated as in the past; therefore, actions have been taken to restore the health of South Florida's ecosystem.

HOW CERP WILL HELP TO RESTORE THE SOUTH FLORIDA ECOSYSTEM

The following sections describe some of the causes of environmental decline in South Florida, along with the causes of problems with water supply and flood protection. The sections are organized by regions: Northern Estuaries, Lake Okeechobee, Everglades, Southern Estuaries, and Water Supply and Flood Protection. Much of this section has been drawn from the Restoration Coordination and Verification (RECOVER) 2005 Interim Goals and Interim Targets Report. (See Chapter 7B of this volume. for information on RECOVER monitoring and assessment activities.)

Northern Estuaries

The Northern Estuaries include the Caloosahatchee, St. Lucie and Loxahatchee estuaries, and the Lake Worth Lagoon. Within Florida, nearly 70 percent of recreational and commercial fisheries species — oyster, pink shrimp, blue crab, gray snapper, red drum, snook, stripped mullet and spotted sea trout — rely on estuaries for at least part of their life span. Major issues in these estuaries include damaging freshwater inflows, degraded water quality and habitat loss.

The eastern oyster (*Crassostrea virginica*) and submerged aquatic vegetation (SAV) are important components of the northern estuaries. Oyster bars and SAV provide important habitat for other animals such as fish that have a significant recreational and commercial value. Submerged aquatic vegetation beds provide habitat for many other plants and animals, stabilize sediments, and form the basis of food chains.

The eastern oyster supported a subsistence fishery prior to European colonization of the U.S., and in recent history has provided an important economic and cultural resource to coastal inhabitants, although there has been no commercial harvesting in the northern estuaries. Oysters improve water quality by filtering particles from the water and serve as prey and habitat for many other animals.

DECLINE OF ECOSYSTEM HEALTH IN NORTHERN ESTUARIES

The Caloosahatchee Estuary is located on the southwest coast of Florida. Most of the fresh water flowing into the estuary comes from the Caloosahatchee River. Historically, the Caloosahatchee River was a meandering system with numerous oxbows, flowing from its headwaters at Lake Hicpochee to the Gulf of Mexico. Activities that led to its degradation, beginning in the 1890s, include channelization, connection to Lake Okeechobee, and construction of an extensive canal network associated with agricultural development in the watershed.

The channelized portion of the Caloosahatchee River, also known as the C-43 Canal, along with the canal network, changed the timing, quantity and direction of runoff within the watershed, and led to abnormal salinity fluctuations. The tidally influenced portion of the estuary is reduced by the operation of the S-79 control structure, which allows periodic large regulatory (flood) releases from Lake Okeechobee. Prior to these impacts, the Caloosahatchee Estuary was a highly productive system with an abundance of aquatic plants and animals. Today, the abundance, health, and functionality of these species have been greatly reduced. SAV and the eastern oyster have been reduced from a widespread distribution to a sparse occurrence.

The St. Lucie Estuary, located on the southeast coast of Florida, flows into the IRL and the Atlantic Ocean. Historically, this estuary was a freshwater system influenced by ephemeral ocean inlets. When the St. Lucie Inlet was permanently established in 1898, the system became an estuary, characterized by abundant mangroves, oyster bars, and SAV. Agricultural and urban drainage projects, beginning in the 1910s, expanded the area that now drains into the estuary. The historic watershed was approximately one-third of its present size of almost 775 square miles.

Major drainage works constructed in the watershed include the C-23 and C-24 canals. The St. Lucie Estuary is connected to Lake Okeechobee by the C-44 Canal, which is used for navigation and regulatory releases from Lake Okeechobee. As a result, freshwater flow into the estuary tends to be excessive in the wet season and occasionally insufficient in the dry season. The estuary also has been degraded by thick deposits of mucky silt that cover large portions of the bottom and make it unsuitable for SAV and oysters. These sediments become re-suspended

by wind, current, and boat traffic, resulting in diminished light penetration through the water column.

The Loxahatchee River is also located on the southeast coast of Florida. The Loxahatchee Basin has been altered extensively by construction of canals, channelization of natural waterways, drainage and impoundment of wetlands, and stabilization of the Jupiter Inlet. Construction of the C-18 Canal disconnected the Northwest Fork from its headwaters, the Loxahatchee Slough. This resulted in periodic shortages of water for the Northwest Fork and increased flows into the Southwest Fork during storm events. Saltwater intrusion upstream into the Northwest Fork resulted in the loss of six river miles of cypress swamp and freshwater floodplain vegetation. Oysters and seagrass beds exist only in a limited area of the estuary.

The Lake Worth Lagoon, also located on the southeast coast of Florida, historically was a freshwater lake receiving water from wetlands along its western edge. Creation of permanent inlets to the lagoon changed it to an estuarine environment. Although regionally important natural resources remain, the cumulative effect of human activities over the past century significantly altered the lagoon environment. Changes affecting the hydrology include construction of major drainage canals (C-51, C-17, and C-16) and shoreline bulkheads, a causeway, channels, and port development. Discharges from the C-51 produce excessive periodic releases of fresh water that adversely impact estuarine biological communities. Limited numbers of oysters remain in the lagoon, and SAV populations are unhealthy and reduced in number.

Water management activities within the watersheds of these estuaries resulted in significant alterations in the timing; volume, or excess wet season and insufficient dry season water flows; distribution, as water now flows through canals instead of overland; and quality of water flowing into these estuaries. Channelization and water control structures have reduced the ability of these systems to filter nutrients and have further degraded water quality. These impacts reduce the ability of the watershed to provide water storage, dry season flows, water quality treatment, and fish and wildlife habitat. The objectives of many CERP projects are focused on reducing these impacts.

Pre-drainage estuarine systems received freshwater inflow primarily from direct rainfall and basin runoff that resulted in low nutrient inputs. These natural patterns of freshwater inflow in the northern estuaries sustained an ecologically appropriate range of salinity conditions with fewer salinity extremes.

Water management and dredging practices have major impacts on the presence of oysters and SAV within these estuaries. CERP projects that will restore more natural freshwater inflows into the estuaries are designed to provide beneficial salinity conditions, a reduction in nutrient concentrations and loads, and improved water clarity that will promote the reestablishment of healthy oyster bars and SAV communities. This should also improve the health of fish and other aquatic populations such as manatees.

HOW CERP WILL HELP TO RESTORE THE NORTHERN ESTUARIES

In the northern estuaries, CERP will help to enhance habitat conditions while providing for economic and recreational opportunities. CERP projects are expected to moderate freshwater discharges, diminish water quality and habitat loss, and enhance natural attributes such as SAV and oysters. This will be accomplished through habitat enhancement, as well as water storage and treatment projects. A detailed description of these projects can be found online in the Central and Southern Florida Project Comprehensive Review Study Final

Integrated Feasibility Report and Programmatic Environmental Impact Statement at: http://www.evergladesplan.org/pub/restudy_eis.cfm.

CERP projects that will are designed to benefit the Northern Estuaries include the C-43 Basin ASR project and the C-43 (Caloosahatchee River) Basin Storage Reservoir, an Acceler8 project. These projects will provide water management and water quality benefits by reducing salinity and nutrient impacts to the Caloosahatchee Estuary. The Palm Beach County Agriculture Reserve Reservoir project is designed to capture, store, and possibly treat excess water currently discharged to Lake Worth Lagoon.

The Caloosahatchee Backpumping with Stormwater Project is designed to benefit the estuary and Lake Okeechobee by capturing, storing, and treating excess basin runoff. The Lake Okeechobee ASR Project is designed to provide water storage that will directly benefit Lake Okeechobee and reduce regulatory discharges to the St. Lucie and Caloosahatchee estuaries. The Lake Okeechobee Watershed Project will provide water storage and treatment in the watershed and should result in more beneficial flows to the estuaries.

The IRL – South Project is designed to provide water storage, treatment of watershed runoff, and wetland rehydration; remove silt and muck; and provide artificial habitat in the St. Lucie Estuary. Acceler8 will construct the C-44 Reservoir and STA; this component of the IRL – South Project is expected to improve the quantity and quality of deliveries to the estuary.

EAA Storage Reservoirs are expected to provide water storage and treatment and reduce Lake Okeechobee regulatory releases to the estuaries. Acceler8 will construct the first phase of the EAA Reservoir Project to provide 190,000 acre-feet (ac-ft) of storage, which will help to improve deliveries to the existing STAs and to the Everglades and is expected to benefit Lake Okeechobee and the estuaries by providing additional system storage during the wet season.

North Palm Beach County projects are designed to provide direct and indirect benefits to the Lake Worth Lagoon and to the Loxahatchee River and Estuary through habitat restoration and water storage and treatment. The District already has constructed two water control structures to provide a flow-way from the L-8 basin storage reservoir to the Loxahatchee River, in order to restore more natural flows to this officially designated Wild and Scenic River. Further, the District has acquired the property and is constructing the belowground L-8 storage reservoir, a key element of this restoration project.

The Acme Basin Discharge Project is designed to provide water storage and treatment and to reduce regulatory discharges to Lake Worth Lagoon. This project is expected to eliminate the direct discharge of poor quality water to WCA-1. Acceler8 is currently constructing this CERP project, which was authorized for Programmatic Authority under WRDA 2000. Programmatic Authority is similar to the authorization received in 1996 for the Everglades Ecosystem Restoration CRPs with a total estimated cost of up to $25,000,000. In 2006, this project was added to the Long-Term Plan, thereby allowing the use of the Everglades restoration dedicated funds for its implementation. See Chapter 13 of this volume for discussion of the Everglades restoration dedicated funds.

Lake Okeechobee

Lake Okeechobee, the liquid heart of South Florida, measuring 730 square miles in area, is the second largest freshwater lake within the contiguous U.S. Lake Okeechobee provides many vital functions on a regional level including natural habitat for fish, wading birds and other wildlife; essential water for people, farms and the environment; flood protection; recreation; navigation; and is home to a multimillion-dollar sport and commercial fishery. Lake Okeechobee is an important source of fresh water to the Everglades, and discharges from the Lake influence the ecology of the St. Lucie and Caloosahatchee Estuaries. CERP is critical to achieving the right balance among the many competing demands in Lake Okeechobee.

DECLINE IN LAKE OKEECHOBEE'S ECOSYSTEM HEALTH

Lake Okeechobee is plagued with unnatural water levels and excessive phosphorus, which significantly affect its ecology. In the 1890s, Hamilton Disston constructed a canal connecting Lake Okeechobee with Lake Hicpochee, the headwaters of the Caloosahatchee River. This provided the Lake's first outlet to tidewater — the Gulf of Mexico — via the Caloosahatchee River. In the early 1900s, the Everglades Drainage District constructed several other canals that impacted Lake Okeechobee. The St. Lucie, Hillsboro, North New River, West Palm Beach, and Miami Canals were constructed from the Lake to tidewater — the Atlantic Ocean.

These canals provided a slow, continuous drainage from Lake Okeechobee and the Everglades. The goal was to drain the northern Everglades for agriculture to prevent the crops from flooding. Construction of the Herbert Hoover Dike in the early to mid-1900s reduced the size of the Lake's open water zone by nearly 30 percent. This resulted in a considerable reduction in average water levels, and produced a new littoral zone within the dike that is only a fraction of the size of the natural one. In addition, variations in rainfall, water supply deliveries from the Lake, regulation schedules, and supply-side management have the potential to affect the Lake's water levels.

During the twentieth century, much of the land around Lake Okeechobee was converted to agricultural use. To the north, dairy farms and beef cattle ranching became the major land uses, while in the south, sugar cane and vegetable farming increased rapidly. Associated with the land use changes were large increases in the rate of nutrient inputs, primarily nitrogen and phosphorus, to the Lake, and detrimental changes occurred in the Lake's water quality.

Phosphorus inputs from the northern watershed have increased dramatically, with loads of total phosphorus nearly tripling in the open-water region of the Lake, between the early 1970s and mid-1980s. Blooms of blue-green algae (cyanobacteria) became more common, with particularly large blooms covering more than 40 percent of the Lake surface in the 1980s. Most recently, scientists have discovered that one of the greatest challenges in reversing harmful trends caused by excessive phosphorus may be controlling sources within the Lake itself.

Because high phosphorus loads have occurred for over 60 years, more than 30,000 tons of phosphorus have accumulated at the bottom of the Lake in the form of soft organic mud. Because the Lake is shallow (approximately 9 feet deep), the mud is mixed into the water column every time strong winds blow across the Lake surface. This keeps water column phosphorus concentrations high, which eventually prevents submerged plants from getting the light they need to grow. It may stimulate the growth of cattail (*Typha* spp.) along the edge of the littoral zone.

When Lake Okeechobee was diked in the 1900s, the littoral zone was comprised of a diverse mosaic of native plants, including spike rush, beak rush and willow. These plants provided important habitat for fish, birds and other wildlife, as they continue to do so today. Today, however, a large percentage of the native plant habitat in the Lake's littoral zone has been lost to exotic plants. An estimated 20 percent (over 20,000 acres) of habitat has been lost, most notably to melaleuca (*Melaleuca quinquenervia*) and torpedograss (*Panicum repens*). The spread of these plants seem to be due to extreme low water levels in the Lake.

Conversely, high Lake levels are the probable cause of cattail expansion in the marsh; high phosphorus levels, particularly in the open-water areas; and loss of aquatic vegetation. Lake Okeechobee's nearshore region has lost most of its submerged plant community due to these high water levels, and a ridge, or berm, of organic material has accumulated along the western Lake shore. If high water levels continue, berms can be expected to form. The increase of berms and the decrease in submerged vegetation may have a grave impact on sport fishery, particularly affecting black crappie.

Concentrations of total phosphorus in the Lake's water column have more than doubled in the last 30 years, from 40 to 50 parts per billion in the early 1970s to over 100 parts per billion in 2001. High phosphorus in the Lake results in the loss of macro-invertebrate diversity, impacts to drinking water, occurrence of blue-green algal blooms, and impacts to downstream ecosystems including the St. Lucie and Caloosahatchee estuaries and the Everglades.

Algal blooms can present a significant risk to the human population that depends on this water resource for drinking water and other uses. Algal blooms can cause problems with taste and odor of drinking water and contribute to the formation of carcinogenic chemicals in water that must be chlorinated, and some bloom-forming algae have the ability to produce toxins that kill or cause disease in fish, wildlife, and domestic animals that drink the water.

HOW CERP WILL HELP TO RESTORE LAKE OKEECHOBEE

CERP is expected to enhance economic value and social well-being in the Lake region by maintaining the current level of flood protection and environmental attributes of Lake Okeechobee. Some of the expected results of CERP implementation involve:

- Reducing open-water total phosphorus concentrations in the Lake
- Substantially reducing the frequency of blue-green algal blooms
- Restoring and maintaining healthy communities of SAV, littoral zone vegetation, and shoreline bulrush (*Scirpus californicus*)
- Eliminating harmful high and low water levels that cause adverse impacts to plants, fish and wildlife, while still providing for a beneficial seasonal range of water levels
- Defining a desired gradual recession of water from a winter high near 15.5 feet to a spring low of near 12.5 feet above mean sea level

These results are expected to be achieved through implementation of CERP projects including the Lake Okeechobee ASR Pilot Project, which includes a series of ASR wells adjacent to the Lake. ASR projects provide underground water storage and will help to minimize high-volume water releases to the St. Lucie and Caloosahatchee estuaries. During dry periods, water recovered from the ASR wells will be used to help maintain surface water levels within the Lake.

The C-43 Basin Plan includes the C-43 Basin Storage Reservoir (Acceler8 project), the C-43 Basin ASR Project, and the Caloosahatchee Backpumping with Stormwater Treatment Project. Implementation of these CERP projects is designed to provide reservoirs and an STA to help store water that might otherwise damage Lake Okeechobee.

The EAA Reservoir Project, which is being constructed by Acceler8, is located in western Palm Beach County. The additional storage provided by this project is expected to relieve pressure on Lake Okeechobee to store water by providing for irrigation requirements in the EAA, environmental deliveries of water to the WCAs, storage of regulatory releases from Lake Okeechobee, and increased flood protections within the EAA.

The purpose of the Lake Okeechobee Watershed Project is to improve water quality in Lake Okeechobee, provide for better management of Lake water levels, reduce damaging releases to the estuaries downstream of the Lake, and reduce phosphorus loading. These goals are expected to be accomplished by constructing an STA in the Fisheating Creek watershed, a reservoir and STA in the Lake Istokpoga watershed, a large reservoir in the lower Kissimmee Basin, a 5,000-acre STA in the Taylor Creek Basin, and smaller reservoir-assisted STAs in the Nubbin Slough Basin. The Taylor Creek and Nubbin Slough CERP features will be designed and constructed through the Acceler8 program.

The two most important restoration achievements expected from these CERP projects are phosphorus concentration reductions and improved management of Lake levels. These projects should help to reduce open-water total phosphorus concentration in the Lake to 40 parts per billion, thereby reducing the occurrence of blue-green algal blooms; reverse the trend in loss of macro-invertebrate diversity in the Lake sediments; and ameliorate impacts of phosphorus on the downstream ecosystem when water is released from the Lake.

Improvements in the management of Lake levels should promote an increase in the amount of aquatic vegetation such as eelgrass, peppergrass, and southern naiad. Improvements are also expected in littoral zone vegetation, which should lead to increasing forage fish populations and should also improve conditions for wading birds and threatened and endangered species such as the wood stork (*Mycteria americana)* and snail kite.

Everglades

The Everglades encompasses the major water flow-way of the historic South Florida ecosystem, the original River of Grass that flowed south from Lake Okeechobee to the mangrove zone edging Florida Bay. The Everglades includes all of the WCAs and the freshwater marshes of Everglades National Park (ENP or Park).

The essence of the Everglades is the large expanse of freshwater marsh along this flow-way, an area that, when allowed enough water and freedom to flow, produces a seasonal abundance of fish that supports populations of alligators, enormous colonies of wading birds, and a multitude of other wildlife species. In this watery ecosystem, minute differences in elevation produce different habitats, such as the deep, central ridge and slough system, and the slightly higher marl prairies that flank either side of Shark River Slough in the ENP.

In the pre-drainage system, higher levels of water during the wet season allowed fish to multiply and disperse over these slightly higher prairies. As the water receded toward the deeper slough during the dry season, fish were concentrated in steadily shrinking pools of water along the edges, providing an abundant source of food for wading birds during their nesting season.

Tree islands dispersed along the River of Grass contain one of the only species-rich tropical forests in the country.

The value of the Everglades lies in its unique ability to produce abundant life, as well as to maintain a large supply of high quality water for the people of South Florida. Most marshes and wetlands throughout the world receive their nutrients from rivers that seasonally overflow their banks. The Everglades is unique in that the extremely low levels of nutrients that support the ecosystem come almost entirely from the atmosphere via rainfall. No other place in the world has such potential to link abundant nature closely with a thriving human population living side by side.

DECLINE IN EVERGLADES ECOSYSTEM HEALTH

The Everglades ecosystem has suffered from changes introduced by the water management infrastructure and associated human activities. Of the major stressors that negatively affect overall ecosystem function and the plants and animals that live there, four are addressed by CERP: reduced spatial extent, reduced water storage capacity, poor water quality, and the division of the River of Grass into compartments.

Agriculture and urban expansion have made the natural ecosystem's spatial extent much smaller and less functional. The central part of the Everglades ecosystem, the ridge and slough area, has lost more than a quarter of its original area. The large area of the original system was essential to capture and store large amounts of rainfall, ameliorating the variability in water extent and depth.

Historically, all of the land south of Lake Okeechobee was part of the original system, which, coupled with other natural factors such as fire, tropical storms, and the presence of key animal species, allowed a variety of different habitats for plant and animal populations to exist simultaneously. Because of the size of the original system, these habitats also covered extensive areas, allowing for ecological functions such as high productivity of aquatic fauna including animals like small fish and crayfish, and the persistence of populations of highly specialized species such as the snail kite and Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*).

The Everglades no longer stores the amount of water that it accommodated in pre-drainage times. The sponge-like peat soils in the sawgrass plain south of Lake Okeechobee that held large quantities of water and released it slowly over the dry season no longer exist since the land has been converted to agricultural land use, resulting in soil subsidence. Canals and pumps of the C&SF Project efficiently remove water from the system before and after storms and heavy rains, sending much of it out to the estuaries, and putting the rest into the marshes of the WCAs.

These changes mean that the central part of the Everglades can be stacked with water to unnatural depths, and at other times is much drier than it should be. Water levels in the Everglades also rise and fall faster than they did in the pre-drainage system, when slow drying allowed the fish and aquatic invertebrates to concentrate in seasonal pools that served as the primary food source for larger animals like alligators and wading birds.

The Everglades originally was one large, connected system, where water flow was slow but unrestricted. The construction of the Tamiami Trail and the C&SF Project created compartments by building canals and levees throughout the system. Under the current system, the hydrology of each of these compartments is managed nearly independently; some marshes are shallow at the same time that adjacent marshes are deep. Levees and canals have diverted the flow of water from its original path, and reduced the extent to which a large horizontal expanse of water

(sheetflow) can move slowly through the system. Canals have created unnatural deep water habitat in the midst of shallow water marshes. The fact that canals move water quickly has increased the rates of change in water depths of marshes adjacent to canals, and altered the timing and the duration of flooding and dryouts in the marshes.

The quality of the water entering the Everglades is degraded from its pre-drainage condition. Very low levels of nutrients are a vital precursor to the clear, clean water of the Everglades, and to the natural distribution of plant communities. Today, water with high levels of nutrients comes into the system from urban and agricultural sources. In addition, the unnatural drying of marsh plants and soils over the last century has allowed a chemical process, oxidation, to occur. When oxidation happens, nutrients that are normally held in soil and plant tissue are released into the environment and can have harmful effects on desirable plant communities.

CERP was designed and approved to create a water management system that allows the natural ecosystem to regain its original health and strength while providing for the needs of the people of South Florida. The intent of CERP is to reverse the trends of loss of water and natural areas, to reduce barriers to the flow of water in the Everglades, and to protect the quality of the water flowing through the ecosystem. These changes in the physical environment will provide the foundation for restoration of Everglades landscapes and the return of populations of abundant wildlife to the ecosystem.

Another major issue in the Everglades is the presence of introduced exotic species, including plants and freshwater and terrestrial animals. Although CERP was not designed specifically to address this problem, exotic species can have effects on the restoration success of CERP, and these species can in turn be affected by CERP implementation.

The hydrologic and water quality stressors have affected the biology of the system in a number of ways, including degradation of the entire landscape and individual species. Reduced spatial extent has decreased the number of options for animals such as wading birds and snail kites with large feeding ranges, lowered the overall amount of aquatic production, and eliminated large areas of long-hydroperiod habitat.

Reduced water storage capacity and the consequent extreme high and low fluctuations of water levels in the Everglades have degraded the central ridge and slough system. Tree islands have been affected by flooding in some areas and by fire in others. Former aquatic slough habitat has been altered by the expansion of sawgrass ridges. This is an important factor in the reduction of total production of aquatic fauna, and of feeding habitat for wading birds. Alligator reproduction has been affected; sometimes marshes are too dry for courtship behavior, and at other times seemingly good dry nesting suddenly becomes fatal as marsh water levels are artificially increased.

Reduced sheetflow due to compartmentalization has contributed to the leveling of ridge and slough habitats, again reducing the potential for production of aquatic fauna. The managed mosaic of compartments has changed the timing and distribution of pools where wading birds feed, and the birds have moved away from their traditional nesting sites near the estuaries.

Addition of nutrients from outside the natural system, and the increase in soil oxidation in the Everglades, has increased phosphorus in the ecosystem and contributed to the expanse of large areas of cattail and to changes in periphyton, which are important algal communities. Increased phosphorus levels in the Everglades may eventually translate into higher levels of phosphorus and nitrogen in downstream estuaries, affecting the frequency of algal blooms in bays and nearshore lakes.

Improvements in hydrology and water quality are essential to alleviate the adverse effects of past water management practices in the Everglades. After these essential changes are made to the physical ecosystem, positive response by landscapes and vegetation communities is expected, followed by restoration of healthy wildlife populations.

Desired restoration conditions for the hydrology of the Everglades involve increasing the amount of water captured and stored by the system, and distributing sufficient amounts of this water to meet the needs of the natural system. Timing and spatial distribution of the water should reflect the historic ecosystem as closely as possible, allowing natural sheetflow along the original route of the River of Grass, and restoring the seasonal patterns of flooding and drying that supported abundant wetland wildlife.

Desired conditions for water quality include maintaining historic levels of phosphorus in surface waters and soils, and reducing the amount of phosphorus entering the natural system, thus supporting healthy periphyton communities and appropriate ridge and slough vegetative communities. The desired hydrologic and water quality restoration conditions described above support the development and maintenance of natural ecological communities, including a natural pattern and composition of tree islands, increases in the abundance and size of marsh fish, increases in alligator population density, and improvements in wading bird numbers and distribution across the landscape.

HOW CERP WILL HELP TO RESTORE THE EVERGLADES

Almost all CERP projects are designed to work together to benefit the Everglades ecosystem, working toward the overall goals of increasing the total spatial extent of natural areas, improving habitat and functional quality, and improving native plant and animal species abundance and diversity. Most CERP projects are multi-purpose, including multiple objectives such as increasing water storage, reducing seepage and improving the quality of water to be released into natural areas.

Further, no single CERP project can be said to significantly improve the Everglades ecosystem by itself. The environmental benefits to the Everglades result from the group of projects as a whole. Removing barriers to sheetflow, for example, will have little benefit unless sufficient water is actually flowing from storage, flow, and seepage management projects. In addition, environmental benefits of water flow depend on the quality of the water.

A summary of the major CERP projects or project categories affecting the Everglades ecosystem follows. Detailed project descriptions can be found online in the Central and Southern Florida Project Comprehensive Review Study Integrated Feasibility Report and Programmatic Environmental Impact Statement at http://www.evergladesplan.org/pub/restudy_eis.cfm. These projects represent the original design of CERP approved in 2000. While the original concepts and intent of CERP should not change, as knowledge of the natural and built systems grows over the lifetime of CERP, the suite of projects, their detailed design, and the timing of their implementation may change to improve the benefits to the natural system.

Everglades Storage Reservoirs. Water storage facilities are planned to allow management for more natural conditions in the Everglades while providing for other water-related needs, such as water supply. While all of the ASR (below-ground storage) and surface reservoirs (aboveground storage) will contribute to the better management of water in South Florida, the following two projects should impact the Everglades most directly:

- The new Everglades Agricultural Area Storage Reservoir in west Palm Beach County will increase reservoir capacity for the Everglades with consequent environmental benefits including the delivery of water to the WCAs. The first phase of the EAA Storage Reservoir (190,000 ac-ft) will be constructed by the Acceler8 program.
- The Central Lake Belt Storage Area Project will increase storage capacity for release of water into the ENP when needed.

Everglades Seepage Management. Water seepage through levees can cause desirable water to leave important areas of the Everglades. A series of CERP projects should reduce the amount of seepage lost from the Everglades including the following:

- The C-11 and C-9 Impoundments are intended to capture runoff in western Broward County. The impoundments will be designed to store water that would currently flow to the ocean or would be pumped into WCA-3. The water that is currently pumped into WCA-3 during heavy rainfall events contains phosphorus concentrations above ambient Everglades levels, and has caused an expansion of cattails into the remnant Everglades. The impoundments are intended to reduce harmful pumping of floodwater into the Everglades and will reduce the draw from the Everglades system during dry times. The Acceler8 program will construct the C-9 and C-11 impoundments. In 2006, these two projects were added to the Long Term-Plan, thereby allowing the use of the Everglades restoration dedicated funds for their implementation. See Chapter 8 of this volume for discussion of the Long-Term Plan revision and Chapter 13 for discussion of the Everglades restoration dedicated funds.
- The WCA-3A/3B Seepage Management Area is planned to reduce the seepage of low nutrient water out of WCA-3 by creating a hydrologic barrier along its eastern perimeter. The Acceler8 program will construct the WCA-3A/3B Seepage Management Area.
- The ENP Seepage Management Project is expected to reduce the seepage of low-nutrient water out of ENP by modifying the levee that borders the eastern side of the Park.

Everglades Sheetflow Enhancement. Many projects are proposed to increase amounts of water into the Everglades and enhance sheetflow, including Flow to Northwest and Central WCA-3A, Flows to Eastern WCA, WCA-2B Flows to the ENP, and South Miami-Dade Reuse. However, two projects may have the largest effect on restoring sheetflow:

- The C-111 Spreader Canal Project includes modifications to the C-111 Canal in the southern Everglades and Model Lands, allowing for rehydration of this area and more natural sheetflow. Depending on the availability of funds, the Acceler8 program will construct the initial phase or the entire C-111 Spreader Canal Project.
- WCA-3 Decompartmentalization and Sheetflow Enhancement, referred to as Decomp, will be implemented in stages and coordinated to complement the Modified Water Deliveries to ENP (Mod Waters) Project (a CERP Foundation project). The first part of Decomp supports elevating a section of eastern Tamiami Trail to increase the potential for sheetflow. Later phases of the Decomp project include moving the main conveyance for urban water supply out of the central Everglades. Canals and levees inside WCA-3 are modified or

removed, and the North New River Canal is improved to take water to the urban areas on the coast. These changes increase the potential for natural sheetflow through the central Everglades WCA-3 and ENP, and reduce unnatural discontinuities in the landscape.

Increased Everglades Spatial Extent. Some projects will acquire natural lands and restore them to increase the spatial extent of the Everglades. These include Biscayne Bay Coastal Wetlands Project (Acceler8 project), Southern Corkscrew Regional Ecosystem Watershed (CREW) Project, the Picayune Strand Restoration Project (Acceler8 project), the Imperial River Flow-Way, Winsburg Farms Wetland Restoration, the C-111 Spreader Canal Project (Acceler8 project), the Strazzulla Wetlands Restoration Project (acquired), the Bird Drive Recharge Area, and four IRL projects: North Fork, Cypress Creek, Pal Mar Complex, and Allapattah. Many of these projects also perform functions with respect to water flow and water quality, as well as spatial extent.

Protection of Everglades Water Quality. Protection of water quality in South Florida is under the jurisdiction of the state of Florida, pursuant to the Everglades Forever Act, [EFA, Section 373.4922, Florida Statutes (F.S.)], which has taken steps independent of CERP, such as the implementation of the Everglades Construction Project (ECP), to improve the quality of water in the natural system. Nevertheless, CERP contributes to protecting water quality by means of the construction of STAs and impoundments. For the Everglades region, eight CERP projects include construction of storage and STAs: C-11 Canal Impoundment, C-9 Impoundment, Central Lake Belt Storage Areas, Big Cypress/L-28 Interceptor Modifications, Miccosukee Water Management Plan, Acme Basin B Discharge, Seminole Tribe Water Conservation Plan, and C-111 North Spreader Canal.

Southern Estuaries

Estuaries and the lands surrounding them are places of transition from land to sea, and from fresh water to salt water. Estuaries are critical for the survival of many species and are among the most biologically productive ecosystems on our planet. Tens of thousands of birds, mammals, fish, and other wildlife depend on estuarine habitats as places to live, feed, and reproduce. Estuaries provide ideal spots for migratory birds to rest and refuel during their journeys. Many species of fish and shellfish rely on the sheltered waters of estuaries as protected places to spawn, literally, nurseries of the sea. More than two-thirds of the fish and shellfish humans consume spend some part of their lives in estuaries.

Besides serving as important habitat for wildlife, the wetlands that fringe many estuaries also perform other valuable functions. Water draining from the uplands carries sediments, nutrients, and other pollutants. As the water flows through freshwater and saltwater marshes, much of the sediments and pollutants are filtered out. This filtration process creates cleaner and clearer water, which benefits both people and marine life. Wetland plants and soils act as a natural buffer between the land and ocean, absorbing flood waters and dissipating storm surges. This protects upland organisms as well as valuable real estate from storm and flood damage.

Seagrass beds are a key component of South Florida estuarine ecosystems, providing critical food and habitat for shrimp, fish, and other organisms. Seagrass beds also stabilize sediments, thus promoting clear water and helping to minimize algal blooms. Freshwater inflow patterns — specifically, quantity, timing, and spatial distribution — affect salinity, nutrients, and light, which in turn influence seagrass species composition, abundance, and spatial distribution.

The southern estuaries include Biscayne Bay, Florida Bay, and the southwestern mangrove coast. These estuaries are a connected system of wetlands and lagoons where fresh water leaving the Everglades mixes with salt water. Florida Bay covers a triangular area of 2,200 square kilometers at the southern tip of Florida between the Everglades and the Florida Keys. About 80 percent of this estuary is within the ENP and it is classified as an Outstanding Florida Water. The Bay is shallow, with an average depth of about three feet and most of the Bay's bottom is covered by seagrass, which is habitat for many invertebrate and fish species.

Biscayne Bay, located along the southeastern coast of Miami-Dade County, varies considerably in width, depth, water quality, and degree of connectedness to the open marine waters of the Atlantic Ocean. The Bay's width ranges from several hundred meters in the northern end to over nine miles in the south-central regions and in depth from less than 3 feet in tidal areas to over 40 feet in dredged ship channels. The central and southern portions of Biscayne Bay comprise much of Biscayne National Park, and Card Sound and Barnes Sound are part of the Florida Keys National Marine Sanctuary. All of these areas are designated as Outstanding Florida Waters.

CAUSE OF DECLINE OF ECOSYSTEM HEALTH IN FLORIDA AND BISCAYNE BAYS

Manmade changes to the quality, quantity, timing, and duration of freshwater inflows to the Southern Estuaries have changed the circulation and salinity patterns. These changes in circulation and salinity patterns have altered the structure and function of estuarine ecosystems. Starting in the late 1980s, a series of ecological changes to Florida Bay was apparent and included widespread seagrass die-off, the occurrence of algal booms, and high turbidity in what had been clear waters, widespread mortality of sponges, and decreases in some other invertebrates and fish species. It is thought that historical decreases in freshwater inflow from the Everglades and resultant increases in salinity have contributed to these ecological changes.

Florida Bay is plagued by the occurrence of turbid water in many parts of the Bay. In the eastern Bay, most of this turbidity is caused by re-suspended sediments, while turbidity in the central and western parts of the Bay is caused by re-suspended sediments and algal blooms. Sediment re-suspension and associated turbidity is strongly affected by seagrass density. The dense monoculture of turtle grass (*Thalassia testudinum*) that existed in Florida Bay prior to die-off in the 1980s resulted in clear water, but this condition is not considered natural and so is not a restoration target. Rather, the target of moderate and diverse seagrass cover will likely be associated with moderate turbidity and light penetration.

Historically, fresh water flowed eastward overland from the Everglades to the Bay through natural sloughs and rivers and as groundwater through the Biscayne Aquifer. During the last century, this pattern was altered by regional drainage, canal construction and operation, and urban development, as well as by construction of roads, levees, and other barriers to surface flow. Because of these alterations, the Bay now receives freshwater inflow from canals, minor overland flows, and groundwater.

Water quality within Biscayne Bay varies from poor in deep areas with heavy pollutant loading and little mixing, to good in the east-central areas where there is little overland pollution and high exchange with marine waters. Parts of the Bay are subject to rapid shifts in salinity and nutrients from canal flows. As the rapid pulse of fresh canal water moves into the Bay, it can harm or even kill plants, bottom-dwelling invertebrates, and fish and shrimp.

HOW CERP WILL HELP TO RESTORE THE SOUTHERN ESTUARIES

The restoration of a natural volume, distribution, and timing of freshwater inputs to Florida Bay is expected to provide salinity patterns that will sustain seagrass beds covering most of the Bay bottom. The northeast portions of the Bay are expected to experience less abrupt and less extreme decreases in salinity, while hypersaline conditions are expected to be less frequent, less extreme, and less extensive in the central and western parts of the Bay.

Seagrass recovery is expected to include decreased dominance by turtle grass and more cover by a mix of turtle grass and shoal grass (*Halodule wrightii*) through most of the Bay, and the expansion of widgeon (*Ruppia maritima*) grass near the northern coastline. The recovery of seagrass beds in combination with restored salinity regimes is expected to enhance nursery ground habitat values, as indicated by increased populations of juvenile pink shrimp, juvenile spotted seatrout, and other fish species that inhabit seagrass beds. Recovery of seagrass beds should sequester nutrients and stabilize sediments to reduce algal blooms and turbidity in areas of Florida Bay that have experienced seagrass die-off. CERP will benefit the nearshore plant and animal communities of southern Biscayne Bay, including Barnes and Card Sounds.

Increased freshwater inflows to the Bay through the tidal creeks and herbaceous marshes of the South Dade Wetlands are expected to lower salinity at mouths of the creeks to levels favorable for establishment of more estuarine salinity patterns supporting seagrass beds and oyster beds in nearshore areas that presently do not support seagrasses or oysters. The delivery of fresh water to the Bay across the South Dade Wetlands should reduce the accompanying nutrient inputs and establishment of more natural inflow patterns is expected to restore oyster bars and estuarine fish communities and to increase densities of juvenile pink shrimp in the nearshore environment of southern Biscayne Bay.

Many CERP projects are intended to contribute to the improvements described above. Additional storage reservoirs and more than 50,000 acres of STAs will be constructed to improve the quantity, quality, timing, and distribution of water to the Everglades system and to the Southern Estuaries. Flows into Florida Bay should be improved by the WCA-3 Decomp Project, which will allow greater sheetflow through WCA-3B into the ENP. The CERP Mod Waters precursor project also should modify water deliveries to ENP and Florida Bay by increasing sheetflow to Shark River Slough.

As currently envisioned, the C-111 Spreader Canal Project (Acceler8 project) is anticipated to increase the annual volume of water that sheetflows to northeast Florida Bay by increasing deliveries to Taylor Slough in the Park and by reducing seepage into the lower C-111 Canal.

The Biscayne Bay Coastal Wetlands Project (Acceler8 project) should significantly reduce the harmful effect of existing point-source discharges to Biscayne Bay. Former wetland areas will be acquired and restored near the Bay and water will be spread across a broad front into the Bay. This is expected to restore a more natural salinity regime in coastal tidal wetlands.

Water Supply and Flood Protection

Nearly six million people live in South Florida, with most residing in a narrow band along the lower east coast. The District provides regional water supply to the people of South Florida by storing water in canals, the WCAs located west of the developed lower east coast, and Lake Okeechobee. Palm Beach, Broward, Miami-Dade and Monroe counties are collectively referred to as the Lower East Coast Service Area for the purposes of water supply.

In addition to its urban population, South Florida supports nearly one million acres of agricultural lands devoted mainly to sugar cane, citrus, vegetables, and plant nurseries. A large, mostly agricultural service area, called the Lake Okeechobee Service Area as it is centered on the Lake, provides water supply to the EAA, the Caloosahatchee and St. Lucie Basins, and the Seminole Tribe of Florida's Brighton and Big Cypress reservations. The C&SF Project's system of canals and water management structures also provides flood protection for people and farms.

PROBLEMS WITH WATER SUPPLY AND FLOOD PROTECTION

In 1948, the U.S. Congress authorized the C&SF Project to help protect the roughly 500,000 people who were then living in South Florida from the effects of hurricanes, floods, droughts, and fires. The massive water management system was built to address flood protection and provide water to people and agricultural lands. When the project was designed in the early 1950s and built in the late 1950s to early 1970s, it was estimated that two million people might be living in South Florida by 2000. Today's population is three times the number that the project was designed to serve.

From 1971 to 2001, South Florida experienced eight years of drought caused by too little rainfall; in six of these years, water shortage restrictions were declared. Water shortage restrictions can cause economic hardship to people living in cities as well as on farms.

Conversely, storm events like the No-Name Storm and Hurricane Irene in 1999 caused extensive flood damage. During the 2004 hurricane season, four hurricanes struck South Florida, and Lake Okeechobee water levels rose by 5.5 feet in only six weeks. These events reinforce the need for upgrades to the aging infrastructure of the C&SF Project. South Florida's growth, enabled in part by the drainage system, has impacted the natural environment and forever changed the region's landscape.

The rapid increase in population has intensified demands for water supply and changed historical land uses, as open areas such as uplands, wetlands and agricultural areas, are converted to development. The loss of open areas to soak up and store South Florida's normally abundant rainfall means more water is shunted off to tide to provide flood protection to new development and less water remains stored in the system for use in dry times.

These factors strain the C&SF Project's ability to perform its intended functions of flood protection; water supply for people, agriculture, and industry; preventing salt water from seeping into the fresh groundwater of the Biscayne aquifer; supplying water to the ENP; and protecting fish and wildlife.

HOW CERP WILL HELP WATER SUPPLY AND FLOOD PROTECTION

As CERP projects are built, they should capture water now lost to the ocean and gulf and store it in wetlands, reservoirs, and underground wells. More water is intended to be delivered to the WCAs, which should lead to greater seepage into the underlying aquifers. Water storage areas will increase aquifer recharge and the amount of fresh water available for both the natural and human environments. Increasing the storage capacity through CERP is expected to lessen water restrictions for the people of South Florida and reduce competition for water between people and the natural system. CERP will help to meet the State of Florida's planning goal for people's needs while also meeting existing and future municipal, industrial, and agricultural water supply requirements in the region during 1-in-10-year drought events.

Added water storage capacity is intended to provide water managers with more flexibility in moving water through the C&SF project area. Not only should water supplies be enhanced, but flood protection maintained, and in some cases improved.

Acceler8

Acceler8, a major initiative for Everglades restoration, was launched in FY2005 to accelerate the pace of funding, design, and construction for eight environmental restoration projects. Seven of the ten congressionally authorized CERP components are included in this initiative.

These components were recommended to Congress for initial authorization because the scientists and engineers engaged in the Central and South Florida Comprehensive Review Study (Restudy) considered that they would provide immediate and significant restoration benefits. The eight CERP components authorized by Congress that will be constructed entirely or in part by Acceler8 are the:

- C-44 Basin Storage Reservoir
- EAA Storage Reservoir – Phase 1
- Site 1 Impoundment (to be dedicated as the Fran Reich Preserve)
- WCA-3A/3B Levee Seepage Management
- C-9 Impoundment and STA – recently added to the Long-Term Plan
- C-11 Impoundment and STA – recently added to the Long-Term Plan
- C-111 N Spreader Canal
- Taylor Creek/Nubbin Slough STAs Project
  (initially authorized by Congress in WRDA 2000 and to be funded by LOER)

In addition, the Acceler8 initiative will advance restoration benefits by constructing the following projects:

- Acme Basin B Discharge Project – programmatic authorization in WRDA 2000 and recently added to the Long-Term Plan
- Biscayne Bay Coastal Wetlands Project - Phase I
- Picayune Strand Restoration Project (formerly Southern Golden Gate Estates)
- C-43 West Reservoir Project
- Three STA expansions in the Everglades Agricultural Area as part of the Long-Term Plan

These Acceler8 projects will greatly increase the spatial extent of wetlands in the South Florida ecosystem. Acceler8 projects will restore approximately 100,000 acres of drained wetlands and will enhance many hundreds of thousands of acres in the WCAs and ENP.

The District will finance project construction with Certificates of Participation (COPs) revenue bonding. This innovative financing plan marks the first time in the nation that COPs will be used for environmental restoration purposes. The financing and expediting of these projects will alleviate future increases in construction and labor costs.

CERP Planning, Implementation and Reporting

Recommended final PIRs are complete for two important CERP projects, IRL – South and Picayune Strand (Southern Golden Gate Estates) Hydrologic Restoration. After Congressional authorization, these projects will move into the detailed design and construction phases, although the District has started early construction on both projects through Acceler8.

The original CERP implementation schedule described in Section 10 of the Restudy was based on the knowledge, experience, and requirements at that time. All CERP projects have been prioritized and banded into five-year time frames in the Master Implementation Sequencing Plan (MISP) 1.0 version released in April 2005 (see http://www.evergladesplan.org/pm/misp.cfm). The MISP includes the sequencing and scheduling of all CERP projects, including pilot projects and operational elements, based on the best scientific, technical, funding, contracting, and other information available. This will ensure that projects are implemented cost-effectively, yielding benefits to the natural environment as quickly as possible.

CERP is a $10.8 billion mission spanning 30 years and involving many levels of government and stakeholders. Management agreements, processes and guidance documents are in place to ensure that the goals of CERP are met. Implementation of program-level management activities, including adaptive assessment and monitoring, are ongoing. The success of CERP relies on outreach and partnering with stakeholders and communities, as well as coordination among CERP, Acceler8 and other projects affecting the Greater Everglades ecosystem. The public is engaged in CERP implementation through public meetings, special events, and the distribution of creative print and electronic products. Extra efforts are made to involve minority and low-income communities and those with limited English proficiency, and to communicate CERP contracting opportunities to small and minority-owned businesses.

The CERP Annual Report is required to provide oversight and accountability for financial commitments under the Everglades restoration section and to record progress in CERP implementation, in accordance with Section 373.470(7), F.S., as amended during 2005. The District, in cooperation with the FDEP, which conserves and manages Florida's natural resources and enforces the state's environmental laws, prepares the CERP Annual Report.

Appendix 7A-1 supplements this chapter, fulfilling the statutory requirements and including CERP financial data and information on the progress of CERP implementation for FY2006. The document includes information on the Conservation and Recreation Lands Trust Fund, the Land Acquisition Trust Fund, the Preservation 2000 Trust Fund, the Florida Forever Trust Fund, and the Save Our Everglades Trust Fund, as well as and other named funds or accounts for the acquisition or construction of project components, features or facilities that benefit CERP. This report also identifies state and local sponsor revenues and itemizes expenditures related to CERP implementation. It describes the purpose for which the funds were expended, provides the unencumbered fund balance remaining for implementation of CERP, and provides a schedule of anticipated expenditures for the next fiscal year.

FY2006 HIGHLIGHTS

The goal of CERP is twofold: to restore, preserve, and protect South Florida's ecosystem; and to provide for other water-related needs of the region, including water supply and flood protection. Strategies for achieving this goal include implementing the expedited Acceler8 initiative, continuing to acquire necessary land, and completing Project Implementation Reports (PIRs). Some highlights of CERP implementation for this annual update are presented below.

- **Everglades Agricultural Area Reservoir.** The FDEP and the District broke ground in August on this Acceler8 project, which will be one of the world's largest constructed reservoirs. The EAA Reservoir, the District's flagship project, is designed to hold 62 billion gallons of water, which is vital to the restoration process for controlling water releases, and for flood protection and wildlife habitat restoration.
- **Everglades Agricultural Area Regional Feasibility Study.** This investigation of alternatives for balancing flows and loads within the EAA to optimize the performance of the existing and expanded STAs was completed.
- **No New Water Resources Development Act Bill.** Although the U.S. Senate made strides toward WRDA reauthorization in 2006, congress adjourned without passing a WRDA bill. Thus, neither final authorization nor funding was realized for construction of two key restoration projects: the IRL – South Restoration Project and the Picayune Strand Restoration Project.
- **Picayune Strand (Southern Golden Gate Estates) Hydrologic Restoration.** Demolition and construction activities are under way at 160 properties within the Acceler8 Picayune Strand Project. Roadways are being removed and the remaining five miles of the Prairie Canal are being plugged to restore natural water flows and enhance and expand wetlands in Florida's southwest region.
- **Land Acquisitions.** Key land acquisitions during FY2006 include 62 acres for the Biscayne Bay Coastal Wetlands Project; 12,000 acres for the C-44 Reservoir and STA Project; and 321.95 acres for the C-111 Spreader Canal Project.
- **C-43 (Caloosahatchee River) West Storage Reservoir.** In July, less than three months after breaking ground on the Acceler8 C-43 West Storage Reservoir Project, the District completed two 28-acre test cell reservoirs. The C-43 test cells will provide data that will guide design and construction of the reservoir, which, when complete, is intended to protect the Caloosahatchee River and Estuary by storing local stormwater runoff and freshwater releases from Lake Okeechobee.
- **C-44 (St. Lucie River) Reservoir and Stormwater Treatment Area.** The District started construction of the Acceler8 C-44 Reservoir and STA in March, and by July, the test cells were complete and holding 92 ac-ft (30 million gallons) of water. Tours were offered to media, local governments, and the community.
- **Stormwater Treatment Areas Expansion.** Construction began in February on three treatment wetlands being completed as part of the Long-Term Plan under the Acceler8 initiative.
- **Acme Basin B Discharge.** In June, the District broke ground on this fourth Acceler8 project in six months. The Acme Basin B Project, which became part of the Long-Term Plan in 2006, was expected to be flow-capable on schedule in December 2006.

- **Certificates of Participation.** In February, a state circuit court judge formally approved the District's plan to use COPs to finance Acceler8 projects. In July, the COPs series 2006 received ratings of Aa3, AA+, and AA- from Moody's Investor Services, Standard & Poor's, and Fitch Ratings, respectively.
- **North Palm Beach County – Part 1 Project.** Construction of the G-161 Structure restoring a historic connection between the Grassy Waters Preserve and the Loxahatchee Slough and C-18 Canal, and construction is proceeding at the L-8 Reservoir to store water discharged from the L-8 basin.
- **Construction of Critical Restoration Projects (CRPs).** Reservoirs and STAs have been constructed in the Taylor Creek, Nubbin Slough, and Ten Mile Creek basins. Culverts have been installed under the Tamiami Trail, south of the Picayune Strand CERP project. Pumps and divide structures have been constructed in the C-11 basin in Broward County to improve the quality of water being pumped to the Everglades. The first phase of dredging to improve water quality in Lake Trafford was completed during FY2006.
- **CERP Project Implementation Reports.** CERP PIRs are completed and are being processed. The IRL – South PIR and Picayune Strand Hydrologic Restoration PIR await congressional action. The Broward WPAs, Site 1 Reservoir, Acme Basin B, and EAA Reservoir PIRs are drafted and under USACE review. These planning efforts support the Acceler8 initiative.
- **Hillsboro ASR Pilot Project.** Construction started in May on the Hillsboro ASR Pilot Project, and scheduled for completion in October 2006. This project is designed to recharge and recover approximately 5 million gallons of treated water per day.
- **Lake Okeechobee ASR Pilot Project.** The USACE and the District celebrated the Lake Okeechobee ASR Pilot Project with a groundbreaking in June. These ASR wells will be able to store up to five million gallons of water per day.
- **C-111 Spreader Canal.** Acquisition of all lands necessary to build the Acceler8 phase of construction was completed in FY2006. The Acceler8 phase of the project is intended to increase the annual volume of water that sheetflows to northeast Florida Bay via Taylor Slough. The subsequent phase of the project will focus on increasing hydroperiods of the wetlands of the southern Everglades, including the Model Lands, and on further reducing damaging pulse releases of freshwater to Manatee Bay and Barnes Sound.
- **Cultural Resources.** When District crews digging a borrow pit discovered the massive bones of an ancient giant sloth and other fossils, construction in that section was stopped and moved elsewhere to keep the Acceler8 STA project on schedule.
- **Exotic and Invasive Species.** Nonindigenous plant species such as Melaleuca have destroyed freshwater prairies, changed bird populations, and displaced animals in the Everglades. Likewise, non-native animals are an increasing threat to Everglades rare and endangered species. A Project Management Plan for an Invasive Species Master Plan is being prepared.
- **CERP 2005 Report to Congress.** This first in a series of periodic reports fulfilling requirements of WRDA 2000 was completed and approved for submittal to the U.S. Congress. This report provides an update on the progress of CERP over the first five-year period of its implementation.

- **Site 1 Impoundment (Fran Reich Preserve) Final Project Implementation Report.** This decision document was completed in May 2006 and was the first CERP PIR to pass the USACE Civil Works Review Board. Site 1 includes an impoundment, seepage management system, improvements to the Hillsboro Canal and L-40 levee and recreational features. This project site will be designated as the Fran Reich Preserve, as authorized by the 2006 Florida legislature.
- **Lake Okeechobee Watershed.** The Lake Okeechobee Watershed Project is progressing under a tight schedule to meet the potential 2008 WRDA authorization. Performance evaluation of ten watershed alternatives was completed, and three final alternatives were selected in January. The Tentatively Selected Plan was identified in August.
- **National Research Council Report to Congress.** In September, the National Research Council's Committee on Independent Scientific Review of Everglades Restoration Progress released a 200-page mandated report to Congress documenting an in-depth independent review of Everglades restoration progress (http://www8.nationalacademies.org/cp/projectview.aspx?key=95). The report commends the state for Everglades and Kissimmee River restoration achievements, including accelerated funding and project implementation, sound science, land acquisition, and phosphorus control, while noting that the federal government has moved slower with project funding and delayed execution.
- **Feasibility Studies.** Development of the Southwest Florida Feasibility Study and the Florida Bay/Florida Keys Feasibility Studies continued during FY2006. These studies will investigate conceptual designs and make regional recommendations for meeting the future needs of agricultural, urban and environmental users. This includes determining the modifications needed to successfully restore and protect the water quality and ecological conditions of the Florida Bay/Florida Keys reef tract.
- **Outreach and Public Involvement.** In April, middle schools received a new guide, Everglades – An American Treasure, that brings to life the interconnected Kissimmee-Okeechobee-Everglades watershed and the unprecedented efforts under way to restore the ecosystem. A colorful companion poster was prepared for distribution in the new school year, and the Philippe Cousteau Foundation filmed a companion video in the summer of 2006.
- **Workforce Training Program.** A collaborative effort to position trainees for job opportunities on Acceler8 construction projects graduated its first students with introductory skills in masonry, carpentry, plumbing, and construction site safety.

The District, USACE, and their partners are pursuing a long-term vision for the restoration of the South Florida ecosystem. The first step is to complete the CERP Foundation Projects, including the Mod Waters Project and Modifications to the C-111 Project (non-CERP project). Information on CERP Foundation Projects is provided in the *Discussion* section below.

DISCUSSION

ACCELER8

Everglades Agricultural Area Reservoir

In August, Governor Jeb Bush and FDEP Secretary Colleen Castille joined local, state, and federal leaders to break ground on one of the largest reservoirs in the world. When completed in 2010, the first component of the EAA Reservoir — also the largest of the Acceler8 reservoirs and a flagship project of this program — will cover 25 square miles and provide 190,000 ac-ft (62 billion gallons) of water storage. The reservoir, which will be constructed on a 16,700-acre parcel in western Palm Beach County just west of U.S. 27, is intended to provide alternative storage for Lake Okeechobee water, reducing harmful discharges to the St. Lucie and Caloosahatchee estuaries optional, allowing the Lake to be maintained at lower stages, and improving the performance of existing STAs that deliver water to the Everglades. Water storage is a key element in the restoration process, not only for controlling water releases, but also for flood protection and wildlife habitat restoration.

C-44 (St. Lucie River) Reservoir and STA

The C-44 Reservoir is a feature of the IRL – South CERP project. In July 2006, the FDEP, the District, and Martin County leaders celebrated the milestone completion of two four-acre test cell reservoirs. The data generated by the test cells will be used to design the $330 million, 3,400-acre C-44 Reservoir and STA project. This project is expected to improve water quality, revitalize wildlife habitat, and improve the ecological health of the St. Lucie Estuary and IRL.

Picayune Strand Restoration

District Acceler8 construction commenced in FY2006 on the Picayune Strand Hydrologic Restoration Project, and two miles of newly filled canals already are reducing freshwater drainage, elevating groundwater levels, and replenishing wetlands. Engineering and design progressed during the year and remediation of test cells to identify the most effective method of removing pesticides from the soil of abandoned sites has been completed. The plan directs the removal of 227 miles of roads and filling in of canals to re-create natural water flows. Newly updated computer models suggest that the protection levee system may not have to be as extensive as previously thought.

An independent engineering review of the Picayune project prompted analysis of the need for three pump stations slated for construction along the Miller, Merritt, and Faka-Union canals at the point where canal filling begins. Building one large pump station instead of three smaller ones may reduce noise, construction-related disturbances, and the number of access roads. Updated pump station and levee plans have been presented to local communities, along with model runs that demonstrate how improving water flow beneath U.S. 41 will alleviate flooding concerns.

Another important change is to the Picayune project's spreader canal, which is designed to route water across the land, but has never been tried on such a large scale for the sake of restoration. The original plan would have allowed water to seek its own course, potentially carving channels in undesirable places. The newly proposed plan will notch the south levee in low areas to direct flows to areas where water once coursed naturally. Portions of the flood protection components and spreader system are scheduled to be constructed in late 2007.

C-43 (Caloosahatchee River) West Storage Reservoir

A celebration in February recognized construction of the C-43 Reservoir test cells. By July, two 29-acre test cell reservoirs were completed to provide information to guide design and construction of the $338 million project. The data include local seepage, embankment placement, grading techniques and other technical details needed for optimum final design of the full-scale reservoir, which will store up to 170,000 ac-ft of water. When complete, the reservoir is expected to protect the Caloosahatchee River and Estuary by capturing and storing local stormwater runoff and freshwater releases from Lake Okeechobee.

STA Expansions in the Everglades Agricultural Area

In February, State Representative Richard Machek and FDEP Secretary Colleen Castille joined local officials and environmental scientists to break ground on three Long-Term Plan projects that will further improve water quality in America's Everglades. Three treatment wetlands are being expanded, which will increase treatment capacity to more than one-half million ac-ft of water per year.

As part of the Acceler8 initiative, expansions of STA-2 in Palm Beach County and STA-5 and STA-6 in Hendry County will add more than 6,000 acres to the existing 40,000 acres of treatment wetlands that are helping to achieve state water quality standards. STA-2 will be expanded by about 2,000 acres, STA-6 by about 1,400 acres and STA-5 by about 2,500 acres. These and future expansions of the EAA STAs are expected to significantly increase the treatment area and enhance the performance of existing STAs.

C-111 Spreader Canal

The District launched a $40 million diversion of the C-111 Canal that is anticipated to increase the annual volume of sheetflow to northeast Florida Bay by increasing deliveries to Taylor Slough and by reducing seepage into the lower C-111 Canal.

In February, the District's Governing Board approved a location for a U.S. 1 bridge that the FDOT had agreed to construct as part of the Eighteen Mile Stretch widening project. The approved location would support the originally proposed central canal alignment should it ultimately be reconnected as the selected alternative plan. The District and the USACE are evaluating alternative canal routes to optimize costs and environmental benefits.

Land Acquisition

Lands acquisition is a critical component of CERP. The cost of CERP lands has increased over the past ten years from a few thousand dollars per acre to, in some cases, $30,000 per acre. An early acquisition program, averaging 23,000 acres per year, has resulted in the acquisition of approximately 55 percent, or 212,189 acres, of the land needed for CERP. During FY2006, 18,294 acres were purchased for CERP Projects at a total cost of $275.7 million. As of the end of FY2006, 96 percent of Acceler8 project lands had been acquired. By the end of FY2007, all 128,289 acres identified for Acceler8 project should be acquired.

Significant recent purchases include 62 acres ($10.9 million) for the Acceler8 Biscayne Bay Coastal Wetlands Project in Miami-Dade County; 12,000 acres ($168 million) for the Acceler8 C-44 Reservoir and STA project, purchased with $27 million from Martin County and several other sources; and 321.95 acres to complete acquisition of all lands necessary to build the

Acceler8 phase of the C-111 Spreader Canal project. Future partnerships may help to fund the purchase of additional land for CERP projects. Additional information on CERP land acquisitions is contained in Volume II, Chapter 6.

Certificates of Participation To Fund Acceler8

In February 2006, a state circuit court judge formally approved the District's plan to use COPs to finance Acceler8 projects. This bond validation hearing moved the agency closer to putting its innovative financing plan into place, and marks the first time in the nation that COPs will be used for environmental restoration purposes. This action paves the way for financing of other restoration initiatives around the country. In July, the COP series 2006 received ratings of Aa3, AA+, and AA- from the Moody's Investor Services, Standard & Poor's, and Fitch rating agencies, respectively. A bond insurance wrap from Ambac raised the rating of the COPs to Aaa/AAA/AAA.

On October 25, 2006 (in FY2007, nonetheless reported in this FY2006 report), the District's inaugural *Acceler8* financing consisting of $546 million, Series 2006 Certificates of Participation (COPs) was successfully offered in the primary market through Citigroup Global Markets in New York City. Most of the more than $500 million of capital was raised during a two-hour order period. Strong early sales resulted in an additional $26 million raised for Everglades restoration, above and beyond the COPs' total par value of $546 million.

COPs will be used to fund eight accelerated Everglades restoration projects (Acceler8) and considered critical to the overall revitalization of this fragile ecosystem. Borrowing the money early will help to avoid inevitable increases in construction materials and labor costs over the life of these key projects.

Job Training

The scope of the Acceler8 construction program, along with proposed FDOT roadway construction projects is expected to create a shortage in skilled construction workers. As part of an expanded business outreach initiative, the District launched a job-training program to assist unemployed workers and small and local businesses to benefit from the Acceler8 program. The District collaborated with local agencies and Palm Beach County Community College to sponsor workforce-training programs to position trainees for job opportunities on Acceler8 projects.

Programs are in place in Belle Glade, Pahokee, and South Bay, and are planned for LaBelle. May 2006 saw the first graduation ceremony in Belle Glade. Students in the first Introduction to Construction class gained skills in masonry, carpentry, plumbing, and rigging, and learned about construction site safety. Partnering with agencies such as Workforce Alliance and the Palm Beach County School Board has helped the District to offer this training at a low cost to the students.

The District is reaching out to small business owners for services including removal of vegetation from thousands of acres of former agricultural land to make way for Acceler8 reservoirs and other facilities. Contractors are being sought to perform demolition work, ditch digging, fence building, concrete placement, and other construction activities. Large construction contracts will be divided into portions to allow small businesses the opportunity to participate. For larger projects, the District will work directly with local businesses to ensure their opportunity to participate as contractors or sub-contractors.

Cultural Resource Issues

Surveys conducted in several locations where CERP restoration is planned have revealed the presence of archeological sites, some of which are substantial. Studies indicate that the sawgrass plains south of Lake Okeechobee, now the EAA, were a transitional area historically used for canoe travel and tribal encampments. To protect Indian artifacts and archaeological finds, the District engages a consultant to monitor restoration projects and ensure that artifacts unearthed during construction are salvaged or preserved.

In April, prehistoric sloth bones were discovered by District crews digging a borrow pit in a field that had been part of the original Everglades. The construction activities within this Acceler8 STA project, was stopped and moved to another site to keep the project on schedule. Less than two weeks later, paleontologists excavated half the skeleton of one giant sloth and bones of another. Among the find were mixed the bones and teeth of prehistoric deer, horses, dugong and turtles. The Museum of Natural History at the University of Florida in Gainesville is analyzing the fossils, along with sediments from the site.

CERP PROJECT PLANNING AND PROGRAMMATIC ACTIVITIES

National Academies Research Council Report to Congress

Progress has been made in developing the scientific basis and management structures needed to support the massive effort to restore the Florida Everglades ecosystem, but some projects important to the restoration have experienced delays. This is affirmed by a new report from the National Research Council.

As required by WRDA 2000, the Research Council, which is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering, submitted its first formal report about the progress that the state and District have made. The National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council comprise the National Academies. They are private, non-profit institutions that provide science, technology, and health policy advice under congressional charter.

The Academies' panel of internationally known experts noted these and many other state contributions to Everglades restoration progress:

- State funding of $1.8 billion for Acceler8 projects
- Sound science to support restoration projects, including an "impressive array of hydrologic models" and well-executed adaptive management strategies
- Early land acquisitions of more than $1 billion, thus acquiring essential sites before rapidly rising land prices made restoration projects cost-prohibitive
- A successful phosphorus control program, made up of STAs and agricultural and urban Best Management Practices, which together have prevented almost 2,500 metric tons of phosphorus from entering the Everglades
- Kissimmee River Restoration, located at the headwaters of the Everglades watershed, noted for already showing significant benefits to the natural system

The report also pointed to challenges with Everglades Restoration such as the Mod Waters Project not yet being completed and lack of fiscal resources from the federal government.

Scientific uncertainties also are contributing to delays in planning and authorizing projects, especially for projects that are complex or contentious, the report observes. But the restoration's scientific program is of high quality, the committee said, finding no uncertainty so significant that it should stand in the way of progress. To help move the effort forward while resolving critical scientific unknowns, CERP in many cases could use an "incremental adaptive restoration" approach. This method takes steps toward restoration sizeable enough to secure some environmental benefits, but stops short of implementing an entire project at once. This approach would complement CERP's existing adaptive management approach, allowing scientists and project managers to learn how the natural system will respond to interventions and guide the remainder of the project's implementation.

Governor Jeb Bush reviewed the report and affirmed that restoring the Everglades is a top priority for the state and that Florida is steadfastly committed to securing the future of this national treasure.

CERP Five Year Report to Congress

In September 2006, the secretaries of the Army and Interior jointly transmitted to Congress the Central and Southern Florida Comprehensive Everglades Restoration Plan 2005 Report (http://www.evergladesplan.org/pm/program_docs/cerp_report_congress_2005.aspx). This is the first in a series of periodic reports fulfilling requirements of WRDA 2000. The report updates members of the U.S. Congress on progress and expenditures during the first five years of CERP, and summarizes milestones and forecasts for requirements expected over the coming five years.

During the first five years under CERP, the focus has been on constructing CERP Foundation Projects, developing PIRs, and adopting the regulations and policies that constitute the legal and process framework for ensuring successful restoration.

Site 1 Impoundment (Fran Reich Preserve)

The Site 1 Impoundment Final PIR and Environmental Assessment (EA) were completed in May 2006. This was the first CERP PIR to be approved by the USACE Civil Works Review Board. Site 1 includes an impoundment, seepage management system, improvements to the L-40 levee and recreational features. This project will capture about 13,280 ac-ft of runoff in an 8-foot deep pool. A series of canals and pump stations will cover the 1,668 acre project site, which the District purchased in 1995 for $8 million

The 2006 Florida legislature designated this project the Fran Reich Preserve, to honor the founder of the West Boca Community Council. Before the CERP project was envisioned, Palm Beach County planned to build a landfill and incinerator on the site, but the plan was defeated. The preserve is located north of the Hillsboro Canal, South of the Loxahatchee National Wildlife Refuge (Refuge) and beyond the western end of Palmetto Park Road.

ASR Pilot Projects

CERP proposes large-scale development of ASR facilities as the preferred method for providing additional freshwater storage required for overall restoration success. Six ASR components will collectively form the proposed CERP ASR System.

Seven broad technical uncertainties related to ASR implementation on the unprecedented scale proposed in CERP were previously identified by the ASR Issue Team, which was formed at the request of the South Florida Ecosystem Restoration Task Force's Working Group. The issues identified are:

- Characterization/suitability of the quality of prospective source waters, and spatial and temporal variability
- Characterization of the regional hydrogeology of the Upper Floridan Aquifer, its hydraulic properties, and its water quality
- Analysis of critical pressure for rock fracturing
- Analysis of site and regional changes in head and patterns of flow
- Analysis of water quality changes during movement and storage in the aquifer
- ASR potential effects on mercury bioaccumulation for South Florida ecosystem restoration projects
- Relationship among ASR storage properties, recovery rates, and recharge volume

Local-scale pilot projects and regional-scale scientific studies designed to address these issues are in progress. The District's contractor started construction of the Hillsboro ASR Pilot Project during FY2006; and a groundbreaking ceremony was held for the Lake Okeechobee ASR Pilot Project, which will be constructed by the USACE. Regional model runs for ASR are scheduled to be performed by the Interagency Modeling Center during FY2007.

North Palm Beach County – Part 1

Six separable elements were combined into the North Palm Beach County – Part 1 Project, which is designed to increase water supplies to the Grassy Waters Preserve and Loxahatchee Slough, and enhance the timing, flow and depth of water in the slough. Furthermore, flows to the Northwest Fork of the Loxahatchee River should be increased, and high discharges to the Lake Worth Lagoon should be reduced. During FY2006, construction proceeded on the G-161 structure and widening of the M Canal project components. Dredging of organic sediment from the C-51 Canal, a partnership among the District, Palm Beach County, and the City of West Palm Beach, also began during FY2006 with the objective of improving downstream water quality in the Lake Worth Lagoon.

Southwest Florida Feasibility Study

The Southwest Florida Feasibility Study is moving forward notwithstanding federal direction in February 2006 to incorporate features that would reduce flooding problems and boost water supplies for urban and agricultural consumers. USACE headquarters sought to lessen the focus on environmental restoration to emphasize drainage and water supply issues. The Project Delivery Team (PDT) considers restoration the foremost priority. During FY2006, the feasibility study efforts produced a list of 115 potential restoration projects within a 4,300-square-mile area that includes all of Lee County; most of Collier and Hendry counties; and parts of Charlotte, Glades, and Monroe counties.

In a report to the U.S. Congress during 2005, the USACE acknowledged delay of the study due to difficulties in obtaining and reconciling necessary water flow data for the region, and in developing and calibrating new hydrologic models. Because decision making depends on the

water flow data and modeling tools, the study's target completion date was moved from March 2005 to October 2008. Some of the proposals the PDT is considering in the study include: removal of spoil berms that are blocking water exchange with mangroves, construction of filter marshes, restoration of flow-ways in farm areas, return of land to its pre-development state; filling of ditches and canals that interrupt flows, and installation of wildlife crossings to prevent traffic deaths of Florida panthers.

CERP FOUNDATION PROJECTS

While the focus of the CERP Annual Report is on the accomplishments of CERP implementation, it is useful to look at the broader South Florida Ecosystem Restoration Program to better understand the context within which CERP exists to improve the conditions of different aspects of the greater Everglades ecosystem. Significant milestones have been accomplished in implementing these projects, some of which already are benefiting the natural system. These projects are discussed briefly here.

During the planning of CERP, certain federal and state Everglades restoration efforts were regarded as the foundation for CERP. These Foundation Projects include:

- Federally authorized Kissimmee River Restoration Project
- Modified Water Deliveries to the Everglades National Park (Mod Waters) Project
- Modifications to the C-111 Project
- Combined Structural and Operational Plan
- Critical Restoration Projects
- C-51/STA-1E Project
- State of Florida's Everglades Construction Project
- Invasive Plant Research Laboratory
- Everglades Ecosystem Water Quality

The most significant near-term efforts to restore hydrologic flows into the ENP are the remaining elements of the Modified Water Deliveries to ENP (Mod Waters) Project, consisting of the 8.5 Square Mile Area Flood Mitigation Project, construction of additional Conveyance/Seepage Control features, and the reconstruction of the Tamiami Trail.

Observable benefits to the natural system and the human environment continue to accrue from continued implementation of the Foundation Projects. The results of backfilling just a portion of the Kissimmee River have proved remarkable, with project operations generating a return of natural flow patterns in the restored area and native flora and fauna returning in significant numbers. Completion of several CRPs has reduced freshwater losses from the Pensucco Wetlands and reduced nutrient discharges from populated areas into WCA-3A, improving the health of these valued wetland systems.

While this CERP Annual Report focuses on the accomplishments of CERP implementation, it acknowledges the significant milestones already accomplished in implementing Foundation Projects, some of which already are benefiting the natural system.

The District, USACE, and USDOI, in partnership with other federal, state, and local agencies and tribal governments, are working to complete the Foundation Projects, while moving forward with the planning and design for construction of CERP projects, which are scheduled to be completed in the next five years. Accomplishments of note among the Foundation Projects are highlighted below.

Kissimmee River Restoration

The Kissimmee River and its floodplain, along with the Upper Chain of Lakes, form the headwaters of the greater Kissimmee-Okeechobee-Everglades ecosystem. Historically, the river meandered over 100 miles from Lake Kissimmee to Lake Okeechobee, through a wide floodplain. The river and floodplain comprised a mosaic of wetland plant communities and supported diverse waterfowl, wading birds, fish, and other wildlife. The goal of this project is to restore ecological integrity to the Kissimmee River and its floodplain ecosystem and improve water quality, water supply, natural resources, and flood control level of service in the Kissimmee Watershed.

Building on the success of the first phase of the Kissimmee River Restoration, heavy equipment was mobilized during July 2006 to return another four miles of the Kissimmee River to its historic, meandering route. The construction is reconnecting oxbows and re-carving sections of the river that were lost during the 1960s.

The first phase of construction (June 1999–February 2001) effort recreated about 15 miles of the meandering Kissimmee River. Approximately seven miles of the C-38 previously had been backfilled using dredged spoil. Construction for the second phase began at the northern end of the first phase of restoration and is progressing northward, eventually to backfill about 1.5 miles of the channelized river. Three weirs were scheduled for removal during this demonstration project's second phase, scheduled for completion in October 2007.

The total Kissimmee River Restoration Project is scheduled to be completed in four phases by 2012 at an estimated investment of $578 million. It is a partnership between the District and the USACE, with each partner providing 50 percent of the cost. The goal is to return flow to 43 miles of the river's historic channel and restore about 40 square miles of river and floodplain ecosystem. Instead of the straight, deep, and wide channel dug 40 years ago, the restored section of the Kissimmee River will again meander through its historic and wetland-rich floodplain, benefiting more than 300 species of fish and wildlife. The Kissimmee River Restoration Project is one of four finalists for the prestigious 2006 International Thiess River Prize award for excellence in river and water management. The winner of this global award for outstanding achievements in river repair and management will be announced in September.

Modified Water Deliveries to Everglades National Park

Tamiami Trail (U.S. 41) and L-29 form an ecological and hydrological barrier between WCA-3 and ENP. Two ongoing projects have identified ways to improve hydrologic and ecological conditions within ENP: the Modified Water Deliveries and C-111 South Dade projects. These projects will help improve conveyance into ENP and provide some seepage control south of Tamiami Trail. The goal of Mod Waters is to improve water deliveries to Shark River Slough, and to restore natural hydrologic conditions of the ENP, and enhance and restore its ecological values. A rainfall-driven water delivery plan was developed and implemented in place of a minimum delivery schedule authorized by congressional mandate (Public Law 91-282).

The plan involves the modification of S-334, raising a portion of the Tamiami Trail, degrading the existing L-67 extension, and filling the accompanying borrow canal. Construction of three gated culvert structures, three gated concrete headwall structures, and two spillway structures is planned. The Mod Waters Project must be completed before the implementation of portions of CERP.

The Mod Waters Project was authorized by the U.S. Congress in the Everglades National Park Protection and Expansion Act of 1989 to improve water delivery to the ENP. Heralded as the first Everglades restoration effort by the USACE, Mod Waters will restore more natural flow through the Everglades; it must be completed before the implementation of portions of CERP. This project authorizes modification of the C&SF Project to restore hydrologic conditions in the ENP, improve conditions over 190,000 acres of habitat, assist in the recovery of threatened and endangered species, and lay a strong foundation for future restoration efforts under CERP. To address concerns regarding phosphorus pollution in the Everglades, Congress enacted provisions in the FY2004 and FY2005 Interior Appropriations Acts that condition funding for Mod Waters upon meeting state water quality standards.

Work is being carried out as three major components as follows:

- **Eight and One-Half Square Mile Area.** This element will restore agricultural land to a more natural condition and restore the hydrologic flow regime in 8.5 square miles of the Everglades ecosystem. The acquisition of lands required to construct this component has been completed, and a contract has been awarded for the construction of flood mitigation features.
- **Tamiami Trail.** This element will raise the roadbed and bridge significant portions of the Shark River Slough, to significantly improve and increase the amount of water flowing into ENP. Redesign of this component was completed in January 2006. Acquisition of lands is in progress and is expected to be completed by December 2006.
- **Conveyance and Seepage.** This element will construct features to further reduce seepage and return waters to ENP and provide flood control protection to developed areas.

Modifications to the C-111 Project

As the Mod Waters Project is geared to benefit the Shark River Slough, the C-111 Project in South Miami-Dade County will attempt to restore Taylor Slough's hydropattern, and enhance flood protection for protected areas east of the L-31N levee. Like the Shark River Slough, Taylor Slough delivers fresh water through the ENP ecosystem. The C-111 Project is a cooperative effort of the District and the USACE. Taylor Slough's hydropattern will be improved through a series of construction projects designed to send more fresh water to the slough, eastern ENP and Florida Bay. One permanent and three interim pump stations are complete, along with three detention areas, replacement of the Taylor Slough Bridge and removal of spoil mounds along the lower C-111. This project is expected to be completed by 2010, subject to appropriations.

Combined Structural and Operational Plan

The USACE Jacksonville District is developing a Combined Structural and Operating Plan (CSOP), with an Environmental Impact Statement, for the Mod Water and the C-111 Projects with the assistance of the District, ENP, and FWS. Currently, the two projects are partially completed and are operated in accordance with the Interim Operating Plan that was approved in

2002. The USACE is using the CSOP study to develop the final operating plan for the two projects and to recommend any necessary structural modifications. The USACE is preparing an Environmental Impact Statement, which should be completed under a new accelerated schedule in mid-2007, for the development of the CSOP for the completed Mod Waters and C-111 Projects.

Critical Restoration Projects

Critical Restoration Projects (CRPs) were authorized in WRDA 1996, with modification in WRDA 1999, for the purpose of developing specific water quality related projects that are essential to the restoration of the Florida Everglades. Each project selected was expected to provide independent, immediate and substantial restoration, preservation and protection of the Florida Everglades. CRP selection criteria specifically excluded any CERP features.

Progress was made toward completing CRPs during FY2006, including efforts on the following projects:

- **Lake Okeechobee Water Retention/Phosphorus Removal.** Construction was completed on schedule for the Taylor Creek and Nubbin Slough STA components. These STAs will reduce Lake Okeechobee Basin runoff and improve the water quality of tributaries flowing into the Lake. Construction for the 190-acre STA on Grassy Land Ranch on Taylor Creek was completed in FY2005, and the 780-acre Nubbin Slough STA on the former New Palm/Newcomer Dairy site was completed in FY2006.
- **Lake Trafford Restoration.** The confined dredging disposal facility and base-bid dredging were completed for the Lake Trafford Restoration CRP. Approximately 3.5 million cubic yards of muck were dredged. Contract issues delayed removal of about 1 million cubic yards of additional suffocating organic matter along the lakeside littoral zone where aquatic vegetation and native fish spawning occur. The muck is easily suspended in the water column by wind and wave action. Nutrients in the muck feed algal blooms, which draw oxygen from the water, killing fish, thereby adding more nutrients to the water in a noxious cycle. Work stopped when low water levels prevented the District's contractor from getting its massive dredge near enough to the shoreline. A dry spring 2006 had shrunk the near-shore depths to an unworkable level. The District expected to award a new contract by October 2006 and to complete the Lake Trafford Restoration work within the subsequent year. Test plots of native vegetation may be planted in the newly-dredged near-shore zone in the spring of 2007.

Appendix 7A-1 presents the status of all CRPs. More information is available on the USACE web site at: http://www.saj.usace.army.mil/projects/index.html.

C-51/STA-1E

The USACE substantially completed construction of C-51/STA-1E in June 2004. Construction of a field-scale periphyton-based STA, a cost effective means of greatly reducing phosphorus levels, was scheduled for completion in 2006, followed by operation and monitoring at a cost of $5 million.

Everglades Construction Project Stormwater Treatment Areas

The ability of wetlands to assimilate phosphorus is crucial to Everglades restoration. For this purpose, approximately 40,000 acres of freshwater wetlands have been constructed in the Everglades. These constructed wetlands (STA-1E, STA-1W, STA-2, STA-3/4, STA-5, and STA-6) are designed to remove excess total phosphorus from surface waters entering into the Everglades Protection Area. From 1994 through April 30, 2006, these STAs reduced the total phosphorus load that would have gone into the Everglades by over 800 metric tons. For information on the ECP STAs implemented pursuant to the Everglades Forever Act, refer to Chapter 5 of this volume.

Invasive Plant Research Laboratory

The development of CERP included a feature to evaluate Melaleuca Eradication and Other Exotic Plants, a project reported earlier in this CERP Annual Report. This feature will utilize the Melaleuca Quarantine Facility, a research laboratory constructed in 2005 by the USACE with funding from the USDOI and the District. This facility will increase the capability to evaluate new biological controls for use in CERP.

Everglades Ecosystem Water Quality

In the past decade, the state has made significant progress in improving the quality of water entering the Everglades. The focus of these efforts has been on reducing phosphorus levels to discharges in the EPA, including the Refuge, WCAs, and ENP. Measures being undertaken to improve the quality of water entering the Everglades are the subject of the Everglades Forever Act, Section 373.4592, F.S., and a 1992 Consent Decree that settled water quality litigation between the U.S. and Florida related to the quality of water entering federal areas. The Everglades Forever Act requires construction of about 45,000 acres of STAs; to complement the state STAs, the federal government constructed the C-51/STA-1E. Florida has established a numeric phosphorus criterion for the EPA of 10 parts per billion; in addition, the state has many Class III water quality criteria for additional parameters for the area.

NONINDIGENOUS SPECIES

The impact of invasive species in South Florida ecosystems is a priority for CERP, as the management and prevention of these species is essential in achieving regional restoration goals. Introduced nonindigenous species diminish and degrade ecosystem functions, disrupt public use, and affect overall ecological health. While past research and control efforts have primarily focused on invasive agricultural pests, collaborating state and federal agencies are now beginning to direct attention to the extensive list of invasive plant and animal species that threaten the distinctive natural areas of the South Florida region.

CERP implementation must consider control and management of non-native species as a critical aspect of ecosystem restoration in South Florida. In support of this goal, CERP addresses the presence of non-native species as one of several factors that preclude any serious consideration of achieving true restoration of the natural system — one in which nonindigenous species are not present. For instance, CERP considers how removal of canals and levees, which act as deepwater refuges for non-native fishes and as conduits into interior marshes for other species, may help control invasive species by slowing further movement. However, restoration of lower salinities in Florida Bay may result in increases of nonindigenous fish, such as the Mayan

cichlid (*Cichlasoma urophthalmus*), which thrives in fresh water. As such, related impacts due to CERP implementation are being addressed as part of the detailed design phase of projects.

Notably, this year marks the 100th anniversary of the wide-scale introduction of melaleuca, a vigorous, fast-spreading Australian tree that crowds out native plants. Melaleuca has spread through thousands of acres of natural, agricultural, and residential areas, destroying freshwater prairies, changing bird populations, and displacing native animals in the Everglades. Funding was authorized by the USACE in 2002 for the CERP Melaleuca Eradication and Other Exotic Plants Project. This project will enhance efforts to control invasive exotic plant species (primarily melaleuca and Old World climbing fern, *Lygodium microphyllum)* in South Florida through mass rearing and controlled release of biological agents concurrent with development of a systemwide plan. Development of the PIR, which will determine the best method to fund the rearing, release, and monitoring of approved bio-control agents, is planned to be completed in 2007. Chapter 9 of this volume provides detail on the status of nonindigenous species in South Florida.

WATER QUALITY

For information on Phosphorus Source Controls for the Basins Tributary to the Everglades Protection Area, please refer to Chapter 4 of this volume. For information on the Everglades Construction Project STAs implemented pursuant to the Everglades Forever Act, please refer to Chapter 5. For information on the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area (Long-Term Plan), please refer to Chapter 8.

WATER CONSERVATION

A discussion of water conservation is included in response to peer review panel comments on the CERP Annual Report for FY2005. The District's overall water conservation goal is to prevent and reduce wasteful, uneconomical, impractical or unreasonable use of water resources. A strategy of the water supply program in the agency's Ten-Year Strategic Plan is to provide funding and regulatory incentives to encourage water users to promote efficient use of water resources through conservation and reuse, and to increase diversity of water supplies by developing alternative sources.

The District’s conservation program strives to improve management of traditional supplies and encourage development of alternative or diverse water supply sources, in addition to improving efficiency of water use. This includes reclaimed water for reuse, use of brackish water sources, wastewater recycling, recharge and ASR. The District improves water use efficiency by funding technology-based conservation projects. Through its Alternative Water Supply Grant Program, Water Savings Incentive Program, and Mobile Irrigation Labs, the District assists local programs that save or create water. Information on the District’s Alternative Water Supply program is presented in Volume II.

The demand for urban and agricultural water uses is projected to increase significantly over the next 20 years in the South Florida region. These water demands must be met without harm to the environment and water resources. Regional water supply plans concluded current District water sources will not be sufficient to meet projected water demands; however, with appropriate management and diversification of water supply sources, there is sufficient water to meet the water needs during a 1-in-10-year drought condition through 2020.

HURRICANES

Hurricanes had measurable impacts on the South Florida ecosystem in 2005 and 2006. In August 2005, Hurricane Katrina's heavy rains poured agricultural and suburban runoff into southern Biscayne Bay, dropping salinity levels and causing phosphorus levels to rise. In September and October, Hurricanes Rita and Wilma exacerbated problems in the southern estuaries. A long-lasting blue-green algal bloom in southern Biscayne Bay and northeast Florida Bay appears to have started the month after Hurricane Wilma. Unlike red-tide algae, blue-green algae is not toxic. However, blue-green algae can harm sea life by clouding the water, in turn blocking sunlight, which prevents photosynthesis and leads to plant mortality.

The result of Hurricane Wilma's passage through South Florida had consequences for both natural and manmade systems. The storm left lakes and canals piled with debris and fallen vegetation, and affected the District's water management infrastructure, including sections that are vital to restoring the Everglades. Impacts occurred from central Florida to the Florida Keys, although the greatest impact was to Lake Okeechobee and the STAs. Discussion of the effects of Hurricane Wilma on the STAs and on the Lake can be found in Chapters 5 and 10, respectively.

Hurricane disturbance may increase nonindigenous plant species in natural areas by decimating the canopy of native plant communities, making them more prone to invasion. Some exotic species have been introduced to the wild as a result of hurricanes. The New Zealand Pukeko, or purple swamp hen, for example, escaped to the Everglades as a result of Hurricane Andrew in 1992. These birds, whose diet consist of wetland plants, frogs, snails, eggs, and ducklings, have been seen in Broward and Palm Beach county wetlands. Research is under way to assess the impact of this species on the South Florida ecosystem. More information can be found in Chapter 9.

CERP 470 REPORT

The CERP 470 Report presented in Appendix 7A-1 of this volume is required to provide oversight and accountability for financial commitments under the Everglades restoration section and to record progress in CERP implementation, in accordance with Section 373.470(7), F.S., as amended during 2005. The District, in cooperation with the FDEP, which conserves and manages Florida's natural resources and enforces the state's environmental laws, prepares the CERP Annual Report. This report is included as Appendix 7A-1 of this volume, as required by Section 373.036(7), F.S.

The CERP 470 Report includes information on the Conservation and Recreation Lands Trust Fund, the Land Acquisition Trust Fund, the Preservation 2000 Trust Fund, the Florida Forever Trust Fund, the Save Our Everglades Trust Fund and other named funds or accounts for the acquisition or construction of project components, features or facilities that benefit CERP.

The CERP 470 Report also identifies state and local sponsor revenues and itemizes expenditures related to CERP implementation. It describes the purpose for which the funds were expended, provides the unencumbered fund balance remaining for implementation of CERP, and provides a schedule of anticipated expenditures for the next fiscal year.

The CERP 470 Report fulfills the statutory requirements and includes CERP financial information and the progress of CERP implementation information for FY2006.

OUTLOOK

The Everglades is a venerated American treasure. This subtly beautiful ecosystem epitomizes the South Florida region. It is also an ecosystem under stress, for which an ambitious 30-year plus restoration plan has been developed. CERP is a roadmap that provides critical direction and organizational structure for restoring and protecting the South Florida ecosystem. The comprehensive, systemwide nature of the plan and the linkage of its elements to one another must be preserved during implementation. Implementation of CERP must proceed using the principles of adaptive assessment, and, once restored, the Everglades and South Florida's natural environment must never again be negatively affected by water management activities.

Florida must forge ahead to implement CERP in keeping with its promise to restore the River of Grass. By constructing the massive water storage systems and other projects and components in the initial authorization that are reaffirmed in the Acceler8 initiative, water releases will be better controlled, wildlife habitat will be restored, and the state's estuaries will be protected. Through Acceler8, 100,000 acres of wetlands will be restored and water treatment areas will be expanded by nearly 29,000 acres to provide 428,000 ac-ft of additional storage for Everglades restoration a decade ahead of schedule.

CERP will revitalize the ecosystem while providing future fresh water supplies for the people and farms of the region. It is considered the world's largest such project. However, its success is up to all: citizens across the nation and state, USACE, USDOI, the District, and other agencies. Both input and support will be required over the coming decades as this ambitious ecological restoration effort is constructed. The state commitment to continued funding of the projects and acquisition of lands must remain strong and constant. The federal government must authorize the projects and appropriate the necessary funds to see the restoration of South Florida through to fruition.

Future generations should have the opportunity to visit this majestic and captivating ecosystem and see its expansive sawgrass marshes and towering blue skies. CERP and the other ecosystem restoration projects, including the Kissimmee River Restoration, Everglades Construction Project, and LOER Program, will make South Florida a healthier place than it is today, and one that will remain strong and vital in the future. Key CERP, Acceler8, and other restoration projects will begin delivering more and cleaner water to the ecosystem. As construction completes and these projects begin being placed in service, the natural system will increasingly benefit from improving water qualities, water quantities, timing of flows, and distribution of water.