



FISCAL YEAR 2000

CROSS-CUT BUDGET

**SOUTH FLORIDA ECOSYSTEM
RESTORATION PROGRAM**

1.1 What Is The South Florida Ecosystem?

Many people see the South Florida ecosystem as just the natural environment. But the South Florida Ecosystem is also home to humans and their built environment (cities, towns, and farms). Today we understand that all living beings, including humans, are interconnected. The South Florida Ecosystem is not just the natural environment. It is both the natural and the built environment.

1.12 Why is The South Florida Ecosystem Important?

The South Florida Ecosystem is a complex network extending from the Chain of Lakes south of Orlando to the coral reefs off the Florida Keys - over 18,000 square-miles of land and water. Within these boundaries is a wide array of upland, lowland, and marine habits. Throughout the region are areas with special designations such as outstanding Florida waters, a national marine sanctuary, an international biosphere reserve, and numerous state and federal parks and preserves - all of which are interconnected.

The built environment is equally complex. Developed areas from Kissimmee to Key West offer cultural diversity and an attractive climate. The region supports major sea and air transportation hubs, thriving tourism and agricultural industries, and national and international commerce. South Florida also possesses fine institutions of higher education and rich points of historical and architectural interest. Over 6.5

million residents and 37 million annual tourists rely on the region and its \$200 billion economy for their livelihoods and well-being.

This unique and complicated national treasure is the physical, economic, and social anchor for the country's fourth most populated state. It can be found nowhere else in the world.

1.13 The Magnitude of the Problem

Disrupted Hydrology / Water Quality Degradation

Once water flowed unimpeded through the southern half of the state. Today flood control and water supply systems, agriculture, and development disrupt the region's natural hydropatterns. Runoff from cities and farms introduces high levels of phosphorus, nitrogen, and other contaminants, polluting many bodies of water. High discharges of stormwater into estuaries severely damage aquatic habitats that support seagrasses, oysters, and other species. Saltwater intrusion and pollutants threaten groundwater. These impacts have significantly stressed the natural system. The following underscore these problems:

- ⇒ Half of the original Everglades has been drained, and perhaps lost forever.
- ⇒ Two million acre-feet of water are lost from the natural system annually through discharge and seepage.
- ⇒ Phosphorus and nitrogen from agricultural and urban runoff have contaminated Lake Okeechobee,

the Everglades, and adjacent areas.

- ⇒ Unnatural freshwater discharges have damaged coastal estuaries, including Florida Bay.

Loss of Habitat and Native Species

Natural habitats are now disconnected through growth and development. The rampant spread of invasive exotic species has further disrupted natural habitats. The cumulative loss of habitat has caused sharp declines in native plants and animals, placing many native species at risk. Specific impacts include:

- ⇒ Wading-bird populations have dropped by 90%–95%.
- ⇒ To date, 68 plant and animal species are federally listed as threatened or endangered.
- ⇒ The incidence of coral diseases in the Florida Keys National Marine Sanctuary has increased 4-fold since 1996.
- ⇒ Over 1.5 million acres of land are infested with invasive exotic plants.
- ⇒ Since 1989 the biomass of turtlegrass in western Florida Bay has decreased by 25%.

Urban Development / Suburban Sprawl

Today South Florida is home to over 6.5 million people, over nine times the population in 1948 when the C&SF Project was authorized. This influx of people has led to dramatic changes to the landscape. Former wetlands are now agricultural lands. Parts of the historical Everglades are now suburbs. Large metropolitan areas

cover most of the eastern coast and portions of the west coast.

As this development spread, older urban areas suffered. The migration to the suburbs reduced tax bases in urban zones and diverted resources to outlying areas. Growth in suburban and rural areas demanded more roads and services.

Today roads, hospitals, schools, and utilities are aging, and human services are overtaxed. Disinvestment and crime in inner cities are persistent problems. Increasingly, outlying areas are strained. For many people the quality of life has decreased. Some indications of built environment stresses include:

- ⇒ There are thousands of contaminated sites (brownfields) along the southeast coast of Florida.
- ⇒ Much of the eastern urban corridor of South Florida is characterized by income levels lower than those found in surrounding suburbs.
- ⇒ The city of Miami is ranked the fourth poorest city in the nation.
- ⇒ Miami-Dade County is ranked the third most congested area in the nation.

1.14 Why Should We Care?

A healthy ecosystem is not a nicety, it is a necessity. Water that is cleaned as it passes through the Everglades and the aquifer, supports habitats throughout the region. Clean water also supports the state's multiple industries and rapidly growing population. In South Florida the urban and the natural systems are inextricably linked. This makes

stakeholders inclusive of every living thing in South Florida — human or nonhuman.

Efforts like the Army Corps of Engineers' Central and Southern Florida Comprehensive Review Plan also known as the "Restudy" are key parts of the restoration plan. The Restudy, due to Congress on July 1, 1999, recommends a plan that is focused on recovering the major characteristics that defined the historic Everglades — the "river of grass". What made the Everglades special was its large size and how water acted to connect myriad habitats, and served to support numerous species of fish and wildlife. The construction of flood control levees following a 1948 hurricane compartmentalized the Everglades. Canals efficiently drained water to the ocean. An explosion of development followed which reduced the size of the Everglades and introduced pollutants to the natural system. As the physical form and function of the flood plan was altered dramatically, natural patterns of water flow were disrupted, and ultimately interfered with the ability of most animals to find dependable habitat, at the right times, and in the right places.

By removing many miles of levees and canals and recovering water storage, the recommended plan will restore the essential defining features of the historic Everglades over large portions of the remaining area. As a result, animals are expected to show a dramatic and positive response. Throughout the food chain the numbers of animals such as crayfish, minnows, sunfish, frogs, alligators, herons, ibis and otters will substantially increase. Equally important, animals will respond to the

recovery of more natural water patterns by recovering their traditional distribution patterns.

How will you know if the plan works and if the ecosystem is being restored? Two telling measures of success will be: 1.) the return of large wading bird nesting grounds, called "rookeries", to Everglades National Park, and 2.) the recovery of several endangered species to a more certain and optimistic future. Scientists believe that wading birds, such as herons, egrets, ibis and storks, are indicators of the overall health of the Everglades. Before they make decisions about where, when or even whether, to nest, wading birds, perhaps more than any other animals, size up the quality of habitats over the entire region of wetlands. As recently as the 1950s and 1960s, large "super colonies" of nesting wading birds remained in the Park, but have since disappeared. The recovery of these super colonies will be a sure sign that the entire Everglades has made substantial progress toward being restored. Among the endangered species, the wood stork, the snail kite, the Cape Sable seaside sparrow, the West Indian manatee, the American crocodile, and the Okeechobee gourd will benefit from improved habitat as a result of the recommended plan.

1.2 Enacting Laws and Initiatives

Over the past 25 years the Florida Legislature and U.S. Congress have passed legislation to manage growth and protect the natural environment. This collective legislation has evolved into a more holistic and integrated vision for restoring the South Florida ecosystem in its totality.

Early state legislation, such as the 1972 Land Conservation Act and the Florida Water Resources Act, established the foundation for managing state growth and protecting sensitive waters. These acts signaled a change in public and governmental attitudes about development and the natural environment.

Another major initiative expanded this theme with the launching of the 1983 Save Our Everglades program — a partnership between the South Florida Water Management District (Water District) and state and federal governmental agencies. The initiative's goal was to work toward restoring the natural components of the ecosystem. Affecting the entire Kissimmee River, Lake Okeechobee, Big Cypress Swamp, and Everglades, this initiative set a precedent for addressing problems on a regionwide scale and for interagency cooperation.

In 1985 Florida strengthened its existing planning laws by adopting the Local Government Comprehensive Planning and Land Development Regulation Act. This act has resulted in the adoption of comprehensive plans by every local government in the state. The 1987 Surface Water Improvement and Management Act (SWIM) complemented the new growth regulations by requiring each Florida water management district to identify critical problems in surface waters and to implement comprehensive restoration plans.

In the early 1990s restoration efforts became more consolidated and focused, while at the same time the scope of these efforts was expanded.

The federal 1992 Water Resources Development Act authorized a massive and comprehensive review study of the Army Corps of Engineers original 1948 Central & Southern Florida Project, designed to control flooding. This project, successful in its time, built a huge network of canals and levees to drain much of the Glades. The goal of the Review Study or “Restudy” is to restore the system's natural hydropattern, while maintaining the existing levels of flood control and improving the integrity, capability, and conservation of urban and agricultural water supplies. The Restudy focuses on virtually the entire ecosystem and is being carried out by an interdisciplinary/interagency team composed of state and federal representatives. The final Restudy will be completed and delivered to the U.S. Congress on July 1, 1999.

The Kissimmee River Restoration Project underscores the success of collaborative efforts. Plans to restore the river, developed by the U.S. Army Corps of Engineers (Corps) and the Water District, culminated in the Water Resources Development Act of 1992. The act authorized and partially funded the restoration of this critical river/floodplain ecosystem, which was disrupted when the river was channelized during the 1960s.

Florida's 1994 Everglades Forever Act established another ambitious ecosystem restoration plan known as the Everglades Program. The program involves the construction of man-made wetlands on land previously used for agriculture and the implementation of agricultural best management practices (BMPs) designed to reduce phosphorus contamination on remaining

farmlands. The act also initiated intensive research and monitoring studies and implemented new incentive-based regulations requiring farmers and municipalities to meet state phosphorus-reduction standards.

A concerted effort is being made to dovetail activities associated with the Restudy and those ongoing under the Everglades Program. Both represent major steps toward implementing a nationwide, integrated plan based on federal and state cooperation.

The 1996 Water Resources Development Act and subsequent appropriation bills continued to stress interagency cooperation and provided funding for restoration efforts on a

regionwide basis. The bill requires the Corps to develop a comprehensive review study for restoring the hydrology of South Florida (i.e., the Restudy). Further, it authorized federal, state, local, and tribal governments to develop recommendations for implementing the plan. The act also authorized additional critical construction projects related to the C&SF Restudy. Finally, the bill formally established a South Florida Ecosystem Restoration Task Force.

This evolving body of legislation and initiatives has culminated into what is now known as the South Florida Ecosystem Restoration and Sustainability Project.

ENVIRONMENTAL AND ECOSYSTEM RESTORATION MILESTONES

1947 Establishment of Everglades National Park	Set aside 1.3 million acres of Everglades as wilderness; expanded to 1.4 million acres in 1989
1972 Florida Land Conservation Act	authorized the issuance of bonds to purchase environmentally endangered and recreation lands
1983 Governor's Save Our Everglades Program	recognized that the entire ecosystem needs to be restored, not just parts of it; initiated Kissimmee River Restoration Project
1984 Florida Warren Henderson Act	gave authority to the Department of Environmental Regulation (now DEP) to protect wetlands and surface waters of the state for public interest
1985 Florida Local Government Comprehensive Planning and Land Development Regulation Act	required the development and coordination of local land use plans
1987 Florida Surface Water Improvement and Management Act (SWIM)	required the five Florida water management districts to develop plans to clean up and preserve Florida lakes, bays, estuaries, and rivers
1990 Florida Preservation 2000 Act	established a coordinated land acquisition program to protect the integrity of ecological systems and to provide multiple benefits, including the preservation of fish and wildlife habitat, recreation space, and water recharge areas
1990 The Florida Keys National Marine Sanctuary and Protection Act	established a 2,800-square-nautical-mile marine sanctuary and authorized a water quality protection program

1991 Florida Everglades Protection Act	provided water management districts with clear tools for ecosystem restoration
1992 Water Resources Development Act	authorized the Kissimmee River Restoration Project and the Central and Southern Florida Project Restudy
1993 Federal South Florida Ecosystem Restoration Task Force	established to coordinate state ecosystem restoration efforts in South Florida
1994 Florida Everglades Forever Act	outlined a comprehensive plan to restore significant portions of the South Florida ecosystem through construction, research, and regulation
1994 Governor's Commission for a Sustainable South Florida	established to make recommendations for achieving a healthy South Florida ecosystem that can coexist with and mutually support a sustainable economy and quality communities
1996 Farm Bill	Section 390 of this Bill directly appropriated \$200 million to conduct restoration activities in the Everglades ecosystem in South Florida
1996 Water Resources Development Act	expanded the task force to include tribal, state, and local governments, mandated extensive public involvement, allowed task force to address full scope of restoration needs (natural and built)

1.3 Partners in Restoration

Forming Partnerships

Legislative efforts and changing land use patterns have led to the formation of several important partnerships involving federal, state, local, and tribal governments, and private entities. Groups that in the past held opposing views on how to manage natural and economic resources are now working more closely together in pursuit of increasingly common goals. Today, these partnerships provide the vision, strategic thinking, and planning needed to carry out coordinated and effective restoration actions.

South Florida Ecosystem Restoration Task Force

In 1993 a Federal Ecosystem Restoration Task Force was established through an interagency agreement. The Task Force was created "to coordinate the development of consistent policies, strategies, plans, programs, and

priorities for addressing the environmental concerns of the South Florida Ecosystem."

The Task Force was later formalized and expanded to include tribal, state, and local governments by the 1996 Water Resources Development Act.

The purpose of the expanded Task Force is to facilitate implementation of the overall restoration effort. In this capacity it serves as an information clearinghouse, referee, and coordinating entity that helps guide the restoration effort, keep it on track, and ensure fiscal accountability.

The South Florida Ecosystem Restoration Task Force currently facilitates the coordination of the restoration work associated with the Everglades Forever Act, the C&SF Restudy, the Kissimmee River Restoration Project, and other efforts being conducted by federal, state, and academic entities. These efforts have largely focused on reestablishing the functions of natural

systems of the South Florida Ecosystem.

interrelationships with South Florida's human communities.

Governor's Commission for a Sustainable South Florida

In 1994 the Governor of Florida established a commission "to develop recommendations and public support for regaining a healthy Everglades ecosystem with sustainable economies and quality communities." The commission has been instrumental in formulating strategies that address both natural and built ecosystem problems in integrated and innovative ways. Its underlying premise is that South Florida's environment, society, and economy are not discrete but are related and interlinking subsystems of the overall ecosystem. This realization represents a major shift in the way the ecosystem, in its totality, should be viewed and managed.

1.4 Fixing the Problem

A Vision for the Future

Ecosystem restoration partners have come to three important conclusions:

- ⇒ On its present course South Florida is not sustainable.
- ⇒ The natural system and the built environment are inextricably linked.
- ⇒ Fixing South Florida Ecosystem problems will take decades of commitment.

These conclusions have led to an emerging vision of South Florida as

a landscape whose health, integrity, and beauty are restored and nurtured by its

This vision can be attained by reaching three long-term goals as indicated below:

GOAL 1: GET THE WATER RIGHT

Getting the water right means restoring a more natural flow of water through the region while also providing adequate water supplies, water quality, and flood control. This involves addressing the quantity, quality, timing, and distribution of water throughout the system. The goal is to deliver the right amount and quality of water to the right places at the right time.

GOAL 2: RESTORE AND ENHANCE THE NATURAL SYSTEM

Restoring and enhancing the natural system means protecting South Florida's natural habitats and reestablishing healthy populations of now threatened and endangered species. Restoring habitats will involve optimizing the spatial extent of wetlands and other habitats through land acquisition and changes in current land use and land and water management. It will also involve reestablishing the physical and biological connections between different parts of the natural system.

These changes, combined with other wildlife management actions such as monitoring and reintroducing species, will play critical roles in maintaining and enhancing species diversity. Reducing and reversing the rampant spread of invasive exotic species will also be important. Finally, halting the stormwater discharge into coastal areas will be vital in restoring the

health of estuaries and sensitive coral reef systems.

GOAL 3: TRANSFORM THE BUILT ENVIRONMENT

Transforming the built environment means developing lifestyles and economies that do not degrade the natural environment or reduce the quality of life in built areas. This will entail rebuilding or revitalizing urban core areas to curtail the outward sprawl of suburbs and development. It also will involve making urban areas more livable by creating green spaces, improving transit systems, and providing affordable housing. Balancing human needs and those of the natural system will require a review of how resources should be used. A sustainable built environment will also require a diverse and balanced economy.

1.5 How Do We Achieve The Goals?

1.51 Adaptive Management

To reach these goals and the future vision for South Florida, the Task Force and its partners have adopted an adaptive management strategy. The strategy acknowledges that not all the data needed to restore the entire system is in hand. It also recognizes the need to move forward. Therefore, the project's learn-as-you-go strategy is to implement action where possible, while continuing to gather data and refine the collective understanding of the problems.

Adaptive management entails three essential elements: models, support studies, and monitoring. Each is a

tool that is used in combination with the other two elements.

Models provide the conceptual framework that forms the basis for support studies. These studies provide data and interpretation that lead to a better understanding of the problem and then to the development of a series of management alternatives. The costs and benefits of the alternatives are then calculated using the models to determine which alternative represents the best course of action.

Once an alternative is selected and implemented, monitoring is used to assess the effectiveness of the action and to provide feedback on ways to modify it (if warranted). Similarly, monitoring data can be used to revise and refine the original model, thereby completing and continuing the interactive feedback loop of decision making and implementation.

Adaptive management provides a structure for initiating critical projects immediately, the flexibility to modify activities when needed, and the feedback and coordination to ensure accountability.

1.52 Innovative Management

The Task Force and its partners also have adopted a series of creative tactics needed to implement goal-oriented actions as follows:

1.52.1 Science-Based Decision Making

To be successful, restoration decisions must be based on sound, applied science. Applied science has two major roles in restoration efforts. One is to facilitate and promote the

application of existing scientific information to planning and decision making. The other is to acquire critical missing information or information that is needed to validate (or modify) ongoing management actions.

Much of the restoration effort is based on the assumption that better water management will provide sustainability across both natural and human systems. This suggests, as a working hypothesis, that hydrologic restoration is a prerequisite for ecosystem restoration.

The challenge is to determine how to modify the structure and operation of the current hydrology so that it more closely resembles predrainage patterns. To do this

- previous drainage patterns must be reconstructed
- key species and habitat indicators must be identified
- predictive and evaluative models must be developed
- monitoring programs need to be implemented

These activities are necessary to provide the scientific data needed to make informed decisions on how to implement restoration projects and to assess their outcomes.

1.52.2 Systemwide Management

Science alone is not the answer. Another crucial step in achieving the restoration goals is to overcome institutional barriers that encourage the status quo. In the past, there has been a tendency to manage natural, economic, and human resources as independent variables that are administered and regulated by

discrete jurisdictions. This approach leads to reduced communication, duplication of effort, and inefficiency.

The task force and its partners, therefore, advocate a holistic, systemwide approach that addresses issues regionally, not locally. There is also an emphasis on obtaining results, rather than implementing programs that have no clear outcome. Finally, there is a growing recognition that the problems faced in South Florida must be solved collaboratively and must be based on a sound understanding of the variables involved.

1.52.3 Integrated Governance

Integrated governance is a creative approach to coordinating federal, state, local, and tribal laws, authorities, and regulations to achieve a shared restoration vision. It also seeks ways to streamline funding, coordinate different levels of federal, state, local, and tribal government, cut costs, and allow actions to be implemented faster.

To be successful, governmental entities will need to seek regulations that are based on common sense, to share their funding, to integrate their budgets, and to develop cooperative programs.

1.52.4 Broad-Based Partnerships

South Florida problems affect all individuals living there but in different ways. To be successful, there must be a shared vision and mutual commitment for change. It is critical that federal, state, local, and tribal governments join with interested and affected parties to examine differing

views and needs. This will form the basis for the respect and trust needed to work together.

1.52.5 Public Outreach and Communication

Finally, building broad-based partnerships requires a good understanding of the issues and an atmosphere of open dialogue. Because of the diversity of cultures in South Florida, public outreach and communication will form an important cornerstone for ecosystem restoration efforts. Public outreach strategies should find concrete and meaningful ways to connect people with ecosystem restoration efforts. They should foster a clear exchange of views, perspectives, and information. The strategies should seek to instill a broad sense of stewardship, ownership, and responsibility for all parties involved, including private citizens.

1.6 Progress Made

1.6.1 Introduction

Creating a sustainable South Florida cannot happen overnight. It will require continued planning, restoration, and monitoring. However, federal, state, tribal, regional, and local partners have made significant progress. The following examples serves to highlight just some of the many accomplishments currently taking place in South Florida.

1.6.2 Restoring the Environment

Over the past 50 years the physical appearance of South Florida has undergone vast transformations. Correcting problems stemming from

these changes will require altering the landscape as well as the way we use and manage resources.

Central and Southern Florida (C&SF) Project Comprehensive Review Study (Restudy)

The *Restudy* is the linchpin of the South Florida ecosystem restoration effort. The purpose of the *Restudy* is to reevaluate the entire C&SF Project water distribution system and to develop a comprehensive plan for implementing changes needed to meet ecosystem water supply needs through 2050. The *Restudy* represents a massive undertaking to better manage the water system of an 18,000-square-mile-area. Implementing the comprehensive plan is a necessary precondition for most future restoration efforts.

Accomplishment Highlights

In 1998 a multiagency planning team completed a draft comprehensive plan for modifying South Florida's water management system. Actions outlined in the draft plan will significantly improve the quantity, timing, and distribution of water deliveries throughout the natural system, and will improve water quality in some areas. The plan will also augment urban and agricultural water supplies. While focused mainly on getting the water right, the plan directly addresses all three of the Task Force's goals.

Many of the *Restudy* recommendations focus on projects that capture and store large quantities of stormwater runoff that currently are

discharged to the ocean. The reclamation and treatment of this water will help ensure adequate water supplies for the natural system, agriculture, and urban areas.

In July 1999 the Corps will submit the final comprehensive plan to Congress for approval. The plan must also be approved by the Florida Legislature and the Water District governing board as a joint sponsor. Pending authorization through the Water Resources Development Act of 2000, the Corps and Water District will begin implementing pilot projects and other critical elements of the plan.

The Restudy Planning Effort

Multidisciplinary, multi-agency planning works! A Restudy team composed of 160 specialists from 30 state, federal, regional, local, and tribal governments worked to produce the draft comprehensive plan. Consensus building was difficult, but it resulted in broad goals that will guide restoration efforts. Critical to the process was public comment (through the Restudy internet web site and numerous workshops and public forums). Local governments and stakeholder groups such as the Governor's Commission for a Sustainable South Florida (Governor's Commission) also played important roles. The Restudy plan marks an unprecedented level of public participation and is a model for future ecosystem restoration planning.

1.6.3 Land Acquisition

Accomplishment Highlights

Since 1996 and through the end of calendar year 1998, 374,080 acres have been acquired for \$481 million dollars. The lands were purchased with funding from the Farm Bill, Florida Preservation 2000 program, Conservation and Recreation Lands (CARL) program, and other federal, state, regional, and local sources.

Water Preserve Areas. One strategy to restore regional water patterns is to establish water preserve areas along the eastern boarder of the Everglades. These areas will control the loss of water through unnatural seepage, help clean the water, provide buffer zones between urban areas and the natural system, and enhance the region's water supply. The Water District, state, and federal agencies have spent approximately \$119 million (\$31 million from the Farm Bill) to purchase 15,919 acres of land along the eastern edge of the Everglades. This land will become a connected series of marshlands, reservoirs, and aquifer recharge basins that will help to meet future water supply needs for urban areas, agriculture, and the environment. Another 24,990 acres are targeted for acquisition as soon as funding is available.

Kissimmee River Restoration Project. The construction phase of this project calls for backfilling portions of the Kissimmee canal (C-38 canal), removing structures, and rechanneling the river. But first the land must be obtained. To date the Water District has acquired 87,978 acres of land located around headwater lakes and in the river's historical 100-year floodplain. This represents 93% of the total 94,265 acres needed to complete the project.

Talisman Land Acquisition. This unique land acquisition deal, negotiated between the Department of the Interior, the U.S. Environmental Protection Agency, the Governor's Office, the Water District, the Nature Conservancy, St. Joe Company, and a coalition of sugar growers, is a testimony to how cooperation among government agencies and stakeholders can help to accomplish South Florida Ecosystem restoration and sustainability. The agreement includes a combination of land purchases, land swaps, and agricultural leases that will help to provide lands to meet long-term water storage and water quality treatment needs for the Everglades, while also providing for the near-term and mid-term needs of agriculture. As part of the deal, 50,400 acres of agricultural land will now be made available for future conversion to water storage facilities under the Restudy. Another roughly 10,700 acres will be acquired for use in filtering marshes to cleanse agricultural stormwater runoff before releasing it to the Everglades. The coalition of sugar growers has guaranteed use of lands for at least five years. In exchange for portions of the Talisman properties, the coalition will swap agricultural lands to be used by the Water District for water storage and water quality treatment purposes. This land acquisition is expected to be completed by April 1999.

Everglades Stormwater Treatment Areas (STAs). The Water District acquired 37,700 acres, or 79% of the 47,250 acres needed for the construction of six stormwater treatment areas (man-made wetlands) under the Everglades Construction Project.

East Everglades Addition to Everglades National Park. The park acquired 62,000 acres (or 57%) of the congressionally authorized expansion area, with 42,959 acres of this land being donated by the state of Florida. The remaining 43% (47,000 acres) must be acquired before the Corps can implement the Modified Water Deliveries Project, which will restore natural hydrologic conditions in the park's critical Shark River Slough drainage. The National Park Service is requesting \$20 million in FY 2000 to complete this land acquisition.

1.6.4 Construction and Infrastructure Improvements

Accomplishment Highlights

Kissimmee River Restoration Project. This project, jointly funded by the Corps and the Water District, will reestablish more natural flows and water levels through the historical Kissimmee River channel and floodplain. Construction to expand Water Control Structure S-65, which controls water releases from Lake Kissimmee to the Kissimmee River, was initiated in August 1997 and is nearing completion. Work is also underway to reestablish sheetflow of water across floodplain lands by removing small agricultural ditches and levees. With land acquisition and detailed design almost completed, the Corps/Water District project team is now poised to begin a major river restoration effort in March 1999 by backfilling a 9-mile stretch of the canal. Over the next 10 years this project will restore over 40 square miles of river and floodplain ecosystem that is home to approximately 320 fish and wildlife species.

Modified Water Deliveries to the Everglades National Park Project.

This project is funded from the Construction Account managed by the National Park Service and the Department of the Interior and is designed to restore more natural hydropatterns in Water Conservation Area 3 (WCA-3) and Shark River Slough. This will be accomplished by 2003 through removal and modification of existing levees and canals along with construction of new water control structures and pump stations. In December 1998, construction was completed on two new water control structures, S-3 STA and S-355B, that will help to reestablish flows from WCA 3B to Northwest Shark River Slough. The new water delivery regime required the Miccosukee Indian community of Tigertail Camp to be raised 8 feet to prevent flooding. This construction, which also included replacing substandard housing with new concrete homes, will be completed in early 1999.

A recent study associated with this project used a multiple criteria decision model to evaluate six alternatives for dealing with the 8.5 Square Mile Area. This area is a flood-prone residential area on the eastern edge of the project area. The model indicated that the complete buyout of the land was the most cost-effective alternative for meeting restoration objectives of the project. In November 1998, the Water District's Governing Board approved the buyout of the 5,446-acre residential area as the locally preferred option, subject to the execution of cost-share agreements with Miami-Dade County and the U.S. Department of Interior.

C-111 Project. This project, jointly funded by the Corps and the Water District will restore more natural quantity, quality, timing, and distribution of water deliveries to Taylor Slough and wetlands in the panhandle of Everglades National Park. This will be accomplished over the next six years through the construction of four new pump stations, the replacement of a bridge over Taylor Slough, the construction or modification of numerous canals and levees, and the acquisition of land to be used as detention/retention and buffer areas between Everglades National Park and agricultural lands. Under this project, the Corps/Water District project team recently removed over 600,000 cubic yards of material from the spoil mounds along the southern side of the C-111 canal. This immediately allowed water to overflow the spoil material and establish a more normal sheetflow across the panhandle of Everglades National Park and on to Florida Bay. The construction of a new pump station (S-332D) was completed in 1997. When fully operational, the pump station will help reestablish more normal water flows to Taylor Slough and will increase deliveries of freshwater to Florida Bay. Creation of the detention/retention area will require congressional approval of a realignment of the Everglades National Park boundary. This realignment will involve exchanges of land between the National Park Service and Water District.

Everglades Construction Project.

This project which is funded by the Water District completed construction on the first of six stormwater treatment areas (STA-6, Section 1) and began flow-through water quality treatment in December 1997. During

the first three months of operation, this 870-acre treatment area reduced phosphorus concentrations from 59 to 21 parts per billion and removed approximately 2,200 pounds of unwanted phosphorus that would have been discharged to the Everglades. The Water District began constructing three more stormwater treatment areas (STA-1-West, STA-2, and STA-5) ranging in size from 4,118 to 6,670 acres; all three will be operational in 1999.

Critical Restoration Projects. Under the authority of the 1996 Water Resources Development Act (WRDA 96), the Corps completed preliminary scoping reports and started detailed design and planning on 12 projects that will provide immediate benefits to the South Florida ecosystem. These projects will provide improvements in the quantity, quality, distribution, and timing of water deliveries and will help restore and protect critical wildlife habitat. WRDA 96 authorized the Corps to spend \$75 million on critical restoration projects. To date, only \$17 million has been appropriated to the Corps. Completion of the highest ranking critical projects is dependent upon appropriation of the remaining \$58 million.

1.6.5 Exotic Species Control

Accomplishment Highlights

Melaleuca Control Program. Melaleuca is an invasive exotic that covers vast tracts of land in South Florida. Over the past two years the Water District and National Park Service have chemically treated 6.8 million trees and have manually removed over 3.7 million seedlings in

the South Florida water conservation areas, Everglades National Park expansion area, and Big Cypress National Preserve. Since 1996 approximately 1,450 acres of melaleuca have been aerially treated with herbicides. Between 1990 and 1998 an interagency melaleuca control program has successfully treated over 24.3 million trees and removed over 26 million seedlings.

Exotic Plant Control Strategy. The Task Force and its Working Group established an interagency task team to develop a strategy for eliminating and/or controlling invasive exotic plants. The team is currently working with the Florida Exotic Pest Plant Council to develop a prioritized list of invasive exotic plant species, determine their spatial distribution throughout South Florida, and identify the best control methods for each species. The strategy, to be completed in mid-1999, will provide specific recommendations and action steps for controlling these high priority species and will identify ways to maximize coordination and cost-sharing between federal, tribal, state, as well as non-governmental organizations. The strategy also will recommend educational programs, incentive programs, and local ordinances to encourage the control of exotic plants on private lands.

1.6.6 Habitat/Wildlife Restoration and Preservation

Accomplishment Highlights

Multi-Species Recovery Plan. This plan is a major initiative to deal with habitat and species population problems on a regionwide basis. The U.S. Fish and Wildlife Service recently completed a two-phased

draft recovery plan. The plan addresses the recovery needs of South Florida's 68 federally listed threatened and endangered species. In phase one a team of over 200 experts from federal, state, regional, and local agencies and other special interest groups developed profiles on the biology, ecology, status, trends, and recovery goals for the federally listed species.

In phase two researchers developed profiles for South Florida's major ecological communities and identified specific management actions needed to restore key habitats and at-risk species. When completed in 1999 the plan will serve as a model for other regional and international recovery efforts. The U.S. Fish and Wildlife Service will also use the plan to evaluate the effects of the Restudy on fish and wildlife in the study area and to recommend specific management actions.

Florida Keys Water Quality Protection Program. The Environmental Protection Agency, the State of Florida, and the National Oceanic and Atmospheric Administration have implemented the Florida Keys National Marine Sanctuary Water Quality Protection Program. This program provides comprehensive monitoring programs that record water quality trends, changes in coral reef health and recruitment, and shifts in the conditions of the surrounding seagrass community. This enables scientists and managers to track the reef ecosystems overall health while water quality problems are addressed. The program has launched several special studies to address wastewater and stormwater

problems that affect the near shore waters of the Keys.

Florida Panther Project. In a multiagency effort to increase genetic diversity in this endangered species, eight female Texas cougars were released in Big Cypress National Preserve, Everglades National Park, and Fakahatchee Strand State Preserve in 1995. To date the transplanted cougars have given birth to 12 kittens.

1.6.7 Built Environment

Accomplishment Highlights

Eastward Ho! This initiative marks a major effort to make urban areas more livable. The goal of this collaborative, multiagency effort is to redirect a greater portion of the future population back to the historical eastern corridor of South Florida. It emphasizes revitalizing older urban areas, improving services, and enhancing the appeal of existing built areas. Promoters of the initiative estimate that redirecting growth patterns and stopping urban sprawl will save over \$6 billion by 2020.

Eastward Ho! Brownfields Partnership. This partnership is a collaboration targeting the cleanup and reuse of contaminated and abandoned/underused urban sites. The partnership recently celebrated its designation as a National Brownfields Showcase community, one of 16 communities chosen from 230 nationwide applicants. This designation brings the promise of increased financial attention and resources for brownfields work.

Florida Keys Carrying Capacity Study. The Governor's Executive Order 96-108 called for a carrying capacity analysis for the Florida Keys in response to rapid population growth. The Department of Community Affairs and the Corps, with public and private support, are designing the study under the Critical Restoration Projects authority provided by WRDA-96. When completed the informational database will allow planners to make knowledgeable decisions about balancing economic and environmental needs.

1.6.8 Innovative Planning and Management

The shared vision of a sustainable South Florida has helped restoration partners coordinate their actions. Former adversaries now work together toward reaching common goals. Many governmental entities share resources and expertise to meet pressing needs. This increased interaction is breaking down institutional barriers, streamlining regulatory processes, and making it possible to deal with problems proactively. The following accomplishments depict the successes made through these collaborative efforts.

Accomplishment Highlights

Integrated Financial Plan. Coordinating funding of projects is critical at the massive scale of the South Florida Ecosystem. The Task Force, through the Working Group and the Governor's Commission, plays a major role in this coordination. For example, the Working Group developed an *Integrated Financial Plan* that summarizes the objectives,

funding requirements, and project schedules for over 200 projects. This document, updated annually, is used by state, federal, regional, and tribal governments to plan and prioritize their fiscal year budgets.

The Task Force, Working Group and Governor's Commission also play valuable roles in disbursing special funding. When Congress authorized \$200 million to the Department of the Interior under the 1996 Farm Bill, DOI Secretary Bruce Babbitt requested recommendations for wisely investing the funds. Through a series of meetings, and with significant opportunities for public comment, the Working Group and Governor's Commission ranked a total of 27 candidate projects that met the criteria set by Congress. Over 85% of the funding went towards the two highest ranked projects: acquiring lands needed for water storage in the Everglades Agricultural Area and in the East Coast Buffer/Water Preserve Areas.

Interagency Issue Teams. The Working Group employed a number of multiagency, multidisciplinary teams to recommend resolutions and action plans for South Florida environmental issues. In response to a request from the former Lieutenant Governor Buddy Mackay, three separate issue teams worked with elected officials and stakeholders to develop near-term action plans for improving water quality in the St. Lucie Estuary, Caloosahatchee Estuary, and Lake Okeechobee. The Working Group also established and used an issue-advisory team to refine a master plan for rock mining in the environmentally sensitive Lake Belt Area.

Southern Everglades Restoration Alliance (SERA). This multidisciplinary, multiagency alliance was formed in 1996 to improve coordination of several ongoing restoration projects in the southern Everglades, including the C-111 Project, Modified Water Deliveries Project, L-28 Project, and Experimental Water Deliveries Program. Resolving critical issues related to these projects requires the participation of federal, tribal, state, regional, and local government agencies. SERA meetings and communications are designed to encourage public and stakeholder participation in the planning, design, and implementation process.

Big Cypress Water Conservation Plan. This project represents a groundbreaking collaboration involving the Seminole Tribe of Florida, Corps, National Park Service, U.S. Department of Agriculture, U.S. Fish and Wildlife Service, and Environmental Protection Agency. This multiyear plan will improve water quality, increase water storage capacity, and enhance hydroperiods on the Big Cypress Reservation. The project will also enhance flood control and provide flexible water conveyance capabilities in the reservation.

1.6.9 Science

Accomplishment Highlights

Everglades Nutrient Removal (ENR) Project. This prototype stormwater treatment area successfully completed its fourth year of operation in August 1998 and continues to exceed performance expectations. During this time, the ENR Project

removed 139,000 pounds of phosphorus that would have otherwise flowed directly into the Everglades Protection Area. A \$4.5-million modification to the ENR Project research test cells was completed in 1998. The Water District will use this bank of 30 football field-sized wetland facilities to conduct controlled experiments to optimize STA performance and to evaluate supplemental water quality treatment technologies that have the potential for reducing phosphorus concentrations to 10 parts per billion or less.

Across-Trophic-Level System Simulation (ATLSS). ATLSS computer landscape models were developed to predict population changes in key Everglades wildlife species that occur as a result of changes in water management. To date population models have been completed for the Florida panther, Cape Sable seaside sparrow, Florida snail kite, wood stork, great blue heron, white ibis, and American alligator. Developed by the Biological Resources Division of the U.S. Geological Survey, these models forecast changes in species health and distributions in responses to long-term trends in key variables such as hydrology, food supply, and predator species. The Corps and other partners have used the ATLSS models in the Restudy to evaluate the relative effects of alternative water management scenarios.

Natural System Model. In April 1998 the Water District completed and released an updated version of the Natural System Model. This computer model simulates water flow through the Everglades before the construction of the C&SF Project.

This updated model served as one of the primary tools in the Restudy planning process where output data were used to measure the degree to which various water management alternatives achieved targeted restoration goals in the Everglades.

Everglades Interim Report. On January 1, 1999, the Water District completed this key science review document mandated by the Everglades Forever Act. This document synthesizes scientific information gathered since 1994 and summarizes major findings related to Everglades restoration. Information from this report will be used by the Water District and Florida Department of Environmental Protection for making decisions affecting the implementation of the Everglades Construction Project, particularly STA 3/4, the last and largest stormwater treatment area.

Florida Bay Science Program. This program, overseen by an interagency program management committee, is guided by a strategic plan for research designed to determine the mechanisms and causes behind detrimental changes in Florida Bay, such as reduced seagrass coverage and water quality. The program has coordinated the collection of sediment cores to document historical water quality and ecology, assembled critical baseline data sets, established restoration targets for salinity, and has begun developing predictive models for the bay and adjacent areas. The science management approach developed for Florida Bay is regarded as a model for ecosystem research throughout South Florida.

Everglades Water Quality Model. The Water District developed this computer model to predict the quantity of phosphorus transported to a specific area when a new water treatment alternative is implemented. The Restudy Team used this model to assess water quality impacts of the various water management alternatives.

Miccosukee and Seminole Water Quality Monitoring Programs. The Miccosukee tribe has an established water quality monitoring program and recently have adopted stringent standards to limit phosphorus levels to 10 parts per billion for reservation water. Similarly, through a cooperative effort with the Bureau of Indian Affairs, Environmental Protection Agency, and U.S. Geological Survey, the Seminole Tribe of Florida has implemented a monitoring program and adopted water quality standards for the Big Cypress and Brighton Reservation. The Seminole Tribe is now developing standards for other reservations. These efforts demonstrate the commitment of both tribes toward maintaining good water quality on tribal lands — lands that are an integral component to the entire ecosystem.

Conceptual Ecological Models. Multiagency teams have developed an initial set of conceptual models to organize technical information for the South Florida Ecosystem. The organized data allows planners to design projects to correct specific problems (stressors) resulting in ecosystem degradation. They also identify the ecological performance measures (indicators) that are most likely to reflect the success of the restoration programs. These models

are a way of creating a consensus among scientists regarding the cause and effect linkages in the stressed Everglades system.

1.6.10 Public Outreach and Participation

The Governor's Commission for a Sustainable South Florida. The Governor's Commission is an effective forum for informing and engaging key stakeholders in free-flowing dialogue. The Commission is an informed body of disparate interests that has successfully reached consensus on many controversial issues and helped to keep individual interest groups working together. It serves as an important conduit for sharing information received from Commission constituencies.

Public Outreach and Participation Strategy. The Working Group developed a public outreach and participation strategy designed to attain broad-based public understanding and long-term support for a restored ecosystem and a sustainable South Florida. Through this strategy the Working Group and the Governor's Commission promote public awareness, actively engage everyone who is affected in restoration and sustainability efforts, and incorporate their views in the many important decisions being made.

Seminole Ah-Tah-Thi-Ki Museum. Opened in April 1997 on the Big

Cypress Reservation, the museum preserves and interprets the culture, language, and customs of the Florida Seminoles. The museum's exhibits, rare artifacts, and interactive computers are effective educational tools for tribal members and the non-Seminole community alike. The museum is a centerpiece of recent tribal achievements.

Tortugas 2000 / Dry Tortugas Commercial Services and Visitor Use Plan Planning Efforts. In fall 1998, the Florida Keys National Marine Sanctuary and Dry Tortugas National Park launched an interagency planning effort to protect sensitive Tortugas habitats. Tortugas 2000, an important component of the Florida Keys marine zoning strategy, will establish an Ecological Reserve to protect biodiversity, maintain ecosystem integrity, and act as a reference site to help scientists discriminate between natural versus induced changes to the Keys ecosystem. The reserve will be located in the western Tortugas region and will be in place by the year 2000.

The Dry Tortugas National Park commercial services and visitor use plan will explore ways to protect resources while continuing to provide high quality visitor experiences in the unique setting of historic Fort Jefferson and the surrounding reefs.

The agencies combined their initial scoping efforts through a newsletter, extensive media contacts, and a series of successful open houses. These joint efforts allowed the agencies to show the difference between these similar, but distinct, efforts in a convenient forum that encouraged strong public participation.

2.0 Financial Summaries

2.1 Introduction:

The three tables contained within this section of the Cross-Cut Budget provide detailed budget information for the federal and state agencies/ entities. Table 1 provides federal budget information by Function, Agency and project for the years 1993 through 2001. Table 2 is a summary of the Federal Budget information by Agency/Department for the years 1993 through 2001. Table 3 is a summary of the State of Florida budget information for the years 1983 through 2001. Please refer to Section 3 for detailed information on the individual line items presented within these tables.

Table 1 -Federal Agency Cross-Cut Budget matrix by functional area for fiscal years 1993-2000
(Note: ALL \$ ARE REPORTED IN THOUSANDS (000))

Function/Agency	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
AREA MANAGEMENT								
USACE								
C&SF Project, O&M	7,987	11,000	11,300	9,846	9,513	9,500	8,328	8,470
Okeechobee Waterway, O&M	3,062	5,540	3,100	3,933	4,276	3,503	3,060	4,680
Removal of Aquatic Growth	2,643	3,292	3,796	3,700	3,980	3,032	2,615	3,130
subtotal, USACE	13,692	19,832	18,196	17,479	17,769	16,035	14,003	16,280
FWS								
Refuges and Wildlife:								
A.R.M. Loxahatchee	1,420	1,140	1,392	1,501	1,544	1,658	1,482	1,482
Florida Panther National Wildlife Refuge	251	263	336	338	479	657	517	517
J.N. "Ding" Darling National Wildlife Refuge	399	524	657	654	767	912	750	750
National Key Deer Refuge	605	547	567	569	734	951	770	770
Pelican Island/Archie Carr	0	0	0	0	75	105	105	105
subtotal, FWS	2,675	2,474	2,952	3,062	3,599	4,283	3,624	3,624
NPS								
Big Cypress National Preserve	1,776	2,355	3,024	3,098	3,164	4,032	4,268	4,721
Biscayne National Park	1,444	1,541	2,002	1,997	2,115	2,392	2,437	3,022
Dry Tortugas National Park	440	457	506	480	494	759	768	1,019
Everglades National Park	8,137	10,858	12,142	12,230	12,665	12,544	12,790	13,408
Task Force Support	0	0	0	0	800	800	800	1,299
subtotal, NPS	11,797	15,211	17,674	17,805	19,238	20,527	21,063	23,469
NOAA								
Florida Keys National Marine Sanctuary	1,700	1,900	2,230	2,230	2,260	2,500	2,400	2,500
Integrated Coastal Management	0	0	0	100	200	200	200	200
Rookery Bay NERR	90	90	90	90	125	125	125	125
Florida Coastal Management Program	476	581	600	600	1,300	1,300	1,300	1,300
subtotal, NOAA	2,266	2,571	2,920	3,020	3,885	4,125	4,025	4,125
AREA MANAGEMENT TOTAL	30,430	40,088	41,742	41,366	44,491	44,970	42,715	47,498
NATURAL RESOURCES MGMT.								
EPA								
Wetland Conservation	1,202	1,079	812	1,038	400	308	308	308
Task Force Support	0	0	0	0	440	442	300	300
subtotal, EPA	1,202	1,079	812	1,038	840	750	608	608
FWS								
Endangered Species (Prelisting, listing, consultation, recovery and permits)	541	887	1,169	1,209	1,560	1,560	1,560	1,560
Environmental Contaminants/Mercury	60	120	120	120	120	120	120	120
Fisheries Assistance (Panama City FRO)	90	100	100	100	100	100	100	100
Law Enforcement	620	637	637	637	637	637	637	637
Migratory Bird Management	44	44	104	104	104	104	104	104
subtotal, FWS	1,355	1,788	2,130	2,170	2,521	2,521	2,521	2,521

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(Note: ALL \$ ARE REPORTED IN THOUSANDS (000))

Function/Agency	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
NOAA								
Fisheries Mangmt/Endangered Species	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
NRCS								
On-Farm assistance/Technical Coord.	1,900	1,900	2,900	3,435	3,535	3,535	5,070	5,070
NATURAL RESOURCES MGMT. TOTAL	5,457	5,767	6,842	7,643	7,896	7,806	9,199	9,199
WATER QUAL.& HABITAT PROTECT.								
USACE								
General Regulatory Functions	1,800	1,800	1,800	1,800	2,200	2,200	2,200	2,200
EPA								
Water Quality and Habitat Protection	891	305	427	1,638	0	0	0	0
Water Permit Compliance & Enforcmt.	0	0	0	0	1,183	1,569	1,312	1,312
FKNMS Water Quality Protection Plan	0	0	0	0	1,031	1,081	35	35
Special Studies	0	0	0	0	100	0	200	0
Water Quality Criteria	0	0	0	0	0	83	83	83
Water Quality Plan	0	0	0	0	143	135	184	257
Urban Needs	0	0	0	0	275	0	50	50
Mercury Studies	0	0	0	0	0	100	100	50
Pesticide Assessment	0	0	0	0	250	125	0	0
South Florida Office	0	0	0	0	100	240	310	440
subtotal, EPA	891	305	427	1,638	3,082	3333	2274	2227
FWS								
Habitat Conservation (Partners, Project Planning, Environmental Coordination and Coastal Program)	186	170	728	728	887	887	887	887
subtotal, FWS	186	170	728	728	887	887	887	887
NOAA								
Habitat Conservation	15	100	110	110	110	110	110	110
WATER QUAL.& HABITAT PROTECT. TOTAL	2,892	2,375	3,065	4,276	6,279	6,530	5,471	5,424
INFORMATION MGMT/ASSESSMT.								
EPA								
Data Management	1,119	653	50	955	50	50	60	60
FWS								
Habitat Conservation	100	100	100	100	0	0	0	0
NOAA								
Technical Support to Fla. Keys Mgt.	1,000	400	200	0	441	441	441	441
Photogrammetry/Coastal Mapping	150	300	175	0	220	220	220	220
Bathymetry/Salinity Characterization	0	80	80	0	25	25	25	25
Aircraft Salinity Mapping	35	200	200	0	0	0	0	0
CoastWatch Product Preparation Dissem.	20	70	80	0	0	0	0	0
Weather Service Forecasting	480	480	1,480	1,480	1,480	1,480	1,480	1,480

Table 1 -Federal Agency Cross-Cut Budget matrix by functional area for fiscal years 1993-2000
(Note: ALL \$ ARE REPORTED IN THOUSANDS (000))

Function/Agency	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
Digitize.:Keys Bathymetry/Wetland Data	0	0	0	200	100	100	100	100
Spatial Database Development	0	0	0	175	0	0	0	0
Circulation Modeling	0	0	0	100	100	100	100	100
subtotal, NOAA	1,685	1,530	2,215	1,955	2,366	2,366	2,366	2,366
USGS								
Earth Science	2,000	2,000	4,325	5,852	440	440	1,030	1,030
INFORMATION MGMT/ASSESSMT. TOTAL	4,904	4,283	6,690	8,862	2,856	2,856	3,456	3,456
SCIENCE: MONITORING								
USACE								
Experimental Program	0	0	0	0	0	50	831	875
Indian River Lagoon	0	0	0	0	0	137	33	35
Toxic and Mutagenic Effects	0	0	0	0	500	0	0	0
Salinity in Florida Bay	0	0	0	0	300	0	0	0
Water Flow to Florida and Biscayne Bays	0	0	0	0	800	0	0	0
subtotal, USACE*	0	0	0	0	1,600	187	864	910
BIA								
Water Quality Monitoring	0	400	400	400	400	400	400	400
EPA								
Water Quality Prot. Prog./Mercury	1,460	2,395	1,983	2,415	0	0	0	0
Environmental Monitoring & Assessment	0	0	0	0	140	140	157	100
FKNMS Water Qual. Prot. Plan Monitoring	0	0	0	0	540	700	1,092	1,260
subtotal, EPA	1,460	2,395	1,983	2,415	680	840	1,249	1,360
NOAA								
Fisheries Monitoring and Assessment	1,130	1,130	1,160	1,160	1,160	1,160	1,160	1,160
National Status & Trends Monitoring	20	40	40	40	120	120	120	120
Intergrated Ecosystem Health Monitoring	0	0	0	270	850	650	900	1,900
Rookery Bay NERR	20	20	20	20	25	25	25	25
subtotal, NOAA	1,170	1,190	1,220	1,490	2,155	1,955	2,205	3,205
USGS								
Earth Science Monitoring	0	0	777	2,290	1,000	1,000	584	584
SCIENCE: MONITORING TOTAL	2,630	3,985	4,380	6,595	5,835	4,195	4,438	5,549
SCIENCE: RESEARCH								
ARS								
General Research	2,814	3,033	2,092	2,046	2,025	3,264	4,045	4,645
USACE								
Modeling	0	0	0	0	2,500	1,160	997	980
Indicator Species	0	0	0	0	300	100	473	485
subtotal, USACE*	0	0	0	0	2,800	1,260	1470	1465

Table 1 -Federal Agency Cross-Cut Budget matrix by functional area for fiscal years 1993-2000
(Note: ALL \$ ARE REPORTED IN THOUSANDS (000))

Function/Agency	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
EPA								
Mercury Risk Assessment	0	0	0	0	300	100	83	83
Mercury Contamination Studies	97	1,371	3,894	1,554	2,976	3,396	1,736	745
subtotal, EPA	97	1,371	3,894	1,554	3,276	3,496	1,819	828
NOAA								
National Marine Fisheries Service	335	1,025	1,458	1,458	1,460	1,460	1,460	2,060
Atlantic Oceanographic & Meteor. Labs.	500	200	200	200	200	200	200	200
University of Miami/CIMAS Pass-through	1,525	1,163	2,175	1,278	1,559	600	600	600
Florida Sea Grant	400	400	400	400	450	470	470	470
NOAA Underwater Research Program	2,000	1,500	1,500	675	1,200	1,300	1,000	1,000
Coastal Ocean Program	395	545	1,000	1,000	2,300	2,300	2,300	2,300
Climate/Agriculture Research -FSUniversity (OGP)	436	746	1,020	1,026	544	0	0	0
Climate/Agriculture Research -UnivSo Fl (OGP)	197	288	323	0	132	0	0	0
Florida Keys/Florida Bay Economic Valuation	0	0	100	200	71	71	71	71
NOVA Coral Reef Institute	0	0	0	0	0	500	500	0
Rookery Bay NERR	47	0	0	100	0	0	0	0
subtotal, NOAA	5,835	5,867	8,176	6,337	7,916	6,901	6,601	6,701
NPS								
Everglades Research	0	0	0	0	7,200	12,000	12,000	8,000
USGS								
Earth Science	0	0	698	1,858	6,007	6,007	5,706	5,706
Biological Science	0	654	1,154	654	1,154	1,154	1,281	1,281
subtotal, USGS	0	654	1,852	2,512	7,161	7,161	6,987	6,987
SCIENCE: RESEARCH TOTAL	8,746	10,925	16,014	12,449	30,378	32,822	31,452	27,161
LAND ACQUISITION								
FWS								
Lake Wales Ridge	0	2000	1000	0	500	0	1,000	0
Ding Darling	0	0	0	0	0	0	0	4,000
National Key Deer Refuge	1,983	0	0	0	0	0	0	0
subtotal, FWS	1,983	2000	1000	0	500	0	1,000	4000
NPS								
BCNP & ENP	9,419	6,000	6,986	0	12,000	33,000	20,000	31,800
Everglades Transition Lands (Asst. - State)	0	0	8,587	0	0	46,000	60,000	45,600
Biscayne National Park	0	0	0	0	0	0	0	600
Land Acquisition Administration	0	0	0	0	0	0	0	2,000
subtotal, NPS	9,419	6,000	15,573	0	12,000	79,000	80,000	80,000
LAND ACQUISITION TOTAL	11,402	8,000	16,573	0	12,500	79,000	81,000	84,000

Table 1 -Federal Agency Cross-Cut Budget matrix by functional area for fiscal years 1993-2000
(Note: ALL \$ ARE REPORTED IN THOUSANDS (000))

Function/Agency	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
INFRASTRUCTURE INVESTMENT								
USACE								
Everglades & S FL Ecosystem Restoration	0	0	0	0	0	10,000	7,000	21,100
Kissimmee River Restoration	2,783	7,400	4,000	5,851	3,000	3,000	8,000	39,800
Central and Southern Florida Project*	3,178	7,244	6,624	8,918	11,267	27,400	14,112	48,813
Melaleuca Fac. Cons. (\$637K, prior app.)	0	1,000	0	0	0	0	0	0
Biscayne Bay	0	700	0	0	0	250	100	400
subtotal,USACE	5,961	16,344	10,624	14,769	14,267	40,650	29,212	110,113
EPA								
Programmatic EIS	0	0	0	0	203	215	155	100
FWS								
Habitat Conservation	0	55	55	55	0	0	0	0
NOAA								
Rookery Bay NERR	0	250	0	0	0	0	0	0
Florida Coastal Management Program	134	135	0	0	0	0	0	0
subtotal, NOAA	134	385	0	0	0	0	0	0
NPS								
Modified Water Delivery System to ENP	6,942	0	4,478	4,457	2,800	11,900	14,000	20,000
INFRASTRUCTURE INVESTMENT TOTAL	13,037	16,784	15,157	19,281	17,270	52,765	43,367	130,213
GRAND TOTALS	79,498	92,207	110,463	100,472	127,505	230,944	221,098	312,500
<p>* Monitoring and Research funds for the Corp's in FY 98,99 and 2000 are accounted for in the C&SF Project funds and are included in the Infrastructure Investment totals. ** Land Acquisition funds for Pelican Island NWR and Archie Carr are not included in this table. Dollars for Area Management in FY 1995 and FY 1996 are not available.</p>								

Table 2: Federal Agency Cross Cut budget summary matrix for fiscal years 1993-2000

TOTALS BY AGENCY (thousands of dollars)	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 Request
USDA								
Agricultural Research Service	2,814	3,033	2,092	2,046	2,025	3,264	4,045	4,645
Natural Resources Conservation Service	1,900	1,900	2,900	3,435	3,535	3,535	5,070	5,070
subtotal, USDA	4,714	4,933	4,992	5,481	5,560	6,799	9,115	9,715
USACE	21,453	37,976	30,620	34,048	38,636	58,885*	45,415	128,593
EPA	4,769	5,803	7,166	7,600	8,131	8,684	6,165	5,183
NOAA	12,105	12,643	15,641	13,912	17,432	16,457	16,307	17,507
DOI								
Bureau of Indian Affairs	0	400	400	400	400	400	400	400
Fish and Wildlife Service	6,299	6,587	6,965	6,115	7,507	7,691	8,032	11,032
National Park Service	28,158	21,211**	37,725	22,262	41,238	123,427	127,063	131,469
US Geological Survey	2,000	2,654	6,954	10,654	8,601	8,601	8,601	8,601
subtotal, DOI	36,457	30,852	52,044	39,431	57,746	140,119	144,096	151,502
TOTALS	79,498	92,207	110,463	100,472	127,505	230,944	221,098	312,500

Grand Total Federal: 1993-2000 **\$1,274,687**

Notes:

*The President's budget reflects \$59 million for the total FY98 actual dollars due to the fact that the Upper St. Johns River Basin segment was included in the C&SF project. The Upper St. Johns River is not within the boundaries of the South Florida Ecosystem.

** The FY94 total excludes \$5 million originally provided in the 1994 construction account which was transferred to land acquisition in accordance with FY94 Emergency Supplemental Appropriation language.

Table 3. State of Florida Cross-Cut budget matrix for fiscal years 1983-00

TOTALS BY DEPARTMENT (thousands of dollars)	1983/93 Cumulative	1994/95 Actual	1995/96 Actual	1996/97 Actual	1997/98 Actual	1998/99 Enacted	1999/00 Request
Florida Department of Agriculture and Consumer Services	N/A*	N/A*	N/A*	N/A*	4,930	5,174	6,174
Florida Department of Community Affairs	N/A*	N/A*	N/A*	N/A*	35,240	37,129	27,248
Florida Department of Environmental Protection	N/A*	N/A*	N/A*	N/A*	62,530	68,500	154,648
Florida Game and Fresh Water Fish Commission	N/A*	N/A*	N/A*	N/A*	9,470	9,470	9,800
Florida Department of Transportation	N/A*	N/A*	N/A*	N/A*	9,730	43,535	3,456
South Florida Water Management District (SFWMD)	130,990	150,300	170,000	242,000	324,900	265,600	348,129
STATE TOTALS	236,020	162,300	199,200	276,600	446,800	429,408	549,455

Grand Total State: 1983-2000 **\$2,299,783**

3.1 INTRODUCTION

The text contained within this section of the Cross-Cut budget provides written descriptions for the project(s) identified in Tables 1, 2 and 3. The text is presented separately for each of the respective Federal and State Agencies/ Departments by functional area and provides a detailed description of the intended use of the funds requested to be appropriated for FY 00. An individual matrix summary table is also included for use as a reference tool for all Federal Agency(s)/Department(s) at the beginning of each individual section.

3.2 U.S. DEPARTMENT OF AGRICULTURE \$9,715,000

USDA budget matrix for fiscal years 1993-00

(thousands of dollars)

Function/Project name	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
NATURAL RESOURCES MANAGEMENT								
NRCS								
On-Farm assistance/Technical Coordination	1,900	1,900	2,900	3,435	3,535	3,535	5,070	5,070
SCIENCE: RESEARCH								
ARS								
General Research	2,814	3,033	2,092	2,046	2,025	3,264	4,045	4,645
TOTALS	4,714	4,933	4,992	5,481	5,560	6,799	9,115	9,715

3.2.1 Natural Resources Conservation Service (NRCS) - \$5,070,000

Natural Resources Management (\$5,070,000)

- On-Farm Assistance/Technical Coordination (\$5,070,000)

Base Program (\$2,100,000)

The NRCS provides technical assistance to individuals and groups on privately owned land to conserve renewable natural resources within the Everglades ecosystem on a voluntary basis. Water management assistance includes the application of best management practices (BMP's) to conserve water used to produce vegetables, citrus and pastures as well as on urban lands, such as lawns, parks, golf courses, and other open space. Assistance is provided to livestock producers to encourage application of BMP's, including animal waste management systems, fencing of streams and canals to reduce off-farm nutrient discharges. NRCS provides wetland determination on agricultural lands as required by the 1985 and 1990 Farm Bill. NRCS is the lead agency in providing a detailed soil survey, including interpretations, on privately owned lands.

Everglades Agricultural Area (EAA) Project (\$1,000,000)

The EAA Project is a special effort to assist the farmers in the EAA and the C-139 basin in meeting requirements outlined in Florida's 1994 Everglades Forever Act. Assistance is provided on a voluntary basis to develop management plans that address natural resource concerns in the EAA. These concerns include: phosphorus loading, soil subsidence, water quality and quantity, suspended sediments, water and wind erosion, agricultural sustainability, and threatened and endangered species.

Indian River Lagoon National Estuary Program (NEP) (\$200,000)

The NRCS receives agency funding to assist the NEP in meeting the goals established by local citizens. NRCS's involvement in the Indian River Lagoon NEP includes the operation of two NRCS-funded mobile irrigation labs to assist land users in reducing irrigation-water use and to reduce freshwater flows into the estuary. This program, currently active in Martin and St. Lucie Counties, may be expanded to new areas.

Southeast Florida Urban Community Assistance Program (SFUCAP) (\$120,000)

The SFUCAP is a pilot USDA project targeted to assist the most intensively used land - urban lands. The program area includes Palm Beach, Broward, Miami-Dade, and Monroe Counties. Assistance is provided to units of government and groups and individuals to reduce land disturbance and runoff, to reduce erosion and loss of open space and wetlands, to prevent non-point source pollution and disruption of plant and animal habitat, and to foster beach stabilization.

South Florida Community-Urban Resource Partnership (SFCURP) (\$300,000)

The SFCURP provides funding and on-site technical assistance to natural resource restoration and education efforts in the Palm Beach, Broward, Miami-Dade and Monroe counties. Federal funding is provided by USDA's Forest Service and NRCS. The SFCURP's established steering committee that includes federal, state and local agencies, non-profit organizations, local business and foundations, provides overall program direction and priority setting. The Steering Committee selects priority natural resource projects through a grant application process that matches federal dollars with local, state or non-profit dollars.

Wetland Reserve Program (WRP) (Technical Assistance: \$15,000)

The WRP is a voluntary program offering landowners a chance to receive payments for restoring and protecting wetlands on their property. The WRP provides a unique opportunity for farmers to retire marginal agricultural lands. WRP obtains conservation easements from participating landowners and provides cost-share payments for wetland restoration. Through the WRP, the USDA plans to restore and protect valuable wetland acres.

Environmental Quality Incentives Program (EQIP) (Technical and Financial Assistance: \$1,135,000) The EQIP is a voluntary program offering land users financial, technical and educational help to install or implement structural,

vegetative and/or management practices where there are significant natural resource concerns that impact water quality and quantity, wildlife habitat, wetlands or grazing lands. Cost sharing may be up to 75% of the cost of the BMP's called for in 5 - 10 year contracts.

Wildlife Habitat Incentives Program (WHIP) (Financial Assistance: \$50,000) WHIP provides financial incentives to develop habitat for fish and wildlife on private lands. Participants agree to implement a wildlife habitat development plan, and USDA agrees to provide cost-share assistance through 5 - 10 year contracts for the initial implementation of wildlife habitat development practices

Resource Conservation and Development (RC&D) (Technical Assistance: \$150,000) RC&D Project areas are established through requests of local Councils to address the conservation, development and utilization of natural resources to improve the standard of living and enhance the environment. These not for profit Councils are established as Florida Corporations to address and solve identified problems with help of federal, state, and local government and private sources. A Council has been established in Broward, Miami-Dade and Monroe Counties and another that includes the counties of Glades, Hendry, Highlands, Polk and Osceola.

3.2.2 Agricultural Research Service (ARS)- \$4,645,400

<i>Science: Research (\$4,645,400)</i>

The ARS mission is to develop and transfer solutions to agriculture problems of high national priority; to provide information access and dissemination to ensure high-quality, safe food and other agricultural products; assess the nutritional needs of Americans; sustain a competitive agricultural economy; enhance the natural resource base and the environment; and provide economic opportunities for rural citizens, communities, and society. Related to the South Florida Restoration Initiative, ARS conducts research on sustainable agriculture production systems for sugarcane and other crops, improved water management, reduced plant stress and protection, and biological control of invasive species. Individual projects are as follows:

- Development of Improved Sugarcane Varieties and its Use in Sustainable Agricultural Production Systems (\$1,370,000)

The primary mission of the Sugarcane Production Research Unit in Canal Point, Florida is to develop high yielding disease resistant varieties for sugarcane production throughout the United States. In the past 28 years, over 40 sugarcane varieties have been released to the Florida industry from researchers at Canal Point, Florida. Preliminary investigations in Florida along with reports from India, Australia, and El Salvador are encouraging for long-term genetic and agronomic research aimed at producing sugarcane under wetland conditions

which are desirable for maintaining ecological sustainability in South Florida. ARS and its cooperators are conducting research aimed at identifying sugarcane varieties adaptable to higher water tables in the Everglades Agricultural Area (EAA)

Agricultural production in the EAA is not sustainable because .056 inches of organic soil are being lost per year to oxidation, which are currently increasing phosphorus levels in the Everglades. Research objectives for the project are as follows: (1) develop sugarcane germ-plasm aimed at improving sugarcane's tolerance to high water tables (flooded or saturated), (2) develop sugarcane germ-plasm aimed at improving sugarcane's ability to yield well with less phosphorus fertilizer or more phosphorus uptake; and (3) and determine agronomic, water management, hydrologic, and microbiological research to help farmers control soil subsistence without reducing profits of their sugarcane-rice cropping system.

Hydrologic Evaluation and Water Quality Studies Affecting Dade County (\$874,400)

An ARS Hydrologist stationed at Miami, Florida is developing an event-based hydrologic model for defining the risk of flooding, including maps of flooding probability, in the agricultural areas of south Dade County. Field and laboratory studies will also be conducted to collect data needed to operate the model.

The farm-scale, and process-oriented model is being developed for a given rainfall event to predict: (1) plant transpiration, soil evaporation, root zone soil moisture, fluctuations of the water table, and storm runoff; (2) crop yield under current and alternative water delivery systems; (3) pesticide and nutrient movement within the root zone; and (4) the dissipation and degradation of pesticide residues and their subsequent fate in aquatic ecosystems. Scientists will develop, calibrate, and test the farm-scale model, to assess the relationship between hydrology (water quantity and quality) and crop production for the modified Everglades Restoration Plan, and to assist the action agencies and farmers in the selection of Best Management Practices to sustain agricultural production in South Florida.

- Plant Stress, Global Climate Change, and Crop Models for Sugarcane and Climate Change Effects on Sugarcane and Trace Production (\$439,000)

Research studies are conducted in outdoor, computer-controlled, plant growth chambers and in greenhouses at the Crop Genetics and Environmental Research Unit in Gainesville, Florida. Ongoing studies are determining the impacts of current and future climatic conditions on sugarcane growth and greenhouse-gas exchanges with the atmosphere where water table depths are maintained at different levels below the soil surface. Findings to date showed a 20 percent increase in sugarcane yield in the first and second crop with a

doubling of CO₂ concentrations while increased atmospheric temperatures and water table depths did not significantly effect sugarcane growth. The study will continue for the third (regrowth) crop in 1999.

ARS scientists in Gainesville have also developed a family of simple, mechanistic crop growth models that have proved beneficial in evaluating and predicting crop responses to the environment. These models have predicted crop responses to soil water availability and nutrient availability. Working with Australian scientists, these models will be modified to predict evapotranspiration and nutrient runoff impacts for sugarcane production in the EAA. Knowledge of agricultural evapotranspiration and nutrient runoff can now be incorporated by hydrologists into regional water management models for South Florida.

- Biological Control and Management of Aquatic Weeds/Invasive Plant Species in South Florida (\$1,962,000)

ARS has conducted research in the biological control of weeds in South Florida for more than 50 years. During the period, alligatorweed, Klamathweed, musk thistle, puncturevine, tansy ragwort, and water hyacinth have been partially or entirely controlled. Since 1989, ARS Aquatic Weeds Research Unit in Ft. Lauderdale and Gainesville, Florida have cooperated with the ARS Australian Biological Control of Weeds Laboratory for research on biological control of melaleuca. Research is continuing under current funding to develop management strategies and biological control agents that are efficient, economical, and environmentally sound. The research includes quarantine evaluation (requiring quarantine facilities) of natural enemies for melaleuca control; release and establishment of melaleuca-control management system; and evaluation of the biological control of hydrilla, water hyacinth, and water lettuce by biological control agents.

The research has been expanded to (1) identify and collect, (through cooperative efforts of ARS Biological Control Laboratories in Australia, Europe, and South America), natural enemies for control of *Melaleuca quinquenervia* and other invasive pest plants; (2) evaluate biological control agents for control of melaleuca and other exotic plant species under U.S. quarantine conditions and obtain approvals of qualified natural enemies; and (3) develop biological-based integrated pest (weed) management strategies that are efficient, economical, and environmentally sound. The release of approved biological control agents will be an integration of biological tactics with other methods of exotic plant species control (chemical, culture, and physical), determination of optimum re-vegetation methods, and an evaluation of compliance with economic and environmental impact assessments on control measures.

3.3 U. S. DEPARTMENT OF THE ARMY \$128,593,000

3.3.1 U. S. Army Corps of Engineers (USACE) \$128,593,000

USACE budget matrix for fiscal years 1993-00

(thousands of dollars)

Function/Project name	1993 Enacted	1994 Enacted	1995 Enacted	1996 Enacted	1997 Enacted	1998 Enacted	1999 Enacted	2000 PB
AREA MANAGEMENT								
C&SF Project, O&M	7,987	11,000	11,300	9,846	9,513	9,500	8,328	8,407
Okeechobee Waterway, O&M	3,062	5,540	3,100	3,933	4,276	3,503	3,060	4,680
Removal of Aquatic Growth	2,643	3,292	3,796	3,700	3,980	3,032	2,615	3,130
Subtotal: USACE	13,692	19,832	18,196	17,479	17,769	16,035	14,003	16,280
WATER QUAL.& HABITAT PROTECTION								
General Regulatory Functions	1,800	1,800	1,800	1,800	2,200	2,200	2,200	2,200
SCIENCE: MONITORING¹								
Experimental Program	0	0	0	0	0	50	831	875
Indian River Lagoon	0	0	0	0	0	137	33	35
Toxic and Mutagenic Effects	0	0	0	0	500	0	0	0
Salinity in Florida Bay	0	0	0	0	300	0	0	0
Water Flow to Florida and Biscayne Bays	0	0	0	0	800	0	0	0
Subtotal: USACE	0	0	0	0	1,600	187	864	910
SCIENCE: RESEARCH								
Modeling (Hydrologic, Hydrodynamic, Ecologic, Water Quality)	0	0	0	0	2,500	1,160	997	980
Indicator Species	0	0	0	0	300	100	473	485
Subtotal: USACE	0	0	0	0	2,800	1,260	1,470	1,465
INFRASTRUCTURE INVESTMENT²								
Everglades & S FL Ecosystem Restoration	0	0	0	0	0	10,000	7,000	21,100
Kissimmee River Restoration	2,783	7,400	4,000	5,851	3,000	3,000	8,000	39,800
Central and Southern Florida Project ³	3,178	7,244	6,624	8,918	11,267	27,400	14,112	48,813
Melaleuca Facility Construction ⁴	0	1,000	0	0	0	0	0	0
Biscayne Bay	0	700	0	0	0	250	100	400
Subtotal: USACE	5,961	16,344	10,624	14,769	14,267	40,650	29,212	110,113
TOTALS	21,453	37,976	30,620	34,048	38,636	58,885	45,415	128,593

¹ Monitoring and Research funds are part of C&SF Project funds shown in the Infrastructure Investment section below. These numbers are listed here, but are also included as part of the infrastructure totals.

² FY99 Enacted numbers do not include anticipated funds reprogramming into some of these accounts.

³ This number does not reflect costs for Upper St. Johns Project (not w/in the SFWMD boundaries/not part of the Cross-Cut), but does include Monitoring and Research funds (broken out separately above).

⁴ Total Melaleuca Quarantine Facility Construction approved FY98 for construction under Everglades & S FL Ecosystem project authority (subject to availability of funds).

Area Management (\$16,280,000)

Operations and maintenance funding is provided for the Corps for the Federally operated portions of the Central and Southern Florida Project and the Okeechobee Waterway. The Corps operates and maintains the Herbert Hoover Dike around Lake Okeechobee and the main outlets of the Lake and the Water Conservation Areas. Additionally, five navigation locks and associated water control structures and the channels for the St. Lucie Canal and Caloosahatchee River that compose the Okeechobee Waterway, are operated and maintained by the Corps.

- Central and Southern Florida Project, O&M (\$8,470,000).
- Okeechobee Waterway, O&M (\$4,680,000).
- Removal of Aquatic Growth (\$3,130,000).

Water Quality and Habitat Protection (\$2,200,000)

- General Regulatory Functions (\$2,200,000).

The Corps Regulatory Program consists of administering the permitting program for placement of fill in waters of the United States under the authority of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. This is an ongoing program to identify impacts of proposed projects to the ecosystem and to ensure that compensation is provided for issued permits. Appropriated funds are utilized for salaries and expenses for staff to review permit applications in South Florida and to lead the Federal interagency effort to improve the decision-making process.

Science: Monitoring (\$910,000)

- Indian River Lagoon (\$35,000).

Continue sea grass mapping of the types and health of sea grasses in the Indian River Lagoon. Continue water quality testing. Funding Source is the Comprehensive Review Study (Indian River Lagoon).

- Experimental Program for the C-111 project (\$875,000).

Continue hydrologic and ecologic data collection in Shark River Slough and Taylor Slough in conjunction with the iterative testing process. The purpose of the monitoring is to identify impacts to endangered species and to obtain information that will assist in future management decisions through an adaptive management process. Funding source is the C-111 Project.

Science: Research (\$1,465,000)

- Hydrologic Models (\$350,000).

Continue improvements to hydrologic models to enable use for design evaluation and development of operational criteria. Canal routing methods, structure operations and updated topography will be further enhanced in the finite element model (FEMWATER) to provide design level parameters and better estimate impacts to private and adjoining lands from operational changes.

Funding source will be the C-111 Project.

- Hydrodynamic Models (\$180,000).

Continue development of hydrodynamic model of Florida Bay. Run additional scenarios for water quality analysis using Florida Bay circulation models. Funding source is the C-111 Project.

- Ecologic Models (\$150,000).

Continue integration with the Everglades Landscape Model (ELM). Funding source is the C-111 Project.

- Water Quality Models (\$300,000).

Continue development into Phase II which will include calibration of the Florida Bay water quality model. Funding source is the C-111 Project.

- Indicator Species (\$485,000).

Continue determination of species autoecology, with respect to the influences of hydropattern, nutrients, and/or salinity, for potential ecological indicator species such as alligator, apple snail, snail kite, wading birds, and sea grasses. Determine the appropriate indicator species for evaluating the ecological effect of changes in freshwater inflow to the estuaries. Funding source is the C-111 Project.

Infrastructure Investment (\$110,113,000)

- Everglades and South Florida Ecosystem Restoration (\$21,100,000)

This project involves the implementation of "critical restoration projects" authorized in Section 528 of the Water Resources Development Act of 1996. The legislation authorizes the COE, in consultation with the Task Force and the non-federal sponsor, to implement projects which will produce independent, immediate and substantial restoration, preservation and protection benefits. FY 2000 activities will include continuation of engineering and design and initiation of construction on 5 critical projects.

- Kissimmee River Restoration (\$39,800,000)

This project involves restoring the historic habitat in much of the Kissimmee River floodplain and restoring water-level fluctuations and seasonal discharges from Lakes Kissimmee, Cypress, and Hatchineha in the upper basin. The recommended plan was authorized by Congress in 1992 and design is underway. The Project Modification Report recommending modifications to the upper basin was approved in FY 1996. Construction of canal improvements and structure modifications in the upper basin will continue through FY 1999. The design for backfilling Reach 1 (Pool C) will be awarded in FY 1999. FY 2000 activities will include continuing engineering and design, initiating two new construction contracts, continuing 4 construction contracts, and implementing project flood mitigation measures.

- Biscayne Bay (\$400,000)

This study will propose solutions that would alleviate adverse factors affecting Biscayne Bay and will develop guidelines for future management of the natural resource. FY 2000 activities will complete Phase I of the feasibility study..

- Central and Southern Florida Project (\$48,813,000)

South Dade County, C-111 Project. This project consists of modifications to the C&SF Project to provide more natural hydrologic conditions in Taylor Slough and to minimize damaging flood releases to Barnes Sound/Manatee Bay, while maintaining flood protection for adjacent agricultural lands. Because the project issues are beyond the authority or jurisdiction of any single agency, an interagency team has been established to facilitate project implementation. The team is called the Southern Everglades Restoration Alliance (SERA) and includes representatives from the Corps, SFWMD, Florida Department of Environmental Regulation, National Resource Conservation Service, and the Fish and Wildlife Service. FY 2000 activities will continue engineering and design, complete construction of a bridge, and initiate a contract to backfill canals/degrade an existing levee.

Lake Okeechobee Regulation Schedule. This is a study of alternative operational strategies for Lake Okeechobee to improve environmental conditions within the lake, without adversely impacting other project purposes. The South Florida Water Management District's Lower East Coast Water Supply Study is providing input to this study from a regional perspective. Resulting operational modifications will optimize the benefits of the existing project, pending future physical modifications that could provide greater opportunities. This project includes only design activities.

Central and Southern Florida Project Comprehensive Review Study. This review is an evaluation of system-wide modifications to the Central and Southern Florida project that may be warranted to address environmental restoration, water supply and flood control

issues in developed areas and tribal lands. The Governor's Commission for a Sustainable South Florida and the South Florida Ecosystem Restoration Working Group completed a conceptual comprehensive plan for use by the Restudy team during plan formulation in August 1996. The study is being cost-shared 50/50 with up to 25% of the local share being provided by "in-kind" services and is scheduled to be completed by 1 July 1999. FY 2000 activities include initiation of design activities.

Indian River Lagoon Study. This is the second feasibility study being conducted in response to the recommendations of the C&SF Project Comprehensive Review Reconnaissance Report. The first study is the Comprehensive Review Study described above. This study will investigate water resource opportunities in Martin and St. Lucie Counties in relation to the C&SF Project water management system including Canals 23, 24, 25, and 44. The study will develop a regional plan to address multiple opportunities to include: environmental restoration of areas adversely impacted by the C&SF Project, flood damage reduction; and urban and agricultural water supply. FY 2000 activities will be the continuation of the feasibility study.

Manatee Pass Gates. This project consists of alternative structural modifications to 23 existing water control structures and locks in the C&SF Project to reduce or eliminate manatee mortalities associated with their operation. The project is being implemented in two phases; the first phase report was approved in FY 96 and addresses the addition of pressure sensitive devices at water control structures. These devices will reverse the gate closure if a foreign object is detected. In the second project phase, acoustic sending and sensing devices will be placed at lock gates. FY 2000 activities will include design and construction.

C-7, 8 and 9. This is a study of the feasibility of modifying existing C&SF Project canals in north Dade County for enhanced flood control benefits. There also may be opportunities for environmental enhancement. Much information generated by the South Florida Water Management District and Dade County is being utilized. FY 2000 work will be the continuation of the design.

West Palm Beach Canal, C-51/STA 1E. This project consists of design and construction of the C-51/STA 1E project to provide flood control for the western C-51 basin, provide water quality enhancement, and to restore a portion of the historic Everglades flows. It is being implemented in conjunction with SFWMD's Everglades Program. FY 2000 activities will continue engineering and design, initiate a canal improvement contract at STA-1E and continue a machinery contract.

3.4 U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) - \$5,183,000

EPA budget matrix for fiscal year 1993-2000

(thousands of dollars)

Function/Project Name	1993 Enacted	1994 Enacted	1995 Enacted	1996 Enacted	1997 Enacted	1998 Enacted	1999 Enacted	2000 PB
NATURAL RESOURCES MANAGEMENT.								
Wetland Conservation	1,202	1,079	812	1,038	400	308	308	308
Task Force Support	0	0	0	0	440	442	300	300
Subtotal: EPA	1,202	1,079	812	1,038	840	750	608	608
WATER QUALITY & HABITAT PROTECTION								
Water Quality and Habitat Protection	891	305	427	1,638	0	0	0	0
Water Permit Compliance & Enforcement	0	0	0	0	1,183	1,569	1,312	1,312
FKNMS Water Quality Protection Plan	0	0	0	0	1,031	1,081	35	35
Special Studies	0	0	0	0	100	0	200	0
Water Quality Criteria	0	0	0	0	0	83	83	83
Water Quality Plan	0	0	0	0	143	135	184	257
Urban Needs	0	0	0	0	275	0	50	50
Mercury Studies	0	0	0	0	0	100	100	50
Pesticide Assessment	0	0	0	0	250	125	0	0
South Florida Office	0	0	0	0	100	240	440	440
Subtotal: EPA	891	305	427	1,638	3,082	3,333	2,274	2,227
INFORMATION MANAGEMENT/ASSESSMENT								
Data Management	1,119	653	50	955	50	50	60	60
SCIENCE: MONITORING								
Water Quality Protection/ Prog./Mercury	1,460	2,395	1,983	2,415	0	0	0	0
Environmental Monitoring & Assessment	0	0	0	0	140	140	157	100
FKNMS Water Quality Prot. Plan Monitoring	0	0	0	0	540	700	1,092	1,260
Subtotal: EPA	1,460	2,395	1,983	2,415	680	840	1,249	1,360
SCIENCE: RESEARCH								
Mercury Risk Assessment	0	0	0	0	300	100	83	83
Mercury Contamination Studies	97	1,371	3,894	1,554	2,976	3,396	1,736	745
Subtotal: EPA	97	1,371	3,894	1,554	3,276	3,496	1,819	828
INFRASTRUCTURE INVESTMENT								
Programmatic EIS	0	0	0	0	203	215	155	100
TOTALS	4,769	5,803	7,166	7,600	8,131	8,684	6,165	5,183

Natural Resources Management (\$608,000)

- Wetland Conservation (\$308,000)

EPA and the Army Corps are implementing a wetlands conservation, permitting, and mitigation strategy that includes interagency mechanisms to coordinate the permitting and mitigation planning needed to implement existing regulatory programs with the greatest efficiency in the face of intense pressure to develop increasingly small parcels,

many with wetland impacts. EPA has dedicated two staff associated with its South Florida Office to participate in this work.

- Task Force Support (\$300,000)

This activity includes the time of staff in the South Florida Office, EPA's Atlanta Regional Office, and EPA headquarters associated with the participation in the South Florida Ecosystem Restoration Task Force and its Working Groups. It also includes the Staff time associated with the administration of grants that support activities included in the restoration effort.

Water Quality and Habitat Protection (\$2,227,000)

- Water Permit Compliance and Enforcement (\$1,312,000)

Compliance and enforcement activities for existing regulatory requirements play an important role in the prevention of further degradation in the South Florida ecosystem. For this reason, these resources will be devoted to provide technical assistance to help ensure compliance with permits and to provide prompt and thorough attention to enforcement when it is needed.

- Florida Keys National Marine Sanctuary Water Quality Protection Plan (\$35,000)

The 1990 Florida Keys National Marine Sanctuaries and Protection Act requires EPA, in conjunction with National Oceanic and Atmospheric Administration (NOAA) and the State of Florida to both plan and implement a Water Quality Protection Program that includes research, monitoring, waste source reduction, and public education.

Remediation of nutrient impacts on the near-shore waters of the Keys continues to be a project focus, although the continuing ecosystem management program also includes monitoring to confirm the status of the ecological conditions there, and research into the mechanisms of pollutant flows and interactions.

Detailed monitoring, and data management plans are being implemented. (See discussion below.)

- Water Quality Criteria (\$83,000)

Florida and tribal entities in Florida are required to reevaluate all water quality criteria for the Everglades. Related issues include the need for specific phosphorus criteria, the apparent inadequacy of present mercury criteria for the protection of Everglades biota, development of salinity standards for surrounding coastal areas. EPA will ultimately decide all of these issues as it approves the State and tribal water quality standards, and will devote resources to assist the State with access to sound science and ongoing scientific reviews.

- Water Quality Plan (\$257,000)

The South Florida Ecosystem Restoration Task Force, has identified the urgent need to restore more natural water flows to the Everglades National Park and Florida Bay. Restoring the flows, however will not achieve the desired goals if the quality of the diverted water is inadequate to sustain the natural system of the areas we want to restore and protect. The Task Force has requested the preparation of a Water Quality Plan to identify where water quality is a concern and to propose actions to restore and protect it in these areas.

The Water Quality Plan is designed to contain components (some already underway) that contribute information needed by other elements of the Task Force work. It expects that other related activities will provide useful assistance in preparing the Plan through a process of close coordination.

- Mercury Studies (\$50,000)

Mercury Studies will augment past and on going research by examining the means of reducing mercury's risks to the environment.

- South Florida Office (\$440,000)

EPA's South Florida Office provides the core of EPA participation in Task Force activities. These include the coordination of section 404 and Stormwater Treatment Area permits associated with the Everglades Construction Project, staff to support section 404 dredge and fill permitting, the development of a Water Quality Implementation Plan, liaison with the Governor's Commission on a Sustainable South Florida, coordination with C&SF Restudy including the discussion of role of aquifer storage and recovery, studies of mercury and procedures for the development of phosphorus criteria, an Urban Initiative, implementation of a South Florida waste management programs and the environmental issues associated with the realignment of Homestead Air Force Base.

Information Management and Assessment (\$60,000)

- Data Management (\$60,000)

The data needs of South Florida are being addressed in conjunction with the Florida Marine Resources Research Institute (FMRI) which is coordinating data management for the State, and certain Federal agencies. Under this initiative, FMRI is working with agencies to produce an information library to locate and catalog the data collected from major current studies of the South Florida Ecosystem, provide geographic information useful in future studies, and provide information to the public using data resources retained by FMRI. The Internet is used to convey information to the public and to link FMRI with other data repositories.

A major part of this demonstration involves FMRI's piloting the use of an early version of EPA's modernized STORET water quality data base, which the State of Florida has used for years.

Science: Monitoring: (\$1,360,000)

- Environmental Monitoring and Assessment Program (\$100,000)

The Program includes monitoring to confirm the status of the ecological conditions there, and research into the mechanisms of pollutant flows and interactions. The natural resources the Program is now focusing on, are the water quality of the Sanctuary, the distribution and condition of the seagrasses, and the conditions of the hard bottom habitats and the important coral reefs.

- Florida Keys National Marine Sanctuary Water Quality Protection Plan Monitoring (Monitoring elements, \$1,260,000)

The 1990 Florida Keys National Marine Sanctuaries and Protection Act requires EPA, in conjunction with National Oceanic and Atmospheric Administration (NOAA) and the State of Florida to both plan and implement a Water Quality Protection Program that includes research, monitoring, waste source reduction, and public education. (See above.)

Science: Research (\$828,000)

- Mercury Risk Assessment (\$83,000)

Mercury contamination of Everglades biota is an issue of great concern. The entire Everglades and Big Cypress region has a human health fish consumption advisory posted. Species such as the endangered Florida panther and wading birds may also be at increased risk. A scientific effort is underway to define the mercury contamination, and elucidate the sources and environmental conditions that result in bioaccumulation. These efforts must continue in order to assess the nature and extent of mercury contamination over various Everglades water conditions (wet years, dry years), develop a mass balance of mercury movement through the system, identify appropriate management or regulatory strategies, and assess their effectiveness by monitoring over time.

- Mercury Contamination Studies (\$745,000)

EPA has been concerned about elevated mercury levels in South Florida since 1989. Fish consumption advisories were first issued covering two million acres encompassing the Everglades and the Big Cypress National Preserve are caused by the accumulation of mercury in the edible tissues of fish in concentrations above Florida fish consumption

guidelines. Recently, these advisories have been extended to certain coastal waters as well.

We are, as yet, unable to definitively identify the source of this important contaminant which is not found uniquely in South Florida. The mechanisms through which it is mobilized are one of the subjects of our studies.

Infrastructure Investment (\$100,000)

- Programmatic Environmental Impact Assessment (\$100,000)

The Environmental Protection Agency is participating in the preparation of a programmatic Environmental Impact Statement for the Central and Southern Florida Project with the Corps of Engineers. Funding under this category also supports its participation on the many working groups of the South Florida Ecosystem Restoration Task Force and the Governor's Commission for a Sustainable South Florida.

The Environmental Protection Agency also provides funding to the State of Florida to support activities in this category under grants authorized by the Clean Water Act to capitalize loans for the construction of municipal wastewater treatment plants and for other pollution reduction projects. The State of Florida supports important projects in South Florida from this fund, but the amount varies as it adjusts the available funding to project needs across the state.

3.5 U.S. DEPARTMENT OF COMMERCE \$17,507,000

3.5.1 National Oceanic and Atmospheric Administration (NOAA) - \$17,507,000

NOAA budget matrix for fiscal year 1993-00 (thousands of dollars)

Function/Project Name	1993 Enacted	1994 Enacted	1995 Enacted	1996 Enacted	1997 Enacted	1998 Enacted	1999 Enacted	2000 PB
AREA MANAGEMENT								
Florida Keys National Marine Sanctuary (NOS)	1,700	1,900	2,230	2,230	2,260	2,500	2,400	2,500
Integrated Coastal Management (NOS)	0	0	0	100	200	200	200	200
Rookery Bay NERR (NOS)	90	90	90	90	125	125	125	125
Florida Coastal Management Program (NOS)	476	581	600	600	1,300	1,300	1,300	1,300
Subtotal: NOAA	2,266	2,571	2,920	3,020	3,885	4,125	4,025	4,125
NATURAL RESOURCES MANAGEMENT								
Fisheries Management/Endangered Species (NMFS)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
WATER QUALITY & HABITAT PROTECTION								
Habitat Conservation (NMFS)	15	100	110	110	110	110	110	110
INFORMATION MANAGEMENT/ASSESSMENT								
Technical Support to Fl. Keys Management (NOS)	1,000	400	200	0	441	441	441	441
Photogrammetry/Coastal Mapping (NOS)	150	300	175	0	220	220	220	220
Bathymetry/Salinity Characterization (NOS)	0	80	80	0	25	25	25	25
Aircraft Salinity Mapping (NOS)	35	200	200	0	0	0	0	0
Coast Watch Product Prep. & Dissemination (NOS)	20	70	80	0	0	0	0	0
Weather Service Forecasting (NWS)	480	480	1,480	1,480	1,480	1,480	1,480	1,480
Digitize Keys Bathymetry/Wetland Data (NOS)	0	0	0	200	100	100	100	100
Spatial Database Development (NOS)	0	0	0	175	0	0	0	0
Circulation Modeling (NOS)	0	0	0	100	100	100	100	100
Subtotal: NOAA	1,685	1,530	2,215	1,955	2,366	2,366	2,366	2,366
SCIENCE: MONITORING								
Fisheries Monitoring and Assessment (NMFS)	1,130	1,130	1,160	1,160	1,160	1,160	1,160	1,160
National Status & Trends Monitoring (NOS)	20	40	40	40	120	120	120	120
Integrated Ecosystem Health Monitoring (NOS)	0	0	0	270	850	650	900	1,900
Rookery Bay NERR (NOS)	20	20	20	20	25	25	25	25
Subtotal: NOAA	1,170	1,190	1,220	1,490	2,155	1,955	2,205	3,205
SCIENCE: RESEARCH								
National Marine Fisheries Service (NMFS)	335	1,025	1,458	1,458	1,460	1,460	1,460	2,060
Atlantic Oceanographic & Meteorological Labs. (OAR)	500	200	200	200	200	200	200	200
University of Miami/CIMAS Pass-through (OAR)	1,525	1,163	2,175	1,278	1,559	600	600	600
Florida Sea Grant (OAR)	400	400	400	400	450	470	470	470
NOAA Underwater Research Program (OAR)	2,000	1,500	1,500	675	1,200	1,300	1,000	1,000
Coastal Ocean Program (NOS)	395	545	1,000	1,000	2,300	2,300	2,300	2,300
Climate/Agriculture Research - FSUniversity (OGP)	436	746	1,020	1,026	544	0	0	0
Climate/Agriculture Research - UnivSoFlorida (OGP)	197	288	323	0	132	0	0	0
Florida Keys/Florida Bay Economic Valuation (NOS)	0	0	100	200	71	71	71	71

NOVA Coral Reef Institute (NOS)	0	0	0	0	0	500	500	0
Rookery Bay NERR (NOS)	47	0	0	100	0	0	0	0
Subtotal: NOAA	5,835	5,867	8,176	6,337	7,916	6,901	6,601	6,701
INFRASTRUCTURE INVESTMENT								
Rookery Bay NERR (NOS)	0	250	0	0	0	0	0	0
Florida Coastal Management Program (NOS)	134	135	0	0	0	0	0	0
Subtotal: NOAA	134	385	0	0	0	0	0	0
TOTALS	12,105	12,643	15,641	13,912	17,432	16,457	16,307	17,507

Abbreviations in table:

NOS - National Ocean Service
 NMFS - National Marine Fisheries Service
 NWS - National Weather Service
 OAR - Office of Oceanic and Atmospheric Research
 OGP - Office of Global Programs

Area Management (\$4,125,000)

- Florida Keys National Marine Sanctuary (\$2,500,000)

Funding will be used for operational activities in the Florida Keys National Marine Sanctuary (FKNMS), including enforcement efforts for sanctuary regulations and operation of a permit system designed to protect sanctuary resources. Vessel maintenance costs are included in these funds. Public outreach and education activities will be conducted including on-the-water interpretation about coral reefs and other coastal resources. A volunteer program designed to assist in management of the sanctuary will be continued. Funding will also support priority Federal, state, and county partnership efforts required for implementation of the FKNMS Management Plan. (National Ocean Service)

- Integrated Coastal Management (Florida Keys) (\$200,000)

These funds will focus and integrate ongoing and planned activities of the National Ocean Service conducted in the Florida Keys and Florida Bay. The goal is to help NOS fulfill the broad environmental mandates described in the FKNMS Management Plan by developing specific, operational tasks for cross-NOS project integration. Priorities for FY00 include implementing an information network to provide access to all ongoing coastal monitoring projects, a regional ecosystem monitoring plan, completion of benthic habitat maps for priority areas within the FKNMS, distribution of Florida Bay bathymetry data, and hydrodynamic modeling of Florida Bay. (National Ocean Service)

- Rookery Bay National Estuarine Research Reserve (\$125,000)

Funding will be used to operate the Rookery Bay National Estuarine Research Reserve site including salaries, travel, facility maintenance, vehicles (autos and watercraft), and various supplies. Funds will also support program activities such as control of invasive exotic species, periodic aircraft patrols of the site, and the use of remote sensing data to map and classify the habitats of the Reserve. (National Ocean Service)

- Florida Coastal Management Program (\$1,300,000)

These funds, provided by the National Ocean Service, support the South Florida component of the state of Florida's coastal zone management program within the Florida Department of Community Affairs. Projects include an evaluation of cumulative and secondary impacts of on-site sewage disposal systems (particularly in the Florida Keys), restoration dredging, an investigation of alleys as stormwater treatment facilities, and land acquisition for improved beach access. The sewage disposal project includes investigation of alternative waste treatment technologies. A portion of these funds also support the Governor's Commission for a Sustainable South Florida. The Governor's Commission serves as a coordination mechanism to focus the many competing interests in South Florida on a restoration and management solution to provide for sustainable economic development that can co-exist with a healthy South Florida ecosystem. (National Ocean Service)

Natural Resources Management (\$1,000,000)

- Fisheries Management/Endangered Species (\$1,000,000)

Funding will be used by the National Marine Fisheries Service (NMFS) to continue the management of fisheries in Federal waters of South Florida to rebuild and maintain stocks at optimum levels. The effectiveness of the management measures will be evaluated by several criteria including the recruitment of juveniles to fisheries. Other management activities are directed at reducing the detrimental impacts of fishing and other human activities on populations of protected species, including turtles and dolphins.

Water Quality and Habitat Protection (\$110,000)

- Habitat Conservation (\$110,000)

This funding supports activities at the Miami office of the Habitat Conservation Division of the National Marine Fisheries Service. Activities include commenting on permits affecting marine resources and participating in management activities of the Federal Working Group, especially development of the Comprehensive Wetland Conservation, Permitting, and Mitigation Strategy for South Florida. These efforts involve extensive consultation and tracking of a variety of projects that may have significant impacts on South Florida Ecosystem Restoration efforts and essential fish habitat. Funding supports participation in planning and implementation of restoration and enhancement activities.

Information Management and Assessment (\$2,366,000)

- Technical Support to Florida Keys Management (\$441,000)

These funds support a variety of technical and assessment activities in and around the Florida Keys including damage assessment and restoration of recent ship grounding sites (including restoration of coral reefs and seagrass areas), hydrologic studies on the circulation and salinity of regional waters, and evaluation of ecological and socioeconomic impacts to regional resources. (National Ocean Service)

- Photogrammetry/Coastal Mapping (\$220,000)

Funding will support updating and maintenance of comprehensive benthic habitat maps completed (with the State of Florida) for the entire Florida Keys National Marine Sanctuary in FY 1998. Other activities will include continued investigations by NOAA's C-CAP program to classify important terrestrial habitats from Thematic Mapper imagery, continued testing and evaluation of the use of multispectral scanners for coastal mapping and work in Florida Bay to map the distribution of low lying mudbanks that are distributed throughout this shallow coastal bay. (National Ocean Service)

- Bathymetry/Salinity Characterization (\$25,000)

Funding will support on-going efforts to develop detailed and up to date characterizations of South Florida's coastal bathymetry. Work will include completion of a mudbank characterization experiment for Florida Bay, based upon the integration of several historical and contemporary sources. These data will be supplemented by an analysis of recent and historic satellite imagery and ground truthing in Florida Bay. This work is being conducted in cooperation with the Department of the Interior (U.S. Geological Survey). (National Ocean Service)

- Weather Service Forecasting (\$1,480,000)

The National Weather Service maintains a regional weather forecasting operation that includes collecting climate data important for many scientific investigations including providing information for the modelling and managing water budgets in South Florida as part of the Restudy effort. The forecasting also provides important information related to nonpoint pollution and fresh water inflow (precipitation), and the flow of water from land into coastal waters via wind-driven circulation patterns (wind speed and direction).

- Florida Keys Bathymetry/Benthic Habitats Digitization (\$100,000)

Funding will update and maintain digital bathymetry and benthic habitats for the South Florida coastal region based upon historic and contemporary sources (see Bathymetry above). Regional and local scientists will format the digital files for application to

mapping, modeling and use by state, federal and other groups in management decisions (National Ocean Service).

- Circulation Modeling (\$100,000)

NOAA modeling activities relative to Florida Bay will establish meteorological and regional circulation boundary conditions needed to support circulation models of the Bay under development of other agencies. NOAA will also be improving preliminary models of Florida Bay circulation. The goal is to complement ongoing and related efforts. A key objective will be to understand the flux of water between Florida Bay and the Florida Keys. (National Ocean Service)

Science: Monitoring (\$3,205,000)

- Fisheries Monitoring and Assessment (\$1,160,000)

NOAA's National Marine Fisheries Service routinely conducts monitoring and assessment activities in South Florida waters for a number of commercial, recreational, and ecologically important species. These activities include estimating population size and distribution, and assessments of species' life histories and movements. Landscape changes in regional watersheds and along the coastal zone are monitored in cooperation with the Department of the Interior.

- National Status and Trends Monitoring (\$120,000)

The National Status and Trends program will continue monitoring contaminants, macroinvertebrates, and bioeffects in the South Florida region. This is an important part of the effort to monitor the impacts and outcomes of inland Restoration efforts that will alter the flow of water (and possibly contaminants) from land to coastal bays and estuaries. These funds will also support implementation of actions of a regional ecosystem monitoring plan to help state, federal and other groups to adequately monitor and implement efforts to restore South Florida's coastal areas (National Ocean Service).

- Integrated Ecosystem Health Monitoring (\$1,900,000)

This is one of three areas where NOAA has requested new funding to support its science, monitoring and management role in the South Florida Ecosystem Restoration effort.

Funding will support a variety of intensive monitoring activities in the Florida Keys National Marine Sanctuary and South Florida coastal areas such as Florida Bay and Biscayne Bay. The objectives are to: (1) document baseline conditions, (2) monitor trends including effects of restoration efforts and management decisions, and (3) evaluate long-term impacts associated with the inland changes in water flow and other human impacts such as ship groundings and oil spills. Effort includes monitoring of key coastal indicators including seagrasses, macroinvertebrates, coral reefs, circulation and

salinity. Results will be used in part to develop a baseline description of current physical and biological conditions, including how conditions vary in space and time. This data will ultimately be used to determine the best alternatives, progress and effectiveness of efforts to replumb inland water flow and restore a healthy South Florida ecosystem.

A major new regional ecosystem monitoring plan was designed but only partially implemented in FY97-98 due to lack of funding. This project is intended to fulfill NOAA's responsibility to establish a long-term ecological monitoring program and database for the South Florida Restoration effort and Florida Keys National Marine Sanctuary and provide a forum for integrating most monitoring in the marine ecosystem. The geographic scope includes all the marine waters of South Florida. This is a key part of a larger partnership effort to monitor and restore South Florida's coastal areas with components being conducted by several NOAA programs as well as other agencies such as the Department of the Interior, the Environmental Protection Agency and the State of Florida in some areas.

New funding will allow NOAA to fully implement this monitoring strategy for South Florida's coastal areas including coral reefs of the Florida Keys National Marine Sanctuary, contaminants in South Florida's bays and estuaries, and other key indicators of coastal ecosystem health (National Ocean Service).

- Rookery Bay National Estuarine Research Reserve (\$25,000)

The Rookery Bay NERR monitoring program currently includes a suite of water quality parameters including temperature, salinity, dissolved oxygen, and turbidity. Habitat monitoring of the site's wetlands (particularly the mangrove areas) is expected to begin soon. (National Ocean Service)

Science: Research (\$6,701,000)

- National Marine Fisheries Service (\$2,060,000)

NMFS will continue research that defines the impact of inland restoration efforts and changing freshwater inflow on Florida Bay habitats, nutrients flow, hydrodynamics, and ultimately on measurable ecosystem productivity, diversity, and health. This research is conducted, in part, through a strong partnership with local scientists.

Significant program enhancement funds are targeted for an integrative spatial study of the benthic communities in relation to habitat particularly seagrass and salinity, and to build a relationship among abundance, biomass, and the management of freshwater inflow. Elements of the study will include modeling, geographic information systems (GIS), field sampling across the entire Bay, and laboratory studies. Spatial community modeling will be incorporated into a total ecosystem model of Florida Bay to help integrate the interagency program of studies in Florida Bay. This effort also includes expansion of tests of water quality entering Florida Bay using biological assays appropriate for South Florida.

- Atlantic Oceanographic and Meteorological Laboratory (\$200,000)

The Atlantic Oceanographic and Meteorological Laboratory (AOML) conducts and supports a wide variety of research important to the South Florida Ecosystem Restoration effort including research on circulation, productivity and changes in coastal waters, modelling of possible future conditions of South Florida's coastal waters under different restoration scenarios, monitoring of water conditions near coral reefs, and atmospheric research on the impacts of winds, precipitation and evaporation on the water available for restoration efforts. AOML provides sophisticated modelling and research capabilities to synthesis and apply information from many other NOAA and other agency monitoring efforts to help find solutions for the restoration effort (Office of Oceanic and Atmospheric Research).

- University of Miami, Cooperative Institute for Marine and Atmospheric Research (CIMAS)

As part of the South Florida Ecosystem Restoration Prediction and Modeling program, NOAA's Office of Oceanic and Atmospheric Research funds research in a variety of fields to better understand, restore and sustain the South Florida Ecosystem. Funding is available to universities and other academic institutions on a competitive, peer-review basis. In FY 2000, \$600,000 will support collaborative research through the University of Miami Rosenstiel School of Marine and Atmospheric Science, Cooperative Institute for Marine and Atmospheric Research (CIMAS).

- Florida Sea Grant (\$470,000)

Florida Sea Grant is currently sponsoring four multi-year research projects in South Florida. Two of the projects are investigating the causes of algal blooms in Florida Bay, looking at both changes in the planktonic food webs and at the input of groundwater nutrients. Another project involves investigating the effect of the sponge die-off in Florida Bay on spiny lobsters and the possibilities for artificial habitat enhancement. A fourth project is evaluating the effect of algal blooms and turbidity on coral reefs. (Office of Oceanic and Atmospheric Research)

- National Undersea Research Program (NURP) (\$1,000,000)

The NURP provides access for the U.S. research community to civilian, military, and international undersea platforms. The research it supports relies on submersibles, underwater laboratories, and diving to enable scientists to perform in situ studies, and on remotely operated vehicles and observatories for indirect access. The program is directed by a national office and carried out by six university-based National Undersea Research Centers. Primary research emphases in NURP are fisheries, coastal processes, ecosystem health, marine lithospheric processes, undersea technology, and diving safety and physiology. The program serves as a center for Federal research support of the nation's coral reef resources and is invaluable to the efforts to monitor,

understand and restore coral reefs in South Florida. (Office of Oceanic and Atmospheric Research)

- Coastal Ocean Program (\$2,300,000)

Funding will provide broad research support for scientific investigations in the South Florida coastal ecosystem including studies of biological and physical processes (including circulation and atmospheric modeling, zooplankton and macrobenthos abundance, and fishery and mammal estimates), and modeling activities intended to better understand and restore the South Florida coastal ecosystem. When coupled with monitoring efforts, these broader investigations show the interactions between restoration efforts and oceanographic, atmospheric, geologic, hydrologic, and fisheries ecosystem characteristics. Much of this work is coordinated through researchers at the AOML (see above) and a variety of universities. The program will focus particularly on: 1) characterizing physical, chemical, and biological stressors of the region; 2) developing and validating new indicators of stress on key organisms and ecological processes; 3) characterizing cumulative stress effects on the diverse seascape; 4) using remote sensing technologies for determining large-scale regional characterizations; and 5) integrating these efforts with monitoring programs to develop a whole-system ecosystem model capable of evaluating the effects of human-induced and natural changes to the South Florida Coastal Ecosystem. (National Ocean Service)

- Florida Keys/Florida Bay Economic Valuation (\$71,000)

Funding will support a major project to determine the market and nonmarket values associated with recreation in the Florida Keys. These data will provide an important link between the regional economy and the South Florida environment (National Ocean Service).

3.6 U. S. DEPARTMENT OF THE INTERIOR \$151,502,000

3.6.1 Bureau of Indian Affairs (BIA) - \$400,000

BIA budget matrix for fiscal year 2000 (FY93-99 included).

(thousands of dollars)

Function/Project name	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
SCIENCE: MONITORING								
Water Quality Monitoring	0	400	400	400	400	400	400	400
TOTALS	0	400	400	400	400	400	400	400

The Bureau of Indian Affairs fulfills its trust responsibility to Indian tribes through a variety of programs. The Miccosukee and Seminole Indian Tribes reservations (located in South Florida) are an integral part of the Everglades ecosystem. Today, approximately 462,000 acres (720 sq mi) in South Florida are considered Indian lands. The traditional and modern lifestyles of the 430 Miccosukee tribal members and 2,500 Seminole tribal members are carried out on these trust lands.

Science: Monitoring (\$400,000)

- Water Quality Monitoring

The FY00 funding level of \$400,000 will provide the necessary water quality monitoring and associated GIS requirements of the tribes. These funds will be used to develop and implement tribal water quality standards and expand tribal opportunities and capabilities in the field.

3.6.2 U. S. Fish and Wildlife Service (FWS) - \$11,032,000**FWS budget matrix for fiscal year 2000 (FY93-99 included)**

(thousands of dollars)

Function/Project name	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
AREA MANAGEMENT								
Refuges and Wildlife:								
A.R.M. Loxahatchee	1420	1140	1392	1501	1,544	1658	1,482	1,482
Florida Panther National Wildlife Refuge	251	263	336	338	479	657	517	517
J.N. "Ding" Darling National Wildlife Refuge	399	524	657	654	767	912	750	750
National Key Deer Refuge	605	547	567	569	734	951	770	770
Pelican Island/Archie Carr	0	0	0	0	75	105	105	105
Subtotal: FWS	2,675	2,474	2,952	3,062	3,599	4,283	3,624	3,624
NATURAL RESOURCES MANAGEMENT								
Endangered Species (Prelisting, listing, consultation, recovery and permits)	541	887	1169	1209	1560	1560	1560	1560
Environmental Contaminants/Mercury	60	120	120	120	120	120	120	120
Fisheries (Panama City FRO)	90	100	100	100	100	100	100	100
Law Enforcement	620	637	637	637	637	637	637	637
Migratory Bird Management	44	44	104	104	104	104	104	104
Subtotal: FWS	1,355	1,788	2,130	2,170	2,521	2,521	2,521	2,521
WATER QUALITY & HABITAT PROTECTION								
Habitat Conservation (Partners, Project Planning, environmental coordination and Coastal Program)	186	170	728	728	887	887	887	887
Subtotal: FWS	186	170	728	728	887	887	887	887
INFORMATION MGMT/ ASSESSMENT								
Habitat Conservation	100	100	100	100	0	0	0	0
LAND ACQUISITION*								
Lake Wales Ridge	0	2000	1000	0	500	0	1,000	0
Ding Darling	0	0	0	0	0	0	0	4,000
National Key Deer Refuge	1,983	0	0	0	0	0	0	0
Subtotal: FWS	1,983	2,000	1,000	0	500	0	1000	4,000
INFRASTRUCTURE INVESTMENT								
Habitat Conservation	0	55	55	55	0	0	0	0
TOTALS	6,299	6,587	6,965	6,115	7,507	7,691	8,032	11,032

* Land Acquisition funds for Pelican Island NWR and Archie Carr NWR are not included in this table.

The USFWS administers 13 national wildlife refuges in South Florida. The FWS manages all actions under the Endangered Species Act, provides comments on comprehensive wetland programs (including permitting), carries out authorities of the Fish and Wildlife Coordination Act, and enforces Federal wildlife laws. As a member of the South Florida ecosystem restoration Task Force, the FWS will continue to undertake important on-ground restoration activities.

Area Management (\$3,624,000)

The FWS administers four major (staffed) national wildlife refuges within the South Florida ecosystem (A.R.M. Loxahatchee, Florida Panther, J.N. "Ding" Darling, and National Key Deer) and nine satellite refuges. Hundreds of thousands of people visit the refuges annually. Funding will be used for NWR operations and maintenance, public education, and outreach to increase public awareness of the issues facing the South Florida ecosystem, control of exotic species, and protection of listed species.

- A.R.M. Loxahatchee National Wildlife Refuge (including Hobe Sound NWR) (\$1,482,000)

A major facet of Everglades ecosystem restoration is to improve the hydro pattern of surface water in the Everglades. Funding will be used to comply with the 1992 Everglades Federal Consent Decree (water quality monitoring, cooperating on a multi-year dosing study to determine the appropriate nutrient limits for the Everglades), map the vegetation changes caused by nutrient pollution, initiate research to determine the effects on vegetation caused by the revised water regulation schedule, and contract with consultants for water quality data analysis. Funding will also be used to provide environmental education to visitors through the Visitor Center, on the trails, and in the local community. Eradication of invasive exotic plants is a major on going management activity.

- Florida Panther National Wildlife Refuge (including Ten Thousand Islands NWR) (\$517,000)

The funding will be used to maintain efforts at control and eradication of exotic species, continue research efforts aimed at improving land management techniques and restoring South Florida's endangered species, and continue to monitor a project to restore historic water flow to Lucky Lake Strand. Funding will also be used to address the needs of the newly established Ten Thousand Islands NWR, particularly for law enforcement and biological projects to protect and survey the natural resources of the mangrove island ecosystem. Funding will also be used to implement the recently approved Comprehensive Conservation Plans for both Refuges.

- J.N. "Ding" Darling National Wildlife Refuge (including Caloosahatchee, Matlacha Pass, Island Bay, and Pint Island NWRs) (\$750,000)

This funding will be used specifically to minimize further loss of ecologically functioning fish and wildlife habitats in the South Florida ecosystem by (1) initiating new, and by expanding existing, invasive exotic plant species control programs, (2) enhancing and restoring ecological function and habitat values to degraded fish and wildlife habitat, and then by (3) expanding existing exotic plant control programs to those habitats. Additionally the funding will be used to protect non-listed indigenous fish and wildlife and plants by, (1) increasing hours expended for law enforcement, (2) enhancing public awareness and ethic of shared

responsibility for a sustainable environment in South Florida implementing an environmental education and outreach program, and (3) by increasing the interpretation and recreation programs through the addition of exhibits and a new visitor center.

- National Key Deer Refuge (including Great White Heron, Key West, and Crocodile Lake (\$770,000))

These four refuges contain over 415,000 acres of terrestrial and marine habitat for nearly 100 Federal or State listed endangered/threatened plant and animal species. This funding will allow for the increased protection of existing lands and marine and coral reef habitat; protection and inventory of new acquisitions; expanded exotic plant control program; planning to reduce impacts of harmful terrestrial and marine recreational activities; restoration of degraded/modified habitat; conducting of important surveys/censuses; coordination of activities; inventory and assessing coral reef and associated marine habitats; enhancement of partnerships with other agencies/organizations, and continued planning and management efforts through the use of tools, such as GIS.

- Pelican Island/Archie Carr National Wildlife Refuges (\$105,000)

These funds will be used to stabilize the shoreline of Pelican Island. Excessive wave action from boats has reduced the island to one-half its original size, thus threatening the historic island and the bird rookery it sustains. These waves are being generated in the Intracoastal Waterway and the only means of protecting the island is through the placing of a breakwater composed of natural materials.

Natural Resources Management (\$2,521,000)

- Endangered Species Recovery (\$1,560,000)

These funds will enable the FWS to continue implementing the multi-species recovery plan in 2000. The recovery plan will provide the Federal, State, Tribal, and local government agencies with a blueprint for protecting, conserving, and managing the threatened and endangered fish and wildlife resources of South Florida. This information will become particularly important as the Corp of Engineers develops plans for restoration of the south Florida ecosystem. In addition to salaries and other expenses, the FWS will use the funds to initiate or continue recovery actions on the endangered Cape Sable seaside sparrow, wood stork, and American crocodile as part of the Experimental Program of Modified Water Deliveries to Everglades National Park. The FWS will also fund recovery actions and field investigations for several other Federally listed species in South Florida, including the Florida grasshopper sparrow, Florida scrub jay, Garber's spurge, Lake Wales plants, Pine Rockland plants, Red-cockades woodpecker, and several species in the Florida Keys. This work will support the Florida Keys Carrying Capacity Study and other studies and investigations affecting listed species and their habitats.

The FWS will also use these funds to consult with the Corps and other agencies relative to those agency activities which potentially affect Federally listed species. These consultations occur on over two thousand Corps permits issued annually. In 2000, the FWS will continue consultation with the Corps on the Central and South Florida Restudy, in addition to other ongoing or new Federal projects and permits.

- Environmental Contaminants (\$120,000)

The funds will be used for the salary and expenses of one Contaminant Specialist and an assistant who will use their training and expertise to perform contaminant investigations in South Florida, particularly in regard to restoration activities.

- Fisheries Assistance (\$100,000)

The funds will be used for the salary and expenses of the South Florida Fisheries Resource Coordinator who will ensure that restoration activities fully consider and maximize South Florida ecosystem health for significant coastal and marine fisheries.

- Law Enforcement (\$637,000)

Funding will be used to enhance law enforcement's ability to handle the quickly escalating regional workload. There has been a marked increase in the illegal trafficking of exotic protected species and the unlawful "taking" of endemic species protected by the ESA and MBTA throughout South Florida. Southwest Florida is one of the most ecologically sensitive and rapidly growing areas of the State, requiring the highest priority for establishing an increased law enforcement presence. Funding will allow the purchase of vehicles, boats, and marine equipment needed by law enforcement personnel to conduct investigations in remote areas. Additional personnel will be detailed to "task force" enforcement operations within the ecosystem as needed. Increased efforts to educate the public regarding the law and illegal activities will be emphasized.

- Migratory Bird Management (\$104,000)

These funds will be used to study migratory birds and their habitat in South Florida. Attention will be placed on surveying the location, extent, and duration of migrations of neo-tropical birds. Ecologically significant habitats to support these species will be identified and prioritized for protection.

Water Quality and Habitat Protection

- Habitat Conservation (\$887,000)

The FWS will use these funds to continue to focus on protection of fish and wildlife resources by providing assistance to the Corps Regulatory Program for the permitting of placement of fill in waters of the United States. The FWS focuses on minimizing impacts to wetlands and other important habitat, especially for Federally listed species. Further, the FWS works with others to ensure mitigation for wetland losses and to provide consistency and predictability for permit reviews. The FWS will also have a key role in development of the Comprehensive Conservation, Permitting, and Mitigation Strategy for the South Florida ecosystem, including the Southwest Florida EIS.

The Coastal Habitat Restoration Program is also funded within this category. The South Florida Coastal Program actively forms partnerships with other federal and state agencies, local governments, non-governmental entities, and private property owners to implement “on-the-ground” restoration projects as well as to conduct research, monitoring and public outreach activities. The Coastal Program complements the larger, more comprehensive South Florida Ecosystem Restoration Initiative by implementing immediate “on-the-ground” actions designed to protect, conserve, and restore coastal living resources. Since its implementation in FY95, the South Florida Coastal Program has provided funding support and technical assistance for 17 projects totaling \$2,005,726 in project costs. FWS funding contribution for these projects totaled \$743,745, which represents a 37 percent share. For the past several years, the importance of “on-the-ground” restorative actions has been reflected by the distribution of half of the Coastal Program’s budget toward actual habitat restoration. In FY 2000 the Coastal Program will emphasize increased use of funding for “on-the-ground” habitat restoration.

Land Acquisition (\$4,000,000)

- J.N. “Ding” Darling National Wildlife Refuge Complex

Funding will be used to protect and preserve a portion of Sanibel Island’s subtropical vegetation habitat for shorebirds, wading birds, migratory waterfowl and endangered species. The refuge complex provides habitat for approximately 291 species of birds, over 50 types of reptiles and amphibians, and at least 32 different mammals. Threatened and endangered species include the southern bald eagle, West Indian manatee, peregrine falcon, indigo snake and gopher tortoise. Several areas within the acquisition boundary of the Refuge that remain in private ownership may eventually be developed if left unprotected.

3.6.3 National Park Service (NPS) - \$131,469,000

NPS budget matrix for fiscal year 2000 (FY93-99 included)

(thousands of dollars)

Function/Project name	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	PB 2000
AREA MANAGEMENT								
Big Cypress National Preserve	1,776	2,355	3,024	3,098	3,164	4,032	4,268	4,721
Biscayne National Park	1,444	1,541	2,002	1,997	2,115	2,392	2,437	3,022
Dry Tortugas National Park	440	457	506	480	494	759	768	1,019
Everglades National Park	8,137	10,858	12,142	12,230	12,665	12,544	12,790	13,408
Task Force Support	0	0	0	0	800	800	800	1,299
Subtotal: NPS	11,797	15,211	17,674	17,805	19,238	20,527	21,063	23,469
SCIENCE: RESEARCH								
Everglades Research	0	0	0	0	7,200	12,000	12,000	8,000
LAND ACQUISITION								
Big Cypress National Preserve And Everglades National Park	9,419	6,000	6,986	0	12,000	33,000	20,000	31,800
Everglades Transition Lands (Asst. - State)	0	0	8,587	0	0	46,000	60,000	45,600
Biscayne National Park	0	0	0	0	0	0	0	600
Land Acquisition Administration	0	0	0	0	0	0	0	2,000
Subtotal: NPS	9,419	6,000	15,573	0	12,000	79,000	80,000	80,000
INFRASTRUCTURE INVESTMENT								
Modified Water Delivery System to ENP	6,942	0	4,478	4,457	2,800	11,900	14,000	20,000
TOTALS	28,158	21,211**	37,725	22,262	41,238	123,427	127,063	131,469

** The FY 94 total excludes \$5 million originally provided in the 1994 construction account which was transferred to land acquisition in accordance with FY 1994 Emergency Supplemental Appropriation language.

The National Park administers three national parks (Everglades, Biscayne, and Dry Tortugas), and one national preserve (Big Cypress) in South Florida. Together, these sites total more than 2,466,804 acres of the most environmentally challenged areas in the National Park System. In order to provide the leadership and direction required for continued coordination and management of the South Florida ecosystem, the NPS proposes in FY2000: \$31 million for area management, including \$8 million to support research associated with the restoration of the South Florida ecosystem; \$78 million for land acquisition; and approximately \$20 million for continuation of water delivery improvements. The NPS component of the South Florida Restoration Initiative totals \$131,469,000 compared to a FY99 enacted level of \$127,063,000 resulting in an increase of \$4,406,000 in FY 2000.

Area Management (\$23,469,000)

- Big Cypress National Preserve (\$4,721,000)

Costs associated with current area management activities support mandated programs such as the protection, inventorying and monitoring of ten threatened and endangered species (Florida Panther, Cape Sable Sparrow, Florida Manatee, etc.) and a large hydrology program that includes restoration of sheet water flow to the Everglades National Park and the Ten Thousand Islands. Additional mandated programs include special uses such as oil exploration/production, 38,000 acres of cattle leases, the

largest recreation hunting wildlife management area in south Florida, implementation of the largest recreational off-road vehicle program in the 48 states, and 11 Native American (Seminole and Miccosukee) villages on Preserve lands. The Preserve supports the largest prescribed fire program in the Service; visitor and resources protection of 728,000 acres of predominately backcountry areas; maintenance of 47 employee housing units, two major visitor support facilities, public utility systems, seven campgrounds, and 66 miles of roads and management of 394 known archeological sites. Public visitation is approximately 2 million based on newly opened recreation access locations of Interstate 75 and the newly designated Scenic Highway, U.S. 41 both which travel through the Preserve.

The current natural resources management program includes collection of baseline data in formats that are compatible with interagency regional hydrologic and community/species-based models, non-native plant control, threatened and endangered species, mitigation of visitor impacts, and about five percent are management funds to support direct inventory/monitoring of resources and a geographic information system.

- Biscayne National Park (\$3,022,000)

Costs for area management activities involve operations associated with a marine park that is exposed to intense urban pressures. These include efforts to address impacts to park resources associated with urban sprawl from the metropolitan area of Miami, four solid waste landfills, a nuclear power facility, and the impending conversion of a former Air Force Base to a commercial airport, with attendant issues of industrial runoff, air quality, noise, and adjacent land uses. All of these threats are located along the park's western boundary, and "upstream" with respect to surface- and ground-water flow into the park.

Other area management activities are associated with the protection of 173,000 acres of marine resources, which include the largest living coral reef system in the National Park Service, eight known terrestrial and 40 known submerged cultural sites, and approximately 20 historic structures and two national historic districts within a boundary that has unlimited access points. Costs also involve the maintenance of three developed islands and one mainland site that include six harbors/docking facilities, two campgrounds, six picnic areas, approximately ten miles of trail, six residences, an environmental education camp and a major visitor center. Visitation in 1998 was approximately 500,000.

Current natural resources management efforts are directed towards coral reef and seagrass protection, water quality monitoring, documentation and mitigation of impacts due to visitor and commercial uses, controlling exotic vegetation, and monitoring at least eight threatened and endangered species. Special efforts are applied to prevent and restore extensive damage to seagrass beds and coral reefs from boat groundings.

The \$585,000 increase of funding for area management for Biscayne in FY 2000 will allow the park to maintain FY 99 operational and program levels and improve its protection of coral reefs.

- Dry Tortugas National Park (\$1,019,000)

Costs are for operations of the 65,000 acre marine and historical national park 70 miles west of Key West. Over the past 14 years visitation at Dry Tortugas has quadrupled, rising from 18,000 visitors in 1984 to an estimated 72,000 visitors in 1998. This increased popularity is putting stress on park facilities and is threatening park resources, visitor safety, and the quality of the visitor experience. This raises concerns over visitor impacts on the remote, wilderness qualities of the site. A visitor use and commercial services planning process is underway to identify the types and levels of visitor activities and services that are consistent with protecting park resources and quality visitor experiences. Current funding will continue a preservation and maintenance program for Fort Jefferson.

Efforts will continue this year to document and recommend management strategies for submerged cultural resources. These efforts are supported by park staff, with overall technical direction provided by the NPS Submerged Cultural Resources Unit.

There is currently no natural resources management program funded within the park's area management. A proposed change to the 2000 program would support coral reef monitoring and protection and other natural resource programs.

The \$251,000 increase of funding for area management for Dry Tortugas in FY2000 will allow the park to maintain FY99 operational and program levels.

- Everglades National Park (\$13,408,000)

Costs for area management reflect continuing demands on operations, natural resources management, planning, maintenance and ecosystem restoration. The park continues to attract significant national and international attention, as a symbol of the effort to save the Everglades, and of the balance being sought in striving to secure South Florida's future. With over 1.5 million acres of fragile wilderness immediately adjacent to some 6 million people, the park has special challenges. Over one and one-half million visitors come each year. The Park has extensive outreach programs to the local community and sustains a large backcountry/wilderness operation.

The park operates major visitor use areas at Flamingo, Shark Valley, Everglades City, and Chekika, and oversees 3 concessions operations. Aging infrastructure requires extensive short-term maintenance, as well as long-term upgrade. The park has 82 miles of surfaced roads, 160 miles of trails, three campgrounds, 48 backcountry campsites, and three fee collection stations. The park has an unprecedented three international treaty designations and is unique in the world. It is home to over 1,000 species of plants, 400 species of birds, and 2 rare orchids, and is a refuge for 14 threatened and endangered species.

Everglades National Park remains the most ecologically threatened park in the nation. Florida Bay is continuing to experience dramatic changes, including striking alterations between hypo- and hyper-salinity, increased turbidity, dramatic seagrass die-offs and persistent and increasing spreads of algae blooms. Exotic plants have and are continuing to replace native plant communities in Everglades National Park and adjacent natural areas.

Shark Slough and eastern Florida Bay have the most extensive network of monitoring networks (hydrological, meteorological, and biological), but even these sites must be tied into a broader program to provide the level of information needed for an understanding of the relation between biotic and abiotic factors in restoration. Current funds primarily cover megafauna and key restoration areas such as Shark Slough, the C-111 basin, and eastern Florida Bay.

The \$618,000 increase of funding for area management for Everglades in FY2000 will allow the park to maintain FY99 operational and program levels.

- South Florida Ecosystem Restoration Task Force Support (\$1,299,000)

This activity also provides \$1,299,000 to support operations of the South Florida Ecosystem Restoration Task Force which is responsible for coordinating and integrating the activities of the participating Federal, State, and Tribal agencies. The Water Resources Development Act of 1996 directs the task force and working group to implement procedures to facilitate public participation in the advisory process; to maintain records and make the proceedings of meetings available for public inspection; and to submit biennial reports to Congress, summarizing the activities of the task force, the policies, strategies, projects, and priorities developed or implemented, and the progress made toward the restoration.

Science: Research (\$8,000,000)

Critical Ecosystem Studies Initiative (CESI)

Ecosystem Restoration Planning– Federal, state, local, and tribal governments, and private industry have undertaken a complex web of restoration and sustainability initiatives in South Florida. In 1998, a process was begun to integrate and better coordinate these efforts, and to create blueprint for future projects in the region. During FY 1998 and 1999, over 500 public and private sector leaders will participate in discussions about ecosystem restoration, sustainable practices, and coordination. In FY 2000, a summit on restoration and sustainability will be held and a final plan for sustaining a healthy ecosystem published.

Ecosystem Science Planning and Peer Review - In FY2000 previous interagency science planning documents will be updated to create a new blue print for south Florida ecosystem science, entitled *Science Planning and Implementation – 2000 and Beyond*. The interagency Science Coordination Team (SCT) will continue reviewing and coordinating scientific investigations and conducting independent peer reviews, workshops and symposiums on South Florida restoration-related topics. Numerous scientific workshops were held in 1997 and 1998, with additional workshops scheduled for 1999 and 2000. Some of the upcoming workshops include: Endangered Species

Protection, such as the Cape Sable Seaside Sparrow, Hydrologic and Hydrodynamic Modeling, Landscape and Ecological Processes, Sustainable Agriculture and Ecosystem Restoration, and an interagency Science Forum and Exposition. All workshops generally include local scientists and resource managers working in the south Florida area, and an external peer review panel. The external panels produce reports which provide guidance to the SCT and agency staff in evaluating the quality of their science, and identifying critical monitoring and research needs to support decision making by local managers and policy makers. This interagency planning and implementation process helps to design the needed long-term monitoring and research studies and the development of predictive models that guide us on the selection of alternative management plans, proposed implementation actions, and the specific engineering design for numerous ecosystem restoration initiatives.

Ecological Modeling – Expansion, Refinement and Applications - During 1998 and 1999, ecological models, particularly the Across Trophic Level Systems Simulation (ATLSS) models, serve as important predictive tools used by resource managers in evaluating various restoration alternatives. These models have been used extensively for regional scale evaluations for the C&SF Restudy, as well as more site-specific applications of endangered and keystone species for projects such as the Modified Water Deliveries and Experimental Water Delivery projects for ENP. During 2000, existing ecological models will continue to be refined and new models will be designed and adapted to the unique south Florida environment. These evolving predictive tools will expand our ability to link the results of hydrologic and water quality modeling with predictions of fish, wildlife, and vegetative changes at the individual, community, and landscape level. Existing models range from endangered species such as the Wood Stork and Cape Sable Seaside Sparrow, to freshwater fish and the white-tailed deer. Ecological models that are coming on-line in 1999 and 2000 include: additional species-specific models for the Snail Kite, the American Alligator and Crocodile, and the Florida Panther, as well as individual and community-based models for freshwater fish and macro-invertebrates, four additional species of wading birds, and several small mammals. In 2000 and beyond, the ecological modeling program is expanding to integrate mangrove, coastal, and nearshore communities (including the Florida Keys), and the coral reef ecosystems.

Selective High Density Topographic Surveys – High density topographic surveys provide ground surface elevation information essential to predicting surface water depths and durations, which are key to assessing restoration alternatives. The landscape scale patterns in ground surface elevations are also a strong indicator of the underlying soils and associated vegetation community distributions, which assist in calibrating hydrological and ecological models. In 1997 and 1998, topographic surveys were focused in the Taylor Slough and C-111 basins of ENP, to support the development of hydrologic models linking these watersheds with hydrodynamic modeling in Florida Bay. Surveys in 1999 have expanded northward into the southern Water Conservation Areas (WCAs 3A and 3B) and the South Dade agricultural area. In 2000, topographic surveys will expand westward into the southern Big Cypress watershed and the downstream areas of Shark River Slough, to provide information for

hydrologic modeling initiatives, linking with site-specific studies in the coastal and mangrove areas in these basins.

Ecological Processes and Indicator Species - The analysis of long-term monitoring data for selected faunal species and plant communities has shown that many of these species/communities make suitable ecological indicators of environmental alterations, because of their specific roles in the ecosystem or their sensitivity to anthropogenic changes. Similarly, ecological process studies have continued to focus on the abundance, distribution, and diversity patterns of key plants and animals and their environmental forcing factors, that act across the Everglades landscape. Site-specific research plots, developed in 1997 and 1998, are being used to establish permanent reference stations to track natural versus man-induced variability. The measurement variables are generally selected based on their sensitivity to changes in water depths, inundation durations, and water quality, which are the key hydrologic characteristics that are the focus of south Florida ecosystem restoration. With the additional data collected in the next two years, a well defined set of science-based performance measures will be available, as management tools during the period of restoration implementation. In addition to measuring restoration success, much of the information on key indicator species and ecological processes will also be used in the development of ecological simulation models as well as providing information for use in the Multi-Species Recovery Planning process.

Landscape Patterns, Processes, and Modeling – This is a new program which began in late 1998, with the goal of examining the ever changing Greater Everglades ecosystem from a regional or landscape scale. At this scale the south Florida ecosystem can be viewed as a complex mosaic of upland, wetland, coastal, and marine communities and faunal populations, which respond to natural and manmade perturbations (e.g., fire, flood, drought, hurricanes, wetland drainage, water quality degradation, land-use changes, etc.) affecting this dynamic landscape. Funding during 1998 was used to complete an ongoing GIS-based vegetative mapping program in the Big Cypress National Preserve, Biscayne National Park, and Everglades National Park. The remote sensing and vegetative classification methods were done in close coordination with state funded mapping programs in the upstream WCAs, to create a seamless vegetation map for the overall ecosystem. Additional 1998 and 1999 funds were provided to the EPA to complete a five year re-sampling of plant and animal communities throughout southern Florida, linked to the distribution of water quality parameters (principally nutrients and mercury). This new landscape scale research and modeling program is integral to the synthesis of ecological, vegetation, trophic level, hydrologic and biogeochemical information into the decision-making process. DOI's National Wetlands Inventory program provides an excellent tool for documenting and assessing historical changes and the predicted affects of restoration proposals within the *status and trends* function of the NWI program. The purpose of this effort is to link landscape-scale community and population dynamics with management practices, to give resource managers the tools to evaluate management options and their implications at the broader regional/landscape scale.

Linkage of Macro- and Micro-Scale Hydrologic Models with Communities - During 1997 and 1998 the mangrove hydrologic modeling program focused primarily on regional-scale processes in the eastern and southern Everglades region with limited information being gathered for western regions. In 1999 and 2000 funds are being used to create a new program that will refocus the USGS mangrove hydrologic modeling program to collect new information on the smaller-scale hydrologic linkages of freshwater and coastal ecosystems of the western Everglades and Big Cypress National Preserve. In 1998 some initial research was initiated linking macro and micro scale hydrologic/vegetation models in the western mangrove communities. Additional research is necessary to link site-specific plant community responses to both existing and restored hydrologic conditions. This continuing research involves the collaboration of biological and physical scientists not only in the development of micro scale linkage between hydrology and the biota, but also in the development of linkages between local hydrologic changes and response of individual mangrove plants. This is one of the biggest gaps in information necessary for refining detailed design and construction plans in the southwestern basins, needed for the implementation phases of the Modified Water Deliveries and C&SF Restudy projects. Significantly more research is necessary to complete modeling for western systems.

Coastal and Estuary Systems – Funding during 1997 and 1998 were used to initiate, and support scientific studies that were identified through an independent peer review process, as essential for the restoration of Florida Bay. These studies included experimental work on seagrass diseases, effects of seagrass die-off and declining water quality on fish productivity, trends in water quality patterns, and the relationship between salinity and water circulation in Florida Bay. The program was expanded in 1999 to include the greater coastal and estuary ecosystems of south Florida. New projects in 1999 and 2000 include the synthesis and integration of the results from nearly 100 projects supported by nine government agencies, including the effects of upstream runoff on nearshore nutrient levels, development of models of seagrass growth and die-off, and models of shrimp and fish population dynamics. These predictive models will be linked to physical and hydrological models to evaluate ecosystem responses to restoration alternatives under varying climatic conditions. The critical needs in these other estuarine ecosystems will similarly be identified through the panel review process used in Florida Bay, and support will be provided to build the scientific basis for performance measures useful for evaluating restoration actions.

Contaminants and Biogeochemical Processes in Inland and Coastal Systems - Limited funding for this program was provided in FY99, which was used to sponsor a peer review workshop on Exposure, Toxicological Effects, and Risk Management. The goal of the workshop was to identify, discuss, and review toxic substance research and other outstanding contaminants issues in south Florida, with specific reference to sustainable restoration of the Greater Everglades and coastal ecosystems. The external panel report provided a prioritized list of needed critical projects (such as screening-level risk assessments of ecological toxicity, quantifying the potential for bioaccumulation of contaminants, and investigations of the use, fate, and degradation of pesticides in areas integral to natural system restoration). In 2000, the SCT will develop an implementation plan to put the Panel's research recommendations into action. This research is essential

since it is anticipated that as restoration projects come on-line there will be a significant increase in urban and agricultural runoff flowing into the Greater Everglades ecosystem. This research is necessary to assess the influence of contaminants (specifically; mercury, pesticides, endocrine disruptors, and nutrients) on flora and fauna in both the inland freshwater ecosystems and adjacent estuarine/coastal ecosystems.

Water Quality Improvement Technology – In 1997 and 1998 work began to address three critical research needs (the analysis of water quality and hydrologic data in agricultural and urban basins that discharge into the Everglades, the development of best management practices (BMPs) particularly in the C-111 basin, and the development of a new marsh water quality treatment technology using algal based polishing cells. Detailed reports have been prepared summarizing water quality aspects of the proposed East-Coast Buffer Strip, and analyses of water quality & hydrologic data from the C-111 Basin. Funding during 1999 and 2000 will continue the analyses in these basins and expand into new areas, and begin a contract with the University of Florida, Tropical Research and Education Center to fund a BMP study on environmentally friendly plant production for use in or adjacent to Everglades National Park. In addition NPS matching funds will be provided to the U.S. Army Corps of Engineers to fund an evaluation of periphyton (algal) based stormwater treatment areas for the removal of nutrients from the waters of the C-111 Canal.

Water Quality on Tribal Lands – Funds during 1997 through 1999 were set aside to support water quality monitoring and research studies on lands managed by the Miccosukee and Seminole Tribes of Florida. The Seminole Tribe installed automatic water quality samplers and began collecting water quality and nutrient data in late 1997. They have also completed the initial design for farm-scale wetland treatment systems, and submitted several summary reports over the last two years, describing the total phosphorus load calculations for sites on their reservation lands. The Miccosukee Tribe of Indians has not yet submitted a scope of work or funding request for their work. Funds during 2000 will be used to continue this ongoing work.

Invasive Species Control Strategy - The spread of invasive exotic plants and animals represents one of the greatest threats to successful south Florida ecosystem restoration. In 1997 and 1998 work on a comprehensive exotic plant control strategy was initiated. In 1999 the program was expanded to include exotic animals such as the highly invasive Asian Swamp Eel, which was identified in very near proximity to the Everglades. Research was initiated by the USGS to assess the threat that this invasive species poses. Funding in 2000 will expand this research on invasive plant and animal species. State, Tribal, federal and local governmental programs are addressing new facets to the invasive control program through biological, chemical or mechanical control mechanisms. The funding in 2000 will focus on the development of a single interagency strategy to integrate these programs.

Science Information Synthesis and Dissemination – In 1999 this new program was established to develop a standardized data storage and retrieval system for all of the projects funded under the CESI program. First year funding will go to the compilation of this information and the establishment of protocols for all monitoring and research

information. Funding during 2000 will continue the development of this data management program, expand the program to include non-CESI projects, and begin the establishment of an electronically linked or centralized database to improve the efficiency of data retrievals.

Land Acquisition (\$80,000,000)

● Big Cypress National Preserve (\$11,800,000)

The acquisition will preclude uses of remaining private land that is incompatible with the preservation, conservation, and restoration management objectives of the National Park Service. Federal ownership will assure consistent land management throughout the watershed. The tracts are throughout the Preserve including wetlands and uplands and are critical to restoration of the south Florida natural hydrologic regime. There are approximately 300 improved and unimproved sites in Big Cypress National Preserve that must also be funded in the future to ensure full implementation of ecological restoration and long-term management plans of the Preserve.

● Everglades National Park (\$20,000,000)

In 1989, Congress authorized the addition to Everglades National Park that encompasses approximately 109,578 acres within an area known as Northeast Shark Slough and the East Everglades. The Congress also directed the Army Corps of Engineers to modify water management structures to allow the sheetflow of water and extend the hydroperiod to more closely resemble the historic Everglades. The Army Corps of Engineers construction effort is called the Modified Water Deliveries to Everglades National Park project.

The East Everglades Addition is necessary to limit further losses suffered by the park due to habitat destruction outside former boundaries and to restore natural water flow patterns that are critical to the long-term viability of park resources. The most recent crisis involves the threatened loss of the Cape Sable seaside sparrow. Acceleration of land buying is required to ameliorate habitat problems with the sparrow's ability to nest. Purchase of the land leads to hydrological improvements which are crucial to restoring ecosystem productivity in the southern Everglades and maintaining adequate freshwater inflow to the downstream estuaries along the Gulf of Mexico and Florida Bay.

Full restoration of natural flows cannot begin until land acquisition is complete. Some improvements could occur as the Corps of Engineers completes structural modifications. The modified water delivery project is scheduled for completion in 2005; therefore land acquisition in the East Everglades needs to be complete by that time.

● Everglades Transition Lands (State) (\$45,600,000)

Of the funds requested in FY 2000, \$45.6 million would be used to provide assistance to the State of Florida to purchase land located within the Everglades ecosystem, including

lands in the East Coast Buffer and Water Preserve Areas, which comprise areas directly east and adjacent to existing Water Conservation Areas, the transition lands, which are referred to as the Frog Pond, Rocky Glades, and 8.5 Square-Mile Area, lands in the Everglades Agricultural Area and other high priorities in the ecosystem.

The most critical physical constraint in restoring the Everglades is a shortage of areas for water storage. Flood control has been provided in the past 50 years by a network of canals, which quickly drained stormwater and released it to "tide." The system has proven so successful that a region that receives an annual average rainfall of over 50 inches a year is now facing a projected water supply crisis in dry years.

Current plans also call for acquisition of a lineal water preserve area along the eastern side of the Everglades which would capture water currently discharged to tide, store and treat it for release for both environmental and urban needs, and serve as a buffer for the Everglades from western development. The efforts funded through the FY 2000 budget request will continue the important land acquisition partnership with the State of Florida that was funded through the \$200 million appropriated to the Department as part of the Federal Agriculture Improvement and Reform Act of 1996 (Farm Bill), Public Law 104-127, as well as funds provided through the Land and Water Conservation Fund in fiscal years 1998 and 1999. Thus, the funds in the budget are necessary to continue this important partnership effort.

In FY 1999, the Department obligated all of the funds appropriated to it under the Farm Bill. After receiving public input on the use of these funds and ranking the priorities for expenditure, the Department applied nearly all of the funds for the purchase of lands in the Everglades ecosystem, funding grant applications from the State of Florida's Department of Environmental Protection and South Florida Water Management District, as well as the Nature Conservancy, and allowing for the acquisition of almost 79,000 acres, including the acquisition of the Talisman Sugar Corporation holdings in the Everglades Agricultural Area. Further, on January 8, 1999, the Department and other parties reached an agreement in concept with various owners of land in the Everglades Agricultural Area (EAA) that will allow for the trade of some of the acquired Talisman lands such that 50,394 acres will be available to evaluate for potential future water storage as part of the Central and South Florida Project Restudy process. In addition, the agreement in concept also provides that the South Florida Water Management District will receive an additional 10,708 acres to be incorporated into various stormwater treatment areas that are presently under construction in the EAA and will, when complete, provide for improved water quality. The Department hopes that the agreement in concept will be finalized in mid-February, 1999.

Of the FY 1998 LWCF funds provided to the Department for use in the South Florida ecosystem, the Department obligated \$46.0 million to purchase lands located in Stormwater Treatment Area 1-East (STA1-E) to facilitate the construction of a freshwater filtration marsh there. Acquisition of these lands is Federal responsibility of the judicially approved consent decree that settled water quality litigation between the United States and the State of Florida and will result in improved water quality discharge to the ecosystem. It is expected that the \$60 million provided to the Department in FY 1999 for

grants to the State will be spent on high priority purchases in the ecosystem. The \$45.6 million requested would be utilized under cost-share terms that require the State of Florida to match the Federal share.

- Biscayne National Park (\$600,000)

The funds will complete acquisition of five islands known as the Ragged Keys. Acquisition of the 602 acres would preclude land uses that are incompatible with the protection, conservation, and restoration management objectives of the park service.

- Land Acquisition Administration (\$2,000,000)

This funding will be used to administer the Federal land acquisition program in South Florida to enable completion of land acquisition and to meet the schedule established by the Department of the Interior. In FY 1998, with the existing staff at the Naples, Florida, Lands Office, it is expected that of the \$34,000,000 program only 27 percent of these funds will be obligated. For FY 1999, additional staff will be hired using Title V funds provided for land acquisition administration. These funds are one-time in nature and not carried forward as part of the land acquisition administration "base." In FY 2000, the National Park Service is requesting \$32,400,000 for Federal land acquisition in South Florida parks. To obligate the requested funds, as well as the carryover generated in the past (i.e., 78% of the FY 1998 funds) an additional \$2,000,000 in acquisition management is needed to continue the staff funded from Title V monies in FY 1999

Infrastructure Investment (\$20,000,000)

- Modified Water Delivery System to Everglades National Park (\$20,000,000)

This project involves construction of modifications to the Central and Southern Florida Project (C&SF) water management system and related operational changes to provide improved water deliveries to Everglades National Park. The original project design includes water control structures to restore more natural hydrologic conditions within Everglades National Park and a flood mitigation system.

Planned features will be implemented by the U.S. Army Corps of Engineers (Corps) with the concurrence of the National Park Service and the non-Federal sponsor, the South Florida Water Management District (SFWMD). Consistent with the provisions of the Everglades National Park Protection and Expansion Act of 1989 (1989 Act), project construction will be Federally funded, and in accordance with the USACE General Design Memorandum (GDM) for Modified Water Deliveries to Everglades National Park, the Federal Government will provide 75% of operating and maintenance costs, with the South Florida Water Management District assuming responsibility for the remaining 25%. Additional project coordination is provided through the Southern Everglades Restoration Alliance (SERA). SERA is made up of the staffs of the five sponsor agencies as well as staffs of other agencies/entities with expertise and insights necessary for successful implementation of these projects.

Project Components

The authorized project consists of structural features with the intended purpose of restoring conveyance between water conservation areas north of Everglades National Park and the Shark River Slough within the park. The original authorization also allowed for the construction of flood mitigation features for the 8.5 Square Mile Area (a residential area adjacent to the park expansion boundary in East Everglades). Based on recent decisions and additional information, the Modified Water Deliveries Project design is being altered to accommodate an improved design. The project consists of four components: Conveyance, 8.5 Square Mile Area, Tamiami Trail, and Seepage Control.

1. The conveyance portion of the project consists of: (a) water control structures in the L-67 A/C canal and levee to discharge water from Water Conservation Area 3A (WCA3A) and Water Conservation Area 3B (WCA3B); (b) water control structures in the L-29 canal to discharge water from WCA3B into Northeast Shark River Slough and; (c) removal of the existing levee and canal that runs along part of the park's original eastern boundary and cuts across the center of Shark River Slough (L-67 extension canal and levee). Structures contained in the original design document of the project included gated culverts, headwall water control structures, and weir-type spillways; discharge, intake, and bypass canals; containment, interceptor, and tie-back levees. These project features are currently being reevaluated in the context of the structural features identified as part of the Central and South Florida Comprehensive Review Study (Restudy). A revised Project Management Plan and Capital Asset Plan reflecting these modifications will be completed in early FY99.
2. The current authorized components of the 8.5 Square Mile Area include the construction of a flood mitigation canal and levee extending along the northern and western perimeters of the area. Two pump stations were also specified to transfer the seepage water from this system to Northeast Shark Slough. Based on a recent hydrologic and economic analysis, the local sponsor (SFWMD) has recommended to the COE the substitution of the Locally Preferred Option (LPO) for the authorized mitigation plan. The LPO selected by the SFWMD recommends total acquisition of the area. The COE is currently in the process of reviewing the recommendation of the SFWMD and will prepare appropriate documentation regarding any modifications to the project as a result of this review.
3. The Tamiami Trail, under the authorized project, would be raised over only a short distance to accommodate the flows based on the original design of the conveyance features discussed above. Based on improved hydrological information, it is now anticipated that up to a 10-mile length of the road would need to be raised 2 feet to accommodate the anticipated increased volumes of water in excess of the original design parameters.
4. Project features associated with items 1) – (3) have the potential to increase seepage losses from the restored wetland areas into both the L-30 and L-31N canals. Seepage control structures were incorporated in the original design as part

of the design of pump stations S-356 and S-357. As part of the Restudy effort, design features have been identified to control seepage from both Water Conservation Area 3B and from Northeast Shark Slough. It is now anticipated that portions of these project features may be constructed as part of the Modified Water Deliveries Project. These additional project features will be assessed for inclusion in the Modified Water Deliveries Project. These additional project features will be assessed for inclusion in the Modified Water Deliveries Project during FY 1999 with features currently authorized being constructed in FY 2000.

In addition to the reevaluation of the project features during FY 2000, work will continue on the Experimental Program of Water Deliveries, acquisition of land in the park expansion area, and the completion of a post-authorization change report for the Tamiami Trail, including required National Environmental Policy Act (NEPA) documentation.

Research conducted in Everglades National Park has documented substantial declines in the natural resources of the area associated with the impacts of water management. Since the park is located at the downstream terminus of a larger water management system, water supply to the park is often in conflict with the other functions of the system such as water supply and flood control. The operation of the overall C&SF Project to accomplish its multi-objective mandates has impacted the distribution, timing, volumes, and quality of water supplied to the park. The Modified Water Deliveries Project will continue to fund some of the critically needed modifications to the existing water management system. If unfunded, the damaging effects will continue to contribute to the decline of the ecosystem, including potential extinction of endangered species such as the Cape Sable Sparrow and Wood Stork.

3.6.4 U. S. Geological Survey (USGS) - \$8,601,000

USGS budget matrix for fiscal year 2000 (FY1993-2000 included)

(thousands of dollars)

Function/Project name	1993 Actual	1994 Actual	1995 Actual	1996 Actual	1997 Actual	1998 Actual	1999 Enacted	2000 PB
INFORMATION MANAGEMENT/ASSESSMENT								
Earth Science	2,000	2,000	4,325	5,852	440	440	1,030	1,030
SCIENCE: MONITORING								

Earth Science Monitoring	0	0	777	2,290	1,000	1,000	584	584
SCIENCE: RESEARCH								
Earth Science	0	0	698	1,858	6,007	6,007	5,706	5,706
Biological Science	0	654	1,154	654	1,154	1,154	1,281	1,281
Subtotal: USGS	0	654	1,852	2,512	7,161	7,161	6,987	6,987
TOTALS	2,000	2,654	6,954	10,654	8,601	8,601	8,601	8,601

The U.S. Geological Survey is the nation’s primary provider of earth and biological science information on natural hazards, the environment, minerals, and energy resources. It is the Federal government’s principal civilian map-making agency and the primary source of its data on the quality and quantity of the nation’s water and biological resources. The maps, reports, and information produced by the USGS help others meet their needs to manage, develop, protect, and conserve America’s water, energy, mineral, land, and biological resources.

Once activities based on the restudy have begun, physical sciences will be needed to determine whether hydrological and geological processes behave as predicted, and biological scientists will be needed to determine whether target populations and other ecosystem components respond to changes as predicted. Adjustment and refinement of plans and management schemes will be necessary and will be possible if continuously informed by observation of physical and biological systems.

The USGS is carrying out a program of science begun in 1995 and 1996 with major input from Federal and State agencies in Florida. The USGS uses the established framework for coordination and to ensure that the science is relevant and to communicate needed scientific information to managers and collaborators. This framework includes the South Florida Ecosystem Restoration Task Force, its associated work groups, and the Science Coordination team. USGS research scientists work with State and Federal partner agencies to develop the scientific tools needed for restoration.

Existing Program

The USGS program encompasses data, ecological and hydrologic processes and models, information integration and synthesis, and tools that make scientific information available to Federal and State agencies and the public. USGS collects data on hydrology, biology, geology, and other land characteristics. It uses these data to describe the biological, geochemical, hydrologic, and ecological processes that drive changes in the ecosystem. USGS ecosystem and hydrologic models were used to evaluate the effects on species and habitats of the Central and Southern Florida Project restudy alternatives under consideration by the Corps of Engineers. The USGS program covers many of the identified science requirements for the Everglades and Florida Bay. Much of the research on hydrologic, cartographic and geologic, biological / ecological issues relevant to DOI's research role in South Florida ecosystem restoration reflects a strong collaborative program between the USGS and the NPS through DOI's Critical Ecosystems Studies Initiative (CESI). USGS scientists are integral in the research and critical to managing the CESI program.

The USGS program is designed to enable managers to predict the impacts of restoration actions. In addition to models, predictive ability requires information on the characteristics of the original system, the achievable targets and indicators of restoration, and the likely biological responses of the system to each proposed restoration alternative. Predictive capability requires extensive understanding of the relations between and among the biological, physical and chemical components of the ecosystem. Comprehensive regional scale monitoring information is equally important to track or restoration trends.

FY 2000 Program Thrusts

In FY 2000, the USGS program in South Florida will continue the synthesis and integration of diverse scientific and data collected by USGS, and to distribute it electronically through the world wide web. The synthesis integrates the accumulated scientific knowledge and understanding from USGS studies to assist decisionmaking for restoration of South Florida. Additionally the synthesis will help to chart the future scientific direction of the USGS program, and will contribute to interagency synthesis activities. The USGS will also continue hydrologic, ecological and biological data collection where needed. Emphasis has shifted to the southwest Florida region. In addition, the program will expand in the area of aquifer storage to accommodate the needs of the restoration for this information.

Information Management and Assessment (\$1,030,000)

The USGS is establishing a database of all USGS data relevant to South Florida Restoration. The database will enable resources managers and scientists to have ready access USGS data sources through the World Wide Web.

Science: Monitoring (\$584,000)

USGS monitors water and/or associated nutrients flowing into Florida Bay, Biscayne Bay, and the Southwest coast, and measures salinity within the Bay. These data are used in circulation and hydrologic models of Florida Bay and the Everglades, under development by the Corps and the NPS to estimate salinity and other water quality conditions resulting from various restoration scenarios. The Corps, NPS, National Oceanic and Atmospheric Administration, and other resource managers need predictive models to determine the location, circulation, and effects of nutrients and toxicants entering Florida Bay, and to better understand the relation between freshwater inflow and Bay salinity. Temperature and salinity data collected in the Bay have been compared with estimates from the recent past to help set restoration targets. The USGS also measures flows and nutrient loads into Biscayne Bay to help define present

conditions as a benchmark to document changes after restoration activities decrease freshwater flows into the Bay.

Science: Research (\$6,987,000)

● Earth Science (\$5,706,000)

The USGS is providing data, information and model components to improve existing and planned models of water flow and water quality in the Everglades and Florida Bay. Information collected for models of the Everglades and USGS model subcomponents include: aerial variation in evapotranspiration (data and model), vegetative resistance to flow (data and model), ground-water flow information, remote sensing interpretations, and an open channel and wetlands flow model. USGS application of advanced, classified remote sensing analysis will provide for the extrapolation of data on vegetative roughness, enabling point data to be used in aerially distributed models. A synthesis of these sources of information is underway. The USGS model, Southern Inland Coastal Systems Model was calibrated during FY1999. This model provided the Taylor Slough/Florida Bay mangrove surface flows and boundary conditions required for the development of the Army Corps of Engineers hydrodynamic model of Florida Bay.

The USGS is providing information about historic hydrological conditions by examining the sedimentary record of the past 200 years. Sedimentation rates, paleoecology and mineralogy determined from shallow cores reveal the history of flooding and drought in the recent past and are critical to the efforts of the Corps, ENP, and the SFWMD. This information will enable them to (1) evaluate the effectiveness of models to duplicate historical conditions (and hence be able to predict future conditions), and (2) compare projected targets and variability to natural hydrologic variability of the environments of South Florida. Analysis of biological records has revealed that high salinity events in the 1840s exceeded conditions seen in the early to mid part of this century.

Geochemical information from the peat and coastal sedimentary layers shows the history of atmospheric deposition of mercury and other associated chemicals, so that their origin can be better identified. USGS research on the sources and cycling and geochemistry of nutrients, mercury, and related chemicals helps management agencies set restoration and water quality targets, establish best management practices and an operating schedule for nutrient removal facilities, and determine the best strategies for reducing methylmercury in South Florida fisheries.

Estuarine and Marine Earth Science Research

The USGS is also providing information for models of Florida Bay on high-resolution bathymetry, salinity, sediment properties and a model that will link the circulation models of Florida Bay to the hydrologic models of the Everglades. The USGS provides analyses of sediment resuspension in Florida Bay for the Florida Department of Environmental Protection, NPS, and other agencies that are evaluating current water quality conditions and determining a monitoring strategy. Research efforts on sediment accumulation will provide information for planned circulation models of Florida Bay and help set restoration targets. USGS information on sedimentation, sea level rise and

shoreline changes has been used to understand and address the causes of Florida Bay hypersalinity.

The USGS measures marine ground-water seepage and nutrient movement into coral reefs and Florida Bay. These data are used in water and nutrient budgets for Florida Bay used by the Corps, NPS, and NOAA. Communities in the Florida Keys need information on nutrient seepage from ground water to evaluate the need for improved sewage-disposal practices. NOAA needs data on nutrient inputs to Florida Bay and the Reef tract to protect the marine sanctuary from nutrient related coral die-offs and decline of the fishery. Information on the hydrogeology of surficial aquifers is needed to understand the movement of nutrient-laden water through the Everglades and into Florida Bay because the porosity of the underlying bedrock provides an alternate route to water movement.

The restudy has identified Lake Okeechobee Aquifer Storage and Recovery (LO-ASR) to be a critical component for Everglades restoration. This additional storage will allow water managers to better control Lake Okeechobee levels thereby providing regional environmental and water-supply benefits for all of south Florida. When high rainfall events cause lake level to rise, water can be injected into the aquifer for use at a later time when the lake levels are low. USGS will provide information required to implement ASR technology.

- Biological Science (\$1,281,000)

Ecological Modeling -Refinement and Application

The cornerstone of the ecological modeling effort is the Across Trophic Level System Simulation (ATLSS), a series of linked models that permit prediction of the effects of various restoration scenarios on biological resources of concern. ATLSS relies on landscape and hydrological models, and links these to ecological models for producer and consumer organisms, and populations of special emphasis, including wading birds, crocodilians, Florida panthers, and other species with diminished populations. ATLSS has been used already in the evaluation of proposed water management plans (the Corps of Engineers "Restudy") and will be used in the future to analyze the effectiveness of restoration actions and to recommend modifications and improvements. As ATLSS components are developed for the freshwater systems of the Everglades, emphasis will shift to extending them to the southwest Florida/Big Cypress region, the mangrove zones, and coral reef systems of the Florida Keys.

Ecological Processes and Indicator Species

Selected species of animals and plant communities either have special ecological roles in the South Florida landscape, or are sensitive indicators of the overall condition of the environment. Research provides improved understanding of the relationships among biological components of the South Florida ecosystem and identifies those components that may be sensitive indicators of restoration success. A growing base of knowledge on these species and communities will ultimately permit incorporation into the suite of

ATLSS models. The Cape Sable seaside sparrow, the wood stork, and the American crocodile are the focal species. Information collected will also accelerate recovery actions for the Florida grasshopper sparrow, Audubon's crested caracara, the lower keys marsh rabbit, and other threatened and endangered plant and animal species.

Landscape Patterns, Processes, and Modeling

Free-living animal populations and the plant communities upon which they depend are known to have been affected historically by a complex mosaic of driving forces, including fires, floods, droughts, and hurricanes. Acting across the landscape, these dynamic events affected living resources in different ways. For example, some populations were favored in wet years while others were favored in dry years. Effects varied locally and across broader portions of the landscape. Understanding these temporal and spatial effects will be essential to developing a long-term restoration program able to maintain a variety of different living resources with different needs. Research will seek to link large-scale population dynamics of living resources with management practices, including water delivery, fire, etc. The goal is to provide resource managers with models and tools to develop optimal management prescriptions.

Florida Bay and the Great Coastal Ecosystems Complex

Florida Bay, the western mangrove/coastal system, Biscayne Bay, and the Florida Keys are coastal and marine systems at the downstream end of the South Florida drainage systems. The distribution, amounts, and quality of freshwater entering these systems will change as a result of restoration activities in more upland systems. These coastal areas are important for fisheries and include the largest coral reef systems in North America. Studies now underway are documenting their degraded pre-restoration conditions, and will provide information that will ultimately be useful in predictive modeling under an expanded ATLSS program.

Contaminants and Biogeochemical Processes in Inland and Coastal Systems

The greater Everglades system is contaminated from inputs of pesticides, potential endocrine disruptors, and most importantly by mercury, which arises from unknown sources. Research to date has documented the mobilization, storage, and transport of mercury in non-living components of the system, but surprisingly little is known about the effects of mercury and other contaminants in fish, wildlife, and other living components. New studies conducted in this program will emphasize living resources and the effect(s) contaminants may have on the well-being and persistence of populations, and ultimately on the success of the restoration as a whole.

3.7 STATE OF FLORIDA EVERGLADES RESTORATION AND PROTECTION PROGRAM: \$549,455,235

Since its beginning on August 8, 1983, the Governor's "Save Our Everglades" program has sought to make the Everglades look and function more as it did in 1900 than in 1983. The program is guided by the principle that although the Everglades cannot be fully restored to its original condition, natural functions and values can be revitalized while maintaining an economically strong South Florida.

This comprehensive ecosystem restoration and protection program has the following six objectives: 1) re-establish the values of the Kissimmee River; 2) protect Lake Okeechobee; 3) protect the Water Conservation Areas; 4) protect the Big Cypress Swamp; 5) restore Everglades National Park and Florida Bay; and 6) protect the Florida panther and other endangered wildlife. The Florida Governor's Office and the Departments of Agriculture, Community Affairs, Environmental Protection and Transportation, the Florida Game and Fresh Water Fish Commission and the South Florida Water Management District have worked together with local and Federal agencies to implement these objectives since 1983.

The progress toward reaching these objectives is substantial and has included: enactment of Federal and state legislation to protect the ecosystem; acquisition of more than 500,000 acres of land (significant restoration work has begun with the initiation of construction of agricultural stormwater treatment areas); new water control features are being constructed to improve fresh water flows to Everglades National Park and Florida Bay; urban stormwater runoff is being treated; parks, preserves and refuges have been created or expanded and endangered plants and animals are being protected. Florida's agencies have worked with the Federal agencies to develop knowledge and understanding of the Everglades ecosystem. In cooperation with Federal agencies and other interests, Florida has recommended plans for restoring the Everglades and is moving forward to implement those plans.

The state contribution to Everglades protection and restoration begins with land acquisition. Florida has acquired approximately 33,000 acres in the Big Cypress National Preserve Addition, pursuant to provisions of the Federal legislation authorizing the Addition which require the state to share 20 percent of the costs of the 146,130 acre area. The State is also acquiring land within the state designated "Big Cypress Area of Critical State Concern" and other parts of Southwest Florida to protect the Big Cypress Swamp. The State of Florida is also participating in acquiring the 109,400-acre Everglades National Park Expansion area. In October 1994, Florida conveyed title to nearly 43,000 acres of land in the Park expansion area. The South Florida Water Management District and the State will continue to acquire land adjacent to the Park to help improve fresh water flows into the Park and Florida Bay

As is illustrated in Table 3 in Section 2 of this Cross-Cut Budget document, Florida State agencies including South Florida Water Management District (SFWMD) have been appropriated with approximately \$2.3 billion for Everglades ecosystem protection and

restoration since August 1983 (Beginning of the Governor's "Save Our Everglades" program).

Expenditures of \$236.02 million for the period August 1983- June 1993 do not include state or SFWMD costs for Everglades National Park, Big Cypress National Preserve or other land acquisition costs incurred before August 1983, nor administrative/management, land management, routine regulatory, and operation and maintenance costs. The costs do include land acquisition and project design, permitting and construction, and research/monitoring costs for the period.

Expenditures for FY 94 through 97 do not include certain administrative, management, regulatory and operation and maintenance costs. SFWMD expenditures for FY 94 & 95 were estimated based on District expenditure history for Everglades protection and restoration and for all years do not include Federal funds.

Florida State Agency contributions to Everglade's protection and restoration for state fiscal year 1999-00 are as follows:

3.7.1 Florida Department of Agriculture and Consumer Services (DACS) - \$6,174,000

The Florida Department of Agriculture and Consumer Services, through its Office of Agricultural Water Policy, addresses water issues and politics relating to agriculture and ecosystem restoration. The department plays an important role in the management of public lands through its Division of Forestry. The Division of Forestry is the managing agency for Picayune State Forest (Southern Golden Gate Estates and Belle Meade) and is the lead agency wildfire suppression, prevention and forest protection in South Florida.

The following expenditures are planned by the DACS for state fiscal year 1999-00:

	(thousands of dollars)
South Florida restoration coordination and planning:	1,220
State Forest land management:	354
Wildlands and forest protection:	4,600
Total DACS	\$6,174

3.7.2 Florida Department of Community Affairs (DCA) - \$27,248,000

The Department of Community Affairs' (DCA) mission is to create livable and sustainable communities that are safe, prosperous and energy efficient. DCA also helps manage growth by encouraging avoidance of sensitive natural areas and wise land use planning (e.g. reducing urban sprawl). In South Florida, DCA is promoting the revitalization of the southeastern urban corridor as a means of protecting the Everglades ecosystem. The Department accomplishes this through representation on the Governor's Commission for a Sustainable South Florida, particularly by spearheading the Commission's Eastward Ho! and Sustainable Communities initiatives.

To date, DCA has provided almost \$2.5 million for Eastward Ho! implementation activities promoting infill development and redevelopment in the urban corridor to slow urban sprawl toward the Everglades. In January 1997, DCA designated five communities to take part in a Sustainable Communities Demonstration program. Three of the five communities are in South Florida and are working with DCA to develop and implement strategic plans and incentives for sustainable development. Thirty-two communities have formed, with DCA's assistance a Florida Sustainable Communities Network. The Department had \$1.5 million allocated in FY 98-99 for sustainable South Florida related activities. DCA's FY 1999/00 budget includes approximately \$1.1 million for these activities.

DCA's comprehensive planning activities in South Florida also contribute to ecosystem restoration by promoting sound land use planning. The Department administers two Areas of Critical State Concern in South Florida: one in the Big Cypress Swamp and the other in the Florida Keys. This program allows DCA to assist local governments in planning and land use regulation decisions. In FY 98-99, DCA contributed to the following initiatives in the Florida Keys: the Florida Keys Carrying Capacity Study, Wastewater Master Plan, and the Cesspit Replacement Program. For FY 1999-2000, the DCA has requested funds to again contribute to the Florida Keys Carrying Capacity Study and the Cesspit Replacement Program.

The Florida Coastal Management Program (FCMP) aims to protect and manage ocean resources, promote hazard mitigation, revitalize working waterfronts, and improve access to coastal resources. In 1998-99 the FCMP expended \$100,000 in NOAA funded, coastal Zone Management grants directly related to ecosystem restoration and sustainable development in South Florida. The Florida Communities Trust program assists local governments in implementing their outdoor recreation and open space, conservation, and coastal management component of the local government comprehensive plans through grant awards for acquisition of recreation, conservation, and open space lands that further these comprehensive plan directives.

The following expenditures are planned by DCA for fiscal year 1999-00:

	(thousands of dollars)
Sustainable South Florida Projects	1,100
Areas of Critical State Concern	1,468
Comprehensive Planning	680
Florida Communities Trust	24,000
DCA Total:	\$27,248

3.7.3 Florida Department of Environmental Protection (DEP) - \$203,481,514

The Department of Environmental Protection is Florida's principal environmental protection agency. The Department protects and monitors air and water quality, acquires and manages land important to ecosystem protection. It regulates air emissions, dredging and filling activities, mining and oil and gas production, development and exploration, prevents pollution and implements recycling programs,

regulates solid and hazardous waste, operates and manages the State Park System; and protects and manages coastal marine, and estuarine resources.

Department priorities in South Florida are the implementation of the Everglades Forever Act (in cooperation with the South Florida Water Management District), ecosystem restoration project management, planning and coordination, research and monitoring, aquatic plant control, and land acquisition and management. The department is also represented on the South Florida Ecosystem Task Force and Working Group, the Governor's Commission for the Everglades, and the Recover Team for the Comprehensive Everglades Restoration Plan.

The Department's budget for FY-2000-2001 has not been approved as of this date, but expenditures of approximately \$203,481,514 for South Florida ecosystem restoration, protection, land acquisition and management, planning, research and monitoring activities are planned.

Department of Environmental Protection FY 1999-2000 Budget for South Florida Ecosystem Restoration and Protection

Category	FY 1999-2000
Land Acquisition	\$177,900,000
Aquatic and Upland Exotic/Invasive Plant Control	\$8,750,000
State Park Operations and Management	\$10,004,164
Everglades Technical Review (Everglades Forever Act)	\$415,000
Ecosystem Projects	\$242,095
Mercury Research and Monitoring	\$1,550,000
Southeast Florida District Office	\$742,058
South Florida District Office	\$1,011,620
Central Florida District Office	\$15,000
Coastal and Aquatic Managed Areas	\$2,851,577
Total:	\$203,481,514

3.7.4 Florida Game and Fresh Water Fish Commission (GFC) - \$9,800,000

The Florida Game and Fresh Water Fish Commission (GFC) is the lead state agency responsible for the conservation of freshwater fish and wildlife. It is directed by the Florida Constitution to "exercise the regulatory and executive powers of the state with respect to wild animal life and fresh water aquatic life. GFC funding comes from general revenue appropriated by the Florida Legislature, hunting and fishing licenses and several trust funds. The Commission is comprised of five members appointed by the Governor and confirmed by the State Senate. Approximately 900 staff implement the GFC programs including, land acquisition and management, regulation of hunting and fishing, research and monitoring of fish, game and nongame species, including endangered and threatened species and "species of special concern" (a state designation). The GFC provides technical assistance and interagency coordination for

activities affecting fish and wildlife habitat in the state and has an award winning environmental education and publications program.

The GFC manages more than 1.6 million acres of land in the Kissimmee-Lake Okeechobee-Everglades watershed, some 766,000 acres of which are in the historic Everglades “River of Grass.” These lands are managed to support the natural diversity of fish and wildlife species typical of South Florida, including over 30 species of special concern - 12 of which are also listed as threatened or endangered. The GFC implements research and monitoring for freshwater fisheries (e.g. Lake Okeechobee, Lake Kissimmee), Florida panther research on public and private lands, mercury in fish populations, bald eagles, wading bird rookeries, and reintroduction of the whooping crane. The GFC works with private landowners wishing to maintain key habitat on their lands. The law enforcement programs address lands managed by the GFC and provide protection for private lands. Pursuant to 1996 legislative action, the GFC has directed increased resources to Everglades restoration activities in cooperation with Federal, state and local agencies and the SFWMD.

The GFC has planned the following expenditures for fiscal year 1999/00:

(thousands of dollars)	
Office of Environmental Services (South Florida coordination, planning and Project reviews):	240
Division of Fisheries:	1,950
Wildlife Research:	850
Non-Game Wildlife protection:	450
Law Enforcement:	5,060
South Florida Regional Office (O&M, land management, etc.)	1,250
Total GFC:	\$9,800

3.7.5 Florida Department of Transportation (DOT) – \$3,456,200

The Florida Department of Transportation (DOT) provides safe, aesthetically pleasing transportation for Florida’s citizens, visitors and commerce. The DOT is nationally recognized for its aesthetically pleasing highways. The department assists local and regional government agencies with funding, planning, design, mapping, transportation research and technical assistance. It also plans and implements programs for energy efficient transit, public transit, transportation programs for the disadvantaged and handicapped and assists agencies in planning safe bicycle routes.

The department is among the top agencies of its type in the nation for protecting wildlife and redesigning roadways to restore natural water flow to overdrained areas. It also leads the nation in providing funding and technical assistance to plan and implement greenways and trails. Many of these bellwether programs have been implemented in South Florida, particularly the Big Cypress Swamp (Interstate 75/Alligator Alley), Tamiami Trail and U.S.1 to the Florida Keys.

The DOT provided \$34.6 million during FY1998/99 for mitigation and construction of the Alligator Alley/ I75 rest and recreation areas which has been completed. The department's planned expenditures for south Florida ecosystem restoration related programs in fiscal year 1999/00 are:

(thousands of dollars)	
Florida Keys Carrying Capacity Study contribution	100
Key Deer Habitat Conservation Plan Study contribution	100
Location/maintenance of Tamiami Trail Culverts for improved water flow under the roadway	10
Exotic removal in the South Florida ecosystem along transportation rights-of-way	2,800
Key Deer Crossing Design	40
South Florida Mitigation projects	143.5
South Florida mitigation projects-maintenance/monitoring	262.7
Total DOT:	\$3,456.2

3.7.6 Governor's Commission for a Sustainable South Florida (GCSSF)

The Governor's Commission for a Sustainable South Florida was established by Executive Order in March 1994 to improve coordination of activities affecting the Everglades ecosystem, recommend actions for the restoration and protection of the ecosystem and recommend strategies to ensure the South Florida economy is based on sustainable economic activities that can coexist with a healthy Everglades. The Commission enhances coordination among private and public organizations and has recommended action steps and conceptual plans to restore, better manage, preserve and protect the Everglades ecosystem and the South Florida economy.

The members of the Commission and Chair were appointed by the Governor. The Members represent tribal, state, regional and local government, business, agriculture, and environmental and civic organizations. Representatives of five federal agencies are ex-officio members of the Commission.

The Commission has produced an Initial Report (October 1995), a Water Budget for South Florida (July 1995), a report on Aquifer Storage and Recovery (May 1996), recommendations for Farm Bill expenditures (May 1996), a Conceptual Plan for Everglades Restoration (August 1996), an Eastward Ho! Report (July 1996), recommendations on the South Florida Ecosystem Restoration Working Group Critical Restoration Projects Lists (May 1997), a report on Energy Issues (August 1997) and a Seepage Management Report (September 1997), a Full Cost Accounting Report (December 1998), and a Draft Restudy Plan Report (January 1999). Planned projects for the coming year include: public outreach activities; completion of recommendations concerning the implementation of full-cost accounting principles; a conceptual plan for the human system; and a funding strategy for water resource projects. Planned expenditures for the Commission for fiscal year 1999/00 from NOAA, DCA and DEP are expected to be approximately \$250,000. This amount is not included in the grand total for the State of Florida. This amount will be matched by the state using "in-kind services.

3.7.7 South Florida Water Management District (SFWMD) \$348,129,416

The South Florida Water Management District (SFWMD) works closely with the Florida Department of Environmental Protection (FDEP) and other state, federal and tribal governments to implement programs to restore and protect the South Florida ecosystem. The Florida Legislature also requires the SFWMD to manage water and related land resources; promote conservation, development and use of surface and ground water for reasonable beneficial uses; manage dams, impoundments, and other "Works of the District" to provide water storage; prevent flood and soil erosion damage; maintain navigable rivers and harbors; and promote outdoor recreation on publicly owned lands.

Currently, the SFWMD's priority ecosystem restoration and protection projects include:

- (1) Development of a Comprehensive Plan (in cooperation with the USACE) for modifying the C&SF Project to enhance the South Florida ecosystem while continuing to provide other authorized C&SF Project purposes such as flood control, water supply, prevention of salt water intrusion, etc. Feasibility studies also are being conducted for Indian River Lagoon restoration and for implementation of Water Preserve Areas along the eastern edge of the Everglades;
- (2) Restoration of the Kissimmee River and floodplain (in cooperation with the USACE) through land acquisition, construction (backfilling 22 miles of canal and recarving 9 miles of remnant river channel), and a comprehensive ecological evaluation program;
- (3) Protection of Lake Okeechobee by reducing nutrient loading and controlling the spread of nuisance and exotic plants;
- (4) Implementation of the Everglades Program mandated by the Everglades Forever Act through land acquisition, construction of stormwater treatment areas (STAs) and hydropattern restoration projects (Everglades Construction Project), control of exotic plants, research and monitoring, and regulation;
- (5) Restoration of the southern Everglades and Florida Bay (in cooperation with the USACE and ENP) through land acquisition (Frog Pond, Rocky Glades, Southern Glades), construction and operational changes to restore natural water flows to ENP and Florida Bay;
- (6) Development and implementation of regional water management plans;
- (7) Acquisition of lands needed for ongoing and future restoration projects (e.g., Water Preserve Areas, Ten Mile Creek), and for conservation and protection of critical wildlife habitat (e.g., Okaloacoochee Slough, Pal-Mar); and

- (8) Control of invasive exotic pest plants in lakes, wetlands, and uplands throughout the South Florida ecosystem.

The District's total operating budget for FY99 is \$473 million, of which approximately \$348 million is allocated for land acquisition, construction, research, monitoring, planning, regulation, and other efforts necessary to accomplish planned ecosystem restoration and protection efforts. The following table shows projected expenditures for South Florida ecosystem restoration efforts during FY 99.

**South Florida Water Management District
FY 99 Budget for Ecosystem Restoration and Protection**

Project	FY 99 Budget (million \$)
C&SF Restudy	4,871,015
Kissimmee Chain of Lakes	443,473
Kissimmee River Land Acquisition (\$17,267,641) Research & Monitoring (\$1,380,474)	20,098,451
Lake Okeechobee Research & Monitoring (\$3,008,121)	4,965,211
Everglades Land Acquisition (\$23,000,000) Research & Monitoring (\$12,826,000) Construction (\$101,217,000)	137,043,705
Southern Everglades/Florida Bay Land Acquisition (\$6,050,206) Research & Monitoring (\$2,699,281) Construction (\$657,238)	10,738,184
Estuaries (IRL, Caloosahatchee, SLE)	5,106,003
Biscayne Bay	2,399,852
Lower West Coast Research & Monitoring (\$1,458,080)	1,718,502
Land Acquisition and Management (in addition to project specific lands listed above) Land Acquisition (\$79,398,931) Land Management (\$8,496,139)	88,619,095
Water Management Planning & Implementation	35,051,176
Additional Ecosystem Research, Monitoring, and Modeling	14,173,685
Invasive Exotic Plant Control (Includes \$7.8 M from FDEP)	8,082,984
Environmental Resource Permitting and Coastal Management Programs	9,383,005
Florida Keys Water Quality Plan	100,000
Government and Public Outreach	5,335,075
Total:	\$348,129,416