

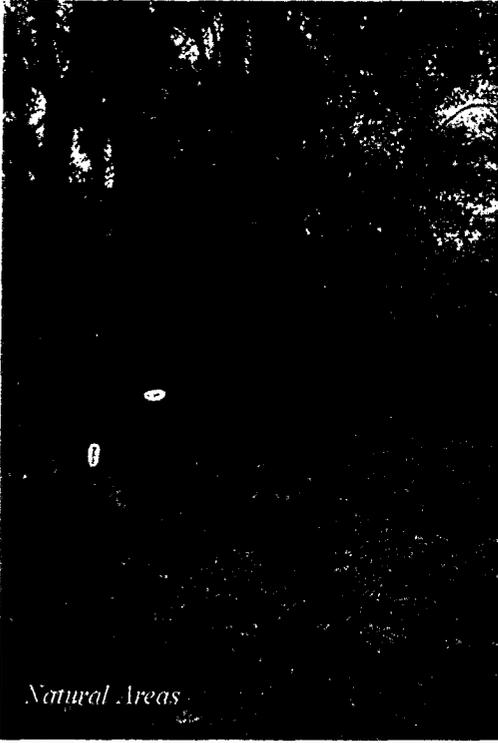
Overview



**Central and Southern Florida Project
Comprehensive Review Study
October 1998**

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THIS IS A STORY...

...of a work in progress. The world is watching to see how it turns out. In its own way, this is as exciting, as uncertain, and as important as the first pyramid, the first dam, the first skyscraper, the first trip to the moon – before we knew if they would fail or succeed.

Our story is about south Florida, and the relationships between the people who live there and the ecosystem in which they live. Our story is about the Everglades, and it is unique in all the world.

In 1992, and again in 1996, the United States Congress directed the Army Corps of Engineers to look at water resource problems and opportunities in south Florida. This is a summary of the results arranged around some commonly asked questions:

- Where did we begin?* The Everglades was large, covered by a variety of habitats and water patterns. Management of the natural system for human purposes began just over one hundred years ago.
- What happened?* Management features succeeded too well. More people took advantage of the benefits than were expected, and there were significant unintended and unforeseen effects on the ecosystem.
- Where are we now?* Current water problems threaten the natural and human environment of south Florida. Today, south Florida is not on a sustainable course for the future.
- What if we do nothing?* The Everglades ecosystem will continue to deteriorate, and related economic activities will suffer. Water supplies will decrease and flooding could worsen.
- Can we do anything about it?* Yes. A partnership of public agencies and interests conducted a Restudy of the Central and Southern Florida Project – the principal series of canals and other water management features in south Florida.
- What should we do?* The Restudy recommends that the Central and Southern Florida Project should be modified to restore the ecosystem and ensure adequate supplies of water for people to use.
- What's in it for us?* The recommended plan will change the quantity, quality, timing and distribution of water, leading to a healthy new Everglades ecosystem and ensuring the quality of life in south Florida.
- What's it going to cost us?* The plan is estimated to cost \$7.8 billion. The federal government will pay half the cost. The people of south Florida will pay the other half.
- Is everyone happy?* Not yet. Traditional interests abound, but everyone has had - and will continue to have - full and fair opportunities to participate in finding a solution.
- What's the next step?* In July 1999, the feasibility report will be sent to the Congress with a request to approve the plan. It will probably take twenty years to implement the plan.
- How do we survive differently?* Uncertainties can be managed by increasing our knowledge, putting the plan in place gradually, monitoring results, and adapting the plan to correct or improve results.
- What's in it for our children?* A healthy ecosystem, continuing economic prosperity, and the south Florida quality of life.

This is the story of a significant work in progress. As you read you will become part of the story, the story of the people of south Florida and a new Everglades, a story of progress that is still in progress.



WELCOME TO SOUTH FLORIDA!

What comes to mind when you think of south Florida? Wide, warm ocean beaches. Retirement condominiums. Miami. Boulevards lined with towering palms. Ranches and farms. Family vacations and theme parks. Freedom and opportunities for a new life. Alligators and slender graceful birds. Water – in the humid air; in the rain, on and under the ground, and in the ocean. All this, and much more, is south Florida.

South Florida lies on the lower end of a peninsula that Marjory Stoneman Douglas called “the most recognizable feature on the map of the United States”. The south Florida area under study encompasses about 18,000 square miles and includes sixteen counties from Orlando in the center of the state to the Florida Keys at the southern tip. Major areas are:

Kissimmee River, which rises below the Orlando metropolitan area in the Chain of Lakes; a rural area of dairy farms and outdoor recreational opportunities.

Lake Okeechobee, the 730 square mile liquid heart of Florida, is the second largest fresh water lake completely within the United States and one of the region’s largest recreational resources.

Upper East Coast, home of Indian River citrus, where the St. Lucie River flows into the nationally significant Indian River Lagoon estuary at the Atlantic Ocean.

Caloosahatchee River, which drains a rapidly developing agricultural basin along the Gulf Coast.

Everglades Agricultural Area, with just over one thousand square miles of rich muck soils that support the region’s largest farmlands. Sugar cane is the major crop.

Water Conservation Areas, covering about 1,350 square miles in three major compartments, the largest remnant of remaining Everglades where water is also stored for urban and agricultural users and for Everglades National Park.

Lower East Coast, a narrow band of urban and suburban development and agriculture, including the largest concentration of people in Florida in the metropolitan areas of West Palm Beach, Fort Lauderdale, and Miami.

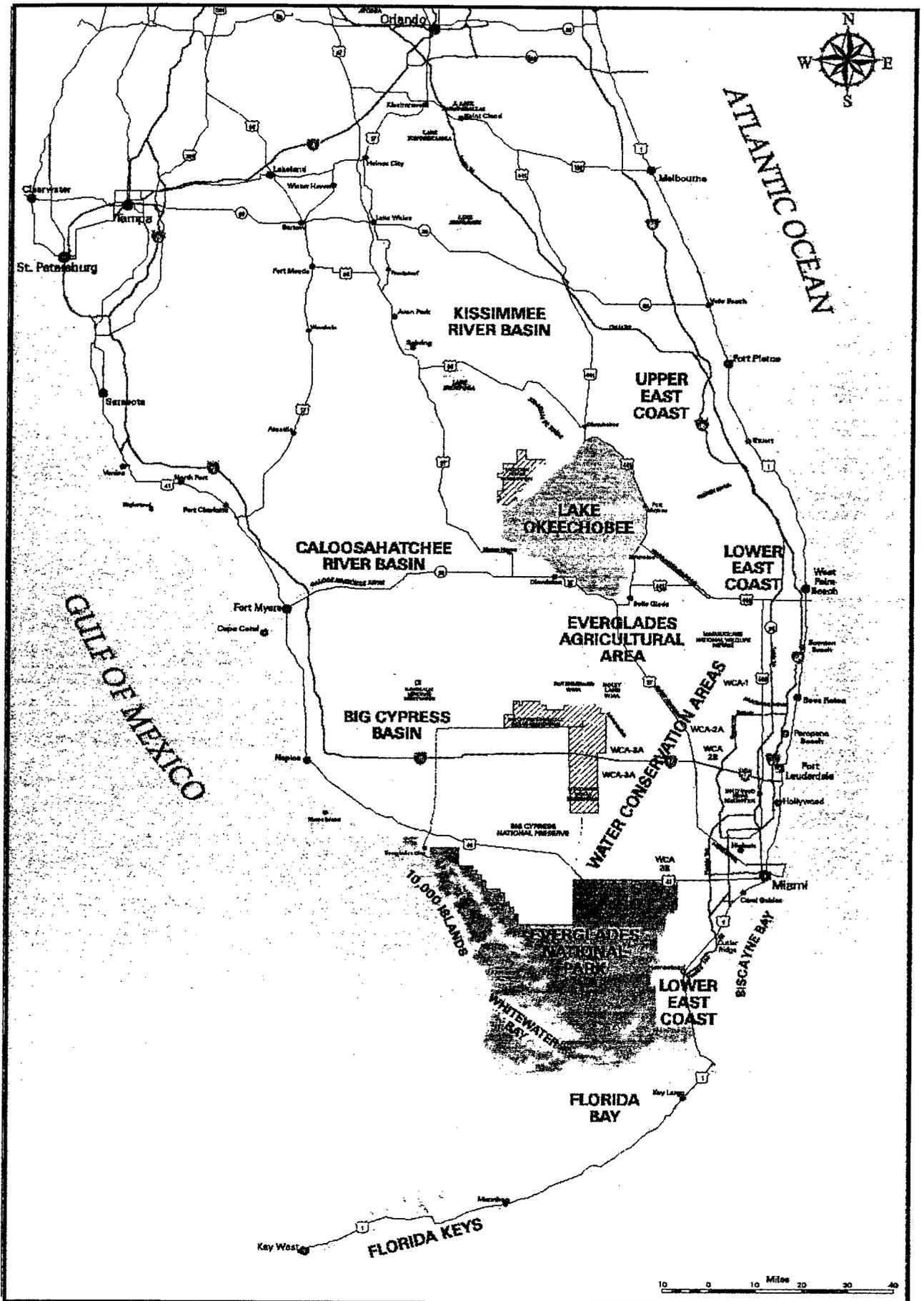
Biscayne Bay, a shallow tidal sound that includes Biscayne National Park, a sanctuary for a diverse community of marine plants and wildlife.

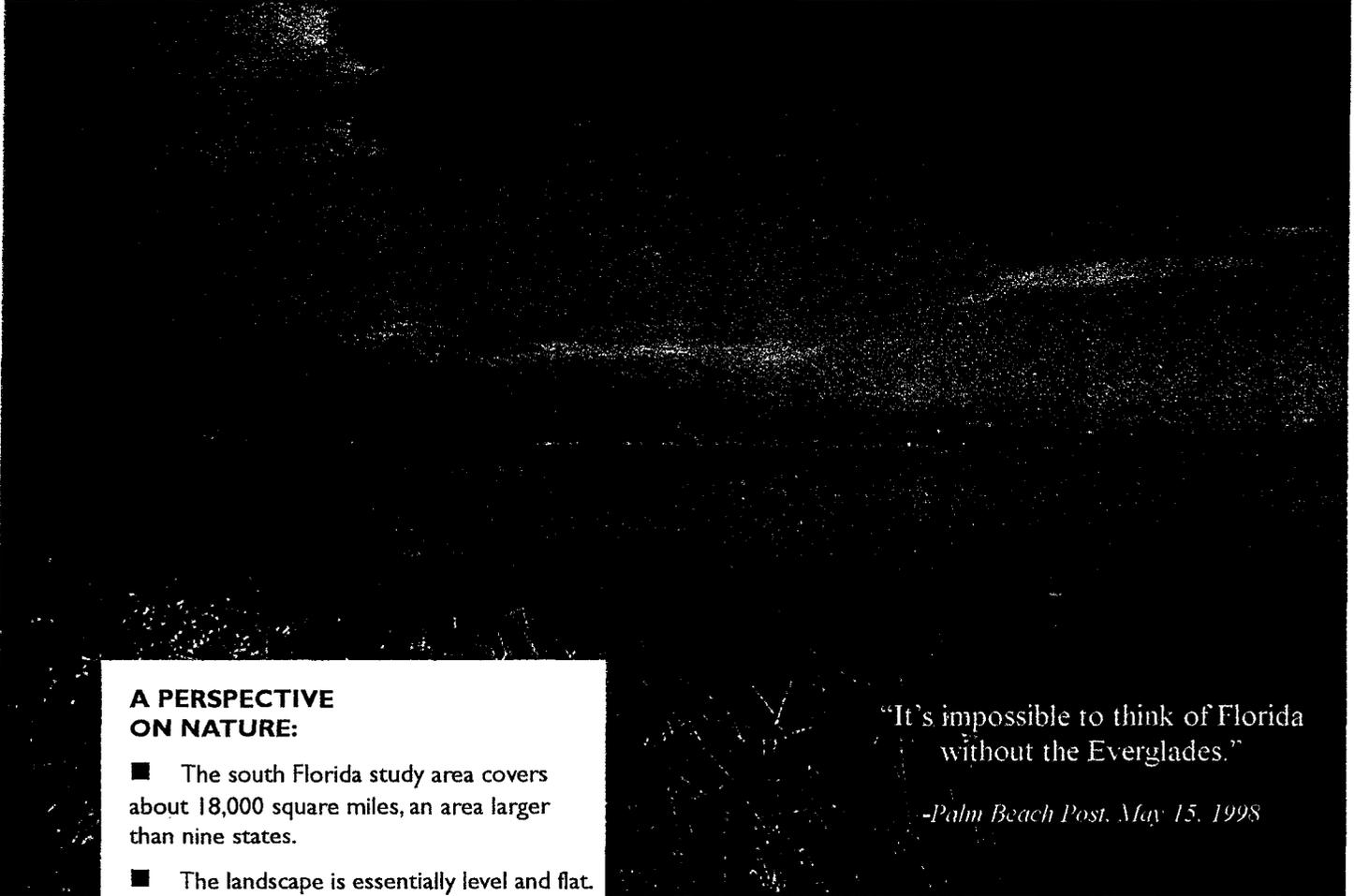
Everglades National Park, with about one thousand square miles of remaining Everglades and seven hundred square miles of Florida Bay, it is the second largest national park in the United States.

Big Cypress Basin, including a national preserve which protects natural and recreational values of the Big Cypress Swamp.

Florida Bay, Whitewater Bay and the Ten Thousand Islands, where coastal coral reef ecosystems are home to aquatic plants and animals that are the foundation of the local economy in tourism and fishing.

Florida Keys and Reef Tract, a string of over 1,700 islands with major fishing and tourism attractions set among coral reefs and the tropical “Conch Republic”.





**A PERSPECTIVE
ON NATURE:**

- The south Florida study area covers about 18,000 square miles, an area larger than nine states.
- The landscape is essentially level and flat. Water that flows from Lake Okeechobee southward to Florida Bay travels about one hundred miles with a drop in elevation of less than twenty feet.
- The weather is warm, sunny and humid. Miami's average daily high temperatures are 76° in January and 92° in July. On average, the sun shines 70% of the time possible, and average humidity is 75% on an annual basis.
- The study area has the only subtropical climate in the continental United States. There are only two seasons: a wet summer and a dry winter. Three-quarters of the sixty-inch annual rainfall occurs during the wet season.
- Flood and fire, drought and frost, tornadoes and hurricanes all contribute to the essence of the study area.
- Thousands of different plants and animals live in south Florida. You can find over three hundred species of birds and other wildlife in Everglades National Park alone.

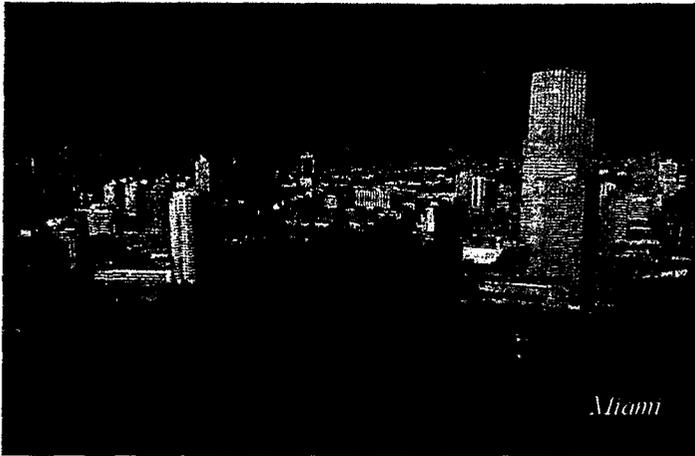
"It's impossible to think of Florida
without the Everglades."

-Palm Beach Post, May 15, 1998

The "Everglades" is the common thread that unites the major areas of south Florida. It is much larger than the area embraced by Everglades National Park. The greater Everglades ecosystem historically included the Kissimmee Valley, Lake Okeechobee, and the land south of the lake to Florida Bay. Mrs. Douglas called it the "River of Grass."

Today that land is divided among the Everglades Agricultural Area, the Water Conservation Areas, the lower east coast, and Everglades National Park. The Everglades is not what it once was, but it survives in colonies of wading birds, and mangrove swamps, and in piece after piece of persistent nature sustained by this unique wet spot on our planet. Surviving thus far, but for how long?

To understand how water in south Florida became what it is today and how it may be in the future, let's look back about one hundred years and see just what made this place the "Everglades."



A PERSPECTIVE ON PEOPLE:

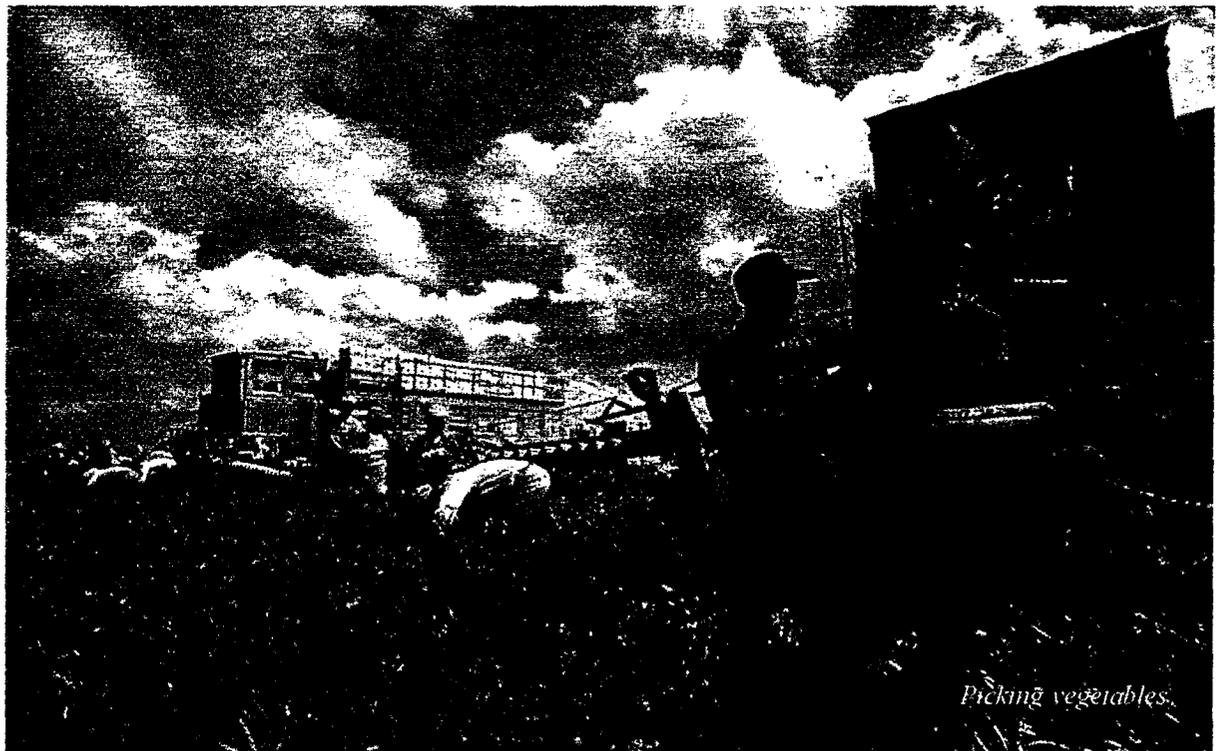
■ Just over six million people live in south Florida, making it more populous than 39 states. Most people live concentrated in a very narrow band along the lower east coast.

■ Proportionately, the region's population is more Hispanic, and there are more people over age 65, compared to both the state and the nation.

■ About twenty million visitors come to south Florida each year. 1995 tourism-related revenues were \$14 billion. Everglades National Park is in the top five tourist destinations in the nation; the Florida Keys National Marine Sanctuary is the number one dive destination in the world.

■ South Florida's economy is based on services, agriculture and tourism. The region leads the nation in production of sugar cane, oranges, grapefruit, and snap beans.

■ Almost one-third of south Florida is in public ownership.



DEFINING CHARACTERISTICS

"Here are no lofty peaks seeking the sky, no mighty glaciers or rushing streams. Here is land, tranquil in its beauty, serving not as the source of water but as the last receiver of it."

Harry S Truman, dedicating the Everglades National Park

WHERE DID WE BEGIN?

Why do we often talk about the Everglades of a hundred years ago? We need to understand how the Everglades functioned before it was drained and developed, which began in the late 1800s. Of course, it's impossible to return the Everglades to that condition. But understanding the form and function of the Everglades before it was significantly modified by people helps us better understand its current problems and possible solutions.

The landscape of the Everglades system was designed by nature to hold water. An eastern coastal ridge and a western inland ridge together formed a broad shallow valley sloping every so slightly from north to south. South Florida has always been a naturally very wet place, and the valley kept most rainfall within the Everglades.

Historically, rainwater from the Kissimmee Valley flowed south to Lake Okeechobee. The lake would periodically overflow its southern lip, and water would continue its ever-so-slow trip through a sixty mile wide shallow river over the flat and level grasslands of the Everglades, eventually emptying into Florida Bay. Only a few small rivers flowed eastward through the coastal ridge. So, what about this made the Everglades, the Everglades?



South Florida, 1856

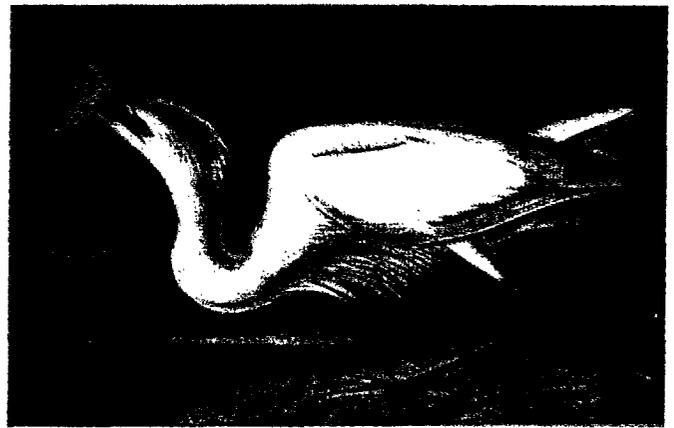
WHAT DO THE EVERGLADES DO?

Although significantly reduced in size, the Everglades continue to provide not only habitat for a rich abundance of animal life but also serve other important functions. Inland fresh water marshes reduce the danger of floods by collecting rainwater runoff, storing it, and releasing it over long periods of time. The effects of droughts are often offset by the quantity of water that is stored as groundwater or in shallow marshes during the normal wet seasons. Wetlands clean water by removing organic and inorganic nutrients and toxic materials from water that flows across them. Fresh water wetlands release water into aquifers for storage. The Everglades wetlands play key roles in forming rich soils for agriculture, in maintaining major commercial and sport fisheries, and in supporting the state's all-important tourism industry.

"All these birds, insects, animals, reptiles, whispering, screaming, howling, croaking, fish in their kinds teeming, plants thrusting and struggling, life in its millions, its billion forms, the greatest concentration of living things on this continent, they made up the first Florida."

Marjory Stoneman Douglas

"Great Blue Heron" by John James Audubon.
Painted in Key West in 1832.



Copyright - Collection of the New-York Historical Society

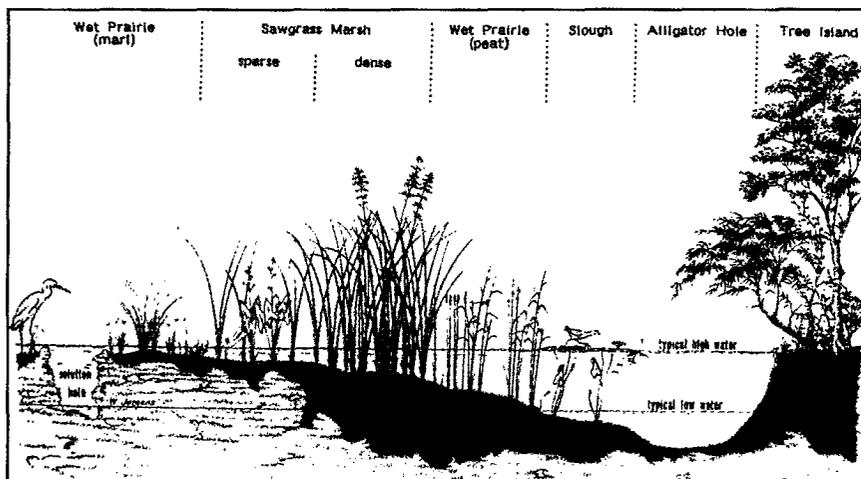
We know that the three major characteristics that defined the historic Everglades - the "River of Grass" - were how the water acted, the area's large size, and the variety of habitats.

How Water Acted. The pace at which the sheet-like flow of water moved across the historic Everglades varied on the order of months to years. Water that moved down the flat and level landscape flowed so slowly that, in effect, it was stored during one season for use in another. The Everglades' all-important long periods of natural flooding depended more on the ability to store water and its slow movement than on the immediate effects of rainfall. Because of the dynamic storage and slow flow in the natural system, summer rains kept wetlands flooded and maintained fresh water flows to coastal estuaries well into the dry winter season. The natural system's enormous dynamic storage capacity was so great that a year of high rainfall kept enough water in wetlands and flows to the estuaries to carry over into one or more later drought years. The dynamic storage made wetlands and estuaries less vulnerable to the rainfall that varies dramatically in time and place throughout south Florida. Water connected the system, from top to bottom.

Large Size. In the mid-1800s, the wetlands of southern Florida covered an area of almost nine million acres. This was vast enough to support animals that had large feeding ranges or very special habitat needs. It produced enough aquatic life to support the larger animals, and was big enough to repeatedly recover from the effects of hurricanes, fires and other natural disturbances.

Variety of Habitats. The Everglades' plants grew in a diverse mosaic of landscapes and seascapes. It was a complex system of plant life linked by water, and included expansive areas of sawgrass sloughs, wet prairies, cypress swamps, mangrove swamps, and coastal lagoons and bays. This mosaic of habitat, in its vast area and with its unique water patterns, supported the continuing survival of animals under a wide range of seasonal and annual conditions.

Today, the historic Everglades is only about half the size it was one hundred years ago. While we cannot restore its historic size, we can restore many of the ways in which water was stored and flowed in the remaining area. Water - in the right place, at the right time, in the right quantity and quality - is a major necessary ingredient in the ecology that supports life in the Everglades.



Typical Everglades plant communities

Source: *The Everglades Handbook: Understanding the Ecosystem*, by Thomas Lodge. Drawing by Wes Jurgens.

WHAT HAPPENED?

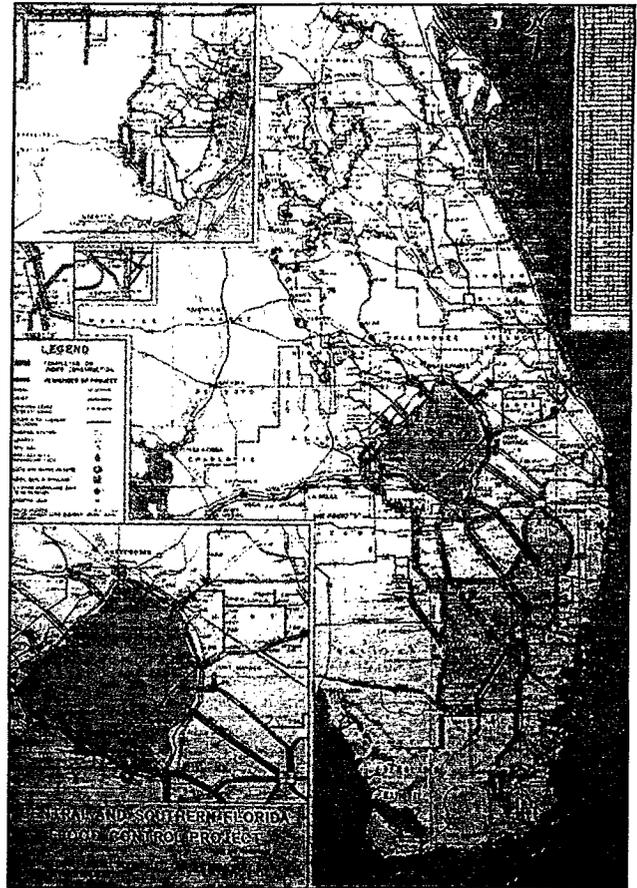
The natural assets of south Florida have long attracted newcomers. The warm weather and sandy beaches beckoned many, while fertile soils – once drained – made vast areas available for food production. Trains, and later cars and aircraft, made the region accessible, and air conditioning made it more habitable for year-round living. Seaports and sparkling water added another dimension. The area attracted money as well as people, giving rise to growth industries and to a high quality of life. For much of the twentieth century, Fort Myers, Miami, Fort Lauderdale and Palm Beach were the places to be.

In the early days of human settlement in south Florida – including before Europeans arrived – the region's water significantly limited where people could live, how successful their attempts at agriculture would be, and how permanent their homes and towns were. Often the problem seemed to be too much water. But drainage did not begin on a large scale until settlers migrating south from other parts of the United States turned their attention to the fertile soils off the relatively dry coastal ridge.

Beginning in the mid-1800s, the State of Florida offered cheap farmland in the Everglades to people who could drain it. The vast Everglades wetlands were generally viewed as “wastelands” and “useless swamp” to be drained for more productive uses. By 1927, the Everglades Drainage District had put in place 440 miles of canals, levees, locks and dams. These efforts were not enough to hold back the devastation of the 1928 Lake Okeechobee hurricane in which over two thousand people drowned and many more were injured. By 1930, the Army Corps of Engineers stepped in with assistance and began construction of the Herbert Hoover Dike around the lake.

“When the project was conceived 50 years ago, no one thought that all the land between the ocean and the Everglades levee, as well as hundreds of thousands of acres in the Kissimmee and Caloosahatchee valleys, would be developed and demand rapid drainage after a storm. No one anticipated the environmental impact of so much drainage. Florida's natural resources seemed inexhaustible.”

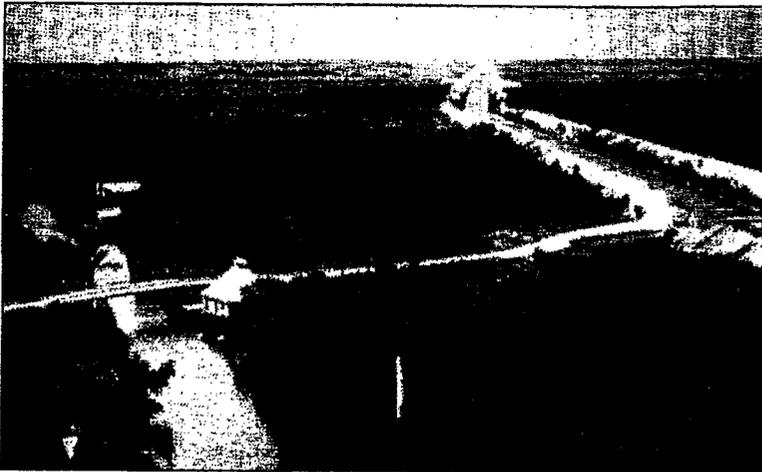
Samuel E. Poole III,
Executive Director,
South Florida Water Management District



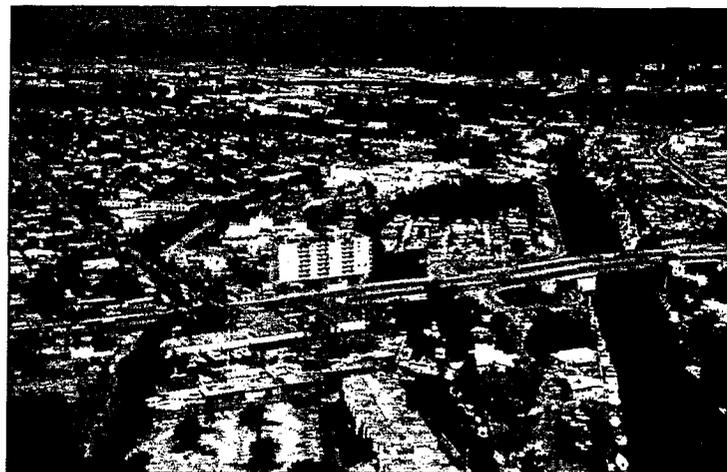
C&SF Project Map

But the water cycle kicked in again in earnest, leaving south Florida teetering back and forth between too much water and too little water. A major drought from the early 1930s through the mid-1940s left the booming population short of water and breathing the smoke of uncontrollable fires in the Everglades. Wet weather returned in 1947 and caused the most severe and extensive flooding on record. An abnormally wet summer, followed by back-to-back hurricanes in September and October, flooded nearly 2.5 million acres and left 90% of southeastern Florida under water. Floodwaters stood in some areas for six months. Notably, also in 1947, Everglades National Park was opened as a place to preserve unique plant and animal species in an essentially primitive condition.

Again, following a major disaster, the Corps of Engineers responded to the State's request for help in managing the region's water. In 1948 the United States Congress approved the massive water management project called the Central and Southern Florida Project. Construction was started by the Corps in 1950 and was essentially complete in the 1970s. The Project is one of the world's most extensive “plumbing” systems, including about one thousand miles of levees and canals, 150 gates and other water control structures, and sixteen major pump stations. It is now largely operated and maintained by the South Florida Water Management District.



The Miami River, 1913



The Miami River, 1997

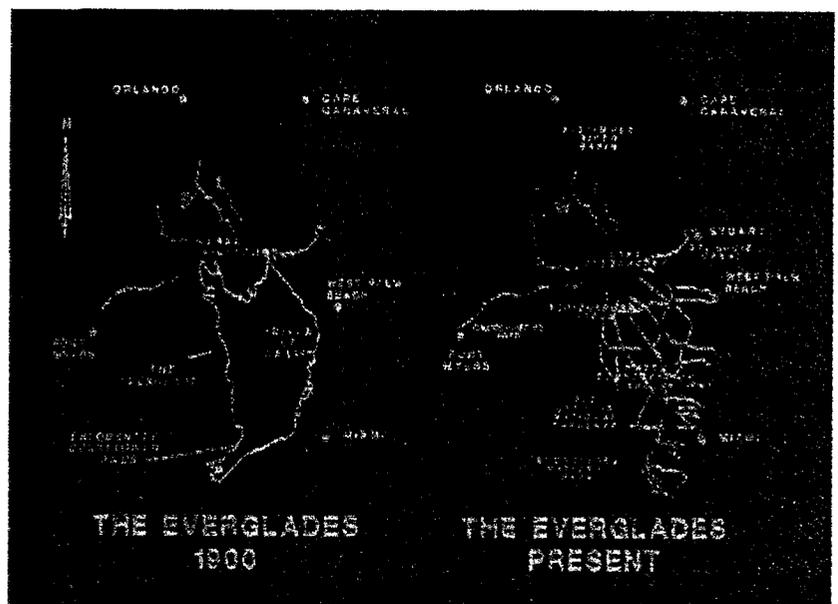
Today, the Central and Southern Florida Project is the backbone of south Florida's system of water management. Whereas earlier projects had been largely aimed at single problems, the multi-purpose Project acknowledged the region's range of water needs. It provides flood protection and supplies water to over six million people and almost one million acres of agricultural lands. It encompasses about 1,600,000 acres of Everglades habitat in addition to Everglades National Park. The Project also facilitates navigation and recreation, prevents salt from seeping into the fresh groundwater supply, and protects fish and wildlife resources. Overall, the Central and Southern Florida Project makes south Florida less vulnerable to the extremes of water by storing water for dry times, moving water around the region, and keeping water for the Everglades. It has been immensely successful doing what it was designed to do.

When the Central and Southern Florida Project was designed in the 1950s only about 500,000 people lived in the region, and it was estimated there might be two million by the year 2000. Today's population of about six million people is three times as many people as the system was designed to serve. This growth strains the ability of the system to perform its intended functions. Also, until fairly recent times we did not understand or appreciate as much about the natural environment as we do today, and the Project has had unforeseen environmental effects.

Over the past one hundred years, excessive drainage of wetlands and changes in the natural variability of water flows have altered the Everglades wetland ecosystem on a regional scale. Many of the dynamic patterns of natural water

movement have been brought under control. In addition, the once very large size of the area has been greatly reduced by development made possible, in part, by the Project. Continuity among habitats has been broken. Processes that once controlled the basic production and survival of animals have been disrupted, natural habitat complexity and options have been reduced, and viable populations of many wide-ranging animals have been lost.

Today, water takes a different course in south Florida as a result of a century of water drainage and development projects. The Central and Southern Florida Project succeeded because it significantly changed the way water moved and paused in the Everglades. But these changes have not been without costs to the ecosystem. Now, it's time to update the regional water management system to serve south Florida for the next fifty years. A rethinking of the Central and Southern Florida Project is in order.



WHERE ARE WE NOW?

“When the rains came this winter,
the Everglades flooded.

Now, when we need rain,
that extra water is gone.”

- Palm Beach Post, June 25, 1998



Look around south Florida today and you will see much of what makes it irresistible to its six million residents. But you will not have to look very hard to see a complex and related set of problems, and opportunities, in the region's water resources. The Restudy made a major investment in understanding these conditions, and identified the following major concerns:

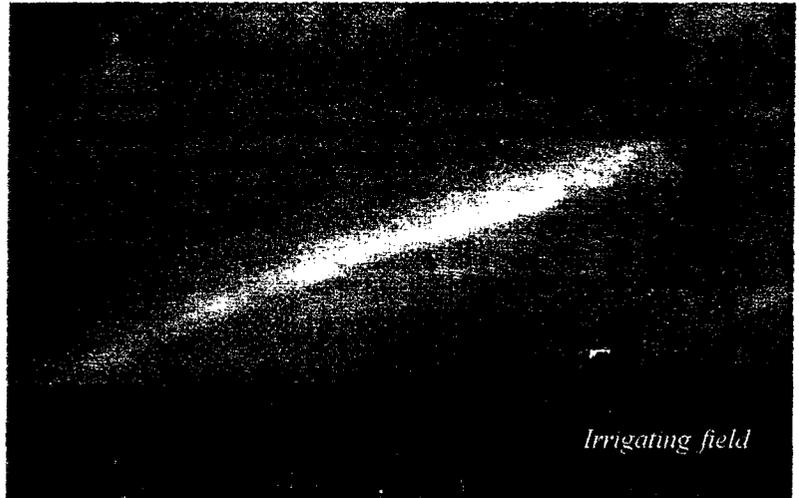
Too Much Water Is Sent to the Sea. The Project was designed to send excess rainwater to sea to keep people and farms dry. Unfortunately, the Project works too well. Nearly 1.7 billion gallons a day are sent to the Atlantic Ocean or the Gulf of Mexico - wasting water needed for the ecosystem and regional water supplies.

Estuaries Often Suffer. Flood protection is provided by sending fresh water to the sea through estuaries such as the St. Lucie and Caloosahatchee. Too much, or too little, fresh water damages the estuaries' delicate balance between salt and fresh water. This can do great harm to seagrasses and other aquatic plants and the fish and animal life which live there.

Lake Okeechobee Is Treated Like a Reservoir. Lake Okeechobee has many masters. It is often managed as if it were a reservoir - at high levels to supply water to agricultural and urban users, and at low levels for flood water storage. Regulated water levels that are either consistently too high or too low damage the ecology of the lake and its shoreline.

“Rapid population growth in southern Florida and increasing demands on limited resources have greatly accelerated natural change. Parts of the ecological puzzle have been rearranged. Some may have been lost. The ability to balance human needs while maintaining the integrity of our environment is being tested.”

Discover a Watershed, The Everglades,
South Florida Water Management District



Irrigating field

The Everglades Is Not Receiving the Historic Timing and Flow of Water. Water is the lifeblood of the Everglades. Historically, a shallow sheet of fresh water flowed slowly over the wetlands to coastal bays and estuaries. Today, discharges to the Everglades are often too much, or too little, and frequently at the wrong times of the year. An over-abundance or scarcity of water affects plants and wildlife accustomed to the Everglades' historic range of water flows, levels and seasons. In addition, canals and highways that criss-cross the Everglades have interrupted its historic overland sheet flow.

Florida Bay Lacks Fresh Water. Florida Bay is a shallow estuary at the southern end of Everglades National Park. The Bay often experiences excessively high concentrations of salt water because not enough fresh water reaches it from natural overland sheet flow. Visible effects include a loss of seagrasses, and a reduction in juvenile shellfish and game fish populations that are so important to the economy.

Water Quality Has Deteriorated. Water quality throughout south Florida has deteriorated over the past fifty years. More than one-half of the wetlands that act as natural filters and retention areas are gone. Some untreated urban and agricultural storm water is sent directly to natural areas and estuaries. Too much, or too little, water is often sent to estuaries. Too many nutrients are entering the Everglades, with an overabundance of cattail a visible sign of the results.

Urban and Agricultural Water Supplies Are Dwindling. Historically, most rainwater soaked into the ground in the region's vast wetlands. As south Florida developed, the canal network worked too effectively and routed too much water off the land to reduce flood

damages. The result is that not enough water is stored for all uses. Water shortages in dry years are now frequent, and will become more severe without any changes to the water management system.

Maintaining Flood Protection. Florida is low-lying, flat, and wet. Today, the Project provides protection from floods on a regional basis for south Florida, supported by many locally operated canal networks.

Taken together, these conditions seriously threaten the natural and human environment of south Florida. The natural system continues to deteriorate. The population requires more fresh water for urban and agricultural uses. The current level of flood protection is in jeopardy as more people move into the region. Today, south Florida is not on a sustainable course for the future.

- About 50% of the area of the historic Everglades has been converted to agricultural or urban use. The total area of Everglades National Park represents only about 15% of the area of the historic Everglades.
- Populations of wood storks and other wading birds have declined by 85-90% in recent decades.
- 68 species of south Florida's mammals, birds, reptiles, amphibians and plants are threatened or endangered.
- Non-native plants, such as melaleuca, Brazilian pepper and Australian pine, compete against and crowd out natural vegetation.

WHAT IF WE DO NOTHING?



Water supply

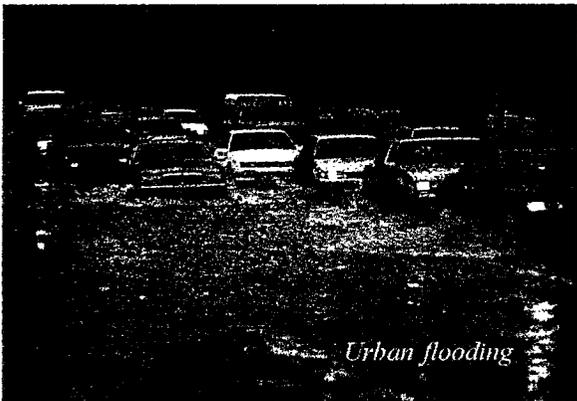
“The people of Florida should be made aware that the south Florida ecosystem is not sustainable on our present course. Floridians, at all levels, need to recognize that we can sustain neither our existing human nor our natural systems in south Florida with regard to water if we do not change direction.”

The Governor’s Commission for a Sustainable South Florida, October 1995

Today, just over six million people live in south Florida - three times as many as the water management system was originally designed to serve. The region’s population is expected to reach eight million by the year 2010, and from twelve to fifteen million by 2050. With that many more people, what could south Florida be like in the year 2050?

A doubling of the current population will consume both land and water. Many new homes, businesses, schools, roads and other development would come at the expense of currently undeveloped areas occupied by wetlands and other habitats and agricultural lands. A reduced natural area, coupled with increased development and demands for water, will mean more drainage and more competition for less and less water.

As a result, the most noticeable changes would probably be more frequent and severe urban and agricultural water shortages and a vastly degraded ecosystem. Valuable wetlands that store and cleanse water and provide food and shelter for wildlife would be lost. A number of plants, animals and birds now living in south Florida would be extinct. The quality of inland and coastal waters would be further deteriorated. These conditions would have major economic consequences not only to south Florida, but also to the state because so much of the economy is tied to tourism, recreation, fishing, boating and other businesses that are dependent on abundant and clean inland and marine waters and the region’s unique natural beauty.



Urban flooding



Dried out canal



Equally important is the effect on our fresh water supply. More people will want more water. Urban water demands alone could double to two billion gallons of water each day by the year 2050. The growing demand for dependable water for agriculture, industry and a burgeoning population will rapidly exceed the limits of readily accessible sources. Water shortages will be more frequent. When the needs of the region's natural systems are factored in, conflicts for water among users will become even more severe.

Agricultural and urban development will increase the volume, duration and frequency of flood waters, jeopardizing the current level of protection.

Keep in mind that "doing nothing" does not mean that absolutely nothing will be done to correct the region's water problems. For example, the Kissimmee River restoration project will be in place, restoring almost thirty thousand acres of wetlands in the Everglades' headwaters. Best management practices and stormwater treatment areas authorized by Florida's Everglades Forever Act will continue to improve the quality of the region's water. The Interim Plan for Lower East Coast Regional Water Supply will ensure an adequate fresh water supply to southeast Florida into the 21st century. However, while projects such as these are necessary, they are not enough to ensure a healthy and sustainable future for the region.

If we make no additional major changes in the Central and Southern Florida Project, by the year 2050, the quality of life in south Florida - which is difficult to put a price on - will probably be very different and much less desirable. Doing nothing will have its costs.

PROJECTS ALREADY UNDERWAY OR SCHEDULED

- Modifications to the Corps' Central and Southern Florida Project, including:
 - Kissimmee River Restoration
 - C-111 Project
 - Modified Water Deliveries to Everglades National Park
 - C-51 Project
 - Manatee Protection
 - Critical Restoration Projects
- Everglades Construction Project
- South Florida Water Management District Interim Plan for Lower East Coast Regional Water Supply
- Northwest Dade County Lake Belt
- State of Florida Save Our Rivers Program
- Miami-Dade County Environmentally Endangered Lands Program

CAN WE DO ANYTHING ABOUT IT?

The Restudy interdisciplinary team:

- Aquatic Ecologists
- Archeologists
- Biologists
- Civil Engineers
- Cost Engineers
- Ecologists
- Economists
- Engineers
- Environmental Engineers
- Environmental Scientists
- Geographers
- Geographic Information System Specialists
- Hydraulic Engineers
- Hydrogeologists
- Hydrologists
- Life Scientists
- Planners
- Plant Ecologists
- Public Affairs Specialists
- Real Estate Specialists
- Resource Managers
- Scientists
- Technicians
- Zoologists

South Florida's water resource problems have not gone unnoticed. Government and private interests have been busy trying to fix parts of the situation for many years. But it was not until the 1990s that national and local interests came together to take a truly comprehensive look at the region's water resources.

In 1992, and again in 1996, the United States Congress directed the Army Corps of Engineers to review the Central and Southern Florida Project and determine if it should be changed to restore and preserve south Florida's natural ecosystem while improving water supplies and maintaining flood protection. The resulting Central and Southern Florida Project Comprehensive Review Study - commonly called the Restudy - has been an ambitious partnership to meet those objectives.

The Restudy has taken place in a much different time and place than when the Project was designed and built. Current problems do not stem so much from mistakes in the original Project, but rather from rapidly changing conditions and the priorities of the time. For example, water demands originally predicted for the year 2020 had already been exceeded by the late 1960s, and continue to grow at rates that could never have been anticipated. In addition, the majority of the public now understands the important functions of wetlands and natural areas - whether for the protection of water supply, augmenting flood protection, or simply to preserve wilderness for its intrinsic values.

Unlike most previous studies, the Restudy has taken a system-wide look at water. While reducing flood damages will always be a major concern with south Florida's flat terrain and plentiful rainfall, the Restudy investigated a broad range of objectives to address the water-related needs of both people and the natural environment.

SPECIAL INVOLVEMENT

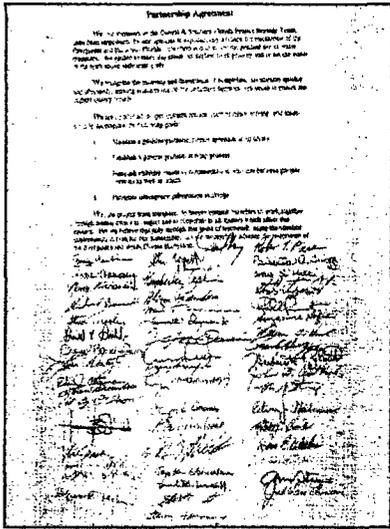
Governor's Commission for a Sustainable South Florida.

In 1994, Florida's Governor appointed a diverse commission of involved citizens to recommend how south Florida can maintain both a healthy economy and environment in the years to come. The 49-member Governor's Commission for a Sustainable South Florida developed a Conceptual Plan for the Restudy which helped guide the formulation of alternative plans. The commission continues to provide advice to the Restudy.

South Florida Ecosystem Restoration Task Force.

Recognizing that the restoration of an ecosystem as vast and complex as south Florida's would require unprecedented action, the Task Force was established to coordinate the development of consistent policies, strategies, plans, programs and priorities. It's the first partnership of its kind and promises to become a model throughout the nation when dealing with complex restoration efforts. The Task Force works to protect and conserve natural resources, to integrate research at all levels, and to expedite the work of the Restudy. The group coordinates restoration activities with federal, state and local agencies, affected tribes and the general public.





Restudy partnership agreement

GOALS AND OBJECTIVES FOR RESTUDY ALTERNATIVE PLANS

Goal: Enhance Ecological Values

- Increase the total spatial extent of natural areas.
- Improve habitat and functional quality.
- Improve native plant and animal species abundance and diversity.

Goal: Enhance Economic Values and Social Well Being

- Increase availability of fresh water (agricultural, municipal and industrial).
- Reduce flood damages (agricultural and urban).
- Provide recreational and navigation opportunities.
- Protect cultural and archeological resources and values.

From its first day, the Restudy was innovative in involving people in what was going on:

Non-Federal Sponsor Involvement. The South Florida Water Management District - headquartered in West Palm Beach - operates the Corps-constructed Central and Southern Florida Project. The Water Management District is also the Restudy's non-federal sponsor and equally shares the study's cost with the Corps. The District and the Corps have forged a strong partnership that has benefits far beyond the Restudy.

Interagency Involvement. Many other state and federal agencies, the Seminole and Miccosukee Tribes, local governments, drainage districts, utilities, and other groups are active partners in the Restudy. Over 160 individuals from about thirty different entities are members of the Restudy team.

Interdisciplinary Involvement. The Restudy team also employed the collaborative knowledge, skills and abilities of over twenty different professions, representing a wide range of natural and social scientists, engineers, and planners.

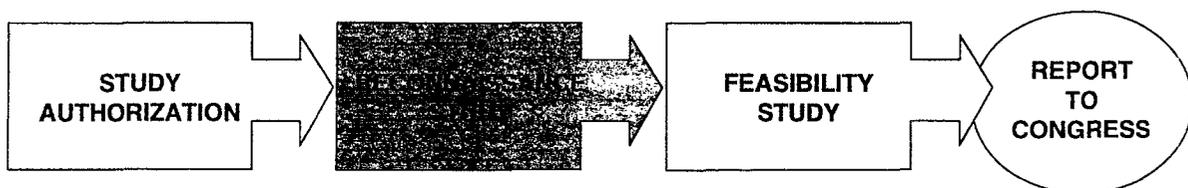
Public Involvement. The Restudy has benefited from an extensive public involvement program inseparable from the planning process. Three rounds of large-scale public workshops were held to scope the problems and oppor-

tunities in 1993 and 1994, with up to seven hundred people attending several meetings. Smaller "focus group" sessions were conducted in 1997 to discuss plan development issues with agricultural, urban, environmental and other interest groups. Stakeholders and other interested parties helped shape the recommended plan from late 1997 through most of 1998. Additional meetings will be held in late 1998 during the review of the draft feasibility report.

The Restudy followed the Corps' two-phase planning process. The opening reconnaissance phase ran from June 1993 to November 1994, and focused on defining the study area's problems and opportunities. The follow-on feasibility phase started in August 1995 and will culminate in July 1999 with the submittal of a feasibility report to the Congress. During the feasibility phase, the Restudy formulated and evaluated a wide range of alternative plans to meet the objectives, using sophisticated analyses and computer models and relying on the experience and judgment of some of the nation's top scientists and engineers. Although some have wanted quicker results, the Restudy has proceeded at a record-breaking pace given the high standards for the scope and complexity of what it was asked to accomplish.

The feasibility report is a major product of the Restudy. The report describes a recommended comprehensive plan of action and a process to implement that plan.

TWO PHASE STUDY PROCESS



WHAT SHOULD WE DO?

After extensive planning and scientific study, involving stakeholders and interested people from the region and the nation, the Restudy identified a comprehensive solution to south Florida's water resource problems for the next fifty years. That comprehensive solution, called the "recommended plan", was designed to enlarge the region's supply of fresh water and to improve how water is delivered to natural areas, using a variety of technologies and locations. The plan is comprehensive and conceptual, and more detailed analyses are needed before anything can be built. For now, it is our best idea about what we need to do to get the water right in south Florida. The plan recommends the following modifications to the existing Central and Southern Florida Project:

Developing Surface Water Storage Reservoirs. A number of water storage areas will be located north of Lake Okeechobee, in the Caloosahatchee and St. Lucie basins, in the Everglades Agricultural Area, and along western Palm Beach, Broward and Miami-Dade Counties. These areas will store 1.5 million acre-feet of water so that it is not sent to the sea.

Creating Water Preserve Areas. Multi-purpose water management areas are planned in Palm Beach, Broward and Miami-Dade Counties between urban areas and the eastern Everglades. The Water Preserve Areas will have the ability to treat urban runoff, store water, reduce seepage, and improve existing wetland areas.

Managing Lake Okeechobee as an Ecological Resource. Today Lake Okeechobee is managed for many often-conflicting uses. The lake's regulation schedule will be changed to reduce the extreme high and low levels that harm the ecology of the lake and its shoreline.

Improving Water Deliveries to Estuaries. Excess rainwater that is discharged to the sea through the Caloosahatchee and St. Lucie Rivers is very damaging to the ecology of their estuaries. The recommended plan will greatly reduce these discharges by storing excess rainwater in surface and underground water storage areas. In addition, during times of low rainfall, the stored water can be retrieved to augment the estuaries.

KEYS TO RESTORATION:

- Increase the amount of water available.
- Ensure adequate water quality.
- Reconnect the parts.

Developing Underground Water Storage. More than three hundred wells will be built to reach underground into the Floridan aquifer. As much as 1.6 billion gallons a day may be pumped through the wells into underground storage zones. The injected fresh water forms a bubble around the existing underground salt water, and can be pumped out during dry times up to years later in the same condition in which it was injected. This approach, known as aquifer storage and recovery, or ASR, has been used for years on a smaller scale to augment municipal water supplies. A significant amount of water in surface reservoirs is lost through evaporation, and a major advantage of ASR is that water does not evaporate when it's underground. The recommended plan includes two hundred wells around Lake Okeechobee, and others in the Water Preserve Areas and the Caloosahatchee basin.

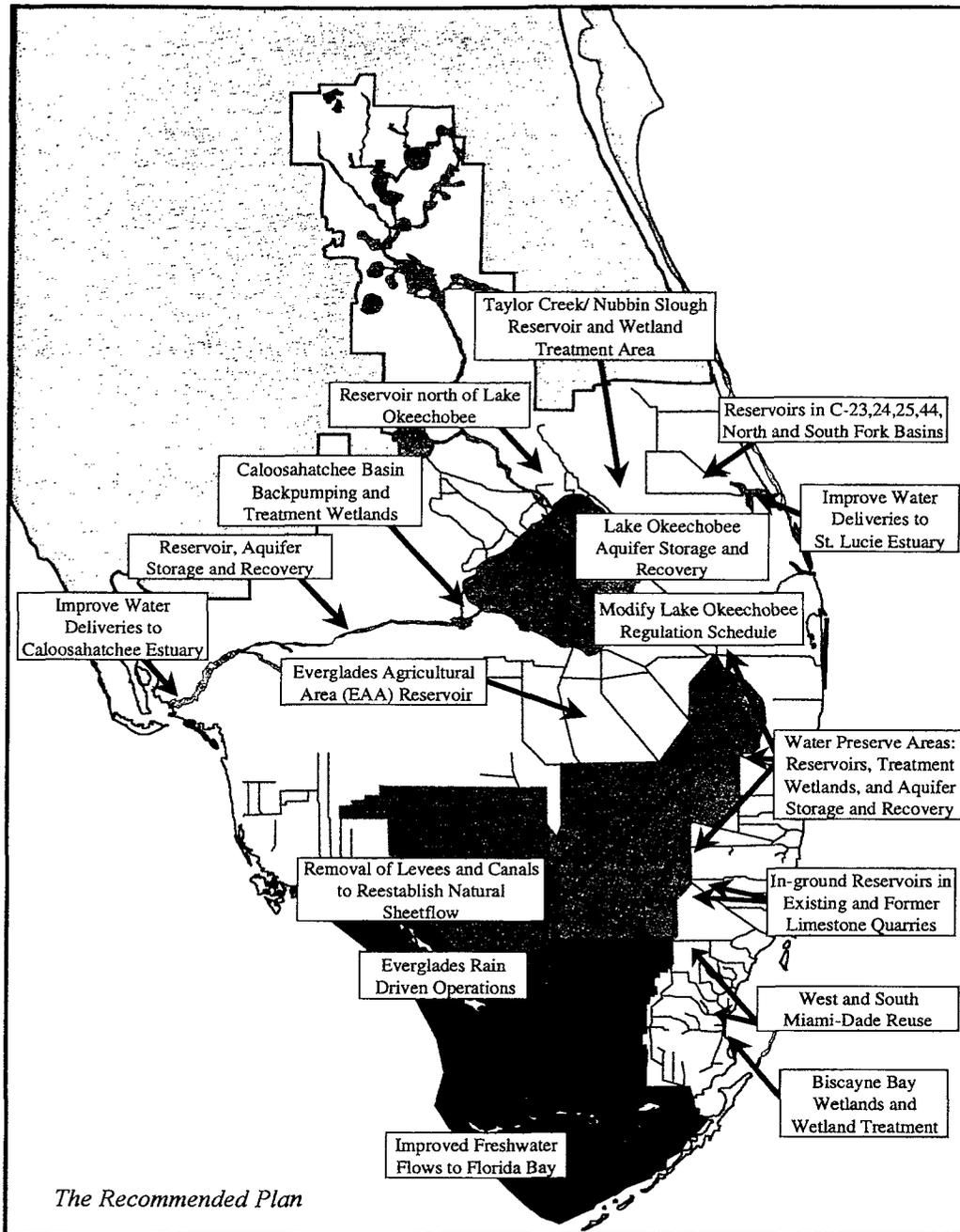
Developing Treatment Wetlands. About thirty thousand acres of manmade wetlands, known as stormwater treatment areas, will be built to treat urban and agricultural runoff water before it is discharged to natural areas. These are in addition to the over forty thousand acres of manmade wetlands already being constructed to treat water discharged from the Everglades Agricultural Area.

Sending Water to the Everglades in a Way that Mimics Nature. Additional changes will be made to the rainfall-driven operational plan to improve the timing of water sent to the Water Conservation Areas and Everglades National Park.

Removing Barriers to Sheetflow. More than five hundred miles of Project canals and levees will be removed to reestablish the natural sheetflow of water through the Everglades. Most of the Miami Canal in Water Conservation Area 3 will be removed. Twenty miles of the Tamiami Trail (U.S. Route 41) will be rebuilt with bridges, allowing water to flow as a sheet into Everglades National Park as it once did naturally. In the Big Cypress Preserve, a north-south levee will be removed to restore some natural overland water flow.

Storing Water in Quarries. Two limestone quarries in northern Miami-Dade County will be converted to water storage reservoirs to supply Florida Bay, the Everglades and Miami-Dade County residents with water. The area will be ringed with an underground wall to ensure that stored water does not leak.

Reusing Wastewater. The recommended plan includes two advanced wastewater treatment plants in Miami-Dade County. The plants will be capable of making more



The Recommended Plan

than 220 million gallons a day of the county's treated wastewater clean enough to discharge into wetlands along Biscayne Bay, and improve water supplies to south Miami-Dade County and the Northeast Shark River Slough part of the Everglades.

Improving Water Deliveries to Biscayne Bay. The recommended plan will protect and restore Biscayne Bay coastal wetlands and treat stormwater runoff before it enters the bay.

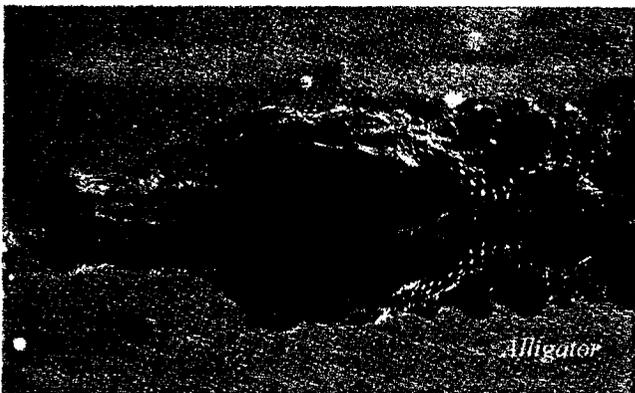
Improving Fresh Water Flows to Florida Bay. Improved water deliveries to Shark River Slough, Taylor Slough, and the wetlands to the east of Everglades National Park will send more fresh water to Florida Bay.

Overall, the recommended plan will store much of the water that is now sent to the sea so there will be enough water for urban and agricultural users, as well as the ecosystem, in the future. It will continue to provide the same level of flood protection, if not more, for south Florida. The recommended plan is a comprehensive solution for ecosystem restoration, water supply and protection from flood damages. It is an important step to a sustainable south Florida over the next fifty years.

WHAT'S IN IT FOR US?

The recommended plan will result in a more livable south Florida for both people and wildlife, including the recovery of a healthy, sustainable Everglades ecosystem. No other plan, especially one on a smaller scale or lacking the balance between Everglades restoration and future urban and agricultural water supply needs, can achieve similar success. Almost everyone living in south Florida will benefit from the recommended plan.

In the past one hundred years we have drained our wetlands, damaged our estuaries, and lost valuable water storage areas. Today's south Florida is almost unrecognizably different from the region of even fifty years ago when the Central and Southern Florida Project was first authorized. The dramatic and fearful degradation of the Everglades during this period is well documented. Key ecosystem indicators, such as the numbers of herons, storks, brown pelicans and alligators, have declined by between 80 and 95 percent. These same indicators are showing that the overall health of the Everglades ecosystem continues to deteriorate. We have not yet seen how bad the Everglades can become.



The recommended plan focuses on recovering the major characteristics that defined the historic Everglades - the "River of Grass." What made the Everglades special were its large size and how water acted as a single interconnected system; and these created a variety of habitats needed by many different plants and animals. It was the



success of the levees and canals, and the resulting explosion of development that shrunk the area, disrupted the natural patterns of water, and ultimately interfered with the ability of most animals to find dependable habitat at the right times and in the right places for survival.

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 will 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.

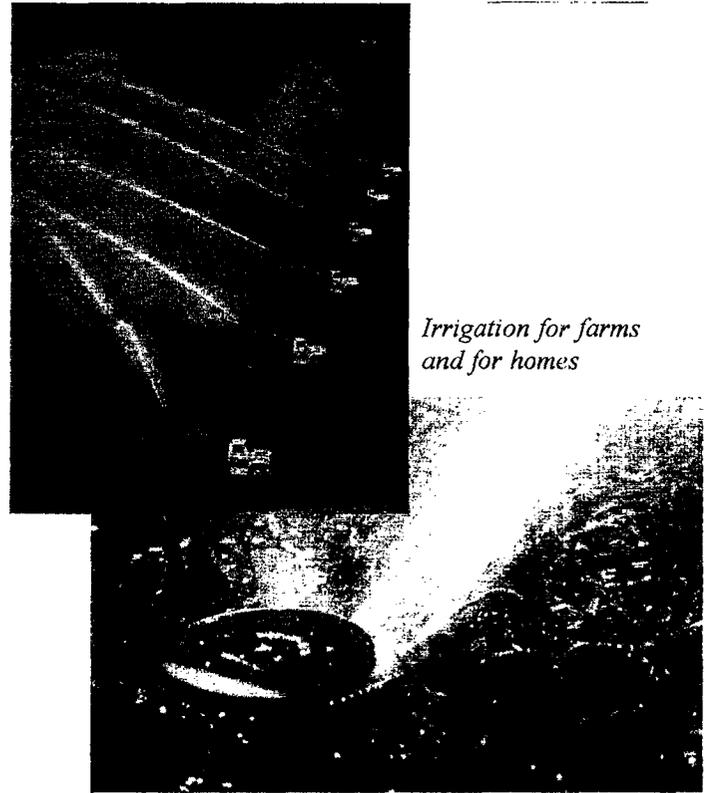
How will you know if the plan works and the ecosystem is being restored? Two telling measures of success will be the return of large wading bird nesting colonies to the Everglades, and the recovery of several endangered species to more certain and optimistic futures. Scientists believe that wading birds, 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 Everglades National Park, but none have been there since. The recovery of 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.

While you're watching the signs of success, keep in mind that the restored Everglades of the future - made possible by the recommended plan - will be different from any former version of the Everglades. While it certainly will be vastly superior to the current ecosystem, it can never be the same as the historic region of a hundred years ago.

It will be smaller, and somewhat differently arranged than it was in the past. But it will be a successfully restored Everglades because it will have recovered the essential qualities that defined the historic Everglades and made it unique among the world's wetlands. It will be a place that kindles the wildness and richness of the former Everglades. It will be a new Everglades.

The recommended plan will increase the amount of fresh water available not just for the natural system but for all water users. An adequate supply of water is key to maintaining healthy agriculture in south Florida. Improving our ability to store water will help prevent economically harmful water cutbacks to farmers in the future. Users in the cities and suburbs can also expect fewer water restrictions affecting how often they can water their lawns or they are asked to reduce water uses around the house. Without the plan, water restrictions could be expected every year in some areas, but the recommended plan will reduce that to as little as once in every ten years. Overall, the plan will provide an expanded fresh water source to meet south Florida's population and water resource demands through the year 2050.

From a regional perspective, the recommended plan is expected to greatly improve water quality conditions. Water pollutants, such as phosphorus, will be reduced as they settle out in stored water, or are removed at



Irrigation for farms and for homes

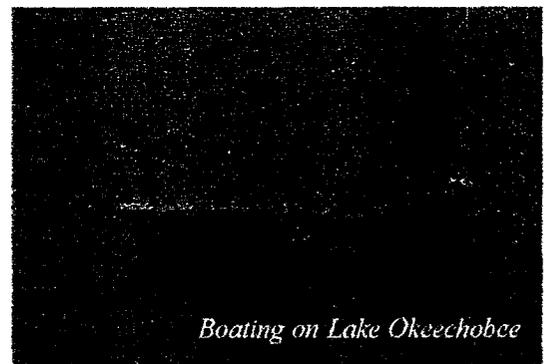
Ecosystem Health With and Without The Recommended Plan

Area	Future Without Plan	Future With Plan
Lake Okeechobee		
Caloosahatchee Estuary		
St. Lucie Estuary		
Lake Worth Lagoon		
Holey Land and Rotenberger Areas		
Loxahatchee National Wildlife Refuge		
Water Conservation Area 2A		
Water Conservation Area 2B		
Northwestern Water Conservation Area 3A		
Northeastern Water Conservation Area 3A		
Eastern Water Conservation Area 3A		
Central & Southern Water Conservation Area 3A		
Water Conservation Area 3B		
Everglades National Park - Shark River Slough		
Everglades National Park - Rockland Marl Marsh		
Florida Bay		
Biscayne Bay		
Model Lands		
Big Cypress National Preserve		

treatment facilities. Cleaner water will benefit the plants, the animals and the people that drink, work with and otherwise use water every day.

The evaluation tools used in the Restudy were not intended to tell us how the recommended plan would effect flooding. Nevertheless, they do provide a general indication of how the plan may handle flood waters. Overall, we believe that the recommended plan will maintain our existing level of flood protection throughout south Florida. Site-specific evaluations of flooding risks will be done during later studies.

The Everglades supports a significant amount of outdoor recreation. Over six million people spend over \$400 million each year visiting just the Everglades-related parks and preserves alone. Ecological improvements should lead to more and better recreational opportunities throughout south Florida. In particular, recreational as well as commercial fishing could show significant improvements as a result of the recommended plan.



Boating on Lake Okeechobee

WHAT'S IT GOING TO COST US?

The cost to implement the recommended plan is estimated to be about \$7.8 billion. Think of that as the mortgage. Then there's about another \$175 million to operate, maintain and monitor the plan every year. Think of that as a home's ongoing expenses for utilities, repairs and the like. Taken all together over twenty years, all of the plan's costs will work out to be just over \$400 million each year. No matter how you look at it, that's a major investment. It will be, by far, more than the Corps of Engineers has ever before recommended spending on one project in one place at one time.

Arrangements concerning which agencies will pay for these costs, and when payments will be due, are yet to be made. In general, the federal government will pay half the cost. The people of south Florida will pay the other half.

And not all of the costs are included in the recommended plan's dollar price tag. For example:

Large areas of primarily farmlands will be replaced by storage reservoirs and stormwater treatment areas, thus removing those lands from agricultural production. This will affect about 170,000 acres north of Lake Okeechobee, in the Caloosahatchee and St. Lucie basins, and in the Everglades Agricultural Area. The Water Preserve Areas in Palm Beach, Broward and Miami-Dade Counties will affect several thousand additional acres.

A limited number of wetlands will be lost when they are similarly replaced by storage reservoirs, stormwater treatment areas, and water preserve areas. And, although a better ecosystem on over two million acres will come at the expense of current fish and wildlife habitats, the result will be a healthier and sustained Everglades for both the natural and human populations.

The plan is also expected to cause a number of other generally short-term and local impacts that commonly occur when projects like this are built. These effects include temporary increases in water turbidity and dust in the air associated with construction activities and equipment. Animals disturbed by the sights and sounds of construction typically move away to safer areas. Changes in the way water is stored and moved in the Water Conservation Areas will significantly affect local wading birds for a short term until they adjust to the new water patterns. Recreation related to natural resources, such as canal fisheries, may also be temporarily affected during construction.

An unknown number of historic and archeological sites may be affected by implementation of the recommended plan. Future studies will identify significant sites, and plans will be developed to offset any unavoidable adverse effects.

All of the different alternative plans considered during the Restudy would have major financial costs and other adverse effects. Dealing with the region's water problems will cost something, whether it is the cost of this plan or another plan - or even the cost of doing nothing at all. With the recommended plan, everyone will have to give something. Some will have to give up the current uses of their lands; some existing habitats will be converted to other habitats; and dollar costs will be shared by all. Equally important, the overall beneficial effects of the recommended plan are expected to far outweigh its adverse effects, including both effects that are and aren't measured in dollars. In the final analysis, we believe that, through sharing the adversity and ensuring a net beneficial effect, the recommended plan is worth it for a sustainable future south Florida.

WHAT DO OTHER MAJOR PUBLIC INVESTMENTS COST?

\$1.0 billion	Interstate 595 (15 miles)
\$4.5 billion	USS Harry Truman Aircraft Carrier
\$4.7 billion	Miami International Airport Capital Improvement Program
\$8.6 billion	Boston Central Artery and Tunnel
\$9-10.5 billion	CALFED (California) Bay-Delta Program

IS EVERYONE HAPPY?

The short answer to the question is: no, not everyone is completely satisfied with the recommended plan. South Florida's residents often have definite ideas and opinions about whether or not the ecosystem is "dying" or "thriving", and what should or shouldn't be done about it. There are "upstream" and "downstream" interests; "inland" and "coastal" interests; "environmental", "agricultural" and "urban" interests - all with seemingly different and competing needs and desires for the ecosystem and the region's supply of fresh water. And it often appears nobody trusts the government at any level.

Why isn't everyone happy? The many different interests involved in south Florida water issues have had just as many concerns about the Restudy over the past several years. Some of their concerns have included:

There's no problem. On the surface, many people see that the Everglades seem to be doing pretty good. After all, it's a very big place and its been there for a very long time. What's the problem? It's often hard to see a long-term trend, but the individual signposts along the road are unmistakable. The 1987 die-off of one hundred thousand acres of seagrass in Florida Bay had major adverse consequences for marine life and the economy; other die-offs have followed. During 1989 and 1990, urban centers along the lower east and west coasts experienced significant water shortages and water restrictions were imposed. High water during the winter of 1997-1998 imperiled the already endangered Cape Sable seaside sparrow. Fish in the St. Lucie estuary have suffered with lesions. The signs are all around us, and the problems are real.

It won't work. There is skepticism about how, and whether, the recommended plan will work - more about individual parts of the plan than about the entire plan. For example, aquifer storage and recovery is a relatively new approach and some people are uncomfortable with relying on it for such a large amount of water storage. Based on what we know now, we're confident that the recommended plan is the right concept for south Florida's water future. As the plan progresses, we'll rely on adaptive management and other approaches to further reduce our uncertainties.

There's nothing in it for me. Some upstream interests are concerned that they would bear an unfair share of the plan's costs for benefits downstream. They fear that their land and their water would be taken, and their way of life would be threatened. Some environmental interests



Our public meetings lead to many discussions among residents with different views about the region.

believe the plan is a step in the right direction, but that it doesn't go far enough, or that urban water uses will receive priority over the ecosystem. A sustainable future will not come without some sacrifice by all. The recommended plan represents an attempt to balance and share both the adversity and the prosperity as fairly as possible throughout the region and among interests.

You haven't solved all the problems. The Restudy has been an ambitious comprehensive look at south Florida's water problems and opportunities. It's been limited to conditions related to the region's water resources. Even with that limit, the Restudy has not answered every question and solved every problem. For example, there are remaining concerns about water quality in areas that are outside the Central and Southern Florida Project. We will keep looking at these kinds of problems as the recommended plan goes on to become a reality.

Cost. Everyone recognizes that doing something about the water problems in south Florida is going to cost a lot of money. How much that cost will be, and how it will be shared, are important concerns to everyone. At the local level, those that may eventually pay for the plan, such as local governments and utilities, are concerned about their potential financial responsibilities. While we do not know now, decisions about who will pay and how much they will pay will take considerable effort to reach a fair agreement.

So, no, not everyone is happy, yet. But, all interests have had - and will continue to have - full and fair opportunities to participate in finding the best possible solution to meet south Florida's water resource needs.

WHAT'S THE NEXT STEP?

The restoration process has started. The reconnaissance phase was complete in November 1994, and the draft feasibility phase was complete in October 1998 - a record pace given the scale and complexity of this work. But this was only the start, and there's much to accomplish before we can see results on the ground.

What's next? Here's generally what we expect to be the main steps in making the recommended modifications to the Central and Southern Florida Project:

Complete the Feasibility Phase. The final feasibility report is scheduled to be submitted to the United States Congress in July 1999, following extensive public and policy review. If it approves the plan, the Congress will pass a law that will tell us what it wants us to do. The Congress usually approves a number of Corps projects every two years in a law called a "water resources development act". In addition to such approval, the Congress must also provide funds every year to pay for what's to be done.

Federal laws also require that the Corps share the cost and other responsibilities of a water resources project with a non-federal sponsor representing local interests. Much like the Corps, sponsors typically have their own approval and funding processes. The South Florida Water Management District has been the non-federal sponsor for the feasibility phase.

Preconstruction Engineering and Design. After the feasibility report is submitted, the technical studies

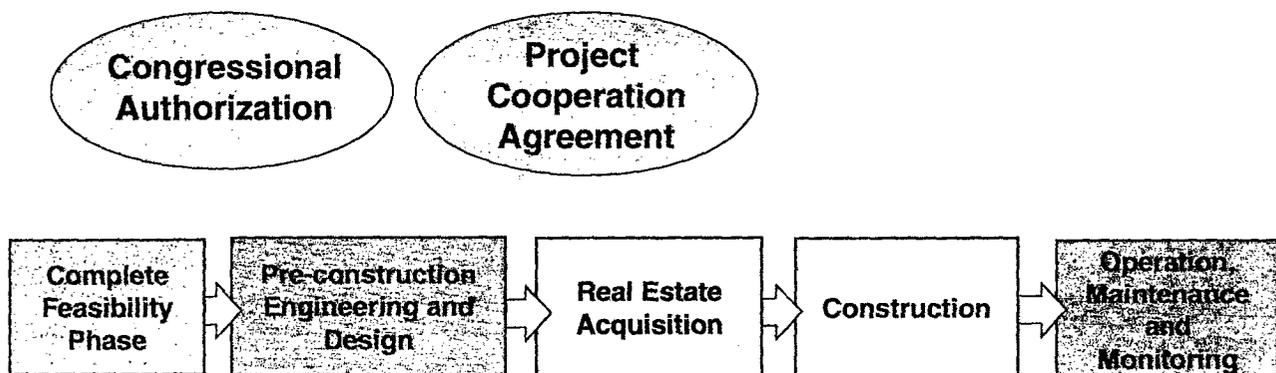
and design needed to begin construction will be completed. This work leads to the detailed drawings and instructions for building each component of the project, and the project cooperation agreement which describes what agencies will be responsible for doing what jobs during construction, operation and maintenance.

Real Estate Acquisition. Real estate interests needed to make the project work must be acquired by the non-federal sponsor before construction can begin. Acquisition may be by purchase, donation or condemnation. The law requires that property owners be compensated if their property is needed for the project.

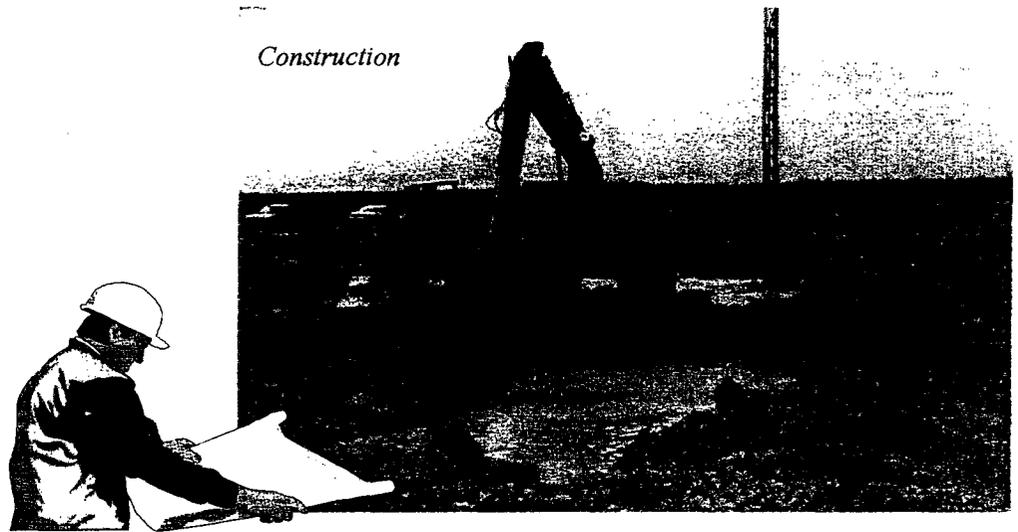
Construction. Work at a specific project site may begin soon after the project cooperation agreement is signed, the real estate is acquired, and a construction contract is awarded. During this phase the recommended plan will be transformed into an actual functioning project on the ground. When construction of a component is complete it will be turned over to the sponsor for use, including its ongoing operation and maintenance.

Operation and Maintenance. Many things will need to be done to make the project work. These range from day-to-day activities, such as opening and closing water gates, to long-term or less frequent jobs, such as repairing access roads. An extensive monitoring program will also be conducted to tell us how well the project is doing. After all this work, the full range of the project's benefits will finally be realized. Where monitoring shows that

PROJECT DEVELOPMENT PROCESS



Construction



results fall short of our expectations, we may make changes in how the project is constructed or operated to improve on those results. This is called adaptive management, and it gives us the flexibility to adjust based on what we learn as we go.

The exact step-by-step process that we will follow to get the project up and functioning will be described in an implementation plan. Although we are just beginning to put the implementation plan together, we know that it must address several key questions, such as:

When and where will we start building something?
 Timing will depend on Congressional approval and funding from the federal and non-federal sources. Construction of the first components could begin as soon as a few years after both are received. All of the different component modifications to the Central and Southern Florida Project will not begin at the same time. The question of where to begin - and why - is very complicated and is the subject of ongoing discussions among the affected interests.

How long will it take? This is not a quick fix. It will probably take twenty years to install all of the components included in the recommended plan.

Who will pay, and how much will they owe? These questions are also under discussion. In general, implementation costs will be equally shared between the federal government and the people of south Florida.

Keep in mind that other projects will be accomplished regardless of the schedule for the recommended plan. These include the Kissimmee River restoration and other Corps projects that the Congress has approved already, as well as projects by the State, the South Florida Water Management District, and other water interests. For example, the Corps, District and others are developing plans for Biscayne Bay, Florida Bay, the Indian River Lagoon, and Water Preserve Areas in western Miami-Dade, Broward and Palm Beach counties, and these will occur independent from the progress of the recommended plan.



Monitoring the project's results

GUIDELINES FOR DEVELOPING THE PROJECT'S IMPLEMENTATION PLAN ARE:

- Continue interdisciplinary and interagency teams.
- Conduct outreach and public involvement.
- Maintain regional system focus.
- Integrate ongoing and future projects.
- Integrate contingency planning.
- Address water quality needs.
- Plan evaluation through adaptive management.
- Address uncertainties.

WHAT IF IT TURNS OUT DIFFERENTLY?

We would like to think that the recommended plan will turn out just exactly as we expect it to be. Alas, uncertainty is a fact of life and we know that the plan will not turn out exactly that way. It would be unreasonable to think that it would - the problem and its solution are too big and too complex, and will take a long time to resolve. The fact is, we expect that at least some things will turn out differently, but we're not sure which ones or how much it will matter if they do.

Some of the things that we are already uncertain about are:

Scientific Models. Many scientific and engineering models that simulate the way things work were used in developing the recommended plan. The conclusions we can draw from them are only as good as our basic understandings and information that are the foundations of the models. For example, the "natural system model" is a hydrologic computer model that was used to evaluate the performance of different alternative plans. The model uses rainfall data from a single historical period - so how good are our evaluations and conclusions if future rainfall is different from the past?

New Technology. Most of the project's features are tested means to manage water, but the aquifer storage and recovery technology has never been tried on the scale at which it is included here.

Understanding the System. The theoretical links between hydrological changes and the ecological responses to those changes that are expected to lead to restoration are not well understood. In addition, there is a lot more to the Everglades than water, which is the primary focus of the recommended plan.

We do not have a full understanding of south Florida's ecosystem, and it is too early to state with certainty what a new Everglades will be like. Given the time needed to implement the recommended plan and the natural delays in ecological responses, the evolution of a new Everglades is likely to take a very long time. As it does, we know that some unexpected effects will occur; that the remaining wetlands will continue to evolve; that our understanding of ecology will continue to improve. We just don't know for sure the exact time or even the exact Everglades characteristics that will lead us to declare "restoration" victory.

Although this may make us uneasy, we should not be overly concerned. We have used the best information, models and judgment available. There is considerable scientific agreement that a much wetter system will

produce dramatic improvements in the ecological health of the Everglades.

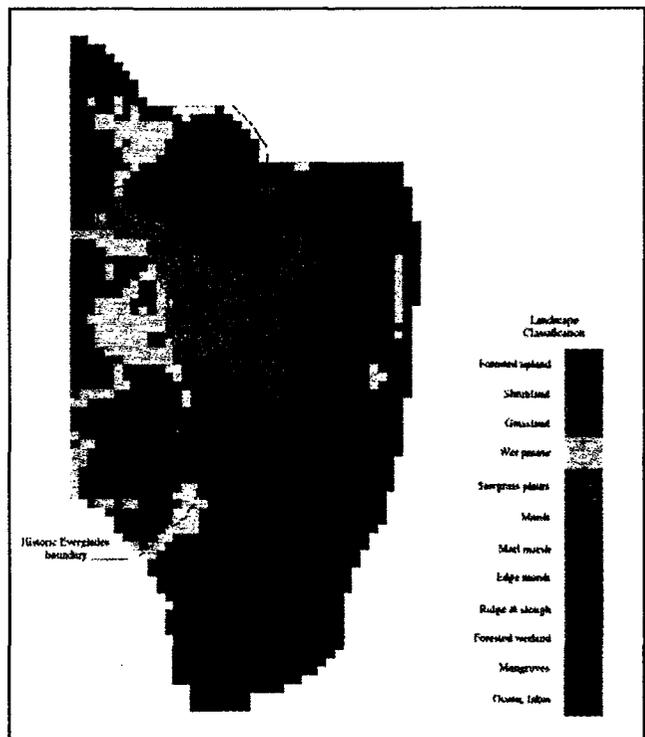
What more can we do about our uncertainties? In the future we will:

- ✦ Become more knowledgeable before we begin to implement the project - As better data, better models, and better understandings become available, we'll use them in further project planning and design.

- ✦ Put the project in place gradually - Engineers call this sequencing the project's implementation. The project will be built gradually, and this will give us time to see if it works as expected. And we'll use pilot projects to test new approaches.

- ✦ Monitor the recommended plan's effects - As it is put in place we'll continually check to see what happens.

- ✦ Adaptively manage the recommended plan - We'll study the monitoring results and see if they match our expectations. Did the waters behave as we predicted they would? If not, should we do something about it? If so, what are the options? In some cases we may again change what we've built or how we operate the project to correct or improve the results.



Natural System Model Landscape Map

WHAT'S IN IT FOR OUR CHILDREN?

South Florida

L189

Everglades



- Everglades Now
- Everglades 100 years ago
- water

Save our Everglades



Dear Kids,

Thanks for sending along your letters and pictures asking us to save the Everglades. Many, many people have been working very hard with us to do just that.

Saving the Everglades is a lot like taking a big test. Both are very important and very hard things to do. We've asked people who live in south Florida and experts from around the world to help us figure this out. Its not surprising that we don't all agree on exactly what we should do. And we're still not exactly sure how it will turn out no matter what gets done.

But we are sure that if we don't do anything there won't be much of an Everglades for you to show to your children. They may not get to see those tall white birds flying across the sky. They may never have the chance to be scared when an alligator pops up on a visit to the Park. Even worse, they may not even be able to live here if there's not enough water to drink. None of us want to give you a future like that. And so, we're sure we need to do something.

People gave us a lot of different ideas about what we should do to save the Everglades. We looked into all of them and came up with what we think is a pretty fair plan to do just that. It's going to cost a lot of money and take a long time. Even so, we think our plan is headed in the right direction. It's a very big idea to make some very big and important differences in your future.

We hope you'll be able to spend long quiet hours in the sun fishing on Lake Okeechobee. We hope you'll always find a tall glass of cool clean water on those hot Florida days. We hope you'll feel the sting of sawgrass when you take an airboat ride from the Tamiami Trail. We hope you'll sleep soundly and feel safe even when the thunderstorms bring the hardest of rains. We hope you'll swim in silence with sea turtles in Florida Bay. And we hope you'll stay and live in Clewiston, or Fort Myers, or Port St. Lucie, or Miami, or Marathon, or wherever life takes you here in south Florida. Our moms and dads gave us these things. We want you to be able to give at least that much to your children.

We're taking a first step in passing these hopes on to all of you. We've hung your drawings on our walls as a reminder of what you asked us to do for you.

The Restudy Team

Everglades

PLEASE SAVE OUR



CONTACTS AND COMMENTS

HOW CAN I GET MORE INFORMATION?

If you would like to know more about the Restudy, please contact:



US Army Corps
of Engineers

U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, Florida 32232-0019

Telephone 904-232-2235 or
800-291-9405
Fax 904-232-2237



South Florida Water Management District
3301 Gun Club Road
P.O. Box 24680
West Palm Beach, Florida 33416-4680

Telephone 561-686-8800 or
800-432-2045 (Florida only)
Fax 561-682-6010

Our Internet web site address is: www.restudy.org

WELCOME TO THE CENTRAL AND SOUTHERN FLORIDA (C&SF) PROJECT COMPREHENSIVE REVIEW STUDY— THE "RESTUDY"

The Central and Southern Florida (C&SF) Project, first authorized by Congress in 1948, is a multi-purpose water resources project. The authorized purposes of the project include: flood control, regional water supply for agricultural and urban areas, prevention of salt water intrusion, water supply to Everglades National Park, preservation of fish and wildlife, recreation, and navigation. In short, this project makes it possible for over five million people to now live and work in the 18,000 square mile area which extends from south of Orlando to Florida Bay. For almost than fifty years, the C&SF Project has performed its authorized functions well. However, the project has also had unintended adverse effects on the unique natural environment which constitutes the Everglades and Florida Bay ecosystems.

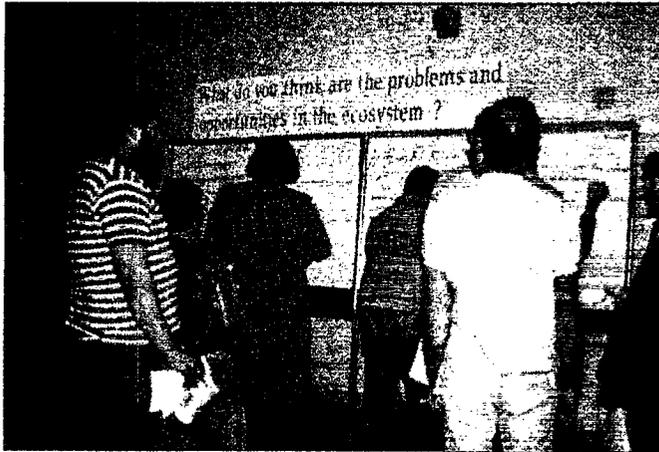
In 1992 Congress authorized a Comprehensive Review Study (Restudy) of the C&SF Project. The purpose of the Restudy is to develop modifications to the Central and Southern Florida Project to restore the Everglades and Florida Bay ecosystems while providing for the other water-related needs of the region. The Restudy is currently in the feasibility phase of the study which is jointly funded by the Corps of Engineers and the South Florida Water Management District. The Study is being accomplished by an interdisciplinary, multi-agency team from a number of Federal, State, Tribal, and local government agencies. The Restudy will result in a Comprehensive Plan that will be submitted to Congress by July 1, 1999. The draft feasibility report is scheduled to be released in October 1998.

On this web site you can find information about the Restudy and related South Florida ecosystem restoration efforts. If you'd like to learn more about the technical aspects of the Restudy in an easy to read style, click on [Guide to the Restudy](#). By clicking on [Comprehensive Plan Evaluation](#) you can participate in the evaluation of alternative plans that are being developed.

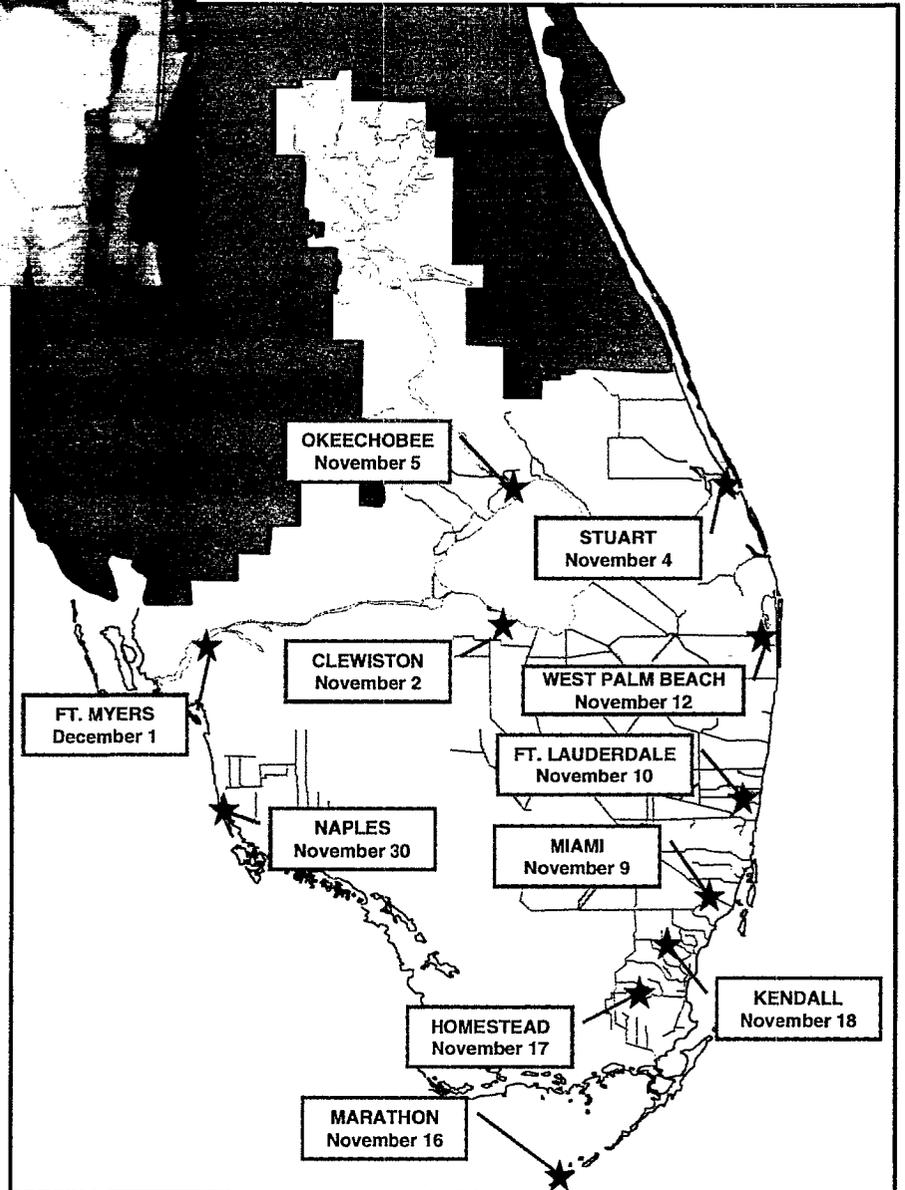
News about the locations and dates for public meetings, workshops, and other opportunities to participate will continue to be listed on our Internet site.

More importantly, we need to continue to hear from you about our work. What do you like? What don't you like? Do you have any more ideas that we should consider? Please come to our meetings, or write a letter to us, or send us a fax, or call us. We're not finished, and we need to keep hearing from you. Please contact us and let us know what you think. We welcome your continuing participation.

The National Environmental Policy Act of 1969 - commonly called NEPA - is our basic national charter for protection of the environment. NEPA requirements, including the development, assessment and comparison of alternative plans using an interdisciplinary approach and public involvement, have been fundamental to the Restudy process. A programmatic environmental impact statement in compliance with NEPA is fully integrated with the Restudy feasibility report.



**PUBLIC
MEETING
SCHEDULE
AUTUMN
1998**



THIS IS A STORY...

...about a work in progress. We are in the middle of our story. We know what can happen if we do not change the course we are on.

We do not know how our story will end - there are far too many chapters yet to be written by others. But we believe we have found a better way to work in harmony with nature for a new Everglades. We believe we can and must change one of the largest works of man so that our children, and their children, can look forward to a healthy ecosystem and continuing economic prosperity. We believe that the promise of south Florida that has attracted so many for so long can be sustained for future generations.

*It ripples even in this last hour,
In a new relation of usefulness and beauty,
The vast, magnificent, subtle and unique region
Of the Everglades may not be utterly lost.*

Margory Stoneman Douglas

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The story of the Everglades and south Florida has been told many times. We have generously borrowed ideas, words and illustrations from the following sources, and are grateful for having the advantage of their insights:

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