SOUTH MIAMI-DADE COUNTY WATERSHED STUDY COVER SHEET

Sub-task 1.1: **Analysis and Documentation of Existing Studies**

Subject: Studies Relevant to the South Miami-Dade Watershed Study and Plan (SMDWSP)

Final Work Product:

Document summary sheets and summary paragraphs describing how each document will be used in the SMDWSP.

Submission Date to South Florida Regional Planning Council Project Manager:

Interim Work Product Draft - July 11, 2003
Interim Work Product Final Draft - July 18, 2003
Interim Work Product revised to incorporate TRC and SFRPC comments - August 28, 2003
Draft Final Work Product - October 16, 2003
Draft Final Work Product revised to incorporate TRC comments - December 5, 2003
Final Work Product revised to incorporate PMT and WSAC comments - February 19, 2004

Watershed Study Advisory Committee Final Review – June 3, 2004

Consensus Score

Ranking	**5**	**4**	**3**	**2**	**1**
Number of Members	18	6	2	0	0

5 – Wholehearted Support
4 – Support
3 – Neutral but Supports Fully to Outside World
2 – Questions Pending
1 – Blocks Any Decision

Consensus is defined as everyone ranking a work product no less than three.

Deliverables:

1. Listing of Studies (3 electronic copies and 5 hard copies)
2. Document Summary Paragraphs (3 electronic copies and 5 hard copies)
3. Document Summary Sheets (3 electronic copies and 5 hard copies)

List of Preparers

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
ADID	Advanced Identification Study
ASR	Aquifer Storage Recovery
BBPI	Biscayne Bay Partnership Initiative
BRRCT	Bay Regional Restoration Coordination Team
BDEB	Bird Drive Everglades Basin
BMP	Best Management Practices
BNP	Biscayne National Park
C & SF	Central and Southern Florida Study
CARL	Conservation and Recreation Lands
CDMP	Comprehensive Development Master Plan
CERP	Comprehensive Everglades Restoration Plan
CRA	Community Redevelopment Area
CWM	Comprehensive Watershed Management
DERM	(Miami-Dade County) Department of Environmental Resources Management
DNR	Florida Department of Natural Resources
DRI	Development of Regional Impact
EAR	Evaluation and Appraisal Report
EELP	Environmentally Endangered Lands Program
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ENP	Everglades National Park
EPA	United States Environmental Protection Agency
ERP	Environmental Resource Permit
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FAU	Florida Atlantic University
FCT	Florida Communities Trust
FDACS	Florida Department of Agriculture and Consumer Services
FIU	Florida International University
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FDRP	Florida Division of Recreation and Parks
FEMA	Federal Emergency Management Act
FFBOT	Florida Forever Board of Trustees
FFWCC	Florida Fish and Wildlife Conservation Commission
FGOC	Florida Governor’s Ocean Committee
FIND	Florida Inland Navigation District

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

FKCCS	Florida Keys Carrying Capacity Study
FKNMS	Florida Keys National Marine Sanctuary
FLMA	Federal Land Managed Areas
FLUCCS	Florida Land Use Category Classification System
FMP	Fisheries Management Plan
FNAI	Florida Natural Areas Inventory
FPL	Florida Power and Light
GIS	Geographic Information System
GPS	Global Positioning System
GRPA	Government Performance and Results Act
Ha	Hectares
HAFB	Homestead Air Force Base
HARB	Homestead Air Reserve Base
HERO	Homestead Economic Redevelopment Area
ICW	Intracoastal Waterway
Km	Kilometer
LESA	Land Evaluation and Site Assessment System
MAST	Maritime and Science Technology
MDWASA	Miami-Dade County Water and Sewer Authority
MDWASD	Miami-Dade Water and Sewer Department
MDTA	Miami-Dade Transit Authority
MDX	Miami-Dade Expressway Authority
MMPA	Marine Mammal Protection Act
MSP	Multi-Species Recovery Plan
NAM	Natural Areas Management
NESRS	Northeast Shark River Slough
NFC	Natural Forested Communities
NMFS	National Marine Fisheries Services
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
OFW	Outstanding Florida Waters
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PD&E	Project Development and Environment Study
P&R	Miami-Dade Parks and Recreation
ROD	Record of Decision
ROI	Region of Influence

LIST OF ACRONYMS ABBREVIATIONS (Continued)

RSMAS	Rosenstiel School of Marine and Atmospheric Sciences
SAFMC	South Atlantic Fishery Management Council
SAMP	Special Area Management Plan
SDSWCD	South Dade Soil and Water Conservation District
SEIS	Supplemental Environmental Impact Statement
SFERTF	South Florida Ecosystem Restoration Task Force
SFWMD	South Florida Water Management District
SFWMM	South Florida Water Management Manual
SHCAs	Strategic Habitat Conservation Areas
SMCRA	South Miami Community Redevelopment Area
SMDWSP	South Miami-Dade Watershed Study and Plan
SNP	Miami-Dade Safe Neighborhood Parks Bond Program
SOR	Save Our Rivers
SRPP	Strategic Regional Policy Plan
SWIM	Surface Water Improvement and Management
TAZ	Traffic Analysis Zone
TBC	Tampa Bypass Canal
TDR	Transfer of Development Rights
TMDL	Total Maximum Daily Loads
TPL	Trust for Public Land
UDB	Urban Development Boundary
ULI	Urban Land Institute
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USB	Urban Service Boundary
USDA	United States Department of Agriculture
USDOE	United States Department of Energy
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WCA	Water Conservation Area
WRDA	Water Resource Development Act

EXECUTIVE SUMMARY: SUB-TASK 1.1 – RELEVANT STUDIES

Overview of the South Miami-Dade Watershed Study and Plan

The South Miami-Dade Watershed, an approximately 370 square mile area located in the southeastern portion of Miami-Dade County, is increasingly recognized as one of the most critical watersheds in Florida. The Watershed plays a vital role in the health of Biscayne Bay as well as providing for the urban and agriculture needs of the County.

The South Miami-Dade Watershed Study and Plan (SMDWSP) is a long-term land planning and water resources study required by the Miami-Dade County Comprehensive Development Master Plan. Divided into five major task areas, the 26- to 30-month study includes a wide-ranging look at South Miami-Dade County's population growth; infrastructure; land ownership, including agriculture, industrial and urban land uses; pollution; water resources; wildlife; and natural areas.

The Study will formulate and analyze three potential land use scenarios. The impact of each scenario on water resources, wildlife habitat, infrastructure, agriculture, the economy and property rights will be evaluated. This evaluation will help form a fourth "preferred" scenario.

The results of this collaborative study process will be the development of a Plan designed to balance the various competing interests in South Miami-Dade – providing the framework for a sustainable economy and environment through the year 2050. The Plan will contain the policies, strategies and procedures necessary for implementing the preferred scenario.

This Sub-task 1.1 report is part of seven inventory and baseline information sub-tasks. This report and the other Task 1 reports help provide the baseline and reference information necessary to complete the SMDWSP.

Sub-task 1.1 – Relevant Studies

The Sub-task 1.1 Report is an evaluation of existing research and studies relevant to the SMDWSP. Relevancy to the Study was based on several factors, including jurisdiction, geographic location, relationship to the Scope of Services and Study objectives, and implementation status. The list of studies reviewed as part of this report is not all-inclusive and will be expanded throughout the course of the Study as applicable

Each study was reviewed and evaluated by an appropriate professional and the findings were documented. A summary form was used in the evaluation of each document. Each form included the following information:

- Entity responsible for the plan;
- Completion date;
- Status;
- Geographic area;

- Scope;
- Key goals or objectives that relate to the SMDWSP; and
- Contact information.

In total, 87 documents were reviewed and evaluated. These documents have been divided into the categories of Planning, Natural Systems, and Water Resources in order to structure an easy reference list for future use. Data review and documentation will continue throughout the term of the project.

The reports and studies noted in this work product are for information purposes only. Use of information, recommendations and data from any report or study from this work product in the final plan will be properly cited.

Relevant studies were used as baseline data for Sub-tasks 1.2 – 1.7. The summary sheets contained in this Report will be used as a reference tool by the project team, the Watershed Study Advisory Committee and the Technical Review Committee. The studies described in the Sub-task 1.1 report provide underlying science and policy recommendations for all aspects of the project, including:

- parameters and thresholds (Sub-task 1.8);
- opportunities and constraints (Sub-task 2.1);
- impact assessment (Task 3);
- alternative actions (Sub-task 4.2), and
- implementation strategies (Sub-task 5.1).

Below is a brief description of the relevancy of each study to future tasks.

PLANNING DOCUMENTS

Adopted Comprehensive Plans and Evaluation and Appraisal Reports

Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth. Adopted comprehensive plans, future land use maps, and evaluation and appraisal reports were reviewed for Miami-Dade County, Coral Gables, Florida City, Homestead, Pinecrest, South Miami and West Miami. These plans will be used in the evaluation of future land use needs, availability of public facilities and services, and redevelopment issues and plans on the local level that could potentially affect the land use scenarios in the SMDWSP.

1988 Proposed Land Use Element Support Components for the Miami-Dade County Comprehensive Development Master Plan for 2000 and 2010

This report is included in the Miami-Dade County Comprehensive Development Master Plan (CDMP) as support components. It will be used for analysis for background

information, land use trends, and information on environmental opportunities and constraints in the development of the three land use scenarios.

Adopted 1995 Evaluation and Appraisal Report for the Land Use Element of the Comprehensive Development Master Plan

The Land Use Element of the Miami-Dade CDMP designates the future land uses and development patterns in Miami-Dade County and contains standards for control and distribution of population densities and building and structure intensities. This document will be used to develop parameter and thresholds in Sub-task 1.8 and as a resource for analysis throughout the Watershed Study.

Biscayne Bay Strategic Access Plan Phase I Inventory Report

This report focuses on providing an overview of current public access to Biscayne Bay. It represents the first portion of a document that will recommend strategies to improve the public's access to the Bay through distribution of recreational, visual and educational opportunities. It will be taken into consideration when developing land uses for the preferred scenario.

Biscayne Bay Partnership Initiative Final Report

This report provides an assessment of the current status of Biscayne Bay issues, along with recommendations for how the various public and private stakeholders who study, manage, regulate and use the Bay might best coordinate their efforts and how the State might assist in authorizing and funding those efforts. This report will be used as reference material for analyzing potential impacts to Biscayne Bay.

Biscayne Bay Regional Restoration Coordination Team (BBRRCT) 2002 Annual Report

This is a progress report of the BBRRCT, created by the Biscayne Bay Partnership Initiative in 1999. It identifies relevant current issues and upcoming funded projects for Biscayne Bay. The proposed and approved projects in the report will be useful in developing land uses in the different land use scenarios.

Eastward Ho! Revitalizing Southeast Florida's Urban Core

This report describes and evaluates the South Florida region and makes recommendations regarding physical and social characteristics for infill and redevelopment in Southeast Florida. The recommendations within this report focus on slowing urban sprawl encroaching upon wetlands and agricultural areas and redeveloping and revitalizing the eastern urban areas. The overall initiative was brought about because of population projections of intense growth for South Florida and the need to accommodate that growth in conjunction with protecting the environment. The SMDWSP has the concurring goal of achieving sustainable growth for south Miami-Dade. Population growth and balanced

and sustainable land uses are key elements of both the Eastward Ho! Initiative and the SMDWSP.

Building on Success: A Report from Eastward Ho!

This report highlights local community successes in the Eastward Ho! Initiative. It also outlines the Brownfields Partnership goals and addresses the issue of how to measure success of revitalization efforts. General concepts from this report will be helpful for formulating the land use scenarios.

Eastward Ho! Development Futures: Paths to More Efficient Growth in Southeast Florida

This study compares the resource consumption and costs of extending two different development patterns into the future. The first is *Existing* development, or sprawl, which includes unlimited outward extension and low density. The second is *Alternative*, or compact development, which holds a portion of development close to previously developed areas and emphasizes infill and redevelopment usually at a higher density. The study provides an outline of goals for Alternative Development in Miami-Dade County. Principles from this study will helpful in the development of the land use scenarios in Task 2 and alternative actions in Task 3.

Florida Keys Carrying Capacity Study (FKCCS)

Some of the components of the FKCCS are similar to those of the SMDWSP. For example, the Carrying Capacity Analysis Model was developed to analyze the impacts of additional land development and population growth on water quality, threatened and endangered species, natural habitat, hurricane evacuation, the economy and social preferences. The Model allows for changes in the input variables and a comparison of impacts between each scenario. The approach and results of the FKCCS may provide insight for the development of the scenarios.

Florida Keys National Marine Sanctuary Final Management Plan (FKNMS)

The FKNMS objectives call for an ecosystem approach to address impacts to the waters of the Florida Keys. The SMDWSP will provide FKNMS staff with a better understanding of the link between land use and water quality. The surface water modeling effort completed on each of the scenarios will have differing levels of impacts on Biscayne Bay and will eventually flow to the Florida Keys. Once completed the SMDWSP will be a useful tool for monitoring potential downstream impacts.

Conceptual Plan of the Governor's Commission for a Sustainable South Florida for the Central and South Florida (C&SF) Project Restudy

The C&SF Project consists of a regional network of canals, levees, storage areas, and water control structures designed to provide water supply and flood protection for

existing and future development. This report was the next step after the Commission's Initial Report in addressing the region's long-term water resource needs. The Commission developed planning objectives, selected a list of 40 preferred options to be evaluated, and incorporated these options in to the Conceptual Plan for the Restudy.

Initial Report of the Governor's Commission for a Sustainable South Florida

This report focuses on Everglade's restoration, urban restoration and quality communities. It includes 110 recommendations concerned with the central theme of sustainability. The Commission's Initial Report identified three broad components – society, the economy, and the environment – that must be integrated to achieve sustainability in South Florida. The central themes all pertain to the SMDWSP and will be used as guiding principles.

Hillsborough River Comprehensive Watershed Management Plan (CWM)

This Comprehensive Watershed Management (CWM) program was developed to conduct water resources assessment and planning on a watershed basis. It was designed to allow for evaluation of the regional status of water resources, with emphasis on the South Florida Water Management District's (SFWMD) Areas of Responsibility (AORs): Water Supply, Flood Protection, Water Quality, and Natural Systems. Many of the goals and issues contained in this program are similar to those of the SMDWSP. This plan will be used as reference throughout the course of the Watershed Study.

Final Environmental Impact Statement (EIS) Disposal and Reuse of Homestead Air Force Base (AFB) Florida

As part of the partial disposal of the Homestead AFB, the Air Force was required to analyze the potential impacts to the natural, built, and cultural environments within and in close proximity to the AFB. The final EIS considered the potential environmental impacts associated with land uses (the alternatives) and interim activities. The results of the reuse plan will be integrated into the land use scenarios.

An Advisory Services Panel Report: Homestead Air Reserve Base, Homestead, FL

The primary planning objective of this plan is to eliminate the boundaries of the former Homestead AFB by integrating the reuse parcels into the surrounding community through viable development initiatives. The development strategy involves short-, medium-, and long-term development of the land. The Urban Land Institute (ULI) panel recommended a strategy to address the patchwork nature of the site to create development that is integrated with the community. The results of the report will be integrated into the land use scenarios.

Pinecrest Incorporation Feasibility Study

The feasibility study was initiated as a precursor to the formal incorporation procedure that is provided in Section 5.05 of the Miami-Dade County Charter. Since Pinecrest has been incorporated, its Comprehensive Plan will be used in the evaluation of future land use needs.

Community Impact Assessment Report, SR 997 (Krome Avenue/SW 177th Avenue)

The scope of this project was to evaluate the perceived impacts to the local community as a result of improvements and proposed changes to SR 997 (Krome Avenue). The need for this report evolved out of the growth, development, and emergency management requirements within South Miami-Dade. The goals and objectives include the identification of the baseline social and economic conditions, land use and growth trends, notable features and the estimated impacts of the proposed actions. Information in this study will be a useful resource throughout the Watershed Study.

Long Range Dredged Material Management Program

This report outlines a program that is intended to provide an infrastructure of management facilities for all maintenance material dredged from the 374 miles of Intracoastal Waterway channel. Once the dredged material management needs have been addressed, resources can be directed to the control of sediment in-flow into waterways such as Biscayne Bay and Miami Harbor. This program is not expected to have relevance to the SMDWSP.

Miami-Dade County Agriculture and Rural Area Study

The main purpose of the study is to collect and analyze data concerning the long-term economic outlook of the agriculture industry and the development of recommendations to enhance the industry's economic viability. The study will also include recommendations for agricultural production surplus land that might be utilized for well-planned, compatible community development. This study will be brought before the Board of County Commissioners for incorporation to the County's Comprehensive Development Master Plan and Land Development Regulations, which would impact policy decisions of the SMDWSP.

Miami-Dade County Agriculture Land Retention Study Summary and Recommendations (Volume One of Six)

The main purpose of this study is the analysis of data concerning the long-term economic outlook of the agricultural industry in Miami-Dade County and the development of recommendations to enhance the industry's economic well-being. The Findings section contains baseline data relevant to the SMDWSP. It describes population, natural resources, climate and the various agricultural enterprises of Miami-Dade County. This report will be a valuable resource throughout the Watershed Study.

Discover Naranja: Charrette Report

The recommendations of the Naranja Charrette Report contain long-range policies for the redevelopment of the unincorporated area of Naranja into a traditional village. The residents of Naranja wanted to evolve from being a "bedroom community" and a "low-income housing conglomerate." The goal is to create a framework that will facilitate development and investment in private land as well as in public infrastructure, preserve the community's heritage, enhance its livability and sense of unity and encourage design quality. This report provides information about redevelopment concepts for towns in the Watershed Study Area.

The Short Cut to Smart Growth (Palm Glade) Presentation

The scope of the presentation is to describe smart growth initiatives that may be used to promote infill and redevelopment. The focus is on development pressure, demographics, land use, parks and schools. The analysis is directly related to the SMDWSP because it highlights a significant opportunity for infill and redevelopment.

Preserving the Bluegrass

This report describes the process of overcoming battles to achieve community consensus. Through the process of consensus building, opposing groups in Lexington, Kentucky, were able to write a plan that each side could agree upon. The plan was approved by County Council and is now being implemented. Such a report and process may be useful in the SMDWSP if and when debate arises regarding issues of land use or property rights.

Residential Density Feasibility Study

The Residential Density Feasibility Study conducted by Miami-Dade County will be a useful tool for distributing land use classifications (Sub-task 2.1) and developing implementation strategies (Sub-task 5.1) to foster urban infill. Tools for encouraging higher densities in appropriate locations are described in the Study. These concepts, along with zoning information, infrastructure capacity and preservation initiatives will be used to help address population increases in urban areas. In addition, the Study identifies other source documents on urban infill and smart growth.

South Florida Tropical Fruit Plan

Miami-Dade County is the center of the tropical fruit crops industry in South Florida. This report outlines the processing of tropical fruits, provides an introduction to specific crops grown, and makes recommendations for research needs and objectives for the industry. This report provides baseline information for the agriculture industry in the Watershed Study Area.

Strategic Regional Policy Plan for South Florida (SRPP)

The SRPP covers six major subject areas: land use and public facilities, natural resources of regional significance, economic development, regional transportation, affordable housing, and emergency preparedness. The goals and policies of the SRPP stress the importance of sustainable development and redevelopment, focusing new development away from sensitive natural areas and towards areas already served by infrastructure, and creating a competitive and diversified regional economy. The SRPP will prove to be a useful tool for balancing the needs of the environment and the economy in Task 2.

The South Dade Watershed Project and Supporting Document

The SDWP presents a brief explanation of the South Florida watershed flow properties, which in turn provides a better understanding of the challenges the region faces in the future. From that understanding emerge strategies to promote sustainable usage of water resources.

Villages of Homestead Development of Regional Impact (DRI) Annual Status Report

This report provides information on changes made to the DRI, including densities and land uses. The information will be useful in the development of the land use scenarios in Task 2.

Miami Urban Area Transportation Study and Year 2025 Update

This plan was developed to guide transportation investments in Miami-Dade County through the year 2025. The plan is intended to be comprehensive, including connections to major activity center, between roadways, transit facilities, bicycle facilities, pedestrian facilities and other means of transportation.

Homestead Air Reserve Base (HARB) Encroachment Study

The impending 2005 round of Base Closures and the rapid expansion of residential development near HARB highlight the need to take proactive steps to preserve the base's capability to effectively and efficiently conduct military operations and training at the site. The recommendations represent the "Best Management Practices" for protecting a military base from incompatible residential and commercial sprawl.

Final Report of the Infill Strategy Task Force

The Task Force was directed by the Board of County Commissioners to examine and make recommendations on opportunities and strategies to promote infill and redevelopment in underdeveloped areas within the County's planned Urban Development Boundary (UDB).

Redland: A Preservation and Tourism Plan

The intention of the plan is to provide a framework for identifying the contributing aspects of Redland's aesthetic, economic and historic character and to propose ways to enhance and link them by developing design guidelines for new buildings and landscape features. It also proposes ways to increase Redland's accessibility and appeal to tourists.

Regional Shift: South Florida in Transition

This report illustrates the dynamic changes that South Florida has experienced over the past decade. It identifies changes, challenges, and opportunities facing the region.

NATURAL SYSTEM DOCUMENTS

1995- Miami-Dade County Comprehensive Development Master Plan Conservation, Aquifer Recharge and Drainage Element

This report is included in the Miami-Dade County Comprehensive Development Master Plan (CDMP) as a support component. It will be used for analysis of the existing natural terrestrial communities and identification of goals and objectives for the communities to be used in the development of land use scenarios in Task 2.

1995 - Miami-Dade County Comprehensive Development Master Plan - Evaluation and Appraisal Report, Conservation, Aquifer Recharge and Drainage Element

This report is included in the Miami-Dade County Comprehensive Development Master Plan (CDMP) as a support component. It will be used for analysis of the existing marine communities and identification of goals and objectives for the communities to be used in the development of land use scenarios in Task 2.

Assessment of populations of wildlife species in pine rockland and tropical hardwood hammock communities of Miami-Dade

This report was completed by Miami-Dade County Department of Environmental Resources Management (DERM) and identified the status of natural community sites within the Watershed Study Area. This information will be useful in identifying the species currently recorded in the area and the quality of various pine rockland and tropical hardwood hammock sites in Miami-Dade. This data will be useful for assessing site-specific needs.

Biscayne National Park General Management Plan

Although the General Management Plan has not been prepared and published yet, the latest newsletter in November 2003 identifies the five draft alternatives proposed. The general management plan will be used to identify the current state of the natural

communities within Biscayne National Park, and the goals and objectives designed to protect and maintain these communities. This information will be used in the development of future land use scenarios in Task 2. This plan is being developed by the National Park Service, U.S. Department of the Interior.

Biscayne Bay Card Sound Aquatic Preserve Management Plan

This plan describes the impacts on Card Sound, from the upland agricultural and urban areas to the local activities directly affecting environmental quality. This information will be used to evaluate the potential effects of future land uses on Card Sound. This plan was completed by the Florida Department of Natural Resources.

Biscayne Bay Strategic Science Plan

The Strategic Science Plan for Biscayne Bay was developed by the Biscayne Bay Subcommittee of Florida Bay and Adjacent Marine Systems Program Management Committee to primarily determine the goals and objectives that are imperative to the continuing efforts to better the Bay. These goals and objectives will be taken into consideration when developing parameters and thresholds for measuring future land use scenarios.

Biscayne National Park General Management Plan, Development Concept Plan, Wilderness Study and Environmental Assessment

This is the original management plan for Biscayne National Park completed by the National Park Service, U.S. Department of the Interior, and it was used to collect background information on natural communities in the park. This historical information will not be used to assess the current needs of the natural communities because it is outdated.

Biscayne National Park General Management Plan Amendment, Final Environmental Impact Statement

The purpose of this amendment is to evaluate four alternatives for the future management of Stiltsville. This plan looked at issues such as water quality, endangered or threatened species, and ecologically critical areas, which are similar focal points for the Watershed Study. Results of this plan will be useful in evaluating potential effects of future land use scenarios on the marine habitat. This amendment was completed by the National Park Service, U.S. Department of the Interior.

Biscayne National Park FY 2000 GPRA Strategic Plan

This plan addresses the key goals and objectives of the BNP and was developed by the National Park Service, U.S. Department of the Interior. This information will be used in the evaluation of future land use scenarios by comparing how compatible the ecological effects generated from the scenarios are with the key goals and objectives of BNP.

C-102 / C-103 Wetland Restoration

This CERP project involves the design and implementation of wetland restoration by removal of fill, exotic species, and the restoration of mangrove, bay bottom, and upland habitat. Identified in the CERP, currently, this project is not yet underway.

CERP - Biscayne Bay Coastal Wetlands

The primary purpose of the Biscayne Bay Coastal Wetlands project is to redistribute freshwater runoff from the watershed into Biscayne Bay, away from the canal discharges that exist today and provide a more natural and historic overland flow through existing and/or improved coastal wetlands. Future land use scenarios generated by the SMDWSP will be consistent with and support the goals and objectives of CERP projects. This plan was developed by the United States Army Corp of Engineers (USACE) and the South Florida Water Management District (SFWMD).

CERP - C-111N Spreader Canal

This project will support ecological restoration of the Southern Glades and Model Lands including downstream estuaries by improving timing, distribution, quantity and quality of water deliveries. Future land use scenarios generated by the SMDWSP will be consistent with and support the goals and objectives of CERP projects.

CERP - Central Lake Belt Storage Area

The purpose of the project is to store excess water from Water Conservation Areas 2 and 3 and provide environmental water supply deliveries to Northeast Shark River Slough, Water Conservation Area 3B, and Biscayne Bay, in that order. Future land use scenarios generated by the SMDWSP will be consistent with and support the goals and objectives of CERP projects.

CERP - South Miami-Dade County Reuse

The purpose of this plan, completed by the South Florida Water Management District (SFWMD), is to provide additional water supply to the South Biscayne Bay and Coastal Wetlands Enhancement Project by constructing an advanced wastewater treatment plant. Future land use scenarios generated by the SMDWSP will be consistent with and support the goals and objectives of CERP projects.

Closing the Gaps in Florida's Wildlife Habitat Conservation System

The objective of this Florida Fish and Wildlife Conservation Commission (FFWCC) report is to identify lands in Florida that, at a minimum, must be conserved and managed in order to ensure the long-term survival of key components of Florida's biological

diversity. This information will be integral to formulating parameters and thresholds and evaluating the needs of community types and individual species.

Coordinating Success: Strategy for Restoration of the South Florida Ecosystem

This plan was completed by the South Florida Ecosystem Restoration Task Force and describes the existing federal and nonfederal programs designed to restore and sustain the South Florida ecosystem. The goals include: get the hydrology right; get the water quality right; restore, preserve, and protect natural habitats; control invasive exotic plants; and foster compatibility of the built and natural systems. This information will be used as baseline goals that the SMDWSP purposes to promote through the preferred land use scenario.

Deering Coastal Wetland Addition Management Plan

This plan was completed by Miami-Dade County Department of Environmental Resources Management (DERM) and will be used to identify site-specific information about an area in the Watershed. It will be useful in identifying current management needs of a coastal wetland community.

Everglades National Park General Management Plan

Although the General Management Plan has not been prepared and published yet, the latest newsletter in September 2003 provides a summary of comments received on the first newsletter and from meetings. The general management plan will be used to identify the current state of the natural communities within Everglades National Park, and the goals and objectives designed to protect and maintain these communities. This information will be used in the development of future land use scenarios in Task 2. This plan is being prepared by the National Park Service, U.S. Department of the Interior.

Everglades National Park Strategic Plan 2001-2005

This plan address three questions: Where is the park going?; What is the environment?; and How will the ENP get there? These types of questions will be addressed in the development of parameters and thresholds that support the goals of ENP. This plan was completed by the National Park Service, U.S. Department of the Interior.

Final Habitat Plan for the South Atlantic Region

This document was completed by the South Atlantic Fisheries Management Council and describes Essential Fish Habitat (EFH) for the southern Atlantic Coast (from North Carolina to the Florida Keys). It describes different habitat types (both fringe and submerged), threats to those systems, restoration efforts and methods, water quality information, and habitat function. This information will be used in developing parameters and thresholds for the marine community and evaluating future land use scenarios.

Florida's Ocean Strategies

This plan identifies stresses placed upon the ocean as and proper management issues that would ultimately attempt to reverse some of the inflicted damages. The challenges relating to water quality, ecosystem sustainability, and recreational utilization of Florida waters coincide with the goals and objectives of the SMDWSP. This plan was completed by the Florida Governor's Ocean Committee.

Management Plan for Dade County Pine Rocklands

This plan will be used to identify site-specific information about an area in the Watershed. It will be useful in identifying current management needs of a pine rockland community. This plan was completed by Miami-Dade County Department of Environmental Resources Management (DERM).

Management Plan for Rockdale Pineland

This plan will be used to identify site-specific information about an area in the Watershed. It will be useful in identifying current management needs of a pine rockland community. This plan was completed by Miami-Dade County Department of Environmental Resources Management (DERM).

Management Plan for Trinity Pineland

This plan will be used to identify site-specific information about an area in the Watershed. It will be useful in identifying current management needs of a pine rockland community. This plan was completed by the Miami-Dade Parks and Recreation Department, Division of Planning and Research.

Miami-Dade County Manatee Protection Plan

The Miami-Dade County Manatee Protection Plan was developed by Miami-Dade County Department of Environmental Resources Management (DERM) and identifies needs to protect the manatee and its habitat. This information will be used to identify critical habitat areas in the Watershed Study Area and the goals and objectives necessary for protecting this species and its critical habitat.

South Florida Multi-Species Recovery Plan

This United States Fish and Wildlife Service (USFWS) recovery plan is designed to recover multiple species through the restoration of ecological communities over a large geographic area. This plan will be used heavily to identify conservation management goals and objectives for natural communities and species.

Supplemental EIS for Homestead Air Base

This plan was completed by the U.S. Air Force and the Federal Aviation Administration. It addresses the transfer of 1,632 acres of property for reuse by the community in a way that is both economically productive and protective of Biscayne Bay. The descriptions of natural community types, fish and wildlife, and threatened and endangered species found within the Region of Influence of HAFB will be used to supplement the natural community descriptions within the Watershed Study Area.

Technical Summary Document for the Advance Identification of Possible Future Disposal Sites and Areas Generally Unsuitable for Disposal of Dredged or Fill Material in Wetlands Adjacent to Southwest Biscayne Bay, Dade County, FL

The Southwest Biscayne Bay Advance Identification (ADID) project, completed by U.S. Environmental Protection Agency and the United States Army Corp of Engineers (USACE), was initiated to determine which, if any, of the wetlands remaining along the southwest shore of the bay might be potential future disposal sites for fill material, pursuant to authority in the Clean Water Act of 1977 and regulations outlined in 40 CFR Part 230. The ADID process is a regional wetlands planning process that identifies jurisdictional wetlands, evaluates their functional values, and identifies those areas where destruction would likely result in significant degradation of the local environment. This information will be used in the evaluation of land use scenarios.

WATER RESOURCES DOCUMENTS

Best Management Practices: South Florida Urban Stormwater Best Management Systems

The South Florida Water Management District (SFWMD) has prepared this document to increase public awareness about the management of urban stormwater runoff and how best management practices can be used to improve water quality. The document provides a general overview of stormwater runoff, the sources affecting water quality, and what can be done to improve the quality of stormwater discharges. This document serves as an important educational tool designed to describe the various opportunities for improving water quality in urban areas of South Florida. Information from this document will be used in the alternative actions and implementation strategies tasks.

1986 Intensive Canal Study: Evaluation of Water Quality in Mowry Canal (C-103)

The Intensive Canal Study was implemented by the Department of Resource Management in 1980 to monitor the surface water quality of Dade County's canals on an annual basis. The investigation of the Mowry Canal (C-103) in 1986 was undertaken to determine if any pollution problems exist in the major South Dade canals, and to obtain baseline data from the canals for use in future studies. Information from this document will provide baseline data.

1987 Intensive Canal Study: Evaluation of Water Quality in the L-31N Canal

The Department of Resource Management of Metropolitan Dade County conducted a water quality investigation of the L-31N canal. The report indicates that the canal is subject to illegal dumping, and the occasional treatment with aquatic weed control chemicals. The report also describes the land use practices of the basins. Water quality samples were taken in the basin and results were compared to drinking water standards. Information from this document will provide baseline data.

1988 Intensive Canal Study: Evaluation of Water Quality in the Princeton Canal (C-102)

The Department of Resource Management of Metropolitan Dade County conducted a water quality investigation of the Princeton Canal (C-102) to determine whether agricultural land use or agricultural practices are contributing to the degradation of ground and surface waters in south Dade County. The report indicates that even though water quality standards are not exceeded over the time periods examined, agricultural fertilizers used in the agricultural practices contributed to a significant degradation of surface water by nutrients in the well drained basins of C-102 and C-103. Information from this document will provide baseline data.

Biscayne Bay Surface Water Improvement and Management Plan

The Surface Water Improvement and Management (SWIM) Act, which was passed by the Florida Legislature in 1987 and amended in 1991, mandated the preparation of and implementation of a SWIM plan for Biscayne Bay. The SWIM Act mandated the creation of a priority list of water bodies of regional and state wide significance, the design and implementation of SWIM plans for these water bodies, and the creation of the SWIM trust fund to provide financial support for the necessary planning and implementation efforts. As indicated in the document, the Biscayne Bay SWIM plan general approach to carrying out the required objectives is a five-step process of assessment, development of control methods or plans, construction or retrofitting to fix the problem, monitoring or assessment to determine relative success or failure, and redesign (if necessary) to modify the course of action as necessary. Information from this document will provide background knowledge and baseline data. Projects and assessments in the SWIM plan will be utilized in the modeling, assessment and implementation strategy tasks.

Biscayne Bay Water Quality Monitoring

Under the Biscayne Bay Water Quality Monitoring program DERM monitors surface water quality monthly at 101 sites in Biscayne Bay and throughout the watershed. Water samples are collected and analyzed for a variety of physical, chemical and biological parameters. Physical parameters including depth, temperature, pH, dissolved oxygen, specific conductance, and salinity are measured monthly at each station; whereas

photosynthetically active radiance is measured monthly at 65 bay sites. Laboratory analyses include total and fecal coliform, total phosphorous, ortho-phosphate, ammonia nitrogen, nitrate/nitrite, TKN, color, turbidity, total suspended solids, chlorophyll a, pheophytin, hardness, and the metals cadmium, copper, lead, and zinc. Specific outputs of this water quality monitoring network are quarterly project status and data reports. This information will be used with the water resource modeling and impact assessment tasks of the project.

Frog Pond Hydrology and Water Quality Report

The Frog Pond Hydrology and Water Quality Report has as its objective to study the interaction between the regional water system and the local hydrological conditions at the small-watershed/farm scale. This was achieved by establishing the effects of canal elevation and rainfall on local ground water flow and quality, and by calibration and testing a field/farm watershed scale computer model as a potential management tool for the area. Information from this report will provide baseline date and assist in the scoping of methodologies.

L-31 Seepage Management

The study had the objective of developing a ground- and surface-water model (MODBRANCH) to estimate groundwater flow beneath the Levee 31n in Miami-Dade County, and to simulate hydrologic conditions in the surrounding area. The study included compilation of data from monitoring stations, measurement of vertical seepage rates in wetlands, and analysis of the hydrogeologic properties of the groundwater aquifer within the Watershed Study Area. Information from this study will be used in the modeling and assessment tasks.

Lower East Coast Regional Water Supply Plan

The Lower East Coat Regional Water Supply Plan (LEC Plan), created by the South Florida Water Management District, provides a blueprint to help met the water resources needs of a rapidly growing South Florida between now and 2020. This technical analysis of the area's future water needs and the availability of water supplies indicate that extensive actions are required to ensure that a sustainable water supply is available to fulfill future urban, agricultural, and natural systems water needs. The plan will provide background and project information that will be used in the impact assessment, alternative action and implementation strategies tasks.

Miami-Dade County Stormwater Management Master Plan

The Miami-Dade County Stormwater Master Plan conducted by DERM is an essential step toward identifying and solving the drainage and water quality problems in the Biscayne Bay and its tributaries. The objectives of the stormwater master plan include the following: improve the quality, quantity, and timing of discharges to the primary canals in order to prevent degradation of the Biscayne National Park and Biscayne Bay;

investigate problems areas due to flooding and water quantity; determine canal capacity (Primary and Secondary); determine the level of service for the existing drainage system; propose control measure for flooding and water quality problems. The plan will provide background and project information that will be used in the impact assessment, alternative action and implementation strategies tasks.

Miami-Dade Water and Sewer Department Wastewater Facilities Master Plan

The Miami-Dade Water and Sewer Department has conducted a Wastewater Facilities Master Plan that identifies the capital improvement projects needed to address both future population growth and wet weather peak flow requirements for the wastewater system through the year 2020. Miami-Dade Water and Sewer Department (MDWASD) faces challenges with its wastewater system. The population of South Florida continues to rise at a rapid rate. The region annually receives heavy amounts of rainfall, which negatively impacts (reduces capacity) the existing facilities. The plan will provide background and project information that will be used in the impact assessment, alternative action and implementation strategies tasks.

Miami-Dade Water and Sewer Department Water Facilities Master Plan

Miami-Dade Water and Sewer Department (MDWASD) conducted a Water Facilities Master Plan to examine MDWASD's water system in a holistic manner and to provide an integrated approach for meeting projected water system demands in the year 2020. The Master Plan is a comprehensive planning document that provides a complete overview of MDWASD water facilities (i.e., supply, treatment, storage, transmission, and distribution). It also provides recommended capital improvements that can be phased out over time based on projected water demands every 5 years. The plan will provide background and project information that will be used in the impact assessment, alternative action and implementation strategies tasks.

Modified Water Deliveries Project

As indicated in the report, the Modified Water Deliveries Project is essential to the restoration and preservation of the Everglades. The report, prepared by the U.S. Army Corps of Engineers, provides a list of recommended projects for increase of water storage, improving water quality, and guidance in land procurement. The expansion of the Everglades National Park is among the key report recommendations included in the report. The plan will provide background and project information that will be used in the impact assessment, alternative action and implementation strategies tasks.

SFWMD's Water Management Plan 2002 Annual Report

This is an annual report prepared by the South Florida Water Management District (SFWMD) to cover progress made by the District during Fiscal Year (FY) 2002. The report provides a comprehensive examination of resource management in the 16-county South Florida region. The policies, programs, and activities of the District are described

in the report. Information from this report will provide background data and updated project and program information.

A Paleoecological Reconstruction of the History of Featherbed Bank, Biscayne National Park, Biscayne Bay Florida

Using multiple-proxy biological indicators, a paleoecological history of the past 550 years of Featherbed Bank has been reconstructed from a short sediment core. The study describes changes in the biotic community, and the organisms present in the area. This study will provide background information.

1.0 INTRODUCTION

Sub-task 1.1 requires Keith and Schnars to gather, analyze and document the relevance of existing and ongoing plans, reports, and studies to the SMDWSP. The documents reviewed as part of Sub-task 1.1 form the base data for subsequent tasks in the Scope of Services. As part of this submittal, selected data and findings from the documents listed in Tables 1 – 3 have been incorporated into sub-tasks 1.2 through 1.7. The summary sheets will also serve as a useful tool for scanning data sources that may be further researched depending on the applicable task.

The reports and studies noted in this work product are for information purposes only. Use of information, recommendations and data from any report or study from this work product in the final plan will be properly cited.

2.0 METHODOLOGY

The initial step in completing this process was to submit a draft listing of studies to the Project Management Team (South Florida Regional Planning Council, Miami-Dade County), Technical Review Committee and the Watershed Study Advisory Committee. The listing was modified based on comments from these groups and submitted in final format. Finally, studies were reviewed and summary sheets containing the following information were prepared:

- Entity responsible for the plan;
- Completion date;
- Status;
- Geographic area;
- Scope;
- Key goals or objectives that relate to the SMDWSP; and
- Contact information.

As new studies become available, summary sheets will be drafted to document their relevance to the SMDWSP.

TABLE OF CONTENTS (Continued)

Page

Study Number: **3.1**

Document Title:
1988 Proposed Land Use Element Support Components for the Miami-Dade County Comprehensive Development Master Plan (CDMP) for 2000 and 2010

Entity Responsible for the Document:
Miami-Dade County

Completion Date of Document:
April 1988

Status of Document:
Implementation

Geographic Area of Document:
Miami-Dade County

Scope of Document:
The material in this report is included in the Miami-Dade County CDMP as support components of background and information.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The support components report provides background information, analyses of land use trends and synopses of urban service and environmental opportunities and constraints.

Existing Land Use

In 1985, 205,827 acres or approximately 16.5 percent of the total land and inland water area were devoted to "developed" purposes, and 1,045,162 acres, or about 83.5 percent of the land and inland water area were devoted to "undeveloped" uses. Of the developed land uses, about 86,112 acres or 41.8 percent were devoted to residential uses, making this the single largest "developed" use in the Miami-Dade County. Of the 86,112 acres, about 88.8 percent of the residential land was used for single-family residences.

Inventory of Land Uses in Miami-Dade County - 1985

Land Use	Acres	Percent of Area
All Land Uses	1,413,629.1	100.00
Residential	86,111.5	6.09
--- Single Family Residential	68,351.5	4.84
--- Residential Townhouses	3,002.5	0.21
--- Two Family Residential	3,303.7	0.23
--- Multifamily Residential	9,620.1	0.68
--- Migrant Labor Camps	198.8	0.01
--- Mobile Home Parks & Permanent Mobile Homes	1,634.9	0.12
Commercial	9,389.1	0.66
Hotels Motels & Other Transient Residential	770.3	0.05
Industrial	15,128.9	1.07
--- Extraction, Excavation, Quarrying	6,679.5	0.47
--- Industrial, Non-noxious	8,118.8	0.57
--- Industrial, Noxious	330.6	0.02
Institutional	8,967.6	0.63
--- Elementary & Secondary Schools Daycare, Nurseries	3,168.0	0.22
--- Colleges, Universities &Vocational Schools Research Centers	1,768.3	0.13
--- Cultural Facilities	233.7	0.02
--- Hospitals and Nursing Homes	793.6	0.06
--- Religious	1,524.7	0.11
--- Public Administration (Governmental)	1,479.3	0.10
Parks & Recreational Open Space	660,620.7	46.73
--- Local Parks & Playgrounds (not schools)	2,629.4	0.19
--- Private Rec Facilities Associated with Residential Developments	653.9	0.05
--- Scout Camps & Recreational Areas, Private Camps	121.6	0.01
--- Beach	517.3	0.04
--- Golf Courses, Public & Private	4,868.1	0.34
--- Cemeteries		
--- Metropolitan Parks	6,894.1	0.49
--- Everglades National Park	404,897.0	28.64
---Water Conservation Area	203,064.7	14.36
--- Indian Villages	14	0.00
--- Nature Preserves & Protected Areas	36,277.0	2.57
Transportation, Communications, Utilities	69,091.3	4.89
--- Trans Terminals & Military Bases	9,454.9	0.67
--- Railroads	2,447.3	0.17
--- Utilities	11,610.2	0.82
--- Streets & Roads	38,643.6	2.73

--- Expressways & Freeways	5,641.0	0.40
--- Parking Garage & Lots, Public & Private	341.5	0.02
--- Dumps, Landfills, Waste Plants	850.8	0.06
Agriculture	93,187.6	6.59
--- Groves	21,883.2	1.55
--- Crops	47,891.8	3.39
--- Grazing, Animal Farming, Feed Lots	9,433.6	0.67
--- Fallow	8,365.7	0.59
--- Plant Nurseries	5,047.0	0.36
Aquaculture	49.4	0.00
Farm Storage Areas	498.0	0.04
Other	18.9	0.00
Undeveloped	289,453.2	20.48
Undeveloped (Vacant), Privately owned	137,176.7	9.7
Undeveloped, Government owned	2,453.0	0.17
--- Environmentally sensitive, private	143,465.6	10.15
--- Environmentally sensitive, gov't owned	6,357.9	0.45
Inland Water	18,268.9	1.29
Coastal Water	162,640.0	11.51

Land Supply/Demand Projections 1985-2010

Residential:
In 1985, there were approximately 86,000 acres of land in residential use in Miami-Dade County. 726,816 housing units of various types were located on that land.

Residential Land Supply & Demand, 1987 – 2010
South Central Tier

	South Central Tier		
	Housing Type (Units)		
	Single Family	**Multifamily**	**Total**
Residential Capacity 1987	39,096	25,847	64,943
Annual Change 1985-90	2,619	1,099	3,718
Residential Capacity 1990	31,239	22,550	53,789
Annual Change 1990-95	2,895	1,210	4,105
Residential Capacity 1995	16,764	16,500	33,264
Annual Change 1995-2000	2,634	1,082	3,716
Residential Capacity 2000	3,594	11,090	14,684
Annual Change 2000-05	2,397	988	3,385
Residential Capacity 2005	-8,391	6,150	-2,241
Annual Change 2005-10	2,192	919	3,111
Residential Capacity 2010	-19,351	1,555	-17,796
Depletion Year	2001	2011	2004

Residential Land Supply & Demand, 1987 – 2010
South Tier

	South Central Tier		
	Housing Type (Units)		
	Single Family	**Multifamily**	**Total**
Residential Capacity 1987	42,105	19,924	62,029
Annual Change 1985-90	1,142	340	1,482
Residential Capacity 1990	38,679	18,904	57,583
Annual Change 1990-95	1,396	403	1,799
Residential Capacity 1995	31,699	16,889	48,588
Annual Change 1995-2000	1,746	490	2,236
Residential Capacity 2000	22,969	14,439	37,408
Annual Change 2000-05	2,205	60	2,805
Residential Capacity 2005	11,944	11,439	23,383
Annual Change 2005-10	2,646	700	3,346
Residential Capacity 2010	-1,286	7,939	6,653
Depletion Year	2009	2021	2011

Commercial and Industrial Use:

The Planning Department inventoried the supply and assessed the use of land for industrial and commercial development in Miami-Dade County to determine whether the current inventory could sustain projected commercial and industrial growth through the years 2000 and 2010. The following tables show estimates and projections of commercial and industrial land absorption for the Planning Analysis Tiers relevant to the SMDWSP, the South and South Central Tiers, based on 1985 data.

Projected Absorption of Industrial Land
Miami-Dade County 1985-2010

Tier	Industrial Land In Use 1990 (Acres)	Vacant Industrial Land 1990 (Acres)	Average Annual Absorption Rate (Acres)	Indicated Years of Land Supply
South Central Tier				
1.2	0	0	0	0
5.2	10	0	0	0
5.3	112	22	1.5	14.7
5.4	131	54	2.2	24.5
5.5	95	5	.5	10.0
5.6	9	0	0	0
5.7	6	7	.2	35.0
5.8	20	13	.5	26.0
6.1	8	5	1.0	5.0
6.2	122	1,388	15.0	92.5
Total	513	1,494	19.2	77.8
South Tier				
7.1	14	12	0.4	30.0
7.2	108	219	4.5	48.7
7.3	81	64	1.9	33.7
7.4	13	0	0	0
7.5	52	298	4.0	74.5
7.6	0	0	0	0
Total	268	593	10.7	55.4
County Total	7,661	10,109	203.5	49.7

Projected Absorption of Commercial Land
Miami-Dade County 1985-2010

Tier	Vacant Commercial Land 1990 (Acres	Total Commercial Land Base 1985 (Acres)	Average Annual Absorption Rate (Acres)	Indicated Years of Land Supply	Implied Population Serving Surplus/Deficit (Acres)	
South Central Tier					2000	2010
1.2	9	84	1.0	9.4	55	53
5.2	24	266	2.0	12.0	61	61
5.3	42	608	2.7	15.4	145	144
5.4	65	477	3.9	16.8	109	112
5.5	124	518	6.2	19.9	240	231
5.6	7	229	1.4	4.9	109	107
5.7	64	287	3.0	21.1	193	189
5.8	7	60	0.6	10.9	(83)	(87)
6.1	122	265	12.8	9.5	(252)	(353)
6.2	106	245	21.0	5.1	(115)	(228)
Total	570	3,039	54.6	10.4	462	229
South Tier						
7.1	132	342	8.8	14.9	173	(25)
7.2	36	136	3.6	10.1	(32)	(64)
7.3	156	349	4.2	37.1	210	189
7.4	259	424	11.8	21.9	138	22
7.5	242	222	5.0	48.0	215	165
7.6	0	0	0	0	(26)	(41)
Total	825	1,523	33.4	24.7	678	246
County Total	3,302	12,566	198.7	16.6	4,576	3,555

Contact:
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Study Number: **3.2**

Document Title:
Adopted 1995 Evaluation and Appraisal Report for the Land Use Element of the Miami-Dade County Comprehensive Development Master Plan

Entity Responsible for the Document:
Miami-Dade County

Completion Date of Document:
November 1995

Status of Document:
Implementation

Geographic Area of Document:
Miami-Dade County

Scope of Document:
The Land Use Element of the Miami-Dade County Comprehensive Development Master Plan (CDMP) designates the future land uses and development patterns in Miami-Dade County and contains standards for control and distribution of population densities and building and structure intensities.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Land Use
At the time of adoption, Miami-Dade County encompassed a total area of 1,413,600 acres, or 2,209 square miles. In 1985, 205,827 acres or approximately 16.5 percent of the total land and inland water area (excluding coastal waters) were devoted to "developed" purposes, and 1,045,162 acres or about 83.5 percent of Miami-Dade County's land and inland water area were devoted to "undeveloped" uses.

Existing Land Use in Miami Dade County (1985)

Land Use	Acres	Percent of area
All Land Uses	1,413,629	100
Residential	86,112	6
---Single Family Residential	68,352	5
---Residential Townhouses	3,003	0
---Two Family Residential	3,304	0
---Multi-Family Residential	9,620	1
---Migrant Labor Camps	199	0
---Mobile Home Parks/Permanent Mobile Homes	1,635	0
Commercial	9,938	1
Hotels Motels and other Transient Residential	770	0
Industrial	15,129	1
--- Extraction, Excavation and Quarrying	6,680	1
--- Industrial, non-noxious	8,119	1
--- Industrial, noxious	331	0
Institutional	8,968	1
--- Elementary & Secondary School, Daycare, Nurseries	3,168	0
Colleges, Universities & Vocational Schools & Research Centers	1,768	0
Cultural Facilities	234	0
Hospitals and Nursing Homes	794	0
Religious	1,525	0
Public Administration (Governmental)	1,479	0
--- Parks and Recreational Open Space	660,621	47
Local Parks and Schools (not schools) – Private recreational facilities associated with Residential developments	654	0
Scout Camps and Recreational Areas, Private camps	122	0
Beach	517	0
Golf Courses, Public and Private	4,868	0
Cemeteries	684	0
Metropolitan Parks	6,894	1
Everglades National Park	404,897	29
Water Conservation Areas	203,065	14
Indian Villages	14	0
Nature Preserves and Protected Areas	36,277	3
Transportation, Communications, Utilities	69,091	5
Trans. Terminals & Military Bases	9,455	1
Railroads	2,447	0
Utilities and Communications	11,610	1
Streets and Roads	38,644	3
Expressways and Freeways	5,641	0
Parking Garage and Lots, Public and Private	342	0
Dumps, Landfills Waste Plants	851	0

Yards Road Maintenance & Storage, Motor Pools	102	0
Agriculture	93,188	7
Groves	21,883	2
Crops	47,892	3
Grazing Animal Farming, Feed lots	9,434	1
Fallow	8,366	1
Plant Nurseries	5,047	0
Aquaculture	49	0
Farm Storage Area	498.00	0
Other	19	0
Vacant	289,453	21
Vacant, Privately owned	137,177	10
Vacant, Government owned	2,453	0
Environmentally Sensitive Private	143,466	10
Environmentally Sensitive Government owned	6,358	1
Inland Water	18,269	1
Coastal Water	162,640	12

Land Supply/Demand Projections 2015

The following tables show residential land supply/demand calculations for Miami-Dade County through the year 2015. The project area is composed of the South Central Tier and the South Dade Tier. The South Dade Tier, the mostly rural area south of SW 184 Street, had a current capacity for 85,000 units and accounted for about 39 percent of the available supply. When combined with the 56,000 unit capacity of the more developed South Central Tier, the two southern tiers account for about 64 percent of total available land.

Residential Land Supply/Demand
South Central Tier, 1994 to 2015

Analysis Done Separately for Each Type **(i.e. No Shifting of Demand Between Single & Multifamily Type)**	**South Central Tier**		
	Structure Type		
	Single Family	**Multifamily**	**Both Types**
Capacity in 1994	37,706	18,600	56,306
Demand 1994-2000	4,199	1,814	6,013
Capacity in 2000	12,512	7,716	20,228
Demand 2000-2005	3,681	1,577	5,258
Capacity in 2005	0	0	0
Demand 2005-2010	1,796	786	2,582
Capacity in 2010	0	0	0
Demand 2010-2015	1,534	631	2,165
Capacity in 2015	0	0	0
Depletion	2003	2004	2003

Residential Land Supply/Demand
South Dade Tier, 1994 to 2015

Analysis Done Separately for Each Type **(i.e. No Shifting of Demand Between Single & Multifamily Type)**	**South Dade Tier**		
	Structure Type		
	Single Family	**Multifamily**	**Both Types**
Capacity in 1994	61,525	23,089	84,614
Demand 1994-2000	1,859	472	2,331
Capacity in 2000	50,371	20,257	70,628
Demand 2000-2005	3,062	779	3,841
Capacity in 2005	35,061	16,362	51,423
Demand 2005-2010	4,128	1,038	5,166
Capacity in 2010	14,421	11,172	25,593
Demand 2010-2015	5,261	1,303	6,564
Capacity in 2015	0	4,657	0
Depletion	2012	2019	2013

Miami-Dade County Planning Department conducted an inventory of the supply, and assessed the use of land for industrial and commercial development in Miami-Dade County to determine whether the current inventory can sustain projected commercial and industrial demand through the years 2005 and 2015. The following tables are estimates and projections of commercial and industrial land absorption in Miami-Dade County for the South Dade Tier and the South Central Tier. These figures are computed from analysis of the Planning Department's land use database, and the appraisal of changes in land use over time.

Projected Absorption of Industrial Land
Miami-Dade County 1990-2015

Tier	Vacant Industrial Land 1990 (Acres)	Industrial Land In Use 1990 (Acres)	Average Annual Absorption Rate1990 thru 2015 (Acres)	Projected Year of Depletion
South Central Tier				
1.2	0	0	0	--
5.2	0	11	0	--
5.3	47	123	1.8	2016
5.4	11	172	0.4	2018
5.5	2	133	0.1	2010
5.6	0	14	0	--
5.7	0	4	0	--
5.8	8	48	0.3	2017
6.1	0	68	0	--
6.2	1,546	242	15.8	2088
Total	1,614	815	18.4	2078
South Tier				
7.1	30	32	0.7	2033
7.2	340	317	7	3039
7.3	59	114	2.1	2018
7.4	408	19	1.2	2015+
7.5	423	70	2.6	2015+
7.6	0	32	0	--
Total	1260	584	13.5	2083
County Total	11,753	10,778	214.7	2045

Projected Absorption of Commercial and Office Building Land
Miami-Dade County 1990-2015

Tier	Vacant Commercial Land 1990 (Acres)	Commercial Land In Use 1990 (Acres)	Average Annual Absorption Rate 1990 thru 2015 (Acres)	Projected Year of Depletion	Total Commercial Acres Per Thousand Persons 2005 - 2015	
South Central Tier						
1.2	32	86	1.3	2014	10.9	9.7
5.2	70	283	2.8	2015	6.1	5.5
5.3	50	723	3.9	2003	6.4	6.0
5.4	76	517	5	2005	5.7	5.1
5.5	136	483	4.4	2021	7.6	7.0
5.6	2	264	1.1	1992	8.5	7.8
5.7	42	236	3.9	2001	10.1	8.7
5.8	80	71	1	2070	3.8	3.2
6.1	367	281	16.5	2012	2.9	2.5
6.2	221	285	19.6	2001	3.3	2.9
Total	1,076	3,230	60.3	2008	5.1	4.5
South Tier						
7.1	174	289	14.4	2002	10.3	6.4
7.2	61	150	7.5	1998	3.6	2.5
7.3	132	227	7.3	2008	9.1	6.9
7.4	400	258	19.5	2011	8.5	5.1
7.5	458	80	22.1	2011	15.1	6.6
7.6	0	14	1.8	1990	1.5	1.0
Total	1,224	1,018	72.6	2007	8.4	5.1
County Total	4,919	12,060	296.4	2007	6.7	5.6

Contact:
Mark Woerner
Miami-Dade County Department of Planning and Zoning
111 NW First Street, Suite 1220
Miami, Florida 33128-1972
(305) 375-2835

Study Number: **3.3**

Document Title:
Biscayne Bay Strategic Access Plan Phase I Inventory Report

Entity Responsible for the Document:
Trust for Public Land (TPL)

Completion Date of Document:
Not yet complete

Status of Document:
Plan was initiated in October 2001 as an 18-month, three-phase effort. As of May, 2003, Phase I is complete.

Geographic Area of Document:
Biscayne Bay is a 428-square-mile water body between mainland Miami-Dade County and the barrier islands that serve as the gateway to the Atlantic Ocean.

Scope of Document:
Phase I of this study focuses on providing an overview of current public access to Biscayne Bay. It outlines the recent history of efforts to improve public access to the bay, and reviews the impacts of existing comprehensive plans, initiatives, and regulations.

Phase II will identify and categorize access issues and develop organizational and governance structure.

Phase III will include a Final Report and Maps.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
This report represents the first portions of a document that will recommend strategies to improve the public's access with the bay through distribution of recreational, visual, and educational opportunities.

Contact:
Amy Condon
Trust for Public Land
Miami Field Office
7900 Red Road, Suite 25
South Miami, FL 33143
(305)667-0409

Study Number: **3.4**

Document Title:
Biscayne Bay Partnership Initiative Final Reports

Entity Responsible for the Document:
Biscayne Bay Partnership Initiative

Completion Date of Document:
2001

Status of Document:
Completed. Implementation is being coordinated through the Biscayne Bay Regional Restoration Coordination Team.

Geographic Area of Document:
Biscayne Bay

Scope of Document:
The partnership is made up of four survey teams, each addressing one of the following themes: 1) social and economic values, 2) science, 3) management, and 4) regulation. This document is a compilation of the final reports from each of the four teams, with recommendations and surveys of issues. The reports include recommendations for actions to protect, improve, and enhance the Bay's resource, its social economic and material value, and its ecological health.

1. Social and Economic Survey Team Report

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- **Overall goal**: Consideration of economic and social benefits of the Bay in the development of a Biscayne Bay Master Plan.
- **Recommendations from the team**:
  - Development of a Biscayne Bay Master Plan
  - Funding of identified projects intended to increase public access to the Bay or improve environmental protection.
  - Creation of a Comprehensive Bay education program for all school children in the Miami-Dade County Public School System.
- **Key social issues**:
  - Access
  - Education and public awareness
  - Contemporary issues
  - Privatized shoreline
    a. Gated communities
    b. Lack of regulation over public parks
- **Key Economic issues**:
  - Demography – population growth

- Employment-pressure for jobs, housing and recreational facilities
- Economic sectors – concentration of growth in low-paying service sector

2. Science Survey Team Report:

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Recommendation of target concentrations for water quality parameters is directly relevant to the Watershed Study.

- Major threats to the Bay were identified:
  - Changes in the quantity, quality timing, and distribution of freshwater inflow;
  - Human induced inputs of pollutants, nitrogen, phosphorous, and toxic chemicals;
  - Potential development of coastal wetlands and inappropriate development of adjacent uplands;
  - Physical alteration or damage to the bay bottom and other factors that destroy communities of bottom-dwelling organisms, destabilize bottom sediments, and increase turbidity;
  - Lack of oversight on fishing pressure or knowledge of its effects;
  - Sea-level rise and other aspects of climate change;
  - Expanding human population.

The Science team was broken down into subgroups: geology, sedimentology, climate, and sea-level; hydrodynamics and transport; and watershed hydrology. Each subgroup recognized that the most immediate need is for scientific information to restore and protect the Bay in ongoing water management planning activities. Sea-level rise and population expansion were recognized as major problems increasing with time that require the application of scientific information to planning and management decisions. Each subgroup gave a general list of scientific recommendations.

The Science team recommends a series of investigations and predictive tools to address the restoration and protection of the Bay. Funds are requested from the Florida Legislature to develop a science program for the Bay built on these recommendations. Funds have been requested to support the development and operation of a permanent Science Advisory Committee and Science Oversight Panel for Biscayne Bay.

3. Management Team Report:

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- **Recommendations for the management of Biscayne Bay**:
  - Any future management activities should build upon existing efforts;
  - State should provide more funding to help management processes be more effective;
  - State should fund additional projects to leverage funds;
  - Inter-agency coordination should be improved;

- Community stakeholder input should be included in all stages of the management process;
- Educational and outreach programs should be implemented;
- Existing management processes for Biscayne Bay should include a stronger consideration of ongoing regional restoration plans and land-based activities occurring in the watershed.

4. Regulation Team Report:

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- **Team objectives**:
  - Identify agencies with jurisdictions over Biscayne Bay;
  - Identify problem areas, determine how effectively current or conventional regulations address these areas and whether innovative regulatory solutions would be appropriate;
  - Assess whether the current regulatory regime is current, comprehensive, balanced, effective, and capable of enforcement.
- **Overarching recommendations**:
  - Increased funding for Biscayne Bay resource management and preservation;
  - Land acquisition;
  - Revised county ordinances;
  - Increased enforcement;
  - Improved data;
  - Interagency coordination;
  - Marine regulatory signage.

Contact:

Catanese Center for Urban and Environmental Solutions
111 East Las Olas Blvd., Ste 709
Fort Lauderdale, FL 33301
Phone (954) 762-5255

Study Number: **3.5**

Document Title:
Biscayne Bay Regional Restoration Coordination Team 2002 Annual Report

Entity Responsible for the Document:
Biscayne Bay Regional Restoration Coordination Team

Completion Date of Document:
Report for year ending January 16, 2003

Status of Document:
Implementation

Geographic Area of Document:
Biscayne Bay

Scope of Document:
This report summarizes the Biscayne Bay Regional Restoration Coordination Team's progress since the completion of the 2001 Annual Report on January 16, 2002 through January 16, 2003.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The Biscayne Bay Partnership Initiative (BBPI) was created by Florida legislature in 1999; in 2001 BBPI released its final report that recommended the establishment of a Biscayne Bay Regional Restoration Coordination Team. The purpose of the team is to:

- Provide a forum for public involvement, outreach, and interagency coordination and communication;
- Identify priority issues for action and create teams to address those issues as needed;
- Make recommendations on key issues;
- Identify goals and performance measures related to key issues and assess the achievement of goals;
- Identify funding requirements; and
- Review elements of CERP that affect Biscayne Bay.

Biscayne Bay projects for Fiscal Year 2003 were funded by the State Legislature in the amount of $3.5 million for ranked projects, including $1,000,000 for the SMDWSP, and a commitment by the South Florida Water Management District (SFWMD) to spend up to $8 million for land acquisition benefiting Biscayne Bay.

Of the 14 projects in FY 2002 projects, all but three were either complete or almost complete at the time of this report. The three that were delayed were due to land acquisition problems. The land acquisition projects for both years totals almost $13.8 million to be spent in 2003. To date, 76.77 acres out of 1,425 have been acquired.

In addition to the goals and objectives outlined in the team charter and the BBPI, specific items to be addressed in 2003 include:

- Further develop and implement the Coordination Team charter goals;
- Finalize Action Plan;
- Create sub-teams to better evaluate action step recommendations;
- Review and comment on the progress of Year 2002 projects;
- Develop formal selection and evaluation procedures to be used for the project funding requirement ranking lists for Fiscal Year 2005;
- Identify potential funding sources not yet identified; and
- Review membership structure and revise.

Contact:

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Owa Ehan Bldg. Room 148
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gmay@sfrestore.org

Study Number: **3.6**

Document Title:
City of Coral Gables Comprehensive Plan

Entity Responsible for the Document:
City of Coral Gables

Completion Date of Document:
April 1, 1998

Status of Document:
Currently being implemented by local government.

Geographic Area of Document:
City of Coral Gables

Scope of Document:
Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Status of Land Use Plan

The City of Coral Gables Future Land Use Map was last revised in January 1998. City staff has confirmed that there have not been any significant land use plan amendments since 1998. The City's Future Land Use Map is consistent with the designations shown on the County's Land Use Plan (LUP).

Rather than focus on new development, the City is working to redevelop existing parcels within its urban core. The City is also striving to promote more pedestrian activity around commercial centers. The close proximity of these employment centers to the Douglas Road Metro-rail station makes it a natural fit for promoting a mix of land uses and pedestrian activity. Strategies and plans are being researched to promote pedestrian and transit activities around the City's main commercial areas.

The City projects a demand of 576 new units to accommodate its 2010 population. According to the City's Comprehensive Plan there are only 20 acres of vacant land remaining within the city limits. It is anticipated that the vacant parcels will provide for 120 dwelling units and the remaining 456 dwelling units will be developed as part of redevelopment and urban infill projects. There are no significantly large vacant tracts remaining for new development.

City of Coral Gables
Acreage of Existing Uses (1995)

Land Use	Acreage	Percentage
Single Family Residential	4,265.44	53.75
Multi-Family Residential	476.16	6.00
Commercial	396.80	5.00
Industrial	79.36	1.00
Education	317.44	1.00
Recreation/Conservation	2,380.80	30.00
Vacant/Undeveloped	20.00	0.25
Total	7,936.00	100.00

Contact:
Walter Carlson, Assistant Director
Planning Department
City of Coral Gables
405 Biltmore Way
Coral Gables, Florida 33134
Phone: 305-460-5213
Fax: 305-460-5327

Study Number: **3.7**

Document Title:
City of Florida City Comprehensive Plan

Entity Responsible for the Document:
City of Florida City

Completion Date of Document:
March 25, 1996

Status of Document:
Currently being implemented by local government.

Geographic Area of Document:
City of Florida City

Scope of Document:
Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Status of Land Use Plan

The City of Florida City's Future Land Use Map was last revised in 2000. The City's Future Land Use Map is not consistent with the Miami-Dade County Land Use Plan. The City's Map contains several mixed-use categories on parcels which are designated for residential development on the County's Plan. As part of Sub-task 1.3 the team will be updating the Miami County's Land Use Plan to be consistent with the Florida City's Future Land Use Map.

City of Florida City
Acreage of Existing Uses (1996)

Land Use	Acreage	Percentage
Single Family Residential	215	11.0
Multi-Family Residential	112	6.0
Commercial	107	5.0
Industrial	79	4.0
Parks / Recreation	21	1.0
Public Institutional	97	5.0
Public Rights-of-Way	321	16.0
Vacant	1,068	52.0
Total	2,020	100.0

The need for new residential development is strong given that projected increase in total population from 2000 to 2015 is 6,995 persons. The City's Future Land Use Map designates 620 acres as Low Density Residential, 283 acres as Medium Density Residential and 111 acres as High Density Residential. Using the existing land use data above, this leaves a total of 405 acres of undeveloped Low Density Residential land (2,430 dwelling units), 203.5 acres of undeveloped Medium Residential land (2035 dwelling units) and 78.5 acres of undeveloped High Density Residential (1,178) dwelling units. Dwelling unit counts are based on the maximum densities allowable under the City's comprehensive plan.

Contact:
City of Florida City
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Florida City, Florida 33034-0570
Phone: (305) 247-8221
Fax: (305) 242-8133

Study Number: **3.8**

Document Title:
City of Homestead Comprehensive Plan

Entity Responsible for the Document:
City of Homestead

Completion Date of Document:
April 2, 2002

Status of Document:
Currently being implemented by local government.

Geographic Area of Document:
City of Homestead

Scope of Document:
Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Status of Land Use Plan

The City of Homestead Future Land Use Map was last revised in February 2003. The City's Future Land Use Map is not consistent with the Miami-Dade County Land Use Plan. The City's Land Use Map contains several mixed-use categories on parcels which are designated for residential development on the County's Land Use Plan. As part of Sub-task 1.3 the team will be updating the Miami-Dade County's Land Use Plan to be consistent with Homestead's Future Land Use Map.

City of Homestead
Acreage of Existing Uses (2000)

Land Use	Acreage	Percentage
Single-Family	1,554.00	0
Duplex	129.0	0
Townhouse / Multi-Family	528.9	0
Total Residential	2,211.9	24
Commercial	485.9	5.3
Hotels	19.9	0.2
Industrial	145.7	1.6
School / Colleges	150.3	0
Hospitals / Nursing Homes	21.0	0
Religious	29.0	0
Government	29.4	0
Total Institutional	229.7	2.5
Local Parks	325.9	0
Private Recreational Facilities	19.5	0
Open Space	17.6	0
Total Parks/ Recreation	363.0	3.9
Trans., Comm., Utilities	969.3	10.5
Agriculture	3,294.0	35.6
Undeveloped	1,351.3	14.6
Inland Water	163.5	1.8
Total	**9,234.2**	**100**

Based on 2000 Census data and the projections in the City's Comprehensive Plan, 10,987 new residents are anticipated by the year 2015. The City's Future Land Use Map designates 2,481 acres as Low Density Residential and 504 acres as Medium Density Residential. Using the existing land use data above, this leaves a total of 927 acres of undeveloped Low Density Residential land (7,560 dwelling units). Dwelling unit counts are based on the maximum densities allowable under the City's Comprehensive Plan.

Contact:
Charles LaPradd, Administrator
Planning & Economic Division
790 North Homestead Boulevard
Homestead, FL 33030
Phone: (305) 247-1801

Study Number: **3.9**

Document Title:
Homestead CRA - The Plan for the Community Redevelopment Area

Entity Responsible for the Document:
Homestead Economic and Rebuilding Organization (HERO); City of Homestead, FL

Completion Date of Document:
April 1994

Status of Document:
Implementation

Geographic Area of Document:
The Community Redevelopment Area (CRA) consists of approximately 1,167 acres. It is generally bounded by Route 1 on the east, Lucy Drive on the south, Redland Road on the west, and Ninth Court on the north.

Scope of Document:
The CRA Plan addresses building deterioration, drainage problems, lack of sidewalks, lack of adequate public sewer service, deterioration of roads and other public facilities, inadequate street lighting, and land use conflicts. Others issues include:

- Building and site deterioration and deficiencies;
- Unsanitary/unsafe conditions;
- Diversity of ownership;
- Age of structures;
- Vacant buildings;
- Vacant lots - Surveys indicated the presence of approximately 730 vacant lots within the CRA;
- Property maintenance and code violations;
- 200 structures were identified for emergency demolition within the City, of which 70% were in the CRA; and
- Need for redevelopment of housing stock.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The main goals/objectives of the CRA plan are to:

- Eliminate land use conflicts and replace substandard buildings;
- Land assembly/acquisition;
- Extending public sewer service;
- Affordable housing/infill housing;
- Revitalization of commercial properties; and
- Upgrade of public infrastructure.

Statement on Environmental Quality: It is stated in the Plan that proposed actions for the CRA are intended to improve the area's environmental quality. These actions include expansion of municipal sanitary sewer and public water systems, improvements to storm sewer systems, streetscape and landscaping improvements, development of service centers, construction of playgrounds, improvements to existing parks and open space, and building rehabilitation activities.

Contact:

Charles LaPradd, Administrator
Planning & Economic Division
790 North Homestead Boulevard
Homestead, FL 33030
Phone: (305) 247-1801

Study Number: **3.10**

Document Title:
City of Palmetto Bay Comprehensive Plan

Entity Responsible for the Document:
City of Palmetto Bay

Completion Date of Document
Not yet complete.

Status of Document:
Not yet complete

Geographic Area of Document:
City of Palmetto Bay

Scope of Document:
Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Status of Land Use Plan
The City of Palmetto Bay does not have an adopted City Comprehensive Plan. The land use designations contained in the Miami-Dade County Land Use Plan will be applied to properties within the Palmetto Bay city limits.

Contact:
City of Palmetto Bay
Building and Zoning Division
8950 SW 152nd Street
Palmetto Bay, Florida 33157
Phone: (305) 259-1234

Study Number: **3.11**

Document Title:
Village of Pinecrest Comprehensive Document

Entity Responsible for the Document:
Village of Pinecrest

Completion Date of Document:
February 1999

Status of Document:
Currently being implemented by local government.

Geographic Area of Document:
Village of Pinecrest

Scope of Document:
Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Status of Land Use Plan

The Village of Pinecrest has 80 acres of vacant land scattered throughout the Village. The largest undeveloped tract of land in the Village is a 19-acre grove located west of SW 62nd Court between SW 88th Street and SW 92nd Street. This site is currently designated for agricultural uses. The Village's population projections for the year 2015 indicate the need for 480 new dwelling units. The Village's Future Land Use Map describes 11 acres of its remaining vacant lands as multi-family with a density of 23 units per acre. The development of these lands at 23 units per acre would yield 253 new dwelling units. The remaining 69 acres of vacant land would yield a total of 173 dwelling units (maximum density 2.5 units per acre), 54 dwelling units short of need. The Village anticipates buildout of vacant lands, including the grove site, by the year 2015.

Village of Pinecrest
Acreage of Existing Uses (1998)

Land Use	Acreage	Percentage
Single Family Residential	4,334.47	84.66
Duplex	22.17	0.43
Multi-Family	49.80	0.97
Mobile Home	9.68	0.19
Total Residential	4,416.12	86.25
General Commercial/Office	129.11	2.52
Transient Residential/Motel	2.65	0.05
Parks/Recreation	55.78	1.09
Educational	60.32	1.18
Religious	45.95	0.90
Utilities	7.99	0.16
ROW: Drainage	102.40	2.00
ROW: Streets	199.68	3.90
Total Developed	5,020.00	11.8
Vacant	79.93	1.56
Agriculture	20.07	0.39
Total Undeveloped	100.00	1.95
Total	5,120	100.00

Contact:
Sergio Purrinos, Planning Director
Village of Pinecrest
11551 S. Dixie Highway
Pinecrest, Florida 33156
(305)234-2121

Study Number: **3.12**

Document Title:
City of South Miami Comprehensive Plan

Entity Responsible for the Document:
City of South Miami

Completion Date of Document
November 7, 2000

Status of Document:
Currently being implemented by local government.

Geographic Area of Document:
City of South Miami

Scope of Document:
Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Status of Land Use Plan

The City of South Miami's Future Land Use Map is current as of June 2003. At the time of EAR adoption, the City had 29.42 acres of vacant land. Residential land development has been relatively stagnant in the city. Between 1990 and 1994, 78 new units were constructed and 75 were demolished for a net increase of three units. The City of South Miami is a built-out city with 70 vacant residentially zoned parcels remaining in the City. The need for new residential development is minimal given that projected increase in total population from 2000 to 2015 is 318 persons. Land use scenario projections within the City will focus on redevelopment. The City's Future Land Use Map is consistent with the designations shown on the County's Land Use Plan.

City of South Miami
Acreage of Existing Uses (1995)

Land Use	Acreage	Percentage
Single Family Residential	803.66	51.77
Two Family Residential	8.81	0.57
Multi-Family Residential	52.60	3.39
Cluster Single-Family	12.84	0.83
Commercial	121.79	7.85
Office	43.35	2.79
Public	55.77	3.79
Recreation	38.89	2.51
Vacant	29.42	1.88
Streets/Water	385.27	24.82
Total	1552.40	100.0

Contact:
City of South Miami
Planning and Zoning Division
6130 Sunset Drive, 2nd Floor
South Miami, Florida 33143
Phone: (305) 663-6327
Fax: (305) 666-4591

Study Number: **3.13**

Document Title:
South Miami Community Redevelopment Plan

Entity Responsible for the Document:
City of South Miami

Completion Date of Document:
Revised February 1997

Status of Document:
Implementation

Geographic Area of Document:
The South Miami Community Redevelopment Area (SMCRA) is composed of 185 acres containing approximately 600 separate folio numbers. The CRA is bounded on the north by SW 62nd Street, on the east by SW 62nd Avenue, on the west by SW 87th Avenue, and to the south by SW 72nd Avenue.

Scope of Document:
The Community Redevelopment Area includes approximately 98% of the original Miami-Dade County South Miami Target Area as created by the County's Office of Community Development. The following issues/conditions were found in the study area:

- Building deterioration
- Site deterioration and deficiencies
- Unsanitary conditions
- Drainage deficiencies
- Diversity of ownership
- Age of structures
- Property Maintenance code violations
- Non conforming structures
- Closed buildings
- Vacant lots
- Inadequate street layout
- High crime areas

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The general redevelopment goals for the SMCRA are as follows:

1. To improve the quality of life for all citizens, businesses and property owners in the area.

2. To work and communicate with all interested community groups towards the successful implementation of all redevelopment programs.

3. To use the following redevelopment tools:
    - Leverage the maximum amount of non-tax increment financing sources possible to assist in redevelopment
    - Purchase and/or redevelopment of vacant or abandoned properties in the redevelopment area
    - Partnerships with both public and private sector to gain the maximum leveraging of assets
    - Environmental clean-up activities
    - Promote alternative modes of transportation and maximize transit facilities
    - Facilitate pedestrian circulation, parks, and open space.

4. To identify and rehabilitate significant historical and cultural elements of the community.

5. To encourage the development of new housing units and rehabilitation of existing ones.

6. To ensure that potable water, wastewater treatment and stormwater drainage systems accommodate present and future demands.

7. Increase public awareness and support for long-range challenges and programs.

8. Support an efficient parking system.

9. Provide a priority for local builders, contractors, material providers and financial and real estate entities to participate in all housing programs.

10. Work in concert with the goals of the Miami-Dade County Office of Community and Economic Development, the Miami-Dade County Comprehensive Master Plan, the City of South Miami Comprehensive Plan and the Moss Plan, as well as those established by Florida Statutes.

Contact:
City of South Miami Building,
Zoning & Community Development Department
6130 Sunset Drive
South Miami, Florida 33143
(305) 663-6326

Study Number: **3.14**

Document Title:
City of West Miami Comprehensive Plan

Entity Responsible for the Document:
City of West Miami

Completion Date of Document:
Adopted May 17, 1989; in the process of being updated.

Status of Document:
Currently being implemented by local government.

Geographic Area of Document:
City of West Miami

Scope of Document:
Comprehensive plans are required by Chapter 163, Florida Statutes to manage and plan for future development and population growth.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Status of Land Use Plan

The 1995/2000 Comprehensive Plan was obtained from the City. All land uses are consistent with the Miami-Dade County Land Use Plan.

On June 19, 2003, Keith and Schnars staff met with City's Planning Director to discuss any potential changes to the comprehensive plan and vacant parcels for development. The City recently transmitted comprehensive plan amendments based on its evaluation and appraisal report (EAR) to the Florida Department of Community Affairs.

Acreage of Existing Uses

City of West Miami
1988 Existing Land Use Inventory

Land Use Category	No. of Acres	% of Total Land Area
Residential	245.56	53.30
Single Family (up to 8 units/acre)	12.40	2.69
Two Family (up to 18 units/acre)	8.20	1.78
Multi-Family (up to 49units/acre)	9.10	1.97
Commercial	30.70	6.66
Parking	3.30	0.72
Recreational		
Public	7.54	1.63
Public Buildings & Grounds		
Buildings	13.00	2.82
Other public/facilities	4.70	1.02
Vacant & Undeveloped	3.90	0.85
Streets & alleys	122.40	26.56
Total Land Area	460.80	100

In 1988, there were only 3.90 acres of vacant/undeveloped land in the City. Currently, the City of West Miami is a built-out city with only a few vacant lots, 1 acre or less in size. Any development opportunities within the City will focus on redevelopment.

Contact:
Juan Pena, Director of Public Works
City of West Miami
901 SW 62nd Avenue
West Miami, Florida 33144
Phone: (305) 266-1122
Fax: (305) 261-9914

Study Number: **3.15**

Document Title:
Eastward Ho! Revitalizing Southeast Florida's Urban Core

Entity Responsible for the Document:

Report was prepared by the South Florida Regional Planning Council in conjunction with the Treasure Coast Regional Planning Council. It is an initiative of the Governor's Commission for a Sustainable South Florida, funded by the Florida Department of Community Affairs' Energy Office.

Completion Date of Document:

Initiative was recommended in October 1995; report was released July 1996.

Status of Document:
Currently being implemented by local governments.

Geographic Area of Document:
The corridor of land between Southeast Florida's two railroads, the FEC and CSX, from Florida City in Miami-Dade County traveling north to Palm Beach, Martin, and St. Lucie counties, including major airports, seaports, and downtowns, approximating the area between Route 1 and I-95/Florida Turnpike.

Scope of Document:
During deliberations on restoring the Everglades the Governor's Commission concluded that Florida could not achieve a sustainable Everglades ecosystem without also creating a more sustainable urban system in South Florida. The Eastward Ho! Initiative began in response to predictions made by the Governor's Commission for a Sustainable South Florida regarding population growth and sustainability. This report describes and evaluates the study area and makes recommendations regarding physical and social characteristics for infill and redevelopment. The recommendations within this report focus on slowing the urban sprawl encroaching upon the wetlands and agricultural areas of South Florida.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The recommendations are designed to encourage urban revitalization efforts and are intended to accomplish three main goals:

- Broaden consensus concerning revitalization strategies to understand the conditions, trends, and issues affecting the type, quality, and timing of redevelopment and infill development.
- Assist local governments and other parties to implement revitalization strategies that encourage quality infill development and redevelopment in the region's urban core by removing obstacles and developing appropriate incentives.

- Develop citizen support for the Eastward Ho! concept.

The intention of the Eastward Ho! initiative is to protect the environment and encourage compact, efficient development patterns and to forge public/private partnerships to promote compact urban density. The overall initiative was brought about because of population projections of intense growth for South Florida and the need to accommodate that growth in conjunction with protecting the environment. The Watershed Study also has the goal of achieving sustainable growth for south Miami-Dade. Population growth and land use are key elements of the Watershed Study.

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Study Number: **3.16**

Document Title:
Building on Success: A Report from Eastward Ho!

Entity Responsible for the Document:
South Florida Regional Planning Council in conjunction with the Treasure Coast Regional Planning Council

Completion Date of Document:
Report published in December 1998

Status of Document:
Currently being implemented by local governments

Geographic Area of Document:
The corridor of land between Southeast Florida's two railroads, the FEC and CSX, from Florida City in Miami-Dade County traveling north to Palm Beach, Martin, and St. Lucie counties, including major airports, seaports, and downtowns, approximating the area between Route 1 and I-95/Florida Turnpike.

Scope of Document:
Eastward Ho! is a public policy initiative that provides information, guidance, and strategies for managing growth in Southeast Florida. It seeks to improve quality of life in urban areas and attract a portion of future regional growth towards communities in the east by supporting redevelopment strategies, to reduce development pressure and urban sprawl.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Each community defines its own plan for revitalization, since most eastern communities have unique characteristics and issues. This report highlights community successes to date in the initiative, such as the City of Delray Old School Square, City of Fort Pierce Waterfront Community Development Plan, and Downtown Miami Moderate Income Homeownership Project.

Also, this report outlines the Eastward Ho! Brownfields Partnership established in March, 1998. The Partnership goals for the following two years were:

- Complete a regional inventory of potential Brownfields sites, integrated with socio-economic, public health, and transportation data;
- Complete at least six detailed site inventories;
- Undertake at least four rehabilitation and redevelopment projects in the corridor;
- Formulate and implement model processes for timely community participation;
- Establish replicable financial tools and models for streamlined governmental processes to promote Brownfields rehabilitation;

- Undertake at least four demonstration projects with federal agencies as part of a creative linkages and learning laboratory approach to apply new resources, programs, and technologies to Brownfields issues.

This report also addresses the issue of how to measure success of revitalization efforts.

This document is an update report on issues and programs established in the Eastward Ho! Initiative. It should have minimal impact on the Watershed Study.

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Study Number: **3.17**

Document Title:
Eastward Ho! Development Futures: Paths to More Efficient Growth in Southeast Florida

Entity Responsible for the Document:
Florida Department of Community Affairs; U.S. Environmental Protection Agency

Completion Date of Document:
February 1999

Status of Document:
Currently being implemented by municipalities through their local comprehensive plans.

Geographic Area of Document:
The corridor of land between Southeast Florida's two railroads, the FEC and CSX, from Florida City in Miami-Dade County traveling north to Palm Beach, Martin, and St. Lucie counties, including major airports, seaports, and downtowns, approximating the area between Route 1 and I-95/Florida Turnpike.

Scope of Document:
The study was conducted during 1998, and compares the resource consumption and costs of extending two different development patterns into the future. The first is *Existing* development, or sprawl, which includes unlimited outward extension and low density. The second is *Alternative*, or compact development, which holds a portion of development near previously developed areas and emphasizes infill and redevelopment usually at a higher density. The costs are viewed in four substantive areas: 1) land consumption; 2) public infrastructure (roads, sewer, and water lines); 3) housing costs; and 4) fiscal impacts.

The following municipalities are Eastward Ho! areas of Miami-Dade County: *Coral Gables*, El Portal, Hialeah, Medley, Miami Shores, Miami Springs, North Miami, North Miami Beach, Opa-Locka, Virginia Gardens, *Homestead*, Miami, *Pinecrest*, *South Miami*, *West Miami*, and *Biscayne Park*. Areas of unincorporated Miami-Dade were also included. *Watershed Study Area municipalities are italicized.*

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The Alternative Development scenario for Miami-Dade County has these goals:

Land development:

- Promotes infill development, with public and private investments in infrastructure, services, development and compatible redevelopment.
- Promotes mixed-uses.

Transportation and Infrastructure:

- Promotes upgrades to mass transit service in the urban infill development areas through rail, bus, and intermodal connections.
- Restructures policy to place greater priority on the installation and upgrading of projects with the infill area and to remove public subsidies from outlying areas.
- Reduces maximum parking requirements.

Environmental and Natural Resources:

- Provides for the conservation and protection of all aquatic and upland ecosystems and natural resources, and protects the functions of aquifer recharge areas and natural drainage features.
- Provides extra solid waste disposal services to serve areas where growth is encouraged and to discourage urban sprawl.
- Upgrades existing regional and neighborhood parks in urban infill development areas through, for example, the building of recreation buildings, tennis and basketball courts, playground equipment, and new parking areas.

Water Conservation:

- Provides potable water supply and sanitary sewage disposal in conformance with urban infill areas to serve areas where growth is encouraged.
- Implements a neighborhood improvement plan in the infill areas to address water supply systems and deficient drainage conditions by providing new and improved systems.
- Continuation of implementation of well-field protection measures.
- Implements policies to ensure that water resources are not negatively impacted by development, excessive drawdown, or saltwater intrusion.

Development Costs and Public Services:

- Increases financial incentives to develop infill sites.
- Identifies and provides affordable housing opportunities.
- Encourages a balanced mix of housing types for all income levels.

Education and Culture:

- Creates an inventory of vacant, abandoned, or significantly underutilized parcels with the infill areas and disseminates information to the development industry.

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Study Number: **3.18**

Document Title:
Florida Keys Carrying Capacity Study

Entity Responsible for the Document:
Florida Department of Community Affairs
U.S. Army Corps of Engineers

Completion Date of Document:
2003

Status of Document:
The Florida Keys Carrying Capacity Study (FKCCS) is housed and maintained by the South Florida Regional Planning Council. Model runs are performed based on requests by local governments.

Geographic Area of Document:
Florida Keys

Scope of Document:
The Florida Keys Carrying Capacity Study (FKCCS) was developed in response to State of Florida Rule 28.20-100 that requires Monroe County to "determine the ability of the Florida Keys ecosystem and various segments thereof, to withstand all impacts of additional land development activities."

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Some of the components of the FKCCS are similar to those of the Watershed Study. For example, the Carrying Capacity Analysis Model was developed to analyze the impact of additional land development and population growth on water quality, threatened and endangered species, natural habitat, hurricane evacuation, the economy and social preferences. The Model allows for changes in the input variables and a comparison of impacts between each scenario.

Four general recommendations for future development resulted from the FKCCS:

1. Prevent encroachment into native habitat because of severe depletion by historic development activities;
2. Continue restoration and land acquisition programs, implement the wastewater and stormwater master plans, and continue ongoing research and management activities in the Florida Keys National Marine Sanctuary;
3. Concentrate on redevelopment and infill for future development; and
4. Increase efforts to manage remaining habitats and resources.

Land development or land resource management in the Monroe County directly affects South Miami-Dade County. If the number of building permits issued each year continues to be capped (by the Rate of Growth Ordinance, the FKCCS or some other instrument)

the demand for housing, specifically affordable housing, will increase in South Miami-Dade County. Overall the general process, methodologies and assumptions followed may prove to be useful as the Watershed Study enters the assessment phase.

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Study Number: **3.19**

Document Title:
Florida Keys National Marine Sanctuary Final Management Plan (FKNMS)

Entity Responsible for the Document:
National Oceanic and Atmospheric Association (NOAA)

Completion Date of Document:
July 1, 1997

Status of Document:
Currently being implemented.

Geographic Area of Document:
The Sanctuary consists of approximately 2,800 square nautical miles of coastal and oceanic waters, and the submerged lands hereunder, surrounding the Florida Keys, and extending westward to encompass the Dry Tortugas, but excluding the Dry Tortugas National Park. The shoreward boundary of the Sanctuary is the mean high water mark. Please refer to the map provided in Sub-task 1.6.

Scope of Document:
The National Marine Sanctuaries Act and the Florida Keys National Marine Sanctuary and Protection Act of 1990 mandate the development of a comprehensive management plan that protects Sanctuary resources and facilitates Sanctuary uses that are compatible with the primary objective of resource protection.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

The goal of the Florida Keys National Marine Sanctuary is:

"To preserve and protect the physical and biological components of the South Florida estuarine and marine ecosystem to ensure its viability for the use and enjoyment of present and future generations."

In addition to the statutory objectives of the National Marine Sanctuary Program (15 CFR, Part 922.1(b)), the FKNMS Sanctuary Advisory Board developed the following objectives:

- Encouraging all agencies and institutions to adopt an ecosystem and cooperative approach to accomplish all objectives, including the provision of mechanisms to address impacts affecting Sanctuary resources but originating outside the boundaries of the Sanctuary;

- Providing a management system which is in harmony with an environment whose long-term ecological, economic, and sociological principles are understood, and which will allow appropriate sustainable uses;

- Managing the FKNMS for the natural diversity of healthy species, populations and communities;

- Reaching every single user and visitor to the FKNMS with information appropriate to their activities; and

- Recognizing the importance of cultural and historical resources, and managing these resources for reasonable, appropriate use and enjoyment.

The SMDWSP is directly related to every one of the FKNMS objectives. A major goal of the Watershed Study is to improve the quality of water in Biscayne Bay. The FKNMS is a downstream recipient of the water flow from south Miami-Dade County. The policy decisions resulting from the study will directly affect the water quality within the FKNMS.

The FKNMS objectives call for an ecosystem approach to address impacts to the waters of the Florida Keys. The Watershed Study will provide FKNMS staff with a better understanding of the link between land use and water quality. The surface water modeling effort completed on each of the scenarios will have differing levels of impacts on Biscayne Bay and will eventually flow into the Florida Keys. Once completed the Watershed Study will be a useful tool for monitoring potential downstream impacts.

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Study Number: **3.20**

Document Title:
Conceptual Plan of the Governor's Commission for a Sustainable South Florida for the Central and South Florida (C&SF) Project Restudy

Entity Responsible for the Document:
The Governor's Commission for a Sustainable South Florida

Completion Date of Document:
August 1996

Status of Document:
Local government resolutions in support of the Conceptual Plan for the Restudy have been passed in Miami-Dade, as well as other counties and municipalities. This report was endorsed and approved by the Governing Board of the SFWMD and Governor Lawton Chiles (October 10 and November 13, 1996, respectively). This plan was also incorporated into the Water Resource Development Act (WRDA) of 1996.

Geographic Area of Document:
The entire South Florida region.

Scope of Document:
The C&SF Project consists of a regional network of canals, levees, storage areas, and water control structures designed to provide water supply and flood protection for existing and future development.

This report was the next step after the Commission's Initial Report in addressing the region's long-term water resource needs. The Commission developed planning objectives, selected a list of 40 preferred options to be evaluated, and incorporated these options in to the Conceptual Plan for the Restudy.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The Conceptual Plan for the Restudy includes ongoing water resource projects grouped into 13 thematic concepts with additional elements, which all together will help to achieve sustainability. The Commission supported the following concepts:

- Regional Storage within the Everglades Headwaters and Adjacent Areas
- Lake Okeechobee Operational Plan
- Everglades Agricultural Area Storage
- Water Preserve Areas
- Natural Areas Continuity
- Water Supply and Flood Protection for Urban and Agricultural Areas
- Adequate Water Quality for Natural System Functioning
- Increased Spatial Extent and Quality of Wetlands Beyond the Everglades
- Invasive Plant Control
- Aquifer Storage and Recovery

- Protection and Restoration of Coastal, Estuarine, and Marine Ecosystems
- Conservation of Soil
- Operation, Management, and Implementation of the C&SF Project Modifications and Related Lands

In addition, the Commission also made the following recommendations:

- Authorized purposes of the C&SF Project should include protection and improvement of water quality for natural system protection and restoration and water supply for environmental and economic needs.
- Modifications to the C&SF Project developed as part of the Restudy should be cost-shared on a 50/50 basis between the Federal government and the State.
- The feasibility phase of the Restudy, including the Comprehensive C&SF Project Plan, should be expeditiously completed and other preparatory steps necessary to implement the Plan should be taken.
- State implementation activities for Everglades restoration should be expedited.
- Adaptive management strategies should be used to implement C&SF Project modifications.
- Adequate agency resources must be provided for implementation of the Plan.
- Congress should remove impediments to more effective public/private involvement in ecosystem management and natural system restoration.

Contact:

The Governor's Commission for a Sustainable South Florida no longer exists. For additional information on its final report contact:

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U.S. Army Corps of Engineers
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http://fcn.state.fl.us/everglades/gcssf/gcssf-reports.html#

***Study Number:* 3.21**

Document Title:
The Initial Report of the Governor's Commission for a Sustainable South Florida

Entity Responsible for the Document:
The Governor's Commission for a Sustainable South Florida

Completion Date of Document:
October 1, 1995

Status of Document:
Implementation

Geographic Area of Document:
South Florida Region

Scope of Document:
Report focuses on Everglades restoration, urban restoration and quality communities.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

This report included 110 recommendations concerned with the central theme of sustainability. The Commission's Initial Report identified three broad components – society, the economy, and the environment – that must be integrated to achieve sustainability in South Florida.

The societal component of a sustainable ecosystem necessitates that the basic quality of life be maintained and assured. Fundamental needs such as education, employment, food, healthcare, affordable housing, safety, transportation, and recreation must be ensured. A societal issue in the Report includes enhancing the quality of the urban areas and integrating them more fully with the natural system. Another issue centers on the restoration and enhancement of urban areas to slow the suburban sprawl that adversely impacts existing natural areas. The Commission's recommendations include the formulation and identification of the eastern central urban corridor and the planning of its redevelopment. From this stemmed the Eastward Ho! Initiative.

Economic stability and growth are also components of the Initial Report. The economic component of the Report includes expanding the availability and accessibility of education, training and high wage employment, policy changes, public private partnerships, business and industry, leadership, and coordinated planning among economic development and tourism industries.

The environmental component is dominated by the issue of water management. To obtain a higher level of stewardship, the Commission examined how to save, store and reuse water more efficiently for human and natural systems. More efficient management

is expected to result in less discharge of storm waters to tide, improved water quality, reduced flooding and enhanced natural systems.

Of the 110 recommendations in the Initial Report, many specifically address goals and objectives for the Restudy and give specific recommendations to the preferred alternatives to the Army Corps and the SFWMD. In summary:

- "*Growth which creates new demands for water should be required to pay the full cost of obtaining and treating that water. Water supply facilities to meet demands must be justified and paid for by consumers using principles of full cost accounting."* (Recommendation 9)

- The Corps and the SFWMD should *"assure that the Restudy addresses the need to achieve a sustainable South Florida economy by… proposing reliable, cost-effective measures to provide the necessary water supply."* (Recommendation 11)

- The Corps and the SFWMD should
    1. address water supply needs for urban and agricultural;
    2. address natural water level fluctuations within the natural system and restoration of natural water quality, timing, volumes, and distribution to the Everglades; and
    3. expedite the Restudy schedule. (Recommendation 13).

- The Restudy should *"integrate all elements of water management. Redesign should provide for sustainability for human natural system requirements."* (Recommendation 16)

- The agencies and interested parties should *"redesign and develop new operations for the South Florida water management system at all levels to conserve and sustain natural systems, to maximize the capture of stormwater, and to conserve water for the benefit of all users."* (Recommendation 23)

- The Corps and the SFWMD *"should reduce the extent of damage from flooding to human and natural systems."* (Recommendation 27)

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Study Number: **3.22**

Document Title:
Hillsborough River Comprehensive Watershed Management Plan (CWM)

Entity Responsible for the Document:
Southwest Florida Water Management District

Completion Date of Document:
2000

Status of Document:
On-going implementation

Geographic Area of Document:
The Hillsborough River Watershed extends over parts of three counties, including much of the northeastern quarter of Hillsborough County, a large area of central Pasco County, and a small portion of northwestern Polk County. It is bounded to the north by the Withlacoochee River watershed, to the east by the Peace River watershed, to the south by the Alafia River watershed, and to the west by the North Coastal and Tampa Bay watersheds. It incorporates parts of Tampa, Lakeland, Dade City, Plant City, the community of Land O' Lakes, and all of the municipalities of Zephyrhills and Temple Terrace.

The watershed ends at the Tampa Bypass Canal (TBC) basin. The TBC basin in not within the USGS boundaries of the Hillsborough River watershed, but is highly influenced by it. Issues related to the TBC basin are discussed in this Plan.

Scope of Document:
This Comprehensive Watershed Management (CWM) program was developed to conduct water resources assessment and planning on a watershed basis. It was designed to allow for evaluation of the regional status of water resources, with emphasis on the SFWMD's Areas of Responsibility (AORs): Water Supply; Flood Protection; Water Quality; and Natural Systems.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Staff workgroups were convened to develop and implement watershed management in each of the SFWMD's 11 watersheds. These workgroups developed three 3 primary watershed management goals:

1. To identify and prioritize existing and potential watershed management issues within the Water Quality, Flood Protection, Water Supply, and Natural Systems AORs.
2. To develop strategies for remedial or protective actions to address the water resource issues identified in Goal 1.
3. To implement the strategies in Goal 2, and monitor their effectiveness.

Specific goals to the Hillsborough River Watershed are similar to some goals of the SMDWSP and are as follows:

Water Quality

- No net increase in nutrient loading to the Hillsborough River.
- Manage nutrient loads to eliminate hypereutrophic conditions in lakes, streams, and river reaches in which they occur.
- Establish numerical goals for pollutant loading to the Hillsborough River and other water bodies in the watershed.

Flood Protection

- Develop a Memorandum of Understanding (MOU) with each county in the watershed. Each MOU will quantify the natural water storage and conveyance systems, and define how much of the watershed no longer has adequate ability to store and convey water flood waters.

Natural Systems

- Prevent and reduce the loss, alteration and fragmentation of natural habitats, particularly the remaining 'core' habitats.
- Undertake habitat restoration and protective management in key resource areas, including the preservation and restoration of natural shorelines.
- Establish minimum flows and levels on water bodies throughout the watershed.

Water Supply

- Maintain healthy lakes, wetlands, and watercourses in areas of future water supply development and improve the condition of water resources in areas of previous impact.
- Improve integration of land use and water use planning.

The following actions were identified by the Hillsborough River watershed team as top priorities for the next one to five years:

Water Supply

- Investigate expansion of the Northern Tampa Bay Water Use Caution Area (NTBWUCA);
- Identify sites for wetland and aquifer rehydration;
- Develop a baseline assessment of Blackwater Creek watershed hydrology;
- Advance Blue Sink/Curiosity Creek watershed hydrology;
- Expand the water resource monitoring network in the upper Hillsborough River watershed.

Flood Protection

- Place existing information into a useable format.

- Enhance enforcement of existing regulations. This includes determination of operation and maintenance roles and responsibilities for systems throughout the watershed.
- Advance Blue Sink/Curiosity Creek subbasin activities.

Water Quality

- Advance Blue Sink/Curiosity Creek/Sulphur Springs activities;
- Evaluate stormwater retrofit opportunity provided by the proposed Temple Terrace Civic Center;
- Evaluate DOT-56th Street stormwater retrofit opportunity/feasibility;
- Develop an upper Hillsborough River diagnostic septic tank study;
- Address the Hillsborough River Reservoir Total Maximum Daily Load (TMDL) development, implementation and retrofits.
- Complete a Crystal Springs nitrate study.

Natural Systems

- Complete a natural area core and corridor mapping analysis to:
    a. Identify and inventory historical habitat distribution to determine relative habitat losses over time,
    b. Evaluate/determine areas of high habitat value and viable linkages, and
    c. Coordinate land acquisition and other conservation efforts among all programs in the watershed.

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Study Number: **3.23**

Document Title:
Final Environmental Impact Statement (EIS) February 1994, Disposal and Reuse of Homestead Air Force Base Florida

Entity Responsible for the Document:
The lead agency responsible for preparing the plan was the U.S. Air Force. There were three additional cooperating agencies involved: the Federal Aviation Administration, U.S. Customs Service, and U.S. Department of Veterans Affairs.

Completion Date of Document:
February 1994

Status of Document:
Scheduled to be realigned on March 31, 1994.

Geographic Area of Document:
The principal geographic area of the plan is the former Homestead Air Force Base, which encompasses approximately 2,940 acres.

Scope of Document:
The scope of this document was to prepare a final Environmental Impact Statement (EIS) to examine the potential impacts to the environment as a result of the partial disposal and reuse of the Homestead Air Force Base (AFB). The final EIS was used to aid and guide future decisions about redevelopment activities for the Homestead AFB.

The need for this document was initiated by the Federal Government during its quest to reduce military defense spending. In 1993, the Defense Base Closure and Realignment Commission recommended that the Homestead AFB be realigned according to the *1990 Defense Base Closure and Realignment Act, Public Law 101-510, Title XXIX*. The Commission recommended that portions of the Homestead AFB be disposed of and aligned for reuse. As part of the implementation process to dispose and reuse the Homestead AFB, the Air Force was required to comply with the National Environmental Policy Act (NEPA), which required the preparation of an EIS.

As part of the partial disposal of the Homestead AFB, the Air Force was required to analyze the potential impacts to the natural, built, and cultural environments within and in close proximity to the AFB. The final EIS considered the potential environmental impacts associated with land uses (the alternatives) and interim activities.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

The key goals and objectives of this document were to estimate the potential environmental impacts resulting from the proposed action and reasonable alternatives presented in this plan.

The environmental impacts were analyzed based upon: population and employment, land use and aesthetics, transportation, and community and public utility services. In addition, issues related to current and future hazardous waste management practices are discussed. Impacts to the physical and natural environment were evaluated for soils and geology, water resources, air quality, noise, biological resources, and cultural resources. All the potential impacts considered were studied over a 20-year period and were also categorized based upon three primary resources: 1) the Local Community, 2) Hazardous Materials and Hazardous Waste Management, and 3) Natural Environment.

To further the analysis, there were several key influential factors discussed that could potentially affect the proposed action and alternatives. The factors considered included: ground disturbance, aircraft operations, direct employment, secondary employment, population increase, traffic, increase in water demand, increase in wastewater production, increase in solid waste, increase in electricity demand, and increase in natural gas demand.

The key components of the final proposed reuse plan for the Homestead AFB included the use of the base as a:

- Research/aviation center,
- Regional airport,
- Cargo hub,
- Agro-industrial complex for agricultural distribution,
- World teleconference center for international trade communications,
- Office park,
- Upward mobility training/education center,
- District open space/recreation park, and
- Civilian housing with inclusion of low-income housing.

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Study Number: **3.24**

Document Title:
An Advisory Services Panel Report: Homestead Air Reserve Base, Homestead, Florida

Entity Responsible for the Document:
Urban Land Institute, Advisory Services Panel

Completion Date of Document:
September 2001

Status of Document:
Recommendations being used by the Miami-Dade County Manager's office.

Geographic Area of Document:
Homestead Air Reserve Base (HARB). Midway between Miami (and Miami International Airport) and Key Largo at the northern edge of the Florida Keys. Situated east of the Florida Turnpike near both Homestead and Florida City, the property is framed by Biscayne National Park to the east and Everglades National Park to the west.

Scope of Document:
The Urban Land Institute (ULI) Advisory Services panel was gathered by the Beacon Council to consider alternatives for reuse of 717 acres of land regarded as surplus to government needs at the former Homestead Air Forces Base (AFB).

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The panel established three goals to address the planning and design issues related to the reuse area, the cantonment area, and surrounding areas:

- Avoid sprawl and create smart growth development;
- Enhance environmental viability; and
- Create a destination.

The primary planning objective is to eliminate the boundaries of the former AFB by integrating the reuse parcels into the surrounding community through viable development initiatives. The development strategy involves short-, medium-, and long-term development of the land.

The panel recommended a strategy to address the patchwork nature of the site to create development that is integrated with the community, using the following principles:

- Co-locate compatible land uses;

- Establish precincts for industrial, institutional/commercial, and residential land uses;

- Build on amenity - the county parkland at the edge property creates value for the surplus lands;

- Layer land use – residential, institutional, and industrial land uses should be located to create a natural transition from north to south; and

- Eliminate the edges – de-emphasize the old base boundaries to create a natural transition of buildings, streets, and open spaces from the airfield and the existing facilities, through the new facilities and development, to the surrounding neighborhood.

The panel focused mid- and long-range development planning on the use of natural assets as the economic engine of the region. Miami-Dade County should direct marketing efforts on ecotourism, as south Miami-Dade is the gateway to Everglades National Park, Biscayne National Park, Florida Keys National Marine Sanctuary, Metrozoo, John Pennekamp Coral Reef State Park, Crocodile Lake National Wildlife Refuge, and Big Cypress National Preserve. These assets should be marketed as a single, large-scale ecotourism destination called Destination Everglades.

The panel suggested that this development depends on securing 30 acres of land more favorably situated than the subject site to capture existing and future tourist traffic traveling the north-south transportation corridors. The panel recommended that the county secure this alternative acreage in exchange for 300 acres of Homestead AFB surplus property.

On the former Homestead AFB site, the panel suggested that the 300 acres be used for residential development using new urbanism and smart growth principles. The 300 acres could support a new community of 1,200 to 1,800 units, housing between 2,400 people at two persons per household in 1,200 units, and 5,850 at 3.25 persons per household in 1,800 units. A town center anchored by a grocery would be centrally located and include about 125,000 square feet of space, and there would be an additional 30,000 square feet of street retail space. This long-term plan for residential development on the Homestead site takes into consideration the buildout of two current projects – Key Gates with 6,600 units, and Buenaventura Lakes, with 2,200 units. These developments will need to be absorbed in the housing market before new units are built on the surplus land.

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Study Number: **3.25**

Document Title:
Pinecrest Incorporation Feasibility Study

Entity Responsible for the Document:
Village of Pinecrest

Completion Date of Document:
May 1995

Status of Document:
Pinecrest was incorporated as a Village, and their Comprehensive Plan was adopted in 1999.

Geographic Area of Document:
The Pinecrest study area contained 6.7 square miles. The exact boundaries of the current Village would not necessarily match the study area.

Scope of Document:
The feasibility study was initiated as a precursor to the formal incorporation procedure that is provided in Section 5.05 of the Miami-Dade County Charter.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The purpose of this study was to:

- Evaluate the feasibility of establishing a municipality and identify alternative means of addressing related issues of concern to the residents and property owners; and
- Provide information about the procedure.

The strongest argument for incorporation was that the Pinecrest area generated more revenues than it directly received in services. In addition, it was found that the net impact of the incorporation of the area would be to reduce the Unincorporated Municipal Service Area tax roll by $1.1 billion or 2.9 percent, and potentially the Fire Rescue District tax roll by 2.4 percent and the Library District by 1.7 percent.

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Study Number: **3.26**

Document Title:
Community Impact Assessment Report, SR 997 (Krome Avenue / SW 177th Avenue)

Entity Responsible for the Document:
Florida Department of Transportation.

Completion Date of Document: October 2002

Status of Document:
Implementation. Two Project Development and Environmental (PD&E) Studies are currently being conducted on Krome Avenue, and are being monitored for the Watershed Study.

Geographic Area of Document: The proposed project is located within the municipal jurisdictions of the cities of Homestead and Florida City, and unincorporated Miami-Dade. The study area consists of a two-lane roadway section that extends 3.83 miles along State Road (SR) 997 (Krome Avenue / SW 177th Avenue) from US-1 to Avocado Drive.

Scope of Document: The scope of the project was to evaluate the perceived impacts to the local community as a result of improvements and proposed changes to SR 997 (Krome Avenue). The need for this report evolved out of the growth, development, and emergency management requirements within South Miami-Dade.

Krome Avenue is an important component of the regional transportation network. It serves as a linkage for long-range commuting trips between Broward and Dade Counties, an alternative route to the Florida Keys, Everglades National Park, Biscayne National Park, and it services the Florida City State Farmer's Market. In addition, Krome Avenue serves as an important aspect of South Florida's emergency management system. Krome Avenue is used as a means to travel north and south during emergencies (hurricane evacuations). The Office of Emergency Management estimates that 800,000 people would need to use the corridor as an evacuation route during a Category four (4) or five (5) storm.

Preceding this report, a PD&E study was completed to help mitigate and understand the challenges presented within the Krome Avenue corridor. There were four street alternatives and a no-build scenario evaluated during the study. The improvements within the proposed alternatives included: landscaping, sidewalks, bicycle lanes, curb and gutter, on-street parking (in sections), and brick paver crosswalks among other aesthetic improvements. The four alternatives included typical roadway cross-section widths that ranged from 70-102 feet.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

There are several goals and objectives that were identified in this study, most of which relate to the SMDWSP. The goals and objectives included: the identification of the baseline social conditions, economic characteristics, land use and growth trends, notable features in the study area, and the estimated impacts of the proposed actions. The majority of the goals and objectives presented here are heavily influenced by the devastation and destruction that occurred following Hurricane Andrew in 1992. As a result of the hurricane, the area(s) in close proximity to the Watershed Study Area were heavily damaged, both socially and economically. Since 1992, the area has received various capital improvements and repairs. However, many communities in the area still feel the adverse affects of the hurricane.

The goal/objective to identify the baseline social conditions provides information on the existing demographics and special populations based on 2000 US Census data for the area surrounding Krome Avenue. In addition, the demographic profile also summarized critical community issues that dealt with the concerns, facilities, services, cohesion, mobility, and safety in and around the Krome Avenue study area.

The goal/objective to identify the baseline economic characteristics provides information on the existing labor force, major employers, and industries in and around the Krome Avenue study area. The economic profile of the area directly relates to the Watershed Study, because shortly after Hurricane Andrew the area not only experienced a decline in the population base, but also experienced a decline in the economic power of the area. Florida City has been designated an Enterprise Zone, which includes portions of the Watershed Study Area. The City of Homestead is designated as a Main Street Community. There have been several efforts to increase the community's wealth; however, portions of the area still remain economically distressed.

The goal/objective to identify the baseline land use and growth trends provides information on the existing and future land use, zoning, and growth trends for the study area. These analyses are important to the Watershed Study because they give insight to the area's future land usage, seeing as the population of the area is expected to experience a large population growth in the future.

The goal/objective to identify the baseline notable features, aesthetic character, and historic resources are important to the Watershed Study, in that they provide information about the areas' key assets and resources that relate to the areas' ability to provide future community, regional, and state facilities/amenities. The estimated impacts as a result of the proposed actions are considered to have minimal negative effects on the surrounding areas. The Krome Avenue Project shall provide ample opportunities to improve the study area through roadway improvements.

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Study Number: **3.27**

Document Title:
Long Range Dredged Material Management Program

Entity Responsible for the Document:
Florida Inland Navigation District (FIND)

Completion Date of Document:
1986

Status of Document:
Implementation

Geographic Area of Document:
The geographic area includes the 374 miles of Intracoastal Waterway channel connecting Fernandina Harbor in Nassau County with Miami Harbor in Miami-Dade and the 15 miles of the Okeechobee Waterway from its confluence with the Intracoastal Waterway to the first navigation lock.

Scope of Document:
The plan comprises three main elements:

- A two-phased plan development and property acquisition element;
- A facility permitting and construction element; and
- A facility operation element.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
This program is intended to provide a permanent infrastructure of management facilities for all maintenance material dredged from the 374 miles of Intracoastal Waterway channel. Once the dredged material management needs have been addressed, resources can be directed to the control of sediment in-flow into waterways such as Biscayne Bay and Miami Harbor. Each long range dredged material management plan includes a general identification of the sources of the sediments entering into the waterway channel. This sediment in-flow is being addressed by the Water Management District and other government agencies through projects involving inlet management, stormwater control and shoreline stabilization. If successful, sediment in-flow reductions will save local and federal maintenance dredging funds, increase the length of time to fill the upland sites capacity, reduce the impact of suspended sediments on the environment of Florida's waterways and increase retention of these sediments in beach and upland systems.
This plan should have minimal impact on the Watershed Study Area.

Contact:
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(561) 627-3386

Study Number: **3.28**

Document Title:
Miami-Dade County Agriculture and Rural Area Study

Entity Responsible for the Document:
Miami-Dade County Planning and Zoning with support from Duany Plater-Zyberk & Company and other consultants

Completion Date of Document:
This Plan will be reevaluated upon approval by the Miami-Dade County Board of County Commissioners.

Status of Document:
The consultant team and the Miami-Dade County Department of Planning and Zoning are finalizing the project deliverables. The Citizens Advisory Committee for the Agriculture and Rural Area Study did not accept this study.

Geographic Area of Document:
The Study Area includes all:

- Land planned for agricultural land use in the Miami-Dade County Comprehensive Development Master Plan;
- Land zoned AU (Agricultural);
- Land that is tax exempted for agricultural use;
- Land currently in agricultural use.

Scope of Document:
The main purpose of the study is to collect and analyze data concerning the long-term economic outlook of the agriculture industry and the development of recommendations to enhance the industry's economic viability. The study will also include recommendations for agricultural production surplus land that might be utilized for well-planned, compatible community development. This study will be brought before the Board of County Commissioners for incorporation into the County's Comprehensive Development Master Plan and Land Development Regulations.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

I. ***Agriculture and Rural Area Study Draft Charrette Report***

Map Atlas

Base Maps

1. Study Area
2. Zoning
3. 1995 Land Use Cover
4. 1998 Land Use
5. 1995 Natural Resource Area
6. Conservation Public Lands
7. Flood Zones
8. Flooding Water Table Elevations
9. Hydrology – Soil Groups
10. Land Elevations
11. Municipal Boundaries
12. Parcel Acreage
13. Population Projections by Traffic Analysis Zones (TAZ)
14. Public Facilities
15. Private Facilities
16. Road Network
17. Water Control Facilities
18. Wells, Wellfields and Aquifers
19. Aerial Photo of Study Area
20. High Ground, least inclined to flooding
21. Proximity to other agriculture operations and distance from housing and Urban Development Boundary (UDB)
22. Parcel Size, depending on crop type
23. View Corridors
24. Population Projections

Suitability Criteria Maps – Agriculture

1. Wells, Wellfields and Aquifers
2. Environmentally Sensitive Areas
3. Comprehensive Suitability Maps

The Agricultural Suitability analysis criteria were based on flood zone data, groundwater vulnerability and soil characteristics.

Suitability Criteria Maps – Development Pressure for Land Conversion

1. Wells, Wellfields and Aquifers
2. Environmentally Sensitive Areas
3. Population Projections by TAZ

4. Proximity to Power Lines
5. Comprehensive Suitability Map

The criteria considered for the land conversion suitability analysis included the proximity to existing roads, quality of roads, proximity to services, contradicting land uses, parcel size, housing density, subdivisions and septic system constraints.

Development Pressure Maps – Drawings Only (not in GIS Format)

1. Proximity to UDB
2. Proximity to Major Roads and Services
3. Population Projections
4. Parcel Size
5. Proximity to Downtown Miami
6. High ground (requiring least filling for roads, septic, etc.) and separation from wells and wellfield protection areas
7. Distance from major power lines and noxious uses

Countywide Survey

Findings based on a countywide survey sent to 1,500 residents. Most respondents preferred lower densities but were willing to accept increased densities to protect farmland and other undeveloped land.

Public Participation

The Agriculture and Rural Area Study Charrette produced six different scenarios for land development in south Miami-Dade County. Each scenario was based on small group discussions with the consultant team serving as facilitators. The results varied among the groups. Common themes centered on the future of the UDB, clustering development, density and the role of government in agriculture. The consultant team created several illustrations to describe the different ways to distribute 128 dwelling units on one square mile. A composite sketch was developed based on the input from all six groups.

Public comment was synthesized by the consultant team into a set of recommendations which were sorted as goals, objectives and policies. Five goals were established:

Goal 1: Maintain sustainable agribusiness.
Goal 2: Ensure and define character of rural area and lifestyle.
Goal 3: Maintain investment value of all Study Area land.
Goal 4: Promote environmental sustainability.
Goal 5: Prepare, approve and implement a comprehensive plan amendment.

II. *Land Use Terms and Projections Draft Report*

Between 2000 and 2025, 3,750 acres are projected to be transferred to the environmental protected/government owned category at a rate of 150 acres per year.

Land inside the Urban Development Boundary

2000 – number of acres of undeveloped private land countywide = 18,330
2000 – number of acres of agriculture = 12,958

Land Absorption Projections - Countywide

	2000		**2025**	
Developed-Urban	248,448	20%	297,863	24.4%
Undeveloped-Private	47,749	3.9%	17,720	1.44%
Agriculture	80,403	6.5%	53,966	4.4%
Protected	856,013	69.5%	859,763	70%
Total Land	1,232,613	100%	1,229,312	100%
Water	315,748		319,049	
Total County	1,548,361		1,548,361	

Source: Miami-Dade County Planning and Zoning

These projections show a loss of 26,437 acres of agriculture land between the years 2000 and 2025, and a loss of 30,029 acres of private undeveloped land to development. By the year 2025, 3,750 are projected to be protected land. Remaining agriculture land would be contiguous land.

Assumptions based on same land use trends of County from 1985 to 2000:

- Linear regression: modify for higher densities;
- Field crops (beans, tomatoes, and squash) require 40 acres or more contiguous.
- Farms going from rural to semi-rural with the majority of residents not committed to commercial agriculture.

According to Property Appraiser's records, 73 dwelling units per year are being constructed on agriculture lands outside UDB. By 2025 there will be total of 1,752 new dwelling units partially urbanizing 8,750 acres of agricultural land.

It is estimated that by the year 2050 there will be 336,354 acres of developed land, 38,483 more than in 2025. This would require 26,000 acres of agriculture land, leaving a total of 27,000 acres.

It should be possible to maintain an agricultural presence in Miami-Dade County with appropriate development regulations, but agricultural will not remain the major economic activity that it presently is in this County.

III. *Definition of Growth Alternatives Draft Report*

3 agricultural land use scenarios:

1. Preferred;

2. Rural - Develop Agriculture zoned areas at 1 d.u./5 acres;
3. Low Density - Develop agriculture zoned areas at between 3 & 6 du/acre.

Suitability Criteria for Non-Agricultural Development:

- Flood protection;
- Concurrency standards for water, wastewater and roads;
- Limitations of septic tanks in well-field protection areas.

Under the Rural scenario, the area could accommodate 37,037 new residents with 13,014 new houses.

Low Density – 4.5 d.u./acre would require amending the Urban Development Boundary; population would increase by 254,619 with 89,654 new homes – contiguous new development all on sewers with no significant new employment, retail equivalent to 25 square feet per du.

IV. *Agriculture Supportive and Complementary Uses Draft Report*

Land based classifications system table showing uses that are compatible with agriculture should be allowed in agriculture zoning districts.

The Comprehensive Everglades Restoration Plan (CERP) will require that lands be zoned agriculture.

Miami-Dade Archipelago 1999 – Florida Department of Environmental Protection (FDEP) – set aside botanical sites to preserve unique plant communities.

V. *Analysis of Agriculture Land Retention Strategies Draft Report*

Goals of Agriculture Retention

1. Achieve preservation of the best agriculture soil;
2. Achieve preservation of agricultural land values;
3. Preserve the rural character of the area;
4. Retain the collateral value of five acre parcels for development purposes (need for banking industry).

Potential Strategies to Achieve Goals

Agricultural Zoning

1. Prohibit development on lands with fertile soil;

2. Five acre lots are not large enough to discourage development and are too small for effective agriculture – promotes sprawl - creates single family homes with large lawns;

3. Cluster zoning – allows for more creativity in urban site design, enables the protection of site amenities and environmental lands.

- Clustering is most effective when it is mandatory; seldom is it successful when it is optional. Cluster ordinance 33-284.6-9.

4. Buffering – Georgia Code requires any non-agriculture use located next to agriculture must provide a 150 ft. landscaped buffer. Buffer codes need to be enforced.

Strategies – Non-Zoning Techniques

5. Right to Farm Laws – Objectives: 1) To strengthen the legal position of farmers against nuisance law-suits by their neighbors and 2) To protect farmers from anti-nuisance and unreasonable agriculture regulations.

6. Agricultural Districts
   - Special areas where commercial agriculture is encouraged and protected and measures are implemented to encourage it.

   - Include a wide range of tools such as land use tax, legal and conservation techniques. New York has a good example; Florida does not have a state law.

7. Land Evaluation Systems - Site assessment models developed by the U.S. Soil Conservation Services.

Land and "Less than Fee" Acquisition Programs

8. Conservation Easements - Voluntary legal agreement between land owners and government – may result in lower property taxes.

9. Purchase of Development Rights (PDR) - the landowner voluntarily agrees to use the land for open space or agriculture in perpetuity.

10. Land Banking – acquire land in urban areas and prepare it for development to ensure land is developed in the most advantageous manner for the community.

    Discourage speculation and leapfrog development.

11. Transfer of Development Rights (TDR) - Transfer development rights to receiving areas with higher densities. Miami-Dade TDR program for the east Everglades makes it very difficult and expensive to build in this area, which provides an incentive for landowners to sell their development rights.

12. Florida Rural and Family Land Protection Act – to protect ranch and timber landowners.

Taxation Programs

13. Agriculture Tax Program – lower tax rates for agricultural land.

14. Differential Assessment value of land based on the net farm income.

15. Circuit Breaker Tax Relief Credit – the amount of credit depends on your income (no such program in Florida yet).

Funding Programs

16. Impact Fees.

17. Environmental Migration Fees.

18. Federal Programs.

Regulatory Techniques

19. Growth Tiers.

20. Concurrency.

21. Urban Service Boundary.

Preserving the economic value of agricultural land can be accomplished by:

- Economic development through the preservation of agriculture;
- Cluster new development in the exurban areas to reduce exurban area and infrastructure costs;
- Maintain the character of the exurban area; and
- Develop strategies that are legally defensible.

VI. *Agricultural Economic Development Strategies Draft Report*

Grant and loan opportunities for farm work, housing through the DCA Division of Housing and Community Development

LOS, Cost and Revenue Document for Fiscal Impact Analysis

Evaluates the fiscal impact of the current predominately agricultural land use pattern in the study area compared to suburban residential build out and describes countywide revenues and expenditures.

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Study Number: **3.29**

Document Title:
Miami-Dade County Agriculture Land Retention Study Summary and Recommendations (Volume One of Six)

Entity Responsible for the Document:
University of Florida Institute of Food and Agricultural Sciences (IFAS) through a contractual agreement with the Florida Department of Agriculture and Consumer Services (FDACS).

Completion Date of Document:
April 2002

Status of Document:
Complete. The document has been submitted to FDACS.

Geographic Area of Document:
The Study Area includes all land:

- Planned for agricultural land use in the Miami-Dade County Comprehensive Development Master Plan;
- Zoned AU (Agricultural);
- That is tax exempted for agricultural use;
- Currently in agricultural use.

Scope of Document:
The main purpose of this study is the analysis of data concerning the long-term economic outlook of the agricultural industry and the development of recommendations to enhance the industry's economic well-being. It is also the intention of FDACS, the Miami-Dade County Commission and the University of Florida that this study and any potential resulting ordinances shall not have an adverse effect on the value or use of property in the study area. The purpose of this study is to provide information and recommendations to FDACS, Miami-Dade County government, and the citizens of Florida, particularly the citizens of Miami-Dade County, to improve current and future land planning.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The Miami-Dade County Agricultural and Land Retention report is organized into five sections:

I. Objectives
II. Findings
III. Major Factors Affecting Profitability and Sustainability of Miami-Dade Agriculture
IV. Trends in Production Technology
V. Other Economic and Social Factors

I. Objectives

Members of the Miami-Dade County Agricultural Practices Study Advisory Board developed the objectives of this study over a period of several years. The objectives can be organized into six major categories. These categories are:

1. Provide an overview of the natural and developed environment of the study area (the South Dade Agricultural Area) and describe the agricultural practices associated with each major crop or commodity group.

2. Document the economic importance of agriculture to Miami-Dade County.

3. Determine economic trends associated with major agricultural crops grown in Miami-Dade County. Trends in acreage, revenues, and profitability were to be examined whenever possible.

4. Identify major factors affecting the profitability and sustainability of Miami-Dade County agriculture.

5. Identify and evaluate emerging technological changes that could help or harm Miami-Dade County's competitive situation.

6. Offer recommendations to improve the economic sustainability of agriculture in Miami-Dade County.

II. Findings

The Findings section is an overview of information pertinent to the study objectives. This section is a summary of the detailed information contained in a series of five appendices.

The Findings section contains baseline data relevant to the Watershed Study. The first major subsection describes population, natural resources, climate and the various agricultural enterprises of Miami-Dade County. Some of the baseline data which will prove useful for the Watershed Study include:

- Flooding caused by hurricanes has had a severe impact on the agriculture industry. Economic losses to agriculture producers from Hurricane Irene were estimated at nearly $230 million. In October 2000, a "no name storm" dumped up to 12 inches of rain in the agricultural area, causing losses of $219 million.

- Agriculture accounts for 19.6% of the 493,604 acres of non-protected lands in Miami-Dade County. Agriculture in Miami-Dade County is diverse with three basic types of crops (row, fruits and nursery). Farms of less than 10 acres represent 20 percent of all farms but only four percent of all agricultural land.

Farm Size Distribution in Miami-Dade County, 1997

Farm Size (acres)	Number of Farms	Percent of Total Farms	Acreage of Land, Percent
1 – 9	928	59	4
10 – 49	446	28	10
50 – 179	99	6	10
180 – 499	57	4	22
500 – 999	27	2	22
1000 +	19	1	33
TOTALS	**1,576**	**100**	**100**

Source: Miami-Dade County Agricultural Land Retention Study and Census of Agriculture

Acres of Agricultural Activity South of the Tamiami Trail

Type of Agriculture Activity	Acres	% of Agriculture in South Miami-Dade	% of Agriculture in County
Vegetables	40,344	45.9	41.7
Fallow Land	2,344	2.7	2.4
Fruit Groves	15,513	17.7	16.1
Container Nurseries	5,841	6.6	6.0
Field Nurseries	5,561	6.3	5.8
Animals	2,220	2.5	2.3
Out	15,989	18.2	16.5
TOTAL	**87,812***	**100**	**90.8**

* 72 acres have two types of agricultural use.

Source: Miami-Dade County Agricultural Land Retention Study and Census of Agriculture

- Agriculture created 14,795 jobs during the 1997-98 crop year. The economic impact of agriculture was measured using the IMPLAN input-output model. The study also contains a detailed breakdown of acreage, revenues and prices by crop.

III. Major Factors Affecting Profitability and Sustainability of Miami-Dade Agriculture

- IFAS completed a survey of farmers and agribusinesses to better understand the major factors affecting profitability and sustainability of agriculture. The respondents were not overly concerned with production issues or marketing difficulties. A new set of problems related to environmental issues, human health concerns (i.e. pesticide regulations, worker safety, etc.), international trade policies, urbanization and phytosanitary challenges has begun to emerge among farmers.

- Survey results found a high level of concern with water quantity, distribution and timing. IFAS offered several recommendations to alleviate the concerns related to water: refine topographic data using Lidar allowing restoration managers to anticipate and evaluate impacts of various water management decisions; improve the hydrological data collection to monitor water table levels in and near agricultural areas; explore an indemnification program that would compensate farmers for crop losses and losses in land values if restoration efforts result in unintended catastrophic or chronic negative consequences; and develop more flood tolerant crops/best management practices focusing on more efficient irrigation, fertilizer management and pest control.

- The large number of small farms and wide variety of industries makes it extremely difficult to organize politically and weakens the market power of the area.

IV. Trends in Production Technology

- Reducing production costs through new technology is key to keeping production costs per unit on par with international competitors.

- Advances in irrigation, fertilizer and pesticides may impact water quality and quantity entering Biscayne Bay.

V. Other Economic and Social Factors

- An increase or decrease in the demand for farm labor directly affects the need for affordable housing. Currently there is a pressing need for dormitory style housing for farm workers. Land use scenarios will be influenced by the projected need for affordable housing.

- Survey results indicated that small tropical fruit operators were most interested in promoting agritourism. The development of a successful agritourism industry would have an impact on job opportunities and the overall economy of agriculture. Additional tourist opportunities would pave the way for conversions to tourist related business (i.e. hotels, restaurants, etc.).

- The rapid pace of population growth in Miami-Dade County has led many people to believe that the urbanization of agricultural lands is inevitable. Sixty percent of the county is protected as a park, preserve, water conservation area or recreation area. Market values for different types of agricultural land were assessed by IFAS. The results were based on sales data obtained from the Miami-Dade County Property Appraisers Office. The profitability of farming will ultimately determine whether lands are sold off and converted to nonagricultural uses. Local and state governments can implement the following tools to preserve the profitability of farming: 1) the Agricultural Practices Study Advisory Board should review all local regulations that have potentially adverse financial effects on agriculture or on owners of agricultural land; 2) review of all existing local regulations, permits

and fees that reduce profitability for agriculture related businesses; 3) support the development of BMPs for crops; 4) and/or buy land or buy agricultural conservation easements.

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Study Number: **3.30**

Document Title:
Discover Naranja: Charrette Report

Entity Responsible for the Document:
Miami-Dade County, prepared by the Treasure Coast Regional Planning Council

Completion Date of Document:
Charrette was held from August 3-10, 2001. Report was published November 2001.

Status of Document:
Implementation

Geographic Area of Document:
The Village of Naranja (the Village) is comprised of the general portion of land limited by SW 256th Street to the north, SW 270th Street to the south, SW 137th Avenue to the east, and the Miami-Dade County Urban Development Boundary to the west.

Scope of Document:
The recommendations of the Naranja Charrette contain long-range policies for the redevelopment of the unincorporated area of Naranja into a traditional Village. The residents of Naranja wanted to evolve from being a "bedroom community" and a "low-income housing conglomerate."

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The goal of the Naranja Master Plan is to create a framework that will facilitate development and investment in private land as well as in public infrastructure, preserve the community's heritage, enhance its livability and sense of unity and encourage design quality.

The proposed development pattern is that of traditional neighborhood development. The strategies include adaptive reuse, renovation, restoration, and redevelopment. The Village is organized into three traditional neighborhoods and a light industrial district. Each neighborhood and district has its own center, where higher densities and some commercial or civic uses develop around a central plaza. All three neighborhoods are connected to the Village Center at the intersection of US1 and SW 264th Street.

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Study Number: **3.31**

Document Title:
The Short Cut to Smart Growth (Palm Glade) Presentation

Entity Responsible for the Document:
Commissioner Katy Sorenson

Completion Date of Document:
No date

Status of Document:
Presentation for informational purposes

Geographic Area of Document:
The study area is within the Watershed Study Area. It is located south of SW 216th Street, north of SW 268th Street, east of U.S. Highway 1 and west of the Urban Development Boundary.

Scope of Document:
The scope of the plan is to describe smart growth initiatives that may be used to promote infill and redevelopment within the study area. The focus is on development pressure, demographics, land use, parks and schools.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The study area is described as the last frontier inside the urban development boundary. There is a mix of existing land uses in the area with 31 percent remaining undeveloped. This analysis is directly related to the Watershed Study because it highlights a significant opportunity for infill and redevelopment. Three urban centers (Cutler Ridge, Goulds and Naranja) are located within the area. The presentation recommends the implementation of smart growth initiatives from the Comprehensive Development Master Plan. These initiatives and strategies should focus on areas subject to highest development pressures, address location, intensity and form, and be consistent with the SMDWSP.

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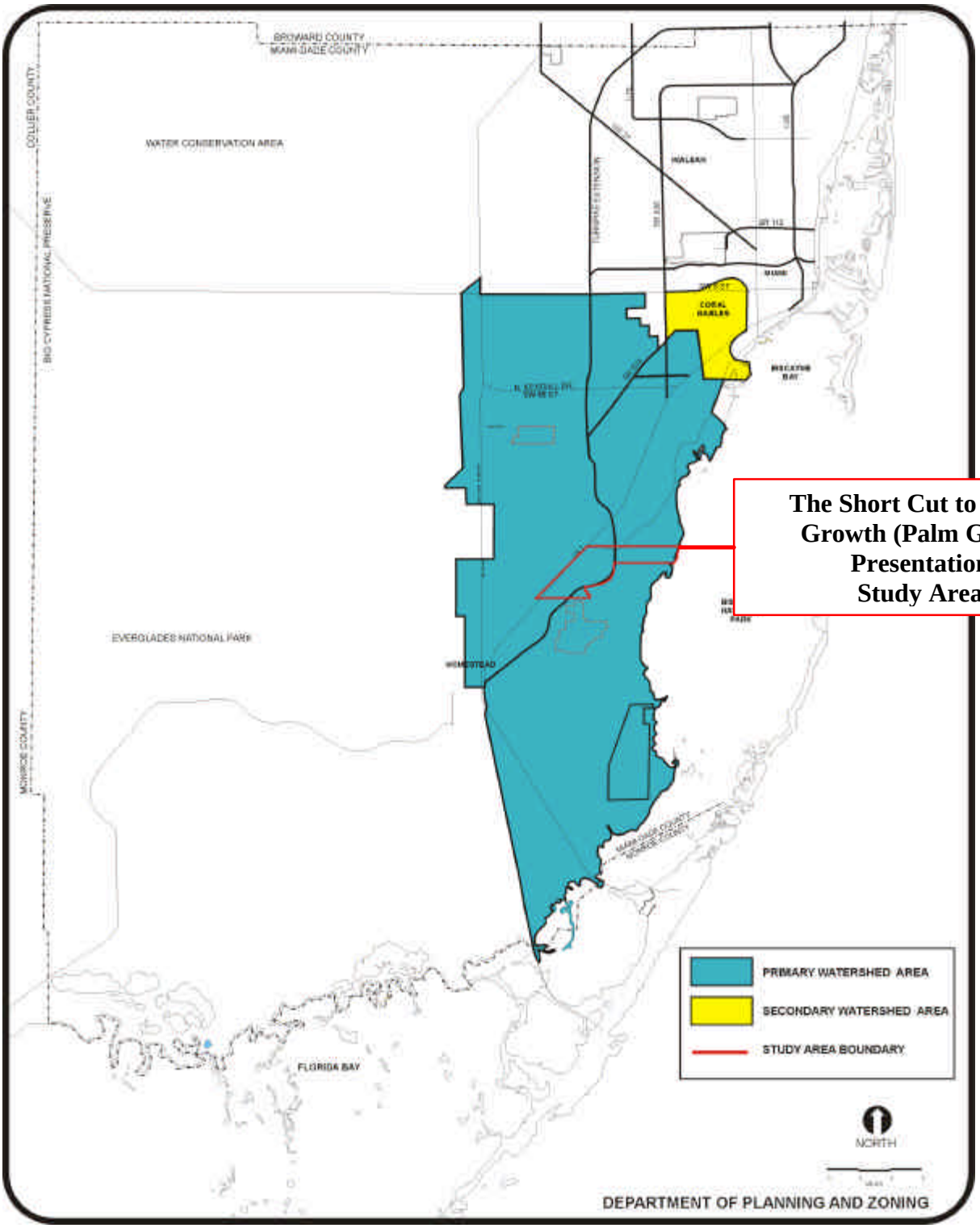
BROWARD COUNTY
MIAMI-DADE COUNTY
COLLIER COUNTY
WATER CONSERVATION AREA
BIG CYPRESS NATIONAL PRESERVE
HIALEAH
CORAL GABLES
BISCAYNE BAY
EVERGLADES NATIONAL PARK
HOMESTEAD
MONROE COUNTY
FLORIDA BAY
The Short Cut to Smart Growth (Palm Glade) Presentation Study Area
PRIMARY WATERSHED AREA
SECONDARY WATERSHED AREA
STUDY AREA BOUNDARY
NORTH
DEPARTMENT OF PLANNING AND ZONING

Study Number: **3.32**

Document Title:
Preserving the Bluegrass - Final Report

Entity Responsible for the Document:
Bluegrass Tomorrow and Lexington-Fayette County, Kentucky

Completion Date of Document:
1996

Status of Document:
Implementation

Geographic Area of Document:
Lexington-Fayette County, Kentucky, Urban Service Boundary (USB) and the Rural Service Area around the USB.

Scope of Document:
The Lexington-Fayette USB was the first urban development boundary in the United States, established in 1958. Between 1993 and 1996, there was intense community debate over expansion of the boundary. The fight was very bitter and eventually a neutral organization, Bluegrass Tomorrow, stepped in and formed a group of key stakeholders from both sides of the debate. Over a slow period of time, the group came to consensus on the issues and developed a Rural Land Management Plan for the 70% of Lexington-Fayette County's land area that lies outside the USB. This report tells about the process of overcoming the battles to achieve community consensus. Highlights of key factors of their success include:

- Neutral, non-partisan convener that served as a bridge builder
  - Provided committed leadership and organizational resources
  - Served as a bridge-builder between constituent groups

- Group made up of knowledgeable people respected by their peers
  - Knew the larger community issues and the political process
  - Felt they had more to gain by investing time in finding common ground and compromising

- A supportive local government open to better ways of making decisions
  - Participated as needed, with staff members providing technical support
  - Used the group as test lab to explore ideas in an informal setting
  - Made the parallel public planning process open

- The structure of the group was such that it was limited to essential stakeholders. They had no official status.

- Maintained an informal, structured process
  - Neutral convener and neutral facilitator
  - Regular meetings to maintain a sense of continuity and purpose
  - Progress in small bites used to form a common understanding
  - Agreed to make all decisions by consensus
  - Began and ended all meetings with a summary of agreements and next steps
  - Created smaller working groups to address particularly sticky issues
  - Used agreement about facts to develop an understanding of complex issues
  - Put agreements into draft documents to share with constituents

- Group developed trust through the process and recognized the opportunity to make a difference for future generations

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
This community was at such a stand-off that decisions could not be reached about future land-use. Through the process of consensus building, opposing groups were able to write a plan that each side could agree upon. The plan was approved by County Council and is now being implemented. Such a report and process may be useful to the SMDWSP if and when debate arises regarding issues of land use or property rights.

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Study Number: **3.33**

Plan Title:
Residential Density Feasibility Study

Entity Responsible for the Plan:
Miami-Dade County Department of Planning and Zoning

Completion Date of Plan:
October 3, 2001

Status of Plan:
Currently being implemented.

Geographic Area of Plan:
Miami-Dade County

Scope of Plan:
The report was written to assist the Miami-Dade County Board of County Commissioners with decisions about residential density. The five main goals of the report are as follows:

1) Describe the current context in which the study was conducted:
2) Identify the most significant physical, economic and social considerations for developing at higher densities;
3) Consider current public sentiment on the issue of higher density;
4) Introduce the practices of other communities that face similar challenges as Miami-Dade County; and
5) Recommend initial actions the County should take to improve implementation of the County's current policies encouraging higher density in appropriate locations.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The Residential Feasibility Study will prove to be a valuable tool for accomplishing Task 2 of the Watershed Study Scope of Services. This Study contains recommendations to build on the sound planning principles of the Comprehensive Development Master Plan (CDMP) and studies from other parts of the country. Below are the recommendations relevant to the Watershed Study:

1. The Miami-Dade County Department of Planning and Zoning should partner with the Metropolitan to create transit oriented development planning programs around metrorail stops. Portland's Trimet and San Francisco's BART are examples of successful programs which should be further researched. The CDMP already recommends that these areas be developed with transit supportive uses, densities, intensities and designs but the policies are not being fully implemented.

2. Expand the urban form guidelines for single-family detached areas to allow up to 10 dwelling units per acre.

3. Evaluate and update infrastructure to meet density objectives. As part of the evaluation and appraisal report (EAR) evaluate infrastructure services and future funding allocations to adequately address intensities of development.

4. Enhance smart growth principles in CDMP with policies from other parts of the County. Other county studies relevant to the Watershed Study include the following:

    - Miami-Dade County Brownfields Task Force Report (1996)
    - Infill Strategy Task Force Report (1996)
    - Infill Housing Advisory Committee Report (1997)
    - Task Force on Urban Economic Revitalization Report (1997)

5. Facts on residential density in Miami-Dade County:

    - 90% of the County's population growth is occurring on the western fringe
    - More people are moving to Miami-Dade while household size is decreasing
    - The definition of high density is relative and depends on which part of the County you live. High densities and low densities are clustered in certain areas. Between the 1980 and 1990 the built environment averaged eight dwelling units/acre. In 1994, single-family vacant land averaged 4.4 dwelling units/acre, multi-family 18 dwelling units/acre for a total vacant residential density of dwelling units/acre. The approved densities for vacant land were found to be 1.2 dwelling units/acre less than the built environment.

6. Utilize transit orientated developments and smart growth principles to accommodate future populations. CDMP policies recommend 20 du/acre immediately around rail stations and 15 dwelling units/acre and 10 dwelling units/acre farther away from the station.

7. Need to recognize that there are impediments to developing at higher densities. The biggest concern related to infrastructure is related to education. Schools are overcrowded and would be further impacted by more intense development. Traffic and parks space may be an issue due to public perception but should not be a technical issue. Wastewater and potable water should not be a problem.

8. Developing at higher densities greatly reduces public costs. Refer to the *Eastward Ho! Study* conducted by Rutgers University and *Financial Impediments and Solutions to Redevelopment* by the FAU/FIU Joint Center.

9. The public workshops conducted by Miami-Dade County Department of Planning & Zoning revealed major concerns related to density:

    - Impact on infrastructure;

- Design compatibility and integration of land uses;
- Land consumption and loss of agriculture land;
- Infrastructure needs of existing development funded and addresses before new infrastructure is provided to new areas;
- South Miami-Dade county residents could not understand why the County has to accommodate new growth.

10. Simply mapping higher densities does not ensure that higher densities will be built. The County needs to do an infill and redevelopment master plan.

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Study Number: **3.34**

Document Title:
The South Florida Tropical Fruit Plan

Entity Responsible for the Plan:
The Tropical Fruit Advisory Council

Completion Date of Plan:
No Date on Document; it is assumed to be 1990

Status of Plan:
Being implemented as a marketing strategy.

Geographic Area of Plan:
South Florida region: Miami-Dade, Broward, and Palm Beach Counties. Most of Florida's tropical fruit orchards are located in Miami-Dade County on land wedged between urban boundaries on the northeast, the Everglades on the west, and environmentally sensitive lands on the south.

Scope of Document:
The plan provides a history of the tropical fruit crops industry in South Florida. It outlines the processing of South Florida's tropical fruits, provides an introduction to specific crops grown, and makes recommendations for research needs and objectives for the industry. Recommendations are also provided for tropical fruit promotion and marketing and for the preservation of South Florida's tropical fruit farmland. Agriculture industry background information is important for a greater understanding of the Watershed Study Area economy.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Miami-Dade County is the center of the tropical fruit industry in South Florida, with a total of 23,000 acres at the time of the study. The plan outlines needs and objectives for horticultural research. Areas in need of research include:

- Development of control measures for pests and diseases;
- Testing and registration of pesticides;
- Post-harvest handling and technology;
- Breeding, evaluation, selection of new varieties;
- Development of improved production practices; and
- Development of marketing and advertising strategies.

The Tropical Fruit Advisory Council recommended the following proposals to reduce and eliminate the permanent loss of South Florida farmland:

- The Florida Legislature should amend the State Comprehensive Plan, the State Land Development Plan (1986-2000), and the State Water Use Plan (1986) to emphasize the importance of enhancing and protecting the South Florida tropical fruit industry.

- The Florida Department of Community Affairs should be directed by executive order and/or statute to include the enhancement and protection of the South Florida tropical fruit industry in its policies and goals.

- The Governor's Task Force on the Future of Agriculture should amend its 1986 Final Report to include a section on South Florida's tropical fruit industry.

- The Florida Department of Agriculture and Consumer Services should co-sponsor, with other state and local government bodies and universities, a symposium on loss of farmland, with a view toward finding specific solutions for Miami-Dade County.

- The University of Florida Institute of Food and Agricultural Sciences should conduct research on and propose solutions to the problem of disappearing tropical fruit farmland in Miami-Dade County.

- The Soil and Water Conservation should implement a Land Evaluation and Site Assessment System (LESA) to monitor Miami-Dade County farmland losses through regular and periodic mapping.

Many of the facts and figures provided in this document have been updated and readdressed in the Miami-Dade County Agriculture and Rural Area Study.

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Study Number: **3.35**

Document Title:
Strategic Regional Policy Plan for South Florida

Entity Responsible for the Document:
South Florida Regional Planning Council

Completion Date of Document:
August 1995 – The plan is currently being updated.

Status of Document:
Currently being implemented.

Geographic Area of Document:
Broward, Miami-Dade and Monroe Counties.

Scope of Document:
The scope of the plan is to provide policy guidance for local governments. Local governments are required to implement the goals and policies of the Strategic Regional Policy Plan for South Florida (SRPP) through their comprehensive plan. The SRPP covers six major subject areas: land use and public facilities; natural resources of regional significance; economic development; regional transportation; affordable housing; and emergency preparedness.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The objectives of the SRPP are similar to those in the Watershed Study. While it highlights the value of Biscayne Bay and other natural resources as Natural Resources of Regional Significance, it also recognizes the importance of a healthy economy and unavoidable pressures of population growth. The goals and policies of the SRPP stress the importance of sustainable development and redevelopment, focusing new development away from sensitive natural areas and towards areas already served by infrastructure, and creating a competitive and diversified regional economy. As the last large section of rural land in all of South Florida, decision makers should implement the growth management policies of the SRPP when determining the development patterns for South Miami-Dade County. The SRPP will prove to be a useful tool for balancing the needs of the environment and the economy.

The following is a list of the Strategic Regional Goals that are related to the Watershed Study:
Goal Number:

2.1 Achieve long-term efficient and sustainable development patterns by guiding new development and redevelopment within the region to areas which are most intrinsically suited for development, including areas (1) which are least exposed to coastal storm surges; (2) where negative impacts on the natural environment

will be minimal; and (3) where public facilities and services already exist, are programmed, or, on an aggregate basis, can be provided most economically.

2.2 Revitalize deteriorating urban areas.

2.3 Enhance the economic competitiveness of the region and ensure the adequacy of its public facilities and services by eliminating the existing backlog, meeting the need for growth in a timely manner, improving the quality of services provided and pursuing cost-effectiveness and equitability in their production, delivery and financing.

3.1 Eliminate the inappropriate uses of land by improving the land use designations and utilize land acquisition where necessary so that the quality and connectedness of Natural Resources of Regional Significance and suitable high quality natural areas is improved.

3.2 Develop a more efficient and sustainable allocation of the water resources of the region.

3.3 Achieve improved air quality throughout the region through a reduction of transportation related impacts and the increased use of natural plantings.

3.4 Improve the protection of upland habitat areas and maximize the interrelationships between the wetland and upland components of the natural system.

3.5 Develop a plan for public access that delineates the Natural Resources of Regional Significance and high quality natural areas compatible with human recreation, and promotes the ecologically sensitive use of suitable Natural Resources of Regional Significance and high quality natural areas.

3.6 In order to improve natural system quality and extent and to improve the connectedness of the natural system, achieve an increased level of the funds set aside for the acquisition, protection, restoration and maintenance of the Natural Resources of Regional Significance and suitable adjacent natural areas.

3.7 Educate South Floridians to achieve an increased awareness of the natural system and of its significance with respect to the overall regional system.

3.8 Enhance and preserve natural system values of South Florida's shorelines, estuaries, benthic communities, fisheries, and associated habitats, including but not limited to, Florida Bay, Biscayne Bay and the coral reef tract.

3.9 Restore and protect the ecological values and functions of the Everglades System.

4.1 Achieve a competitive and diversified regional economy, including lower unemployment rate and higher per capita income than the state and national average for Dade, Broward and Monroe Counties through the achievement of cutting edge human resources, economic development infrastructure and other resources to ensure a sustainable regional community.

5.1 To achieve mutually supportive transportation planning and land use planning that promotes both mobility and accessibility in order to foster economic development, preserve natural systems, improve air quality, increase access to affordable housing and promote safety.

6.1 Ensure the availability of adequate, affordable housing for very low, low, and moderate income households within a reasonable commute distance of job centers.

6.3 Decrease the cost and increase the efficiency of providing affordable housing in the region.

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Study Number: **3.36**

Document Title:
The South Dade Watershed Project (SDWP)

Entity Responsible for the Document:
The principal organizations responsible for the plan were the University of Miami's School of Architecture Center for Urban and Community Design and the South Florida Water Management District.

Completion Date of Document:
July 1995

Status of Document:
Complete, however, the South Dade Watershed Project (SDWP) was not a design plan, but more of a documentary of the historic land uses and water flow for the South Florida region. The document is a descriptive and graphical presentation explaining what, when, why, and how South Florida's hydrology has evolved naturally and artificially.

Geographic Area of Document:
The geographic area of the plan focuses on South Miami-Dade County. However, many of the topics are interrelated and include the entire South Florida Region.

Scope of Document:
The scope of the SDWP is to serve as a planning document that defines the perceived watershed challenges in South Miami-Dade County, outlines the historic watershed flow conditions, and suggests strategies to mitigate the South Miami-Dade watershed deficiencies. Moreover, the SDWP seeks to provide long-term sustainable water resource protection for South Florida.

The SDWP takes several approaches in defining the challenges of the existing watershed conditions. The existing hydrological conditions are described using a variety of historical and graphical representations of the watershed and its interrelation to land use and the built environment. The SDWP explains how the misuse of the natural environment and misguided land use policies has caused many adverse conditions, especially those relating to water resources.

The SDWP presents a brief explanation of the South Florida watershed flow properties, which in turn provides a better understanding of the challenges the region faces in the future. From that understanding emerges strategies that promote sustainable usage of water resources. The SDWP presents strategies that integrate land use and water, connecting our human needs with the requirements of the natural environment.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

The key goals and objectives relating to the SMDWSP include:

- Defining and understanding the binding watershed challenge and issues that include:
  - the management of water resources;
  - adequacy of land use policies;
  - the interrelationship between the natural environment and human needs; and
  - and the effects of urbanization on water aquifers, infiltration, impervious surfaces, natural/managed systems, stormwater management, flood protection, natural disasters, wetlands restoration/functions, and aquifer recharge.

- Addressing the watershed challenges and issues from a policy perspective that includes the evaluation of the historic, current, and future land use polices to form a regional approach that leads to sustainable development.

- Mitigating watershed challenges and issues from a strategic and constructive point of view that includes discussion on how to create:
  - sustainable environments in complimentary and not competitive environments;
  - interactive watershed networks;
  - water storage in South Dade;
  - water resource overlay zoning districts;
  - principals for sustainable water resource planning;
  - guidelines for regional system planning; and
  - changes to the existing urban drainage systems.

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Study Number: **3.37**

Document Title:
The South Dade Watershed Project Supporting Document

Entity Responsible for the Document:
The principal organizations responsible for the plan were the University of Miami's School of Architecture Center for Urban and Community Design and the South Florida Water Management District.

Completion Date of Document:
July 1995

Status of Document:
Complete, however, the South Dade Watershed Project (SDWP) was not a design plan, but more of a documentary of the historic land uses and water flow for the South Florida region. The document is a descriptive and graphical presentation explaining what, when, why, and how South Florida's hydrology has evolved naturally and artificially.

Geographic Area of Document:
South Miami-Dade County

Scope of Document:
This is a supporting document to the South Watershed Project document. Each of the five chapters covers technical or related information to the study.

Chapter One covers the history of South Florida development and laws governing water and growth management. This includes a synopsis of the ecology of southeast Florida prior to drainage and development and pre-growth management. It provides summaries of Florida's Growth Management legislations from 1972, 1975, 1985 and 1993. Examples of watershed and ecosystem management are provided from Chesapeake Bay, the Australian Alps, and the Great Lakes/St. Lawrence Basin.

After the history portion, an explanation of the genesis of the South Dade Watershed Project is provided. Some key problems with Biscayne Bay are identified:

- Water and sedimentation degradation
- Loss and alteration of habitats
- Alteration of hydrology

Because of Hurricane Andrew, Biscayne Bay experienced extensive damage. Concerned citizens and agencies viewed this as an opportunity to plan for the Bay in a more responsible way.

Chapter Two provides a data inventory and compilation and an evaluation of stormwater requirements, as well as a partial ranking of drainage basins. The main objective of the South Dade Watershed Project was to provide a comprehensive understanding of landuse

in South Dade County (Miami-Dade) and regional water management objectives. To achieve that objective, the following data was compiled:

- Present landuse
- Future landuse
- Impervious surfaces by landuse type
- Stormwater runoff by landuse type
- Pollutant loading by landuse type
- Water quality from the Biscayne Bay Water Quality Monitoring Program
- Average monthly discharge from Biscayne Bay SWIM Plan
- Wetland uptake rates for various stormwater constituents

This report is considered a Phase I report that inventoried available data, summarizes the methodology used to evaluate the wetland treatment area requirements by basin, and provided a partial ranking of basins for detailed evaluation in Phase 2 to lead to a wetland watershed management plan.

Chapter Three is a review of the use of economic analysis in the valuation of wetlands. It shows the multiplicity of ways and means for assessing environmental values. Such multiplicity is said to represent the diversity of benefits provided by the many environmental functions. Therefore, the method to measure the socioeconomic value of one function may not be appropriate to measure the value of another function.

The first section of this chapter examines valuation methods used to measure the physical goods produced by the wetlands. The second section presents methodologies used to measure wetland services. The third section examines valuation methods for measuring the aesthetic and recreational opportunities that wetlands supply. The fourth section contains methods that are used to determine the real estate value of wetlands. The final section discusses other concepts and methods that are related to the valuation of wetlands, such as the intrinsic value and wetlands mitigation banking.

Chapter Four investigates the resource base of the economy of South Dade (Miami-Dade) and its relationship to sustainability and carrying capacity. The carrying capacity of the study area was evaluated using the EMERGY flows and the EMERGY Investment Ratio and availability of long term storages of water on a sustainable basis. Population levels calculated in this manner were between 700,000 and 1.7 million people. In addition, several carrying capacity levels were calculated based on sustainable use of water resources. These suggested that between 70,000 and 90,000 people could be supported without “mining” for water resources of the region, and that if treated wastewater were imported from greater Miami, and recycled through constructed wetland sloughs, the sustainable water crop would increase population levels to about 340,000 people.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

The South Dade Watershed Project is derived from the need to protect Biscayne Bay from water quality and quantity problems caused by past alterations and current land uses. The main objectives outlined by the focus group are:

- Reclaim wetlands

- Reforest
- Create regional greenway network
- Reconnect the Everglades to Biscayne Bay, Card Sound, and Barnes Sound
- Create clear boundaries between urban, agricultural, and natural lands
- Reduce the urban boundary and rebuild compact, mixed use, pedestrian friendly communities

Challenges to the project were outlined:

- Population growth
- Existing boundaries, zoning, and landuse
- Existing institutional and governance structures
- Public opposition
- Funding

Suggestions were made for developing and implementing a watershed protection plan:

- Assess watershed conditions/identify natural resource needs and flood protection limitations
- Identify areas that need particular attention
- Set plan goals and objectives/refine with public input
- Develop a plan/identify alternative solutions
- Refine plan/identify alternatives based on public input
- Implement solutions through integration, coordination, and partnerships
- Monitor and report /use adaptive management.

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Study Number: **3.38**

Document Title:
Villages of Homestead Development of Regional Impact (DRI) Annual Status Report

Entity Responsible for the Document:
City of Homestead

Completion Date of Document:
Reporting period of 3/1/99 – 2/28/01

Status of Document:
Implementation

Geographic Area of Document:
Villages of Homestead, FL

Scope of Document:
The scope of this report is to fulfill the requirement by the State of Florida to submit an annual report.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
In June of 1999, the City of Homestead made various changes to the DRI. The proposed changes approved by amendment include:

- Reduction of 174 residential dwelling units for a cumulative reduction from 14,465 dwelling units to 9,882 dwelling units;
- Reduction of 11 acres of school for a cumulative decrease from 9.34 acres to 64.08 (47.34 actual) acres of school designation;
- Reduction of 4.85 acres of retail for a cumulative decrease from 103.02 acres to 74.12 acres of retail designation;
- Increase of 67.02 acres of open space/park for a cumulative increase from 84.66 acres to 624.40 acres of open space/park area; and
- Increase of 93 acres of grass buffer/overflow parking for a cumulative increase from 0 acres to 203 of grass buffer/overflow parking area.

The approved program includes three phases and is scheduled to be completed by the end of the year 2015.

Land Use	Development		
	DRI Approvals	**Constructed**	**Remaining DRI Approvals**
Residential	9,882 du	3,239 du	6,643 du
Commercial	974,000 sf	22,500 sf	951,500 sf
Office	241,000 sf	0 sf	241,000 sf
Industrial	3,100,000 sf	116,000 sf	2,984,000 sf
Hotel	400 rooms	0 rooms	400 rooms
*Rec/Open Space	664.23 acres	596.83 ac	67.40 ac
*Community Park	86.30 acres	86.3 acres	0 acres
Golf Course	150 acres	150 acres	0 acres
*Schools	47.34 acres	69.3 acres	0 acres
Hospital	127 beds	0 beds	127 beds

Source: 2001 DRI Annual Status Report
* DRI development order requirements

During the reporting period, the two developing entities, Florida Design Communities and M&H Homestead, LTD, and the City of Homestead have developed their respective areas as follows:

M&H Homestead, LTD and Michael Latterner, Trustee
Under this ownership, a development of 325-unit condominium known as "Center Gate" was developed.

City of Homestead
During this reporting period, the City built SW 344th Street and a buffer area along its southern edge, which included a 61.7-acre lake and 93 acres of grassed buffer/overflow parking.

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Study Number: **3.39**

Document Title:
Adopted Miami-Dade County Comprehensive Development Master Plan, May 1997as Amended through April 2001

Entity Responsible for the Document:
Miami-Dade County

Completion Date of Document:
May 1997

Status of Document:
Currently being implemented by Miami-Dade County.

Geographic Area of Document:
Miami-Dade County

Scope of Document:
The Miami-Dade County Comprehensive Development Master Plan (CDMP) designates the future land uses and development patterns in Miami-Dade County and contains standards for distribution of population densities and building intensities.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Land Use Policy 3E provides the framework for the SMWSP. The CDMP provides background information, analyses of land use trends and synopses of urban service and environmental opportunities and constraints.

The Goals, Objectives, and Policies of this document will provide ongoing reference throughout the Study. The Land Use, Transportation, Housing, Conservation, and Open Space Elements will be used for baseline information in Task 1 and for the development of land use scenarios in Task 2. The Transportation Element and the Water, Sewer, and Solid Waste Element will be useful in developing future service levels, as well as opportunities and constraints in Task 2 and impact assessment in Task 3. Data from the CDMP is documented in nearly all of the Task 1 reports.

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Study Number: **3.40**

Document Title:
Miami-Dade County Comprehensive Development Master Plan, October 2003 Evaluation and Appraisal Report (EAR)

Entity Responsible for the Document:
Miami-Dade County

Completion Date of Document:
October 2003

Status of Document:
Currently being implemented by Miami-Dade County.

Geographic Area of Document:
Miami-Dade County

Scope of Document:
The Miami-Dade County Comprehensive Development Master Plan (CDMP) designates the future land uses and development patterns in Miami-Dade County and contains standards for distribution of population densities and building intensities.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The EAR provides updated CDMP background information, analyses of land use trends, and synopses of urban service and environmental opportunities and constraints, as well as recommendations for revised goals, objectives and policies. Throughout the EAR, the SMDWSP is cited as a crucial component of future land use decisions, including those pertaining to the Urban Development Boundary (UDB).

The information from this document will provide ongoing reference throughout the Study. The Land Use, Transportation, Housing, Conservation, and Open Space Elements will be used for baseline information in Task 1 and for the development of land use scenarios in Task 2. The Transportation Element and the Water, Sewer, and Solid Waste Element will be useful in developing future service levels, as well as opportunities and constraints in Task 2 and impact assessment in Task 3. Data from the EAR is documented in nearly all of the Task 1 reports.

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Study Number: **3.41**

Document Title:
Miami Urban Area Transportation Study and Year 2025 Update

Entity Responsible for the Document:
Metropolitan Planning Organization (MPO) for the Miami Urbanized Area

Completion Date of Document:
2001

Status of Document:
Adopted in December 2001

Geographic Area of Document:
For the purposes of this plan, Miami-Dade County was divided into six Analysis Areas. These areas are based on current boundaries of County Commissioner districts and aligned to match existing traffic analysis zone (TAZ) borders. The Central Area of Analysis includes South Miami and Coral Gables from the SMDWSP. The South Area of Analysis includes Homestead, Florida City and Pinecrest, and various neighborhoods including Rockdale, Perrine, Cutler, Peters, Bel Aire, Cutler Ridge, Franjo, Goulds, Alladin City, Naranja, Princeton and South Allapattah.

Scope of Document:
Plan was developed to guide transportation investments in Miami-Dade County through the year 2025. The Plan is intended to be comprehensive, including connections to major activity center, between roadways, transit facilities, bicycle facilities, pedestrian facilities and other means of transportation.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The following set of goals and objectives was approved by the Miami-Dade MPO Governing Board.

- Improve transportation systems and travel
  - Complete roadway grids
  - Fill transit service gaps
  - Reduce congestion
  - Enhance mobility
  - Pursue multimodal travel options
  - Improve safety in facilities and operation
  - Enhance evacuation travel corridors
- Promote economic vitality
  - Increase access to employment areas and sites
  - Increase reverse commute opportunities
  - Enhance tourist opportunities
  - Increase and improve access to airports and seaports

  - Augment multimodal access to major activity centers
  - Generate employment opportunities
- Enhance social benefits
  - Preserve community cohesion
  - Provide equitable and environmentally just travel facilities and services
  - Promote elderly and disabled accessibility
  - Increase reverse commute opportunities for disadvantaged communities
  - Increase accessibility to major health care facilities
  - Promote community compatible values in systems development and design
- Encompass Environmental and energy concerns
  - Minimize air quality impacts of transportation facilities, services, and operations
  - Minimize water quality impacts of transportation facilities, services, and operations
  - Reduce fossil fuel use
  - Reduce access to environmentally sensitive areas
  - Promote sustainability in transportation systems
- Integrate land use, growth, and development considerations
  - Discourage peripheral growth and urban area sprawl
  - Encourage infill growth and development
  - Promote tenets of Eastward Ho!
  - Discourage growth and development in high hazard coastal areas
  - Minimize access to and travel within sensitive land uses
- Optimize sound investment strategies
  - Minimize construction costs
  - Minimize operations expenses
  - Optimize maintenance outlays
  - Optimize use of private sector funding sources
  - Maximize use of external funding sources

The Miami Urban Area Transportation Study and Year 2025 Update will be used in the transportation analysis. The Miami-Dade Transportation Improvement Program (TIP) is a five year plan for programmed (funded) and planned improvements. TIP improvements will be included in the analysis and modeling. Other transportation plans, such as the MDX Master Transportation, will be reviewed and incorporated into the study. The MDX Master Transportation has been requested.

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Study Number: **3.42**

Document Title:
Homestead Air Reserve Base (HARB) Encroachment Study

Entity Responsible for the Document:
Prepared by the Vision Council for the Miami-Dade Defense Alliance (a program of the Beacon Council)

Completion Date of Document:
June 2003

Status of Document:
Individual recommendations are being implemented. Applications are pending (as of June 2004) for the Joint Land Use Study (JLUS) Program for Miami-Dade County, Homestead, Florida City and the base. JLUS implementation recommendations may involve revisions to the communities' comprehensive plans and traditional land use and development controls.

Geographic Area of Document:
Homestead Air Reserve Base

Scope of Document:
The impending 2005 round of Base Closures and the rapid expansion of residential development near HARB highlight the need to take proactive steps to preserve the base's capability to effectively and efficiently conduct military operations and training at the site. The recommendations represent the "Best Management Practices" for protecting a military base from incompatible residential and commercial sprawl.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

1. The U.S. Air Force (482 Fighter Wing) should:
    a. Purchase the property underlying both Clear Zones. Alternatively, obtain restrictive easements or development rights for the property.
    b. Purchase the property outside the base boundaries falling in the Explosive Quantity/Distance Areas.
    c. Designate an Office of Primary Responsibility (OPR) within the 482 Fighter Wing to work with local governments and citizens groups to incorporate AICUZ guidelines in Comprehensive Plans, zoning ordinances and building codes.
    d. Incorporate Explosive Quantity/Distance Arcs and their impact on civilian property in the AICUZ.
    e. Forward the updated AICUZ Study to the City of Homestead and Miami-Dade County and request specific implementation actions on the part of those two governments.

f. Provide both local governments a legal description of the base boundaries supplemented by maps, charts or photographs showing those boundaries for integration into planning documents.
g. Participate in proposed HARB Encroachment Working Group.
h. Conduct an annual "Town Meeting" to increase public awareness of the base and its issues.

2. The State of Florida should:
    a. Designate military airports within the state as "Areas of Critical State Concern."
    b. Implement legislation requiring local jurisdictions and land use authorities adopt land use plans, zoning policies and regulations that insure compatible development around military airfields.
    c. Acquire critical lands near military bases through purchase or exchange programs to create buffer zones and to insure compatible development I the area.
    d. Continue to support and fund the Florida Defense Alliance.
3. Miami-Dade County should:
    a. Designate HARB as an "Area of Critical County Concern" and create a HARB Overlay District as specified in this report.
    b. Create a HARB Working Group to address comprehensive plan changes, zoning and propose development with HARB officials.
    c. Create an "ex-officio" position on Community Council 15 for a HARB representative who – as the situation requires – can comment on the impact of proposed development on base operations.
    d. Expand the Biscayne Bay Development Buffer Review Group tasking to include protection of HARB and provide a position for a HARB representative.
    e. Fully implement Policy 7A of the Transportation Element of the CDMP.
        1. Integrate the 2003 HARB AICUZ policy guidelines into the Miami-Dade CDMP. Use overlay maps of AICUZ noise contours and Air Force Land Use Compatibility Guidelines to evaluate existing and future land use proposals.
        2. Modify Article XXXV of zoning ordinances to: a) establish the HARB Overlay district, b) incorporate AICUZ Clear Zones, Accident Potential Zones and Noise Zones, and c) reflect the land use guidelines outlined in the AICUZ.
        3. Establish enforceability guidelines and penalties.
    f. Assure Miami-Dade County redevelopment activities at the former HARB are consistent with the AICUZ compatible developmental guidelines.
    g. Ensure buyers of property in the vicinity of HARB are informed of base operations.
        1. Require developers provide full and timely notice of HARB accident potential and noise impacts to prospective buyers in the Overlay District.
        2. Require registered deed disclosures for all properties sold within the Overlay District.

h. Initiate Code Enforcement action to eliminate unpermitted, squatter housing within the AICUZ defined Accident Potential and Noise zones.
i. Create and implement the interlocal and intergovernmental agreements necessary to achieve the recommendations of this study.
j. Request the Department of Defense conduct a HARB Joint Use Land Study (JLUS). Fund as required by federal guidelines.

4. The City of Homestead should:
    a. Designate HARB as an "Area of Critical City Concern" and co-sponsor with Miami-Dade County the establishment of a Homestead Air Reserve Base Overlay District.
    b. Integrate the 2003 HARB AICUZ policy guidelines into the City of Homestead Comprehensive Master Plan.
    c. Update Homestead Ordinance 91-08-66 to reflect the recommendations of the 2003 AICUZ report. Use overlay maps of AICUZ noise contours and Air Force Land Compatibility Guidelines to evaluate existing and future land use proposals. Establish enforceability guidelines and penalties.
    d. Coordinate development issues falling within the Overlay District with the Installation Commander at HARB.
    e. Participate in the proposed Miami-Dade HARB Encroachment Working Group.
    f. Create an "ex-officio" position on the City's Planning and Zoning Committee for a HARB representative who – as the situation requires – can comment on the impact of proposed development on base operations.
    g. Review the Homestead Park of Commerce Master Plan and modify it as necessary to be compatible with the AICUZ guidelines.
    h. Join Miami-Dade County in requesting and funding a Joint Land Use Study.
    i. To the maximum extent feasible, eliminate existing incompatible development in the AICUZ zones within the city's jurisdiction.
    j. Assure buyers of property in the vicinity of HARB are informed of base operations.
        1. Require developers provide full and timely notice of HARB accident potential and noise impacts to prospective buyers in the Overlay District.
        2. Require registered deed disclosures for all properties sold within the Overlay District.

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Study Number: **3.43**

Document Title:
Final Report of the Infill Strategy Task Force

Entity Responsible for the Document:
Miami-Dade County Department of Planning and Zoning

Completion Date of Document:
December 16, 1997

Status of Document:
Implementation

Geographic Area of Document:
Miami-Dade County

Scope of Document:
The Task Force was directed by the Board of County Commissioners to examine and make recommendations on opportunities and strategies to promote infill and redevelopment in underdeveloped areas within the County's planned Urban Development Boundary (UDB).

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The following recommendations were considered by the Task Force to be those with the greatest potential for implementation and effectiveness.

GEOGRAPHIC ISSUES

- **Recommendation 1**: Miami-Dade County should delineate an Urban Infill Development Area in its CDMP. Policies should be included that this area shall receive priority for future public and private investments in infrastructure, services, development and compatible redevelopment.

- **Recommendation 2**: Strong emphasis should be given to strategies that promote infill development which generate employment opportunities and service-oriented activities, over the creation of additional housing per se, within those portions of the designated Urban Infill Development Area that have high rates of unemployment, poverty, and households on public assistance.

- **Recommendation 3**: Hold the line on the UDB. The BCC should adopt as a policy statement that the UDB will not be extended for the next ten years.

HOUSING

- **Recommendation 4**: Within the Urban Infill Development Area, encourage a balanced mix of well-designed housing types (owner/renter occupied units), sizes and prices for income levels (market and non-market rate units).

- **Recommendation 5**: Create consortium of lending institutions for residential and business loans at below market rates.

INFRASTRUCTURE/FUNDING

- **Recommendation 6**: Upgrade mass transit service in the Urban Infill Development Area through an expanded rail system, increased and reliable bus service and intermodal connections, and improved marketing of the system.

- **Recommendation 7**: Improve educational opportunities in the Urban Infill Development Area (UIDA) by giving priority to 1) increasing funding, 2) redirecting resources, and 3) forging creative solutions through public school/private enterprise partnerships to identify incentives for providing education opportunities within the UIDA.

- **Recommendation 8**: Miami-Dade County should participate with federal, state, and other initiatives in a coordinated effort with other local governments to pursue financial assistance for infill infrastructure projects within the Urban Infill Development Area.

DESIGN/REGULATION

- **Recommendation 9**: County and municipal permitting agencies in the Urban Infill Development Area should increase flexibility and streamline the permitting and development review process to encourage infill development and redevelopment.

- **Recommendation 10**: Promote good design to gain acceptance of higher density, and promote mixed use neighborhoods and projects, including small area planning with a clear objective of empowering the residents, business owners, and all other stakeholders in determining the character and intensity of development in and around their neighborhood.

PUBLIC EDUCATION

- **Recommendation 11**: The County and cities should coordinate the creation of a parcel inventory of vacant, abandoned, or significantly underutilized sites within the Urban Infill Development Area and disseminate such information

to the development industry, including lenders, realtors, developers, and the public.

IMPLEMENTATION

- **Recommendation 12**: An Infill Strategy Committee should be established for a period of 18 months to assist the County in implementing and further defining the recommendations outlined in this report.

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Study Number: **3.44**

Document Title:
Redland: A Preservation and Tourism Plan

Entity Responsible for the Document:
Miami-Dade County Office of Community Development, Historic Preservation Division and the University of Miami School of Architecture

Completion Date of Document:
November 1993

Status of Document:
Unknown

Geographic Area of Document:
Redland area of South Miami-Dade County

Scope of Document:
The intention of the plan is to provide a framework for identifying the contributing aspects of Redland's aesthetic, economic and historic character and to propose ways to enhance and link them by developing design guidelines for new buildings and landscape features. It also proposes ways to increase Redland's accessibility and appeal to tourists.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

The objectives identified in the study are:

1. To identify within the area the resources which define the architectural and landscape character of the district. In Redland, it is defined by its historic rural architecture, the agricultural and native landscape, its grid of long narrow roads, canal systems, fruit groves, low limestone walls, and rows of Royal Palms.

2. To evaluate current zoning and design an overlay to eliminate inherent conflicts. In Redland, current zoning allows a broad array of non-agriculture related industry.

3. To renew linkages between the contributing themes in the district. This is accomplished through architectural design and landscape guidelines, thematic landscaping of some right-of-ways and intersections, protecting historic sites, developing and implementing architectural and landscape design guidelines.

4. To evaluate the economic base of the area that contributes to the community character. In Redland, it is: agriculture, commercial horticulture, "green" tourism, industry related to agriculture, retail sales related to agriculture and nurseries, among others.

5. To develop the incentive programs, regulations or policies necessary to implement these goals.

To protect the community character of the Redland area, the plan recommends a Thematic Resource District (TRD) to provide an umbrella that would allow planning, zoning, and conservation elements to be tailored to the community.

Agriculture recommendations include:

- Implement an agricultural zoning overlay to protect agricultural areas from the negative impacts of non-farm development.
- Implement Purchase of Development Rights Program to retain agriculture at strategically located sites along the UDB and Krome Avenue.

For the preservation of historic sites, districts and corridors, the adoption of Rural Design Guidelines for Site, Architecture and Landscape Designs is recommended.

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Study Number: **3.45**

Document Title:
Regional Shift: South Florida in Transition

Entity Responsible for the Document:
Center for Urban and Environmental Solutions

Completion Date of Document:
2003-2004

Status of Document:
Not applicable.

Geographic Area of Document:
The South Florida region, as defined by Enterprise Florida, including Indian River, St. Lucie, Martin, Palm Beach, Broward, Miami-Dade, and Monroe counties.

Scope of Document:
This report illustrates the dynamic changes that South Florida has experienced over the past decade. It identifies changes, challenges, and opportunities facing the region.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
This report has no set goals or objectives of a plan. It is a research document.
Quick facts:

Place:

- Per capita water use has remained on parity with national per capita use, but higher than state per capita use.
- By 2003, all seven counties had land acquisition programs in addition to the state programs Preservation 200 and Florida Forever.
- Highway congestion has become worse. The annual cost of congestion in the core county area is estimated between $2 and $3 billion annually.

People:

- South Florida's population grew from 4.5 million in 1990 to 5.5 million in 2000 and now represents the sixth most populous metropolitan area in the nation.
- South Florida's poverty rate was 13.5% in 1999, higher than the state rate (12.5%). The highest rates were in Miami-Dade (18%) and St. Lucie (14%) counties.

Economy:

- South Florida's civilian labor force increase 15% from 2.32 million in 1991 to 2.66 in 2001.
- The number of people unemployed declined from 206,316 in 1991 to 146,379 in 2001, but unemployment rates remain higher than the state and the nation.

- Over 5 million visitors to the region's beaches had an economic impact of nearly $10 billion, including 111,000 jobs.

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Study Number: **4.1**

Document Title:
Conservation Aquifer Recharge and Drainage Element, Support Component of the Comprehensive Development Master Plan of Miami-Dade County, Florida and the Adopted Components and the Adopted 1995 Evaluation and Appraisal Report for the Conservation Element

Entity Responsible for the Document:
Metro-Dade Planning Department

Completion Date of Document:
Conservation, Aquifer Recharge and Drainage Element Support Component, December 1989, Adopted Components, May 1997
Adopted 1995 Evaluation and Appraisal Report for the Conservation Element, November 1995

Status of Document:
Currently being implemented

Geographic Area of Document:
Miami-Dade County, Florida

Scope of Document:
The purpose of the Conservation, Aquifer Recharge, and Drainage Element of the Comprehensive Development Master Plan (CDMP) is to provide for the identification, conservation, appropriate use, protection and restoration of the biological, geological, and hydrological resources of Metropolitan Dade County.

The goal of the CDMP, as identified in the adopted components, is to provide for the conservation, environmentally sound use, and protection of all aquatic and upland ecosystems and natural resources, and protect the functions of aquifer recharge areas and natural drainage features in Miami-Dade County.

The Adopted 1995 Evaluation and Appraisal Report for the Conservation Element addresses how the Comprehensive Development Master Plan has accomplished its adopted objectives, addressed changes in local conditions, addressed new requirements of State planning law, and identified changes needed to update this element.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

Miami-Dade County's major natural ecosystems/biotic communities may be classified into four groups as follows: 1) upland ecosystems, 2) freshwater wetlands, 3) freshwater systems (canals and lakes) and 4) coastal systems.

1. *Upland Ecosystems*
Pinelands: over 180,000 acres of South Florida slash pine once extended along the coastal ridge from North Miami south to Mahogany Hammock, a total distance of 65 miles. The pinelands of South Florida have been habitat to at least 30 endemic plant species; five of these species have been designated as federally endangered or threatened. Pinelands of the coastal rock ridge are one of the few habitats used by the locally endemic Miami Rock-rim Crowned Snake which is listed as threatened by the state and is under review for endangered species listing by the U.S. Fish and Wildlife Service. Another species found in pinelands and listed in the table of special status wildlife is the Southeastern American Kestrel, designated by the state as threatened. Over 90% of the original pinelands have been lost. In the urban areas, the losses are closer to 100%.

Hammocks: More than 500 hammocks were once scattered along the coastal ridge among the pinelands and bordering the wetland sloughs. Today, about 125 hammocks still exist on that portion of the ridge within the Everglades National Park (ENP). Many species of rare bromeliads, ferns and orchids can be found here, as well as the eastern indigo which is listed as threatened on state and federal lists. The Florida tree snail, formerly abundant in South Florida hammocks, has been seriously over-collected and is listed as a species of species concern by the state.

2. Freshwater Wetland Ecosystems
Cypress Communities: Major stands of cypress communities are located southeast of Shark River Slough near the "rock reef pass" in Everglades National Park; in approximately 35 square miles of the Big Cypress Swamp lying within the extreme northwestern region of Miami-Dade County; and in the eastern Taylor Slough area. All orchids and most bromeliads and ferns are on the state list of threatened and endangered species. The ponds and "alligator holes" within the cypress swamp draw many birds, mammals, and reptiles including the rare and endangered Florida panther, black bears, and bald eagles.

3. Freshwater Systems
Sawgrass Marsh/Slough/Rush Flats: Throughout the central Everglades basin, sawgrass, the dominant species, grows over thick but variable deposits of Everglades peat, which, in turn lies over marl deposits or Miami limestone. A number of endemic species are found in the glades. The endangered Snail Kite feeds only on the apple snail, found primarily in rush flats. Primary nesting for this species occurs in Water Conservation Area (WCA) 3A but its federally-designated critical habitat extends well into ENP.

Tree Islands: Three types of tree islands, willow thickets, bayheads, and hardwood hammocks, are commonly found in the Everglades. Most of the special-status plant species of tree islands are orchids, bromeliads and ferns found mostly in the tropical hardwood hammocks.

4. Coastal Systems

Rocky Glades: the rocky glades is a physiographic region lying between the central Everglades basin to the west and northwest and the coastal marsh region of ENP to the south. Dominant vegetation is the muhly grass, and many endemic grasses and herbs are also found in the area, including: waterwillow, tube flower, and Carter's small flowered flax. There is also a state designated threatened orchid found in the tree islands.

Marl Glades: Vegetation of the marl glades is characterized by sawgrass marsh and wet flats of other sedges and rushes. The endangered orchid, *Vanilla barbellata,* is now only rarely found within the hammocks of the marl glades. The southern portion of this area has been designated a critical habitat of the American crocodile.

The Objectives in the Adopted Components of the CDMP are:

(1) Improve air quality in the County to meet all National Ambient Air Quality Standards set by the Environment Protection Agency (EPA) and their respective deadlines; and reduce human exposure to air pollution.

(2) Protect groundwater and surface water resources from degradation, provide for effective surveillance for pollution and clean up polluted areas to meet all applicable federal, state, and county ground and surface water quality standards.

(3) Regulations within wellfield protection areas shall be strictly enforced. The recommendations of the NW Wellfield Protection Plan shall continue to be fully implemented as shall recommendations that evolve from the West Wellfield planning process.

(4) The aquifer recharge and water storage capacity of the presently undeveloped areas in western and southern Miami-Dade County shall be maintained or increased.

(5) Miami-Dade County shall continue to develop and implement stormwater master plans, and cut-and-fill criteria as necessary to provide adequate flood protection; correct system deficiencies in County-maintained drainage facilities; coordinate the extension of facilities to meet future demands throughout the unincorporated area; and maintain and improve water quality. Plans for all basins in the County shall continue to be prepared sequentially with the last plans being completed by 2007, and sooner if additional funding is obtained. Implementing actions recommended in each basin plan shall commence immediately after the applicable plan is approved. Outside of the Urban Development Boundary (UDB) the County shall not provide, or approve, additional drainage facilities that would impair flood protection to easterly developed areas of the County, exacerbate urban sprawl or reduce water storage.

(6) Soils and mineral resources in Miami-Dade County shall be conserved and appropriately utilized in keeping with their intrinsic values.

(7) Miami-Dade County shall protect and preserve the biological and hydrological functions of the Future Wetlands identified in the Land Use Element. Future impacts to the biological functions of publicly and privately owned wetlands shall be mitigated. All

privately owned wetlands identified by the South Florida Regional Planning Council as Natural Resources of Regional Significance and wetlands on federal, state, or county land acquisition lists shall be supported as a high priority for public acquisition. Publicly acquired wetlands shall be restored and managed for their natural resource, habitat and hydrologic values.
(8) Upland forests included on Miami-Dade County's Natural Forest Inventory shall be maintained and protected.
(9) Freshwater fishes and wildlife shall be conserved and used in an environmentally sound manner and the net amount of habitat critical to federal, state or county designated endangered, threatened, or rare species or species of special concern shall be preserved.

The 1995 Evaluation and Appraisal Report gives an update on the conditions of each element since the CDMP. The following reflects changes in natural systems from 1988 through 1994:

Wetlands: No work permits were issued for unstressed wetlands, but 220 permits were issued in areas designated as stressed or in areas east of those wetlands. These permits allowed 5,825 acres of jurisdictional wetlands to be dredged or filled. Over 75% of the impacted acreage was permitted for rockmining, and most of the remainder was for agricultural uses.

Upland Forests: In 1992, County staff inventoried the remaining pineland and hammock sites in Miami-Dade County. They surveyed 368 pinelands and approximately 100 hammocks. Both the number of sites and the total acreage was greater than that identified in the 1984 survey, because several sites were overlooked in the earlier survey. A post-Hurricane Andrew review of these forest inventory data revealed that there are currently 4,400 acres of pine rockland and 1,000 acres of hammocks in Miami-Dade County, outside of ENP. There are 55 endemic plant species found in the pinelands of Miami-Dade County.

Fish and Wildlife/Endangered Species: There are currently 14 federally listed endangered species and 5 federally listed threatened species that reside in Miami-Dade County. Critical habitat has been designated in Miami-Dade County for 4 of the endangered species: the American crocodile, the Cape Sable seaside sparrow, the Everglades snail kite and the West Indian manatee. Recovery plans have been written for the American crocodile, the West Indian manatee, panther, bald eagle, indigo snake, all of the listed sea turtles, snail kite, and wood stork. Twenty-nine additional species are candidates for federal listing. The current federal list only contains six endangered plants from Miami-Dade County: Beach jacquemontia, Deltoid spurge, Crenulate lead plant, Pineland milkpea, Small's milkpea and Tiny polygala. Five of the six are found exclusively in pinelands. The Garber's spurge, also a pineland species, is listed as threatened. The federal list includes 34 additional species, found in Miami-Dade County that are candidates for federal listing. The State of Florida endangered, threatened and rare species lists includes 119 plant species found in Miami-Dade County. Eighty-four of these species are listed as endangered, 12 species are listed as threatened and 23 as rare.

The majority of these plants are herbaceous and gramminoid species that reside in the remnant pinelands in south Miami-Dade County.

The 1995 Evaluation and Appraisal Report also evaluates the progress that has been made toward achieving adopted objectives of the Conservation Element. In regards to the natural systems assessment, Objective 7, 8, and 9 should be addressed.

Objective 7: There was no direct monitoring measure included in the CDMP for this Objective. This Objective has been implemented through the County's land acquisition and regulatory programs.

Objective 8: There was no direct monitoring measure included in the CDMP for this Objective. This Objective has been implemented through the County's Environmentally Endangered Lands Program, (EELP), the natural areas management program administered by the Miami-Dade County Park and Recreation Department, the County's Environmentally Endangered Lands covenants and Chapter 24-60 of the County Code, which addresses natural forest communities and other tree resources. Through the EELP, 586 acres of pinelands and 279 acres of hammocks have been placed on the County's Priority Acquisition list. To date, $23 million has been spent to purchase endangered lands at 16 pineland and hammock sites.

Objective 9: There was no direct monitoring measure included in the CDMP for this Objective. This Objective has been implemented through the County's Manatee planning program and Environmentally Endangered Land acquisition efforts, which have targeted lands that are recognized as critical crocodile and panther habitat acquisition. Miami-Dade County has spent about $23 million to date to acquire 430 acres of environmentally endangered lands.

After the damage caused by Hurricane Andrew in 1992, the US Fish and Wildlife Service granted Miami-Dade County funds to provide technical assistance to public agencies for plant community restoration on public lands and endangered plant recovery activities on private lands. The first step was the development of a pine rockland restoration and long term management plan.

Since 1975 Miami-Dade County has limited development in Environmentally Sensitive areas to one dwelling unit per 5 acres.

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Study Number: **4.2**

Document Title:
Adopted 1995 Evaluation and Appraisal Report for the Coastal Management Element – Comprehensive Master Plan

Entity Responsible for the Document: Metropolitan Dade County

Completion Date of Document: November 1995

Status of Document: Completed. Amendments to the objectives proposed in this document were used to generate the 2001 Miami Dade Comprehensive Development Master Plan.

Geographic Area of Document:
Coastal Resources Area of Dade County

Scope of Document: Documents the implementation status of goals, objectives, and policies recommended during the six-year period following the 1988 Dade County Comprehensive Development Master Plan. It also establishes objectives for the year 2000.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

Objectives for 1995

- Protect, conserve, and enhance coastal wetlands, living marine resources and wildlife habitats in Metropolitan Dade County.
- Protect, conserve, or enhance beaches and dunes and offshore reef communities.
- Maintain and improve the quality of coastal and estuarine waters to meet all applicable federal, state and local water quality standards by 1995.
- Maintain or increase amount of shoreline devoted to water-dependent and water-related uses.
- Provide for the protection of coastal resources, human lives and property from natural disasters.
- Protect, preserve and sensitively reuse historic resources and increase designated historic sites districts and archaeological sites and zones by 30% above 1992.
- Improve public's appreciation and awareness of Dade County's coastal resources.

Objectives for year 2000

- By 2005: a GIS database for mapping, monitoring, evaluating and managing benthic and coastal wetland and hammock communities in Biscayne Bay, embankments and tributaries will be compiled.

- By 2000 add monitoring to increase designated environmental protection areas.

- By 2000 monitor development on antidegradation targets and by 2005 reduce exceedences by 25%.

- Protect endangered and threatened wildlife and manage coastal habitat to maintain or improve wildlife value. Complete wildlife and habitat studies by 2000 and implement regulations.

- Maintain or increase amount of publicly-accessible shoreline devoted to water-dependent and water-related uses by 2000.

- Minimize user conflicts and study compatible uses and conflict resolution by 2000.

- Increase shelter capacity and evacuation time.

- Use GIS for Hazard Mitigation and mapping.

- Protect, preserve, and sensitively reuse historic resources and increase designated number of historic sites districts and archaeological sites and zones.

- Implement policies to improve public's appreciation and awareness of Dade County's coastal resources.

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Study Number: **4.3**

Document Title:
Assessment of Populations of Wildlife Species in the Pine Rockland and Tropical Hardwood Hammock Communities of Miami-Dade County

Entity Responsible for the Document:
Miami-Dade County Department of Environmental Resources Management

Completion Date of Document:
July 2003

Status of Document:
Completed

Geographic Area of Document:
Miami-Dade County, Florida

Scope of Document:
The objective of the project was to determine the nature of populations of animals, especially the threatened and endangered species, in these natural communities on Environmentally Endangered Lands (EEL) sites. The report looks at the current management practices in these communities in promoting healthy populations of these animal species and provides information toward the development of a wildlife management plan for each of these native communities. EEL-purchased pine rockland and hardwood hammocks and a scrubby flatwood community are the study locations for this project.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Approximately 10 of the EEL sites reviewed in this study fall within the Watershed Study boundary. Key issue facing the natural communities:

> All of the natural communities of Miami-Dade County have decreased in size, continuity, and quality. Only 2% of pinelands outside of ENP that existed at the turn of the century remain. The causes of native habitat loss are diverse in nature. The major causes are anthropogenic, including: clearing of native vegetation and rock plowing for agricultural activities; development of public and private structures; improper frequency, timing and intensity of fires; and the introduction of nonindigenous species.

The following sites studied in this report lie within the Watershed Study boundary:

- Trinity Pineland: Pine rockland -- 10-acre -- SW 74 Street and 74 Avenue. The site is surrounded by residential development. It is one of the few pine rockland sites in Miami-Dade County that has a healthy pine canopy and is in good condition because it was missed by Hurricane Andrew in 1992. It is surrounded on the south, east, and west sides by single-family residential developments and on the north by a privately owned two acre pine rockland. Current management

includes the planting and monitoring of several hundred pine seedlings and continued invasive exotic plant species control. Two small wildfires burned one acre parcels of this site in 1996 and 1997 and the entire site burned in 1999.

- Rockdale Pineland: Pine rockland, 26-acre site, SW 144 Street & US-1. This is one of only a very few pine rockland sites remaining within urban Miami-Dade County. This site contains over 120 native plant species, including the endangered *Chamaesyce deltiodea* var. *pinetorum* and possibly *Polygala smallii*. Adjacent to the north, south, and west, is estate density residential housing; to the east is US –1, a four-lane highway, with commercial development to the opposing side. Current management includes invasive exotic plant species control and solid waste removal. Wildfires burned portions of the site in 1994, 1997, and 1999.
- Ludlam Pineland: Pine rockland, 10-acres, SW 148 Street and 67 Avenue. The site contains a high diversity of native plants, including numerous juvenile slash pines and two endangered plant species, *Chamaesyce deltiodea* var. *pinetorum* and *Polygala smallii*. This site abuts single family housing to the north, east and west. It is bordered to the south by a pine rockland parcel owned by Florida Power and Light. Current management includes the cutting and removal of the invasive exotic plant species *Neyraudia reynaudia* and subsequent herbicide treatments; improving a firebreak along the northern edge of the site; and developing a prescribed burn and fire management plan. Wildfires burned the eastern five acres of this site in the 1980s.
- Ned Glenn Pineland Preserve: Pine rockland (10-acres), hardwood hammock (1-acre), SW 188 Street and 97 Avenue. The site is owned by the Dade County School Board and managed as a preserve by the Environmentally Endangered Lands (EEL) Program. The site contains 10 acres of pine rockland and one acre of hammock. This site, although surrounded by single family residential development, is located close to Whispering Pines Hammock Park and a privately owned pine rockland containing several endangered species. Current management includes follow-up treatments for invasive non-native plant species and the planting of native hardwoods in the hammock. Wildfires burned approximately five acres of this site in 1994 and 1997. The site completely burned in April 2000.
- Quail Roost Pineland: pine rockland, 49-acres, SW 200 Street & 147 Avenue. It is one of the largest pine rockland tracts outside of ENP. Historically located on the edge of a transverse glade, the glade has since been replaced by the C-102 Canal. The site is surrounded by a variety of agricultural uses; on the northwest corner by a five acre pineland and on the northeast corner by a fifteen acre pineland, both of which are under private ownership. Current management includes invasive exotic plant species control and a prescribed burn preparation and monitoring.
- Ross/Castellow Hammock Complex: Hardwood hammock, SW 223 Street and 157 Avenue. This area contains over 100 acres of tropical hardwood hammock and transitional pine rockland. This is the largest tropical hardwood hammock outside of ENP. Surrounding land uses are predominantly agricultural. Current management includes continued nonnative plant species control.

- Harden Hammock: Hardwood hammock, 12-acres, SW 226 Street and 107 Avenue. The site contains a diverse fern flora, including a fern hybrid that is believed to be exclusive to this hammock. This site is surrounded on the north and west sides by low income high-density single-family homes; agricultural lands on the east and south; the Florida turnpike directly to the east. Current management includes invasive nonnative plant species control. The area is fenced by a six-foot chain-link fence.
- Owaissa Bauer Pineland: Transitional pine rockland, 10-acres, SW 264 Street and 170 Avenue. The site is directly south of Camp Owaissa Bauer Park. It is surrounded predominantly by agricultural lands. Current management includes initial invasive nonnative plant species removal and the removal of hardwoods for a future prescribed burn.
- Hattie Bauer Hammock: Hardwood hammock, 9-acres, SW 168 Street and 157 Avenue. This site contains 9 acres of tropical hardwood hammock and 6 acres of filled and disturbed lands. This was once the location of a popular tourist attraction called Orchid Jungle. The county purchased the site in 1997. The hammock contains a mix of native hardwoods and exotic hardwoods that are mostly tropical in origin. The hammock is situated at the highest natural elevation on the Miami Rockridge south of Coconut Grove and contains numerous solution holes that provide habitat for rare and endangered ferns. Endangered species on site include *Campylonerum latum*, *Tectaria coriandrifolia*, *Pepperomia obtusifolia*, *Alvarodoa amorphioides*, and *Colubrina cubensis* var. *floridana*. The remaining portion of the property is currently being renovated into a county park.
- Florida City Pinelands: Pine rockland, 18-acres, SW 344 Street and 185 Avenue. The site contains a high diversity of native plants, including the endangered *Chamaesyce deltoidea* var. *pinetorum*. This site is surrounded on the east, west and south by residential development and on the north by commercial and residential development. Current management includes invasive nonnative plant species control and the installation of a fence on the east and north sides of the site. Wildfires burned the site in 1995.

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Study Number: **4.4**

Document Title:
Biscayne National Park General Management Plan

Entity Responsible for the Document:
U.S. Department of the Interior, National Park Service

Completion Date of Document:
Pending.

Status of Document:
Currently available are 3 newsletters updating the public on the status of the General Management Plan. The following information is from the latest newsletter #3, November 2003. Currently developing preliminary management alternatives; the next step is to prepare and publish the Draft Management Plan/Environmental Impact Statement.

Geographic Area of Document:
Biscayne National Park, Miami-Dade County

Scope of Document:
The General Management Plan is being prepared to address the growing population in South Florida and adequately protect and maintain Biscayne National Park, while improving access to the park for visitors.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
This plan, like the Watershed Study, is being prepared to develop a vision for the Park's future within an area with a growing population, while keeping within the park's purpose, stated in 1968 as "to preserve and protect for the education, inspiration, recreation and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty…" The Watershed Study Vision Statement determines to maintain similar goals within the Watershed Study Area.

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***Study Number*: 4.5**

Document Title:
Biscayne Bay Card Sound Aquatic Preserve Management Plan

Entity Responsible for the Document: Florida Department of Natural Resources (DNR) Division of State Lands, Bureau of Submerged Lands and Preserves

Completion Date of Document: December 1991

Status of Document: Remains in Draft; never formally approved by Governor and Cabinet

Geographic Area of Document:
The plan covers only that portion of the Biscayne Bay Aquatic Preserve that is within Card Sound. This includes approximately 17,000 acres of sovereign submerged lands in Monroe and Dade Counties. The Dade county portion of the preserve adjoins a primarily undeveloped shoreline with the exception of the Model Land Company Canal and the Card Sound cooling canals serving Turkey Point power plant. There is also a small commercial development and dockage near the northeast end of Card Sound Bridge. The area has been designated a lobster sanctuary because of its important habitat for juvenile spiny lobster (*Panulirus argus*) and is closed to lobster harvesting at all times.

The Intracoastal Waterway (ICW) traverses the sound in a northeast to southwest orientation, connecting Biscayne Bay to Barnes Sound. The ICW corridor is excluded from the boundaries and management provisions of the preserve.

Scope of Document: The scope of this plan is the management of the Card Sound portion of Biscayne Bay Aquatic Preserve. The Card Sound area is separated into several management units depending on existing shoreline use and environmental conditions. Depending on the area, specific criteria have been developed to determine allowable activities in the preserve. The criteria address commercial and private docking facilities, marinas, leasing or transferring of land, utility easements, spoil disposal, piers, and ramps.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The plan describes the impacts on Card Sound, from the upland agricultural and urban areas to the local activities directly affecting environmental quality. Local activities that are affecting or have the potential to affect the sound include boating, dredging activities, docking facilities, mosquito control, septic leachate, discharges from desalinization or reverse osmosis plants, accidental thermal discharges from cooling canals, prop scarring, and commercial harvesting. The plan recommends a system for monitoring the types and intensity of uses to analyze their impacts.

Site specific management issues involve specific activities, rather than permitted activities, that directly affect the biological integrity of Card Sound, including increasing

vessel traffic, damage to submerged resources, damage to emergent resources, protection of bird feeding and resting areas, research needs, acquisition of environmentally sensitive lands, boundary extension, and enforcement. The management initiatives to address these activities are summarized as follows but some include actions that would require legislative or rulemaking changes.

1) Reducing speed zones and anchorages in the tidal canals.
2) Working with the Coast Guard and Navigation District to reduce impacts to submerged resources where depths are limited near the ICW.
3) Promoting education regarding the importance of submerged resources.
4) Stabilizing filled areas with native vegetation near the Land Company and Florida Power and Light Company canals.
5) Prohibiting live-aboard and permanent mooring in the preserve except in where pump out facilities are available.
6) Controlling invasive species.
7) Prohibiting camping on public lands.
8) Excluding watercraft from shallow waters and around rookeries.
9) Supporting acquisition efforts.
10) Establishing long-term monitoring of water, sediment, and biological components.
11) Participating and supporting efforts to resolve water management practices affecting the biology and hydrology of Card Sound.
12) Identifying and supporting research efforts.
13) Proposing that Barnes Sound be included as an aquatic preserve.
14) Increasing law enforcement on state lands.

The Management Action Plan establishes goals, objectives, and tasks for the management and protection of Card Sound. The purposes are to: (1) provide information on the ecological functions and economic importance of the natural resources within the sound; (2) oversee those activities that affect the natural resources within the sound; (3) ensure that accurate biological and physical information is considered in permit-related issues and planning decisions; (4) ensure that all statutes and rules regarding the sound's natural resources are followed and that violations are enforced; (5) conduct site surveys for specific activities; (6) coordinate with other resource management and enforcement agencies; (7) educate the public; (8) conduct or cooperate with others to conduct research projects; and (9) periodically update the management program.

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Study Number: **4.6**

Document Title:
A Strategic Science Plan for Biscayne Bay

Entity Responsible for the Document: Biscayne Bay Subcommittee of the Florida Bay and Adjacent Marine Systems Program Management Committee

Completion Date of Document: January 2002

Status of Document: Available online at:
http://www.aoml.noaa.gov/ocd/sferpm/bbscienceplandraft.pdf

Geographic Area of Document: (please attach any graphics files or copy any maps)
Biscayne Bay

Scope of Document:
The Strategic Science Plan for Biscayne Bay was developed to primarily determine the goals and objectives that are imperative to the continuing efforts to better the Bay.

Data gaps were identified in order to determine which areas needed more research, further data collection, model development and associated tasks. The Plan itself does not enlighten one on the "short term information needs"; but it does clarify which scientific efforts need to be put forth in order to understand the most critical issues facing Biscayne Bay, including: freshwater inflow and salinity changes, groundwater influence, fishing effects, and mangrove fringe requirements.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

1. Restore Estuarine Character
    - Recreate a more mesohaline habitat along southwestern coast and reconnect wetlands/oligohaline habitats
        1. Collect more surface water salinity data
        2. Collect data on distribution and abundance of fish and shrimp along coast
        3. Improve data accuracy of canal discharge volumes
        4. Determine relationship between rainfall and surface water flow
        5. Determine significance of groundwater influence on ecology
        6. Develop models on hydrodynamics and salinity responses
        7. Collect accurate bathymetry/wetland topography data
        8. Improve forecasts on sea level rising
        9. Describe relationships of substrate, salinity and SAV
        10. Improve knowledge on predevelopment salinity patterns
        11. Define required inflows along southwest coast to maintain mesohaline conditions
        12. Establish relationships as indicators on diatoms, shrimp and bivalve production

2. Eliminate Pollutant Impacts
    - Control watershed loading and ensure human health
        1. Continue comprehensive water quality, bioeffects monitoring, and indicator research
        2. Determine significance of groundwater influence on ecology
        3. Collect baseline data on concentrations and safety of toxicants in tissues
        4. Collect baseline data on toxicant load in wetland soils
        5. Collect baseline data on nutrient flux from atmosphere and between sediments and water
        6. Determine causes of high rates of physical abnormalities found in fish
        7. Develop models on water quality patterns
        8. Develop an approach for numerical water quality targets on the relationships between water quality and ecosystem health
3. Restore Sustainable Fisheries
    - Ensure healthy fish and shrimp populations and protect/restore fish habitats
        1. Collect baseline data on the utilization of freshwater habitats
        2. Collect baseline data on the utilization/importance of fish of North Bay habitats
        3. Collect baseline data on the utilization/importance of mangrove habitat to juveniles
        4. Collect baseline data on concentrations and safety of toxicants in tissues
        5. Collect data and describe structure on population of key species
        6. Collect comprehensive data on how fishing pressure affects populations
        7. Assess impact of bycatch and analyze statistics on sustainability of pink shrimp fishery
        8. Assess impacts of fishing methods on benthic communities
        9. Develop models on the relationship of fishery production to variables
        10. Determine requirements for the habitats of small fish

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Study Number: **4.7**

Document Title:
Biscayne National Park General Management Plan, Development Concept Plan, Wilderness Study and Environmental Assessment

Entity Responsible for the Document:
National Park Service, U.S. Department of the Interior

Completion Date of Document:
January 1983

Status of Document:
Currently being implemented and updated

Geographic Area of Document:
Biscayne Bay National Park is located just south of Miami, Florida, and contains 175,000 acres of land and water. It comprises an extensive undeveloped mainland mangrove shoreline, much of middle and lower Biscayne Bay, the northernmost chain of coral keys in the U.S. and 20 miles of submerged coral reefs.

Scope of Document:
Combines a philosophy of resource protection with that of assuring visitor enjoyment through interpretation and the continuation of established recreational activities. A critical part of the plan is a public transportation system that will make the park more accessible to the non-boating public. The proposed plan would have no significant impact upon the environment.

Proposed plan:

- Establish a public boat system that will provide an opportunity for the non-boating public to experience the Park by traveling in the water and visiting the keys and the coral reefs
- Improve the interpretive program, with particular emphasis on participatory interpretation at the Elliot Key Harbor complex
- Maintain the present park development sites on the keys without significant change
- Maintain the undeveloped areas of the keys and mainland in a natural state
- Return the Ragged Keys and Soldier Key to a natural state and allow access for the boating public
- Designate Boca Chita as a day use area for the boating public and provide necessary development
- Allow established recreational pursuits to continue with appropriate controls to minimize visitor use conflicts and resource damage
- Prepare a cultural resource preservation guide to aid day-to-day management and systematic monitoring of impacts upon cultural resources; institute an integrated program to reduce visitor impacts upon submerged archaeological resources

- Increase monitoring of air and water quality and recreational and commercial impacts upon marine and terrestrial natural resources, placing particular emphasis on protection of endangered and threatened species and environmentally sensitive sites

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- The objective for managing the mainland is to preserve it in its natural state (except for the existing headquarters site at Convoy Point) and to help visitors understand the important ecological role served by the virtually unbroken mangrove shoreline.
- The objective for managing the bay is to allow established recreational and commercial activities to continue with controls necessary to guarantee the protection of marine species, water quality, bay-bottom communities, and visitor safety.

Endangered or Threatened Species

- 12 species that are federally listed as endangered are found in the vicinity of the park: Florida manatee, brown pelican, bald eagle, peregrine falcon, Atlantic ridley turtle, hawksbill turtle, leatherback turtle, American crocodile, finback whale, humpback whale, right whale, sei whale
- 5 species that are federally listed as threatened have been reported within the park: eastern indigo snake, loggerhead turtle, green turtle, Schaus swallowtail butterfly, Bahaman swallowtail butterfly
- Portions of Biscayne Bay are included in designated critical habitat for the Florida manatee and American crocodile

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Study Number: **4.8**

Document Title:
Biscayne National Park General Management Plan Amendment, Final Environmental Impact Statement

Entity Responsible for the Document:
National Park Service, U.S. Department of the Interior

Completion Date of Document:
Pending

Status of Document:
Currently in draft form

Geographic Area of Document:
Biscayne Bay National Park includes a large portion of Biscayne Bay and the offshore waters south of Miami in Miami-Dade County, Fl. The Park includes approximately 174,000 acres. The Park's established boundary includes nearly 165,000 acres of marine waters, containing 72,000 acres of coral reefs, and about 9,100 acres of dry land, of which 4,250 acres are divided into 42 islands or keys.

Scope of Document:
The purpose of this amendment is to evaluate four alternatives for the future management of Stiltsville. These strategies will:

- allow for diverse public use of Stiltsville
- protect resources in vicinity of stilt structures
- protect the public's health and safety
- establish a financial framework for reducing the Park's costs for maintaining the structures

Alternative A: preferred alternative

- single non-profit organization would be created along with an appropriate agreement with the National Park Service and other groups for the management and use of Stiltsville structures
- rehabilitate buildings to support education and interpretation opportunities
- provide visitor and interpretive center, research facilities, an artist-in-residence dwelling, meeting space, and a satellite park office providing for National Park Service presence
- non-profit organization created and operated by stakeholders representing a cross-section of the community, including former Stiltsville leaseholders

Alternative B

- National Park Service responsible for renovation, management, and operation of Stiltsville structures

Alternative C

- Structures leased for private use; potential lessees compete for right to lease; preference given to those that would provide for some level of public access

Alternative D: No Action Alternative

- Non-renewable leases that calls for the removal of the structures from Stiltsville area

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- water quality, biological resources, endangered or threatened species, ecologically critical areas, cultural resources, visitor experience and safety, soundscape, visual resources, park operations, socioeconomic resources

Resources Protected:

- There are 31 state-listed threatened and endangered vascular plants, occurring within the park, in addition to the list below.

Affected Environment:

Biscayne Bay

- Protected wetlands constitute 35% of the Surface Water Improvement and Management Plan area
- Designated as an Outstanding Florida Water
- Seagrasses cover approximately 72,000 acres, approximately 42% of the total park area; the endangered Johnson's seagrass is found in the northern portions of Biscayne Bay
- Seagrasses serve as food source for endangered West Indian manatee and as nursery grounds for several species of fish and invertebrates
- Waters serve as a nursery area for larvae and juveniles of a wide variety of fish; West Indian manatee and bottlenose dolphin commonly forage in Biscayne Bay
- Stiltsville structures serve as an artificial habitat area for various sessile organisms

TABLE 6: ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES PRESENT OR POTENTIALLY PRESENT IN THE VICINITY OF STILTSVILLE

Common Name	Scientific Name	Observed	State Status b/ Federal Status b/
Roseate spoonbill	*Ajaia ajaja*	X	SSC
Loggerhead sea turtle	*Caretta caretta*	X	T T
Piping plover	*Charadrius melodus*	X	T T
Atlantic green turtle	*Chelonia mydas mydas*	X	E E
Leatherback sea turtle	*Dermochelys coriacea*	X	E E
Little blue heron	*Egretta caerulea*	X	SSC
Reddish egret	*Egretta rufescens*	X	SSC
Snowy egret	*Egretta thula*	X	SSC
Atlantic hawksbill sea turtle	*Erectmochelys imbricata*	X	E E

White ibis	*Eudocimus albus*	X	SSC
Arctic peregrine falcon	*Falco peregrinus tundris*	X	E E
American oystercatcher	*Haematopus palliates*	X	SSC
Bald eagle	*Haliaeetus leucocephalus*	X	T T
Kemp's ridley sea turtle	*Lepidochelys kempi*	X	E E
Brown pelican	*Pelecanus occidentalis*	X	SSC
Black skimmer	*Pynchops niger*	X	SSC
Least tern	*Sterna antillarum*	X	T
West Indian manatee	*Trichechus manatus latirostris*	X	E E

a/ Sources: National Park Service 1978; Mulliken and VanArman 1995; park staff, personal communication.
b/ E = endangered; T = threatened; SSC = special concern; X = present.

- Ecologically critical areas include Essential Fish Habitat, as identified by the South Atlantic Fishery Management Council (SAFMC 1998) and Habitat Area of Particular Concern, as defined by the National Oceanic and Atmospheric Administration (1999) and mapped by the South Atlantic Fishery Management Council

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Study Number: **4.9**

Document Title:
FY 2000 GPRA Strategic Plan, Biscayne National Park

Entity Responsible for the Document:
National Park Service, Biscayne National Park

Completion Date of Document:
August 23, 2000

Status of Document:
To be revised as new information becomes available and as required by the Government Performance and Results Act.

Geographic Area of Document:
Boundaries of Biscayne National Park (BNP).

Scope of Document:
This plan addresses the key goals and objectives of the BNP (*See Goals and Objectives section of this Summary). It also details the following topics:

- Funding and utilization of funds
- Visitor activities in BNP
- Status of the Natural Resources as of FY98
- Status of Cultural Resources as of FY98
- Educational activities as of FY98
- External Issues

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

GOALS

1. Preserve Park Resources
    - Disturbed Resources – restoration attempts, prevention and recovery plans development, and protective measures implementation
    - Exotic Species – removal and protective measures implementation
    - Noise – protection and restoration of soundscape
    - Fisheries – areas to be designated as "no take" zones
    - Threatened and Endangered Species – improve degraded habitats by implementing recovery plans
    - Water Quality – improve and restore historic water parameters
    - Historic Structures – no action. Historic structures are in good condition.
    - Archaeological sites - no action. Archaeological sites are in good condition.
2. Public Enjoyment and Visitor Experience

- Visitor Satisfaction – facilities and services, experience, commercial services, access
- Visitor Safety – no accidents/incidents caused by the condition of park facilities and services or concession facilities and services
- Public education – make park visitors and neighboring communities aware of the significance of the park's resources

3. Ensure Organizational Effectiveness
    - Data Systems – employees need access to networked computers and able to access and manipulate data
    - Employee Competencies – identification and training
    - Employee Performance – appropriate strategic and annual performance goals
    - Workforce Diversity – representation of underrepresented groups
    - Employee Safety – reduce employee lost time injury rate and cost of new worker's compensation cases

OBJECTIVES

1. Education
    - Public Outreach
    - Funding
2. Public Access
    - Improving access
    - Funding
    - Enforce existing regulations
3. Ecological Restoration
    - Improve water timing and flow
    - Funding
    - improve water quality
    - reduce species loss and increase habitat
    - remove exotic species

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Study Number: **4.10**

Document Title:
C-102/C-103 Wetland Restoration

Entity Responsible for the Document:
South Florida Water Management District

Completion Date of Document:
Pending

Status of Document:
Pending

Geographic Area of Document:
Miami-Dade County, Florida

Scope of Document:
Design and implementation of wetland restoration by removal of fill, exotic species, and the restoration of mangrove, bay bottom, and upland habitat.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Army Corps of Engineers is preparing a feasibility study. Future Actions include: entering into Project Coordination Agreement, and Design and Implement improvements.

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Study Number: **4.11**

Document Title:
CERP- Biscayne Bay Coastal Wetlands

Entity Responsible for the Document:
United States Army Corps of Engineers (USACE) and South Florida Water Management District (SFWMD)

Completion Date of Document:
Design Agreement on May 12, 2000; Project schedule: Start- October 1, 2001; End- December 11, 2016

Status of Document:
Project Implementation Report Phase

Geographic Area of Document:
Mainland coast of southern Biscayne Bay from the Deering Estate at C-100C, south into the undeveloped areas south of Homestead and Florida City known as the Model Lands basin.

Scope of Document:
The primary purpose of the Biscayne Bay Coastal Wetlands project is to redistribute freshwater runoff from the watershed into Biscayne Bay, away from the canal discharges that exist today and provide a more natural and historic overland flow through existing and/or improved coastal wetlands. The project consists of two major components:

- Land intensive system that retains water, improves wetland hydroperiods, and directs water through alternative routes more like the original drainage system; and
- An operational change to increase water elevations at the coastal water control structures in the dry season.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- Restore or enhance freshwater wetlands, tidal wetlands, and nearshore bay habitat;
- Re-establish productive nursery habitat along the shoreline;
- Re-distribute freshwater flow to moderate point source canal discharges to improve freshwater and estuarine habitat;
- Restore and improve quantity, quality, timing, and distribution of freshwater to the Bay;
- Preserve and restore spatial extent of natural coastal glades habitat; and
- Re-establish connectivity between C-111 Model Lands, and adjacent basins.

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Study Number: **4.12**

Document Title:
CERP- C-111 Spreader Canal

Entity Responsible for the Document:
SFWMD

Completion Date of Document:
In progress

Status of Document:
Pre-Construction, Engineering and Design Project Phase; Project Schedule: Start- October 18, 2000; End- March 11, 2009

Geographic Area of Document:
Miami-Dade County, Florida

Scope of Document:
The scope of this plan consists of altering the 1994 design for the C-111 project by adding the following enhancements: constructing a 3,200 acre stormwater treatment area; enlarging pump station S-332E from 50 cubic feet per second (cfs) to 500 cfs; extending the spreader canal approximately 2 miles under U.S. Highway 1 and Card Sound Road to the Model Lands; and installing culverts under U.S. Highway 1 and Card Sound Road. The project will also fill in the southern reach of the C-111 canal below C-111 Spreader to S-197, remove S-18C and S-197, and backfill C-110 canal.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- Re-hydrate Model Lands, establish sheet flow and hydropatterns that will sustain ecosystems in the Southern Glades and Model Lands, provide more natural sheet flow to Florida Bay by eliminating point sources of freshwater discharges through the C-111 canal to the estuarine systems of Manatee Bay and Barnes Sound, and maintain some level of flood protection for agricultural and urban areas in the project area.
- Ecological restoration of the Southern Glades and Model Lands including downstream estuaries by improving timing, distribution, quantity and quality of water deliveries.

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Study Number: **4.13**

Document Title:
CERP- Central Lake Belt Storage Area

Entity Responsible for the Document:
SFWMD

Completion Date of Document:
Design Agreement May 12, 2000

Status of Document:
Pre-Construction, Engineering and Design Project Phase; Project Schedule: Start- March 8, 2011; End- November 14, 2036

Geographic Area of Document:
Miami-Dade County, Florida

Scope of Document:
This project includes pumps, water control structures, a stormwater treatment area, and a combination above ground and in-ground storage reservoir with a total storage capacity of approximately 190,000 acre-feet. The purpose of the project is to store excess water from Water Conservation Areas 2 and 3 and provide environmental water supply deliveries to Northeast Shark River Slough, Water Conservation Area 3B, and Biscayne Bay, in that order.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
To store excess water from Water Conservation Areas 2 and 3 and provide environmental water supply deliveries to Northeast Shark River Slough, Water Conservation Area 3B, and Biscayne Bay, in that order. A pilot test of this technology will be conducted prior to final design of this component to determine construction technologies, storage efficiencies, impacts upon local hydrology, and water quality effects.

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Study Number: **4.14**

Document Title:
CERP- South Miami-Dade Reuse

Entity Responsible for the Document:
Miami-Dade County

Completion Date of Document:
Design Agreement Pending

Status of Document:
Pre-Construction, Engineering and Design Project Phase; Project Schedule: Start- July 1, 2011; End- June 18, 2020

Geographic Area of Document:
Miami-Dade County, Florida

Scope of Document:
The scope of this plan consists of constructing an advanced wastewater pilot treatment plant at Miami-Dade South District Facility and monitoring the facility to determine the ecological effects. The purpose of this plan is to provide additional water supply to the South Biscayne Bay and Coastal Wetlands Enhancement Project.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The key goals and objectives this plan addresses include:

- The identification of critical concerns and the ability of the treatment process to remove them will be determined;
- The identification of advanced wastewater treatment technologies that will: produce reclaimed water that will not have adverse affects on estuarine wetlands and Biscayne Bay, and produce economically viable quantities of water to meet regional water demands identified in CERP;
- Identifying the effects of applying reclaimed water to estuarine wetlands and Biscayne Bay;
- Determining levels of treatment and technologies needed to prevent degradation of estuarine wetlands and Biscayne Bay; and
- Determining the ecological effects of discharging reclaimed water in estuarine wetlands and Biscayne Bay.

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Study Number: **4.15**

Document Title:
Closing the Gaps in Florida's Wildlife Habitat Conservation System: Recommendations to meet minimum conservation goals for declining wildlife species and rare plant and animal communities

Entity Responsible for the Document:
James Cox, Randy Kautz, Maureen MacLaughlin, and Terry Gilbert
Office of Environmental Services, Florida Game and Fresh Water Fish Commission

Completion Date of Document:
1994

Status of Document:
Currently being implemented

Geographic Area of Document:
Florida

Scope of Document:
This report describes habitat areas in Florida that should be conserved if key components of the state's biological diversity are to be maintained.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The objective of this report is to identify lands in Florida that, at a minimum, must be conserved and managed in order to ensure the long-term survival of key components of Florida's biological diversity. Objectives:
(1) Identify habitat areas that are essential to the survival of rare and declining species not adequately protected by the current system of conservation areas;
(2) Identify areas important to several globally endangered species of plants and rare animal and plant communities; and
(3) Identify regional areas of high biological diversity ("hot spots") to assist in local land-use planning.

There are 5 geographical areas addressed in this report that cover the Watershed project area.

Area 1: East edge of the Everglades National Park (between State Roads 997 and 821; also south of Tamiami Trail, west of State Road 997). **Area 2:** Areas north of Card Sound. Large area of freshwater marsh, salt marsh, and mangrove swamp east and west of U.S. 1, primarily south of Aerojet Canal Number C-111. Portions of the area make up a Strategic Habitat Conservation Area for the American crocodile. **Area 3:** Critically endangered areas consisting of pine rockland and rockland hammock communities. Important patches occur around Homestead, Goulds, and Florida City. **Area 4:** Tropical

hardwood hammocks, pinelands, and mangrove islands of the Florida Keys. Some of the more important tracts occur on Key Largo and Elliott Key; and on Big Pine Key, No Name Key, the Torch keys, Ramrod Key, Summerland Key, Cudjoe Key, and Sugarloaf Key in the Lower Keys.
Area 5: Coastal Areas in Miami-Dade County: Fisher Key, Virginia Key, Key Biscayne, Matheson Hammock County Park and Chapman Field Park

Statewide, coastal strand community has been reduced by more than 50% since human habitation of Florida, now leaving about 13,000 acres. Pine rocklands, found in Broward, Miami-Dade and Monroe counties, formerly covered 382,000 acres but has been reduced to fewer than 21,000 acres because of development. Tropical hardwood hammock, found in extreme South Florida, is presently estimated to cover only 15,000 acres. This community contains some of the rarest plants and animals found in all of the U.S. Scrub communities of Florida once covered about 1.03 million acres, but now cover about 422,000 acres. More than 82% of the scrub habitat found along Florida's central ridge has been lost to residential and agricultural development. The longleaf pine community once covered 6.89 million acres, or 20% of the original Florida landscape. Today only 851,000 acres remain in all of Florida, and only about 38% of this acreage is found in current public land.

Limiting factors affecting communities:
The primary problem is loss of habitat. Other problems stem from the fragmentation of remaining patches of natural habitat. Some of the deleterious features commonly associated with edge habitats near urban and residential areas are decreased survival and reproduction owing to increased predation, collisions with vehicles, and nest parasitism, as well as fundamental changes in habitat owing to changes in species composition and habitat management procedures.

Another problem is land management practices on the remaining areas with forest cover. About 35% of Florida's remaining forest cover (including wetland forests) is in short rotation, commercial pine plantations. Florida's remnant natural wetlands have also radically altered hydroperiods owing to past draining or flood-control practices, particularly in the Everglades and the Upper St. Johns River. Other natural wetlands have been altered by polluted runoff originating from intensively developed urban and agricultural lands. Still other natural habitats in Florida have been invaded by exotic plants that often force out native plant species and eliminate appropriate habitat conditions for many native animal species.

Analyses of individual focal species:
American crocodile- Breeding area of the species includes the mainland shoreline of southern Biscayne Bay (Turkey Point), west to Cape Sable, the bay-side shoreline of North Key Largo, and islands in Florida Bay. The population of American crocodiles in Florida consists of fewer than 500 individuals and only approximately 30 breeding females. The habitat areas that fall outside of current conservation lands are proposed as a SHCA for this species. The proposed SHCA consists of wetlands where regulatory provisions could be applied to maintain appropriate habitat.

Black-whiskered Vireo- Potential habitat for the black-whiskered vireo is most extensive in south Florida with approximately 85% of the estimated habitat occurring in Everglades National Park. Using a low density of 5 breeding pairs per km^2 of appropriate habitat, there are an estimated 6 conservation areas with sufficient habitat to support >200 individuals; another 8 conservation areas have sufficient habitat to support 50-200 individuals. These estimates tentatively indicate that black-whiskered vireos lack the minimum level of habitat protection desired. Blocks of habitat occurring within the Florida Keys, Tampa Bay, Charlotte Harbor, Indian River, and Biscayne Bay are proposed as SHCA.

Bobcat- The only habitat types not used by this species are barren lands and certain types of agricultural lands. All "natural" upland cover types were deemed suitable, and the wetland cover types included cypress swamp, hardwood swamp, bay swamp, and bottomland hardwood. Using an estimated density of .2/km^2 and the distribution of habitat in current conservation areas, it's estimated that current conservation areas do not provide sufficient habitat to support at least 10 populations of approximately 200 individuals. There exists a large base of habitat for bobcats. Also, habitat conservation plans developed for several other focal species (e.g., Florida panther and black bear) will likely umbrella the requirements of bobcats. For these reasons, no specific habitat conservation plans were developed for this species.

Florida Burrowing Owl- A concentration of occurrence records in southeast Florida along the Miami Ridge implies a sizeable owl population on agricultural lands in this area. This population is confronted by a burgeoning urban environment. No specific habitat conservation recommendations were developed for burrowing owls. The report recommends conservation practices for other species that will, to a large extent, also benefit burrowing owls.

Florida panther- The population is estimated at 30-50 adults and occupies a limited area of southwest Florida. Home range sizes in panthers average about 550 km^2 for males and 300 km^2 for females. The researchers generalized population viability model for Florida panthers indicates that a population of about 50-70 would have a good chance of persisting for at least 200 years under favorable management conditions. Panthers inhabit a landscape consisting of large patches of hardwood hammock, pineland, hardwood swamp, and cypress swamp cover types. Large areas without roads, large public conservation areas, and large private land-ownership patterns are also important features of the landscapes occupied by panthers. Intensive agricultural areas and barren land cover are not regularly used by Florida panthers.

Qualitative scores for panther habitat are based on "preferred" and "secondary" habitat types, quantity and composition of land cover on private parcels, and patch size, to produce a composite map with scores ranging from 1-8. Preferred land-cover types included pineland, hardwood hammock, and cypress swamp. Secondary habitat types included hardwood swamp, dry prairie, oak scrub, and other cover types that may not be often used by panthers but appear to be important in determining the presence of panthers

in an area. Parcels having <100 km^2 of the preferred land-cover types were assigned the lowest score, and parcels having >100 km^2 of preferred land cover and at least 15% of preferred land-cover types scored highest. Patches at least 10 km^2 scored higher than patches smaller than 10 km^2. One of the greatest threats to the continued existence of panther habitat in south Florida is conversion of large areas of rangeland and native land cover to agriculture. Continued expansion of citrus areas could effectively subdivide the proposed panther habitat conservation area. Another pressing need is the establishment of additional populations elsewhere in the former range of the taxon. Additional populations would also help to maintain higher levels of genetic diversity.

Gopher Tortoise- Gopher tortoises occur in a variety of disturbed and natural areas, including xeric land-cover types (sandhill, oak scrub, sand pine scrub, pineland, dry prairie, and mixed-hardwood pine). The report concludes that although adequate protection is not necessarily provided to species that utilize gopher tortoise burrows, the current system of conservation areas in Florida provides the minimum level of habitat protection required to maintain gopher tortoises.

Limpkin- Potential habitat includes forested wetlands and freshwater marshes. The largest blocks of limpkin habitat are found in the Everglades, along much of the St. Johns River south of Lake George, and along the western edge of Lake Okeechobee. An estimate of 5-10 territories/km^2 in forested wetland systems and 2.5-5 territories/km2 in open wetland systems is used to assess habitat capacity in current conservation areas. Approximately 1,981 km^2 of potential limpkin habitat is found throughout Florida with 49% occurring in current conservation areas. These figures suggest a statewide population of about 3,000-6,000 territories in current conservation areas. Conservation areas in Florida do not appear to provide the recommended minimum base of habitat for limpkins.

Mangrove Cuckoo- Primary habitat is inferred to be coastal mangrove swamps, but shrub and brush, scrub, and hardwood hammock land cover adjacent to mangrove swamps may also be used. Mangrove cuckoos occur throughout extreme south Florida and extend along the west coast as far north as Tampa Bay. There appear to be four more-or-less distinct habitat areas within this broader range: Tampa Bay, Charlotte Harbor, the Lower Keys, and a large region extending across the southern peninsula from Naples to Miami (and including the upper keys). A total of 585 km^2 of potential habitat is estimate to occur statewide with 83% found within currently defined conservation areas. The Everglades National Park accounts for approximately 86% of the potential habitat estimated to occur in conservation areas. Previous studies have found that mangrove cuckoos were not found in forest fragments <2.3 ha, suggesting that continued habitat loss and fragmentation may eliminate cuckoos in these areas.

Short-tailed Hawk- Occurrence information alone provides ample proof that this species lacks adequate representation in current conservation areas in Florida. A total of about 30 occurrence records exist, and only about half of these are associated with current conservation areas. Most areas where this species has been recorded consist of a mix of large forests tracts, which are used for nesting, and nearby open areas, which serve as

foraging areas. Securing an adequate base of habitat for this species may be achieved by protecting habitat for other species (e.g., black bear and Florida panther), but several areas where this species was recorded are not prime areas for either black bears or Florida panthers. Perhaps the best habitat conservation strategy is simply to conserve the forested habitat, open rangeland, and natural cover in areas where this species has been recorded nesting.

Snail Kite- Potential habitat includes freshwater marsh, shrub swamp, and open water, and potentially dry prairie and grassland areas that. The total size of the Florida snail kite population has been estimated at <800 individuals for many years. This species lacks an adequate base of habitat in current conservation areas. The nomadic characteristic of snail kites requires that habitat management and conservation efforts be extended to areas outside the boundaries of current water conservation areas of the Everglades. Discharges of nutrient-laden water from agricultural and dairy sources into Lake Okeechobee and the Water Conservation Areas have contributed to the loss of foraging habitat and die-offs of snails.

Southern Bald Eagle- Potential foraging habitat includes freshwater marsh and open water, and potential nesting areas include forested uplands and wetlands. The statewide population probably consists of a single, panmictic population. The researchers believe that the number of nests (<170) in current conservation areas is far below the minimum number needed for long-term security.

White-crowned Pigeon- This species is limited primarily to the Florida Keys and Florida Bay. The species nests on mangrove islands throughout Florida Bay and a few other areas in the Ten Thousand Islands of the Everglades National Park. Pigeons forage primarily in tropical hardwood hammocks along the Florida Keys, the important foraging plants in hammocks being poisonwood, blolly, and species of fig. Appropriate nesting habitat is protected to some degree by wetland regulations, but critical foraging habitat is not well protected. Continued residential and urban development threaten to eliminate many of the remaining patches of tropical hardwood hammock on private lands.

Wilson's Plover- Foraging habitat includes the exposed salt flats and sandy open areas in close proximity to open water, coastal strand, salt marsh, and mangrove land cover. Habitat for Wilson's plover is found throughout coastal areas of the state. A lack of published density estimates makes it difficult to determine the level of protection offered by current conservation areas. The Apalachee, Tampa Bay, South Florida, and Southwest Florida regions are estimated to have the greatest quantity of habitat among regions, but there is great variation in the degree to which habitat within these regions is conserved. About 50% of the habitat in the South Florida and Southwest Florida regions is in current conservation areas. No specific habitat conservation recommendations were developed for this species. However, the habitat distribution map developed for this species is used as a part of the analysis of important coastal habitats.

The focal species analyzed above are not perfect indicators of the habitat areas required by some species.

Areas Supporting Globally Rare Plant Species- The Miami Rockridge Pineland acquisition project in Dade County would provide significant protection for a number of poorly protected pine rockland species including Florida thoroughwort, Brickell-bush, Bahama sachsia, deltoid spurge, Blodgett's wild mercury, and Florida gama grass. These pine rockland sites are highly vulnerable to development, and several of the sites originally proposed in 1986 have been destroyed.

Coastal Communities- A map showing the overlap of habitat areas for different taxa of beach mice and salt marsh snakes, American oystercatcher, mangrove cuckoo, Cuban snowy plover, piping plover, white-crowned pigeon, and Wilson's plover was created by adding together the individual habitat distribution maps created for each of these species. A map of coastal habitats of potential importance to migratory birds was generated by isolating coastal hammocks, scrub, and mixed hardwood-pine forests within 1.6 km of the coast. Recorded shorebird aggregation areas were digitized from scale county road maps. Sea turtle nesting areas along the southern Atlantic and Gulf coasts were mapped based on information processed by FNAI. All occurrences recorded by FNAI falling with 5 km of the coast were analyzed. Any conservation plans developed for this broad group should contain elements of land acquisition, land-use regulation, managing human access and recreation, and landowner education.

Gap Analysis- A separate set of coarse habitat distribution maps was prepared for 120 species of vertebrates for use in a "gap analysis", a theoretical approach to identifying important conservation lands by overlaying potential habitat maps for individual species. These overlays display species-rich "hot spots" where many species might co-occur. The species selected for this analysis included those (except fish and whales) listed by the Florida Game and Fresh Water Fish Commission as endangered, threatened, or species of special concern, plus an additional 43 species of vertebrates not listed but perhaps in some jeopardy. Several potentially important habitat areas are highlighted within existing conservation areas. The resolution of water management issues affecting these areas will also have great implications for some of Florida's rarest species.

Pine Rocklands- Pine rockland communities are restricted to outcrops of Miami limestone in Dade County and the Florida Keys. The largest remaining patches of pine rockland forest are on Long Pine Key in Everglades National Park and on Big Pine and Cudjoe keys in the Florida Keys. The total area of pine rockland shown is 5,168 ha (12,765 acres). A proposal (anon. 1992, 1993) submitted to the Florida Conservation and Recreation Lands program identified important remnant tracts of pine rocklands in Dade County.

Prairie Birds- Some of the birds associated with this community type have distinctive, disjunct populations that are generally restricted to Florida. Existing conservation areas do not provide many of these species with the habitat base needed for long-term security. The northwestern section of Dade County includes areas where numerous species overlap.

Wetlands Important to Wading Birds- Because of the regulatory status of wetland areas, the conservation of areas shown to be important to many different species can be largely achieved through the application of existing wetland laws.

An overview of recommendations developed for focal species and their effects on population security is included in this reference document.

According to this report, Dade County has 698,269 acres (56.33%) of existing conservation lands and 23,959 acres (1.93%) of proposed SHCA.

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Study Number: **4.16**

Document Title:
Coordinating Success: Strategy for Restoration of the South Florida Ecosystem

Entity Responsible for the Document:
South Florida Ecosystem Restoration Task Force

Completion Date of Document:
July 31, 2000

Status of Document:
Currently being implemented

Geographic Area of Document:
The South Florida Ecosystem is an 18,000-square-mile region of subtropical uplands, wetlands, and coral reefs that extends from the Chain of Lakes south of Orlando through the reefs southwest of the Florida Keys. It encompasses many nationally significant conservation areas, including Everglades and Biscayne National Parks, Big Cypress National Preserve, the Arthur R. Marshall Loxahatchee National Wildlife Refuge, and the Florida Keys National Marine Sanctuary.

Scope of Document:
The purpose of this plan is to describe the existing federal and nonfederal programs designed to restore and sustain the South Florida ecosystem. The South Florida Ecosystem Restoration Task Force (the task force) coordinates and tracks the work done by federal, state, tribal, and local entities that are working to address the deteriorating ecological conditions. Congress identified four elements to be included in this document: outline how the restoration effort will occur, identify the resources needed, establish responsibility for accomplishing actions, and link the strategic goals established by the participants to outcome-oriented goals. This document is for planning purposes only.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The appropriate agencies will track progress toward restoring the ecosystem through approximately 200 performance measures developed as part of the Comprehensive Everglades Restoration Plan (CERP), plus additional measures for areas not covered by the CERP, such as the South Florida Multi-Species Recovery Plan. The agencies will provide the data to the task force, which will synthesize the information and report to Congress, the State Legislature, and the Councils of the Tribes.

The result of the task force's efforts should be the restoration of the South Florida ecosystem. The following is three of the primary goals of the task force:

Goal 1:

- Get the water right: get the hydrology right; get the water quality right

Goal 2:

- Restore, preserve, and protect natural habitats and species; control invasive exotic plants

Goal 3:

- Foster compatibility of the built and natural systems

The following projects serve as examples to illustrate the types of projects that will be included in the expanded Goal 3 section of the update to this document:

SFWMD Regional Water Supply Plans
CERP Coastal Wellfield Operations
CERP Utility Water Conservation
Eastward Ho! Brownfields Partnership
Palm Beach County Freshwater Chain-of-Lakes Project
West Palm Beach Wetland Reclamation Project
South Biscayne Bay Watershed Management Plan
Miami-Dade Agriculture and Rural Land Retention Study
Miami River Dredging Project
Florida Keys Carrying Capacity Study
Pineland Site Complex

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Study Number: **4.17**

Document Title:
The Deering Coastal Wetland Addition Management Plan

Entity Responsible for the Document:
Metropolitan Dade County, Environmentally Endangered Lands Program

Completion Date of Document:
April 1995

Status of Document:
Currently being implemented.

Geographic Area of Document:
The Deering Estate Coastal Wetland Addition is located in south Miami-Dade County on the shore of Biscayne Bay. The addition lies on the northern boundary of the 381 acre Charles Deering Estate and is bordered by a small estate density residential area to the west, SW 152 Street and the Cutler Power Plant to the north, and Biscayne Bay and the townhouse development of Paradise Point to the east.

Scope of Document:
The purpose of this management plan is to:

- To maintain and restore the coastal mangrove band, salt marsh, and hammock communities that were historically present on the Deering Coastal Wetland Addition site;
- To conserve, protect, and enhance wildlife populations and water resources;
- To conserve, protect unique geological and historical resources;
- To expand further knowledge about exotic vegetation control techniques;
- To further the implementation of applicable goals in Miami-Dade County's Comprehensive Development Master Plan;
- To complement on-going federal, state, and county initiatives related to resource protection and restoration;
- To provide outdoor recreation and public education where consistent with the protection of the natural resources on the site; and
- To provide controlled public access to Biscayne Bay.

The following management activities will be undertaken:

- Exotic plant removal;
- Prescribed fire management;
- Elimination of man-made obstructions;
- Vehicular access control;
- Native vegetation replanting; and
- Compatible outdoor recreation and education.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Acquisition and public protection of this property will further the implementation of the CDMP Conservation Objective 7 and related policies and provisions related to wetland preservation. In relation to the Coastal Element of the CDMP, the acquisition of the Deering Estate Coastal Wetland Addition will implement adopted CDMP directives related to natural resource acquisition, preservation and management, public shoreline access, environmentally compatible recreational use, and public awareness and historic preservation.

Two wildlife surveys will be conducted yearly. A complete species list will be compiled for each management area. If listed species are found on the site, management activities will be developed or adjusted to be sensitive to the life history of these species. Site monitoring will focus on exotic vegetation removal and its effects on habitat for native wildlife and plant utilization. Population counts for listed wildlife and plants will be conducted and listed species data summaries will be forwarded to FNAI annually.

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Study Number: **4.18**

Document Title:
Everglades National Park General Management Plan
Plan is not yet released to the public. Currently newsletters are available to the public about the management plan process and updates. Latest newsletter is September 2003.

Entity Responsible for the Document:
U.S. Department of Interior, National Park Service

Completion Date of Document:
Pending

Status of Document:
Pending

Geographic Area of Document:

Scope of Document:

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

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Study Number: **4.19**

Document Title:
Everglades National Park Strategic Plan 2001-2005

Entity Responsible for the Document:
National Park Service

Completion Date of Document:
2000

Status of Document:
Began implementation in October 2000

Geographic Area of Document:
This plan encompasses Everglades National Park (ENP), which covers 1,509,000 acres including most of Florida Bay. The park covers more than 60 miles north-to-south and forty miles east-to-west, and is located in both Miami-Dade and Monroe County.

Scope of Document:
This plan address three questions: Where is the park going?; What is the environment?; and how will the ENP get there? This Strategic Plan outlines the goal and programs that will accomplish the park's mission. It consists of:

- A mission statement – born out of the NPS organic act as well as the specific legislation establishing this park;
- Mission goals- that illustrate broadly what ENP does far beyond just five years- "in perpetuity"- to accomplish the mission; and
- Long-term goals- which target in quantified, measurable ways what will be accomplished in the next 5 years toward achieving the mission goals.

The Purpose of Everglades National Park: Everglades National Park is a public park for the benefit of the people. It is set aside as a permanent wilderness preserving essential primitive conditions including the natural abundance, diversity, behavior, and ecological integrity of its flora and fauna.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The Everglades provide and protect fresh water that enables people to live and do business in much of this area. It is the source of drinking water for 5 million people and sustains a productive agricultural industry.

The Significance of Everglades National Park:

- Qualifies as a World Heritage Site, a Biosphere Reserve, a Wetland of International Importance, and an Outstanding Florida Water
- Supports the largest stand of protected Sawgrass prairies in North America

- Serves as a crucial water recharge area for South Florida through the Biscayne Aquifer
- Provides sanctuary for 20 threatened and endangered species
- Supports the largest mangrove ecosystem in the western hemisphere
- Constitutes the largest designated wilderness in the southeast that provides foraging habitat and breeding grounds for migratory wading birds
- Contains important cultural resources and is the homeland of the Miccosukee Tribe of Indians of Florida
- Functions as a nationally significant estuarine complex in Florida Bay and the Parks' western coast, providing a major nursery ground that supports sport and commercial fishing
- Comprises the only subtropical reserve on the North American continent, presenting a major ecological transition zone where diverse temperate and tropical species mingle
- Functions as a major corridor and stopover for neo-tropical migrants in the South Florida ecosystem
- Encompasses resources that directly support significant economic activities

Mission Goals

Goal Category I: Preserve Everglades National Park Resources

Park Mission Goal I.a.0. Hydrological conditions within Everglades National Park and the South Florida ecosystems are characteristic of the natural ecosystem prior to Euro-American intervention, including water quality, quantity, distribution and timing.

Park Mission Goal I.a.1. Everglades National Park is restored and protected in ways that allow natural processes, functions, cycles, and biota to be reestablished and maintained in perpetuity, and that allow archaeological and historical resources to be appropriately preserved.

Goal Category II: Provide for the Public Use and Enjoyment and Visitor Experience of Everglades National Park

Park Mission Goal II.a. Visitors to Everglades National Park have the opportunity to experience the Park's unique subtropical wilderness values.

Park Mission Goal II,b. The public understands and appreciates Everglades National Park and its role in the South Florida ecosystem and provides support in achieving the Park's purpose.

Goal Category III: Strengthen and Preserve Natural and Cultural Resources and Enhance Recreational Opportunities Managed by Partners

Park Mission Goal III.a. The Seminole and Miccosukee Tribes have the opportunity to exercise their existing tribal rights within Everglades National Park to the extent and in such a manner that they do not conflict with the park purpose.

Goal Category IV: Ensure Organizational Effectiveness

Park Mission Goal IV.a. Everglades National Park has a diverse, motivated, and professional workforce allowing it to be a responsive, efficient, safe, and accountable organization.

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Study Number: **4.20**

Document Title:
Final Habitat Plan for the South Atlantic Region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council

Entity Responsible for the Document:
South Atlantic Fishery Management Council

Completion Date of Document:
October 1998

Status of Document:
Final/Complete. The South Atlantic Fishery Management Council (SAFMC) and (NMFS) are to review and update the habitat components of Fishery Management Plans (FMPs) at least every 5 years.

Geographic Area of Document: (please attach any graphics files or copy any maps)
The Plan covers estuarine inshore habitats and marine habitat focusing on North Carolina, South Carolina, Georgia, and the Florida east coast out to the 200-mile limit, south to Key West.

Scope of Document:
This comprehensive document is the result of a cumulative effort of several agencies working together to define and describe Essential Fish Habitat (EFH) for the southern Atlantic Coast (from North Carolina to the Florida Keys). It goes into scrupulous detail on different habitat types (both fringe and submerged), threats to those systems, restoration efforts and methods, water quality information, and habitat function. Both estuarine/inshore and marine/offshore EFH are described. Multiple species of corals, crustacea, and fish are discussed including EFH requirements for each, distribution, spawning habitats, biological factors, and economic factors. The Plan also meticulously describes the numerous threats to EFH, both natural and man-made. Multiple anthropogenic threats are discussed including urban sprawl, recreational uses, and industry and commerce amongst others.

The Magnuson-Stevens Fishery Conservation and Management Act of 1996 provides the mandate to identify and protect marine and anadromous fisheries habitat and particularly to identify EFH for species. EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” “Fish” includes finfish, crabs, shrimp, and lobsters. The Act mandates an effort to integrate fishery management and habitat management by stressing the dependency of healthy fisheries on diverse and healthy estuarine and marine ecosystems.

This plan is a comprehensive analysis of fishery habitats in the Southeast with information on the requirements for each life history stage of managed species, including habitat variables that control or limit distribution, abundance, reproduction, growth, survival, and productivity. Habitat requirements of prey species and actions that cause reductions in prey populations are addressed as well as how fishing and non-fishing activities influence habitat function on an ecosystem or watershed scale.

The Plan concludes with a discussion of information and research needs to further clarify potential data gaps on EFH for the South Atlantic Region.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The purpose of the Habitat Plan is to further the national marine resource management goal of maintaining sustainable fisheries through maintenance and protection of suitable marine fishery habitat quality.

Biscayne Bay is one of the South Atlantic estuarine drainage areas specifically identified in the plan in relation to occurrence of habitat types such as mangroves and seagrass beds, which must be healthy to maintain the value of the resource. The protection of water quality and the ecological values of Biscayne Bay is one of the objectives of the SMDWSP.

From the Biscayne Bay Partnership Initiative:
The Comprehensive Amendment contains amendments related to habitat for each of the South Atlantic Fishery Management Plans. Each amendment has two goals: 1) to identify EFH, and 2) to establish EFH-HAPCs. Those FMPs related to Biscayne Bay are:

- Shrimp: Biscayne Bay is mapped as an area of high abundance of juvenile pink shrimp. EFH includes inshore estuarine nursery areas, offshore marine habitats, and interconnecting water bodies. Areas that meet criteria for HAPCs include all coastal inlets, all state-designated nursery habitats of particular importance to shrimp, and state-identified overwintering areas.

- Snapper-grouper complex (includes gray snapper): Biscayne Bay is mapped as an area of high abundance of juvenile gray snapper. For specific life stages of the gray snapper, EFH includes seagrass, tidal creeks, and mangrove fringe. Areas that meet criteria for HAPCs include all coastal inlets, mangrove habitat, seagrass habitat, and all state-designated nursery habitats of particular importance to snapper.

- Coastal migratory pelagic complex (includes Spanish mackerel): Biscayne Bay is mapped as an area where juvenile Spanish mackerel are common. EFH includes all coastal inlets and state-designated nursery habitats of particular importance to coastal pelagic species. HAPCs include Atlantic Coast estuaries with high numbers of Spanish mackerel.

- Red drum: Biscayne Bay is mapped as an area where red drum juveniles are rare, but historically the red drum was a common species in the bay, until it declined rapidly

beginning in the 1940s. In 1998, the state ended an 8-year unsuccessful attempt to restock red drum into Biscayne Bay. EFH includes mangrove fringe, sea grasses, oyster reefs, and tidal creeks. Areas that meet criteria for HAPCs include all coastal inlets, all state-designated nursery habitats of particular importance to red drum, and habitats identified for submerged aquatic vegetation.

- Spiny lobster: Biscayne Bay and Card Sound are identified as areas meeting the criteria of HAPC for spiny lobster. EFH includes shallow subtidal bottom, seagrass, soft sediments, coral and live/hard bottom, sponges, algal communities, and mangrove prop roots.

- Coral, coral reefs and live/hard bottom: Biscayne Bay and Biscayne National Park are identified as areas meeting the criteria of HAPC for coral, coral reefs, and live/hard bottom.

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Study Number: **4.21**

Document Title:
Florida's Ocean Strategies

Entity Responsible for the Document:
Florida Governor's Ocean Committee. This committee is comprised of members representing government, conservation, education, science, recreation, and business entities.

Completion Date of Document:
June 1999

Status of Document: Final Report. An interim report was produced in November of 1998 that led to a draft final report in January of 1999. The Final Report was adopted in June of 1999.

Geographic Area of Document: (please attach any graphics files or copy any maps)
The three bodies of water that surround the state of Florida: the Atlantic Ocean, the Gulf of Mexico, and Florida Bay.

Scope of Document:
Much of Florida's economic stability hinges upon the utilization of the ocean (Atlantic, Gulf, and Bay). Grand industries such as fishing and boating put a heavy strain on the natural marine resources; subsequently, Governor Lawton Chiles created a committee whose sole purpose was to identify the stresses placed upon the ocean as well as to determine proper management issues that would ultimately attempt to reverse some of the inflicted damages.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The Final Plan presents four challenges, as well as possible solutions for those challenges:

1. Improvement of information on and understanding of marine resources
    - Increase coastal and marine research
    - Promote research partnerships
    - Identify research needs
    - Develop and execute monitoring programs

2. Creation of an improved ocean management framework
    - Cultivate partnerships between public and private entities
    - Utilization user-friendly practices
    - Acknowledge and create policies of international importance

3. Sustainable and diverse marine ecosystems
    - Water quality standards
    - Fishery management
    - Habitat protection
    - Migratory species protection
    - Aquaculture practices
    - Marine law enforcement

4. Ocean awareness and education
    - Develop public outreach programs
    - Increase support for volunteerism and conservation programs
    - Increase educational opportunities

The challenges relating to water quality, ecosystem sustainability, and recreational utilization of Florida waters coincide with the goals and objectives of the SMDWSP.

PLAN COMPONENT:

a. Natural resource systems discussed and Existing Conditions

1. Wetlands, estuaries, mangrove forests
2. Coral reefs
3. Seagrass
4. Sargassum
5. Artificial reefs
6. Migratory pelagic species
7. Marine mammals
8. Sea turtles
9. Seabirds

b. Priorities and major issues as stated in studies

Major issues stated in the Final Plan are as follows:

1. Identifying inadequate management issues
2. Addressing those inadequacies
3. Improving partnerships between agencies
4. Improving public awareness

Priorities are discussed using four broad categories:

1. Protection of marine resources (floral and faunal)
2. Protection of oceanic ecosystem
3. Bolster marine economic utilization
4. Increase public outreach and awareness

c. Indicator species, limiting factors, problems of concern, keystone species, and factors that are distinctive from atmospheric/climatic impacts, red flags (for land use planning and impact assessment)

Note: Indicator species/Keystone species are not discussed in the Plan.

Problems of concern for land use and impact assessment:

1. Sewage treatment discharge policy
2. Directing growth away from water recharge areas and natural systems
3. Upgrade older water treatment plants
4. Improving land acquisition efforts

d. Commercial fisheries, shellfish, sport fishing, and tourism issues

1. Support the enhancement of commerce and international trade (for sustaining resources)
2. Aquaculture support
3. Responsible stock enhancement
4. Explore limited use areas/seasonal harvests/no-take and no-fishing marine reserves
5. Preserve nursery habitat
6. Implementing artificial reefs for recreational diving
7. Personal watercraft policies in sensitive areas

e. Indicate on a study area map the geographical coverage of literature

No map was included in the Plan. The geographical coverage includes all major bodies of water that surround the Florida peninsula.

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Study Number: **4.22**

Document Title:
Restoration Plan for Miami-Dade County's Pine Rockland Forests Following Hurricane Andrew

Entity Responsible for the Document:
Department of Environmental Resources Management, Metropolitan Dade County, Florida

Completion Date of Document:
August 1995

Status of Document:
Currently being implemented

Geographic Area of Document:
Miami-Dade County, Florida. The area between SW 120 Street and SW 408 Street contains 4,400 acres of pine rockland forest, 99% if the acreage remaining in Miami-Dade County outside of Everglades National Park. This is the area where Hurricane Andrew's severest impacts were also associated, and 18 months after the hurricane, almost 90% of the mature slash pines had died as a result of initial and indirect impacts.

Scope of Document:
The purpose of this plan is to establish the framework for the future restoration activities of Miami-Dade County's pine rocklands.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- Restore and maintain environmentally endangered pine rocklands to maximize biotic diversity and preserve their natural resource values.
- Ensure that long-term inter-agency coordination and public support are maintained throughout the pine rockland restoration effort.
- Restore and maintain naturally occurring plant and animal associations and the abiotic processes of the pine rockland habitat by employing appropriate management techniques.
- Re-establish South Florida slash pine rockland habitats affected by Hurricane Andrew.
- Restore and maintain a forest canopy structure of uneven-aged pine trees and an understory with a mosaic of shrub gaps.
- Ensure the viability of rare, threatened, endangered, endemic species and species of special concern consistent with the preservation and enhancement of pine rockland habitat.

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Study Number: **4.23**

Document Title:
Management Plan for Rockdale Pineland

Entity Responsible for the Document:
Metropolitan Dade County Park and Recreation Department, Natural Areas Management, in cooperation with Metropolitan Dade County Department of Environmental Resources Management's Environmentally Endangered Lands Program

Completion Date of Document:
December 1996

Status of Document:
Currently being implemented

Geographic Area of Document:
The Rockdale Pineland site is located in south-central Miami-Dade County, on the west side of U.S. Highway 1 between SW 144 Street and SW 152 Street in Section 21, Township 55, Range 40. The site is approximately 44 acres in size. The site is divided into 3 parcels: the 26 acre EEL/CARL Rockdale Pineland, the Rockdale 100 Bus Corridor, and the Miami-Dade Transit Authority (MDTA) parcel. The Rockdale Pineland site contains approximately 26 acres of pine rockland, an exceedingly rare plant community in Florida.

Scope of Document:
The purpose and scope of this management plan are to propose policy guidelines and provide management direction for the Rockdale Pineland site. The management plan is written to be consistent with the purposes of the Miami-Dade County Environmentally Endangered Lands (EEL) Program described in Chapter 24A-5 of the Code of Metropolitan Dade County.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The management goals for the Rockdale Pineland include preserving and enhancing the diverse native pine rockland and transitional hammock communities, thereby preserving and enhancing the existing natural buffering features of the preserve, and increasing the public's awareness of pine rockland ecology and management issues. Management activities are expected to include exotic plant control, periodic prescribed burning, re-establishment of pine canopy, enhancement of the emerging oak hammock at the southern end of the site, access control, and establishment of an appropriate interpretive program.

Occurring on the site are several rare endemic plants including the Deltoid spurge (*Chamaesyce deltoidea* ssp *deltoidea*), Sand flax (*Linus arenicola*), and Pineland morning glory (*Jacquemontia curtissii*). Osprey and hawks are frequent visitors, and even bald eagles have been observed in the Rockdale Pineland.

Management Goals and Objectives:
Goal: Restore and maintain environmentally endangered pine rocklands to maximize biotic diversity and preserve their natural resource values.

Objective: Maintain long-term interagency coordination and public support throughout the pine rockland restoration effort.

- Restore and maintain naturally occurring plant and animal associations and the abiotic processes of the pine rockland habitat by employing appropriate management techniques.
- Reestablish south Florida slash pine (*Pinus elliotii* var. *densa*) in pine rockland habitats affected by Hurricane Andrew.
- Restore and maintain a forest canopy structure of uneven-aged pine trees and an under story with a mosaic of shrub gaps.
- Ensure the viability of rare, threatened, endangered, endemic species and species of special concern consistent with the preservation and enhancement of pine rockland habitat.

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Study Number: **4.24**

Document Title:
Draft Management Plan for Trinity Pineland

Entity Responsible for the Document:
Metropolitan Dade County Park and Recreation Department, Planning and Research Division

Completion Date of Document:
June 1993

Status of Document:
Currently being implemented

Geographic Area of Document:
Trinity Pineland is a 10 acre remnant of a plant community referred to as Miami-Dade Pine Rockland located on the south side of SW 76 Street, between 7300 and 7400, Miami-Dade County, Florida.

Scope of Document:
This plan proposes the management policy and land use plan for the Trinity Pineland site. The proposals are in conformance with the Metro Dade County Comprehensive Development Master Plan; the State Environmentally Endangered Lands Plan; and the State Lands Management Plan for the conservation and protection of natural and historic resources, and for resource based public outdoor recreation which is compatible with the conservation and protection of the site, along with other related uses necessary for the accomplishment of this purpose.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Mission Statement: It is the intent of the Miami-Dade County Park and Recreation Department to provide protection and stewardship for a pine rockland community that is unique to, and scarce in South Florida, while furthering the public's understanding, appreciation, and enjoyment of such areas.

Goal: Preserve and restore native pine rockland habitat and the natural processes that historically (pre-Columbian) influenced this community.

Objectives:

- Institute a fire management plan that would replicate as closely as possible the historic fire cycles of pine rockland.
- Control alien pest plants to improve the health and balance of the pine rockland community.
- Insure the long-term viability of native populations of plant and animal species considered rare, threatened, endangered, or of special concern.

- Provide increased security for Trinity Pineland by involving neighboring property owners in management decisions.

Goal: Manage public access to protect sensitive resources and environmental integrity while providing opportunities to improve awareness and appreciation for Miami-Dade Pine Rocklands.

- Control public access to the property to restrict uses which are incompatible with the protection of resources.
- Provide controlled public access through scheduled programming that will increase public awareness and appreciation of the significance of Miami-Dade Pine Rocklands.

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Study Number: **4.25**

Document Title:
Miami-Dade County Manatee Protection Plan

Entity Responsible for the Document:
Department of Environmental Resources Management, Metropolitan Dade County, Florida

Completion Date of Document:
1995

Status of Document:
Currently being implemented

Geographic Area of Document:
Miami-Dade County, Florida. Critical manatee habitat includes all waters of Card and Barnes Sounds, Manatee Bay, Biscayne Bay, and "all adjoining and connected lakes, rivers, canals, and waterways from the southern tip of Key Biscayne northward and including Maule Lake."

Scope of Document:
Provide county-wide protection for the manatee and its habitat by including criteria for vessel speed zones, marina/boat facilities (including siting), law enforcement, shoreline and submerged land development, educational programs, habitat protection, human-manatee interactions, and governmental coordination.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
- Ensure the long-range protection of the manatee species and its habitat in Florida
- Reduce the number of manatee mortalities and injuries, including but not limited to those which are human-related, particularly flood gate and boat-related causes
- Protect manatee habitat and upgrade where possible
- Minimize manatee harassment
- Increase public awareness of the need to protect manatees and their environment
- Monitor the status of manatee populations and their habitats
- Manatee habitat shall be protected from degradation
- Methods to enhance and restore water quality in manatee habitats shall be investigated by DERM and other agencies (e.g. City of Miami, SFWMD), and cleanup shall commence as soon as possible
- Aquatic plant removal shall be minimized in areas used by manatees
- Manatee aggregation areas shall be incorporated into the state and federal systems of refuges, parks, reserves, and preserves
- DERM shall work with the SFWMD to reduce to zero the number of manatee mortalities related to flood gates/salinity control structures

- Miami International Airport shall install and maintain barriers to prevent manatees from entering the canal-culvert system
- Manatee protection shall be considered during high speed (greater than 30 mph) water-related activities
- Vessel speed restrictions for manatee protection should be adequately marked
- Law enforcement should be improved through the coordination of enforcement agencies and by increasing enforcement personnel
- Development of shoreline and submerged land areas shall be regulated in a manner that does not directly or indirectly impact the manatee or its habitat in an adverse manner
- Information about manatees shall be readily available to the general public
- Vessel traffic and manatee usage patterns should continue to be monitored in order to detect changes in these patterns and modify vessel speed restricted zones accordingly
- The general public shall be able to obtain information from county and state government regarding manatee protection in Miami-Dade County

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Study Number: **4.26**

Document Title:
Multi-Species Recovery Plan for South Florida

Entity Responsible for the Document:
United States Fish and Wildlife Service Southeast Region

Completion Date of Document:
May 1999

Status of Document:
Currently being implemented

Geographic Area of Document:
The South Florida Ecosystem encompasses 67,346 square kilometers (26,002 square miles) covering the 19 southernmost counties in Florida. This region includes 51,934 square kilometers (12,833,121 acres) of land and three major watersheds: the Kissimmee River-Lake Okeechobee-Everglades Watershed, the Caloosahatchee River watershed, and the Peace River/Myakke River watershed. The Multi-Species Recovery Plan identified the recovery needs of the 68 threatened and endangered species and 23 natural communities in U.S. Fish and Wildlife Service's South Florida Ecosystem.

Scope of Document:
This recovery plan is designed to recover multiple species through the restoration of ecological communities over a large geographic area. Recovery actions at the **Species-level**: determine the distribution of the species in South Florida, protect and enhance populations, conduct research on biology/ecology, monitor populations, and inform and involve stakeholders and the general public in the recovery process. **Habitat-level** recovery actions: prevent degradation of existing habitat, restore degraded or unsuitable habitat, conduct research to determine the applicability and effectiveness of management techniques, monitor habitat-level responses to management actions, and increase public awareness of the species/habitat relationship. **Community-level** recovery actions: prevent further destruction or degradation of existing communities, manage existing natural communities within the context of restoration objectives, maintain communities in a natural condition, re-create natural communities where they have been destroyed by human activities to the extent that a legitimate natural community can no longer be restored, connect appropriate habitat, conduct community-level research, monitor community-level processes and effects of land managed actions, and increase public awareness at the community level.

The Multi-Species Recovery Plan was designed to:

- Assist government, Tribal, academic, non-government, and private efforts to recover threatened and endangered species and restore the South Florida ecosystem

- Support efforts to acquire land in South Florida to conserve threatened and endangered species
- Support interagency consultations on actions in South Florida that affect threatened or endangered species
- Support efforts to prepare habitat conservation planning in South Florida
- Promote outreach to involve the public in species recovery and ecosystem restoration
- Encourage information exchange among the various Working Group efforts in South Florida

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

- Restore and maintain the biodiversity of native plants and animals in the upland, wetland, estuarine, and marine communities of the South Florida Ecosystem
- Recover threatened and endangered species in the South Florida Ecosystem
- Ensure that any development plans or permits for development are fully coordinated among affected governmental agencies and are compatible with the restoration of the South Florida Ecosystem
- Develop and manage the hydrology of the Kissimmee River, Lake Okeechobee, the Everglades, and associated waters in a way that maximizes ecosystem restoration goals while providing appropriate consideration for the needs of urban, rural, and agricultural users
- Manage the hydrological conditions in the remaining undeveloped and potentially restorable lands in a way that maximizes natural processes
- Restore and sustain healthy ecosystem conditions in Florida Bay, adjacent estuaries, and coastal waters of the South Florida Ecosystem
- Maintain the health and biodiversity of the coral reef ecosystem associated with Florida Bay, Biscayne Bay, and the Florida Keys

Ecological Communities within Watershed Study Area:

Florida Scrub, including Scrubby Flatwoods and Scrubby High Pine
Federally listed species in South Florida: 32
State listed species in South Florida: 100
Scrubs often occupy ecotones between long-leaf pine savannas (high pine or pine flatwoods) and wetlands, and conditions within a single scrub may grade from xeric to mesic. Scrubby flatwoods is floristically and functionally intermediate between pine flatwoods and scrub, and sometimes (but not necessarily) occurs as an ecotone between them.

Restoration of Scrub, Scrubby Flatwoods and Scrubby High Pine

Restoration Objective: Maintain and enhance the structure, function, and composition of the scrub community, and increase the spatial extent of scrub as habitat throughout South Florida to insure the long-term survival in the wild of all plant and animal species that depend upon this community for their existence.

Restoration Criteria: Scrub in South Florida may be considered restored when: (1) existing scrub habitat is preserved through land acquisition; Federal, State or local management actions; and/or private cooperative agreements; (2) when prescribed fire or other management techniques are used to restore suitable habitat from overgrown scrub; (3) when any further loss, fragmentation, and degradation of scrub habitat has been prevented; (4) when appropriate ecosystem management has been prepared, funded, and implemented for long-term perpetuation of the scrub community; and (5) when protection of scrub is adequate to ensure endemic, rare, and imperiled species that use this community have self-sustaining populations.

Beach Dune, Coastal Strand, Maritime Hammock

Federally listed species in South Florida: 16

State listed species in South Florida: 50

The beach dune community occurs on the first dunes above the beach, which are most often built by sea oats. In South Florida, the herbaceous zone and sandy coasts are contiguous along the Atlantic coast from Sebastian inlet, Indian River County, south to Cape Florida, Miami-Dade County. In South Florida, maritime hammocks extend south on the sandy barrier islands to Cape Florida, Miami-Dade County on the Atlantic side. The most commonly encountered community behind the herbaceous dune zone is a shrubby community known as coastal strand.

Restoration of Beach Dune, Coastal Strand and Maritime Hammock

Restoration Objective: Maintain the structure, function, and ecological processes of beach dune, coastal strand and maritime hammocks, and prevent any further loss or degradation of these communities in South Florida.

Restoration Criteria: This restoration objective will be achieved when: (1) beach dune/coastal strand/maritime hammock communities are protected from further destruction and degradation; (2) areas dominated by the exotic Australian pine (*Casuarina equisetifolia*) are replaced with native coastal vegetation; (3) invasion of newly created coastal habitat by this exotic is prevented; (4) endemic, rare, and imperiled species that use these communities have self-sustaining populations in the wild; and (5) natural successional processes following storm destruction or beach accretion are allowed to occur.

Mesic Temperate Hammock

Federally listed species in South Florida: 8

State listed species in South Florida: 22

Mesic temperate hammock occurs in a broad zone of peninsula Florida, where it is transitional between the southern mixed hardwood forest of north peninsular and panhandle Florida and the tropical forest of southern Florida. Tropical forests, or hammocks, of South Florida contain tropical tree species such as tamarind, lancewood, gumbo-limbo, poisonwood, wild lime, mahogany, and black ironwood. They also have a high component of tropical shrubs, such as wild coffee, marlberry, myrsine, and stoppers. Temperate canopy species such as live oak, hackberry, and cabbage palm also occur in tropical hardwood hammocks.

Restoration of Mesic Temperate Hammock

Restoration Objective: Maintain the structure, function, and ecological processes of mesic temperate hammocks and prevent any further loss or degradation of this community in South Florida.

Restoration Criteria: Given that mesic temperate hammocks occur as ecotonal communities or as "islands" in a larger matrix of another natural community type, restoration of this community type implies protection and restoration of surrounding and adjacent communities. Mesic temperate hammock may be considered restored when: (1) intact mesic temperate hammocks are protected from further degradation; (2) the effects of disturbance in degraded hammocks are reversed by active management; (3) ecological linkages to adjacent communities are restored and preserved; (4) management can insure the persistence in the wild of species that use mesic temperate hammocks as habitat;
(5) invasive exotic species are reduced to non-threatening levels; and (6) landscape-level habitat diversity is restored.

Tropical Hardwood Hammock

Federally listed species in South Florida: 9
State listed species in South Florida: 186

Tropical hardwood hammock is a closed canopy forest, dominated by a diverse assemblage of evergreen and semi-deciduous tree and shrub species, mostly of West Indies origin. At least five major types of hammocks can be described:

- Rockland hammock "islands" on limestone substrate in or on the edges of pine rockland or marl prairie communities on the Miami Rock Ridge and in Big Cypress National Preserve
- Keys rockland hammock on limestone substrate making up the dominant forest type in the Florida Keys
- Coastal berm hammock on storm-deposited berms in the Sand Keys (west of Key West), the Florida Keys, and along the northern shores of Florida Bay
- Tree island hammock in the Everglades marsh and surrounding marl prairie and rocky glades
- Shell mound hammock on aboriginal sites

Restoration of Tropical Hardwood Hammock

Restoration Objective: Maintain the structure, function, and ecological processes of tropical hardwood hammocks and prevent any further loss, fragmentation, or degradation of this community in South Florida.

Restoration Criteria: Given that tropical hardwood hammocks occur as ecotonal communities or as "islands" in a larger matrix of another natural community type, restoration of this community type implies protection and restoration of surrounding and adjacent communities. This restoration objective will be met when: (1) intact tropical hardwood hammocks are protected through land acquisition or cooperative agreements with landowners; (2) any further destruction and degradation of this community has been prevented; (3) the effects of disturbance in degraded hammocks are reversed by active management; (4) ecological linkages to adjacent communities are restored and preserved;

(5) management can insure the persistence in the wild of species that use tropical hardwood hammocks as habitat; (6) invasive exotic species are reduced to non-threatening levels; and (7) landscape-level habitat diversity is restored.

Pine Rocklands
Federally listed species in South Florida: 10
State listed species in South Florida: 103
Pine rocklands are unique to southern Florida and the Bahamas. In Florida they are found on limestone substrates on the Miami Rock Ridge, in the Florida Keys, and in the Big Cypress Swamp. Pine rocklands are dominated by a single canopy tree, South Florida slash pine, a diverse hardwood and palm subcanopy, and a very rich herbaceous layer.

Restoration of Pine Rocklands
Restoration Objective: Maintain the structure, function, and ecological processes of pine rocklands, and prevent any further loss, fragmentation, or degradation of this community in South Florida.
Restoration Criteria: Given that pine rocklands occur as ecotonal communities or as "islands" in a larger matrix of another natural community type, restoration of this community type implies protection and restoration of surrounding and adjacent communities. Pine rocklands may be considered restored when: (1) a reserve design is developed that identifies intact pine rockland habitat essential for maintaining biodiversity and self-sustaining populations of imperiled species; (2) the reserve design is effected to protect this community through land acquisition or cooperative agreements with landowners; (3) the effects of disturbance in degraded pine rocklands are reversed by active management; (4) any further loss, fragmentation, and degradation of this community has been prevented; (5) ecological linkages to adjacent communities are restored and preserved; (6) management is implemented to benefit the large number of species that depend upon pine rocklands as habitat; (7) invasive exotic species are reduced to non-threatening levels; and (8) landscape-level habitat diversity is restored.

Mesic Pine Flatwoods
Federally listed species in South Florida: 9
State listed species in South Florida: 40
Mesic pine flatwoods are found within the Everglades NP in Miami-Dade County. The habitat typically exhibits an emergent tree layer of pines with limbless lower trunks and ground layers of low vegetation. The habitat is dominated by a slash pine or longleaf pine overstory with an upland understory.

Restoration of Mesic Pine Flatwoods
Restoration Objective: Maintain the structure, function, and biological composition of mesic pine flatwoods, and increase the spatial extent of protected pinelands in South Florida.
Restoration Criteria: South Florida can contribute to the preservation of regionally significant aquifer recharge and fish and wildlife habitat values by preserving mesic flatwoods. The conservation and recovery of listed plant and animal species, wide-ranging species, neotropical birds, and large complexes of isolated and ephemeral

wetlands will be accomplished by the preservation and restoration of this community. The restoration objective will be achieved when: (1) the mesic pine flatwoods habitat is preserved through land acquisition or private landowner cooperative agreements, consistent with the GFC's "Closing the Gaps in Florida's Wildlife Habitat Conservation System," the Florida Panther Habitat Preservation Plan (South Florida Population), the Game and Fresh Water Fish Commission's Preservation 2000 Act Study (Biodiversity Conservation Analysis), current State/Federal land acquisition proposals (including CARL, SOR, *etc*.), other Federal listed species recovery plans, and regional wildlife habitat protection plans; (2) degraded areas are identified and restored to suitable hydric pine flatwoods habitat; (3) hydrology, fire and exotic plant management is regionally applied to restore and maintain regional plant and animal biodiversity; (4) the geographic extent of mesic pine flatwoods in South Florida is identified; and (5) the integrity of the habitat is maintained by proper South Florida management practices.

Hydric Pine Flatwoods
Federally listed species in South Florida: 10
State listed species in South Florida: 75
There may be no natural hydric pine flatwoods remaining outside of public ownership in Monroe, Broward, and Miami-Dade counties. Hydric pine flatwoods are dominated by a slash pine overstory with a wetland plant understory.

Restoration of Hydric Pine Flatwoods
Restoration Objective: Maintain the structure, function, and biological composition of hydric pine flatwoods, and increase the spatial extent of protected pinelands in South Florida.
Restoration Criteria: South Florida can contribute to the preservation of regionally significant wetland habitat, hydrology, aquifer recharge, and fish and wildlife habitat values by preserving the geographic extent of hydric pine flatwoods. The conservation and recovery of listed plant and animal species, wide-ranging species, neotropical birds, and large complexes of isolated and ephemeral wetlands will be accomplished by the preservation and restoration of this community. The restoration objective will be achieved when: (1) the hydric pine flatwoods habitat is preserved through land acquisition or private landowner cooperative agreements, consistent with the Game and Fresh Water Fish Commission's "Closing the Gaps in Florida's Wildlife Habitat Conservation System," the Florida Panther Habitat Preservation Plan (South Florida Population), the Game and Fresh Water Fish Commission's Preservation 2000 Act Study (Biodiversity Conservation Analysis), current State/Federal land acquisition proposals (including CARL, SOR, *etc*.), other federal listed species recovery plans, and regional wildlife habitat protection plans; (2) degraded areas are identified and restored to suitable hydric pine flatwoods habitat; (3) hydrology, fire and exotic plant management is regionally applied to restore and maintain regional plant and animal biodiversity; (4) the geographic extent of hydric pine flatwoods in South Florida is identified; and (5) the habitat is identified as a true forested, wetland community and no longer portrayed as a transitional habitat.

Freshwater Marshes and Wet Prairies
Federally listed species in South Florida: 12
State listed species in South Florida: 82
The single largest, and best known freshwater marsh and wet prairie complex within South Florida is the Everglades. Freshwater marsh and wet prairie communities are associated with natural depressions, the edges of natural lakes, ponds, creeks, rivers, and human-made impoundments such as borrow pits and canals.

Restoration of Freshwater Marshes and Wet Prairies
Restoration Objective: Restore natural water quality, increase the spatial extent, and restore natural hydropatterns and seasonal flows to freshwater marshes and wet prairies in South Florida.
Restoration Criteria: South Florida must restore and preserve the highly threatened Kissimmee River-Lake Okeechobee-Everglades drainage system, as well as freshwater marsh and wet prairie habitats that are associated with other lakes and creeks, and isolated freshwater marshes and wet prairies. The recovery of listed plant and animal species, and the continued existence of other species of concern, including the American alligator, apple snail, and migratory birds, depends upon the restoration of these communities. Restoration of freshwater marshes and wet prairies must also assure flood control and aquifer recharge for drinking water and agriculture. The restoration objective will be achieved when (1) the Kissimmee River is restored to its natural basin; (2) Lake Okeechobee water quality and water storage are restored to more natural conditions; (3) the Water Conservation Areas, including the Arthur C. Marshall Loxahatchee NWR have water quality and sheet flow, and hydropatterns restored to more natural conditions; (4) Everglades NP and Big Cypress National Preserve have water quality, sheet flow and hydropatterns restored to natural conditions; (5) the Northeast Shark River Slough (NESRS) addition to Everglades NP and the eight and one half square mile area (8.5 SMA) of the East Everglades land purchases are completed and sheet flow is restored; (6) the lands currently identified by the COE, SFWMD and the National Audubon Society as Water Preserve Areas are added to the spatial extent of the system to provide additional natural wetlands, flood control, and aquifer recharge; (7) the SOR additions are made through the use of all possible conservation land funding methods (SOR, CARL and Federal financial assistance); (8) prescribed burning is restored to the management of the marsh and wet prairie systems; (9) exotic biota including Brazilian pepper, melaleuca, Australian pine, hydrilla, and water hyacinth are eradicated or controlled; and(10) the integrity of the marshes and wet prairies are ensured and maintained through a sound water management program of delivery schedules, and water storage patterns to be derived from the Central and Southern Florida (C&SF) Restudy; and (11) the distinction between wet prairie and marsh habitat conditions,

Forested Wetlands: Flowing Water Swamps
Federally listed species in South Florida: 5
State listed species in South Florida: 79
Flowing water swamps are seasonally inundated forested wetlands located along or within drainage channels. They include the floodplain wetlands along clearly defined

rivers, as well as the strands and sloughs that characterize shallower and more diffuse flowways.

Restoration of Flowing Water Swamps

Restoration Objective: Prevent further reduction in area of flowing water swamps, protect all remaining high quality habitat, and restore and manage protected lands to maintain ecological processes and biodiversity, including normal hydroperiods and flow regimes.

Restoration Criteria: The recovery objective will be achieved when: (1) a reserve design incorporating all currently protected tracts and remaining high quality habitat has been developed and implemented; (2) flowing water swamps are protected through acquisition or cooperative agreements with landowners; (3) appropriate management plans have been prepared and funded for all lands within the reserve network; (4) restoration has been successfully initiated such that ecological processes are operating normally; and (5) natural succession and restoration actions through funded management programs can be expected to re-establish community structure and biodiversity on all significant degraded sites within the reserve network. All systems within the reserve network must have adequate natural buffers and secure headwaters. Hydrological management for normal hydroperiods and flow regimes must be assured. Mature forests and core reserve swamps must be managed to achieve old-growth characteristics. Buffer zone swamps used for timber production must be managed sustainably.

Forested Wetlands: Pond Swamps

Federally listed species in South Florida: 7

State listed species in South Florida: 33

Pond swamps are seasonally inundated forested wetlands located around or within landscape depressions. They include the lake border swamps and major wetlands within large landscape basins, as well as smaller cypress domes and gum ponds. Dwarf cypress savannas, which can be categorized as a very shallow and diffuse type of basin swamp, characterize the Big Cypress Swamp.

Restoration of Pond Swamps

Restoration Objective: Prevent further reduction in area of pond swamps, protect all remaining high quality habitat, and restore and manage protected lands to maintain ecological processes and biodiversity. Restoring and maintaining swamps within a healthy fire-maintained flatwoods and prairie landscape mosaic is critical.

Restoration Criteria: The recovery objective will be achieved when: (1) a reserve design incorporating all currently protected tracts and remaining high-quality habitat has been developed and implemented; (2) pond swamps are protected through acquisition or cooperative agreements with landowners; (3) appropriate management plans have been prepared and funded for all lands within the reserve network; (4) restoration has been successfully initiated such that ecological processes are operating normally; and (5) natural succession and restoration actions through funded management programs can be expected to re-establish community structure and biodiversity on all significant degraded sites within the reserve network. Pond swamps within the reserve system must be adequately buffered from urban and agricultural runoff.

Forested Wetlands: Seepage Swamps
Federally listed species in South Florida: 5
State listed species in South Florida: 38
Seepage swamps are forested wetlands characterized by saturated soils rather than periodic inundation. They include baygalls at the base of seepage slopes, bayheads in peat-filled depression or at the downstream ends of Everglades teardrop islands, and hydric hammocks on low sand or limestone rises within periodically inundated wetland systems.

Restoration of Seepage Swamps
Restoration Objective: Prevent further reduction in area of seepage swamps in South Florida, protect all remaining high quality habitat, and restore and manage protected lands to maintain ecological processes and biodiversity. Restoration and maintenance of water sources and hydrological regimes is critical.
Restoration Criteria: The recovery objective will be achieved when: (1) a reserve design incorporating all currently protected tracts and remaining high-quality habitat has been developed and implemented; (2) seepage swamps are protected through acquisition or cooperative agreements with landowners; (3) appropriate management plans have been prepared and funded for all lands within the reserve network; (4) restoration has been successfully initiated such that ecological processes are operating normally; and (5) natural succession and restoration actions through funded management programs can be expected to re-establish community structure and biodiversity on all significant degraded sites within the reserve network. The reserve design must include appropriate linkages between major systems and incorporate the matrix of habitats necessary to maintain interactions between communities. Appropriate water supplies and delivery must be assured for maintenance of normal hydrological conditions in all seepage swamps within the reserve system. Protection from unnaturally severe droughts and fires must be assured.

Mangroves
Federally listed species in South Florida: 9
State listed species in South Florida: 46
Mangrove ecosystems are a mosaic of different types of forest, with each type providing different physical habitats, topology, niches, microclimates, and food sources for a diverse assemblage of animals. Four species of mangroves occur in South Florida: red mangrove, black mangrove, white mangrove, and buttonwood.

Restoration of Mangroves

Restoration Objective: Maintain the structure, function, and ecological processes of mangroves and prevent any further loss, fragmentation, or degradation of this habitat type in South Florida.
Restoration Criteria: South Florida can contribute to the preservation of nationally significant wetlands, hydrology, aquifer recharge, and fish and wildlife habitat values by

preserving the only geographic extent of this type of habitat within the continental United States. Benefits of restoring mangrove communities include: the conservation and recovery of listed plant and animal species, wide-ranging species, and neotropical birds; the recycling of nutrients and the nutrient mass balance of the estuarine ecosystem, including high primary and associated secondary biological production; the protection of the base arboreal, estuarine, and marine food web; the provision of physical habitat and nursery grounds for a wide variety of marine/estuarine vertebrates and invertebrates significant to sports and/or commercial fisheries; the protection of public and private lands and property by mangrove storm buffers and wind breaks; the stabilization of shorelines and fine substrates; the improvement of water quality and clarity by filtering uplands runoff and trapping waterborne sediments and debris. Finally, preservation of mangrove systems contributes to the overall natural setting and visual aesthetics of Florida's estuarine waterbodies and the economy of the coastal counties of South Florida and the State of Florida. The restoration objective will be achieved when (1) the geographic extent of mangrove habitat in South Florida is identified; (2) mangrove habitat is preserved through land acquisition or private landowner cooperative agreements consistent with the GFC's *Closing the Gaps in Florida's Wildlife Habitat Conservation System* and Preservation 2000 Act Study (Biodiversity Conservation Analysis), current State and Federal land acquisition proposals, and regional wildlife habitat protection plans; (3) the hydrology and exotic plant management of mangrove wetlands are regionally applied to enhance, restore, and maintain plant and animal biodiversity; and (4) State regulations are adequately enforced resulting in no-net loss of mangrove habitat.

Coastal Salt Marsh

Federally listed species in South Florida: 6

State listed species in South Florida: 27

Salt marshes are found in flat, protected waters usually within the protection of a barrier island, estuary, or along low-energy coastlines. Situated between land and sea, salt marshes experience the effects of both salt and fresh water.

Restoration of Coastal Salt Marsh

Restoration Objective: Maintain the structure, function, and ecological processes of South Florida coastal salt marsh communities and increase their spatial extent in South Florida.

Restoration Criteria: South Florida can contribute to the restoration and preservation of coastal salt marsh ecosystems in Florida by restoring the natural structure, composition, and ecological processes of this community. The conservation and restoration of salt marsh habitat in South Florida will contribute to the recovery of several federally and State listed species, the protection and stabilization of other imperiled or rare species, provide additional nursery and breeding habitat, maintain or increase biodiversity, and restore hydrology to several coastal areas. The restoration objective will be achieved when: (1) salt marsh habitat in South Florida is identified and characterized; (2) salt marsh habitat is protected through land acquisition; Federal, State or local management actions; and/or private cooperative agreements; (3) salt marsh structure, composition, and

ecological processes are restored and maintained; (4) policies are implemented to prevent further degradation and alteration of salt marsh habitat; (5) if mitigation is necessary, specific success criteria and compliance procedures are developed and implemented to ensure mitigation projects sufficiently replace the structure, composition, and ecological processes of salt marshes; (6) salt marsh habitat in the Lower Keys is preserved and enhanced enough to support self-sustaining populations of salt marsh-dependent species, such as the Lower Keys rabbit and rice rat; (7) the biodiversity of salt marshes is returned to natural levels; (8) salt marsh habitat is enhanced and maintained to provide important nurseries and breeding grounds; and (9) at least 90 percent of exotic vegetation is removed permanently from salt marsh habitat.

Seagrasses
Federally listed species in South Florida: 11
State listed species in South Florida: 26
Seagrasses are submerged vascular plants that can form dense vegetative communities in shallow water estuaries. Three seagrass species commonly occur in varying degrees of abundance throughout South Florida's coastal ecosystem: turtle grass, manatee grass, and shoal grass. Three other species of seagrass are sparsely distributed within this range: star grass, paddle grass, and Johnson's seagrass.

Restoration of Seagrasses
Restoration Objective: Maintain and increase seagrass habitat in South Florida.
Restoration Criteria: South Florida can contribute to the protection, enhancement, and restoration of seagrass ecosystems in Florida by maintaining or improving water quality conditions necessary for seagrass growth within the region's estuaries. The protection, enhancement, and restoration of seagrass habitat in South Florida will contribute to the recovery of listed plant and animal species as well as maintain the ecological functions associated with this community, such as high primary and secondary production; enhancing water quality by stabilizing sediments and removing nutrients; and providing shelter, foraging, and nursery habitat for numerous invertebrates and vertebrates important to recreational and commercial fisheries. The preservation of this community will enhance the overall natural setting and visual aesthetics of Florida's coastal landscape and contribute significantly to the economy of South Florida and to the State of Florida. The restoration objective for seagrass habitat in South Florida will be achieved when: (1) the spatial extent of seagrasses has been identified; (2) the condition of existing seagrasses has been assessed by monitoring specific locations; (3) the relationship between light and water quality to seagrasses has been determined from these monitoring sites; (4) predictive models have been developed that link light attenuation and nutrient loadings to water quality and to epiphyte abundance; (5) the models set pollution load reduction goals to improve or maintain water quality conditions necessary for seagrass survival and growth; (6) management actions have been implemented that result in protecting, enhancing, and restoring seagrasses; and (7) additional protective measures have been implemented to prevent further physical disturbance of seagrass habitat. Increased seagrass distribution and abundance will be used as measures of success to inform the public in recognizing the importance of this community to fisheries resources, wading birds, and listed species such as the Florida manatee.

Nearshore and Midshelf Reefs
Federally listed species in South Florida: 8
State listed species in South Florida: 15
The term "nearshore reefs" includes all solid physical substrate below the mean high waterline and seaward of Atlantic Ocean or Gulf of Mexico shoreline which may be vulnerable to fill deposition and turbidity associated with beach nourishment.

Restoration of Nearshore and Midshelf Reefs
Restoration Objective: To prevent further losses of nearshore and midshelf reef habitat values (primary and secondary production, refuge habitat, nursery habitat, biodiversity, educational).

Restoration Criteria: The primary threat to the health of Florida's nearshore reef system is the deposition of beach fill. Rock outcrops within the beach fill areas are buried, the epifaunal organisms associated with those outcrops are smothered, and the habitat which the reef provides to motile fishes and invertebrates is lost. The zone of direct burial increases in time as the fill material relaxes or is washed seaward by wave action and is transported to adjacent areas by littoral drift. Impacts extend beyond the fill zone when the fill material contains high amounts of silt and clay. Suspended fine material not only reduces light penetration but may settle out of the water, degrading reef areas seaward of this zone. Midshelf reefs can similarly be affected by turbidity and sedimentation when the borrow site contains fine material. Midshelf reefs may also be damaged by direct contact with the dredge and dredge-related equipment. A measurable criterion for meeting the stated restoration objective would be to prevent any further loss of nearshore reef (natural or artificial) acreage due to beach fill. That is, each acre lost by burial should be replaced by carefully designed and deployed artificial reefs. The above stated criterion is an interim criterion. The restoration objective of maintaining habitat *values* cannot be achieved until those values to threatened and endangered sea turtles, the vertebrate and invertebrate fisheries species mentioned in this report, and all other reef species which are of recreational or scientific importance, are understood. Life history information on the green sea turtle, for example, is incomplete (Ehrhart, *et al.* 1996). The value of South Florida's nearshore reefs to species which may only use nearshore reefs during a particular life stage, and for which basic life history information is lacking, cannot be measured with any confidence. The identification of factors which may limit a population is not possible. Degradation of nearshore reef habitat could have serious implications for populations of species if such habitat already represents a demographic bottleneck in the South Florida Ecosystem's carrying capacity for those species. The ultimate objective for restoration of the nearshore and midshelf reef systems would be to accomplish the basic research required to understand the value of the reefs to the species with which we are concerned, and to replace lost values through informed, responsible artificial reef design and deployment.

The Species: Mammals

Florida Panther (*Puma concolor coryi*)
A small population in South Florida, estimated to number between 30 and 50 adults (30 to 80 individuals), represents the only known remaining wild population. The survival and recovery of the Florida panther is dependent upon: (1) protection and enhancement of the extant population, associated habitats, and prey resources; (2) improving genetic health and population viability; and (3) re-establishing at least two additional populations within the historic range. The only known, reproducing panther population is located in the Big Cypress Swamp/Everglades physiographic region of South Florida. The largest contiguous tract of panther habitat is in the Big Cypress Swamp/Everglades physiographic regions. Big Cypress National Preserve, Everglades NP, and Florida Panther NWR together comprise about 927,793 ha of native habitats, 46% of which is forested.

The Florida panther's existence is threatened by extinction processes. Environmental factors affecting the panther include: habitat loss and fragmentation, contaminants, prey availability, human-related disturbance and mortality, disease, and genetic erosion.

Recovery for the Florida Panther
Recovery Objective: Establish three viable populations within the historic range.
South Florida Contribution: The narrative in this multi-species recovery plan is being prepared in advance of the range-wide Florida panther recovery plan revision which will be undergoing complete revision beginning in late 1997. Therefore, recovery tasks identified in this plan should be considered tentative and subject to change based on the results of the range-wide recovery plan revision. The multi-species plan will focus on the South Florida population, while recognizing that full recovery of this species is dependent upon the establishment of additional populations within the historic range of the species. The FWS will ensure the two plans complement one another in effecting recovery of the Florida panther.
Recovery Criteria: The present range-wide recovery objective for the Florida panther is to achieve three viable, self-sustaining populations within the historic range of the animal. First priority will be to secure the population in South Florida. A viable population level will be determined when enough data are available to develop a panther population model. An essential criteria for recovery of the panther needs to ensure 95% probability of persistence of the South Florida population over a minimum of 100 years. Re-established populations may require separate population goals. Population objectives will generally be based on the size of the respective areas, prey base, and other ecological factors important to panthers.

West Indian Manatee (*Trichechus manatus*)
In Florida, manatees are commonly found from the Georgia/Florida border south to Biscayne Bay on the east coast and from Wakulla River south to Cape Sable on the west coast. Manatees are also found throughout the waterways in the Everglades and in the

Florida Keys. The South Florida Ecosystem region is home to the most resident manatee populations and transient migrants in Florida. In South Florida, manatees are most prominent year-round in the following areas: Indian River, Biscayne Bay, Everglades and Ten Thousand Island area, Estero Bay and Caloosahatchee River area, and Charlotte Harbor area. Some of the largest winter aggregations (50 or more manatees) occur in south and central Florida.
Manatees occur in both fresh- and saltwater habitats within tropical and subtropical regions. They depend on areas with access to natural springs or manmade warm water refugia and access to areas with vascular plants and freshwater sources.

Critical habitat was designated for the manatee in the early 1970s, although no specific primary or secondary constituent elements were included in the designation (50 CFR 17.95). Critical habitat for the manatee identifies specific areas occupied by the manatee, which have those physical or biological features essential to the conservation of the manatee and/or may require special management considerations.

Manatees and their habitats are continually threatened by human activities, such as habitat loss for residential and commercial purposes, increased turbidity levels from upland urbanization activities, pollution from sewage discharge and stormwater runoff, aquatic recreational and commercial activities, and alterations of natural hydrology.

Management
In 1980, the first manatee recovery plan was approved and a manatee coordinator was hired by the FWS to oversee the recovery of the manatee. The primary goal for recovery of the manatee is to restore manatee populations to sustainable levels that will permit their reclassification from endangered to threatened.

Recovery for the West Indian Manatee
Recovery Objective: Reclassify to threatened, then delist
South Florida Contribution: Reduce human-related mortality in South Florida; control or reduce threats to essential manatee habitat in South Florida.
Recovery Criteria: The statewide manatee recovery plan states that the West Indian manatee can be considered for reclassification when data and population models are available to assess population size and trends; when analyses indicate that the population is growing or stable; when mortality factors are controlled at acceptable levels or are decreasing; and when critical habitats are secure and threats to them are controlled or decreasing.

The Species: Birds

Bald eagle (*Haliaeetus leucocephalus*)
In the eastern U.S., the bald eagle is the largest raptor and is commonly associated with large bodies of water. Nest sites are usually located near large rivers, lakes, or estuaries where the eagle feeds primarily on fish and water-dependent birds. Current threats to the bald eagle include: habitat fragmentation and loss, collisions with cars and power lines, and shooting.

In the southeastern U.S., the recovery plan established the reclassification criteria from endangered to threatened as 600 or more occupied territories throughout at least 75% of the eagle's historical range. Reclassification of the southeastern population required that more than .9 young be produced per occupied nest, greater than 1.5 young be produced per successful nest, and at least one young be produced in 50% of the nests for each nesting season. These criteria were based on a 3 year average. A principal component of the guidelines for the southeastern U.S. includes a recommendation that two protective zones be established around bald eagle nests.

Recovery for the Bald Eagle
Recovery Objective: Delist the species once recovery criteria are met.
South Florida Contribution: South Florida's contribution to meeting this recovery objective will be achieved by maintaining or increasing the number of successful nests and the average annual productivity.
Recovery Criteria: Delisting criteria for the bald eagle in the southeast region are currently being developed. Until this species is delisted, South Florida's contribution to recovery of the bald eagle in the southeast is in accordance with the recovery criteria as indicated in the current approved Southeastern States Bald Eagle Recovery Plan. Specifically, South Florida can contribute to the recovery of the bald eagle in the southeast by furthering the goals of: nesting productivity of at least .9 chicks per occupied nest, greater than 1.5young per successful nest, and at least 50% success in raising at least one young. These criteria must be accompanied by three years of data.

Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*)
Changes in habitat that have occurred as a result of changes in the distribution, timing, and quantity of water flows in South Florida, continue to threaten the subspecies with extinction. Cape Sable seaside sparrows have a very restricted range and occur only in the Everglades region of Miami-Dade and Monroe counties in South Florida. The currently preferred nesting habitat of Cape Sable seaside sparrows appears to be a mixed marl prairie community that often includes muhly grass. Cape Sable seaside sparrows avoid sites with permanent water cover.

Critical habitat for the Cape Sable seaside sparrow was designated on August 11, 1977 before the full distribution of the subspecies was known..

The last population census in 1998 from Everglades NP revealed 3056 individuals from 6 subpopulations.

Recovery for the Cape Sable Seaside Sparrow
Recovery Objective: Reclassify to threatened once recovery criteria are met.
Recovery Criteria: Before the sparrow's listing as an endangered species, the distribution and abundance of the short hydroperiod prairies that provide habitat for the Cape Sable seaside sparrow had declined by more than 50 percent due to destruction, fragmentation, and degradation of habitat for residential housing construction or agriculture. These areas are probably not restorable. Many of the remaining short-

hydroperiod prairies that supported the Cape Sable seaside sparrow have been converted into long-hydroperiod wetlands, or have been degraded due to increased fire frequencies and/or woody species invasion as a result of reduced hydroperiods by water management practices in South Florida. The feasibility of fully restoring these areas is still uncertain. Consequently, this recovery plan outlines criteria for reclassifying the Cape Sable seaside sparrow from endangered to threatened. This objective will be achieved: if the loss of functional Cape Sable seaside sparrow habitat, as a result of current and past water management practices, and the invasion of woody and exotic plant species, is eliminated; if Cape Sable seaside sparrow habitat west of Shark River Slough and in Taylor Slough, which has been degraded by current and past water management practices, is restored; when demographic information on the Cape Sable seaside sparrow supports, for a minimum of 5 years, a probability of persistence [T(N)] that is equal to or greater than 80 percent (±0.05), for a minimum of 100 years; when the rate of increase (*r*) for the total population is equal to or greater than 0.0 as a 3-year running average for at least 10 years; when a minimum of three stable, self-sustaining core breeding areas are secured; when a stable age structure is achieved in the core populations; and, when a minimum population of 6,600 birds is sustained for an average of 5 years, with all fluctuations occurring above this level.

Everglade snail kite (*Rostrhamus sociabilis plumbeus*)
The Florida population of snail kites is considered to be a single population with considerable distributional shifts. The combination of a range restricted to the watersheds of the Everglades, lakes Okeechobee and Kissimmee, and the upper St. Johns River, with a highly specific diet composed almost entirely of apple snails, makes the snail kite's survival directly dependent on the hydrology and water quality of these watersheds. Snail kite habitat consists of freshwater marshes and the shallow vegetated edges of lakes (natural and man-made) where apple snails can be found. These habitats occur in humid, tropical ecoregions of peninsular Florida and are characterized as palustrine-emergent, long-hydroperiod wetlands often on an organic peat substrate overlying oolitic limestone or sand or directly on limestone or marl.

Critical habitat was designated for the snail kite in 1977 and, since then, has not been revised. Critical habitat includes Arthur R. Marshall Loxahatchee NWR, WCA 2, portions of WCA 3, portions of Everglades NP, western portions of Lake Okeechobee, the Strazzulla and Cloud Lake reservoirs in St. Lucie County, and portions of the St. Johns Marsh in Indian River County.

The ranges of the endangered wood stork and Cape Sable seaside sparrow overlap the range of the snail kite.

Water management actions in the Everglades and in the lakes are the most important human-controlled factors in survival and recovery of the snail kite. A balanced approach to water level management is required to maintain favorable habitat conditions for the snail kite.

Recovery for the Everglade Snail Kite
Recovery Objective: Reclassify to threatened once recovery criteria are met.
Recovery Criteria: The objective of this recovery plan is to restore the Everglade snail kite to a stable, secure, and self-sustaining status allowing the reclassification of the species from endangered to threatened under the ESA. Due to the limited distribution of the species, its specialized ecological niche, and the irreversible loss of a significant portion of the Kissimmee/Okeechobee/Everglades watershed, the FWS believes it unlikely that the snail kite will ever be elevated above the threatened status. This objective will be achieved when: the 10-year average for the total population size is estimated as greater than or equal to 650, with a coefficient of variation less than 20 percent for the pooled data over the 10-year period; no annual population estimate is less than 500 in the 10-year period; the rate of increase of the population to be estimated annually or biannually, and over the 10-year period, will be greater than or equal to 1.0, sustained as a 3-year running average over 10 years; the feeding range of snail kites will not decrease from its current extent, including as a minimum, the St. Johns Marsh, the Kissimmee Chain of Lakes, Lake Okeechobee, Loxahatchee Slough, Loxahatchee NWR, all of the water conservation areas, Everglades National Park, Big Cypress National Preserve, Fakahatchee Strand, Okaloacoochee Slough, and marshes surrounding the Corkscrew Swamp; and snail kite nestings regularly occurs over the 10-year period in the St. Johns Marsh, Kissimmee Chain of Lakes, Lake Okeechobee, and at least one of the present compartments of the water conservation areas. The FWS recognizes that the snail kite is a resilient species in a highly changeable environment and that to some degree a "boom and bust" population fluctuation is characteristic of the species. The above criteria for reclassification to threatened are flexible enough to allow substantial declines in population within a given year, while setting goals over a 10-year period. The global climate fluctuations that are correlated with cycles of flood and drought in South Florida occur on a periodicity of 9 to 14 years.

Roseate tern (*Sterna dougallii dougallii*)
The Caribbean population of the roseate tern breeds from Florida through the West Indies to islands off Central America and northern South America. Approximately 300 pairs currently breed between Marathon and the Dry Tortugas, though none have nested at the Dry Tortugas for over ten years.

In extreme southern Florida, roseate terns typically nest on isolated islands, rubble islets, dredge-spoil, and rooftops. In Florida, breeding site location is dependent on the distribution and abundance of islands with open sandy or broken coral substrates. Other important factors include absence of predators and minimal amounts of human disturbance.

Recovery for the Roseate Tern
Recovery Objective: Delist the species once recovery criteria are met.
South Florida Contribution: Maintain and increase the South Florida population.
Recovery Criteria: The current population estimate for the roseate tern in Florida is 300 breeding pairs. The objective of this recovery plan is to maintain or increase this number. This objective will be achieved when: the four major colony sites (Pelican Shoal, Vaca

Rock, Truman Annex, and the Marathon Governmental Center) are protected from existing threats; these colony sites are managed to reduce losses of eggs, young, and adult roseate terns, and increase colony productivity; potential nesting habitat is restored or rehabilitated to provide additional colony sites for the roseate tern; conservation programs to maintain, protect, and enhance these and additional colony sites are implemented; and studies of the breeding biology and reproductive success of roseate terns in Florida indicate the population has sustained a rate of increase (r) equal to or greater than 0.0 as a 2-year running average for five consecutive years.

Wood stork (*Mycteria Americana*)
The habitats on which wood storks depend have been disrupted by changes in the distribution, timing, and quantity of water flows in South Florida. The wood stork is primarily associated with freshwater and estuarine habitats for nesting, roosting, and foraging. The loss or degradation of wetlands in central and South Florida is one of the principal threats to the wood stork

Recovery for the Wood Stork
Recovery Objective: Reclassify to threatened, then delist.
South Florida Contribution: The former Science Subgroup (now Science Coordination Team) of the South Florida Ecosystem Restoration Task Force and Working Group prepared a set of recommendations for success measures for the South Florida Ecosystem restoration program. Included in these recommendations are targets for the recovery of nesting wading birds in the Everglades basin (WCAs and ENP). The Science Subgroup's measure of success for the wood stork is a breeding population between 1500 to 2500 pairs. The goal for wood stork recovery in South Florida is to support 2500 nesting pairs in the Everglades and Big Cypress Basin systems and to support, as a South Florida Ecosystem component, 35% (3500 nesting pairs) of the southeast United States recovery and delisting nesting population of 10,000 pairs.
Recovery Criteria: South Florida will contribute to the recovery of the total population, if the wood stork foraging and nesting habitat in the Everglades watershed is restored and/or enhanced as a result of the modified water storage and delivery programs being developed by the SFWMD and the COE. The recovery criteria as identified in the wood stork recovery plan, for the Everglades and Big Cypress Basin is a population of 2500 nesting pairs. The recovery criteria for the South Florida Ecosystem populations, which also includes nesting colonies in coastal counties in central Florida and nesting colonies in the Kissimmee Basin, is 35% (3,5000 nesting pairs) of the total recovery population of 10,000 pairs.

The Species: Reptiles

American crocodile (*Crocodylus acutus)*
Habitat loss and fragmentation due to increased urbanization and agricultural land uses are also threats to this species. In Florida, changes in the distribution, timing, and quantity of water flows also have affected the American crocodile, although the specifics of these effects are not clear. The crocodile population in Florida, although small, appears to be stable. Future threats in Florida include stochastic natural disasters such as hurricanes and

cold weather, road mortality, and continued habitat degradation. The current distribution of the American crocodile is limited to extreme South Florida, including coastal areas of Miami-Dade, Monroe, Collier, and Lee counties.
The American crocodile is found primarily in mangrove swamps and along low-energy mangrove-lined bays, creeks, and inland swamps.
The timing and frequency of the freshwater hydroperiod substantially influences the health of the estuarine environment in South Florida and may be one of the most important large scale factors influencing crocodile populations on the mainland.

American crocodile critical habitat includes all land and water within an area encompassed by a line beginning at the easternmost tip of Turkey Point, Miami-Dade County, on the coast of Biscayne Bay; southeast along a straight line to Christmas Point at the southernmost tip of Elliot Key; southwest along a line following the shores of the Atlantic Ocean side of Old Rhodes Key, Palo Alto Key, Angelfish Key, Key Largo, Plantation Key, Lower Matecumbe Key, and Long Key, to the westernmost tip of Middle Cape; north along the shore of the Gulf of Mexico to the north side of the mouth of Little Sable Creek; east along a straight line to the northernmost point of Nine-Mile Pond; northeast along a straight line to the point of beginning.

Recovery for the American Crocodile
Recovery Objective: reclassify to threatened.
Recovery Criteria: The initial recovery plan for this species identified habitat alteration and human disturbances as the primary threats to this species and those that warranted its listing. Although efforts have been undertaken to ameliorate these threats, it is generally believed that these factors continue to act against the American crocodile to some extent. However, despite the ongoing influences of these threats, the crocodile has increased in numbers and is approaching population levels targeted by the initial recovery plan. It is apparent, therefore, that the effects of these threats are not as deleterious as previous assessments may have suggested, and that the reclassification of this species is possible.
Previous recovery efforts identified the need for a minimum of 60 breeding females within the population before reclassification could be considered. Since these criteria were developed, new information, based on consistent surveys, has indicated that the total number of nesting females has increased substantially over the last 20 years, from about 20 animals to about 50, and that nesting has remained stable at the major nesting areas. Based on the fact that the population appears stable, and that all of the threats as described in the original listing have been eliminated or reduced, reclassification of the crocodile will be possible, provided existing levels of protection continue to be afforded to crocodiles and their habitat, and that management efforts continue to maintain or enhance the amount and quality of available habitats necessary for all life stages.

American alligator (*Alligator mississippiensis*)
The American alligator is a listed species because of its similarity to the American crocodile and sympatric living with the crocodile.

Eastern indigo snake (*Drymarchon corais couperi*)
The Eastern indigo snake primarily occurs in sandhill habitats in northern Florida and southern Georgia. Since its listing, habitat loss and fragmentation by residential and commercial expansion have become much more significant threats to the eastern indigo snake. Georgia and Florida currently support the remaining, endemic populations of the eastern indigo snake. Over most of its range, the eastern indigo snake frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dines, and human-altered habitats.

To protect and recover the eastern indigo snake, large expanses of unaltered habitat must be protected. Recent studies suggest that preserves must be at least 4,000 ha.

Recovery for the Eastern Indigo Snake
Recovery Objective: Ensure numerous populations exist and are protected.
South Florida Contribution: Stabilize and increase population.
Recovery Criteria: There is a general lack of information on the status and trends of Eastern indigo snakes in South Florida. Although the primary threat identified when the Eastern indigo snake was listed has been ameliorated, we believe that an additional threat of habitat loss and fragmentation continues to affect the survival and recovery of this species. The objective to stabilize and increase numbers of Eastern indigo snakes in South Florida will require protection of individuals as well as the habitat where they are known to occur. Once it is determined that sufficient, suitable habitat exists in South Florida for the eastern indigo snake population to stabilize or increase, delisting criteria can be considered. The development of delisting criteria will require the analysis of demographic data to demonstrate that there are adequate, contiguous tracts of upland habitat in South Florida to ensure at least a 95% probability of persistence for the eastern indigo snake for 100 years.

Green sea turtle (*Chelonia mydas* (incl. *aggassi*))
The green sea turtle nests regularly in South Florida, predominantly on the east coast between Volusia and Broward counties. The green sea turtle accounts for about 1.9% of total nesting reported statewide. Serious threats to the green sea turtle on South Florida's nesting beaches include: artificial lighting, beach nourishment, beach armoring, increased human presence, and exotic beach and dune vegetation.

Green turtles occupy three habitat types: high-energy oceanic beaches, convergence zones in the pelagic habitat, and benthic feeding grounds in relatively shallow, protected water. These benthic feeding grounds are commonly pastures of seagrasses and/or algae, but small green turtles can also be found over coral reefs, worm reefs, and rocky bottoms.

Environmental threats to sea turtles include: oil and gas exploration, development and transportation; pollution; trawl, purse seine, hook and line, gill net, pound net, longline, and trap fisheries; underwater explosions; dredging; offshore artificial lighting; power plant entrapment; entanglement in debris; ingestion of marine debris; marina and dock

development; boat collisions; and poaching. In South Florida, threats to nesting beaches include: beach erosion, armoring, and nourishment; artificial lighting; beach cleaning; increased human presence; recreational beach equipment; exotic dune and beach vegetation; nest loss to abiotic factors; and poaching.

Recovery for the Green Sea Turtle
Recovery Objective: Delist the species once recovery criteria has been met.
South Florida Contribution: Support delisting actions.
Recovery Criteria: The South Florida recovery contribution parallels the existing recovery plans for the sea turtles. South Florida's objective for the loggerhead turtle, green turtle, leatherback turtle and hawksbill turtle will be achieved when: the level of nesting for each species is continuously monitored and increases to the species-specific recovery goal; beaches supporting greater than 50% of the nesting activity are in public ownership; all important nesting beaches are protected and appropriately managed to prevent further degradation; non-native nuisance species have been controlled or eliminated on public lands; at least 60% hatch success is documented on major nesting beaches; effective lighting ordinances or lighting plans are implemented; and beaches are restored or rehabilitated to be suitable for nesting where appropriate.

Hawksbill sea turtle (*Eretmochelys imbricata*)
Nesting by the hawksbill sea turtle is rare in Florida. Serious threats to the hawksbill turtle on its nesting beaches include artificial lighting, beach nourishment, increased human presence and exotic beach and dune vegetation.

Hawksbills forage on coral reef habitats, feeding on sponges and resting in the ledges and caves of the reef. Hawksbills are known to inhabit mangrove-fringed bays and estuaries, particularly along the eastern shore of continents where coral reefs are absent.

Environmental threats to sea turtles include: oil and gas exploration, development and transportation; pollution; trawl, purse seine, hook and line, gill net, pound net, longline, and trap fisheries; underwater explosions; dredging; offshore artificial lighting; power plant entrapment; entanglement in debris; ingestion of marine debris; marina and dock development; boat collisions; and poaching. In South Florida, threats to nesting beaches include: beach erosion, armoring, and nourishment; artificial lighting; beach cleaning; increased human presence; recreational beach equipment; exotic dune and beach vegetation; nest loss to abiotic factors; and poaching.

Recovery for the Hawksbill Sea Turtle
Recovery Objective: Delist the species once recovery criteria has been met.
South Florida Contribution: Support delisting actions.
Recovery Criteria: The South Florida recovery contribution parallels the existing recovery plans for the sea turtles. South Florida's objective for the loggerhead turtle, green turtle, leatherback turtle and hawksbill turtle will be achieved when: the level of nesting for each species is continuously monitored and increases to the species-specific recovery goal; beaches supporting greater than 50% of the nesting activity are in public ownership; all important nesting beaches are protected and appropriately managed to

prevent further degradation; non-native nuisance species have been controlled or eliminated on public lands; at least 60% hatch success is documented on major nesting beaches; effective lighting ordinances or lighting plans are implemented; and beaches are restored or rehabilitated to be suitable for nesting where appropriate.

Leatherback sea turtle (*Dermochelys coriacea*)
The leatherback sea turtle is the largest of all the sea turtles. It nests regularly on the east coast of Florida.

Environmental threats to sea turtles include: oil and gas exploration, development and transportation; pollution; trawl, purse seine, hook and line, gill net, pound net, longline, and trap fisheries; underwater explosions; dredging; offshore artificial lighting; power plant entrapment; entanglement in debris; ingestion of marine debris; marina and dock development; boat collisions; and poaching. In South Florida, threats to nesting beaches include: beach erosion, armoring, and nourishment; artificial lighting; beach cleaning; increased human presence; recreational beach equipment; exotic dune and beach vegetation; nest loss to abiotic factors; and poaching.

Recovery for the Leatherback Sea Turtle
Recovery Objective: Delist the species once recovery criteria has been met.
South Florida Contribution: Support delisting actions.
Recovery Criteria: The South Florida recovery contribution parallels the existing recovery plans for the sea turtles. South Florida's objective for the loggerhead turtle, green turtle, leatherback turtle and hawksbill turtle will be achieved when: the level of nesting for each species is continuously monitored and increases to the species-specific recovery goal; beaches supporting greater than 50% of the nesting activity are in public ownership; all important nesting beaches are protected and appropriately managed to prevent further degradation; non-native nuisance species have been controlled or eliminated on public lands; at least 60% hatch success is documented on major nesting beaches; effective lighting ordinances or lighting plans are implemented; and beaches are restored or rehabilitated to be suitable for nesting where appropriate.

Loggerhead sea turtle (*Caretta caretta*)
The loggerhead sea turtle is the most common sea turtle species in South Florida. The total number of loggerhead sea turtle nests surveyed in South Florida accounts for approximately 60% of all nests reported statewide.

Environmental threats to sea turtles include: oil and gas exploration, development and transportation; pollution; trawl, purse seine, hook and line, gill net, pound net, longline, and trap fisheries; underwater explosions; dredging; offshore artificial lighting; power plant entrapment; entanglement in debris; ingestion of marine debris; marina and dock development; boat collisions; and poaching. In South Florida, threats to nesting beaches include: beach erosion, armoring, and nourishment; artificial lighting; beach cleaning; increased human presence; recreational beach equipment; exotic dune and beach vegetation; nest loss to abiotic factors; and poaching.

Recovery for the Loggerhead Sea Turtle
Recovery Objective: Delist the species once recovery criteria has been met.
South Florida Contribution: Support delisting actions.
Recovery Criteria: The South Florida recovery contribution parallels the existing recovery plans for the sea turtles. South Florida's objective for the loggerhead turtle, green turtle, leatherback turtle and hawksbill turtle will be achieved when: the level of nesting for each species is continuously monitored and increases to the species-specific recovery goal; beaches supporting greater than 50% of the nesting activity are in public ownership; all important nesting beaches are protected and appropriately managed to prevent further degradation; non-native nuisance species have been controlled or eliminated on public lands; at least 60% hatch success is documented on major nesting beaches; effective lighting ordinances or lighting plans are implemented; and beaches are restored or rehabilitated to be suitable for nesting where appropriate.

The Species: Invertebrates

Schaus Swallowtail Butterfly (*Heraclides aristodemus ponceanus*)
The present distribution of the Schaus swallowtail extends from southern Miami-Dade County through the Keys in Biscayne Bay and north to southern Key Largo in the Upper Keys, to Lower Matecumbe Key in the Middle Keys. Schaus swallowtail butterfly distribution is limited to tropical hardwood hammocks and is concentrated in the insular portions of Miami-Dade and Monroe counties, from Elliott Key in Biscayne Bay National Park (NP) and associated smaller Keys to central Key Largo. The Schaus swallowtail butterfly occurs exclusively in subtropical dry forests (hardwood hammocks) including areas that were formerly cleared and farmed, but have since regrown.

The principal future threats to Schaus swallowtail butterfly survival and recovery are, in descending order: loss of habitat for residential and commercial construction; introduction of pesticides and other hazardous chemicals; road kills; extreme climatic conditions, such as hurricanes, freezes, and droughts; and death by predators, parasites, and collectors.

Recovery actions for the Schaus swallowtail butterfly should focus on acquiring additional hardwood hammock habitat and protecting those areas and existing hammock from development.

Recovery for the Schaus Swallowtail Butterfly
Recovery Objective: Reclassify to threatened, then delist.
Recovery Criteria: The Schaus swallowtail butterfly has always been a rare species in its historic range of Miami-Dade and Monroe counties. The destruction and degradation of Schaus swallowtail habitat and other human activities, such as collecting and mosquito spraying, increased the vulnerability of this rare species to extinction. Management actions such as acquiring and restoring habitat, enforcing prohibitions against take, reducing the effects of mosquito spraying, and increasing our biological understanding of the butterfly's biology and ecology have helped stabilize this species. Due to the

effectiveness of the management actions to help its recovery, the objective of this recovery plan is to delist the Schaus swallowtail butterfly. This objective will be achieved when: further loss, fragmentation, or degradation of suitable, occupied habitat within the butterfly's historic range in the Upper Florida Keys and Miami-Dade County has been prevented; when breeding sites of the Schaus swallowtail butterfly have been protected from mosquito spraying; when mosquito spraying in other areas used by the Schaus swallowtail butterfly has been reduced by 90%; when all suitable, occupied habitat on priority acquisition lists for the Schaus swallowtail butterfly is protected either through land acquisition or cooperative agreements; when the hardwood hammocks that form the habitat for the Schaus swallowtail butterfly are managed, restored, or rehabilitated on protected lands; and when stable populations of the Schaus swallowtail butterfly are distributed throughout its historic range.

The Species: Plants

Crenulate lead-plant (*Amorpha crenulata*)
Inhabits marl prairies and wet pine rocklands in a small area of Miami-Dade County. The crenulate lead-plant is known from a 20-square-mile area from Coral Gables to Kendall, Miami-Dade County. Currently, 8 locations are known for this plant.

Recovery for the Crenulate Lead-plant
Recovery Objective: Prevent extinction, then stabilize.
Recovery Criteria: *Amorpha crenulata* will, most likely, never reach a level at which reclassification could be possible. The objective of this recovery plan is to increase existing populations and prevent extinction. *Amorpha.crenulata* may be considered stabilized when existing populations, within the historic range, are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression. These sites must also be managed to maintain areas to support *A. crenulata*. Monitoring programs should demonstrate that populations of *A. crenulata* on these sites support sufficient population sizes, are distributed throughout the historic range, and are sexually or vegetatively reproducing a sufficient rate to maintain the population. Further, seedling establishment must be documented in the wild. This recovery objective is an interim goal because of the limited data on the biology, ecology, and management needs of this species. The recovery objective will be reassessed annually based on new research, management, and monitoring information. Reclassification criteria may be developed if new information identifies ways of re-establishing populations of this species to expand its distribution within its historic range.

Deltoid spurge (*Chamaesyce deltoidea*)
This species is known from pine rocklands in Miami-Dade County, Florida. This plant was listed as a result of habitat destruction, which had reduced the deltoid spurge's range by 98% from urban expansion in the area. Habitat loss, fire suppression, and exotic plant invasions threaten the recovery of the deltoid spurge. Deltoid spurge is a Miami-Dade County endemic that was historically known to occur in pine rocklands from the Goulds area north to the center of the city of Miami. The northern portion of its range has been

completely modified by urban expansion. The deltoid spurge is now known only from south Miami to the Homestead area.

Recovery for the Deltoid Spurge
Recovery Objective: Stabilize then reclassify to threatened.
Recovery Criteria: *Chamaesyce deltoidea* ssp. *deltoidea* may be considered stabilized when existing populations, within the historic range of *C. deltoidea* ssp. *deltoidea*, are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression. These sites must also be managed to maintain pine rocklands to support *C. deltoidea* ssp. *deltoidea*. Once the existing populations are stabilized, *C. deltoidea* ssp. *deltoidea* may be considered for reclassification to threatened. Reclassification will be considered when: enough demographic data are available to determine the appropriate numbers of self-sustaining populations required to ensure 20 to 90 percent probability of persistence for 100 years; when these populations, within the historic range of *C. deltoidea* ssp. *deltoidea* are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression; when these sites are managed to maintain the pine rocklands to support *C. deltoidea* ssp. *deltoidea*; and when monitoring programs demonstrate that populations of *C. deltoidea* ssp. *deltoidea* on these sites support sufficient population sizes, are distributed throughout the historic range, and are sexually or vegetatively reproducing at sufficient rates to maintain the population. This recovery objective is an interim goal because of the limited data on the biology, ecology, and management needs of this species. The recovery objective will be reassessed annually based on new research, management, and monitoring information. Reclassification criteria may be refined if new information identifies ways of re-establishing populations of this species to expand its distribution within its historic range.

Garber's spurge (*Chamaesyce garberi*)
Garber's spurge is known from pine rocklands, coastal flats, coastal grasslands, and beach ridges in Miami-Dade and Monroe counties, Florida. It is found throughout its historic range and is abundant in some areas, but the populations are relatively disjunct. Habitat loss and exotic plant invasion threaten its recovery. Garber's spurge is endemic to South Florida, is abundant on Cape Sable, and is probably found throughout the Keys in small numbers.

Recovery for the Garber's Spurge
Recovery Objective: Stabilize, then delist.
Recovery Criteria: *Chamaesyce garberi* may be considered stabilized when existing populations, within the historic range of *C. garberi*, are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression. These sites must also be managed to maintain pine rocklands to support *C. garberi.* Once the existing populations are stabilized, *C. garberi* may be considered for delisting. Delisting will be considered when: enough demographic data are available to determine the appropriate numbers of self-sustaining populations required to ensure 95 percent probability of persistence for 100 years; when these populations, within the historic range of *C. garberi*, are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression; when these sites are managed to maintain the pine rocklands to support

C. garberi; and when monitoring programs demonstrate that populations of *C. garberi* on these sites support sufficient population sizes, are distributed throughout the historic range, and are sexually or vegetatively reproducing at sufficient rates to maintain the population. This recovery objective is an interim goal because of the limited data on the biology, ecology, and management needs of this species. The recovery objective will be reassessed annually based on new research, management, and monitoring information on the species. Delisting criteria may be refined if new information identifies ways of re-establishing populations of this species to expand its distribution within its historic range.

Small's milkpea (*Galactia smallii*)

Small's milkpea is endemic to the pine rocklands of Miami-Dade County. Throughout South Florida, most of the pine rocklands have been destroyed for residential housing, commercial construction, or agriculture. Less than 2% of the original pine rockland habitat of the Small's milkpea remains and most of that habitat occurs in small, isolated stands that are difficult to protect or manage. Continued habitat loss and fragmentation, fire suppression, and invasion by exotic plant species threaten the existence of Small's milkpea. Small's milkpea occurs in the Redland pine rocklands of southern Miami-Dade County, Florida. Its distribution is spotty because of the limited habitat available. The type locality is listed as near Silver Palm, Miami-Dade County, in an area now encompassed by Redland pine rocklands.

Recovery for the Small's Milkpea

Recovery Objective: Prevent extinction, then stabilize**.**

Recovery Criteria: *Galactia smallii* will, most likely, never reach a level at which reclassification could be possible. The objective of this recovery plan is to increase existing populations and prevent extinction. *Galactia smallii* may be considered stabilized when existing populations, within the historic range, are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression. These sites must also be managed to maintain pine rocklands to support *G. smallii*. Monitoring programs should demonstrate that populations of *G. smallii* on these sites support sufficient population sizes, are distributed throughout the historic range, and are sexually or vegetatively reproducing at sufficient rates to maintain the population. This recovery objective is an interim goal because of the limited data on the biology, ecology, and management needs of this species. The recovery objective will be reassessed annually based on new research, management, and monitoring information. Reclassification criteria may be developed if new information identifies ways of re-establishing populations of this species to expand its distribution within its historic range.

Beach jacquemontia (*Jacquemontia reclinata*)

Much of the primary habitat of this species, beach coastal strand and maritime hammock, has been destroyed or altered for residential and commercial construction. Fewer than 1,000 individual plants exist. They are found in small, widely separated populations in Dade, Broward, and Palm Beach counties, where habitat loss and modification place this species at a high risk of extinction.

Recovery for the Beach Jacquemontia
Recovery Objective: Reclassify to threatened.
Recovery Criteria: *Jacquemontia reclinata* may be considered for reclassification from endangered to threatened when: enough demographic data are available to determine the appropriate numbers of self-sustaining populations and sites needed to ensure 20 to 90 percent probability of persistence for 100 years; when these sites, within the historic range of *J. reclinata*, are adequately protected from further habitat loss, degradation, and fragmentation; when these sites are managed to maintain the coastal strand to support *J. reclinata*; and when monitoring programs demonstrate that populations of *J. reclinata* on these sites support the appropriate numbers of self-sustaining populations, and those populations are stable throughout the historic range of the species. *Jacquemontia reclinata* may be considered for delisting when there is an adequate number of geographically distinct, self-sustaining populations throughout its historic range to ensure 95% probability of persistence for 100 years. The recovery identifies management recommendations, such as translocations, that are necessary to accomplish this objective. Additional criteria for delisting will need to ensure persistence of the species for 100 or more years, and will be defined once this species is reclassified.

Tiny polygala (*Polygala smallii*)
Tiny polygala was once thought to be endemic to Miami-Dade and Broward counties, but recent surveys have extended its range to southern St. Lucie County. All 11 known populations are found within 9.7 km of the Atlantic coast. The only known populations occur in sand pockets of pine rocklands, open sand pine scrub, slash pine, high pine, and well-drained coastal spoil. The survival and recovery of tiny polygala is threatened by habitat loss from urban development, fire suppression, and exotic plant infestation. Tiny polygala occurs in four distinct habitats with similar characteristics: pine rockland, scrub, high pine, and open coastal spoil.

Recovery for the Tiny Polygala
Recovery Objective: Prevent extinction, then stabilize.
Recovery Criteria: *Polygala smallii* will, most likely, never reach a level at which reclassification could be possible. The objective of this recovery plan should be to increase existing populations and prevent extinction. *Polygala smallii* may be considered stabilized when existing populations, within the historic range, are adequately protected from further habitat loss, degradation, exotic plant invasion, and fire suppression. These sites must also be managed to maintain pine rocklands and scrub flatwoods to support *P. smallii*. Monitoring programs should demonstrate that populations of *P. smallii* on these sites support sufficient population sizes, are distributed throughout the historic range, and are sexually or vegetatively reproducing at sufficient rates to maintain the population. This recovery objective is an interim goal because of the limited data on the biology, ecology, and management needs of this species. The recovery objective will be reassessed annually based on new research, management, and monitoring information. Genetic information is of particular importance to the recovery of *P. smallii*, especially considering the recently identified populations in Martin and St. Lucie counties. Reclassification criteria may be developed if new information identifies ways of re-establishing populations of this species to expand its distribution within its historic range.

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Study Number: **4.27**

Document Title:
Final Supplemental Environmental Impact Statement, Disposal of Portions of the Former Homestead Air Force Base, Florida

Entity Responsible for the Document:
The United States Air Force (Air Force) and the Federal Aviation Administration (FAA) prepared the SEIS.

Completion Date of Document:
December 2000

Status of Document:
Currently being implemented

Geographic Area of Document:
The Homestead Air Force Base is located in southern Florida, about 25 miles south of Florida. The Homestead Air Force Base covers an area of 2,940 acres.

Scope of Document:
This plan addresses the transfer of 1,632 acres of property for reuse by the community in a way that is both economically productive and protective of Biscayne Bay. The proposed action is to transfer the property to the county to be redeveloped as a commercial airport. Alternative actions are also examined: Commercial Spaceport alternative, Mixed Use alternative, and the No Action alternative.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Biscayne National Park is about 2 miles and Everglades National Park about 10 miles from the former base. The Superintendent of Biscayne NP has identified water pollution, reduced surface and groundwater inflow, loss of undeveloped buffer land, and noise as the most serious potential impacts from outside the park. Pressures from urban development, and in particular from secondary development related to reuse of former Homestead AFB, were a source of potential concern. Air emissions from vehicles and aircraft were also identified as potential sources of impact. To address these concerns, potential impacts related to population growth, air quality, water quality, noise, and biological resources are addressed.

The concerns related to effects on water quality in Biscayne Bay from the Proposed Action and alternatives include changes in stormwater runoff, changes in groundwater flows, and emissions of air pollutants from aircraft and other sources. Development on former Homestead AFB would increase the amount of impervious surface on the site, resulting in more stormwater runoff. Total stormwater runoff from the site is estimated to increase by 43% under the Proposed Action, 30% under the Commercial Spaceport alternative, and 15% under the Mixed Use alternative.

The result of either a commercial airport or commercial spaceport at Homestead is that Biscayne NP would experience more noise. The Mixed Use alternative, which would not include civil aviation use, would not increase aircraft noise, but would result in the same noise effects on Biscayne NP as the No Action alternative; that is, continuing military and other government aircraft operations together with aircraft overflights from other airports.

The net effect for the Proposed Action would be an increase in surface water discharges of about 2.0% and a decrease in groundwater discharges of about 1.4% of the projected baseline discharges from Military, Mowry, and Princeton Canals in 2015. Wetlands behind the mangrove swamp bordering the western shore of the bay are not expected to be appreciably changed by the change in water regime.

The National Park Service is required to protect the air quality related values of Everglades NP from adverse air pollution impacts. These values, as identified by NPS, include visibility, flora, fauna, cultural and historical resources, odor, soil, water, and virtually all resources that are dependent upon and affected by air quality. The principal concerns listed by NPS for Everglades NP were visibility and impacts on sensitive plant species. The primary air pollutant of concern is ozone.

Biota at Everglades NP could be sensitive to both increases in air pollutant emissions and noise. Under the Proposed Action, LAmax is projected to increase in some portion of all three populations. Concerns have also been expressed that a commercial airport at former Homestead AFB could introduce agricultural pests like Medfly and citrus canker to south Miami-Dade County.

The report found that a buffer area would serve several purposes in protecting and restoring conditions in Biscayne NP. The key benefits of a buffer emphasized in the NPS report include:

- Park Resources: a buffer area could provide open space for managing surface water and restoring natural flow of water into the bay
- Farmland: use of buffer lands for agriculture would be compatible with preserving park resources and would preserve the rural character of the area by limiting conversion of agricultural land.
- Tourism: the buffer is expected to provide beneficial conditions for resources that are important for sustaining ecotourism.
- Public Health and Safety: the buffer analyzed by NPS would reduce risks associated with hurricane winds, storm surge flooding, and accidents at Turkey Point Nuclear Power Plant by limiting population density in the area.
- Wetlands: preserving a contiguous wetland area in the southern tip of Florida is a goal of the South Florida Ecosystem Restoration Program and is intended to enhance natural conditions in several protected areas in Biscayne NP, Everglades NP, and throughout the Florida Keys; the buffer analyzed by NPS would be consistent with this goal.

Urban encroachment has been identified by Biscayne NP as one of the principal threats to the preservation of the park.

Cumulative Effects of South Florida Ecosystem Projects

L-31E Flowway Redistribution Project would improve the quality of the water reaching the bay. If the Flowway Distribution Project is implemented, Military Canal will no longer discharge into Biscayne Bay. Positive effects associated with the plans for reuse of the former Homestead AFB include:

- Reduction in surface water discharges to Biscayne Bay from Military Canal under all alternatives except the Market-Driven Mixed Use Alternative
- Preservation of all pine rockland areas containing the federally listed Small's milkpea on the former base
- Removal of exotic plant species and caiman from the former base under the Collier-Hoover proposal. This could also be a mitigation measure the other alternatives.

Reuse elements that would have a negative effect include:

- Increase in nitrogen inputs into Biscayne Bay under all reuse alternatives, with the highest increase under the Proposed Action.
- Increased surface water, nutrient, and toxic chemical discharge from areas surrounding the former base due to reuse-related secondary development. This would occur under all alternatives but would be highest with the Proposed Action.
- Net decrease in groundwater flows to Biscayne Bay under all reuse alternatives; decreases the most with the Proposed Action.
- Net increase in ammonia inputs to Biscayne Bay through groundwater under Commercial Spaceport alternative and, possibly, Collier-Hoover scenario.
- Wildlife exposure to increased numbers of aircraft noise events and longer noise exposures above traditional ambient levels under the Proposed Action and the Commercial Spaceport alternative, possibly leading to wildlife avoiding some areas in the immediate vicinity of the base.
- Increased development pressure and potential loss of native habitat on lands surrounding the former base, including agricultural lands.
- Small increase in the potential for spilled hazardous materials and waste to enter Biscayne Bay during flooding if the Proposed Action or Commercial Spaceport alternative is implemented.
- Small increase in the risk of catastrophic aircraft accidents destroying wildlife and habitat under the Proposed Action and Commercial Spaceport alternatives.

Previously Identified Mitigation Measures

Issue Team Report recommendations:

Biscayne National Park Protection Buffer: The recommended buffer would include at least 75% of existing agricultural land between the Urban Development Boundary and Biscayne Bay. Miami-Dade County has committed to the concept of a buffer.

Water Resources: recommendations include developing and implementing a remediation plan for Military Canal, developing and implementing a Base Stormwater Master Plan, developing and implementing Outstanding Florida Water non-degradation standards and interim Pollution Load Reduction Goals to be used in stormwater management for the

former base, developing and implementing an Integrated Land Use and Water Management Watershed Plan for Miami-Dade County, expediting the design and implementation of the L-31E Flowway Redistribution Project, requiring Miami-Dade County to apply for an Environmental Resources Permit or its equivalent, developing a groundwater monitoring system, and identifying and mitigating impacts on water supply.

Noise: recommendations included developing site-specific protocols, conducting a study, and developing and implementing a noise management plan.

Air Quality: recommended a study on the impacts of aircraft emissions on the national parks and preparation and implementation of an Air Quality Plan.

Wildlife and Habitat: recommended preparing and implementing wildlife and habitat management protection and mitigation plans for all state and federal listed wildlife resources impacted by activities on former Homestead AFB.

South Florida Ecosystem Restoration: recommendations focused on placing conditions on the planning process and on construction and operations to ensure consistency with ecosystem restoration goals and ongoing studies and management plans.

Region of Influence (ROI) for biological resources:
There are four types of estuarine and marine communities in the ROI: mangrove swamps, seagrass beds, reefs, and open water.

Mangrove swamps: form the majority of transition between the land south of Miami-Dade County and the waters of Biscayne Bay. The American crocodile is a federally and state listed endangered species and is found in sheltered areas such as mangrove creeks, the salt water portion of canals, and coastal ponds.

Seagrass beds: cover approximately 370 square kilometers of Biscayne NP aquatic habitat and comprise the dominant vegetation in the area closest to shore that is most influenced by groundwater inflow. Seagrass species commonly found occurring in Biscayne Bay include turtle grass, manatee grass, shoal grass, and species of *Halophila*. The West Indian manatee is a federally listed endangered species inhabiting both fresh and salt water parts of shallow coastal waters, canals, and rivers of Florida, including Biscayne Bay. Manatees are often observed swimming, feeding, or resting in seagrass areas and near freshwater canal mouths.

Reef: the northern portion of the Florida reef tract lies within Biscayne NP. The reef/hard bottom community covers 11-13% of Biscayne NP, with the greatest coverage in central south bay at depths of 1 to 3 meters.
Open Water: species found here include planktonic organisms such as phytoplankton, or sea turtles and bottlenose dolphins.

Wetland and freshwater aquatic communities: The ROI is within the Everglades Province of the Savannah Division Ecoregion.

Coastal Salt Marsh: within the ROI, the coastal salt marsh communities primarily occur south and southeast of former Homestead AFB as a transition zone between the fresh water marsh and wet prairie or mangrove swamp communities.

Fresh Water Marsh and Wet Prairie: the fresh water marsh and wet prairie community occupies part of the Everglades south and west of former Homestead AFB. Freshwater marsh is the most extensive (198 acres) wetland type within former Homestead AFB.

Freshwater swamps: Cypress, hardwood, and scrub forest swamp communities are discussed together because of their relatively small acreage within the ROI.

Open Water: approximately 1,500 acres of open water occur within the ROI. The aquatic community on former Homestead AFB consists of approximately 50 acres of streams and waterways and 30 acres of small surface water reservoirs.

Upland and Disturbed Communities: upland communities include dry prairie, pineland, and tropical hardwood hammock. None of the upland communities found on former Homestead AFB are natural or unaltered. The ROI contains three types of natural upland communities, covering a total of 15,500 acres: dry prairie, pineland, and tropical hardwood hammock.

Dry Prairie: dry prairie is endemic to Florida and is confined to a few regions of the state. The ROI contains approximately 3,100 acres of dry prairie, none of which occur on the former base. Dry prairies occur southeast of former Homestead AFB near the Turkey Point Nuclear Power Plant.

Pineland: the pineland community in the ROI includes approximately 5,600 acres of both south Florida pine flatwoods and south Florida pine rocklands. State and federal sensitive plant species have been observed at 26 locations on former Homestead AFB, and most of these areas are remnant pine rocklands.

Tropical Hardwood Hammock: this rare community type is characterized as hardwood forest on upland sites in regions where limestone is near the surface or exposed. The ROI contains approximately 6,800 acres of tropical hardwood hammock occurring south and southeast of former Homestead AFB.
A total of 29 species that occur or have the potential to occur in the ROI are listed as threatened or endangered by the State of Florida but not listed by the federal government.

Record of Decision (ROD) for Disposal of Portions of the Former Homestead Air Force Base (January 2001)

The Air Force has concluded that the surplus property should not be conveyed for airport purposes. The runway and taxiways will be retained by the Air Force. The surplus property that remains (about 717 acres) will be transferred for mixed use development.

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Study Number: **4.28**

Document Title:
Technical Summary Document for the Advance Identification of Possible Future Disposal Sites and Areas Generally Unsuitable for Disposal of Dredged or Fill Material in Wetlands Adjacent to Southwest Biscayne Bay, Dade County, Florida

Entity Responsible for the Document:
U.S. Environmental Protection Agency (EPA), Region IV, in cooperation with the U.S. Army Corps of Engineers, Jacksonville District.

Completion Date of Document:
March 1994

Status of Document:
Completed

Geographic Area of Document:
Project area encompasses approximately 23,000 acres of land between Matheson Hammock County Park in the north and in the wetlands east of the Turkey Point Power Plant cooling canals in the south.

Scope of Document:
The Southwest Biscayne Bay Advance Identification (ADID) project was initiated to determine which, if any, of the wetlands remaining along the southwest shore of the bay might be potential future disposal sites for fill material, pursuant to authority in the Clean Water Act of 1977 and regulations outlined in 40 CFR Part 230. The ADID process is a regional wetlands planning process that identifies jurisdictional wetlands, evaluates their functional values, and identifies those areas where destruction would likely result in significant degradation of the local environment.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The entire geographical study area of the ADID project is within the watershed study boundary.

The ADID process for the southwest Biscayne Bay area is expected to: increase public awareness of the range of wetland types in the project area and their value, increase public awareness of the Section 404 and other wetland permitting programs, encourage developers to seek less damaging alternatives which do not involve destruction of valuable wetlands in the Southwest Biscayne Bay area, reduce the time and effort expended for applications in this area which may have a high potential for not complying with the guidelines, and provide information on potential mitigation criteria for areas identified as possible future disposal/development sites in the Southwest Biscayne Bay area.

Three designations related to the suitability of an area for disposal of fill were developed by the participating agencies in response to the three general groupings presented in the Functional Assessment Section: (1) Generally unsuitable for Disposal of Fill, for those wetlands with significant hydrological and biological values, (2) Evaluation Required on a Site by Site Basis, for those areas with mixed functional values, and (3) Potentially Suitable for Fill with Appropriate Mitigation, for those areas with functional values reduced, relative to the previous categories. The majority of the wetlands in the project area (11,077 acres, or almost 79% of the jurisdictional wetlands) were assigned to this category. Of this acreage, 4,923 acres (44% of the land designated as "Generally Unsuitable") are either in public ownership, or, if privately owned, are within the boundaries of Biscayne National Park.

Restoration and enhancement projects that would benefit both the wetland system in the ADID project area and Biscayne Bay: exotic removal and control, restoration of short hydroperiod wetlands, buffers for undeveloped lands, re-establish hydrological continuity, mosquito ditches, increase local hydroperiod, freshwater spreader system east of L-31E, provide additional freshwater supplies to the bay, and relocation of L-31E. In general, the most beneficial mitigation projects in the ADID areas are those that result in large, continuous tracts of high quality wetlands, and/or those that restore historical water flow regimes to the extent possible. Where flow of freshwater or tidal waters has been interrupted by the construction of roads, those roads should be removed, or culverts should be located and sized to restore water delivery to the adjacent wetlands.

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Study Number: **5.1**

Document Title:
Best Management Practices for South Florida Urban Stormwater Management Systems

Entity Responsible for the Document:
South Florida Water Management District

Completion Date of Document:
April 2002

Status of Document:
Currently being implemented.

Geographic Area of Document:
The geographic area of this document is the entire South Florida region.

Scope of Document:
This document was prepared to increase the public's awareness about the management of urban stormwater runoff and how best management practices (BMPs) can be used to improve water quality. This document explains the process by which stormwater flows into waterways and how the urbanization of land can adversely affect water quality when BMPs are not employed. Since most of the pollution in waterways is caused by nonpoint sources, the majority of the BMPs presented in this document are directed towards the management/reduction of nonpoint sources. Nonpoint pollution is considered: contaminants from land surface, erosion of soils, debris, increased volumes of stormwater runoff, atmospheric deposition, suspended sediments, and dissolved contaminants.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:

The key objectives of this document, that relate to the SMDWSP, are to provide the public with a better understanding of how urbanized areas affect water quality through stormwater runoff and it presents the necessary steps to help improve water quality through BMPs.

The key components within this document included: a discussion of the sources, constituents, and methods of quantifying pollutants in urban stormwater runoff, the feasibility of screening urban BMPs, nonstructural/structural BMP options, and opportunities for BMP implementation. In addition, a more detailed analysis and information is provided in the appendices of the document, which included the typical costs associated with various BMPs, construction materials used, and various functional aspects of specific BMPs.

Sources, Pollutants, Methods

There were ten nonpoint sources, seven common pollutants, and two methods for quantifying the amount of pollutants in urban stormwater cited in this document as key components to understanding urban stormwater runoff. Each directly relates to future actions being considered within the Watershed Study.

- Nonpoint sources – construction activities, agricultural activities, street pavement, motor vehicles, atmospheric deposition, vegetation, land surface, litter, chemicals, and wastewater.

- Common pollutants found in urban stormwater runoff – sediments, nutrients, heavy metals, oxygen demand substances, petroleum hydrocarbons, pathogens, toxics, and others relating to temperature and physical water properties.

- Methods for quantifying pollutants in urban stormwater runoff – concentration and load.

BMP Feasibility

The process by which the feasibility of choosing the appropriate BMP to minimize negative externalities associated with urban stormwater is an intricate and heavily studied process. There are five factors to consider, which are extremely important and relevant to the Watershed Study during the selection of the appropriate BMP. They include:

1. Physical and technical limitations – watershed area, area required for the BMP option, pollutant type and loading, soil type, slope and flow characteristics, water table elevation, bedrock or hardpan, location, and receiving waters.

2. Pollutant reduction capabilities – removal mechanisms, type of contaminant to be removed, characteristics of the annual runoff volume directed to treatment, and treatment efficiency factors.

3. Cost considerations – design and permitting costs, capital costs, operation, inspection, and maintenance costs, and unit costs of pollutant removal.

4. Supplemental benefits/side effects – opportunities for wildlife use, passive recreation, water conservation, mosquito breeding, downstream temperature changes, reduced base flows, and ground water contamination.

5. Public acceptance – reflects the characteristics of the community, acknowledges community priorities, heightens the awareness about the program/problem, provides clear, concise information, explains what each individual must do, gives the individual an easy way to do the task, and monitors the program and gains feedback.

Nonstructural BMP Options
Most nonstructural BMPs are applicable for use in residential, commercial, industrial, agricultural, and nursery operations in newly developed or existing watersheds. Nonstructural BMPs rely on actions and not structures, thus they must be implemented consistently and repetitively over time. The process for selecting nonstructural BMPs should consider the incorporation of: planning and regulatory tools, conservation, recycling, source controls, maintenance and operational procedures, and educational and outreach programs.

Structural BMP Options
Structural BMPs for controlling stormwater runoff in developing areas fall into two primary categories, retention systems and detention systems. Retention systems rely on absorption of runoff to treat urban runoff discharges. Detention systems rely less on absorption of runoff to treat urban runoff discharges and more on detaining a portion of the urban runoff for a short period of time. Other systems are also used in addition to retention and detention ponds, which also rely on the physical removal of pollutants.

- Retention systems – dry retention basins, exfiltration trenches, concrete grid pavers, vegetated filter strips, and grassed swales.

- Detention systems – dry detention ponds, wet detention ponds, and constructed wetlands.

- Other – water quality inlets, separation devices, and chemical treatment.

Best Management Practices for the South Florida region including the Watershed Study, can be implemented at various stages of the development process to help improve water quality and decrease the amount of pollution that enters bodies of water during rainfall events. This includes implementing nonstructural/structural BMPs before new developments occur, during development phases, and by retrofitting existing development to include BMPs. In order to effectively/efficiently implement BMPs, each BMP employed should be based upon baseline conditions, desired future conditions, and desired water quality goals for the area.

The information and recommendations contained in the study will be an important reference document in evaluating and recommending BMPs for Watershed Study.

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Study Number: **5.2**

Document Title:
1986 Intensive Canal Study: Evaluation of Water Quality in the Mowry Canal (C-103)

Entity Responsible for the Document:
DERM

Completion Date of Document:
May, 1989

Status of Document:
Final

Geographic Area of Document:
Points along the C-103 Canal.

Scope of Document:
The Intensive Canal Study (ICS) was implemented in 1980 to monitor the surface water quality of Miami-Dade canals.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Findings:

1. There was evidence of salt water intrusion at the discharge sites of both canals during the dry season. The effect was more pronounced along the C-103 Canal. The C-103 Canal has a salinity structure (S-20F) located at SW 97 Avenue, approximately two miles east of sampling site L-4. The North Canal drains into the C-103 Canal via the L-31E Canal, located approximately 75 feet west of salinity structure S-20F. the North Canal is effectively blocked off from the bay by the L-31E levee, which reduces salt water intrusion in the North Canal.

2. Levels of nutrients and other agriculturally-related compounds (such as chlorides and sulfates) were higher in the C-103 and North canals than in historical data levels from other canals in north and south Dade County.

3. Although most phenol levels in these canals were higher than the 1 ug/l water quality standard, these levels are considered normal for Dade County canals.

4. All sites had conductivity levels which were at or exceeded the 500 umhos/cm water quality standard. These levels are typical of Dade County canals and most likely result from the intermixing of groundwater (which has typically higher conductivity levels) and surface water.

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Study Number: **5.3**

Document Title:
1987 Intensive Canal Study: Evaluation of Water Quality in the L-31N Canal

Entity Responsible for the Document:
Miami-Dade Department of Environment Resources Management (DERM)

Completion Date of Document:
December, 1990

Status of Document:
Final

Geographic Area of Document:
Area along the L-31N Canal near Homestead, Florida.

Scope of Document:
The L-31N canal is a 19-mile segment of a canal system which (1) conveys water from Conservation Areas for recharging south Dade groundwater supplies and (2) drains stormwater from surrounding rural areas for eventual disposal to coastal areas. Land uses in the L-31N canal drainage basin having some potential to degrade area wide water quality include a small municipal airport (with potential for expansion), a cement manufacturing plant and agricultural fields. The canal is subject to illegal dumping and to canal maintenance activities that entail occasional treatment with aquatic weed control chemicals. Because the L-31N canal will become increasingly important to public drinking water supplies as it recharges the West Wellfield in the early 1990's and a future regional wellfield in far south Dade, it was selected for intensive study of water and sediment quality in 1987.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Findings:

1. There were no violations of drinking water standards or Class I and III surface water standards. Levels of Dissolved Oxygen (DO) in canal samples were not in compliance with surface water standards, due primarily to the influx of groundwater (which by nature has low DO levels) rather than degradation of water quality.

2. Levels of nitrates/nitrites, potassium, magnesium and chlorides found in water samples collected from monitoring stations in agricultural areas, were slightly elevated above background values indicating slight water quality degradation related to farming activities.

3. No polychlorinated biphenyls, volatile organic compounds, pesticides or herbicides were detected in water or sediment samples. Pesticide testing, primarily for farming and landscaping residues, includes 26 organochlorines, 5 organophosphates, and 5 carbamates; 8 PCBs; 47 volatile organic compounds and 7 herbicides. Analysis did not include herbicides used for aquatic weed eradication.

4. The trihalomethane formation potentials measured in the water samples were expectedly high (averaging 2,353 µg/l), principally due to the presence of naturally occurring organic compounds from the soils in water conservation areas. These organics do not pose a water quality problem to the canal ecosystem or recreational use of the canal water. The significance is their potential for undergoing chemical reactions with chlorine used for treating public drinking water supplies. These reactions form undesirable by-products (trihlomethanes) in drinking water.

5. Analyses of sediments indicated the presence of low levels of zinc and lead. There was no detection of other metals, polychlorinated biphenyls, pesticides, or herbicides that were analyzed.

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Study Number: **5.4**

Document Title:
1988 Intensive Canal Study – Evaluation of Water Quality in the Princeton Canal (C-102)

Entity Responsible for the Document:
DERM

Completion Date of Document:
November 1992

Status of Document:
Complete

Geographic Area of Document:
The Princeton Canal (C-102)

Scope of Document:
The Princeton Canal was chosen as a continuation of investigations into how agricultural land use or agricultural practices are contributing to the degradation of ground and surface waters in South Dade County.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Document:
Provides historical information regarding water quality within the drainage canals in the South Miami-Dade Watershed.

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Study Number: **5.5**

Document Title:
Biscayne Bay Surface Water Improvement and Management Plan

Entity Responsible for the Document:
South Florida Water Management District

Completion Date of Document:
1995

Status of Document:
The Surface Water Improvement and Management (SWIM) Act (Ch. 373.451-3733459,F.S.), which was passed by the Florida Legislature in 1987 and amended in 1991, mandated the preparation and implementation of a SWIM plan for Biscayne Bay. The South Florida Water Management District (SFWMD) prepared and adopted the initial Biscayne Bay SWIM Plan in 1988 and modified the plan in 1989. This current plan (1995) incorporates portions of the original text and replaces the 1989 plan. In addition to addressing the issue identified in 1988, this updated plan also provides analysis of the extensive data collected since 1988 to document the effectiveness of the initial plan's strategies, new issues and problems facing Biscayne Bay and its watershed, and solutions that are consistent with the directives of the SWIM Act. These solutions may involve continuation of ongoing efforts, modification of existing activities, or creation of new projects. Goals, objectives and strategies are provided in this document to guide the protection and restoration of the Biscayne Bay ecosystem.

Geographic Area of Document:
The Biscayne Bay planning area is located along the southeastern coast of Florida and is comprised of a marine ecosystem of about 428 square miles and a drainage are of about 938 square miles, including 350 square miles of wetlands. The bay is located in eastern Dade County. The watershed is composed of the drainage basins east of the Everglades, including portions of southern Broward and northern Monroe counties. The study area is bounded on the north by Dumfoundling Bay and includes the Intracoastal Waterway to one mile north of the Broward County line and the C-9 (Snake Creek) Basin. The western boundary follows the hydrologic divide formed by the L-30, L-31N, and L-31W levee system. Everglades National Park and U.S. Highway 1 to Key Largo form the southern boundary. The eastern boundary follows the Atlantic Ocean seashore one mile offshore.

Scope of Document:
The SWIM Act mandated the creation of a priority list of water bodies of regional and statewide significance, the design and implementation of SWIM plans for these water bodies, and the creation of the SWIM trust fund to provide financial support for the necessary planning and implementation efforts. The intent of this legislation was to prevent further decline in the quality of Florida's surface water resources. SWIM plans

are developed and implemented by the five regional water management districts, in cooperation with the Florida Department of Environmental Protection, other state agencies and local governments.

Biscayne Bay was one of three water bodies in the SFWMD designated by the Legislature in the original act. The Biscayne Bay SWIM planning area encompasses more than 16 percent of the State's population (U.S. Census, 1990) and 41 percent of the population within the SFWMD.

A three-part approach is required to restore water quality and maintain the conditions that are expected by visitors and those who use the bay: a) reduce or eliminate pollution; b) clean up, isolate or remove the pollutants that are already in the system; and c) restore, preserve and protect the Biscayne Bay ecosystem, including the watershed components that are critical to the health of the Bay.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
For many of the pressing issues that were identified in previous versions of the Biscayne Bay SWIM plan, remedial steps are well under way due to prior efforts by local governments, other agencies and previous SWIM projects to implement previous plan recommendations. For other issues or concerns, some of which may be stated for the first time in this 1995 version of the plan, initial actions must begin with an assessment of the nature and extent of the problem.

Issues and Priority Project

Bay Wide Issues

- Water Quality
  General Surface Water Quality Monitoring Program
- Environmental Resources
  Continued Restoration of Wetland Habitats – Selected Restoration Projects

Priority Areas

- General Surface Water Quality Monitoring
- Priority Basin Assessments
- Basin Nonpoint Management Planning
- Local Government Storm water Systems Retrofitting

Upper Arch Creek Basin
Upper Arch Creek Assessment and Basin Plan

Miami River Watershed
Miami River Enforcement and Wagner Creek Assessment and Basin Plan

South Dade Watershed
The South Dade Watershed Restoration Plan
L-31E Flow Redistribution Project
Fertilizer BMP Development
Agricultural BMP Monitoring
Historical Freshwater Flow Analysis
South Dade Topography
Freshwater Flow Requirements for Biscayne National Park

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Study Number: **5.6**

Document Title:
Biscayne Bay Water Quality Monitoring

Entity Responsible for the Document:
The Department of Environmental Resource Management (DERM, Miami-Dade County) and South Florida Water Management District (SWIM).

Completion Date of Document:
It is an ongoing program effort for the collection of water quality monitoring data that is continually collected in Biscayne Bay.

Status of Document:
The network of monitoring stations entails monthly sampling at all the sites.

Geographic Area of Document:
Biscayne Bay and its tributaries.

Scope of Document:
The SWIM Plan for Biscayne Bay has identified several issues affecting water quality and submerged aquatic vegetation. Strategies to address these issues include both systematic and investigative monitoring. Systematic monitoring is a powerful tool used to identify problem areas and provide a clear understanding of baseline conditions. Through a cooperative effort with the SFWMD, DERM has maintained a systematic routine water quality monitoring program in Biscayne Bay since 1979. SWIM funding has historically provided a significant contribution for the continuation of this important program. The Biscayne Bay SWIM Plan lists the DERM water quality monitoring program as a priority project objective. It credits the database as having been "used effectively to demonstrate water quality impacts at several locations such as Arch Creek, the Miami River basin, the South Dade Landfill, Military Canal, and the South Dade agricultural area". The Biscayne Bay SWIM Plan also states that "data from the monitoring program will be the primary source for determining the success of achieving water quality targets" for the Bay.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
DERM monitors surface water quality monthly at 101 sites in Biscayne Bay and throughout the watershed. Water samples are collected and analyzed for a variety of physical, chemical and biological parameters. Physical parameters including depth, temperature, pH, dissolved oxygen, specific conductance, and salinity are measured monthly at each station; whereas photosynthetically active radiance is measured monthly at 65 bay sites. Laboratory analyses include total and fecal coliform, total phosphorous, ortho-phosphate, ammonia nitrogen, nitrate/nitrite, TKN, color, turbidity, total suspended solids, chlorophyll a, pheophytin, hardness, and the metals cadmium, copper, lead, and

zinc. Specific outputs of this water quality monitoring network are quarterly project status and data reports.

DERM conducts epibenthic habitat monitoring annually at 11 fixed Bay sites. Parameters surveyed include seagrass shoot and blade densities, standing crop biomass by species, and seagrass composition along a 45 m transect. Additionally, DERM employs a rapid visual technique to survey bottom communities at randomly chosen locations throughout the Bay. This monitoring network consists of 100 stratified random sites sampled annually using the modified Braun-Blanquet cover-abundance scale. Overall cover for each species of seagrass and total cover for all species are estimated at each site; whereas frequency, abundance, and density are calculated at each site. DERM employs biological techniques similar to those used by researchers conducting work throughout Florida Bay and the Florida Keys National Marine Sanctuary. A SAV project status report and the verified SAV data are transmitted to the District annually.

These data are critical for developing freshwater flow, water quality targets, and pollutant loading criteria for Biscayne Bay. These data are expected to contribute toward the establishment of baseline conditions, salinity and water quality performance measures, and evaluate the effectiveness of restoration projects undertaken in connection with the Biscayne Bay Coastal Wetlands Project.

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Study Number: **5.7**

Document Title:
Study of the Frog Pond Area Hydrology and Water Quality Modifications Introduced by the C-111 Project Detention Pond Implementation

Entity Responsible for the Document:
South Florida Water Management District

Completion Date of Document:
August 20, 2003

Status of Document:
The project has been completed.

Geographic Area of Document:
The study was conducted at the Frog Pond area, a small watershed of 2023 Ha (5000-acres) located at the boundary of the Everglades National Park (ENP) in Homestead (Florida). This public land is under interim management by the South Dade Soil and Water Conservation District (SDSWCD) and will revert to SFWMD on September 30, 2003. For the last 10 years, the area was subleased to a small group of growers that farmed under restricted conditions (low inputs, no flood protection).

Scope of Document:
Frog Pond, a small (23km2) agricultural watershed adjacent to ENP, was selected for this study. Several C-111 Project actions, under the IOP (Interim Operation Plan) for Protection of the Cape Sable Seaside Sparrow, are currently being implemented in the area (modified L-31W canal management, detention pond). A network of 16 wells with automatic logging of groundwater heads, 4 surface stage recorders (at the canals/ditches surrounding the area), 2 rain gauges, 1 automatic weather station for ET estimation and soil moisture monitoring, and a bi-weekly water quality sampling program (with over 25 chemical elements analyzed) was established by the University of Florida in March 2002. A GIS system comprising different hydrological, land use and vegetation layers was developed to support the research.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The main objective of this study was to investigate how the canals operated by the SFWMD interact with the aquifer in this sensitive area of the Everglades, and to educate the stakeholders and public on standing hydrological issues in the District. This will help to fine-tune the balance between the many, sometimes conflicting, land uses in the area (agriculture, urban development and restoration). Specific objectives are:

- Establish the reach of varying canal elevations/rainfall and their seasonal relationship to ground water table depth.

- Assess water quality and seasonal variation by bi-weekly sampling at canals, ditched and wells.

- Calibrate and test field/farm scale computer models to aid in evaluating management scenarios that are developed based on regional scale models.

- Make results and recommendations accessible to stakeholders through the University of Florida Extension.

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Study Number: **5.8**

Document Title:
L-31 Seepage Management
Evaluation of the Use of Reach Transmissivity to Quantify Leakage beneath Levee 31N, Miami-Dade County, Florida. U.S. Geological Survey – Water-Resources Investigations Report 00-4066

Entity Responsible for the Document:
U.S. Geological Survey, U.S. Department of the Interior

Completion Date of Document:
Completed 2000

Status of Document:
The study was completed in 2000

Geographic Area of Document:
The study area is limited to a 7-mile reach of Levee 31N in central Miami-Dade County. Levee 31N has a depth of about 20 ft and a top width of about 100 ft. The canal stage generally does not vary more than 3 ft during the year. The area is characterized by low topographic relief with elevations ranging from 4 to 8 ft above sea level. The Levee 31N study site is bordered by Tamiami Canal to the north, C-1W Canal to the south, Everglades National Park to the west, and agricultural and urban areas to the east.

Scope of Document:
The purpose of this report is to describe the methods for quantifying ground-water seepage beneath Levee 31N, and to specify the data requirements and computational effort that these methods require. Modifications to the existing USGS model code MODBRANCH (Swain and Wexler, 1996) were made by adding the reach-transmissivity leakage option to more accurately represent the leakage conditions at the Levee 31N site. A finite-difference model was developed to analyze ground-water and surface-water flow in the vicinity of Levee 31N. A substantial amount of data was needed for model input and calibration. The data included geologic information, vertical seepage measurements, canal stage and discharge measurements, and ground-water levels. An algorithm suitable for application to real-time seepage estimation was developed. Accurate seepage data will enhance the accuracy of models of the Everglades and costal systems. The methods evaluated in this report will be a critical element for water managers in their endeavors to restore historical flow patterns in the Everglades ecosystem.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Results of the study are of significance to water managers and those involved in Everglades restoration efforts. For example, seepage estimates provided by the South Florida Water Management Model (SFWMM), which is used by local water managers to determine the effect of canal operations on water levels throughout southern Florida, can

be checked with the results of this study. The current seepage algorithm used by the SFWMM is a regression relation that was empirically derived through comparisons with a two-dimensional ground-water flow model. The new algorithm developed through this study is physically based.

Results of this study also are necessary for developing a water balance for the northeastern part of Everglades National Park (ENP), an area which is targeted for future restoration efforts. Water deliveries to the area will likely change in the near future to affect a change in water levels. The model developed through this study can be used to estimate the impact of water-level changes on subsurface seepage rates below Levee 31N, and water deliveries to the area can be adjusted accordingly with respect to seepage loses. Additionally, subsurface outflows from ENP replenish a part of the Biscayne Aquifer which underlies urban areas. During dry periods, the aquifer is at risk of saltwater intrusion near the coast, induced by limited inflows and municipal well-fields pumpage. During wet periods, urban areas are prone to flooding which can be aggravated by excessive subsurface flows from the Everglades eastward. Maintaining acceptable water levels in urban areas requires quantifying and ultimately controlling subsurface flows below the levee system. An accurate estimate of the transfer of water across the Everglades boundary is, therefore, crucial for water management in urban areas. The model also can be used to evaluate the potential effects of proposed expansion of rock-mining activities and municipal well-field pumpage immediately east of Levee 31N on seepage rates below Levee 31N and, ultimately, the water balance of the east Everglades.

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Study Number: **5.9**

Document Title:
Lower East Coast Regional Water Supply Plan Planning Document Appendices Volumes I & II

Entity Responsible for the Document:
South Florida Water Management District and the U.S. Army Corps of Engineers

Completion Date of Document:
May 2000

Status of Document:
Plan is updated every five years.

Geographic Area of Document:
The Lower East Coast Planning Area includes the counties of Palm Beach, Broward, Miami-Dade, Monroe and eastern Hendry.

Scope of Document:
The Lower East Coast Regional Water Supply Plan (LEC Plan) provides a blueprint to help meet the water resource needs in rapidly growing South Florida between now and 2020. Technical analyses of this area's future water needs and the availability of water supplies indicate that extensive actions are required to ensure that a sustainable water supply is available to fulfill future urban, agricultural, and natural system water needs. The actions recommended in this plan will meet these needs. Analyses show that the recommended projects must be built on schedule or the region will face a significant increase in the risk of water shortages and environmental decline.

The LEC Planning Area is expected to experience substantial population growth between now and 2020, increasing by almost 58 percent from 1995. Most of this increase in population will occur in the coastal area, which is projected to have almost seven million residents in 2020. This growth will create additional water demands for potable and irrigation water. Agricultural water demand, primarily for irrigation of row crops, ornamental horticulture, and sugarcane, is projected to decrease by seven percent reflecting a reduction in the area cultivated to approximately 480,000 acres. The overall water demand of consumptive users is projected to increase by 20 percent, to 2.52 billion gallons per day on average. In addition, significant increases in water supply deliveries will need to sustain and restore the natural systems of South Florida.

Development of proactive water resources and water supply development projects is imperative to meet water demands and restore critical ecosystems in the coastal estuaries, Lake Okeechobee, the Everglades, and the Biscayne Bay. The South Florida Water Management District (District) is primarily responsible for development of water resources. Local governments, water users, and water utilities are primarily responsible

for implementing water supply development. When appropriate resources are available, the District will also assist water supply development efforts at the local level.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The purpose of this plan is to fulfill the requirements of Section 373.0361, Florida Statutes (F.S.), for regional water supply plans. Implementing this plan, which complies with the statutory requirements, will ensure significant benefits to the people in South Florida and the natural systems by providing guidance, funding, and resources needed to develop regional and local water supplies.

Implementation of the LEC Plan will do the following:

- Create a water supply that fully meets the future (2020) needs of almost seven million people, agriculture and industries during a 1-in-10 year drought.

- Reduce the number and severity of violations of Minimum Flows and Levels (MFL) criteria for the Everglades and enhancement of other significant natural systems.

- Reserve by allocation, sufficient water to allow for the restoration of the Everglades and enhancement of other significant natural systems.

- Reduce the uncertainty for issuing long-term permits for water users as they invest in tomorrow's water supply infrastructure.

- Provide public forums to modernize District operational procedures and promote greater flexibility in the operation of the regional water management system.

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Study Number: **5.10**

Document Title:
Miami-Dade County Stormwater Management Master Plan

Entity Responsible for the Document:
Department of Environmental Resource Management, Miami-Dade County

Completion Date of Document:
The schedule of Completion for the Stormwater Management Master Plan is broken down on a Basin level and it is described as follows:

Basin	Target Completion Date
• C-1	Dec-03
• C-2	Aug-04
• C-3	Mar-05
• C-100	Dec-03
• C-102	Dec-03
• C-103	Dec-03
• North Canal	Dec-03
• Florida City	Dec-03

Status of Document:
As the schedule indicates, the Miami-Dade County Stormwater Master Plan is currently under development for several Basins.

Geographic Area of Document:
Miami-Dade County

Scope of Document:
The scope of the Miami-Dade County Stormwater Master Plan includes the following:

- Identify water quality and quantity problems and implement strategies for reducing existing impacts;
- Estimate the effects of existing and future land-uses on flood protection and water quality, and identify infrastructure and management strategies to accommodate those uses;
- Collection and evaluation of new and existing water quality data, evaluation of alternatives for water quantity and quality improvements, and selection of Best Management Practices;
- Mapping of Drainage Systems;
- Development of a Hydrologic/Hydraulic Model to be used for evaluation of the drainage system; and
- Development of Flood Contour Maps.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
The development of the Stormwater Management Master Plan is an essential step toward identifying and solving the drainage and water quality problems in the Biscayne Bay and its tributaries. The objectives of the stormwater master plan include the following:

- Improve the quality, quantity, and timing of discharges to the primary canals in order to prevent degradation of the Biscayne National Park and Biscayne Bay;
- Investigate problems areas due to flooding and water quantity;
- Determine canal capacity (Primary and Secondary);
- Determine the level of service for the existing drainage system;
- Propose control measure for flooding and water quality problems.

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Study Number: **5.11**

Document Title:
Miami-Dade Water and Sewer Department Wastewater Facilities Management Plan

Entity Responsible for the Document:
Miami-Dade Water and Sewer Department

Completion Date of Document:
June 2003

Status of Document:
The Master Plan has been completed

Geographic Area of Document:
Miami-Dade County

Scope of Document:
Miami-Dade Water and Sewer Department (MDWASD) faces challenges with its wastewater system. The population of South Florida Continues to rise at a rapid rate. The region annually receives heavy amounts of rainfall, which negatively impacts (reduces capacity) the existing facilities. The purpose of this document, Wastewater Facilities Master Plan including Interim Peak Flow Management Plan, is to identify the capital improvement projects needed to address both future population growth and wet weather peak flow requirements for the wastewater system through the year 2020. Due to complex and changing conditions, it is anticipated that this Master Plan will be modified as needed to reflect the latest conditions.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
MDWASD provides sewer service to most of Miami-Dade County including the South Miami Dade watershed. The system consists of multiple pipelines owned and operated by MDWASD. Other public and private entities are interconnected to MDWASD facilities and convey sewage to their plants. The key objectives of the Master Plan related to the SMDWSP include:

- Describe alternatives being considered for wet weather treatment and disposal alternatives;
- Discusses integration of water and wastewater strategies and regulatory requirements to develop water sources, withdraw water for potable or other uses and to construct potable water treatment plants;
- Regulatory impacts to treatment plants, and effluent disposal.

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Study Number: **5.12**

Document Title:
Miami-Dade Water and Sewer Department Water Facilities Management Plan

Entity Responsible for the Document:
Miami-Dade Water and Sewer Department (MDWASD)

Completion Date of Document:
September 2002

Status of Document:
Water Facilities Master Plan Completed

Geographic Area of Document:
Miami-Dade County

Scope of Document:
As the largest water and sewer utility in the southeastern United States, Miami-Dade Water and Sewer Department (MDWASD) provides drinking water to almost 2 million customers in Miami-Dade County (County). The County has experienced tremendous growth in the last 20 years, a trend that is expected to continue in the future.

The purpose of this Water Facilities Master Plan is to examine MDWASD's water system in a holistic manner and to provide an integrated approach for meeting projected water system demands in the year 2020. This integrated approach will consider outside agency and stakeholder input and the many uncertainties associated with future growth in Miami-Dade County, as well as the County's ability to raise the funding necessary to pay for the needed water facilities capital improvements. This plan is designed to examine MDWASD's complex water system in a complete "one service area" approach rather than being constrained by examining the system on jus a "service area by service area" approach (i.e. Hialeah-Preston, Alexander Orr, Jr., and South Miami-Dade).

The primary objectives of this master plan are to:

- Provide Comprehensive planning document that will provide a complete overview of MDWASD water facilities (i.e. supply, treatment, storage, transmission, and distribution).
- Provide a list of water supply, treatment, storage, transmission, and distribution alternatives that extend beyond the current constraints of MDWASD's three service areas.
- Analyze the alternatives against criteria developed by both MDWASD and other agency stakeholders who have been involved with the master planning process.
- Provide recommended capital improvements that can be phased over time based on projected water demands determined approximately every 5 years.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
MDWASD's water system is the largest in Florida, supplying, treating, and distributing more than 300 million gallons (MG) of water a day to almost two million customers. Water supply for MDWASD is derived primarily from eight major well fields located in the Hialeah-Preston and Alexander Orr Service Areas. The remaining 11 water supply wells are located at five individual water supply systems (the former Rex Utility District water system) in South Miami-Dade County. All of the wells are constructed into the highly productive Biscayne Aquifer, the sole source aquifer for the County.

Because of current and possible future permit constraints on the withdrawal allocations from the West and Southwest Wellfields, MDWASD is embarking on an ASR water management program at both wellfields. The purpose of the ASR program is to store high-quality, untreated water from the two well fields into the upper Floridan aquifer (a confined, brackish aquifer occurring at depths below 1,000 feet) during the rainy season when the water is plentiful. During the dry season, the high-quality water would be withdrawn from the ASR wells to supplement the water form the Biscayne Aquifer wells. By relying more heavily on the ASR wells, MDWASD will be able to reduce withdrawals from the Biscayne Aquifer, and hence reduce potential impacts on adjacent wetlands caused by wellfield drawdown. MDWASD's ASR program is in complete conformance with SFWMD's LEC plan goals and objectives.

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Study Number: **5.13**

Document Title:
Modified Water Deliveries to Everglades National Park

Entity Responsible for the Document:
US Army Corps of Engineers

Completion Date of Document:
June 1992

Status of Document:
Complete

Geographic Area of Document:
Everglades National Park

Scope of Document:
A computer model was developed to simulate the effects of different hydro-meteorological conditions within the Central and Southern Florida Project boundaries. Many alternatives for improving the water deliveries to the park were developed.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
This document analyzed and recommended the alternatives and improvements for flow conditions in South Florida. This will affect and impact all the design alternatives for the South Miami-Dade Watershed.

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Study Number: **5.14**

Document Title:
SFWMD's District Water Management Plan 2002 Annual Report

Entity Responsible for the Document:
South Florida Water Management District

Completion Date of Document:
December 2002

Status of Document:
Annual Report

Geographic Area of Document:
The entire 16-County, South Florida Water Management District Boundaries.

Scope of Document:
To provide comprehensive long-range guidance for the actions of the SFWMD.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
This is an overall summary of activities of the SFWMD. It includes all major activities for Planning, Public Works Construction, Operations and Maintenance, Regulation, Outreach and Monitoring and Evaluation.

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Study Number: **5.15**

Document Title:
A Paleo-ecologic Reconstruction of the History of Featherbed Bank, Biscayne National Park, Biscayne Bay, Florida

Entity Responsible for the Document:
US Geological Survey

Completion Date of Document:
2000

Status of Document:
Complete

Geographic Area of Document:
Biscayne Bay

Scope of Document:
A paleo-ecological history of the past 550 years of Feathered Bank, Biscayne Bay was reconstructed using multiple-proxy biological indicators.

Key Goals/Objectives Relating to the South Miami-Dade Watershed Study and Plan:
Baseline and historical assessment of Biscayne Bay has been developed and can be used to evaluate water quality within Biscayne Bay.

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