

TITLE: WCA-2A Regulation Schedule Review			
SUBREGION : 3	PROJECT ID: CE01	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Management	BUDGET CATEGORY: Area Management	USACE: \$500,000	
PROJECT PLAN MANAGER: K. Brooks-Hall 904-232-3155	BASIS: 2	TOTAL: \$500,000	
LEAD ORGANIZATION(S): USACE		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): SFWMD		USACE: \$0	
COUNTY(S): Palm Beach, Broward		TOTAL: \$0	
LINKED PROJECTS: Dependent on : Critical to: Associated with:		REMAINING FINANCIAL REQUIREMENT:	
		USACE: \$500,000	
		TOTAL: \$500,000	
START: 1998	END: 2001	APPROVED: 11/97	LAST REVISION: 7/98

DESCRIPTION: A revised regulation schedule was implemented for Water Conservation Area No. 1 (WCA-1) (Loxahatchee National Wildlife Refuge) in 1995. The schedule was modified to improve water conditions for wading bird and snail kite habitat. Implementation of the revised regulation schedule has already shown benefits. When the WCA-1 regulation schedule modifications were approved, it was agreed that the WCA-2A regulation should also be reviewed to evaluate opportunities for similar benefits. The review will be initiated in FY98.

RESTORATION BENEFITS: The purpose of the project is to evaluate the feasibility of modifying operational modifications for WCA-2A to benefit its fish and wildlife resources, without adversely impacting the area's ability to satisfy its flood control and water supply purposes. The study can be implemented with existing operational and maintenance authority. It can be funded through ongoing O&M appropriations for the Corps of Engineers. It will be initiated in FY99.

Time Line and Fiscal Year Budget (in thousands of dollars) for WCA-2A Regulation Schedule Review																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE			200	100	200											500
Subtotal			200	100	200											\$500

TITLE: Water Conservation Areas: Inholdings, Mineral Rights, and Other Interests			
SUBREGION: 3	PROJECT ID: CE02	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Land Acquisition	BUDGET CATEGORY: 1	SFWMD	\$18,028,792
PROJECT PLAN MANAGER: Rinaldi (561)682-6537	BASIS: 2,3	TOTAL:	\$18,028,792
LEAD ORGANIZATION(S): SFWMD		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): None		SFWMD	\$9,228,792
COUNTY(S): Palm Beach, Broward		TOTAL:	\$9,228,792
LINKED PROJECTS: Dependent on: Critical to: Associated		REMAINING FINANCIAL REQUIREMENT:	
with:		SFWMD	\$8,800,000
START: 1948	END: 2010	TOTAL:	\$8,800,000
		APPROVED: 11/97	LAST REVISION: 7/98

DESCRIPTION: The WCA's include approximately 256,000 acres in Broward, Dade, and Palm Beach counties. The acquisition program is attempting to purchase all outstanding mineral rights on approximately 250,000 acres and fee title rights on less than 70,000 acres. Land Management is carried out by the FGFWFC and the U.S. Fish and Wildlife Service, under contract to the SFWMD.

RESTORATION BENEFITS: The general purpose of these lands is to store floodwater from developed areas adjacent to the WCA's for later use during the dry season. Releases of water from the WCA's during the dry seasonal and, particularly during drought conditions are considered vital to the maintenance of adequate water levels in the coastal canals, wellfields, and Everglades National Park and for the prevention of saltwater intrusion.

Time Line and Fiscal Year Budget (in thousands of dollars) for Water Conservation Areas: Inholdings, Mineral Rights, and Other Interests																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program	██████████															
Project																
Land Acq	200	200	200	200	200										7,800	8,800
Subtotal																\$8,800

TITLE: Soil Survey for Everglades National Park, Big Cypress, & Water Conservation Areas			
SUBREGION: 3	PROJECT ID: CE05	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Natural Resources Management	NRCS	\$4,280,000
PROJECT PLAN MANAGER: Greg Hendricks (561) 795-5451	BASIS: 3	TOTAL:	\$4,280,000 (unfunded)
LEAD ORGANIZATION(S): NRCS		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): NPS, USGS, IFAS		Total	\$0
COUNTY(S): Palm Beach, Broward, Dade, & Monroe		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on: Critical to: TS01, TS40, TS41, TS55, TS56 Associated: TS19, TS22, TS45		NRCS	\$4,280,000
with:		TOTAL:	\$4,280,000
START: 1997	END: 2002	APPROVED: 11/97	LAST REVISION: 8/98

DESCRIPTION: This project will produce a comprehensive soil survey of Everglades National Park (ENP) and the Water Conservation Areas (WCA's) throughout south Florida, consisting of approximately 2,000,000 acres. This soil survey will consist of a spatial representation of soil map units and series across the national park and WCA landscape. A detailed soil series description will be developed that describes each of the soil profiles, sequence of layers from the surface to rock, and other important physical, biological and ecological features.

RESTORATION BENEFITS: Presently there is no soil survey available to land managers and planners at the ENP or WCA's at a level of detail that compares with that which will be produced by this product. Information provided by this detailed soil survey will deliver to land managers an effective tool that will assist them in the restoration and/or preservation of key landscape features necessary for the sustainability of their land and water management objectives. Ecological communities are highly correlated to soil series for which they are associated. Key soil characterization data will be used by land and water managers to guide the restoration and/or management of desired plant communities. Other benefits include development of key information that will be required for new hydrologic and ecologic models being developed.

Time Line and Fiscal Year Budget (in thousands of dollars) for Soil Survey for Everglades National Park, Big Cypress, & Water Conservation Areas																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
NRCS			550	1060	1060	1060	550									4,280
<i>Subtotal</i>			550	1060	1060	1060	550									\$4,280

TITLE: Canal C-111 Project			
SUBREGION: 3	PROJECT ID: CE06	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Infrastructure	BUDGET CATEGORY: Infrastructure Investment	USACE: \$87,564,000	SFWMD: \$73,729,000
PROJECT PLAN MANAGER: Glenn Landers, 904-232-2125	BASIS: 1	NPS (Land): \$0	TOTAL: \$161,293,000
LEAD ORGANIZATION(S): USACE		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): SFWMD, ENP, DEP, FWS		USACE: \$22,290,000	SFWMD: \$71,790,000 See Note
COUNTY(S): Dade		NPS(Land): \$0 See Note	TOTAL: \$94,080,000
LINKED PROJECTS: Dependent on: CE10, CE12, Critical to: CE13 Associated: CE08, CE11, CE12 with: CE14		REMAINING FINANCIAL REQUIREMENT:	
START: 1994	END: 2005	TOTAL: To Be Determined: See Notes Below	APPROVED: 11/97
			LAST REVISION: 7/98

NOTE 1: Financial requirements shown above are based on the original project scope and current Project Cooperation Agreement (PCA). The original project lands cost estimate of \$50,690,000 did not include state conservation lands (Southern Glades) needed to implement the C-111 project. WRDA 1996, Section 316, changed cost sharing for C-111 project implementation to 50% Federal and 50% Local including credit for Southern Glades lands. The U.S. Army Corps of Engineers (USACE) is currently preparing a General Reevaluation Report (GRR) Supplement to detail the estimated revised project lands costs. After approval of the REDM, the PCA will be amended to implement 50/50 cost sharing per WRDA 1996 and project financial requirements shown above will be updated.

NOTE 2: WRDA 1996, Section 316, also states "The Secretary of Interior shall pay 25% of the cost of acquiring such portions of the Frog Pond and Rocky Glades areas as are needed for the project." The Corps GRR Supplement will detail the cost of acquiring these lands. Current total cost estimate for the Frog Pond and Rocky Glades is approximately \$110,650,000.

DESCRIPTION: The goal of the C-111 Project modifications is restoration of the Taylor Slough and eastern panhandle of Everglades National Park, while maintaining flood protection within the C-111 basin east of L-31 N and C-111. The project plan consists of both structural and nonstructural modifications to the existing project works within the C-111 basin. Structural components of the plan include: construction or modification of nine canals, construction of an L-31 Tieback levee and S-332D tieback levee, removal of existing spoil material along the south side of lower C-111, construction of five pump stations, and replacement of an existing bridge over Taylor Slough in ENP. The project will require the acquisition of lands in the Frog Pond; the Rocky Glades Agricultural Area (L-31N lands); and additional lands in the Southern Glades. The SFWMD has completed acquisition of the Frog Pond and acquisition of the remaining lands is underway. These modifications will widen the areal extent of water distribution capability, thereby restoring more natural hydrology in 128 square miles of the Taylor Slough and its headwaters in the Rocky Glades.

RESTORATION BENEFITS: The goal of this project is to restore more natural timing, distribution, and quantity of freshwater flows to Taylor Slough and the wetlands in the panhandle of ENP. Restoring the natural hydroperiods will help to restore and maintain natural vegetation communities in these regions of ENP. The detention/retention area will also contribute to improving the water quality of waters delivered to ENP.

Time Line and Fiscal Year Budget (in thousands of dollars) for Canal C-111 Project															
Task	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design															
Land Acquisition															
Construction															

Completion																
Project																\$161,293

Annual Federal and non-Federal cost Allocation will be based on the negotiated Project Cooperation Agreement.

TITLE: East Cape and Homestead Canal Plugs Repair			
SUBREGION : 3	PROJECT ID: CE07	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Infrastructure	BUDGET CATEGORY: Infrastructure	TOTAL: \$235,000	
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	BASIS:	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USACE		\$235,000	
SUPPORTING ORGANIZATION(S): ENP		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): Dade, Monroe		TOTAL: \$0	
LINKED PROJECTS: Dependent on: Critical to: Associated CE06,CE10		APPROVED: 11/97	
with:		LAST REVISION: 7/98	
START: 1997	END: 1997		

DESCRIPTION: The East Cape and Homestead Canals were constructed to assist in the drainage of the Everglades prior to the authorization of Everglades National Park in 1936. After the park was established in 1947, the canals were plugged to prevent over-drainage of the upstream freshwater systems and saltwater intrusion during the high tides in the dry season. Hurricane Andrew resulted in both plugs being over-topped. Extensive damage occurred causing the plugs to leak badly and potentially fail. The Corps of Engineers has provided design assistance and funding to Everglades National Park to repair/replace the plugs. The park completed the scheduled work in FY97.

RESTORATION BENEFITS: The project will prevent the loss of freshwater from coastal lakes in the southern Everglades and prevent saltwater intrusion. This will help restore and protect natural hydrologic conditions. The project is authorized, funded, and completed.

STATUS: completed

Time Line and Fiscal Year Budget (in thousands of dollars) for East Cape and Homestead Canal Plugs Repair																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
USACE	235															235
Subtotal	235															\$235

TITLE: Everglades National Park Water and Wastewater			
SUBREGION : 3	PROJECT ID: CE08	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Infrastructure	BUDGET CATEGORY: Infrastructure Investment	NPS Construction Budget	
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	BASIS: 3	TOTAL: \$38,491,000	APPROPRIATED TO DATE:
LEAD ORGANIZATION(S): NPS		TOTAL: \$3,748,000	
SUPPORTING ORGANIZATION(S):			REMAINING FINANCIAL REQUIREMENT:
COUNTY(S): Dade		TOTAL: \$34,743,000	
LINKED PROJECTS: Dependent on: Critical to: Associated			
with:			
START: 1997	END: TBD	APPROVED: 11/97	LAST REVISION: 8/98

DESCRIPTION: To rehabilitate or replace the water and wastewater systems at 17 areas within Everglades National Park.

RESTORATION BENEFITS: A large percentage of the existing water and wastewater systems within Everglades National Park were constructed over 25 years ago when the public health and environmental standards were not as fully evolved as they are today. While originally constructed to code, many of these systems fall short of meeting present day standards. This rehabilitation effort would modify or replace all of the existing systems with the new systems that offer the full level of public health and environmental protection that present day standards require. The final result will be potable water systems properly designed to provide safe, clean water and wastewater that are properly designed and provide sufficient treatment to fully protect the fragile water resources within Everglades National Park.

Time Line and Fiscal Year Budget (in thousands of dollars) for Everglades National Park Water and Wastewater																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
System Repair																
Project																
NPS	354	3,394	1,600												33,143	38,491
Subtotal																\$38,491

TITLE: Hole-in-the-Donut			
SUBREGION : 3	PROJECT ID: CE09	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Infrastructure	BUDGET CATEGORY: Habitat Protection/Area Mgmt.	Dade Co.	\$75,000,000
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	BASIS: 1	TOTAL:	\$75,000,000
LEAD ORGANIZATION(S): NPS		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): DERM			\$ 6,284,584
COUNTY(S): Dade		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on: Critical to: Associated with:		TOTAL:	\$68,715,416
START: 1994	END: 2017	APPROVED: 11/97	LAST REVISION: 7/98

DESCRIPTION: This project will restore approximately 5,000 - 6,000 acres of wetlands within Everglades National Park by removing exotic vegetation (Brazilian pepper) and removing disturbed substrate to limestone bedrock.

RESTORATION BENEFITS: Invasive exotic pest vegetation is one of the greatest long-term threats to the Everglades ecosystem. As a result of this project, 5,000 - 6,000 acres of exotic vegetation will be restored to natural wetlands within ENP as mitigation for development projects in other areas of Dade County. A vast seed source with the potential to invade and disturb other areas of the Everglades will be eradicated.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hole-in-the-Donut																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Reclamation																
Project																
Dade County	2387	2910	3056	3209	3369										60,069	75,000
Subtotal																\$75,000

TITLE: Modified Water Deliveries to Everglades National Park			
SUBREGION: 7	PROJECT ID: CE10	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Infrastructure	BUDGET CATEGORY: Infrastructure Investment	NPS	\$134,163,000
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	BASIS: 1	TOTAL:	\$134,163,000
LEAD ORGANIZATION(S): ENP/USACE		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): SFWMD, DEP, FWS		TOTAL: \$50,037,000	
COUNTY(S): Dade, Broward		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on: CE12, CE13 Critical to: CE06 Associated: CE07, CE10, CE11		TOTAL: \$84,126,000	
with: CE14		APPROVED: 11/97	
START: 1990	END: 2003	LAST REVISION: 11/98	

DESCRIPTION: The project is being implemented in conjunction with acquisition of 109,578 acres in the East Everglades as part of the ENP Expansion. This current project project design involves: (1) construction of gaps or control structures in the L-67 A&C levees to allow flow from WCA-3A to WCA-3B; (2) construction of water control structures to deliver a additional flow of water to the NE Shark River slough from WCA-3B; (3) degradation of the L-67 extension levee south of Tamiami Trail and, and (4) construction of a flood mitigation/seepage control feature to prevent adverse impacts to the 8.5 square mile residential area. Together, these efforts will contribute to the restoration of historical hydroperiods in the southern portion of WCA-3A and WCA-3B, as well as the northern section of Shark River Slough, a total area of about 800 square miles.

RESTORATION BENEFITS: This project will contribute to the restoration of historical hydroperiods and flows to WCA-3A, WCA-3B, and Shark River Slough, which will help to restore and maintain natural biological communities in ENP.

Time Line and Fiscal Year Budget (in thousands of dollars) for Modified Water Deliveries to Everglades Nat. Park																
Task	91-97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Design																
Land for Con.																
Construction																
Project																
USACE	25526	11900	12611	20000	22000	22000	19765								361	
Subtotal	25526	11900	12611	20000	22000	22000	19765									\$134,163

Notes: It is critical that land acquisition be accelerated so all land is acquired prior to completion of the project features.

The 1991 through 1999 appropriation figures above represent the net amount appropriated after congressional reprogramming according to P.L. 103-219 and P.L. 105-277. The total financial requirement figure includes the combined total of past allocations and future budget requests for project infrastructure costs and project implementation support. Project costs could increase following design evaluations currently being conducted by the Southern Everglades Restoration Alliance (SERA). The above costs also do not include the raising of 10 miles of Tamiami Trail which could add approximately \$50,000,000 to the total project cost and extend the project completion date to the end of 2005.

TITLE: Additional Lands - 8.5 Square Mile Area			
SUBREGION: 3	PROJECT ID: CE11	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Land Acquisition	BUDGET CATEGORY: Land Acquisition	State	75 percent
PROJECT PLAN MANAGER: John Outland (850) 488-4892	BASIS: 1, and 3	Federal	25 percent
LEAD ORGANIZATION(S): FDEP		TOTAL:	\$76,000,000 (estimated)
SUPPORTING ORGANIZATION(S): USACE, SFWMD, Dade County, U.S. Dept of Interior		APPROPRIATED TO DATE:	
COUNTY(S): Dade		TOTAL:	\$0
LINKED PROJECTS: Dependent on: Critical to: CE10 Associated		REMAINING FINANCIAL REQUIREMENT:	
with:		TOTAL:	\$76,000,000
START: 1998	END: Completion of acquisition (based on willing seller initiative)	APPROVED: 11/97	LAST REVISION: 7/98

DESCRIPTION: This project consists of a willing seller land acquisition program for up to 5,013 acres consistent with the recommendations of the Governor's Committee on the 8 1/2 Square Mile Area. The acquisition area is in addition to the 1,065 acres included in the buffer/flow-way (see project titled East Coast Buffer Water Preserve Areas). The area was once historical pinnacle rock Everglades and under natural conditions was subject to seasonal flooding due to its topographic setting. Existing development in the area consists of agricultural and rural residential uses and a plethora of illegal land uses and activities (residential density violations, illegal structures and dumping).

RESTORATION BENEFITS: The acquisition of the remaining lands outside of the buffer/flow-way is needed to support water supply and protect water quality in the buffer/flow-way and adjacent Everglades National Park. Purchase will eliminate the potential for increased urban development that would decrease the effectiveness of the flood protection and water quality attenuation provided by the proposed buffer/flow-way.

TITLE: East Everglades Addition to Everglades National Park			
SUBREGION : 3	PROJECT ID: CE12	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Land Acquisition	BUDGET CATEGORY: Land Acquisition	State: (20%)	Federal: (80%)
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	BASIS: 1	TOTAL: 101,150,000	
LEAD ORGANIZATION(S): NPS		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): State of Florida		TOTAL: \$81,150,000	
COUNTY(S): Dade		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on:		State:	Federal:
Critical to: CE06, CE10		TOTAL: \$20,000,000	
Associated: CE06, CE10			
with:			
START: 1990	END: 2000	APPROVED: 11/97	LAST REVISION: 11/98

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

RESTORATION BENEFITS: The East Everglades Addition is necessary to limit further losses suffered by the park due to habitat destruction outside former boundaries and to restore natural water-flow patterns that are critical to the ecological integrity and long-term viability of park resources. The acquisition of the East Everglades Addition lands and completion of the Modified Water Deliveries to Everglades National Park project are the most significant efforts underway to restore water deliveries to Shark Slough, the principal watershed in Everglades National Park. These hydrologic improvements are crucial to restoring ecosystem productivity in the southern Everglades and maintaining adequate freshwater inflow to the downstream estuaries along the Gulf of Mexico and Florida Bay.

The state has donated 42,959 acres and retains 2,181 acres in public ownership, another 13,109 acres have been acquired by the Federal Government, while another 5,005 acres are in condemnation leaving a total of 44,746 to be acquired.

NOTE: Restoration of natural flows cannot begin until land acquisition is complete. Land acquisition needs to be expedited to keep pace with the Corps construction efforts, which are projected for completion in 2006. To facilitate condemnation, appropriations are needed 2 years prior to taking possession.

*The State of Florida appropriated \$17,900,000 to purchase the lands it subsequently donated to Everglades National Park.

Time Line and Fiscal Year Budget (in thousands of dollars) for East Everglades Addition to Everglades National Park																
Task	96&prior	97	98	99	00	01	02	03	04	05	06	07	08	09	Unprog	Total
Land Acquisition (Federal only)																
Project																
Land Acquisition	26,150	9000	26000	20000	20,000											
Subtotal	26,150	9000	26000	20000	20,000											\$101,150,000

TITLE: Experimental Program of Modified Water Deliveries to ENP			
SUBREGION: 7	PROJECT ID: CE13	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Management	BUDGET CATEGORY: Infrastructure	Federal - 100 percent CE06, CE10	
PROJECT PLAN MANAGER: Glenn Landers 904-232-2125	BASIS: 1	TOTAL: Included in C-111 & MWD Projects	
LEAD ORGANIZATION(S): USACE		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): ENP, SFWMD		TOTAL:	
COUNTY(S): Dade, Broward, Monroe		REMAINING FINANCIAL REQUIREMENT: Included in funding for C-111 (CE06) & MWD (CE10)	
LINKED PROJECTS: Dependent on: CE04 Critical to: CE10, CE06 Associated: TS01		TOTAL:	
with:			
START: 1985	END: 2006	APPROVED: 11/97	LAST REVISION: 2/98

DESCRIPTION: The Experimental Program of Modified Water Deliveries to ENP was authorized in the Supplemental Appropriations Act of 1984. It is an iterative testing process to develop improved operational strategies of water deliveries to ENP using the existing features of the water management system. The program will continue through completion of the Modified Water Deliveries to ENP and C-111 Projects. Because the existing system is not adequate to fully restore the hydrology of ENP without causing adverse flood impacts to adjacent private property, the tests have been designed carefully to avoid such impacts. The seventh iteration is now underway.

RESTORATION BENEFITS: The purpose of the program is to provide a mechanism to test alternative water management strategies and evaluate their impacts. Hydrologic and ecologic data are being collected to help determine the relation of water management actions on the flora and fauna. The goal is to restore more natural hydrologic conditions in ENP during the design and construction period of the Modified Water Deliveries to ENP and C-111 Projects. When these projects are constructed, the existing operational constraints will be eliminated. The Experimental Program will recommend an operating strategy for the completed projects. The project is authorized and funding is available through the Modified Water Deliveries to ENP and C-111 Projects.

Time Line and Fiscal Year Budget (in thousands of dollars) for Experimental Program of Modified Water Deliveries to ENP																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
Subtotal																\$0

TITLE: Nutrient Threshold / Dosing			
SUBREGION : 3	PROJECT ID: CE15	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	SFWMD	\$ 9,000,000
PROJECT PLAN MANAGER: Tom Fontaine (561)687-6551	BASIS:	Federal	\$ 4,000,000
LEAD ORGANIZATION(S): SFWMD,DOI, DEP		TOTAL:	\$13,000,000
SUPPORTING ORGANIZATION(S):		APPROPRIATED TO DATE:	
COUNTY(S): Palm Beach, Broward, Dade		SFWMD	\$ 7,000,000
LINKED PROJECTS: Dependent on: Critical to: Associated		DOI	\$ 3,000,000
with:		TOTAL:	\$10,000,000
START: 1994	END: 2001	REMAINING FINANCIAL REQUIREMENT	
		SFWMD	\$ 2,000,000
		DOI	\$ 1,000,000
		TOTAL:	\$ 3,000,000
		APPROVED: 11/97	LAST REVISION: 2/98

DESCRIPTION: By December 31, 1998 and no later than December 31, 2001 the Department of Environmental Protection and the South Florida Water Management District shall employ all means practicable to complete any additional research necessary to numerically interpret the Class III narrative nutrient criterion for phosphorus, necessary to meet water quality standards in the Everglades Protection Area.

RESTORATION BENEFITS: Expected benefits of setting a numeric phosphorus criterion for the Everglades includes prevention of imbalance of flora and fauna, and long term recovery of phosphorus impacted ecosystems.

Time Line and Fiscal Year Budget (in thousands of dollars) for Nutrient Threshold / Dosing																
Task	97& Prior	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Project																
SFWMD, DOI DEP																
Subtotal	3600	2,100	2,000	2,000	1,000											\$13,000

TITLE: Six Water Level and Meteorological Monitoring Stations			
SUBREGION : 3	PROJECT ID: CE18	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Monitoring	TOTAL: \$ 1,349,500	
PROJECT PLAN MANAGER: Randy Harrell (850) 488-2427	BASIS: 1	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): FDEP		TOTAL: \$0	
SUPPORTING ORGANIZATION(S): NOAA, NPS, SFWMD, USGS		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): Collier, Dade, Monroe			
LINKED PROJECTS: Dependent on: Critical to: TS41,8-16M Associated with: TS23, 8-10-M		TOTAL: \$ 1,349,500	
START: November, 1999	END: September, 2004	APPROVED: 5/97	LAST REVISION: 8/98

DESCRIPTION: Six water level and meteorological monitoring stations to be located in Florida Bay and Biscayne Bay to measure physical conditions at coastal locations. These stations will collect data on water levels, backup water levels (storm surges), wind speed and direction, rainfall, barometric pressure, air and water temperature, relative humidity, solar radiation, and salinity. Units hardwired to a telephone line will include a speech synthesizer so that data (real time) can be obtained by phone.

RESTORATION BENEFITS: Real-time hydrologic and meteorological data will be readily available for trends analysis and modeling for indicators and variables important for measuring restoration success.

Time Line and Fiscal Year Budget (in thousands of dollars) for Six Water Level and Meteorological Monitoring Stations																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Installations																
Operation																
Operation																
Operation																
Operation																
Project																
State		291	91	94.25	97.5	101	0									674.75
Federal		291	91	94.25	97.5	101	0									674.75
Subtotal		582	182	188.5	195	202	0									\$1,349.5

TITLE: C-111 Basin Hydrologic Investigations and Model Development			
SUBREGION: 3	PROJECT ID: CE19	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Natural Resources Management	\$2,040,600	
PROJECT PLAN MANAGER: Graham/Genereux 305-348-3119	BASIS: 2	TOTAL: \$2,040,600	APPROPRIATED TO DATE:
LEAD ORGANIZATION(S): University of Florida, Florida International University		TOTAL: \$0	
SUPPORTING ORGANIZATION(S): USDA, SFWMD, USACE		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): Dade		TOTAL: \$2,040,600	
LINKED PROJECTS: Dependent on: C&SF Restudy Critical to: C-111 Project Associated: Mod Water Del			
with:			
START: 1998	END: 2001	APPROVED:	LAST REVISION: 8/98

DESCRIPTION: Proposed structural and operational changes to the Central and Southern Florida (C&SF) water management system have been evaluated to assess gross changes in regional hydrology, however, the temporal and spatial scale of the current modeling efforts, and the density of the current monitoring system, are inadequate to predict and assess localized flooding in the agricultural area that may result from these changes. The first task of the proposed project consists of evaluation and analysis of the available regional hydrology and water quality data, particularly in the agricultural areas east of C-111. The second task involves developing a model capable of simulating the hydrology in the agricultural area, at a spatial and temporal scale that will allow prediction of localized impacts from proposed structural and operational changes to the water management system. In addition we will carry out field data collection and experiments necessary to formulate, develop, and calibrate the model. Upon verification and calibration, the model will be useful for evaluating the potential impacts of different water management scenarios on the hydrology of the agricultural area. Throughout the project, researchers will interact with the US Army Corps of Engineers (COE), the US Department of the Interior (DOI), the US Department of Agriculture (USDA), and the South Florida Water Management District (SFWMD), to help improve the planning, design, and operation of water management facilities in south Dade County for the benefit of the natural system and agricultural and urban communities.

RESTORATION BENEFITS: This project will produce an enhanced understanding of the local hydrology of South Dade County which is essential for the decision making process regarding the structural and operational characteristics of the C-111 system. The model developed will be useful for assessing different water management scenarios, including affects related to both ecosystem restoration and agriculture/ economics of the area. Scientifically, the proposed work will include the development of a verified, calibrated, state-of-the-art model dynamically linking the surface and subsurface water flow components in a region where both are central to the local hydrology.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hydrologic Investigations and Model Development															
Task	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program															
Data	125	125	125	125											500
Analysis	350	350	350	350											1400
Model															
Devel	35	35	35	35											140
Liaison															

TITLE: Restoration of pineland and hardwood hammocks on previously rock plowed land in C-111 Basin in Dade County			
SUBREGION : 3	PROJECT ID: CE21	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Management	BUDGET CATEGORY: Area Management	\$600,00 + IFAS MATCH (in kind)	
PROJECT PLAN MANAGER: Don Pybas/R.J. Knight	BASIS: Ecosystem Restoration	TOTAL: \$1,200,000	
LEAD ORGANIZATION(S): University of Florida/IFAS		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): SFWMD, FDACS, FDEP, USDA, USDI		TOTAL none	
COUNTY(S): Dade		REMAINING FINANCIAL REQUIREMENT: \$600,000	
LINKED PROJECTS: Dependent on: Critical to: Associated TS07		TOTAL: \$600,000 = IFAS MATCH (in kind)	
with:			
START: 1997	END: 2001	APPROVED: 11/97	LAST REVISION: 2/98

DESCRIPTION: Restore South Florida slash pine and hardwood hammock species on a 200-foot wide strip on each side of the two miles of SR 9336 from C-111 canal to the L-31W canal, i.e. a total of ca. 50 acres. Two one-acre hammocks each 200' X 216' will be established in low lying areas on each side of the road. Initially each hammock will contain the following native species: A. Trees: dahoon holly, Florida trema, golden fig, gumbo limbo, Krug's holly, live oak, paradise tree, sweet bay and West Indian mahogany, and B. Shrubs: bitter bush, marlberry and Tetrazygia. After the overstory has become established, several native stoppers, wild coffee and other shade-loving species will be added to form an understory. Monitoring data will be collected to show the progressive reduction in vulnerability to encroachment of exotics as the trees gain stature.

RESTORATION BENEFITS: This project will demonstrate the techniques required to re-establish native conifer and hardwood forests on land that has been rock plowed. This arrangement of pineland and hardwoods will create a most attractive approach to Everglades National Park. Within a few years these native trees and shrubs will attract a succession of native butterflies and other arthropods, and various, and various native grasses, herbs, mushrooms, amphibians, reptiles, birds, and mammals. These biological associations will provide a hospitable environment for various endangered species.

Time Line and Fiscal Year Budget (in thousands of dollars) for Restoration of pineland and hardwood hammocks on previously rock plowed land in C-111 Basin in Dade County																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program	████████████████████															
Project																
IFAS	150	150	100	100	100											600
Subtotal																\$600

TITLE: Extension Public Information Support Ecosystem Restoration in C-111 Basin in Dade County			
SUBREGION : 3	PROJECT ID: CE23	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: PIE	BUDGET CATEGORY: PIE		
PROJECT PLAN MANAGER: Don Pytras / J.H. Crane	BASIS: 2, Ecosystem Restoration	TOTAL: \$ 754,425 + IFAS Match (in kind)	APPROPRIATED TO DATE:
LEAD ORGANIZATION(S): Univ. of Fla., IFAS		TOTAL: \$ 0	
SUPPORTING ORGANIZATION(S): SFWMD, FDACS, FDEP, USDA, USACE, USEPA, USDI			REMAINING FINANCIAL REQUIREMENT:
COUNTY(S): Dade		TOTAL: \$ 754,425 + IFAS Match (in kind)	
LINKED PROJECTS: Dependent on: Critical to: Associated			APPROVED: 11/97
with:			
START: 1997	END: 2001		

DESCRIPTION: Develop and conduct extension/public information and education programs on water issues including flooding, water table, levels, drought, water use and water quality for the benefit of vegetable, tropical fruit, and ornamental growers and for urban residents. Facilitate effective communication between and among growers, homeowners, the SFWMD, USACE, USDI, FDACS, FDEP, USEPA, USDA and others concerned with water management and water issues. Provide input to University of Florida Hydrology Task Force, the USDA hydrological engineer stationed with the USACE in Jacksonville and the one at the Subtropical Horticulture Research Station in Miami. Make recommendations to agricultural community concerning practices that need to be changed. Assure rapid adoption of BMP's developed by UF/IFAS Crops Research Working Group.

RESTORATION BENEFITS: Assure that agricultural community, SFWMD, USACE, USDI, USDA, etc., address water issues in a highly professional and timely manner. Assure the rapid and extensive adoption of BMP's by production agriculture in Dade County to provide improved water quality and water conservation. Assist growers in coping with the full spectrum of water-related issues. Assure that agriculture (i) is a viable and durable agent in ecosystem restoration, (ii) is an environmentally friendly neighbor to fragile natural ecosystems and (iii) serves as an effective buffer against pollutants from urban areas.

Time Line and Fiscal Year Budget (in thousands of dollars) for Extension Public Information Support Ecosystem Restoration in C-111 Basin in Dade County																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Extension education in C-111 Basin																
Project																
	214	121	123	146	151											755
Subtotal																\$755

TITLE: Grossman Hammock Restoration			
SUBREGION : 3	PROJECT ID: CE 24	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Land Management	BUDGET CATEGORY: Land Management	Dade Co.	\$100,000
PROJECT PLAN MANAGER: Dick Ring (305) 242-7800	BASIS: Dade Co. Wetlands Trust Fund	TOTAL:	\$100,000
LEAD ORGANIZATION(S): ENP		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): Dade Co.		Dade Co.	\$100,000
COUNTY(S): Dade Co.		TOTAL:	\$100,000
LINKED PROJECTS: Dependent on: Critical to: Associated		REMAINING FINANCIAL REQUIREMENT:	
with:		TOTAL:	\$ 0
START: 1998	END: 2000	APPROVED: 11/97	LAST REVISION: 2/98

DESCRIPTION: This project involves the re-vegetation of 3.5 acres of hardwood hammock habitat decimated by the invasion of exotic plant species and Hurricane Andrew. The restoration will be accomplished through the planting of approximately 1,400 native trees and shrubs. The area will be monitored to document the success of the restoration effort and maintained to assure that exotic plant species do not become established.

RESTORATION BENEFITS: Grossman Hammock site is one of the most important biological and archeological resources of the East Everglades region. The restoration will restore the character of the original hammock and adjacent wetland.

Time Line and Fiscal Year Budget (in thousands of dollars) for Grossman Hammock Restoration																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Restoration																
Project																
Dade Co.		90	0	10												100
Subtotal		90	0	10												\$100

TITLE: West Dade Water Reuse Reconnaissance Report			
SUBREGION: 3	PROJECT ID: CE25	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Infrastructure	BUDGET CATEGORY: Infrastructure	Corps	\$100,000
PROJECT PLAN MANAGER: Glenn B. Landers 904-232-2125	BASIS: 1	TOTAL:	\$100,000
LEAD ORGANIZATION(S): USACOE; MDWSAD		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): DERM; SFWMD; EPA; FDEP;		Corps	\$100,000
COUNTY(S): Dade County		TOTAL	\$100,000
LINKED PROJECTS: Dependent on:		REMAINING FINANCIAL REQUIREMENT:	
Critical to:		Corps	\$0
Associated CE06, CE10		TOTAL:	\$0
with:			
START: March 1997	END: September 1999	APPROVED: 11/97	LAST REVISION: 798

DESCRIPTION: The study area is located in southern Dade County, with the tentative site location of the facility west of Tamiami Airport in the general area of canal C-1 and the L-31N borrow canal. The Miami-Dade Water and Sewer Authority Department (MDWSAD) is proposing this new regional treatment facility. The new facility would have a treatment capacity of 100 mgd (155cfs) which can be used to improve the water quality and increase the supply of surface water in the Everglades, which could enhance the habitat for fish and wildlife. The proposed plan does not consider discharge directly into Everglades National Park. It would consider raising stages in canal C-1 or create a treatment area to reduce the outflow of groundwater from Everglades National Park. The Corps is coordinating with MDWSAD and other interested agencies - FDEP, DERM, SFWMD, ENP, and EPA, to consider various alternatives for the reuse water that will favorably affect the fish and wildlife habitat. A Reconnaissance Report has been prepared and approved, determined there might be a feasible solution, determine if there is a Federal interest in participating in further studies. A Project Study Plan is now being developed to describe the scope, cost, and schedule for the feasibility study. The cost of the feasibility study would be shared equally with the Metropolitan Dade County Water and Sewer Authority. The studies will be initiated in FY 99 after the PSP has been approved and a Feasibility Cost Sharing Agreement signed.

Time Line and Fiscal Year Budget (in thousands of dollars) for West Dade Water Reuse Reconnaissance Report																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Recon Study																
Project																
Recon Study	100															100
Subtotal																\$100

TITLE: Exotic Plant Control and Restoration of Degraded Plant Communities in the Southern Glades Wildlife and Environmental Area and Environs			
SUBREGION: 2	PROJECT ID: CE26	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Management	BUDGET CATEGORY: Restoration	Dade County	\$399,000
PROJECT PLAN MANAGER: Anderson (954) 746-1789	BASIS: 1	GFWFC	\$25,000
LEAD ORGANIZATION(S): GFWFC		TOTAL:	\$424,000
SUPPORTING ORGANIZATION(S): Dade County, DERM		APPROPRIATED TO DATE:	
COUNTY(S): Dade		Dade County	\$450,000
LINKED PROJECTS: Dependent on: Critical to: Associated CE06		GFWFC	\$ 25,000
with:		TOTAL:	\$475,000
START: 1998	END: 1998	REMAINING FINANCIAL REQUIREMENT:	
		TOTAL:	\$-0-
		APPROVED: 11/97	LAST REVISION: 8/98

DESCRIPTION: Exotic plant stands dominated by Brazilian pepper and Australian pine on approximately 63.5 ha of the Aerojet portion of the Southern Glades Wildlife and Environmental Area (SGWEA) will be removed through both mechanical means and by herbicidal treatment. Following exotic plant removal, native trees and shrubs will be planted in order to enhance the environmental value and natural function of these disturbed sites.

RESTORATION BENEFITS: Invasive exotic pest vegetation is one of the greatest long-term threats to the Everglades Ecosystem. The conversion from exotic species monocultures with little wildlife value into functional plant communities will accrue large benefits to a multitude of native wildlife including two critically endangered species, the Cape Sable Seaside Sparrow and the Florida Panther, as well as state-listed species such as the White-crowned pigeon and Florida Tree Snail. A vast exotic seed source will be eliminated to better ensure the integrity of other upland habitats within the SGWEA and adjacent Everglades National Park.

Time Line and Fiscal Year Budget (in thousands of dollars) for Exotic Plant Control and Restoration of Degraded Plant Communities in the Southern Glades Wildlife and Environmental Area and Environs																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Restoration																
Project																
GFWFC		25														
Dade Co.		450														
Subtotal		475														\$475

TITLE: Everglades Tree Island Research and Monitoring Initiative: Phase I			
SUBREGION : 3	PROJECT ID: CE30	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Information	SFWMD \$130,351	FGFWFC \$ 39,400
PROJECT PLAN MANAGER: Fred Sklar 561-686-8800	BASIS: 1, 2	TOTAL: \$169,751	
LEAD ORGANIZATION(S): SFWMD, FGFWFC		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): FWS, NPS, USGS		SFWMD \$64,200	FGFWFC \$19,700
COUNTY(S): Palm Beach, Broward, Dade, Collier, Monroe		TOTAL: \$83,900	
LINKED PROJECTS: Dependent on:		REMAINING FINANCIAL REQUIREMENT:	
Critical to: TS01		SFWMD \$66,151	FGFWFC \$19,700
Associated		TOTAL: \$85,851	
with:			
START: October 1997	END: July 1999	APPROVED: 11/97	LAST REVISION: 2/98

DESCRIPTION: State and federal agencies are conducting research and monitoring on tree islands to evaluate minimum flows and levels, Restudy alternatives, hydropattern restoration, and effective water management. This project would seek to coordinate efforts, structure the relevant questions, standardize data collection, reduce costs, and maximize information for water resource management. This project sheet addresses the first year, which will be devoted to designing a multi-phase research and monitoring plan that will form the basis for a multi agency, adaptive management program for the freshwater and native upland systems of the Everglades in a way that crosses management-authority boundaries. Phase II, refinement and implementation, will be submitted at a later date.

RESTORATION BENEFITS: The benefit would be the development of comparable databases and analyses so that management decisions are based on ecosystem-wide information, as opposed to the historical approach of looking at data on an area-by-area basis. The goal of this interagency project is to quantify the relationships between water management, tree island ecology, and wildlife health and diversity.

Time Line and Fiscal Year Budget (in thousands of dollars) for Everglades Tree Island Research and Monitoring Initiative: Phase I																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Inter. Meeting																
Dev. And Ref of Com. Tech																
Dev. Of Com database																
Out. Rev of Coop app.																
Project																
SFWMD		64.2	66.2													130.4
FGFWFC	19.7	19.7														39.4
Subtotal	19.7	83.9	66.2													\$169.8

TITLE: Inventory of Tree Islands in WCAs 2 and 3			
SUBREGION : 3	PROJECT ID: CE 31	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Information	FGFWFC	\$400,000
		FWS	\$112,800
PROJECT PLAN MANAGER: Lorraine Heisler 561-778-5094	BASIS: 1, 2	TOTAL:	\$512,800
LEAD ORGANIZATION(S): FGFWFC		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): FWS		FGFWFC	\$126,800
COUNTY(S): Palm Beach, Broward, Dade		FWS	\$44,600
		TOTAL:	\$171,400
LINKED PROJECTS: Dependent on:		REMAINING FINANCIAL REQUIREMENT:	
Critical to: TS01, CE10, CE04		FGFWFC	\$273,200
Associated		FWS	\$68,200
with:		TOTAL:	\$341,400
START: 8/1997	END: 6/2002	APPROVED: 11/97	LAST REVISION: 8/98

DESCRIPTION: The aim of this project is to collect information on a characteristic Everglades landscape component that has been largely been ignored in the WCAs yet which is a significant component of the regional ecology. In addition, the sensitivity of the vegetation on these tree islands to inundation and to drought makes them a powerful indicator of the effects of water management practices. The project is composed of two phases. The first, to be completed by June 1998, focuses on inventorying 40 tree islands selected to represent the range of hydrologic conditions that have been recorded over the past 30 years within WCAs 2 and 3. It combines on-the-ground investigations of vegetation composition and structure with a GIS-based landscape-level analysis. The second phase would develop the baseline for long-term monitoring (see below). Related projects by other agencies include topographic mapping of current conditions, bird community studies, dendrochronological studies, re-vegetation projects, palynological investigations, and research into physical processes by which tree islands are formed.

RESTORATION BENEFITS: The information obtained during the year of Phase 1 will be used to evaluate alternative hydrological scenarios considered by the Restudy. The information gathered by both phases would form the basis of a long-term, multi-agency co-ordinated monitoring program (prospective project) aimed at providing input for the adaptive management of water levels within the remnant Everglades system.

Time Line and Fiscal Year Budget (in thousands of dollars) for Inventory of Tree Islands in WCAs 2 and 3																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Phase I	█															
Data analysis		█														
Phase II				█												
Data analysis				█												
Project																
FGFWFC	63.4	63.4	108.6	108.	56											400
FWS	12	32.6	68.2	6												112.8
Subtotal	75.4	96	176.8	108.	56											\$512.8

TITLE: Phosphorus Monitoring at Loxahatchee NWR			
SUBREGION : 5	PROJECT ID: CE34	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Monitoring	USFWS	\$13,000/year
PROJECT PLAN MANAGER: Mark Musaus (561)732-3684	BASIS:	TOTAL: \$13,000/year	
LEAD ORGANIZATION(S): USFWS		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): Florida International University		USFWS	\$78,000 since 1992
COUNTY(S): Palm Beach		TOTAL: \$78,000	
LINKED PROJECTS: Dependent on: Critical to: Associated with: CE15		REMAINING FINANCIAL REQUIREMENT:	
START: 1992		TOTAL: \$13,000/year	
END: Unknown		APPROVED: 11/97	LAST REVISION: 7/98

DESCRIPTION: Since 1992, Loxahatchee National Wildlife Refuge has been collecting data on total phosphorus levels in the marsh water and atmospheric deposition. The monitoring is required by the Everglades Water Quality Lawsuit. Marsh water concentrations are used to determine compliance with the interim and long-term limits. The atmospheric deposition is used to determine how much phosphorus is contributed to the Everglades system through atmospheric fallout.

RESTORATION BENEFITS: The monitoring contributes to an understanding of the phosphorus cycles in the northern Everglades compared with the southern Everglades. The results will be used as part of a large data pool from multi-agency research and monitoring efforts to determine the phosphorus threshold for the Everglades. Post BMP and STA completion monitoring for marsh water quality will have to continue to determine the success of the restoration efforts.

Time Line and Fiscal Year Budget (in thousands of dollars) for Loxahatchee NWR Phosphorus Monitoring																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Water Quality Monitoring																
Atmospheric Deposition																
Project	13	13														26
Subtotal	13	13														\$26

TITLE: Exotic Plant Control on Loxahatchee National Wildlife Refuge			
SUBREGION : 5	PROJECT ID: CE 35	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Management	BUDGET CATEGORY: Natural Resources Management	USFWS	\$130,000/year
PROJECT PLAN MANAGER: Mark Musaus (561)732-3684	BASIS:	SFWMD	\$ 75,000/year
		TOTAL:	\$205,000/year
LEAD ORGANIZATION(S): USFWS		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): SFWMD		USFWS	\$442,500
COUNTY(S): Palm Beach		SFWMD	\$375,000
LINKED PROJECTS: Dependent on: Critical to: Associated with:		TOTAL:	\$817,500
START: 1992	END: ?	REMAINING FINANCIAL REQUIREMENT:	
		TOTAL:	\$205,000/year
		APPROVED:	LAST REVISION: 7/98

DESCRIPTION: Melaleuca is an exotic tree that affects over 60,000 acres in A.R.M. Loxahatchee National Wildlife Refuge. An intensive eradication program began in 1992, and since then almost 2 million trees have been killed. The trees are still a serious threat to the northern Everglades. Biological controls will take many years to manifest their effects. Until then, it is imperative to control the spread and reduce the existence of the trees in the Everglades. The refuge maintains its own exotic plant control crew that operates year-round.

RESTORATION BENEFITS: Restoration cannot be achieved without the control of exotic plants such as Melaleuca. Because of the biomass involved with the size and quantity of Melaleuca trees, they represent a serious threat to the function of the Everglades ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Loxahatchee NWR Exotic Plant Control																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
USFWS																
SFWMD																
Project																
USFWS	130	130	130													390
SFWMD	75	75	75													225
Subtotal	205	205	205													\$615

TITLE: Miccosukee Tribe Water Management Area			
SUBREGION: 5	PROJECT ID: CE36	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Infrastructure	BUDGET CATEGORY: Infrastructure	TOTAL \$42,113,000	
PROJECT PLAN MANAGER: Duncan (305) 223-8380	BASIS: 1 & 2	:	
LEAD ORGANIZATION(S): Miccosukee Tribe		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): USACE, BIA		TOTAL \$0	
COUNTY(S): Broward		:	
LINKED PROJECTS: Dependent on: Critical to: Associated WCA5-M		REMAINING FINANCIAL REQUIREMENT:	
with:		TOTAL \$42,113,000	
:		:	
START: 1997	END: 2002	APPROVED: 11/97	LAST REVISION: 2/98

DESCRIPTION: The Miccosukee Water Management Area (MWMA) is a project to construct a managed wetland on the Miccosukee Tribe's Alligator Alley Reservation. The purpose of the project is to provide water storage capacity and water quality enhancement for waters which discharge into the Everglades Protection Area.

The project will convert approximately 900 acres of tribally owned cattle pastures into a wetland retention/detention area, which will be designed to filter out harmful nutrients contained in stormwater runoff before the water enters the Everglades Protection Area. (Tribal Water Quality Standards adopted December 19, 1997, dictate a numerical standard of 10 parts per billion for total phosphorous inside the Everglades protection area) Costs include planning, design, engineering, and construction of a managed wetland as well as operation and maintenance for the project.

RESTORATION BENEFITS: The MWMA will significantly contribute to the ability of the Federal government to meet it's trust responsibility to the Tribe, while providing protection for the resources of the Everglades Protection Area. In addition to clean water, tribal cultural and economic benefits will also be obtained.

Time Line and Fiscal Year Budget (in thousands of dollars) for Miccosukee Tribe Water Management Area																	
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total	
Planning & Design																	
Construction																	
Operation/Man																	
Project																	
Operational	1264	1264	4211	4211	4211	4211	537	537	537	537	537	537				19,372	
Capital																	22,741
Subtotal																	\$42,113

TITLE: Miccosukee Tribe Water Management			
SUBREGION: 3	PROJECT ID: CE37	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Management	BUDGET CATEGORY: Management	\$4,200,000 initial investment, plus expenses of \$2,100,000	
PROJECT PLAN MANAGER: Duncan (305) 223-8380	BASIS: 3	TOTAL:	\$25,200,000
LEAD ORGANIZATION(S): Miccosukee Tribe		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): USACE, BIA		BIA	\$199,000
COUNTY(S): Broward		TOTAL:	
LINKED PROJECTS: Dependent on: Critical to: Associated		REMAINING FINANCIAL REQUIREMENT:	
with:		TOTAL:	\$25,001,000
START: 1997	END: Ongoing	APPROVED: 11/97	LAST REVISION: 2/98

DESCRIPTION: This project involves a holistic approach to surface-water resources management within the Reservation. It includes field surveying of canals and levees, engineering design, ditch excavation, installation of water control structures, aquatic weed control, and collecting and analyzing water quality samples within the Reservation and the marsh interior of WCA-3A.

RESTORATION BENEFITS: The project will provide improved management of flows and quantity distribution as well as enhanced water quality benefits, both on and off the Reservation.

Time Line and Fiscal Year Budget (in thousands of dollars) for Miccosukee Tribe Water Management																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Regulation																
Ecosystem Management																
Integration & Coordination of plan																
SW Mgmt																
WQ Monitoring																
Enviro Engineering																
Aq Weed Control																
Mapping																
Geo Info System																
GPS																
Right Protection																
Project																
Miccosuke Tribe		2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100		\$25,200
Subtotal																\$25,200

TITLE: Subregional characterization of the geological framework of the subsurface coarse sand zone and its influence on Florida Bay and the southern Florida ecosystem			
SUBREGION: 3 & 5	PROJECT ID: CE38	FINANCIAL REQUIREMENT: TOTAL: \$300,000 APPROPRIATED TO DATE: TOTAL: \$0 REMAINING FINANCIAL REQUIREMENT: TOTAL: \$300,000	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research		
PROJECT PLAN MANAGER: Scott (904)488-9380	BASIS: 1 and 3		
LEAD ORGANIZATION(S): FDEP(FGS)			
SUPPORTING ORGANIZATION(S): USGS, SFWMD			
COUNTY(S): Collier, Dade, Monroe			
LINKED PROJECTS: Dependent on: Critical to: TS01, SW21, Associated: TS41			
with:			
START: 1999	END: 2001	APPROVED: 11/97	LAST REVISION: 7/98

DESCRIPTION:This project is a subset investigation of the larger areal distribution of the siliciclastic (sand, silt and clay) formation that may provide ground water to Florida Bay. This investigation concentrates on the potentially permeable sediments in the proximity of Florida Bay to determine the subregional ground-water flow path and the potential of ground-water contributions to the bay. The approach of the project is to drill approximately seven (7) cores in western Dade, southern Collier and Monroe counties onshore and two (2) cores in Florida Bay through the sand zone to depths of approximately 600 feet on average. If this study reveals that the ground waters from this zone are affecting Florida Bay, a follow-up investigation (BCB26-S) will characterize the regional subsurface sand formation and ground-water system through drilling additional cores and conducting further analyses. The approach proposed herein is a less costly means of determining the potential influence of nutrients from ground water in the sand unit on Florida Bay and the southern Florida ecosystem.

RESTORATION BENEFITS: The data obtained by this investigation is required to more fully understand the Florida Bay and southern Florida ecosystems. The ground-water contribution and its effect on the bay have not been fully considered and are not understood. Proper restoration of the ecosystem requires comprehending the influences affecting the entire ecosystem.

Time Line and Fiscal Year Budget (in thousands of dollars) for Subregional characterization of the geological framework of the subsurface coarse sand zone and its influence on Florida Bay and the southern Florida ecosystem																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Core drilling and analyses																
Project																
State			100	40	10											\$150
Federal			100	40	10											\$150
Subtotal			200	80	20											\$300

TITLE: Florida Bay Fisheries - Habitat Assessment Program			
SUBREGION : 7	PROJECT ID: CE40	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Monitoring/ Research	USGS/BRD	\$527,200
PROJECT PLAN MANAGER: Mike Robblee (305) 348-1269	BASIS:	TOTAL:	\$480,000
LEAD ORGANIZATION(S): FLDEP/FMRI		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Monroe		TOTAL:	\$218,000
LINKED PROJECTS: Dependent on: Critical to: Ecol. Monitoring in FL Bay Associated		REMAINING FINANCIAL REQUIREMENT:	
with:		TOTAL:	\$480,000
START: 1997	END: 2000	APPROVED:	LAST REVISION:

DESCRIPTION: This is an ongoing program to assess status and trends in benthic fish habitat (seagrass) in Florida Bay. The program includes three elements: 1) abundance and distribution; 2) structure and dynamics; and 3) populations dynamics. These study elements provide information for spatial assessment and resolution of both intra- and inter- annual variability in the macrophyte (seagrasses and macroalgae) communities and will provide spatially explicit change data to monitor response to water management alterations or other restoration activities. The protocols used in this program are also being used in the Florida Keys National Marine Sanctuary thus providing the opportunity for a regional database. Principal Investigator: Dr. Michael Durako, FDEP/FMRI.

RESTORATION BENEFITS: This project contributes significantly to the critical needs identified in the Florida Bay Science Plan to monitor and understand the dynamics of seagrasses and changes in seagrasses in Florida Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Bay Fisheries - Habitat Assessment Program																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Monitor status																
Project																
	87	131	131	131												480
Subtotal	87	131	131	131												\$480

TITLE: Relationships Between Inshore Populations of the Pink Shrimp, <i>Penaeus duorarum</i> , and Offshore Tortugas and Sanibel Fisheries			
SUBREGION: 7	PROJECT ID: CE41	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	TOTAL: \$150,000	
PROJECT PLAN MANAGER: Mike Robblee (305) 348-1269	BASIS:	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS/BRD		TOTAL: \$75,000	
SUPPORTING ORGANIZATION(S): NOAA/NMFS, NPS		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): Monroe		TOTAL: \$75,000	
LINKED PROJECTS: Dependent on: Critical to: Consumer modeling, success criteria		TOTAL: \$75,000	
Associated: NOAA pink shrimp project			
with:			
START: 1997	END: 1999	APPROVED:	LAST REVISION: 8/98

DESCRIPTION: This is an ongoing project employing stable isotopes as tracers for the purpose of : 1) determining the relative importance of various inshore estuarine source areas to the offshore Tortugas and Sanibel shrimp fisheries; and 2) to determine the source areas supporting the fall and spring recruitment peaks in the Tortugas fishery. Principal Investigators: Drs. Brian Fry, Florida International University, Mike Robblee, USGS/BRD, and Joan Browder, NOAA/NMFS.

RESTORATION BENEFITS: These data are important in order to understand the relationship of Florida Bay to the Tortugas Fishery and the possible implications of restoration actions to this fishery.

Time Line and Fiscal Year Budget (in thousands of dollars) for Relationships Between Inshore Populations of the Pink Shrimp, <i>Penaeus duorarum</i> , and Offshore Tortugas and Sanibel Fisheries																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project																
Subtotal	75	75														\$150

TITLE: Florida Bay Program Support		
SUBREGION: 7	PROJECT ID: CE42	FINANCIAL REQUIREMENT:
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	
PROJECT PLAN MANAGER: Mike Robblee (305) 348-1269	BASIS:	TOTAL: \$270,000
LEAD ORGANIZATION(S): USGS/BRD		APPROPRIATED TO DATE:
SUPPORTING ORGANIZATION(S):		TOTAL: \$108,000
COUNTY(S): Monroe		REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: Dependent on: Critical to: Fl. Bay Research Program Mgmt Associated		TOTAL: \$270,000
with:		
START: 1997	END: 2001	APPROVED:
		LAST REVISION: 8/98

DESCRIPTION: An interagency Florida Bay Research Program has existed dating from 1994 when the initial science plan for Florida Bay was completed (Armentano et. Al., 1994). This plan and subsequent updates established the Florida Bay Interagency Program Management Committee, the Florida Bay Scientific Oversight Panel, and Critical Area Research Teams for the purposes of program coordination, review, and implementation. ENP and USGS/BRD support formal activities of the PMC including: an annual science conference; special topic workshops; and support research team activities focusing on critical questions/ research areas within the Program. Additionally, ENP and USGS/BRD support Florida Bay projects logistically where feasible. These activities include but are not limited to: laboratory use in Key Largo and at the South Florida Natural Resources Center; boat support; and housing of visiting researchers at Key Largo.

RESTORATION BENEFITS: The activities funded in this project are essential for supporting the Florida Bay Research Program which is directed at restoring Florida Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for Florida Bay Program Support																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Project	54	54	54	54	54											
Subtotal																\$270

TITLE: Temporal and Spatial Variation in the Seagrass Associated Fish and Invertebrates in Johnson Key Basin, western Florida Bay			
SUBREGION: 7	PROJECT ID: CE43	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	TOTAL: \$375,000	
PROJECT PLAN MANAGER: Mike Robblee (305) 348-1269	BASIS:	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS/BRD		TOTAL: \$150,000	
SUPPORTING ORGANIZATION(S): NOAA/NMFS, NPS		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): Monroe		TOTAL: \$300,000	
LINKED PROJECTS: Dependent on: Critical to: NOAA pink shrimp project Associated: NOAA pink shrimp project		TOTAL: \$300,000	
with:			
START: 1997	END: 2001	APPROVED:	LAST REVISION: 8/98

DESCRIPTION: This is an ongoing project due for completion in FY 1997. This is a joint project with the National Marine Fisheries Service to evaluate fish and invertebrate response to changes in habitat associated with seagrass die-off and algal blooms, to contribute seasonal population abundance to shrimp modeling efforts under development, and to relate long-term fish and invertebrate abundance to changing salinity conditions within Florida Bay.

RESTORATION BENEFITS: Completion of this project will provide insight into the responses of seagrass associated animals to habitat change and salinity conditions in western Florida Bay following seagrass die-off. This is a critical need as identified in the Florida Bay Science Plan. The information collected in this project is critical input to the ongoing NOAA pink shrimp project and will contribute importantly to the pink shrimp as a success criteria for restoration.

Time Line and Fiscal Year Budget (in thousands of dollars) for Temporal and Spatial Variation in the Seagrass Associated Fish and Invertebrates in Johnson Key Basin, western Florida Bay																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Monitor abundance on 6 wk interval																
Project																
	75	75	75	75	75											
Subtotal																\$375

TITLE: High Resolution Bathymetry of Florida Bay			
SUBREGION : 7	PROJECT ID: CE44	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research		
PROJECT PLAN MANAGER: Mike Robblee (305) 348-1269	BASIS:		
LEAD ORGANIZATION(S): USGS/BRD			
SUPPORTING ORGANIZATION(S): USGS/BRD			
COUNTY(S): Monroe		TOTAL: \$549,000	APPROPRIATED TO DATE:
LINKED PROJECTS: Dependent on: Critical to: Fl. Bay Research Program Mgmt. Associated		TOTAL: \$366,000	REMAINING FINANCIAL REQUIREMENT:
with:		TOTAL: \$183,000	
START: 1997	END: 1999	APPROVED:	LAST REVISION: 8/98

DESCRIPTION: An interagency Florida Bay Research Program has existed dating from 1994 when the initial science plan for Florida Bay was completed (Armentano et al., 1994). This plan and subsequent updates established the need for updated bathymetry of Florida Bay. Existing bathymetric data from the bay dated from the mid to late 1800's. This research need was determined to be critical to physical and biological modeling programs ongoing or planning for the Florida Bay Research Program.

RESTORATION BENEFITS: Updated bathymetric data will be useful as input to both circulation and mass balance models as well as seagrass and shrimp models currently being developed within the Florida Bay Research Programs. When used predictively these models will be used to evaluate water management alternatives for Florida Bay.

Time Line and Fiscal Year Budget (in thousands of dollars) for High Resolution Bathymetry of Florida Bay																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field work																
Map prod																
Project																
	183	183	183													
Subtotal																\$549

TITLE: Wading Bird Empirical Studies			
SUBREGION : 5	PROJECT ID: CE45	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research		
PROJECT PLAN MANAGER: Donald L. DeAngelis	BASIS: 2,3	TOTAL: \$205,000	APPROPRIATED TO DATE:
LEAD ORGANIZATION(S): USGS/BRD		TOTAL: \$95,000	
SUPPORTING ORGANIZATION(S): SFWMD			REMAINING FINANCIAL REQUIREMENT:
COUNTY(S): Collier, Dade, Monroe		TOTAL: \$110,000	
LINKED PROJECTS: Dependent on: Critical to: ATLSS Associated: ATLSS Program			APPROVED:
with:			
START: FY1997	END: FY2000		

DESCRIPTION: Water depth and characteristics of the wading bird prey community will be manipulated to determine their effects on wading bird foraging and site selection. Experiments will be conducted in situ with free-ranging birds from the Everglades.

RESTORATION BENEFITS: The parameters resulting from this study will be critical for the development of the ATLSS wading bird model. This model will be used in assessing the effects of water deliveries on wading bird populations.

Time Line and Fiscal Year Budget (in thousands of dollars) for Wading Bird Empirical Studies																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field Ecology																
Project																
Subtotal	40	55	55	55												\$205

TITLE: Fish recruitment, Growth and Habitat Use in Florida: An Integrated Team Approach			
SUBREGION: 08	PROJECT ID: CE46	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research		
PROJECT PLAN MANAGER: Mike Robblee (305) 348-1269	BASIS:		
LEAD ORGANIZATION(S): USGS/BRD, NOAA/BRD, FLDEP/FMRI		TOTAL: \$825,000	APPROPRIATED TO DATE:
SUPPORTING ORGANIZATION(S):			
COUNTY(S): Monroe		TOTAL: \$275,000	REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: Dependent on: Critical to: Ecological Modeling in Florida Bay Associated		TOTAL: \$600,000	
with:			
START: FY1997	END: FY1998	APPROVED:	LAST REVISION:

DESCRIPTION: This project poses the hypothesis that recruitment, growth, survivorship, and energy utilization of selected fish and invertebrates varies with habitat type, salinity, and planktonic community characteristics within Florida Bay. Coupled process-oriented field surveys along salinity, and habitat gradients, field and laboratory experiments, and modeling will be used to address this hypothesis in relation to seasonal and interannual salinity variation and habitat (seagrass, algae, seagrass die-off) and water management. This project is a jointly funded project between USGS/BRD, NPS, and NOAA/NMFS. Principal Investigators: Drs. Don Hoss, Carolyn Currin, William Hettler, David Peters, Allyn Powell, Gordon Thayer, Lawrence Rozas, NOAA/NMFS, Mike Robblee, USGS/BRD, Richard Matheson, David Camp, Jim Colvocoresses, FDEP/FMRI, Robert Werner, State University of New York, Joan Holt and Scott Holt, University of Texas.

RESTORATION BENEFITS: This project addresses the critical research need as identified within the Florida Bay Science Plan What of understanding relationships between environmental change, habitat change and recruitment, growth and survival of animals in Florida Bay. Additionally this project will provide significant empirical data in support of consumer modeling.

Time Line and Fiscal Year Budget (in thousands of dollars) for Fish recruitment, Growth and Habitat Use in Florida: An Integrated Team Approach																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Characterize fish, invertebrate populations	X	X	x													
Project																
	275	275	275													825
Subtotal																\$825

TITLE: Population genetic structure and the dispersal of freshwater fishes and prawns		
SUBREGION : 3	PROJECT ID: CE47	FINANCIAL REQUIREMENT:
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	
PROJECT PLAN MANAGER: Bill Loftus (305) 242-7800	BASIS:	TOTAL: \$204,100
LEAD ORGANIZATION(S): USGS/BRD, Florida Inter. University		APPROPRIATED TO DATE:
SUPPORTING ORGANIZATION(S): NPS		TOTAL: \$59,100
COUNTY(S): Collier, Dade, Monroe		REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: Dependent on: Critical to: ATLSS Associated: ATLSS fish model and wading bird models		TOTAL: \$145,000
START: 1996	END: 2000	APPROVED:
		LAST REVISION:

DESCRIPTION: In modelling the dynamics of aquatic animal populations in southern Florida wetlands, it has become apparent that the dispersal distances, rates of movements, and timing of movement are important but poorly understood. The small size of most of the wetland animals precludes the use of standard marking techniques for studying movement, and the large, open system of these wetlands makes recapturing marked animals improbable. Likewise the short lifespans of these animals makes recapture difficult. Use of genetic markers in determining the presence of structure in populations offers an indirect way of assessing the degree of movement and mixing in these populations. The analyses proposed use already-proven methods of assessment that employ allozymes and DNA. A range of species will be tested, including the common fish and macroinvertebrate species. In addition to this indirect method, field studies of marking larger-bodied species in marshes and ponds will be carried out to assess the degree and distance of movements. Under appropriate conditions, mark-recapture of small-bodied fishes will also be attempted.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries.

Time Line and Fiscal Year Budget (in thousands of dollars) for Population genetic structure and the dispersal of freshwater fishes and prawns																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Pilot study	5															5
Allozyme Work	30	30	30	30	5											88
Analysis	30	30	30	30	5											75
Field Study Large bodied		30	30	30	5											15
Small bodied			30	30	5											16
Final Report					5											5.1
Project																
Subtotal	30	30	30	30	5											\$204.1

TITLE: Freshwater mesocosm studies			
SUBREGION :	PROJECT ID: CE48	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY:	BUDGET CATEGORY:	Start-up costs, support for a series of graduate students, supply/operations support	
Science	Research	TOTAL: \$249,200	
PROJECT PLAN MANAGER:	BASIS:	APPROPRIATED TO DATE:	
William F. Loftus			
LEAD ORGANIZATION(S): USGS - BRD, FIU			
SUPPORTING ORGANIZATION(S): NPS			
COUNTY(S): All			
LINKED PROJECTS: Dependent on:		TOTAL: \$41,900	
Critical to: ATLSS		REMAINING FINANCIAL REQUIREMENT:	
Associated		Additional funds to apply from 1998 onward	
with:		TOTAL: \$207,300	
START: 1996	END: 2002	APPROVED:	LAST REVISION: 1998

DESCRIPTION: One of the primary unknowns for modelling the dynamics of fish communities in the Everglades is the identification of factors that limit population growth and community dynamics. The mesocosm that has been built in ENP will complement field studies by providing opportunities for experimental studies under more controlled conditions than possible in field conditions, but at a larger scale and with more field-like conditions than in laboratory aquaria. Three general research tasks are planned to be addressed in the mesocosm: 1). Fish population growth at various densities with same resource base; 2). Fish population growth at various nutrient levels; 3). Predation effects by fish on fish. The planned studies include inter-guild functional response experiments with large predatory and small prey species, the effect of small fishes on larvae of larger species, exotic-native fish interactions, and predator-prey interactions among fish and macroinvertebrate species. Intra-guild effects will also be tested, using small marsh species as subjects.

RESTORATION BENEFITS: Provide data for ATLSS models to evaluate alternatives for ecological effects of the C&SF Restudy, C-111 Project, and MODFLOW.

Time Line and Fiscal Year Budget (in thousands of dollars) for Freshwater mesocosm studies																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Facility	█															32.3
Pilot study	█															15
Pred-prey Interguild	█	█	█	█	█	█										15
Pred-prey Intraguild	█	█	█	█	█	█										15
Pred-prey nesting effect			█	█	█	█										17
Nutrient effects varying dens.			█	█	█	█										25
Nutrient effects Varying nutrnt.			█	█	█	█										110
Final Reports				█	█	█	█									20
Project																
Subtotal	41.9	40.3	42	45	40	40										\$249.3

TITLE: Role of Aquatic Refuges in the ecology of wetland fishes			
SUBREGION : 07, 06, 05	PROJECT ID: CE49	FINANCIAL REQUIREMENT: Graduate student support Supply/operations support TOTAL: \$150,000	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research		
PROJECT PLAN MANAGER: William F. Loftus	BASIS: 2, 3	APPROPRIATED TO DATE: New project	
LEAD ORGANIZATION(S): USGS - BRD		TOTAL: \$-0-	
SUPPORTING ORGANIZATION(S): Florida Intl University		REMAINING FINANCIAL REQUIREMENT: New Project	
COUNTY(S): Dade, Collier, Monroe		TOTAL: \$-0-	
LINKED PROJECTS: Dependent on: Hydrology Critical to: ATLSS Associated		TOTAL: \$-0-	
with:			
START: 1998	END: 2001	APPROVED:	LAST REVISION:

DESCRIPTION: Aquatic animals use several kinds of deeper-water habitats across the south Florida landscape, including alligator holes, headwater creeks, and canals. The temporal dynamics of that usage, in relation to hydrological conditions, have just begun to be described. This project would address questions important to ATLSS, such as whether different types of deep-water habitats function as sources or sinks for fishes, the movements of animals between surface-water habitats and ground-water refuges, and the effects of restoration activities on refuge availability. The project is intended to complement other ongoing investigations of fishes in canal habitats (Williams and Nico, pers. comm.), and an assessment of large-fish population sizes in marshes relevant to Test 7 (Trexler, pers. comm.).

RESTORATION BENEFITS: Provide data for ATLSS models to evaluate alternatives for ecological effects of the C&SF Restudy, C-111 Project, and MODFLOW.

Time Line and Fiscal Year Budget (in thousands of dollars) for Role of Aquatic Refuges in the ecology of wetland fishes																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Pilot Study		█													25	25
Field Work		█	█	█	█	█									150	150
Lab Work			█	█	█	█									20	20
Final Report						█									5	5
Project																
Subtotal		30	55	55	55	5										\$200

TITLE: Life history and ecology of the Everglades crayfish			
SUBREGION : 07, 06	PROJECT ID: CE50	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	Expand on current study Support graduate student Operations/supply funds	
PROJECT PLAN MANAGER: William F. Loftus, BRD	BASIS: 2	TOTAL:	\$250,000
LEAD ORGANIZATION(S): USGS-BRD		APPROPRIATED TO DATE:	
SUPPORTING ORGANIZATION(S): FL International Univ.		85 K until June 1998	
COUNTY(S): Dade, Collier, Monroe		TOTAL:	\$85,000
LINKED PROJECTS: Dependent on: Critical to: ATLSS White Ibis and crayfish models		REMAINING FINANCIAL REQUIREMENT:	
Associated		TOTAL:	\$165,000
with:			
START: 1996	END: 2000	APPROVED:	LAST REVISION: 1998

DESCRIPTION: A study is underway to examine the abundance, size frequency, and reproductive phenology of the Everglades crayfish under different wetland conditions at several south Florida sites. Those data are critical to building the crayfish-simulation model in ATLSS. However the limited scope of this Master's degree-level study will not provide important information on the role of crayfish in Everglades food webs and its biotic interactions therein, nor was it intended to provide life-history parameter data, such as age and size at first reproduction, growth rates, etc., needed to parameterize the model. This Ph.D.-level study would gather critical life-history data from wild-caught field specimens from a variety of Everglades basins, and from specimens raised in the Everglades mesocosm array. The mesocosms will be used for short-term experiments on the role of crayfish in the wetlands and its selection of habitats under different hydrological conditions. Stable-isotope analysis will be used to determine the trophic position of crayfish in different environments. Allozyme and DNA analysis will address questions about dispersal and movement, and about population structure.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries.

Time Line and Fiscal Year Budget (in thousands of dollars) for Life history and ecology of the Everglades crayfish																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Field ecology	█	█	█	█											40	90
Mesocosm			█	█											20	30
Food web		█	█	█											25	30
Experiments		█	█	█											45	50
Genetic work		█	█	█											10	30
Report writing		█	█	█											25	20
Project																250
Subtotal																\$250

TITLE: Critical Model Development for the Restudy				
SUBREGION: 3	PROJECT ID: CE52	FINANCIAL REQUIREMENT:		
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research			
PROJECT PLAN MANAGER: DeAngelis	BASIS: 2,3			TOTAL: \$206,000
LEAD ORGANIZATION(S): USGS/BRD, NPS				APPROPRIATED TO DATE:
SUPPORTING ORGANIZATION(S): University of Tennessee				TOTAL: \$103,000
COUNTY(S): Dade, Collier, Monroe, Broward, Palm Beach				REMAINING FINANCIAL REQUIREMENT:
LINKED PROJECTS: Dependent on: Critical to: ATLSS, Restudy Associated: ELM		TOTAL: \$103,000		
START: Continuing	END: FY1998	APPROVED:	LAST REVISION:	

DESCRIPTION: This work will consist of two tasks related to the application of the ATLSS modeling approach to the Restudy. (1) The restudy alternative scenario evaluations will be completed, with this support paying for supplies to complete the evaluations. (2) The white-tailed deer/Florida Panther model will be expanded to the core habitat area of the Florida Panther, which lies outside the area currently covered by the South Florida Water Management Model. To do this, the hydrologic model will be extended.

RESTORATION BENEFITS: All three tasks in this proposal will improve the application of ATLSS to the Restudy. The first task, to complete the scenario comparisons performed, is absolutely necessary for the success of the Restudy. The second task, to extend geographically the Florida Panther model, is essential to produce a model of the whole Florida panther population in southern Florida.

Time Line and Fiscal Year Budget (in thousands of dollars) for Development of Selected Model Components for ATLSS.																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Critical Model Development for the Restudy Project	x	x														
NPS/CESI	65.3															
USGS/BRD	7.8															
Subtotal	103	103														#206

TITLE: Public Lands Information Center			
SUBREGION : Total System	PROJECT ID: CE53	FINANCIAL REQUIREMENT: Federal funds will be matched with over \$8 million from the private sector, plus presently undetermined amount from State/City for access adjustments TOTAL: \$1,800,000 - Exhibits, staffing and operation over 10 years	
PROGRAM CATEGORY: Public Information & Education	BUDGET CATEGORY: Public Outreach		
PROJECT PLAN MANAGER: Dick Ring (305) 242-7710	BASIS:	APPROPRIATED TO DATE: TOTAL: \$0	
LEAD ORGANIZATION(S): NPS			
SUPPORTING ORGANIZATION(S): USFWS, NOAA, State of Florida		REMAINING FINANCIAL REQUIREMENT: TOTAL: \$1,800,000	
COUNTY(S): Dade			
LINKED PROJECTS: Dependent on: Critical to : Associated with:		APPROVED: 11/97 LAST REVISION: 7/98	
START: 2000	END: 2009		

DESCRIPTION: The Public Lands Information Center, to be located at the junction of U.S. Highway 1 and the Florida Turnpike in Florida City, would be a collaboration with the private sector to utilize space at a planned IMAX complex for exhibits, materials and staffing to convey ecosystem restoration projects and public lands visitor information to visitors to South Florida. Management and operation would be a collaborative effort by Federal and State. The lands have been fully acquired and site development planning is set to begin. Note: The Working Group discussed and adopted an endorsing resolution 4/2/97.

RESTORATION BENEFITS: This project will sustain and increase public awareness, concern and support for restoration. Public support will be the decisive factor in securing sustained political and financial support.

Time Line and Fiscal Year Budget (in thousands of dollars) for Public Lands Information Center																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Program																
Exhibit Prep																
Project																
NPS				630	130	130	130	130	130	130	130	130	130			1,800
Subtotal																\$1,800

TITLE: Development of trophic models for amphibians and reptiles in southern Florida			
SUBREGION : 3	PROJECT ID: CE54	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	TOTAL: \$100,000	
PROJECT PLAN MANAGER: DeAngelis (305) 284-1690	BASIS: 2,3	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS-BRD		TOTAL: \$50,000	
SUPPORTING ORGANIZATION(S): Everglades Research Group, Inc.			
COUNTY(S): Dade, Collier		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on: Critical to: ATLSS intermediate trophic level models Associated with:		TOTAL: \$0	
START: January 1997	END: December 1998	APPROVED:	LAST REVISION: 8/98

DESCRIPTION: This work will be a continuation of the synthesis of empirical work on the amphibian and small reptile communities of the Everglades/Big Cypress region. During the first year, a conceptual model of these communities was provided and estimates were made of the standing stocks of biomass and the energy fluxes of the main functional groups of this community for both long- and short-hydroperiod wetlands: aquatic and terrestrial turtles, aquatic and terrestrial snakes, sirens and amphiuma, and frogs. During the next year, the following information will be provided and work performed: 1) Diet analyses, based on a more thorough literature review and gut analysis of hundreds of animals, 2) reproductive analyses, based on dissections and literature review, 3) growth and size-, age-class analyses, 4) collaboration to complete development of amphibian and reptile model.

RESTORATION BENEFITS: This work will provide the data for the reptile and amphibian model to determine prey availability for higher trophic levels.

STATUS: COMPLETED

Time Line and Fiscal Year Budget (in thousands of dollars) for Development of trophic models for amphibians and reptiles in southern Florida																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Data synth.																
Project																
Subtotal	50	50														\$100

TITLE: Computer simulation modeling of intermediate trophic levels for across trophic level system simulations of the Everglades/Big Cypress region			
SUBREGION : 3	PROJECT ID: CE55	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY:	BUDGET CATEGORY:	USGS/ BRD \$9,093	
Science	Research	NPS/CESI \$78,814	
PROJECT PLAN MANAGER:	BASIS:	TOTAL: \$87,907	
DeAngelis, BRD (305) 284-1690	2, 3	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS-BRD, NPS		Total: \$179,000	
SUPPORTING ORGANIZATION(S): University of Miami			
COUNTY(S): Dade, Collier, Monroe, Broward, Palm Beach		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on:		TOTAL: \$87,907	
Critical to: ATLSS, Restudy			
Associated with:			
START: July 1997	END: 1999	APPROVED:	LAST REVISION: 8/98

DESCRIPTION: The objective of this work will be to complete the modeling of the biomass dynamics of two important intermediate trophic level groups in the Everglades/Big Cypress region. These are the fish and herp (amphibians plus reptiles) functional groups. These are important food sources for the alligators and wading birds. In addition, this work will extend and expand the snail kite model. Empirical studies will be completed on possible impacts of small mammals on the Cape Sable seaside sparrow.

RESTORATION BENEFITS: This work is essential to Everglades restoration. The fish and reptile/amphibian functional groups are major parts of the energy budget of the Everglades/Big Cypress region. The biomass of this assemblage constitutes a large fraction of the food intake of the American alligator and wading birds. The models being developed will be used in evaluations of hydrologic scenarios for Everglades restoration. The snail kite is an important endangered species. Continued improvements of this model will help in development of management approaches. The Empirical work on Cape Sable sparrow predators is necessary to develop measures to protect the sparrows from this major source of mortality.

Time Line and Fiscal Year Budget (in thousands of dollars) for Computer simulation modeling of intermediate trophic levels for across trophic level system simulations of the Everglades/Big Cypress region																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Ecological Modeling																
Project																
NPS/ CESI	79	80	80													
USGS/BRD	9	9	9													
Subtotal	88	89	89													

TITLE: Development of selected model components of an across-trophic-level systems simulation (ATLSS) for the wetland ecosystems of South Florida			
SUBREGION : TS	PROJECT ID: CE56	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	USGS/BRD \$27,366 NPS/CESI \$379,564 TOTAL: \$ 406,930	
PROJECT PLAN MANAGER: DeAngelis, BRD (305) 284-1690	BASIS: 2,3	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS-BRD		Total: \$983,000	
SUPPORTING ORGANIZATION(S):		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): All		Total: \$1,728,000	
LINKED PROJECTS: Dependent on: Critical to: Ecological Restoration, Atlss Associated with:		APPROVED:	
START: January 1997	END: 2000	LAST REVISION: 8/98	

DESCRIPTION: This work will continue research in several key areas of the development of the ATLSS modeling approach. 1) This will continue the hydrologic scenario evaluations for the Restudy. 2) It will include application of all available ATLSS models to the final chosen Scenario for the Environmental Impact Assessment. 3) It will continue work to produce an efficient set of landscape classes, associated metadata, object-oriented database, and graphical user interface. 4) It will continue improvement of vegetation regrowth parameterization for new vegetation of the UFL-GAP vegetation map. 5) It will continue the refinement of models and performance evaluation of the models.

RESTORATION BENEFITS: This work is essential to Everglades restoration. It will continue the evaluation of hydrologic scenarios to compare the effects of the various alternatives with base conditions in their effects on a set of key biotic components. The models now being used will be improved, new ones added, and improvements in the integration made so that these models will be easier to use.

Time Line and Fiscal Year Budget (in thousands of dollars) for Development of selected model components of an across-trophic-level systems simulation (ATLSS) for the wetland ecosystems of South Florida																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Dev of Selected model																
Project																Total
NPS/ CESI	379	541	541	541	541											
USGS/BRD	27	35	35	35	35											
Subtotal	407	576	576	576	576											

TITLE: Network analysis of trophic dynamics in South Florida Ecosystems			
SUBREGION : TS	PROJECT ID: CE57	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY:	BUDGET CATEGORY:		
Science	Research		
PROJECT PLAN MANAGER: DeAngelis, BRD (305) 284-1690		BASIS: 2,3	TOTAL: \$200,000
LEAD ORGANIZATION(S): USGS-BRD		SUPPORTING ORGANIZATION(S): Univ. of Maryland, Chesapeake Biological Laboratory	APPROPRIATED TO DATE:
COUNTY(S): Dade, Collier, Monroe			
LINKED PROJECTS: Dependent on: Critical to: ATLSS Associated with: ATLSS Program		REMAINING FINANCIAL REQUIREMENT:	TOTAL: \$0
START: June 1997	END: FY 1999		
		APPROVED:	LAST REVISION: 8/98

DESCRIPTION: The proposed work is aimed at quantifying the networks of trophic interactions that occur among the major taxonomic groups of the various Everglades habitats. The strategy is to use available information on levels of biomass and exchanges of carbon to piece together complete budgets for each ecosystem. This will result in a complex network of interactions that requires systematic analysis. The structural characteristics imbedded within these complicated pictures are revealed through application of a suite of algorithms collectively referred to as "network analysis". The habitats included will be the gramminoid, mangrove estuarine, and Florida Bay ecosystems.

RESTORATION BENEFITS: This work will produce an overview of the total energy flow web of the Everglades region and will allow an estimation of the effects on all components of the system caused by impacts of hydrology on particular components.

Time Line and Fiscal Year Budget (in thousands of dollars) for Network analysis of trophic dynamics in South Florida Ecosystems																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Ecological Modeling																
Project																
NPS/CESI	100	100														
USGS/BRD																
<i>Subtotal</i>																\$200

TITLE: Experimental Studies of Population Growth and Predator-Prey Interactions of Fishes in the Everglades National Park			
SUBREGION : 3	PROJECT ID: CE58	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	USGS/BRD \$16,100	NPS/CESI \$59,000
PROJECT PLAN MANAGER: William F. Loftus USGS/BRD	BASIS: 2,3	TOTAL: \$75,100	APPROPRIATED TO DATE:
LEAD ORGANIZATION(S): USGA/BRD, NPS		Total:	
SUPPORTING ORGANIZATION(S): FIU		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): Dade, Collier		TOTAL: \$300,400	
LINKED PROJECTS: Dependent on: Critical to: Ecological Restoration,ATLASS Associated with:		APPROVED:	
START: Continuing	END: FY2001	LAST REVISION: 8/98	

DESCRIPTION: One of the primary unknowns for modeling the dynamics of fish communities in the Everglades is the identification of factors that limit population growth and community dynamics. The mesocosm that has been built in ENP will complement field studies by providing opportunities for experimental studies under more controlled conditions than possible in field conditions, but at a larger scale with more field-like conditions than in laboratory aquaria. Three general research talks are planned to be addressed in the mesocosm: 1. Fish population growth at various densities with same resource base; 2. Fish population growth at various nutrient levels; 3. Predation effects by fish on fish. The planned studies include inter-guild functional response experiments with large predatory and small prey species, the effect of small fishes on larvae of larger species, exotic/native fish interactions, and predator/prey interactions among fish and macroinvertebrate species. Intra-guild effects will also be tested using small marsh species as subjects.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries

Time Line and Fiscal Year Budget (in thousands of dollars) for Experimental Studies of Population Growth and Predator-Prey Interactions of Fishes in the Everglades National Park																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Everglades Aquatic Consumers																
Project																
NPS/CESI	59.0															
USGS/BRD	16.1															
Subtotal	75.1	75.1	75.1	75.1	75.1											

TITLE: Population Structure and Spatial Delineation of Aquatic Consumer Communities in the Everglades National Park			
SUBREGION : 3	PROJECT ID: CE59	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	USGS/BRD \$100,000	NPS/CESI \$104,100
PROJECT PLAN MANAGER: William F. Loftus (305) 242-7800	BASIS: 2,3	TOTAL: \$204,100	
LEAD ORGANIZATION(S): USGS/BRD, NPS		APPROPRIATED TO DATE	
SUPPORTING ORGANIZATION(S): FIU		TOTAL : \$99,100,000	
COUNTY(S): Dade		REMAINING FINANCIAL REQUIREMENT:	
LINKED PROJECTS: Dependent on: Critical to: Ecological Restoration Associated with:		TOTAL: \$105,000	
START: Continuing	END: FY 2001	APPROVED: 3/96	LAST REVISION: 8/98

DESCRIPTION: In modeling the dynamics of aquatic animal populations in southern Florida wetlands, it has become apparent that the dispersal distances, rates of movements, and timing of movement are important but poorly understood. The small size of most of the wetland animals precludes the use of standard marking techniques for studying movement, and the large, open system of these wetlands makes recapturing marked animals improbable. Likewise the short life spans of these animals makes recapture difficult. Use of genetic markers in determining the presence of structure in populations offers an indirect way of assessing the degree of movement and mixing in these populations. The analyses proposed use already-proven methods of assessment that employ allozymes and DNA. A range of species will be tested, including the common fish and macroinvertebrate species. In addition to this indirect method, field studies of marking larger-bodied species in marshes and ponds will be carried out to assess the degree and distance of movements. Under appropriate conditions, mark-recapture of small-bodied fishes will also be attempted.

RESTORATION BENEFITS: Data are critical to ATLSS model development to evaluate ecological effects of the C&SF Restudy, C-111 Canal, and Modified Water Deliveries.

Time Line and Fiscal Year Budget (in thousands of dollars) for Everglades Aquatic Consumers																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Research																
Project																
NPS/CESI	40.4	25	25	25	5											120.4
USGS/BRD	8.7	25	25	25	0											83.7
Subtotal	49.1	50	50	50	5											204.1

TITLE: : Vegetation Dynamics of Land-Margin Ecosystems: Mangroves of South Florida			
SUBREGION: 03	PROJECT ID: CE60	FINANCIAL REQUIREMENT:	
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	TOTAL: \$1,364,700	
PROJECT PLAN MANAGER: Thomas J. Smith, Ph.D. USGS/BRD	BASIS: 2,3	APPROPRIATED TO DATE:	
LEAD ORGANIZATION(S): USGS/BRD, NPS		TOTAL: \$528,700	
SUPPORTING ORGANIZATION(S): USGS/BRD, NPS		REMAINING FINANCIAL REQUIREMENT:	
COUNTY(S): Dade, Collier		TOTAL: \$834,000	
LINKED PROJECTS: Dependent on: Critical to: Ecological Restoration, ATLASS Associated with:		APPROVED:	
START:	END:	LAST REVISION: 8/98	

DESCRIPTION: Land-margin ecosystems (mangrove forests, brackish marshes & coastal lakes) comprise some 40% of Everglades National Park. They support the important detrital foodwebs of the coastal zone. These systems are at the "receiving end" for water management decisions made upstream which will impact the spatial distribution, timing and quantity of freshwater inflow. Additional factors which are important include the disturbance caused by Hurricane Andrew and potential affects of sea-level rise. This project will develop the data necessary to evaluate the response of Land-margin Ecosystems to upstream water management. Included will be information on primary productivity, nutrient dynamics, response to disturbance and historical changes over time. The data are also critical to the ATLSS and ELM modeling programs.

RESTORATION BENEFITS: This project will develop an understanding of a region identified as critical by the Task Force and which was listed repeatedly in the Science Subgroup's "Information Needs" volume. Without this project the land-margin ecosystems will not be included within the spatial domain of the ATLSS and ELM modeling projects nor will their response to upstream water management be understood.

Time Line and Fiscal Year Budget (in thousands of dollars) for Mangroves of South Florida																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Mangrove Hydrology/ Ecology																
Project																
NPS/CESI	211.3	227	227	227	227											
USGS/BRD	39.4	51	51	51	51											
Subtotal	250.7	278	278	278	278											\$1,364.7

TITLE: Hydrologic Variation and Ecological Processes in the Mangrove Forest of South Florida		
SUBREGION : 3,5	PROJECT ID: CE61	FINANCIAL REQUIREMENT: TOTAL: \$441,900
PROGRAM CATEGORY: Science	BUDGET CATEGORY: Research	
PROJECT PLAN MANAGER: Smith USGS/BRD	BASIS: 2,3	APPROPRIATED TO DATE: TOTAL: \$271,400
LEAD ORGANIZATION(S): USGS/BRD, NPS		
SUPPORTING ORGANIZATION(S):		
COUNTY(S): Dade, Collier		REMAINING FINANCIAL REQUIREMENT: TOTAL: \$170,500
LINKED PROJECTS: Dependent on: Critical to: Ecological Restoration, ATLASS Associated with: Vegetation Dynamics in Land Margin Ecosystems		
START: Continuing	END: FY1999	APPROVED: LAST REVISION: 8/98

DESCRIPTION: Hydrological variation appears to drive many important ecological processes in mangrove forests, such as primary productivity. Mangroves support important detrital foodwebs of the coastal zone. These systems are at the "receiving end" for water management decisions made upstream which will impact the spatial distribution, timing and quantity of freshwater inflows and also groundwater dynamics. Additional factors which are important include the disturbance caused by Hurricane Andrew and potential affects of sea-level rise. This project will develop the data necessary to evaluate the response of mangrove forests to upstream water management. Included will be information on ground and surface water elevation and salinity and how these vary in response to changing stage at upstream sites. The data are also critical to the ATLSS and ELM modeling programs.

RESTORATION BENEFITS: This project will develop an understanding of a region identified as critical by the Taskforce and which was listed repeatedly in the Science Subgroup's "Information Needs" volume. Without this project mangrove forests will not be included within the spatial domain of the ATLSS and ELM modeling projects nor will their response to upstream water management be understood.

Time Line and Fiscal Year Budget (in thousands of dollars) for Hydrologic Variation and Ecological Processes in the Mangroves																
Task	97	98	99	00	01	02	03	04	05	06	07	08	09	10	Unprog	Total
Mangrove Hydrology/ Ecology																
Project																
NPS/CESI	75.9	102.6	102.6													
USGS/BRD	25	67.9	67.9													
Subtotal	100.9	170.5	170.5													\$441.9