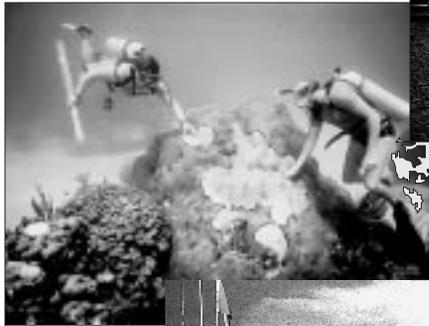


# Florida Keys National Marine Sanctuary



U.S. Department of Commerce

National Oceanic and  
Atmospheric Administration

National Ocean Service

Office of Ocean and Coastal  
Resource Management

Sanctuaries and  
Reserves Division

## Final Management Plan/Environmental Impact Statement

Volume III of III  
Appendices



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This final management plan and environmental impact statement is dedicated to the memories of Secretary Ron Brown and George Barley. Their dedicated work furthered the goals of the National Marine Sanctuary Program and specifically the Florida Keys National Marine Sanctuary.

*"We must continue to work together - inspired by the delight in a child's eye when a harbor seal or a gray whale is sighted, or the wrinkled grin of a fisherman when the catch is good. We must honor the tradition of this land's earliest caretakers who approached nature's gifts with appreciation and deep respect. And we must keep our promise to protect nature's legacy for future generations."*

- Secretary Ron Brown  
Olympic Coast dedication ceremony, July 16, 1994

*"The Everglades and Florida Bay will be our legacy to our children and to our Nation."*

- George Barley  
Sanctuary Advisory Council Chairperson

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# Florida Keys National Marine Sanctuary

## Final Management Plan/Environmental Impact Statement

Volume III  
Appendices

1996

National Oceanic and Atmospheric Administration



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# Acknowledgments

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In 1955, renowned naturalist and marine biologist Rachel Carson described the Florida Keys this way in her book *The Edge of the Sea*:

"I doubt that anyone can travel the length of the Florida Keys without having communicated to his mind a sense of the uniqueness of this land of sky and water and scattered mangrove-covered islands. The atmosphere of the Keys is strongly and peculiarly their own. This world of the Keys has no counterpart elsewhere in the United States, and indeed few coasts of the Earth are like it."

This unique environment is the reason for the existence of the Florida Keys National Marine Sanctuary, and the reason why so many people have contributed so much of their time and energy to making the Management Plan as comprehensive and fair as possible.

Since 1989, numerous environmental organizations and individuals have worked long and hard to provide input into the legislation designating the Sanctuary and into developing the Final Management Plan/Environmental Impact Statement (FMP/EIS). They provided useful and objective comments at numerous workshops, Advisory Council meetings, and other public forums held during the planning process. The contributions of each of these individuals, and the organizations they represent, is appreciated.

The National Marine Sanctuary Program staff wish to thank everyone who has participated in the development of this plan, especially members of the public who gave of their time to offer objective and useful input during the many public comment periods offered during the planning process.

Special thanks go to the members of the Sanctuary Advisory Council for their major contribution to the planning process. Their diligent work and sacrifice of time and expenses will be remembered as the key to the success of developing a comprehensive management plan. With the leadership of their chairman and vice-chairman, they navigated waters never before charted for a National Marine Sanctuary or, for that matter, any marine protected area in the United States. Their role was crucial in this planning process, especially the leadership they exhibited in developing the Sanctuary's final plan. Never before has such a comprehensive plan been assembled by such a diverse interest group to solve complex problems in one of the Nation's most ecologically diverse regions.

In addition, Program staff would like to thank our local, State, and Federal agency planning partners for their assistance during the development of this plan. Those individuals who worked diligently for over four years on the plan sacrificed an enormous amount of time and effort to assist in this project. Dozens of agency scientists, managers, and planners have devoted time to this planning process, especially during the various workshops and strategy assessment planning sessions, extended review sessions, and deliberations on the compact agreement. The National Marine Sanctuary Program staff is grateful to all of you.

Also, special thanks to all of those individuals who reviewed various portions of the document, especially sections of the Description of the Affected Environment. Your thorough review has served to make this section an important reference for future use.

We also extend our appreciation to the Sanctuary Volunteers and staff and students of Indiana University who have helped assess some shipwrecks identified in the management plan.

Particularly, the Program owes special recognition and thanks to the staff of NOAA's Strategic Environmental Assessments Division for their enormous amount of time and sacrifice in assisting in the planning and development of this plan.

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## Abstract

This abstract describes the Final Management Plan and Environmental Impact Statement (FMP/EIS) for the Florida Keys National Marine Sanctuary. Congress, recognizing the degradation of this unique ecosystem due to direct physical impacts and indirect impacts, passed the Florida Keys National Marine Sanctuary and Protection Act of 1990 (Public Law 101-605) designating the Florida Keys National Marine Sanctuary. The Act requires the National Oceanic and Atmospheric Administration (NOAA) to develop a comprehensive management plan with implementing regulations to govern the overall management of the Sanctuary and to protect Sanctuary resources and qualities for the enjoyment of present and future generations. The Act also establishes the boundary of the Sanctuary, prohibits any oil drilling and exploration within the Sanctuary, prohibits the operation of tank ships or ships greater than 50 meters in the Area to Be Avoided, and requires the development and implementation of a water quality protection program by the U.S. Environmental Protection Agency and the State of Florida, in conjunction with NOAA.

The Sanctuary consists of approximately 2,800 nm<sup>2</sup> (9,500 km<sup>2</sup>) of coastal and oceanic waters, and the submerged lands thereunder, surrounding the Florida Keys, and extending westward to encompass the Dry Tortugas, but excluding the Dry Tortugas National Park. The shoreward boundary of the Sanctuary is the mean high-water mark. Within these waters are spectacular, unique, and nationally significant marine environments, including seagrass meadows, mangrove islands, and extensive living coral reefs. These marine environments support rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical, research, educational, and aesthetic values that give this area special national significance. These environments are the marine equivalent of tropical rain forests in that they support high levels of biological diversity, are fragile and easily susceptible to damage from human activities, and possess high value to human beings if properly conserved.

The economy of the Keys is dependent upon a healthy ecosystem. Approximately four million tourists visit the Keys annually, participating primarily in water-related sports such as fishing, diving, boating, and other ecotourism activities. In 1991, the gross earnings of the Florida Keys and Monroe County totaled \$853 million, 36 percent of which came from services provided as part of the tourism industry. Another 18.7 percent of the gross earnings came from the retail trade, which is largely supported by tourists. In 1990, half of the Keys' population held jobs that directly or indirectly supported outdoor recreation. In addition, the commercial fishing industry accounted for \$17 million of the Keys' economy, more than 20 percent of Florida's total gross earnings from commercial fishing. All of these activities depend on a healthy marine environment with good water quality.

The purpose of the proposed Management Plan is to ensure the sustainable use of the Keys' marine environment by achieving a balance between comprehensive resource protection and multiple, compatible uses of those resources. Sanctuary resources are threatened by a variety of direct and indirect impacts. Direct impacts include boat groundings, propeller dredging of seagrasses, and diver impacts on coral. For example, over 30,000 acres of seagrasses have been impacted by boat propellers. Indirect impacts include marine discharge of wastes, land-based pollution, and external sources of water quality degradation. These and other management issues are addressed by the comprehensive Management Plan.

Volume I contains the final comprehensive Management Plan and includes the discussion of the Preferred Alternative and socioeconomic analysis as well as 10 action plans composed of management strategies developed with substantial input from the public, local experts, and the Sanctuary Advisory Council to address management issues. The action plans provide an organized process for implementing management strategies, including a description of the activities required, institutions involved, staffing requirements, and an estimate of the implementation cost. A list of the action plans in alphabetical order is as follows: 1) Channel/Reef Marking; 2) Education and Outreach; 3) Enforcement; 4) Mooring Buoy; 5) Regulatory; 6) Research and Monitoring; 7) Submerged Cultural Resources; 8) Volunteer; 9) Water Quality; and 10) Zoning. These action plans include several critical activities designed to manage and protect the natural and historic resources of the Sanctuary, including:

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- Establishing water-use zones providing focused protection for 60 to 70 percent of the well-developed reef formations, prohibiting consumptive activities in a small portion of the Sanctuary, buffering important wildlife habitat from human disturbance, and protecting several large reserves for species diversity replenishment, breeding areas, and genetic protection.
  - Establishing Sanctuary regulations to designate nonconsumptive zones, prohibit damage to natural resources, establish special-use permits, and restrict other activities that may negatively impact Sanctuary resources.
  - Expanding and coordinating the Enforcement Program to enforce the regulations, particularly in the zoned areas.
  - Implementing an Ecological Monitoring Plan to evaluate the effectiveness of the zoned areas and the health of the Sanctuary.
  - Expanding the Mooring Buoy Program to include the new zones and protect important coral reef and seagrass habitat.
  - Implementing a Channel and Reef Marking Program to protect seagrasses, coral reefs, and mangroves in shallow-water areas.
  - Implementing a Submerged Cultural Resources Plan to protect the numerous historically important shipwrecks and other submerged cultural resources.
  - Expanding the Education and Volunteer programs to reach more users and the millions of visitors coming to the Keys each year.

Volume II describes the process used to develop the draft management alternatives and includes environmental and socioeconomic impact analyses of the alternatives used in the draft management plan and environmental impact statement.

Volume III consists of the appendices, including the two acts that designate and implement the Sanctuary.

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### Note to Readers:

**Appendix I.** *Strategy Development Tracking Table* was not reproduced from the Draft Management Plan/EIS since it was developed to assist reviewers of the draft document reconcile the strategies developed in 1992 with the draft plan. Any changes to the strategies in the draft plan were achieved in response to public comment received over the 9 month comment period and deliberation by the extended review team.

In the interest of space, **Appendix J.** *Marine and Terrestrial Species and Algae* in the Draft Management Plan/EIS has also not been reprinted in this final document. The species list provided in Volume III of the draft EIS continues to be valid, except for the erroneous reference to the California Sea Lion, *Zalophus californianus*, as a species endemic to the Florida Keys. Additional copies of the species list are available upon request to:

Florida Keys National Marine Sanctuary  
P.O. Box 500368  
Marathon, FL 33050  
(305) 743-2437

# General Introduction

This is the third of three volumes describing the Final Management Plan/Environmental Impact Statement (EIS) for the Florida Keys National Marine Sanctuary. Volume I contains the selection of the Final Preferred Alternative, which is the Final Management Plan, including 10 detailed action plans. The Final Preferred Alternative explains the modifications to the Draft Preferred Alternative (III) based on public comments, the FKNMSPA, the NMSA and other considerations. Volume II describes the Management Plan/EIS development process, including the process for selecting the Draft Preferred Alternative that underwent a nine month public review. Volume III contains the appendices referenced in Volumes I and II. The Final Plan is based on the EIS analysis in Volumes I and III.

## Authority for Designation

National marine sanctuaries are routinely designated by the Secretary of Commerce through an administrative process established by the National Marine Sanctuaries Act (NMSA) of 1972, 16 U.S.C. 1431 et seq., as amended, including activation of candidate sites selected from the National Marine Sanctuary Program Site Evaluation List. Sanctuaries also have been designated by an Act of Congress. The Florida Keys National Marine Sanctuary was designated when the President signed the Florida Keys National Marine Sanctuary and Protection Act. Appendix A in Volume III contains a copy of this Act.

## Terms of Statutory Designation

Section 304(a)(4) of the NMSA requires that the terms of designation set forth the geographic area included within the Sanctuary; the characteristics of the area that give it conservation, recreational, ecological, historical, research, educational, or aesthetic value; and the types of activities that will be subject to regulation by the Secretary of Commerce to protect those characteristics. This section also specifies that the terms of designation may be modified only through the same procedures by which the original designation was made. Thus, the terms of designation serve as a charter for the Sanctuary.

## Mission and Goals of the National Marine Sanctuary Program

The purpose of a sanctuary is to protect resources and their conservation, recreational, ecological, historical, research, educational, or aesthetic values through comprehensive long-term management. National marine sanctuaries may be designated in coastal and ocean waters, the Great Lakes and their connecting waters, and submerged lands over which the United States exercises jurisdiction consistent with international law. They are built around distinctive natural and historical resources whose protection and beneficial use require comprehensive planning and management.

The National Oceanic and Atmospheric Administration (NOAA) administers the National Marine Sanctuary Program through the Sanctuaries and Reserves Division (SRD) of the Office of Ocean and Coastal Resource Management (OCRM).

In accordance with the NMSA, the mission of the National Marine Sanctuary Program is to identify, designate, and comprehensively manage marine areas of national significance. National marine sanctuaries are established for the public's long-term benefit, use, and enjoyment. To meet these objectives, the following National Marine Sanctuary Program goals have been established (15 CFR, Part 922.1(b)):

- Enhance resource protection through comprehensive and coordinated conservation and ecosystem management that complements existing regulatory authorities.
- Support, promote, and coordinate scientific research on, and monitoring of, the site-specific marine resources to improve management decisionmaking in national marine sanctuaries.
- Enhance public awareness, understanding, and the wise use of the marine environment through public interpretive, educational, and recreational programs.
- Facilitate, to the extent compatible with the primary objective of resource protection, multiple uses of national marine sanctuaries.

The Florida Keys National Marine Sanctuary is one of a system of national marine sanctuaries that has been established since the Program's inception in 1972. Sanctuaries are not new to the Florida Keys; there is a twenty year history of National Marine Sanctuaries in the Keys.

## Background

**Historical Perspective.** The lure of the Florida Keys has attracted explorers and visitors for centuries. The clear tropical waters, bountiful resources, and appealing natural environment were among the many fine qualities that attracted visitors to the Keys. However, warning signs that the Keys' environment and natural resources were fragile, and not infinite, came early. In 1957, a group of conservationists and scientists held a conference at the Everglades National Park and discussed the demise of the coral reef resources in the Keys at the hands of those attracted there because of their beauty and uniqueness. This conference resulted in action that created the world's first underwater park, the John Pennekamp Coral Reef State Park in 1960. However, in just a little over a decade following the establishment of the park, a public outcry was sounded that cited pollution, overharvest, physical impacts, overuse, and use conflicts as continuing to occur in the Keys. These concerns continued to be voiced by environmentalists and scientists alike throughout the decade of the 1970's and indeed, into the 1990's.

Other management efforts were instituted to protect the coral reefs of the Florida Keys. The Key Largo National Marine Sanctuary was established in 1975 to protect 103 square nautical miles of coral reef habitat stretching along the reef tract from north of Carysfort Lighthouse to south of Molasses Reef, offshore of the Upper Keys. In 1981, the 5.32 square nautical mile Looe Key National Marine Sanctuary was established to protect the very popular Looe Key Reef located off Big Pine Key in the Lower Keys. Throughout the 80's mounting threats to the health and ecological future of the coral reef ecosystem in the Florida Keys prompted Congress to take action to protect this fragile natural resource. The threat of oil drilling in the mid-to-late 1980's off the Florida Keys, combined with reports of deteriorating water quality throughout the region, occurred at the same time scientists were assessing the adverse affects of coral bleaching, the die-off of the long-spined urchin, loss of living coral cover on reefs, a major seagrass die-off, declines in reef fish populations, and the spread of coral diseases. With the reauthorization of

the National Marine Sanctuary Program in 1988, Congress directed the Sanctuary Program to conduct a feasibility study of possible expansion of Sanctuary sites in the Keys. Those study sites were in the vicinity of Alligator Reef, Sombrero Key, and westward from American Shoals. This endorsement for expansion of the Sanctuary program in the Keys was a Congressional signal that the health of the resources of the Florida Keys was of National concern. The feasibility study was overtaken by several natural events and ship groundings that precipitated the designation of the Florida Keys National Marine Sanctuary.

Three large ships ran aground on the coral reef tract within a brief 18 day period in the fall of 1989. Coincidental as it may seem, it was this final physical insult to the reef that prompted Congress to take action to protect the coral reef ecosystem of the Florida Keys. Although most remember the ship groundings as having triggered Congressional action, it was in fact the cumulative events of environmental degradation, in conjunction with the physical impacts that prompted Congressman Dante Fascell to introduce a bill into the House of Representatives in November of 1989. Congressman Fascell had long been an environmental supporter of South Florida and his action was very timely. The bill was sponsored in the Senate by Senator Bob Graham, also known for his support of environmental issues both in Washington, and as a Florida Governor. It was passed by Congress through bi-partisan support and signed. On November 16, 1990, President George Bush signed into law the Florida Keys National Marine Sanctuary and Protection Act (FKNMSPA) (Appendix A in Volume III).

**Florida Keys Environmental Setting.** The Florida Keys National Marine Sanctuary extends approximately 220 miles southwest from the southern tip of the Florida peninsula. Located adjacent to the Keys' land mass are spectacular, unique, and nationally significant marine environments, including seagrass meadows, mangrove islands, and extensive living coral reefs. These support rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical, research, educational, and aesthetic values that give this area special national significance. They are the marine equivalent of tropical rain forests, in that they support high levels of biological diversity, are fragile and easily susceptible to damage from human activities, and possess high value to humans if properly conserved.

The marine environment of the Florida Keys supports over 6,000 species of plants, fishes, and invertebrates, including the Nation's only coral reef that lies adjacent to the continent, and one of the largest seagrass communities in this hemisphere. Attracted by this natural diversity and tropical climate, approximately four million tourists visit the Keys annually, where they participate primarily in water-related sports such as fishing, diving, boating, and other activities.

**Sanctuary Boundary.** The Act designated 2,800 square nautical miles of coastal waters off the Florida Keys as the Florida Keys National Marine Sanctuary. The Sanctuary boundary extends southward on the Atlantic Ocean side of the Keys from the north easternmost point of the Biscayne National Park along the approximate 300-foot isobath for over 200 nautical miles to the Dry Tortugas. From there it turns north and east, encompassing a large portion of the Gulf of Mexico and Florida Bay, where it adjoins the Everglades National Park. The landward boundary is the mean high water mark. The Key Largo and Looe Key National Marine Sanctuaries, the State Parks and Aquatic Preserves, and the Florida Keys Refuges of the U.S. Fish and Wildlife Service are overlapped by the Sanctuary; whereas the Everglades National Park, Biscayne National Park, and Dry Tortugas National Park are excluded from the boundary of the Sanctuary.

**Threats to the Environment.** The deterioration of the marine environment in the Keys is no longer a matter of debate. There is a decline of healthy corals, an invasion by algae into seagrass beds and reefs, a decline in certain fisheries, an increase of coral diseases and coral bleaching. In Florida Bay, reduced freshwater flow has resulted in an increase in plankton blooms, sponge and seagrass die-offs, and fish kills.

Over four million people visit the Keys annually, 70% of whom visit the Sanctuary. Over 80,000 people reside in the Keys full time. Since 1965, the number of registered private recreational vessels has increased over six times. There are significant direct and indirect effects from the high levels of use of Sanctuary resources resulting from residents and tourists. The damage done by people hinders the ability of marine life to recover from naturally occurring stresses. Human impacts can be separated into direct and indirect impacts.

**Direct human impacts.** The most visible and familiar physical damage results from the carelessness or, on

occasion, the recklessness of ship captains, boaters, divers, fishermen, snorkelers and beachgoers. Over 30,000 acres of seagrasses have been damaged by boat propellers. Direct impacts to resources also result from careless divers and snorkelers standing on coral, improperly placed anchors, and destructive fishing methods. In the period between 1993 and 1994, approximately 500 vessels were reported aground in the Sanctuary. These groundings have a cumulative effect on the resources. Over 19 acres of coral reef habitat has been damaged or destroyed by large ship groundings.

**Indirect human impacts.** The overnutrification of nearshore waters is a documented problem in the Sanctuary. A major source of excess nutrients is sewage-25,000 septic tanks, 7,000 cesspools, 700 shallow injection wells, and 139 marinas harboring over 15,000 boats. These nutrients are carried through the region by more than 700 canals and channels. Removing nitrogen and phosphorous from wastewater requires a technology that, at present, is lacking from sewage treatment facilities in the Keys.

## Management Plan Requirements

The FKNMSPA directs the Secretary of Commerce to develop a comprehensive management plan and implement regulations to protect Sanctuary resources. The Act requires that the plan:

- facilitate all public and private uses of the Sanctuary consistent with the primary objective of resource protection;
- consider temporal and geographic zoning to ensure protection of Sanctuary resources;
- incorporate the regulations necessary to enforce the comprehensive water quality protection program developed under Section 8 of the FKNMSPA;
- identify needs for research, and establish a long-term ecological monitoring program;
- identify alternative sources of funding needed to fully implement the Plan's provisions and supplement appropriations authorized under Section 10 (16 U.S.C., §1444) of the FKNMSPA and Section 313 of the NMSA;
- ensure coordination and cooperation between Sanctuary managers and other Federal, State,

and local authorities with jurisdiction within or adjacent to the Sanctuary;

- promote education among users of the Sanctuary about coral reef conservation and navigational safety; and
- incorporate the existing Looe Key and Key Largo national marine sanctuaries into the Florida Keys National Marine Sanctuary.

All of these requirements have been addressed in the Management Plan.

In addition to the above statutory objectives, the Sanctuary Advisory Council, early on in the planning process in 1992, developed a set of goals and objectives for the Sanctuary that NOAA later adopted. The goal is:

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

The objectives include:

- Encouraging all agencies and institutions to adopt an ecosystem and cooperative approach to accomplish the following objectives, including the provision of mechanisms to address impacts affecting Sanctuary resources but originating outside the boundaries of the Sanctuary;
- Providing a management system which is in harmony with an environment whose long-term ecological, economic, and sociological principles are understood, and which will allow appropriate sustainable uses;
- Managing the Florida Keys National Marine Sanctuary for the natural diversity of healthy species, populations, and communities;
- Reaching every single user and visitor to the FKNMS with information appropriate to their activities; and
- Recognizing the importance of cultural and historical resources, and managing these resources for reasonable, appropriate use and enjoyment.

NOAA incorporated the Sanctuary Advisory Council's objectives into the Final Comprehensive Management Plan, and some progress has already been made toward accomplishing these objectives. For example, steps have been taken to meet the first objective of ecosystem management. Sanctuary Staff have been involved in the efforts of the South Florida Ecosystem Restoration Task Force and the Governor's Commission for a Sustainable South Florida. These two efforts have focused on the restoration of the South Florida ecosystem, of which the Sanctuary is the downstream component. These combined efforts recognize the importance of protecting and preserving the natural environment for the sustainable use of future generations. The natural and built environments have to be managed in harmony to sustain the healthy environment upon which the South Florida economy is dependent.

### Overview of the Planning Process

The size of the Sanctuary and the diversity of its users required that NOAA adopt a holistic, ecosystem-based management approach to address the problems facing the Sanctuary. This meant using a problem-driven focus, relying on partnerships, and building consensus around the identification of issues and their short- and long-term solutions.

**A Comprehensive Approach.** The FKNMSPA requires NOAA to develop a comprehensive management plan. To meet this mandate, NOAA has addressed many problems and issues, such as water quality and land use, that are outside the "traditional" scope of Sanctuary management. The process involved unprecedented participation by the general public, user groups, and Federal, State, and local governments.

Because of the size of the Sanctuary and the variety of resources it contains, many problems never before encountered by Sanctuary management had to be addressed. For example, significant declines in water quality and habitat conditions in Florida Bay are threatening the health of Sanctuary resources. These conditions are thought to be the result of water quality and quantity management in the South Florida region. Such problems must be addressed by management to ensure adequate protection of Sanctuary resources. There is a need, therefore, to explicitly include the agencies with responsibilities in these areas in an ecosystem management approach.

**Knowledge-based Consensus Building.** A series of workshops followed a set of public scoping meetings, and laid the foundation for building this Plan. At these work sessions, NOAA used a systematic process for obtaining relevant information from experts with knowledge of Sanctuary problems.

NOAA recognized that a useful management plan could not be developed and implemented without forging working teams to help provide the vision and knowledge necessary to accomplish the goals set forth in the FKNMSPA. Four teams were formed to ensure that input was provided by major Federal, State, and local interests in the Sanctuary, and to see that a plan was produced that met the goals and objectives set forth by the FKNMSPA and NOAA. There was considerable interaction, and some overlap in membership and function, among these teams.

- In July 1991, the Interagency Core Group, composed of Federal, State, and local agencies with direct jurisdictional responsibility in the Sanctuary, was formed to develop policies, and direct and oversee the management plan development process (Appendix B in Volume III lists the members of this Core Group).
- Sanctuary Planners held a series of workshops, from July 1991 through January 1992, which focused on a range of topics. The workshop topics included mooring buoys, education, photobathymetry, research, submerged cultural resources, and zoning.
- A Strategy Identification Work Group, composed of 49 local scientists and management experts, generated the initial set of strategies and details on implementation requirements.
- The Sanctuary Advisory Council (SAC) was established by the FKNMSPA to ensure public input into the Plan, and to advise and assist NOAA in its development and implementation. The SAC first met in February 1992 and conducted over 30 meetings that were open to the public (Appendix B in Volume III contains a list of SAC members). The SAC became an integral part of the Sanctuary planning process by serving as a direct link to the Keys' user communities, such as the dive industry, environmental groups, and commercial and recreational fishermen. In addition, the SAC has been instrumental in helping NOAA to formulate policy, particularly with regard to:

1) the marine zoning plan, 2) activities needing regulation, and 3) recommending a preferred alternative for the Management Plan.

- A NOAA team composed of the Sanctuaries and Reserves Division, the Strategic Environmental Assessments Division, and the Office of the Assistant General Counsel for Ocean Services was responsible for developing and implementing the process to produce the Draft Plan. The Sanctuaries and Reserves Division is responsible for coordinating the review and producing the Final Management Plan and Environmental Impact Statement.

**Focus on Management and Action.** From the beginning of the Plan development process, it has been recognized that management is a continuous activity that must involve those responsible for implementing actions. The process has made maximum use of existing knowledge and experience to identify, characterize, and assess alternative management actions. Much of the planning process was devoted to identifying short- and long-term management actions or strategies, including their operational requirements. These management actions can be found in the detailed action plans contained in this volume. These plans address management issues ranging from channel marking, to volunteer programs, to regulations. They provide details on institutional needs, personnel, time requirements, and implementation costs. These details are necessary for the decisions that will have to be made upon Plan implementation by the managers in the region.

**Toward Integrated, Continuous Management.** A central purpose of the Management Plan is to take the disparate threads of protection and regulation that currently apply to the Florida Keys' ecosystem and weave them into a fabric of integrated coastal management (ICM). ICM is not a new idea or concept; what is new is the notion of applying it in a comprehensive and continuous manner. ICM is a process that begins with direct participation of managers, planners, analysts, scientists, and a concerned public. Developing an integrated management approach does not take place quickly; it evolves over time, based on incremental gains that build upon one another.

A major component of the Management Plan is the consideration of water quality issues and problems. The FKNMSPA called upon the U.S. Environmental Protection Agency and the State of Florida to develop

a comprehensive water quality protection program for the Sanctuary. NOAA has incorporated this protection program into the Management Plan as the Water Quality Action Plan found in this volume.

## Overview of the Public Review Process

The Draft Management Plan and Environmental Impact Statement for the Florida Keys National Marine Sanctuary was released to the public at a Sanctuary Advisory Council meeting on April 4, 1995. This initiated a nine month public review of the draft plan that ended December 31, 1995. During this review period Sanctuary staff facilitated the public's review of the plan in a variety of ways that were designed to maximize the public's full understanding of the components and contents of the draft plan.

The nine month public review process included the following opportunities:

- *Sanctuary Advisory Council Preview.* On April 4, the draft plan was released in a public meeting. At this meeting, each of the authors of the Action Plans contained in the Preferred Alternative (Volume I) gave a verbal summary of the contents of the Action Plans. This day-long, detailed preview, initiated the public's review of the draft plan and served to introduce and familiarize the public with the plan.
- *Info-Expos.* The Sanctuary staff held two series of three-day-long Info-Expos in April and May of 1995 and October 1995. The Info-Expos were held in the Upper, Middle, and Lower Keys. They were set up like a trade show and individual tables served as information booths manned by Sanctuary staff, Sanctuary Advisory Council members, Core Group members, and a Spanish interpreter. The Info-Expo staff passed out materials and answered the public's questions about the draft plan. Each of the booths represented a specific theme such as water quality, fishing, boating, zoning, etc. Additionally, staff distributed copies of the draft plan to the public if they had not received one by mail.
- *Working Groups.* In June 1995, the Sanctuary Advisory Council established 10 Working Groups, one for each action plan, to assist in the public review of the draft plan. The SAC appointed a Chairperson for each of the Working Groups and other SAC members were

encouraged to sign up to participate in the Working Groups that they were interested in monitoring.

In August 1995, the Sanctuary Staff gave the Working Groups a briefing outlining the purpose, objectives, and ground rules for the Working Group's public review of the draft plan. The purpose of the Working Groups was to broaden the public's review of the draft plan in order to get the best and most comprehensive review possible. An objective of the process was to help the SAC formulate their comments on the draft plan. The ground rules were: that membership on the Working Groups was open and the public was encouraged to sign up and participate; no voting (strive for consensus, but record both sides when split); all suggestions were to be recorded; the Working Group meetings were to be held in different parts of the Keys; and Sanctuary staff were to serve in a support role.

Each of the Working Groups held multiple meetings in various parts of the Keys. The public was given enormous opportunity to provide their input on the draft plan.

- *Public Hearings.* There were six public hearings held on the draft plan. The hearings were held in Miami, Key Largo, Marathon, Key West, St. Petersburg, and Silver Spring, Maryland. The Sanctuary Advisory Council was encouraged to attend as many of the meetings as possible in order to help the SAC further develop their comments on the draft plan. This made it possible for the SAC to take full advantage of the public's comments in their deliberations on the draft plan in November and December.

As a result of the public review process, NOAA received over 6,400 statements of public comment on the draft management plan and environmental impact statement. Clearly, the use of the Sanctuary Advisory Council Working Groups assisted the advisory council in the development of their comments on the draft plan. As a result of their review process, the input at public hearings, and written public comments, NOAA has been able to develop a Final Management Plan that reflects a broad range of public comments.

## The Environmental Impact Statement Process

The National Environmental Policy Act of 1969 (NEPA) requires any Federal agency proposing a major action that significantly affects the quality of the human environment to develop an environmental impact statement that describes both the positive and negative impacts that may result from implementation. Accordingly, an EIS has been drafted to accompany the Management Plan, and both have gone through a public review and comment process prior to adoption in this Final Plan. The Draft EIS evaluated a range of reasonable alternative approaches to Sanctuary management. These alternatives are presented in Volume II to facilitate analysis of their effects. The Preferred Alternative for Sanctuary management is presented based on NOAA's analysis of its impacts and the public comments.

## Contents of Volume III

This volume contains appendices referred to in Volume I and II. They are organized alphabetically, and the pages within each appendix are listed numerically.

- Appendix A includes the full texts of both the National Marine Sanctuary Act and the Florida Keys National Marine Sanctuary and Protection Act.
- Appendix B lists the members of the Inter-agency Core Group, Sanctuary Advisory Council, and Strategy Working Group.
- Appendix C lists the existing legislative authorities within the Keys.
- Appendix D provides additional information about Federal fishery management.
- Appendix E gives a sample strategy description sheet.
- Appendix F gives a sample strategy characterization sheet.
- Appendix G lists the strategies in each of the mid-range management alternatives.
- Appendix H lists the strategies in the Preferred Alternative.
- Appendix I provides a list of submerged cultural resources - known sites and losses.
- Appendix J is a draft compact and agreement package.
- Appendix K is the revised Sanctuary Designation Document, which details the effect of designation, describes the Sanctuary area, outlines the scope of applicable Sanctuary regulations, and specifically defines the Sanctuary's boundaries.
- Appendix L is a summary of the comments received on the Draft Management Plan/EIS and NOAA's responses.
- Appendix M is the assessment of the potential costs and benefits of the Final Management Plan regulations pursuant to Executive Order 12866.

## The National Marine Sanctuaries Act

### The National Marine Sanctuaries Act, as amended

#### Sec. 301. FINDINGS, PURPOSES, AND POLICIES.

(a) Findings.—The Congress finds that—

(1) this nation historically has recognized the importance of protecting special areas of its public domain, but these efforts have been directed almost exclusively to land areas above the high-water mark;

(2) certain areas of the marine environment possess conservation, recreational, ecological, historical, research, educational, or esthetic qualities which give them special national and, in some instances, international significance;

(3) while the need to control the effects of particular activities has led to enactment of resource-specific legislation, these laws cannot in all cases provide a coordinated and comprehensive approach to the conservation and management of special areas of the marine environment;

(4) a Federal program which identifies special areas of the marine environment will contribute positively to marine resources conservation, research, and management;

(5) such a Federal program will also serve to enhance public awareness, understanding, appreciation, and wise use of the marine environment; and

(6) protection of these special areas can contribute to maintaining a natural assemblage of living resources for future generations.

(b) Purposes and Policies.—The purposes and policies of this title are—

(1) to identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance;

(2) to provide authority for comprehensive and coordinated conservation and management of these marine areas, and activities affecting them, in a manner which complements existing regulatory authorities;

(3) to support, promote, and coordinate scientific research on, and monitoring of, the resources of these marine areas, especially long-term monitoring and research of these areas;

(4) to enhance public awareness, understanding, appreciation, and wise use of the marine environment;

(5) to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;

(6) to develop and implement coordinated plans for the protection and management of these areas with appropriate Federal agencies, State and local governments, Native American tribes and organizations, international organizations, and other public and private interests concerned with the continuing health and resilience of these marine areas;

(7) to create models of, and incentives for, ways to conserve and manage these areas;

(8) to cooperate with global programs encouraging conservation of marine resources; and

(9) to maintain, restore, and enhance living resources by providing places for species that depend upon these marine areas to survive and propagate.

#### Sec. 302. Definitions.

As used in this title, the term—

(1) “draft management plan” means the plan described in section 304(a)(1) (C)(v);

(2) “Magnuson Act” means the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.);

(3) “marine environment” means those areas of coastal and ocean waters, the Great Lakes and their connecting waters, and submerged lands over which the United States exercises jurisdiction, including the exclusive economic zone, consistent with international law;

(4) “Secretary” means the Secretary of Commerce;

(5) “State” means each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, American Samoa, the Virgin Islands, Guam, and any other commonwealth, territory, or possession of the United States;

(6) “damages” includes—

(A) compensation for—

(i)(I) the cost of replacing, restoring, or acquiring the equivalent of a Sanctuary resource; and

(II) the value of the lost use of a sanctuary resource pending its restora-

tion or replacement or the acquisition of an equivalent sanctuary resource; or

(ii) the value of a sanctuary resource if the sanctuary resource cannot be restored or replaced or if the equivalent of such resource cannot be acquired;

(B) the cost of damage assessments under section 312(b)(2); and

(C) the reasonable cost of monitoring appropriate to the injured, restored, or replaced resources;

(7) "response costs" means the costs of actions taken or authorized by the Secretary to minimize destruction or loss of, or injury to, sanctuary resources, or to minimize the imminent risks of such destruction, loss, or injury;

(8) "sanctuary resource" means any living or nonliving resource of a national marine sanctuary that contributes to the conservation, recreational, ecological, historical, research, educational, or aesthetic value of the sanctuary; and

(9) "exclusive economic zone" means the exclusive economic zone as defined in the Magnuson Fishery and Conservation Act.

### Sec. 303. Sanctuary Designation Standards

(a) Standards.—The Secretary may designate any discrete area of the marine environment as a national marine sanctuary and promulgate regulations implementing the designation if the Secretary—

(1) determines that the designation will fulfill the purposes and policies of this title; and

(2) finds that—

(A) the area is of special national significance due to its resource or human-use values;

(B) existing State and Federal authorities are inadequate or should be supplemented to ensure coordinated and comprehensive conservation and management of the area, including resource protection, scientific research, and public education;

(C) designation of the area as a national marine sanctuary will facilitate the objectives in subparagraph (B); and

(D) the area is of a size and nature that will permit comprehensive and coordinated conservation and management.

(b) Factors and Consultations Required in Making Determinations and Findings.—

(1) Factors.—For purposes of determining if an area of the marine environment meets the standards set forth in subsection (a), the Secretary shall consider—

(A) the area's natural resource and ecological qualities, including its contribution to biological productivity, maintenance of ecosystem structure, maintenance of ecologically or commercially important or threatened species or species assemblages, maintenance of critical habitat of endangered species, and the biogeographic representation of the site;

(B) the area's historical, cultural, archaeological, or paleontological significance;

(C) the present and potential uses of the area that depend on maintenance of the area's resources, including commercial and recreational fishing, subsistence uses, other commercial and recreational activities, and research and education;

(D) the present and potential activities that may adversely affect the factors identified in subparagraphs (A), (B), (C);

(E) the existing State and Federal regulatory and management authorities applicable to the area and the adequacy of those authorities to fulfill the purposes and policies of this title;

(F) the manageability of the area, including such factors as its size, its ability to be identified as a discrete ecological unit with definable boundaries, its accessibility, and its suitability for monitoring and enforcement activities;

(G) the public benefits to be derived from sanctuary status, with emphasis on the benefits of long-term protection of nationally significant resources, vital habitats, and resources which generate tourism;

(H) the negative impacts produced by management restrictions on income-generating activities such as living and nonliving resources development; and

(I) the socioeconomic effects of sanctuary designation.

(2) Consultation.—In making determinations and findings, the Secretary shall consult with—

(A) the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate;

(B) the Secretaries of State, Defense, Transportation, and the Interior, the Administrator, and the heads of other interested Federal agencies;

(C) the responsible officials or relevant agency heads of the appropriate State and local

government entities, including coastal zone management agencies, that will, or are likely to be, affected by the establishment of the area as a national marine sanctuary;

(D) the appropriate officials of any Regional Fishery Management Council established by section 302 of the Magnuson Act (16 U.S.C. 1852) that may be affected by the proposed designation; and

(E) other interested persons.

(3) Resource Assessment Report.—In making determinations and findings, the Secretary shall draft, as part of the environmental impact statement referred to in section 304(a)(2), a resource assessment report documenting present and potential uses of the area, including commercial and recreational fishing, research and education, minerals and energy development, subsistence uses, and other commercial, governmental, or recreational uses. The Secretary, in consultation with the Secretary of the Interior, shall draft a resource assessment section for the report regarding any commercial, governmental or recreational resource uses in the area under consideration that are subject to the primary jurisdiction of the Department of the Interior. The Secretary, in consultation with the Secretary of Defense, the Secretary of Energy, and the Administrator, shall draft a resource assessment section for the report including information on any past, present, or proposed future disposal or discharge of materials in the vicinity of the proposed sanctuary. Public disclosure by the Secretary of such information shall be consistent with national security regulations.

### Sec. 304. Procedures for Designation and Implementation.

(a) Sanctuary Proposal.—

(1) Notice.—In proposing to designate a national marine sanctuary, the Secretary shall—

(A) issue, in the Federal Register, a notice of the proposal, proposed regulations that may be necessary and reasonable to implement the proposal, and a summary of the draft management plan;

(B) provide notice of the proposal in newspapers of general circulation or electronic media in the communities that may be affected by the proposal; and

(C) on the same day the notice required by subparagraph (A) is issued, the Secretary shall submit to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate documents including an executive summary consisting of—

(i) the terms of the proposed designation;

(ii) the basis of the findings made under section 303(a) with respect to the area;

(iii) an assessment of the considerations under section 303(b)(1);

(iv) proposed mechanisms to coordinate existing regulatory and management authorities within the area;

(v) the draft management plan detailing the proposed goals and objectives, management responsibilities, resource studies, interpretive and educational programs, and enforcement, including surveillance activities for the area;

(vi) an estimate of the annual cost of the proposed designation, including costs of personnel, equipment and facilities, enforcement, research, and public education;

(vii) the draft environmental impact statement;

(viii) an evaluation of the advantages of cooperative State and Federal management if all or part of a proposed marine sanctuary is within the territorial limits of any state or is superjacent to the subsoil and seabed within the seaward boundary of a State, as that boundary is established under the Submerged Lands Act (43 U.S.C. 1301 et seq.); and

(ix) the proposed regulations referred to in subparagraph (A).

(2) Environmental Impact Statement.—The Secretary shall—

(A) prepare a draft environmental impact statement, as provided by the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), on the proposal that includes the resource assessment report required under section 303(b)(3), maps depicting the boundaries of the proposed designated area, and the existing and potential uses and resources of the area; and

(B) make copies of the draft environmental impact statement available to the public.

(3) Public Hearing.—No sooner than thirty days after issuing a notice under this subsection, the Secretary shall hold at least one public hearing in the coastal area or areas that will be most affected by the proposed designation of the area as a national marine sanctuary for the purpose of receiving the views of interested parties.

(4) Terms of Designation.—The terms of designation of a sanctuary shall include the geographic area proposed to be included within the sanctuary, the characteristics of the area that give it conserva-

tion, recreational, ecological, historical, research, educational, or esthetic value, and the types of activities that will be subject to regulation by the Secretary to protect those characteristics. The terms of designation may be modified only by the same procedures by which the original designation is made.

(5) Fishing Regulations.—The Secretary shall provide the appropriate Regional Fishery Management Council with the opportunity to prepare draft regulations for fishing within the exclusive economic zone as the Council may deem necessary to implement the proposed designation. Draft regulations prepared by the Council, or a Council determination that regulations are not necessary pursuant to this paragraph, shall be accepted and issued as proposed regulations by the Secretary unless the Secretary finds that the Council's action fails to fulfill the purposes and policies of this title and the goals and objectives of the proposed designation. In preparing the draft regulations, a Regional Fishery Management Council shall use as guidance the national standards of section 301(a) of the Magnuson Act (16 U.S.C. 1851) to the extent that the standards are consistent and compatible with the goals and objectives of the proposed designation. The Secretary shall prepare the fishing regulations, if the Council declines to make a determination with respect to the need for regulations, makes a determination which is rejected by the Secretary, or fails to prepare the draft regulations in a timely manner. Any amendments to the fishing regulations shall be drafted, approved, and issued in the same manner as the original regulations. The Secretary shall also cooperate with other appropriate fishery management authorities with rights or responsibilities within a proposed sanctuary at the earliest practicable stage in drafting any sanctuary fishing regulations.

(6) Committee Action.—After receiving the documents under subsection (a)(1)(C), the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate may each hold hearings on the proposed designation and on the matters set forth in the documents. If within the forty-five day period of continuous session of Congress beginning on the date of submission of the documents either Committee issues a report concerning matters addressed in the documents, the Secretary shall consider this report before publishing a notice to designate the national marine sanctuary.

(b) Taking Effect of Designations.—

(1) Notice.—In designating a national marine sanctuary, the Secretary shall publish in the Federal Register notice of the designation together with

final regulations to implement the designation and any other matters required by law, and submit such notice to the Congress. The Secretary shall advise the public of the availability of the final management plan and the final environmental impact statement with respect to such sanctuary. The Secretary shall issue a notice of designation with respect to a proposed national marine sanctuary site not later than 30 months after the date a notice declaring the site to be an active candidate for sanctuary designation is published in the Federal Register under regulations issued under this Act, or shall publish not later than such date in the Federal Register findings regarding why such notice has not been published. No notice of designation may occur until the expiration of the period for Committee action under subsection (a)(6). The designation (and any of its terms not disapproved under this subsection) and regulations shall take effect and become final after the close of a review period of forty-five days of continuous session of Congress beginning on the day on which such notice is published, unless in the case of a natural marine sanctuary that is located partially or entirely within the seaward boundary of any State, the Governor affected certifies to the Secretary that the designation or any of its terms is unacceptable, in which case the designation or the unacceptable term shall not take effect in the area of the sanctuary lying within the seaward boundary of the State.

(2) Withdrawal of Designation.— If the Secretary considers that actions taken under paragraph (1) will affect the designation of a national marine sanctuary in a manner that the goals and objectives of the sanctuary cannot be fulfilled, the Secretary may withdraw the entire designation. If the Secretary does not withdraw the designation, only those terms of the designation or not certified under paragraph (1) shall take effect.

(3) Procedures.—

(A) In computing the forty-five-day periods of continuous session of Congress pursuant to subsection (a)(6) and paragraph (1) of this subsection—

(i) continuity of session is broken only by an adjournment of Congress sine die; and

(ii) the days on which either House of Congress is not in session because of an adjournment of more than three days to a day certain are excluded.

(B) When the committee to which a joint resolution has been referred has reported such a resolution, it shall at any time thereafter be in order to move to proceed to the consideration of the resolution. The motion shall be privileged

and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

(C) This subsection is enacted by Congress as an exercise of the rulemaking power of each House of Congress, respectively, and as such is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in the case of resolutions described in this subsection. This subsection supersedes other rules only to the extent that they are inconsistent therewith, and is enacted with full recognition of the constitutional right of either House to change the rules (so far as those relate to the procedure of that House) at any time, in the same manner, and to the same extent as in the case of any other rule of such House.

(c) Access and Valid Rights.—

(1) Nothing in this title shall be construed as terminating or granting to the Secretary the right to terminate any valid lease, permit, license, or right of subsistence use or of access that is in existence on the date of designation of any national marine sanctuary.

(2) The exercise of a lease, permit, license, or right is subject to regulation by the Secretary consistent with the purposes for which the sanctuary is designated.

(d) INTERAGENCY COOPERATION.—

(1) REVIEW OF AGENCY ACTIONS.—

(A) IN GENERAL.—Federal agency actions internal or external to a national marine sanctuary, including private activities authorized by licenses, leases, or permits, that are likely to destroy, cause the loss of, or injure any sanctuary resource are subject to consultation with the Secretary.

(B) AGENCY STATEMENTS REQUIRED.—Subject to any regulations the Secretary may establish, each Federal agency proposing an action described in subparagraph (A) shall provide the Secretary with a written statement describing the action and its potential effects on sanctuary resources at the earliest practicable time, but in no case later than 45 days before the final approval of the action unless such Federal agency and the Secretary agree to a different schedule.

(2) SECRETARY'S RECOMMENDED ALTERNATIVES.—If the Secretary finds that a Federal agency action is likely to destroy, cause the loss of, or injure a sanctuary resource, the Secretary shall (within 45 days of receipt of

complete information on the proposed agency action) recommend reasonable and prudent alternatives, which may include conduct of the action elsewhere, which can be taken by the Federal agency in implementing the agency action that will protect sanctuary resources.

(3) RESPONSE TO RECOMMENDATIONS.—The agency head who receives the Secretary's recommended alternatives under paragraph (2) shall promptly consult with the Secretary on the alternatives. If the agency head decides not to follow the alternatives, the agency head shall provide the Secretary with a written statement explaining the reasons for that decision.

(e) REVIEW OF MANAGEMENT PLANS.—Not more than five years after the date of designation of any national marine sanctuary, and thereafter at intervals not exceeding five years, the Secretary shall evaluate the substantive progress toward implementing the management plan and goals for the sanctuary, especially the effectiveness of site-specific management techniques, and shall revise the management plan and regulations as necessary to fulfill the purposes and policies of this title.

### Sec. 305. Application of Regulations and International Negotiations.

(a) Regulations.—This title and the regulations issued under section 304 shall be applied in accordance with generally recognized principles of international law, and in accordance with the treaties, conventions, and other agreements to which the United States is a party. No regulation shall apply to or be enforced against a person who is not a citizen, national, or resident alien of the United States, unless in accordance with—

(1) generally recognized principles of international law;

(2) an agreement between the United States and the foreign state of which the person is a citizen; or

(3) an agreement between the United States and the flag state of a foreign vessel, if the person is a crewmember of the vessel.

(b) Negotiations.—The Secretary of State, in consultation with the Secretary, shall take appropriate action to enter into negotiations with other governments to make necessary arrangements for the protection of any national marine sanctuary and to promote the purposes for which the sanctuary is established.

(c) INTERNATIONAL COOPERATION.—The Secretary, in consultation with the Secretary of State and other appropriate Federal agencies, shall cooper-

ate with other governments and international organizations in the furtherance of the purposes and policies of this title and consistent with applicable regional and multilateral arrangements for the protection and management of special marine areas.

**Sec. 306. Prohibited Activities.**

It is unlawful to—

- (1) destroy, cause the loss of, or injure any sanctuary resource managed under law or regulations for that sanctuary;
- (2) possess, sell, deliver, carry, transport, or ship by any means any sanctuary resource taken in violation of this section;
- (3) interfere with the enforcement of this title; or
- (4) violate any provision of this title or any regulation or permit issued pursuant to this title.

**Sec. 307. Enforcement.**

(a) In General.—The Secretary shall conduct such enforcement activities as are necessary and reasonable to carry out this title.

(b) Powers of Authorized Officers.—Any person who is authorized to enforce this title may—

- (1) board, search, inspect, and seize any vessel suspected of being used to violate this title or any regulation or permit issued under this title and any equipment, stores, and cargo of such vessel;
- (2) seize, wherever found, any sanctuary resource taken or retained in violation of this title or any regulation or permit issued under this title;
- (3) seize any evidence of a violation of this title or of any regulation or permit issued under this title;
- (4) execute any warrant or other process issued by any court of competent jurisdiction; and
- (5) exercise any other lawful authority.

(c) Civil Penalties.—

(1) Civil penalty.—Any person subject to the jurisdiction of the United States who violates this title or any regulation or permit issued under this title shall be liable to the United States for a civil penalty of not more than \$100,000 for each such violation, to be assessed by the Secretary. Each day of a continuing violation shall constitute a separate violation.

(2) Notice.—No penalty shall be assessed under this subsection until after the person charged has been given notice and an opportunity for a hearing.

(3) In Rem Jurisdiction.—A vessel used

in violating this title or any regulation or permit issued under this title shall be liable in rem for any civil penalty assessed for such violation. Such penalty shall constitute a maritime lien on the vessel and may be recovered in an action in rem in the district court of the United States having jurisdiction over the vessel.

(4) Review of Civil Penalty.—Any person against whom a civil penalty is assessed under this subsection may obtain review in the United States district court for the appropriate district by filing a complaint in such court not later than 30 days after the date of such order.

(5) Collection of Penalties.—If any person fails to pay an assessment of a civil penalty under this section after it has become a final and unappealable order, or after the appropriate court has entered final judgment in favor of the Secretary, the Secretary shall refer the matter to the Attorney General, who shall recover the amount assessed in any appropriate district court of the United States. In such action, the validity and appropriateness of the final order imposing the civil penalty shall not be subject to review.

(6) Compromise or Other Action by Secretary.—The Secretary may compromise, modify, or remit, with or without conditions, any civil penalty which is, or may be, imposed under this section.

(d) Forfeiture.—

(1) In General.—Any vessel (including the vessel's equipment, stores, and cargo) and other item used, and any sanctuary resource taken or retained, in any manner, in connection with, or as a result of, any violation of this title or of any regulation or permit issued under this title shall be subject to forfeiture to the United States pursuant to a civil proceeding under this subsection. The proceeds from forfeiture actions under this subsection shall constitute a separate recovery in addition to any amounts recovered as civil penalties under this section or as civil damages under section 312. None of those proceeds shall be subject to set-off.

(2) Application of the Customs Laws.—The Secretary may exercise the authority of any United States official granted by any relevant customs law relating to the seizure, forfeiture, condemnation, disposition, remission, and mitigation of property in enforcing this title.

(3) Disposal of Sanctuary Resources.— Any sanctuary resource seized pursuant to this title may be disposed of pursuant to an order of the appropriate court or, if perishable, in a manner prescribed by regulations promulgated by the Secretary. Any proceeds from the sale of such sanctuary resource shall for all purposes represent the sanctuary resource so disposed of in any subsequent legal proceedings.

(4) Presumption.—For the purposes of this section there is a rebuttable presumption that all sanctuary resources found onboard a vessel that is used or seized in connection with a violation of this title or of any regulation or permit issued under this title were taken or retained in violation of this title or of a regulation or permit issued under this title.

(e) Payment of Storage, Care, and Other Costs.—

(1) EXPENDITURES.—

(A) Notwithstanding any other law, amounts received by the United States as civil penalties, forfeitures of property, and costs imposed under paragraph (2) shall be retained by the Secretary in the manner provided for in section 107(f)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act.

(B) Amounts received under this section for forfeitures and costs imposed under paragraph (2) shall be used to pay the reasonable and necessary costs incurred by the Secretary to provide temporary storage, care, maintenance, and disposal of any sanctuary resource or other property seized in connection with a violation of this title or any regulation or permit issued under this title.

(C) Amounts received under this section as civil penalties and any amounts remaining after the operation of subparagraph (B) shall be used, in order of priority, to—

(i) manage and improve the national marine sanctuary with respect to which the violation occurred that resulted in the penalty or forfeiture;

(ii) pay a reward to any person who furnishes information leading to an assessment of a civil penalty, or to a forfeiture of property, for a violation of this title or any regulation or permit issued under this title; and

(iii) manage and improve any other national marine sanctuary.

(2) Liability for Costs.—Any person assessed a civil penalty for a violation of this title or of any regulation or permit issued under this title, and any claimant in a forfeiture action brought for such a violation, shall be liable for the reasonable costs incurred by the Secretary in storage, care, and maintenance of any sanctuary resource or other property seized in connection with the violation.

(f) Subpoenas.—In the case of any hearing under this section which is determined on the record in accordance with the procedures provided for under section 554 of title 5, United States Code, the Secretary may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may administer oaths.

(g) Use of Resources of State and Other Federal Agencies.—The Secretary shall, whenever appropriate, use by agreement the personnel, services, and facilities of State and other Federal departments, agencies, and instrumentalities, on a reimbursable or nonreimbursable basis, to carry out the Secretary's responsibilities under this section.

(h) Coast Guard Authority Not Limited.—Nothing in this section shall be considered to limit the authority of the Coast Guard to enforce this or any other Federal law under section 89 of title 14, United States Code.

(i) Injunctive Relief.—If the Secretary determines that there is an imminent risk of destruction or loss of or injury to a sanctuary resource, or that there has been actual destruction or loss of, or injury to, a sanctuary resource which may give rise to liability under section 312, the Attorney General, upon request of the Secretary, shall seek to obtain such relief as may be necessary to abate such risk or actual destruction, loss, or injury, or to restore or replace the sanctuary resource, or both. The district courts of the United States shall have jurisdiction in such a case to order such relief as the public interest and the equities of the case may require.

(j) Area of Application and Enforceability.—The area of application and enforceability of this title includes the territorial sea of the United States, as described in Presidential Proclamation 5928 of December 27, 1988, which is subject to the sovereignty of the United States, and the United States' exclusive economic zone, consistent with international law.

**Sec. 308. Severability.**

If any provision of this Act or the application thereof to any person or circumstances is held

invalid, the validity of the remainder of this Act and of the application of such provision to other persons and circumstances shall not be affected thereby.

**SEC. 309. Research, Monitoring, and Education.**

(a) IN GENERAL.—The Secretary shall conduct research, monitoring, evaluation, and education programs as are necessary and reasonable to carry out the purposes and policies of this title.

(b) PROMOTION AND COORDINATION OF SANCTUARY USE.—The Secretary shall take such action as is necessary and reasonable to promote and coordinate the use of national marine sanctuaries for research, monitoring, and education purposes. Such action may include consulting with Federal agencies, States, local governments, regional agencies, interstate agencies, or other persons to promote use of one or more sanctuaries for research, monitoring, and education, including coordination with the National Estuarine Research Reserve System.

**Sec. 310. Special Use Permits.**

(a) Issuance of Permits.—The Secretary may issue special use permits which authorize the conduct of specific activities in a national marine sanctuary if the Secretary determines such authorization is necessary—

- (1) to establish conditions of access to and use of any sanctuary resource; or
- (2) to promote public use and understanding of a sanctuary resource.

(b) Permit Terms.—A permit issued under this section—

- (1) shall authorize the conduct of an activity only if that activity is compatible with the purposes for which the sanctuary is designated and with protection of sanctuary resources;

- (2) shall not authorize the conduct of any activity for a period of more than five years unless renewed by the Secretary;

- (3) shall require that activities carried out under the permit be conducted in a manner that does not destroy, cause the loss of, or injure sanctuary resources; and

- (4) shall require the permittee to purchase and maintain comprehensive general liability insurance against claims arising out of activities conducted under the permit, and to agree to hold the United States harmless against such claims.

(c) Fees.—

- (1) Assessment and Collection.—The Secretary may assess and collect fees for the conduct of any activity under a permit issued under this section.

- (2) Amount.—The amount of a fee under this subsection shall be equal to the sum of—

- (A) costs incurred, or expected to be incurred, by the Secretary in issuing the permit;

- (B) costs incurred, or expected to be incurred, by the Secretary as a direct result of the conduct of the activity for which the permit is issued, including costs of monitoring the conduct of the activity; and

- (C) an amount which represents the fair market value of the use of the sanctuary resource and a reasonable return to the United States government.

- (3) Use of Fees.—Amounts collected by the Secretary in the form of fees under this section may be used by the Secretary—

- (A) for issuing and administering permits under this section; and

- (B) for expenses of designating and managing national marine sanctuaries.

(d) Violations.—Upon violation of a term or condition of a permit issued under this section, the Secretary may—

- (1) suspend or revoke the permit without compensation to the permittee and without liability to the United States;

- (2) assess a civil penalty in accordance with section 307; or

- (3) both.

(e) Reports.—Each person issued a permit under this section shall submit an annual report to the Secretary not later than December 31 of each year which describes activities conducted under that permit and revenues derived from such activities during the year.

(f) Fishing.—Nothing in this section shall be considered to require a person to obtain a permit under this section for the conduct of any fishing activities in a national marine sanctuary.

**SEC. 311. Cooperative Agreements, Donations, And Acquisitions.**

(a) COOPERATIVE AGREEMENTS, GRANTS, AND OTHER AGREEMENTS.—The Secretary may enter into cooperative agreements, financial agreements, grants, contracts, or other agreements with States, local governments, regional agencies, interstate agencies, or other persons to carry out the purposes and policies of this title.

(b) AUTHORIZATION TO SOLICIT DONATIONS.—The Secretary may enter into such agreements with any nonprofit organization authorizing the organization to solicit private donations to carry out the purposes and policies of this title.

(c) DONATIONS.—The Secretary may accept donations of funds, property, and services for use in designating and administering national marine

sanctuaries under this title. Donations accepted under this section shall be considered as a gift or bequest to or for the use of the United States.

(d) ACQUISITIONS.—The Secretary may acquire by purchase, lease, or exchange, any land, facilities, or other property necessary and appropriate to carry out the purposes and policies of this title

**SEC. 312. Destruction Or Loss Of, Or Injury To, Sanctuary Resources.**

(a) Liability for Interest.—

(1) Liability to the United States.—

(A) IN GENERAL— Any person who destroys, causes the loss of, or injures any sanctuary resource is liable to the United States for an amount equal to the sum of—

(i) the amount of response costs and damages resulting from the destruction, loss, or injury; and

(ii) interests on that amount calculated in the manner described under section 1005 of the Oil Pollution Act of 1990.

(2) Liability In Rem.—Any vessel used to destroy, cause the loss of, or injure any sanctuary resource shall be liable in rem to the United States for response costs and damages resulting from such destruction, loss, or injury. The amount of that liability shall constitute a maritime lien on the vessel, and may be recovered in an action in rem in the district court of the United States having jurisdiction over the vessel.

(3) Defenses.—A person is not liable under this subsection if that person establishes that—

(A) the destruction or loss of, or injury to, the sanctuary resource was caused solely by an act of God, an act of war, or an act or omission of a third party, and the person acted with due care;

(B) the destruction, loss, or injury was caused by an activity authorized by Federal or State law; or

(C) the destruction, loss, or injury was negligible.

(4) Limits to Liability.— Nothing in sections 4281–4289 of the Revised Statutes of the United States or section 3 of the Act of February 13, 1893 shall limit the liability of any person under this title.

(b) Response Actions And Damage Assessment.—

(1) Response Actions.—The Secretary may undertake or authorize all necessary actions to prevent or minimize the destruction or loss of, or injury to, sanctuary resources, or to minimize the imminent risk of such destruction, loss, or injury.

(2) Damage Assessment.—The Secretary shall assess damages to sanctuary resources in accordance with section 302(6).

(c) Civil Actions For Response Costs And Damages.—The Attorney General, upon request of the Secretary, may commence a civil action in the United States district court for the appropriate district against any person or vessel who may be liable under subsection (a) for response costs and damages. The Secretary, acting as trustee for sanctuary resources for the United States, shall submit a request for such an action to the Attorney General whenever a person may be liable for such costs or damages.

(d) Use Of Recovered Amounts.—Response costs and damages recovered by the Secretary under this section shall be retained by the Secretary in the manner provided for in section 107(f)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9607(f)(1)), and used as follows:

(1) Response Costs And Damage Assessments.— Twenty percent of amounts recovered under this section, up to a maximum balance of \$750,000, shall be used to finance response actions and damage assessments by the Secretary.

(2) Restoration, Replacement, Management, And Improvement.—Amounts remaining after the operation of paragraph (1) shall be used, in order of priority—

(A) to restore, replace, or acquire the equivalent of the sanctuary resources which were the subject of the action;

(B) to manage and improve the national marine sanctuary within which are located the sanctuary resources which were the subject of the action; and

(C) to manage and improve any other national marine sanctuary.

(3) Federal-State Coordination.—Amounts recovered under this section with respect to sanctuary resources lying within the jurisdiction of a State shall be used under paragraphs (2)(A) and (B) in accordance with the court decree or settlement agreement and an agreement entered into by the Secretary and the Governor of that State.

**Sec. 313. Authorization Of Appropriations.**

There are authorized to be appropriated to the Secretary to carry out this title the following:

(A) \$8,000,000 for fiscal year 1993;

- (B) \$12,500,000 for fiscal year 1994;
- (C) \$15,000,000 for fiscal year 1995; and
- (D) \$20,000,000 for fiscal year 1996.

**Sec. 314. U.S.S. Monitor Artifacts and Materials.**

(a) Congressional Policy. — In recognition of the historical significance of the wreck of the United States ship Monitor to coastal North Carolina and to the area off the coast of North Carolina known as the Graveyard of the Atlantic, the Congress directs that a suitable display of artifacts and materials from the United States ship Monitor be maintained permanently at an appropriate site in coastal North Carolina. [P.L. 102-587 designated Hatteras Village, NC, as this site.]

(b) Interpretation And Display Of Artifacts.—

(1) Submission Of Plan. — The Secretary shall, within six months after the date of the enactment of this section, submit to the Committee on Merchant Marine and Fisheries of the House of Representatives a plan for a suitable display in coastal North Carolina of artifacts and materials of the United States ship Monitor.

(2) Contents Of Plan.—The plan submitted under subsection (a) shall, at a minimum, contain—

(A) an identification of appropriate sites in coastal North Carolina, either existing or proposed, for display of artifacts and materials of the United States ship Monitor;

(B) an identification of suitable artifacts and materials, including artifacts recovered or proposed for recovery, for display in coastal North Carolina;

(C) an interpretive plan for the artifacts and materials which focuses on the sinking, discovery, and subsequent management of the wreck of the United States ship Monitor; and

(D) a draft cooperative agreement with the State of North Carolina to implement the plan.

(c) Disclaimer. —This section shall not affect the following:

(1) Responsibilities Of Secretary.—The responsibilities of the Secretary to provide for the protection, conservation, and display of artifacts and materials from the United States ship Monitor.

(2) Authority Of Secretary.—The authority of the Secretary to designate the Mariner's Museum, located at Newport News, Virginia, as the principal museum for coordination of activities referred to in paragraph (1).

**Sec. 315. Advisory Councils.**

(a) ESTABLISHMENT.—The Secretary may establish one or more advisory councils (in this section referred to as an "Advisory Council") to provide assistance to the Secretary regarding the designation and management of national marine sanctuaries. The Advisory Councils shall be exempt from the Federal Advisory Committee Act.

(b) MEMBERSHIP.—Members of the Advisory Councils may be appointed from among—

(1) persons employed by Federal or State agencies with expertise in management of natural resources;

(2) members of relevant Regional Fishery Management Councils established under section 302 of the Magnuson Fishery Conservation and Management Act; and

(3) representatives of local user groups, conservation and other public interest organizations, scientific organizations, educational organizations, or others interested in the protection and multiple use management of sanctuary resources.

(c) LIMITS ON MEMBERSHIP.—For sanctuaries designated after the date of enactment of the National Marine Sanctuaries Program Amendments Act of 1992, the membership of Advisory Councils shall be limited to no more than 15 members.

(d) STAFFING AND ASSISTANCE.—The Secretary may make available to an Advisory Council any staff, information, administrative services, or assistance the Secretary determines are reasonably required to enable the Advisory Council to carry out its functions.

(e) PUBLIC PARTICIPATION AND PROCEDURAL MATTERS.—The following guidelines apply with respect to the conduct of business meetings of an Advisory Council:

(1) Each meeting shall be open to the public, and interested persons shall be permitted to present oral or written statements on items on the agenda.

(2) Emergency meetings may be held at the call of the chairman or presiding officer.

(3) Timely notice of each meeting, including the time, place, and agenda of the meeting, shall be published locally and in the Federal Register.

(4) Minutes of each meeting shall be kept and contain a summary of the attendees and matters discussed.

## The Florida Keys National Marine Sanctuary and Protection Act

### Public Law 101–605 (H.R. 5909)

SECTION 1. SHORT TITLE. This Act may be cited as the "Florida Keys National Marine Sanctuary and Protection Act."

SEC. 2. FINDINGS. The Congress finds and declares the following:

(1) The Florida Keys extend approximately 220 miles southwest from the southern tip of the Florida peninsula.

(2) Adjacent to the Florida Keys land mass are located spectacular, unique, and nationally significant marine environments, including seagrass meadows, mangrove islands, and extensive living coral reefs.

(3) These marine environments support rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical, research, educational, and esthetic values which give this area special national significance.

(4) These environments are the marine equivalent of tropical rain forests in that they support high levels of biological diversity, are fragile and easily susceptible to damage from human activities, and possess high value to human beings if properly conserved.

(5) These marine environments are subject to damage and loss of their ecological integrity from a variety of sources of disturbance.

(6) Vessel groundings along the reefs of the Florida Keys represent one of many serious threats to the continued vitality of the marine environments of the Florida Keys which must be addressed in order to protect their values.

(7) Action is necessary to provide comprehensive protection for these marine environments by establishing a Florida Keys National Marine Sanctuary, by restricting vessel traffic within such Sanctuary, and by requiring promulgation of a management plan and regulations to protect sanctuary resources.

(8) The agencies of the United States must cooperate fully to achieve the necessary protection of sanctuary resources.

(9) The Federal Government and the State of Florida should jointly develop and implement a comprehensive program to reduce pollution in the waters offshore the Florida Keys to protect and restore the water quality, coral reefs, and other living marine resources of the Florida Keys environment.

### POLICY AND PURPOSE

SEC. 3.(a) POLICY.—It is the policy of the United States to protect and preserve living and other resources of the Florida Keys marine environment.

(b) PURPOSE.—The purpose of this Act is to protect the resources of the area described in section 5(b), to educate and interpret for the public regarding the Florida Keys marine environment, and to manage such human uses of the Sanctuary consistent with this Act. Nothing in this Act is intended to restrict activities that do not cause an adverse effect to the resources or property of the Sanctuary or that do not pose harm to users of the Sanctuary.

### DEFINITION

SEC. 4. As used in this Act, the term "adverse effect" means any factor, force, or action that would independently or cumulatively damage, diminish, degrade, impair, destroy, or otherwise harm—

(1) any sanctuary resource, as defined in section 302(8) of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1432(8)); or

(2) any of those qualities, values, or purposes for which the Sanctuary is designated.

### SANCTUARY DESIGNATION

SEC. 5.(a) DESIGNATION.—The area described in subsection (b) is designated as the Florida Keys National Marine Sanctuary (in this Act referred to as the "Sanctuary") under title III of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1431 et seq.). The Sanctuary shall be managed and regulations enforced under all applicable provisions of such title III as if the Sanctuary had been designated under such title.

**Appendix A. Sanctuary Legislation**

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(b) AREA INCLUDED.—(1) Subject to subsections (c) and (d), the area referred to in subsection (a) consists of all submerged lands and waters, including living marine and other resources within and on those lands and waters, from the mean high water mark to the boundary described under paragraph (2), with the exception of areas within the Fort Jefferson National Monument. The Sanctuary shall be generally identified and depicted on National Oceanic and Atmospheric Administration charts FKNMS 1 and 2, which shall be maintained on file and kept available for public examination during regular business hours at the Office of Ocean and Coastal Resource Management of the National Oceanic and Atmospheric Administration and which shall be updated to reflect boundary modifications under this section.

(2) The boundary referred to in paragraph (1)—

(A) begins at the northeasternmost point of Biscayne National Park located at approximately 25 degrees 39 minutes north latitude, 80 degrees 5 minutes west longitude, then runs eastward to the 300-foot isobath located at approximately 25 degrees 39 minutes north latitude, 80 degrees 4 minutes west longitude;

(B) then runs southward and connects in succession the points at the following coordinates:

(i) 25 degrees 34 minutes north latitude, 80 degrees 4 minutes west longitude,

(ii) 25 degrees 28 minutes north latitude, 80 degrees 5 minutes west longitude, and

(iii) 25 degrees 21 minutes north latitude, 80 degrees 7 minutes west longitude;

(C) then runs southward to the northeastern corner of the existing Key Largo National Marine Sanctuary located at 25 degrees 16 minutes north latitude, 80 degrees 8 minutes west longitude;

(D) then runs southwesterly approximating the 300-foot isobath and connects in succession the points at the following coordinates:

(i) 25 degrees 7 minutes north latitude, 80 degrees 13 minutes west longitude,

(ii) 24 degrees 57 minutes north latitude, 80 degrees 21 minutes west longitude,

(iii) 24 degrees 39 minutes

north latitude, 80 degrees 52 minutes west longitude,

(iv) 24 degrees 30 minutes north latitude, 81 degrees 23 minutes west longitude,

(v) 24 degrees 25 minutes north latitude, 81 degrees 50 minutes west longitude,

(vi) 24 degrees 22 minutes north latitude, 82 degrees 48 minutes west longitude,

(vii) 24 degrees 37 minutes north latitude, 83 degrees 6 minutes west longitude,

(viii) 24 degrees 40 minutes north latitude, 83 degrees 6 minutes west longitude,

(ix) 24 degrees 46 minutes north latitude, 82 degrees 54 minutes west longitude,

(x) 24 degrees 44 minutes north latitude, 81 degrees 55 minutes west longitude,

(xi) 24 degrees 51 minutes north latitude, 81 degrees 26 minutes west longitude, and

(xii) 24 degrees 55 minutes north latitude, 80 degrees 56 minutes west longitude;

(E) then follows the boundary of Everglades National Park in a southerly then northeasterly direction through Florida Bay, Buttonwood Sound, Tarpon Basin, and Blackwater Sound;

(F) after Division Point, then departs from the boundary of Everglades National Park and follows the western shoreline of Manatee Bay, Barnes Sound, and Card Sound;

(G) then follows the southern boundary of Biscayne National Park and the northern boundary of Key Largo National Marine Sanctuary to the southeasternmost point of Biscayne National Park; and

(H) then follows the eastern boundary of the Biscayne National Park to the beginning point specified in subparagraph (A).

(c) AREAS WITHIN STATE OF FLORIDA.—The designation under subsection (a) shall not take effect for any area located within the waters of the State of Florida if, not later than 45 days after the date of enactment of this Act, the Governor of the State of Florida objects in writing to the Secretary of Commerce.

(d) BOUNDARY MODIFICATIONS.—No later than the issuance of the draft environmental impact statement for the Sanctuary under section 304(a) (1) (C) (vii) of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1434(a) (1) (C) (vii)), in consultation with the Governor of the State of Florida, if appropriate, the Secretary of Commerce may make minor modifications to the boundaries of the Sanctuary as necessary to properly protect sanctuary resources. The Secretary of Commerce shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Merchant Marine and Fisheries of the House of Representatives a written notification of such modifications. Any boundary modification made under this subsection shall be reflected on the charts referred to in subsection (b) (1).

#### PROHIBITION OF CERTAIN USES

SEC. 6.(a) VESSEL TRAFFIC.—(1) Consistent with generally recognized principles of international law, a person may not operate a tank vessel (as that term is defined in section 2101 of title 46, United States Code) or a vessel greater than 50 meters in length in the Area to Be Avoided described in the Federal Register notice of May 9, 1990 (55 Fed. Reg. 19418-19419).

(2) The prohibition in paragraph (1) shall not apply to necessary operations of public vessels. For the purposes of this paragraph, necessary operations of public vessels shall include operations essential for national defense, law enforcement, and responses to emergencies that threaten life, property, or the environment.

(3) The provisions of paragraphs (1) and (2), including the area in which vessel operations are prohibited under paragraph (1), may be modified by regulations issued jointly by the Secretary of the department in which the Coast guard is operating and the Secretary of Commerce.

(4) This subsection shall be effective on the earliest of the following:

(A) the date that is six months after the date of enactment of this Act,

(B) the date of publication of a notice to mariners consistent with this section, or

(C) the date of publication of new nautical charts consistent with this section.

(b) MINERAL AND HYDROCARBON LEASING, EXPLORATION, DEVELOPMENT, AND PRODUCTION.—No leasing, exploration, development, or production of minerals or hydrocarbons shall be permitted within the Sanctuary.

#### COMPREHENSIVE MANAGEMENT PLAN

SEC. 7.(a) PREPARATION OF PLAN.—The Secretary of Commerce, in consultation with appropriate Federal, State, and local government authorities and with the Advisory Council established under section 208, shall develop a comprehensive management plan and implementing regulations to achieve the policy and purpose of this Act. The Secretary of Commerce shall complete such comprehensive management plan and final regulations for the Sanctuary not later than 30 months after the date of enactment of this Act. In developing the plan and regulations, the Secretary of Commerce shall follow the procedures specified in sections 303 and 304 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1433 and 1434), except those procedures requiring the delineation of Sanctuary boundaries and development of a resource assessment report. Such comprehensive management plan shall—

(1) facilitate all public and private uses of the Sanctuary consistent with the primary objective of Sanctuary resource protection;

(2) consider temporal and geographical zoning, to ensure protection of sanctuary resources;

(3) incorporate regulations necessary to enforce the elements of the comprehensive water quality protection program developed under section 8 unless the Secretary of Commerce determines that such program does not meet the purpose for which the Sanctuary is designated or is otherwise inconsistent or incompatible with the comprehensive management plan developed under this section;

(4) identify priority needs for research and amounts needed to—

(A) improve management of the Sanctuary, and in particular, the coral reef ecosystem within the Sanctuary; and

(B) identify clearly the cause and effect relationships between factors threatening the health of the coral reef ecosystem in the Sanctuary;

(5) establish a long-term ecological monitoring program and database, including methods to disseminate information on the management of the coral reef ecosystem.

(6) identify alternative sources of funding needed to fully implement the plan's provisions and supplement appropriations under section 9 of this Act and section 313 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1444).

(7) ensure coordination and cooperation between Sanctuary managers and other Federal, State, and local authorities with jurisdiction within or adjacent to the Sanctuary;

(8) promote education, among users of the Sanctuary, about coral reef conservation and navigational safety; and

(9) incorporate the existing Looe Key and Key Largo National Marine Sanctuaries into the Florida Keys National Marine Sanctuary except that Looe Key and Key Largo Sanctuaries shall continue to be operated until completion of the comprehensive management plan for the Florida Keys Sanctuary.

(b) PUBLIC PARTICIPATION.—The Secretary of Commerce shall provide for participation by the general public in development of the comprehensive management plan.

(c) TERMINATION OF STUDIES.—On the date of enactment of this Act, all congressionally mandated studies of existing areas in the Florida Keys for designation as National Marine Sanctuaries shall be terminated.

#### FLORIDA KEYS WATER QUALITY

SEC. 8.(a) WATER QUALITY PROTECTION PROGRAM.—(1) Not later than 18 months after the date of enactment of this Act, the Administrator of the Environmental Protection Agency and the Governor of the State of Florida, in consultation with the Secretary of Commerce, shall develop a compre-

hensive water quality protection program for the Sanctuary. If the Secretary of Commerce determines that such comprehensive water quality protection program does not meet the purpose for which the Sanctuary is designated or is otherwise inconsistent or incompatible with the comprehensive management plan prepared under section 7, such water quality program shall not be included in the comprehensive management plan. The purposes of such water quality program shall be to—

(A) recommend priority corrective actions and compliance schedules addressing point and nonpoint sources of pollution to restore and maintain the chemical, physical, and biological integrity of the Sanctuary, including restoration and maintenance of a balanced, indigenous population of corals, shellfish, fish and wildlife, and recreational activities in and on the water; and

(B) assign responsibilities for the implementation of the program among the Governor, the Secretary of Commerce, and the Administrator in accordance with applicable Federal and State laws.

(2) The program required by paragraph (1) shall, under applicable Federal and State laws, provide for measures to achieve the purposes described under paragraph (1), including—

(A) adoption or revision, under applicable Federal and State laws, by the State and the Administrator of applicable water quality standards for the Sanctuary, based on water quality criteria which may utilize biological monitoring or assessment methods, to assure protection and restoration of the water quality, coral reefs, and other living marine resources of the Sanctuary;

(B) adoption under applicable Federal and State laws of enforceable pollution control measures (including water quality-based effluent limitations and best management practices) and methods to eliminate or reduce pollution from point and nonpoint sources;

(C) establishment of a comprehensive water quality monitoring program to (i) determine the sources of pollution causing or contributing to existing or anticipated pollution problems in the Sanctuary, (ii)

evaluate the effectiveness of efforts to reduce or eliminate those sources of pollution, and (iii) evaluate progress toward achieving and maintaining water quality standards and toward protecting and restoring the coral reefs and other living marine resources of the Sanctuary;

(D) provision of adequate opportunity for public participation in all aspects of developing and implementing the program; and

(E) identification of funding for implementation of the program, including appropriate Federal and State cost sharing arrangements.

(b) COMPLIANCE AND ENFORCEMENT.—The Administrator of the Environmental Protection Agency, the Secretary of Commerce, and the Governor of the State of Florida shall ensure compliance with the program required by this section, consistent with applicable Federal and State laws.

(c) CONSULTATION.—In the development and implementation of the program required by paragraph (1), appropriate State and local government officials shall be consulted.

(d) IMPLEMENTATION.—

(1) The Administrator of the Environmental Protection Agency and the Governor of the State of Florida shall implement the program required by this section, in cooperation with the Secretary of Commerce.

(2)(A) The Regional Administrator of the Environmental Protection Agency shall with the Governor of the State of Florida establish a Steering Committee to set guidance and policy for the development and implementation of such program. Membership shall include representatives of the Environmental Protection Agency, the National Park Service, the United States Fish and Wildlife Service, the Army Corps of Engineers, the National Oceanic and Atmospheric Administration, the Florida Department of Community Affairs, the Florida Department of Environmental Regulation, the South Florida Water Management District, and the Florida Keys Aqueduct Authority; three individuals in local government in the Florida Keys; and three citizens knowledgeable about such program.

(B) The Steering Committee shall, on a biennial basis, issue a report to Congress that—

- (i) summarizes the progress of the program;
- (ii) summarizes any modifications to the

program and its recommended actions and plans; and (iii) incorporates specific recommendations concerning the implementation of the program.

(C) The Administrator of the Environmental Protection Agency and the Administrator of the National Oceanic and Atmospheric Administration shall cooperate with the Florida Department of Environmental Regulation to establish a Technical Advisory Committee to advise the Steering Committee and to assist in the design and prioritization of programs for scientific research and monitoring. The Technical Advisory Committee shall be composed of scientists from federal agencies, State agencies, academic institutions, private non-profit organizations, and knowledgeable citizens.

(3)(A) The Regional Administrator of the Environmental Protection Agency shall appoint a Florida Keys Liaison Officer. The Liaison Officer, who shall be located within the State of Florida, shall have the authority and staff to—

(i) assist and support the implementation of the program required by this section, including administrative and technical support for the Steering Committee and Technical Advisory Committee;

(ii) assist and support local, State, and Federal agencies in developing and implementing specific action plans designed to carry out such program;

(iii) coordinate the actions of the Environmental Protection Agency with other Federal agencies, including the National Oceanic and Atmospheric Administration and the National Park Service, and State and local authorities, in developing strategies to maintain, protect, and improve water quality in the Florida Keys;

(iv) collect and make available to the public publications, and other forms of information that the Steering Committee determines to be appropriate, related to the water quality in the vicinity of the Florida Keys; and

(v) provide for public review and comment on the program and implementing actions.

(4)(A) There are authorized to be appropriated to the Administrator of the Environmental Protection Agency \$2,000,000 for fiscal year 1993, \$3,000,000 for fiscal year 1994, and \$4,000,000 for fiscal year 1995, for the purpose of carrying out this section.

(B) There are authorized to be appropriated to the Secretary of Commerce \$300,000 for fiscal year 1993, \$400,000 for fiscal year 1994, and \$500,000 for fiscal year 1995, for the purpose of enabling the

## Appendix A. Sanctuary Legislation

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National Oceanic and Atmospheric Administration to carry out this section.

(C) Amounts appropriated under this paragraph shall remain available until expended.

(D) No more than 15 percent of the amount authorized to be appropriated under subparagraph (A) for any fiscal year may be expended in that fiscal year on administrative expense.

### ADVISORY COUNCIL

SEC. 9.(a) ESTABLISHMENT.—The Secretary of Commerce, in consultation with the Governor of the State of Florida and the Board of County Commissioners of Monroe County, Florida, shall establish an Advisory Council to assist the Secretary in the development and implementation of the comprehensive management plan for the Sanctuary.

(b) MEMBERSHIP.—Members of the Advisory Council may be appointed from among (1) Sanctuary managers, (2) members of other government agencies with overlapping management responsibilities for the Florida Keys marine environment, and (3) representatives of local industries, commercial users, conservation groups, the marine scientific and educational community, recreational user groups, or the general public.

(c) EXPENSES.—Members of the Advisory Council shall not be paid compensation for their service as members and shall not be reimbursed for actual and necessary traveling and subsistence expenses incurred by them in the performance of their duties as such members.

(d) ADMINISTRATION.—The Advisory Council shall elect a chairperson and may establish subcommittees, and adopt bylaws, rules, and such other administrative requirements and procedures as are necessary for the administration of its functions.

(e) STAFFING AND OTHER ASSISTANCE.—The Secretary of Commerce shall make available to the Advisory Council such staff, information, and administrative services and assistance as the Secretary of Commerce determines are reasonably required to enable the Advisory Council to carry out its functions.

### AUTHORIZATION OF APPROPRIATIONS

SEC. 10.(a) AUTHORIZATION FOR SECRETARY OF COMMERCE.—Section 313(2) (C) of the Marine Protection, Research, and Sanctuaries Act of

1972 (16 U.S.C. 1444(2) (C)) is amended by striking "\$3,000,000" and inserting in lieu thereof "\$4,000,000."

(b) AUTHORIZATION FOR EPA ADMINISTRATOR.—There are authorized to be appropriated to the Administrator of the Environmental Protection Agency \$750,000 for each of the fiscal years 1991 and 1992.

(c) REPORT.—The Secretary of Commerce shall, not later than March 1, 1991, submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Merchant Marine and Fisheries of the House of Representatives a report on the future requirements for funding the Sanctuary through fiscal year 1999 under title III of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 14321 et seq.).

Approved November 16, 1990.

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**Federal**

***U.S. Department of Commerce***

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Honorable Bonnie R. Cohen  
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**Appendix B. Core Group /Sanctuary Advisory Council/Strategy Working Group Members**

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## Existing Legislative Authorities

This appendix describes the statutory or legal framework currently in place in the Florida Keys.

### Federal Authorities

The number of Federal agencies and statutes and regulations affecting water and resources in the Florida Keys is extensive, and authorities often overlap.

#### *Coastal and Sanctuary Resource Management.*

Abandoned Shipwreck Act of 1987 (ASA), 43 U.S.C. §§ 2101 et seq.

Under the ASA, the United States asserts title to shipwrecks that are: 1) embedded in the submerged lands of a state; 2) embedded in coralline formations protected by a state on its submerged lands; and 3) on the submerged lands of a state and included in or determined to be eligible for inclusion in the National Register. The ASA directs the Federal government to transfer title to the state whose submerged lands contain the shipwreck, except when shipwrecks are located on public or Indian lands or when the wrecks are United States warships that have not been affirmatively abandoned. The public is given notice of the location of any shipwreck when title is asserted under the ASA.

In accordance with the ASA, states manage a broad range of living and nonliving resources in State waters and submerged lands, including abandoned shipwrecks. Shipwrecks offer recreational and educational opportunities for divers, tourists, users of biological sanctuaries, and historical researchers. States are encouraged to provide public access to these shipwrecks through the adoption of guidelines for the creation of underwater parks.

The Secretary of the Interior is responsible for publishing guidelines that seek to maximize the enhancement of shipwrecks as cultural resources; foster a partnership among sport divers, salvors, and other interests to manage shipwreck resources; facilitate access and utilization of the shipwrecks; and recognize the interests of groups engaged in shipwreck discovery and salvage. This responsibility was delegated to the National Park Service.

Significantly, the admiralty principles of salvage and finds do not apply to abandoned shipwrecks under

the ASA. Moreover, the ASA does not affect NOAA's authority under the National Marine Sanctuaries Act to designate and manage abandoned shipwrecks within national marine sanctuaries in State waters.

Coastal Barrier Resources Act of 1982, as amended (CBRA), 16 U.S.C. § 3501 et seq.

The purpose of the CBRA is to promote more appropriate use and conservation of coastal barriers along the Atlantic, Gulf, and Great Lakes coastlines. "Coastal barriers" are defined as bay barriers, barrier islands, and other geological features composed of sediment that protect landward aquatic habitats from direct wind and waves. They provide essential habitats for wildlife and marine life; natural storm buffer zones; and areas of scientific, recreational, historic, and archeological significance. The CBRA seeks to minimize the loss of human life, wasteful Federal expenditures on shoreline development, and damage to wildlife, marine life, and other natural resources by restricting future Federal financial assistance, establishing the Coastal Barrier Resources System (CBRS), and considering the means of achieving long-term conservation of barrier resources. The Secretary of the Interior is responsible for maintaining and reviewing the CBRS.

Under this Act, Federal financial assistance for development activities within the CBRS is generally unavailable, except for necessary oil and gas exploration and development; the maintenance of channel improvements, jetties, and roads; essential military activities; the construction and maintenance of Coast Guard facilities; the establishment and maintenance of air and water navigational devices; scientific studies; and nonstructural shoreline stabilization systems.

Coastal Zone Management Act of 1972, as amended (CZMA), 16 U.S.C. §§ 1451 et seq.

The CZMA provides incentives for coastal states to effectively manage, protect, and develop their coastal zones consistent with Federal standards and goals. A state's coastal zone includes coastal waters, and extends inland from the shoreline to the extent necessary to control activities having a significant impact on coastal waters. For Federal approval, a coastal zone management plan must:

- 1) identify the coastal zone boundaries;
- 2) define the permissible land and water uses within the coastal zone that have a direct and significant impact and identify the State's legal authority to regulate these uses;
- 3) inventory and designate areas of particular concern;
- 4) provide a planning process for energy

## Appendix C. Existing Legislative Authorities

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facilities; 5) provide a planning process to control and decrease shoreline erosion; and 6) provide for an effective coordination and consultation mechanism between regional, State, and local agencies.

NOAA has the authority to grant Federal approval for proposed coastal zone management plans. NOAA has approved Florida's coastal management program. Therefore, Florida is eligible for financial assistance and gains a legal mechanism to control Federal permits and activities that affect the State's coastal zone. Section 307 of the CZMA requires that all Federal agency activities within the coastal zone must be consistent, to the maximum extent practicable, with the enforceable policies of the State coastal zone management plan. The Secretary of Commerce, however, can override a state's determination of inconsistency if the Secretary finds that the activity is consistent with the CZMA or in the interests of national security.

Section 315 of the CZMA establishes the National Estuarine Research Reserve System (NERRS). States may seek Federal approval and designation of certain areas as national estuarine research reserves (NERR) if the areas qualify as biogeographic and typological representations of estuarine ecosystems and are suitable for long-term research and conservation. Federal financial assistance is available for approved acquisition, management, research, and education.

In the recent Coastal Zone Reauthorization Amendments of 1990, Congress added a Federal requirement that coastal states with federally approved coastal zone management plans prepare, and submit for Federal approval, coastal nonpoint source pollution control programs. CZMA § 6217, 16 U.S.C. § 1455b. The coastal nonpoint source pollution programs expand the nonpoint source pollution programs developed under section 319 of the Clean Water Act (CWA) by including land and water uses affecting coastal waters. States must submit the final versions of their coastal nonpoint source pollution, or section 6217, programs to NOAA by June 1995.

Endangered Species Act (ESA), 16 U.S.C. §§ 1531-1543.

The ESA protects species of marine mammals, birds, and fish listed as "threatened" or "endangered." The U.S. Fish and Wildlife Service (FWS) and NMFS determine which species need protection and maintain a list of endangered and threatened species. The ESA prohibits a "taking" of any member of a listed

species. "Take" is defined broadly to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." 16 U.S.C. §1532(19).

The ESA also requires that Federal agencies engage in a consultation process designed to ensure that projects authorized, funded, or carried out by Federal agencies do not jeopardize the continued existence of endangered or threatened species or result in destruction or modification of their critical habitat. 16 U.S.C. §1536. Critical habitat areas are designated either by the FWS or NMFS, depending on the species. No critical habitats have been designated in the Sanctuary. However, the Right Whale Recovery Team has recently petitioned the National Marine Fisheries Service (NMFS) to establish critical habitat for the northern right whale in waters incorporating part of the Sanctuary. 55 Fed. Reg. 28,670 (1990).

Magnuson Fishery Conservation and Management Act (MFCMA), 16 U.S.C. § 1801 et seq.

The MFCMA provides for the conservation and management of all fishery resources between three and 200 nautical miles (5.6 and 370 km) offshore. The NMFS is charged with establishing guidelines for and approving fishery management plans (FMPs) prepared by regional fishery management councils for selected fisheries. These plans determine the levels of commercial and sport fishing consistent with achieving and maintaining the optimum yield of each fishery. Benthic continental shelf fishery resources located outside State waters, such as abalone, lobster, crabs, sea urchins, and corals, are subject to management under the MFCMA. The waters of the Florida Keys Marine Sanctuary are within the jurisdiction of both the South Atlantic and Gulf of Mexico fisheries management councils.

In July 1983 the Gulf of Mexico Fisheries Management Council approved an FMP to protect the coral and coral reefs of the Gulf of Mexico and the South Atlantic. The final rules implementing the FMP were published on July 23, 1984, at 49 Fed. Reg. 29,607 (1984) and codified at 50 C.F.R. Part 638. These regulations establish management measures to be applied in coral habitat areas of particular concern (HAPC). Within the HAPC, the following restrictions apply: 1) fishing for coral is prohibited except as authorized by permit; 2) fishing with bottom longlines, traps, pots, and bottom trawls is prohibited in areas less than 50 fathoms in depth; and 3) the use of toxic chemicals to take fish or other marine organisms in or on coral reef areas is prohibited except as authorized by permit.

The FMP for the protection of the reef fish resources of the Gulf of Mexico may also apply. This FMP sets bag and size limits, places restrictions on the use of certain types of fishing gear, and establishes reporting and permit systems. It also establishes a stressed area in the Gulf where reef fish are protected by special management measures.

Within Federal waters, the MFCMA is enforced by the U.S. Coast Guard (USCG) and the NMFS. The Secretary of Commerce can enter into agreements with any State agency for enforcement purposes in State waters.

Marine Mammal Protection Act (MMPA), 16 U.S.C. §§ 1361 et seq.

The MMPA applies to U.S. citizens in State, contiguous zone, and international waters and to foreign nationals subject to U.S. jurisdiction. It is designed to protect all species of marine mammals. The MMPA is implemented by the NMFS, which is the agency responsible for whales, porpoises, dolphins, and pinnipeds (seals), and the FWS, which is primarily responsible for sea lions and walrus. The Act provides for: 1) a general moratorium on the “taking” of marine mammals, with a few limited exceptions; 2) the development of a management approach designed to achieve an “optimum sustainable population” (OSP) for all species or population stocks of marine mammals; and 3) the protection of depleted populations of marine mammals.

The MMPA has been amended to include requirements that observers be carried aboard commercial fishing vessels to determine levels of incidental take of marine mammals. Commercial fishing activities are divided into categories on the basis of gear type and associated levels of potential incidental take of marine mammals.

Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703 et seq.

It is unlawful “to pursue, hunt, take, capture, kill . . . any migratory bird, any part, nest or egg” or any product of any such bird protected by the Migratory Bird Convention, except as permitted by regulations. The Secretary of the Interior is charged with determining when, to what extent, and how to permit these activities. Game bird cannot be hunted during a closed season. Nongame birds cannot be hunted at all.

National Historic Preservation Act (NHPA), 16 U.S.C. § 470 et seq.

The NHPA authorizes the Secretary of the Interior to maintain a National Register of “districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture.” Sites have been listed on the National Register that include or are composed entirely of ocean waters and submerged lands within State waters or on the Outer Continental Shelf (OCS), such as the USS MONITOR.

Federal agencies conducting, licensing, or assisting an undertaking that may affect a listed site or a site that is eligible for listing must provide the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed action before any action is taken. 16 U.S.C. 470f. The Council determines whether the undertaking will change the quality of the site’s historic, architectural, archaeological, or cultural character. 36 C.F.R. Part 800.

#### ***Pollution Control.***

Clean Water Act (CWA), 33 U.S.C. § 1251 et seq.

The CWA establishes the basic scheme for restoring and maintaining the chemical, physical, and biological integrity of the nation’s waters. To varying degrees, the waters of the United States are subject to requirements of the CWA. The CWA regulates discharges from known sources and discharges of harmful quantities of oil and hazardous substance discharges. The Act also regulates the disposal of vessel sewage and dredged material.

The EPA administers the National Pollutant Discharge Elimination System (NPDES). Under the NPDES program, a permit is required for the discharge of any pollutant from a point source into the navigable waters of the United States. NPDES permits are required for discharges associated with oil and gas development on Federal leases beyond State waters. The EPA can establish specific conditions for permits.

The CWA was amended in 1987 to include the nonpoint source (NPS) program. States must develop management programs to address NPS runoff. Under Florida’s program, which has been approved by the EPA, the State will identify water bodies that require NPS controls. Water management districts have NPS control authority to permit agricultural

## Appendix C. Existing Legislative Authorities

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water management systems. The State implements an area-wide water quality management planning program that includes NPS controls.

The CWA prohibits discharges of harmful quantities of oil and hazardous substances into the contiguous zone, except where permitted under the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships. The USCG investigates and responds to discharges of oil and hazardous substances in accordance with the National Contingency Plan (NCP). The USCG, with the cooperation of the EPA, administers the NCP. Regional plans are submitted to implement the NCP. EPA's Region IV, which contains the Sanctuary, has a regional contingency plan that the EPA follows for both oil and hazardous substance spills occurring inland. The USCG is the lead agency for coastal and ocean spills, and follows the regional contingency plan for spills of hazardous substances. However, the USCG develops its own area plans for oil spills.

The CWA requires recreational vessels with toilet facilities to contain operable marine sanitation devices. The CWA also requires noncommercial craft to comply with marine sanitation device regulations issued by the EPA and enforced by the USCG. The statute also establishes "no-discharge zones" where greater environmental controls prohibit discharge of sewage from all vessels. Publicly owned sewage treatment facilities must meet effluent reductions by secondary treatment.

The Army Corps of Engineers (ACOE) implements a permitting program for the discharge of dredged or fill materials into the navigable waters of the United States that lie inside of the baseline for the territorial seas and fill materials into the territorial seas within three miles of shore. Although the ACOE has primary responsibility for the program, the EPA is authorized to review and comment on the impact of proposed dredge and fill activities on municipal water supplies, shellfish beds and fishery areas, wildlife, and recreational areas.

Clean Air Act (CAA), 42 U.S.C. §§ 7401 et seq.

The CAA establishes national guidelines and minimal air quality standards to protect and enhance the quality of the nation's air resources. Beyond State waters, Prevention of Significant Deterioration (PSD) provisions of the CAA apply to new sources on the Outer Continental Shelf (OCS) adversely affecting air quality; these regulations would supplement air quality regulations administered by the DOI in its activities related to the OCS.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 et seq.

The CERCLA addressed the cleanup of hazardous waste sites. Under CERCLA, Federal and State agencies categorize hazardous waste sites and prioritize responses. CERCLA provides the Federal government with the authority to respond to releases of hazardous substances, remediate sites, and seek reimbursement from the potentially responsible parties (PRPs). Response actions are carried out in accordance with the National Contingency Plan (NCP). CERCLA also created a Hazardous Substance Trust Fund, called the Superfund, to fund removal and remedial actions undertaken by the government. Finally, CERCLA makes PRPs liable for costs of removal or remediation incurred by the State or Federal government; other necessary costs of response; damages for injury, destruction, or loss of natural resources; and health assessment costs.

Ocean Dumping Act (ODA), Title I of the Marine Protection, Research, and Sanctuaries Act of 1972, 33 U.S.C. §§1401 et seq.

The ODA prohibits the transportation of any materials from or under the authority of the United States for the purpose of dumping them into ocean waters without a permit from the EPA. This Act also prohibits any person from dumping any material that may affect the territorial seas, regardless of the origin of the materials. The EPA regulates ocean dumping of all materials, except the dumping of dredged materials, which is regulated by the ACOE.

Oil Pollution Act of 1990 (OPA), 33 U.S.C. §§ 2701 et seq.

The OPA creates a comprehensive prevention, response, liability, and compensation regime for dealing with oil pollution from vessels and shore facilities. A person who causes an oil spill covered by OPA may be liable for certain costs and penalties. Any party responsible for a discharge, or a substantial threat of a discharge, of oil into navigable waters, adjoining shorelines, or the exclusive economic zone is liable for: 1) the removal costs and damages, including assessment costs; 2) injury to, destruction or loss of, or loss of use of natural resources; 3) injury to, or economic losses as a result of the destruction of real or personal property; 4) subsistence use of natural resources, net lost government revenues, or lost profits; and 5) net costs of providing additional public services during or after the removal activities.

It establishes enhanced vessel construction standards, crew licensing, contingency planning, Federal response capabilities, enforcement authority, penalties, and research and development with the goal of increasing environmental safeguards during oil transportation.

The USCG has the responsibility for merchant marine personnel, including the authority to review criminal records and alcohol and drug abuse histories. OPA establishes the double-hull requirement for oil tankers. Under OPA, the USCG is required to ensure that vessels comply with the improved, expanded vessel traffic service schemes.

OPA also amends section 311(c) of the CWA to ensure immediate and effective removal of a discharge and mitigation or prevention of a substantial threat of a discharge. OPA mandated a comprehensive national response system to quickly contain a spill of oil or hazardous waste into the waters of the United States and to minimize damage to the environment. OPA increases the penalties available under the CWA for oil and hazardous waste spills.

Ports and Waterways Safety Act (PWSA), 33 U.S.C. § 1221 et seq.

The PWSA, as amended by the Port and Tanker Safety Act of 1978 and the Oil Pollution Act of 1990, is designed to promote navigation and vessel safety and protect the marine environment. The PWSA applies both in State and Federal waters out to 200 miles. The PWSA authorizes the USCG to establish vessel traffic separation schemes (VTSSs) for ports, harbors, and other waters subject to congested vessel traffic. VTSSs are applicable to commercial ships, other than fishing vessels, weighing 300 gross tons (270 gross metric tons) or more. OPA amended the PWSA to mandate that appropriate vessels must comply with VTSSs.

In addition to vessel traffic control, the USCG regulates other navigational and shipping activities and promulgates numerous regulations relating to vessel design, construction, and operation designed to minimize the likelihood of accidents and to reduce vessel source pollution. Finally, the USCG is vested with the primary responsibility of maintaining boater safety, including the conduct of routine vessel inspections and coordination of rescue operations.

River and Harbors Act (RHA), 33 U.S.C. § 401 et seq.

Section 10 of the RHA prohibits the unauthorized obstruction of the navigable waters of the United States. The construction of any structure or the excavation or fill in the navigable waters of the United States is prohibited without a permit from the ACOE. Section 13 prohibits the discharge of refuse and other substances into navigable waters, but has been largely superseded by the CWA.

Shore Protection Act of 1988, 33 U.S.C. § 2601 et seq.

Under the Shore Protection Act of 1988, municipal and commercial waste cannot be transported by a vessel in coastal waters without a permit from the Department of Transportation. The procedures for loading, securing, and off-loading of these wastes must ensure that any deposition of waste into coastal waters is minimized.

#### ***Offshore Resources.***

Submerged Lands Act of 1953, as amended (SLA), 43 U.S.C. §§ 1301 et seq.

The SLA delineates State authority over submerged lands and their resources. The Act recognizes State authority over submerged lands extending out to three geographical miles into the Atlantic or Pacific oceans, or three marine leagues into the Gulf of Mexico from the coastline.

Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. § 1331 et seq.

The OCSLA, as amended, establishes Federal control over the natural resources of the OCS beyond three nautical miles (off Texas's and Florida's west coast, this authority extends to three marine leagues or 10.35 nm.). The authority to manage OCS mineral exploration and development activities has been delegated to the Minerals Management Service (MMS) by the Secretary of the Interior. The MMS has overall responsibility for leasing OCS lands. In unique or special areas, the MMS may impose special lease stipulations designed to protect specific geological and biological phenomena.

The MMS is also charged with supervising OCS operations, including the approval of both exploration and development/production plans and applications for pipeline rights-of-way on the OCS. Lessees are

## Appendix C. Existing Legislative Authorities

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required to include specific information concerning emissions and their potential impacts on coastal areas in exploration and development/production plans. The MMS enforces OCSLA regulations, 30 C.F.R. Part 250, and stipulations in particular leases.

In addition to the DOI, both the ACOE and USCG have responsibility over OCS mineral development under the PWSA to the extent that such development affects navigation. The ACOE is responsible for ensuring, through a permit system, that OCS structures including pipelines, platforms, drill ships, and semi-submersibles, do not obstruct navigation. The USCG ensures that structures on the OCS are properly marked and safe working conditions are maintained onboard.

### **General Nautical Authorities.**

Act to Prevent Pollution from Ships (APPS), 33 U.S.C. § 1901 et seq.

The APPS is the Federal legislation implementing the International Convention for the Prevention of Pollution from Ships, as modified by a 1978 Protocol (MARPOL 73/78). The APPS regulates discharges of oil, oily mixtures, and noxious liquid substances from large seagoing vessels except tankers less than 150 gross tons and other vessels less than 500 gross tons. The USCG enforces the APPS.

Except for discharges from machinery space bilges, tankers subject to the Act may not discharge oil or oily mixtures unless they are 50 nautical miles from the nearest land; the total quantity of oil discharged cannot exceed one part in 15,000 of the total cargo capacity. Discharges from other vessels regulated by the Act, and discharges from the machinery bilges of tankers must be made as far as practicable from land and may not have an oil content of more than 100 parts per million. Besides these requirements, discharges by a vessel regulated by the Act must be made while the vessel is en route and the instantaneous discharge rate must not exceed 60 liters per mile. No discharges can be made in specially designated areas; the Gulf of Mexico is a special area for the purposes of the APPS and MARPOL.

Marine Plastic Pollution Research and Control Act of 1987 (MPPRCA), 33 U.S.C. §§ 1901-1903, 1905, 1907-1909, 1912.

This Act amends the APPS to implement Annex V of MARPOL in the United States by prohibiting the dumping of plastics at sea and severely restricting

dumping other types of ship-generated garbage, both at sea and in the navigable waters of the United States. Its provisions apply to all U.S. watercraft, including recreational vessels, and to all other ships subject to MARPOL when in U.S. waters.

### **Miscellaneous.**

Federal Aviation Act of 1958 (FAA), 49 U.S.C. §§ 1301 et seq.

The FAA establishes the Federal Aviation Administration and gives it broad powers to promote air commerce and regulate the use of navigable airspace to ensure aircraft safety and the efficient use of navigable airspace. To accomplish this mandate, the Administration publishes aeronautical charts that provide a variety of information to pilots, including the location of sensitive areas that should be avoided.

## State Authorities

This section describes the State statutory or legal framework currently in place in the Florida Keys.

### **Coastal or Resource Management Authorities.**

Florida Environmental Land and Water Management Act of 1972, Title 28, Natural Resources; Conservation, Reclamation, and Use, Chapter 380, Land and Water Management, sections 380.012-380.12.

In accordance with this Act, the Department of Community Affairs (DCA) is responsible for the statewide planning and development of land and water management policies to ensure a water management system that both improves water quality in the State and promotes growth. The Act establishes regional planning for developments that will have a substantial effect on the health, safety, or welfare of citizens in more than one country. This Act authorizes DCA to recommend Areas of Critical State Concern (ACSC) that should be considered "environmentally endangered lands and outdoors recreation lands" under the Land Conservation Act of 1972. The DCA establishes general guidelines for development activities in ACSC. Local land-development regulations and plans must conform to these guidelines and subsequent development in an ACSC must be conducted in accordance with this Act. The Florida Keys has been designated as an ACSC. The guiding principles for development of the Keys are set out in Section 380.0552 F.S.

The Florida ACSC Restoration Trust Fund Act, sections 380.0558 et seq., creates a trust fund for reimbursement of the State's actual costs in obtaining payment of damages for injury to, or destruction of, the coral reefs and other natural resources of the State. The fund also can be used for research, protection, and restoration of coral reefs and other injured national resources. Damages recovered by Florida for injury to its coral reefs or national resources are deposited in this fund.

Beach and Shore Preservation Act, Title 11, County Organization and Intergovernmental Relations, Chapter 161, Beach and Shore Preservation, sections 161.011 et seq.

Before any coastal construction, reconstruction, or physical activity is undertaken for shore protection purposes on State lands below the mean high-water line of any tidal water of the State, a coastal construction permit must be obtained from the State. Coastal construction cannot interfere with public use of the beach seaward of the mean high-water line unless the State determines that this interference is unavoidable for purposes of protecting the beach or an endangered upland sanctuary.

The Act creates beach and shore preservation districts at the county level. The State sets coastal construction control lines on a county basis along beaches to provide for a 100-year storm surge and ensure protection of the beach-dune system, as well as public access. Construction of buildings or other structures is generally prohibited seaward of the coastal construction control line, which is set at 50 feet of the mean high-water line, or the erosion control line if one is established (whichever line is more landward). The Act allows the State to authorize a waiver of this setback in certain situations.

Construction in violation of the Act is considered a public nuisance and must be removed. Violations of this Act can be considered criminal misdemeanors. The State can also assess administrative penalties of \$10,000 per day for willful violation. The Act provides for joint and severe liability when damages are caused by gross negligence or willful conduct. The State can impose liens on both real and personal property.

The Act sets up a "Beach Management Trust Fund" to carry out State responsibilities in comprehensive, statewide beach protection activities.

Coastal Zone Protection Act of 1985, Title 11, County Organization and Intergovernmental Relations, Chapter 161, Beach and Shore Preservation, sections 161.52-161.58.

This Act mandates strict construction standards in order to minimize damage along the coast.

Florida Coastal Management Act of 1978, Title 28, Natural Resources; Conservation, Reclamation, and Use, Chapter 380, Coastal Planning, sections 380.19-380.25.

Although the Florida Coastal Coordinating Council (FCCC) is created within the State, the State administers the FCMA as the State's lead agency. The FCCC, however, reviews all of the plans and activities relating to the coastal zone and develops a comprehensive State plan for the coastal zone. The State coastal zone management plan is considered part of the State comprehensive plan. The FCMA provides for Federal consistency review as part of the permit or license issuance or denial process. Federal consistency review is limited to specific situations explicitly delineated in the FCMA.

Florida Wetlands Protection Act, Title 29, Public Health, Chapter 403, Environmental Control, sections 403.91 - 403.929 (known as the Warren S. Henderson Wetlands Protection Act of 1984).

In Florida, the State is responsible for permitting certain activities in wetlands. For example, no person can dredge or fill in, on, or over surface waters without a permit. A permit applicant must show that the water quality criteria for the wetlands will not be violated and that the project will not adversely affect human health and safety, fish and wildlife conservation, navigation, fishing, recreation, and significant historical archaeological resources, among others. The Act creates a wetlands monitoring system to determine the location of wetlands and to identify impacts to and losses of wetlands. The Act provides protection for mangroves located in waters where dredge and fill activities are permitted.

(1) Florida Wetlands Regulations, FAC 17-312.

Part IV of Rule 17-312, entitled "Additional Criteria for Dredging and Filling Within Outstanding Florida Water in Monroe County," provides the most stringent protection to the waters of the Florida Keys that is allowed by law. Part IV explicitly requires additional protection for coral, algae, sponge, and seagrass communities; specifies siting and design criteria for

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piers and boat mooring facilities; and denotes permitting requirements for marinas and shoreline stabilization.

Land Conservation Act of 1972, Title 18, Public Lands, Chapter 259, Land Acquisition for Conservation or Recreation.

This Act requires the State to develop comprehensive plans to conserve environmentally endangered lands, and provides a mechanism for the State to purchase land in designated ACSC.

Outdoor Recreation and Conservation Act of 1963, Title 28, Natural Resources; Conservation, Reclamation, and Use, Chapter 375, Outdoor Recreation, sections 375.001 et seq.

In accordance with this statute, the State develops a comprehensive multipurpose outdoor recreation and conservation plan for the State, and is authorized to acquire property to achieve conservation and recreation purposes.

Florida Communities Trust Act, Title 28, Natural Resources; Conservation, Reclamation, and Use, sections 380.501 et seq.

This statute created a nonregulatory State agency in DCA and a revolving trust fund to coordinate, undertake, or fund projects implementing the conservation, recreation, or coastal elements of the local comprehensive plans. The trust fund is authorized to acquire and dispose of property to protect the environment or provide public access or recreational facilities.

Title 28, Natural Resources; Conservation, Reclamation, and Use, Chapter 370, Saltwater Fisheries.

This chapter provides statutory authority for the State to preserve, manage, and protect the marine, crustacean, shellfish, and anadromous fishery resources in State waters and regulate fishing operations in the State.

Title 28, Natural Resources; Conservation, Reclamation, and Use, Chapter 372, Wildlife.

This chapter generally authorizes the Game and Fresh Water Fish Commission to regulate the use of freshwater organisms and everglades.

Florida Endangered and Threatened Species Act of 1977, Title 28, Natural Resources; Conservation, Reclamation, and Use, sections 372.072 et seq.

The Game and Fresh Water Fish Commission is responsible for researching and managing freshwater and upland species. The State has the regulatory authority for marine species. Killing or wounding endangered or threatened species is a third degree felony.

(1) Endangered and Threatened Species Regulations, FAC 39.

Florida Historical Resources Act, Title 18, Public Lands and Property, Chapter 267, Historical Resources, sections 267.011 et seq.

The Division of Historical Resources manages the State's historical resources, including resources on State-owned submerged lands. All treasure trove, artifacts, and objects with historical and archaeological value that have been abandoned on State-owned or State-owned sovereignty submerged lands belong to the State, and title to these resources is vested in the Division of Historical Resources for administration and protection. By virtue of its ownership, this agency has primary the responsibility for submerged cultural resources, including historic shipwreck sites and other abandoned objects with intrinsic, historical, or archaeological value.

(1) Procedures for conducting exploration and salvage of historic shipwreck sites, FAC 1A – 31.001 et seq.

(2) Research permits for archeological sites of significance, FAC 1A – 32.01 et seq.

Title 18, Public Lands and Property, Chapter 253, State Lands. Section 253.12 provides State ownership of all sovereignty tidal and submerged bottom lands, all coastal and intracoastal waters of the State and all submerged lands owned by the State in navigable freshwater.

### ***Water and Air Quality Authorities.***

Florida Clean Vessel Act, Vessel Registration and Safety, Chapter 327, Marine Sanitation, section 327.53

(1) Every vessel 26 feet or more in length which has an enclosed cabin with berthing facilities shall, while on the waters of the state, be equipped

with a toilet. On a vessel other than a houseboat, the toilet may be portable or permanently installed. Every permanently installed toilet shall be properly attached to the appropriate United States Coast Guard certified or labeled marine sanitation device.

(2)(a) Every houseboat shall be equipped with at least one permanently installed toilet which shall be properly connected to a United States Coast Guard certified of labeled Type III marine sanitation device. If the toilet is simultaneously connected to both Type III marine sanitation and to another approved marine sanitation device, the valve or other mechanism selecting between the two marine sanitation devices shall be set to direct all sewage to the Type III marine sanitation device and, while the vessel is on the waters of the state, shall be locked or otherwise secured by the operator, so as to prevent resetting.

(b) A houseboat on which a Type I marine sanitation device was installed before January 30, 1980, need not install a Type II device until October 1, 1996. A houseboat on which a Type III marine sanitation device was installed before July 1, 1994, need not install a Type III device until October 1, 1996.

(3) Every floating structure that has an enclosed living space with berthing facilities, or working space with public access, must be equipped with a permanently installed toilet properly connected to a Type III marine sanitation device or permanently attached via plumbing to shoreside sewage disposal. No structure shall be plumbed so as to permit the discharge of sewage into the waters of the state.

(4)(a) Raw sewage shall not be discharged from any vessel, including houseboats, or any floating structure in Florida waters. The operator of any vessel which is plumbed so that a toilet may be flushed directly into the water or so that a holding tank may be emptied into the water shall, while the vessel is on the waters of the state, set the valve or other mechanism directing the sewage so as to prevent direct discharge and lock or otherwise secure the valve so as to prevent resetting.

(b) All waste from Type III marine sanitation devices shall be disposed in an approved sewage pumpout facility.

(c) All waste from portable toilets shall be disposed in an approved waste reception facility.

(5) Every vessel owner, operator, and occupant shall comply with United States Coast Guard regulations pertaining to marine sanitation devices and with United States Environmental Protection Agency regulations pertaining to areas in which the discharge of sewage, treated or untreated, is prohibited.

(6)(a) A violation of this section is a noncriminal infraction as provided in s.327.73. Each violation shall be a separate offense. The owner and operator of any vessel shall be jointly and severally liable for the civil penalty imposed pursuant to this section.

(b) All civil penalties imposed and collected pursuant to this section shall be deposited in the Motorboat Revolving Trust Fund and shall be used: to implement, administer, and enforce this act; to construct, renovate, or operate pumpout stations and waste reception facilities; and to conduct a program to educate vessel operators about the problem of human body waste discharges from vessels and inform them of the location of pumpout stations and waste reception facilities.

(7) Any vessel or floating structure operated or occupied on the waters of the state in violation of this section is declared a nuisance and a hazard to public safety and health. The owner or operator of any vessel or floating structure cited for violating this section shall, within 30 days following the issuance of the citation, correct the violation for which the citation was issued or remove the vessel or floating structure from the waters of the state. If the violation is not corrected within the 30 days and the vessel or floating structure remains on the waters of the state in violation of this section, law enforcement officers charged with the enforcement of this chapter under s.327.70 shall apply to the appropriate court in the county in which the vessel or floating structure is located, to order or otherwise cause the removal of such vessel or floating structure from the waters of the State at the owner's expense. If the owner cannot be found or otherwise fails to pay the removal costs, the provisions of s.328.17 shall apply. If the proceeds under s.328.17 are not sufficient to pay all removal costs, funds appropriated from the Motorboat Revolving Trust Fund pursuant to paragraph (6)(b) or s.327.25(12) may be used.

(8) Any not-for-profit corporation that is organized and existing under the laws of the state and that possesses a valid exemption from federal income taxation under s.501(c)(3) of the United States Internal Revenue Code received prior to

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January 1, 1994 shall have until October 1, 1998, to comply with the provisions of this section.

Florida Air and Water Pollution Control Act, Title 29, Public Health, Chapter 403, Environmental Control, sections 403.011 et seq.

The State is responsible for regulating the pollution of air and water under this Act by administering and enforcing the State standards for air and water quality. A permit is required for the operation, construction, or expansion of any installation that may be a source of air or water pollution. This Act authorizes the State to establish restoration programs for water bodies within State and rules for waters categorized as Outstanding Florida Waters. The State approves current and long-range plans for air and water quality control and pollution abatement. The State stormwater program is also authorized in accordance with this Act.

The State enforces this Act by instituting civil actions for damages to the “air, waters, or property, including animal, plant, and aquatic life” caused by any violation and civil penalties of up to \$10,000 per offense. Each day of a continuing violation constitutes a separate offense. The State can also pursue civil penalties for damages, administrative relief, injunctive relief, and criminal penalties.

(1) Air Pollution Rules, FAC 17-2.100.

(2) Antidegradation for Surface Water Quality, Outstanding Florida Waters, FAC 17-3.041.

No degradation of water quality is allowed in Outstanding Florida Waters and Outstanding Natural Resource Waters except as provided in FAC 17-4.242 (2) and (3).

(3) Ambient Air Quality Standards, FAC 17-2.300.

(4) Rules on Permits, FAC 17-4.001.

(5) Special Protection for Outstanding Florida Waters, FAC 17-4.242.

(6) Stormwater Discharge Regulations, FAC 17-25.001.

(7) Water Quality Standards. FAC 17-3.011.

(8) Wetlands Application Regulations, FAC 17-611.100.

Environmental Protection Act of 1971, Title 29, Public Health, Chapter 403, Environmental Control, sections 403.412 et seq.

Injunctive relief is available to Florida’s Department of Legal Affairs, any political subdivision or municipality of the State, or any private citizen in order: 1) to compel a government agency to enforce its rules or the law protecting air, water, or other natural resources; or 2) to stop any person or government entity from violating a law or regulation protecting the air, water, or other natural resources.

Florida Litter Law of 1971, Title 29, Public Health, Chapter 403, Environmental Control, sections 403.413-403.4135.

This law makes it illegal to dump litter of any kind, in any manner or amount, on roads or public lands, or in lakes, rivers, canals, streams, tidal waters, or coastal waters unless authorized by law or permit. The penalties for violating this Act range from civil fines to criminal prosecution. The Litter Law is enforced by all law enforcement officers in Florida.

Florida Pollutant Spill Prevention and Control Act, Title 28, Natural Resources; Conservation, Reclamation, and Use, Chapter 376, Pollutant Discharge Prevention, sections 376.011-376.319.

This Act provides the State with the authority to regulate the transfer, storage, or transportation of products that contain pollutants between vessels, onshore facilities and vessels, and terminal facilities within State jurisdiction. For the purposes of this Act, pollutants are defined as oil of any kind, gasoline, pesticides, ammonia, chlorine, and derivatives, excluding liquefied petroleum gas. The discharge of any of these substances into or on any coastal waters, estuaries, tidal flats, beaches, or lands adjoining the sea coast of the State is generally prohibited. When a prohibited discharge occurs, this Act provides for proper removal and establishes liability limits for the terminal facility or vessel and reimbursement of persons who have been damaged. Furthermore, the State is authorized to contain and remove any pollution caused by these activities. A trust fund has been established to pay for inspections, supervision over activities, and reasonable damage claims. The State possesses strong enforcement powers, including civil penalties that can reach \$50,000 per violation per day.

Surface Water Improvement and Management Act, Title 28, Natural Resources, Chapter 373, Surface Waters, sections 373.451-373.4596.

Each water management district prepares and maintains a list of prioritized water bodies of regional or statewide significance. Based on criteria developed by the State for these water bodies, the water management districts develop surface water improvement and management plans to restore and maintain the water quality. The Surface Water Improvement and Management Trust Fund is available for planning and implementation.

Water Resources Restoration and Preservation Act, Title 29, Public Health, Chapter 403, Environmental Control, sections 403.0615 et seq.

The State samples the water quality of State waters and establishes restoration programs when needed.

Water Resources Act of 1972, Title 28, Natural Resources; Conservation, Reclamation, and Use, Chapter 373, Water Resource Plan, sections 373.026 et seq.

Under this Act, the State supervises regional water management districts. The South Florida Water Management District (SFWMD) manages the Florida Keys. Pursuant to the permitting authorization in this Act, the SFWMD regulates development impacting freshwater wetlands and estuarine systems. The SFWMD's authority to permit activities extends to all "waters in the State," including coastal waters.

***Waste Management Authorities.***

Florida Solid and Hazardous Waste Management Act (FSHWMA), Title 29, Public Health, Chapter 403, Environmental Control, sections 403.702-403.7721.

This statute regulates the storage, collection, transport, separation, processing, recycling, and disposal of solid waste, including hazardous waste. The Act was passed to protect public health and enhance the environment, while at the same time recovering resources that still have use. Pursuant to this authority, the State coordinates solid waste planning, reviews and issues permits for the construction, operation and closure of solid waste management facilities, creates and enforces standards for the generation, treatment, storage, and disposal of waste, and promotes recycling. The Act requires certain storage, treatment, and disposal activities for all types of solid waste, including residential waste and used oil.

(1) Biohazardous Waste Management Regulations, FAC 17-712.100 et seq.

(2) Hazardous Substance Release Notification Rules, FAC 17 150.200 et seq.

When a reportable quantity of a hazardous substance is released, the owner/operator of a facility that allows the release must notify the State.

(3) Hazardous Waste Rules, FAC 17-730.001 et seq.

The State's regulations implementing the FSHWMA.

(4) Inland Protection Trust Fund.

Provides payment for cleanup and closure of leaking UST with petroleum or petroleum products.

(5) Resource Recovery and Management Regulations, FAC 17-7.200 et seq.

The State's regulations, which implement the Florida Resource Recovery and Management Act, set the criteria and standards for recycling and recovery of materials from wastes.

(6) Solid Waste Disposal Facilities Regulations, FAC 17-701.001 et seq.

The State's regulations implementing the FSHWMA.

(7) Underground Storage Tanks Regulation, FAC 17-61.001 et seq.

The State's regulations prescribing standards for underground storage tanks; providing for registration and notification requirements; mandating construction, operation, repair, and closure standards; establishing an inspection program; creating a petroleum-contaminated cleanup reimbursement funds, criteria, and site ranking.

(8) Used Oil Management Regulations, FAC 17-710.100 et seq.

Florida Statewide Multipurpose Hazardous Waste Facility Siting Act, Title 29, Public Health, Chapter 403, Environmental Control, sections 403.78-403.7893.

This Act establishes a centralized and coordinated permitting process for the location, construction, operation, and maintenance of hazardous waste management facilities.

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### Florida Industrial Siting Act.

(1) Industrial Siting Regulations, FAC 17-23.001 to 23.200.

These regulations implement the Industrial Siting Act by providing a centrally coordinated permit review for industrial, commercial, wholesale, or retail projects to ensure that these projects will protect national resources.

### ***Development and Planning.***

Local Government Comprehensive Planning and Land Development Regulation Act, Title 11, County Organization and Intergovernmental Relations, Chapter 163, Intergovernmental Programs, sections 163.3161 et seq.

This Act confers on local officials the responsibility of planning and regulating the use of land by adopting local government comprehensive plans and land development regulations in conformity with the Environmental Land and Water Management act of 1972. Section 163.3178 deals specifically with coastal management.

(1) Local Planning Regulations, FAC 9J-5 [9J-II, 9J-12, 9J-24, 9J-26, and 9J-29].

These regulations implement the Local Government Planning and Land Development Act by providing that planning activities are integrated on a State, regional, and local level.

State Comprehensive Planning Act of 1972, Title 13, Planning and Development, Chapter 186, State and Regional Planning, sections 186.001 et seq., and Chapter 187, State Comprehensive Plan.

This Act creates an integrated planning process to guide State policies in many areas, specifically including land use and water resources. The State comprehensive plan has become the authoritative expression of State policy and is a long-range planning tool to aid in orderly social, economic, and physical growth. It provides goals for water resources, coastal and marine resources, air quality, natural systems and recreational lands, waste, land use, and cultural historical resources. [The State Water Use Development Plan for the State's water resources does not provide any additional regulatory authority, but is used as a functional part of the State

Comprehensive Plan and provides policy guidance for the State's activities related to water use.]

Florida Regional Planning Council Act, Sections 186.501-.513.

This statute establishes a formal mechanism, in the form of regional planning councils and regional plans, to link local concerns, regional policies, and State plans.

### ***Miscellaneous.***

*Pesticides.* The State is represented by the Florida Coordinating Council on Mosquito Control, a body established by the statute (Chapter 388, F.S.) that gives the Department general authority to accomplish its mission.

*Wastewater Facilities Regulation.* Domestic Wastewater treatment plants are permitted in accordance with Chapter 17-600, F.A.C., Chapters 17-610, F.A.C., and 17-640, F.A.C., are used to permit the re-use of reclaimed water and land application of wastewater residuals aspects of wastewater treatment plant permitting. Chapter 17-40, F.A.C., contains provisions for mandatory re-use within designated critical water supply areas by the Water Management Districts. Also, any new or expanded surface water discharges must meet the anti-degradation requirements in Chapters 17-4 and 17-302, F.A.C.

*Underground Injection Well Control.* The Underground Injection Control (UIC) system was delegated to the Department in April 1982 under Chapter 17-28 F.A.C. The UIC rule regulates injection wells.

Septic tanks, or on-site sewage disposal systems (OSDS), are permitted by the County Public Health Units in accordance with Chapter IOD-6, F.A.C.

The Department of Health and Rehabilitative Services is created under Section 20.19, Florida Statutes (F.S.). The specific authority to conduct the OSDS program is granted under sections 381.0064-66, F.S. Specific regulations promulgated under these sections are contained in Chapter IOD-6 of the Florida Administrative Code (FAC). Section 381.0064, F.S., requires the department to provide continuing education courses for "septic tank contractors, pump-out operators, environmental health specialists, and master plumbers who install septic tanks or service septic tanks." Section 381.0065, F.S., provides for installation conditions for OSDSs. Section 381.0066,

F.S., provides the authority for the implementation of a fee schedule designed to recover the cost of carrying out the on-site sewage disposal program. Chapter IOD-6, F.A.C., contains the regulations promulgated by the Department to oversee the installation and operation of individual OSDs.

The general purpose of the Division of Tourism under Section 218.121, F.S. is to guide, stimulate, and promote the coordinated, efficient, and beneficial travel and leisure development of the state of its region. The 1991 Legislature created the Florida Tourism Commission (Chapter 91-31, Laws of Florida). The Division will operate under the oversight of this commission, whose authority includes funding, planning, promoting and coordinating the State's activities relating to tourism.

The Florida Transportation Code of the Florida Statutes includes Chapters 334-339, 341, 347, 348, and 349 and sections 332.003-322.007, 351.35, 351.36, 351.37, and 861.011. The following sections and chapters supplement the Code and provide additional authority to the Department: section 20.23 and Chapters 206, 212, 316, 320, 427, and 479.

**Federal Fishery Management**

**Fishery Management Plans**

Regional fishery management councils have been established by the Magnuson Fishery Conservation and Management Act to manage fishery resources in the U.S. exclusive economic zone. This is accomplished through the preparation of Fishery Management Plans (FMP) that encompass domestic and foreign fishing efforts for species within their areas of authority. The Councils initially identify a need for fishery management, then determine the objectives that the FMP would accomplish within a defined time period. An FMP is then prepared that includes a list of management alternatives that can be used to achieve these objectives. After the FMP is approved by the Council, it is taken to public hearings. Following these hearings and the expiration of the required review period, the FMP is submitted to the Secretary of Commerce for approval and implementation. The Department of Commerce, through National Marine Fisheries Service agents, the U.S. Coast Guard, and cooperative agreements with State agencies, is responsible for enforcing the FMP laws and regulations.

The Councils are charged with developing FMPs to define certain fisheries within their jurisdictions and establish management measures to prevent overfishing. Highly migratory species, including billfish, swordfish, tunas, and sharks, are managed directly by the National Marine Fisheries Service on behalf of the Secretary (of Commerce).

**FMPs Affecting the Sanctuary**

FMPs governing fisheries within the FKNMS and their implementing regulations are as follows:

Gulf of Mexico Fishery Management Council

Red Drum	50 CFR 653
Reef Fish	50 CFR 641
Shrimp	50 CFR 658
Stone Crab	50 CFR 654

South Atlantic Fishery Management Council

Atlantic Red Drum	50 CFR 647
Shrimp	50 CFR 658
Snapper-Grouper	50 CFR 646

Joint Gulf and South Atlantic Council

Coastal Migratory Pelagic Resources	50 CFR 642
Coral and Coral Reefs	50 CFR 638
Spiny Lobster	50 CFR 640

Secretarial FMPs

Atlantic Billfish	50 CFR 644
Atlantic Swordfish	50 CFR 630
Shark of the Atlantic Coast	50 CFR 678
Atlantic Tuna Fisheries-Atlantic Tunas Convention Act of 1975	50 CFR 285

**National Standards**

The national standards are statutory principles that must be followed in any FMP. In developing FMPs, the Councils have the initial authority to ascertain facts, establish management objectives, and to propose management measures that will achieve the objectives. The Secretary (of Commerce) determines whether the proposed management objectives and measures are consistent with the national standards, other provisions of the Magnuson Act, and other applicable law. The NMSA authorizes the Councils to prepare draft fishing regulations for the sanctuaries, pursuant to 16 U.S.C. 1434 (a)(5), using the following national standards as guidance.

National Standard 1 - Optimum Yield

Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

National Standard 2 - Scientific Information

Conservation and management measures shall be based upon the best scientific information available.

National Standard 3 - Management Units

To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

National Standard 4 - Allocation

Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing

## **Appendix D. Federal Fishery Management**

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privileges among various United States fishermen, such allocation shall be: (1) Fair and equitable to all such fishermen; (2) Reasonably calculated to promote conservation; and (3) Carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

### National Standard 5 - Efficiency

Conservation and management measures shall, where practicable, promote efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

### National Standard 6 - Variations and Contingencies

Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

### National Standard 7 - Costs and Benefits

Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

## **Stock Assessment And Fishery Evaluation (SAFE) Reports**

The SAFE Report is a document that provides the Councils with a summary of the most recent biological status of the species in the fisheries and the social and economic condition of the recreational and commercial fishing interests. It summarizes, on a periodic basis, the best available scientific information concerning past, present, and possible future condition of the stocks and fisheries being managed under Federal regulations. SAFE reports have been developed for all Council FMPs listed above. SAFE reports are available from NMFS, Office of Fishery Management, Silver Spring, MD, 20910.

## Sample Strategy Description Sheet



## Florida Keys National Marine Sanctuary

### Strategy Identification Session



#### Strategy Description Sheet

**Strategy Number** BD-1

**Strategy Name** Develop standardized channel  
marker system for the Sanctuary  
(HIGH).

#### Strategy Type

Educational

Regulatory

Administrative

Economic

Research

#### Description

Design channel/obstruction markers and place them throughout the  
Sanctuary to define obstructions, shallow areas, and environmentally  
sensitive areas. The areas to be marked should be mapped using GIS and  
aerial photography.

#### Desired Effect

To alert boaters to natural and manmade water obstructions, such as  
seagrass, coral, wrecks, and spoil banks. The markers will also divert  
boaters from environmentally sensitive areas.

#### Geographic Extent of Strategy

FKNMS

#### Targeted Use(r) & Cost to User

Private and commercial boaters may be affected indirectly through  
licensefees and taxes.

#### How Administered

DNR, NOAA, USCG, State, Federal, and Local Governments.

#### Administrative Costs and Financing

USCG markers cost \$500-\$1000 per structure. Alternative financing should  
be considered for defining shallow areas throughout the Sanctuary.

#### Implementation Schedule

As soon as possible.

#### Prerequisites for Implementation

Permission of the USCG, the development of a workable plan with confirmed  
funding, and the cooperation of the Int'l Assoc. of Lighthouse Adm., USACOE,  
Florida DER, and DNR.

**Sample Strategy Characterization Sheet**

**Preliminary Characterization Worksheet**

**Theme: Habitats**

Strategy	Relative Impacts							Notes/Assumptions	
	+/-	In a Given Area			Throughout Sanctuary				
		H	M	L	H	M	L		
<b>BD-1 Standardize Channel Marker System in FKNMS</b>								Present (H M L)	Future (H M L)
1. Corals	+		X				X	H	H
2. Hardbottoms	+		X				X	H	H
3. Seagrasses	+	X					X	H	H
4. Algal Communities	+		X				X	H	H
5. Mangroves									
6. Sediments	+			X			X	H	H
7. Submerged Cultural Resources									
<b>BD-2 Restricted zoning for all habitat in the FKNMS</b>								Present (H M L)	Future (H M L)
1. Corals	+	X			X			L	H
2. Hardbottoms	+	X			X			L	H
3. Seagrasses	+	X			X			L	H
4. Algal Communities	+	X			X			L	H
5. Mangroves	+	X			X			L	H
6. Sediments	+	X			X			L	H
7. Submerged Cultural Resources	+	X			X			L	H
<b>BD-3 Signs at Boat Ramps</b>								Present (H M L)	Future (H M L)
1. Corals	+	X				X		H	M
2. Hardbottoms	+		X				X	H	M
3. Seagrasses	+	X				X		H	M
4. Algal Communities	+		X				X	H	M
5. Mangroves	+		X				X	H	M
6. Sediments	+		X				X	H	M
7. Submerged Cultural Resources	+		X				X	H	M

## Mid-range Alternative Strategies

This appendix presents the three mid-range management alternatives being considered for inclusion in the comprehensive Draft Florida Keys National Marine Sanctuary Management Plan and describes the strategies (proposed management actions) that comprise them. It also details the differences between the strategies across each mid-range alternative.

The strategies described in this appendix are the result of a two-year effort to gather and distill information relevant to meeting the requirements of the National Environmental Policy Act (NEPA). Each alternative represents a different approach to managing the Sanctuary, and this appendix is designed to present the most complete view of the current strategies by issue.

## Boating

***B.1.a Conduct a survey to assess public and private boat access throughout the Sanctuary to develop a low-impact access plan. Implement low-cost administrative changes for public access (e.g., signage, timing restrictions, closures, etc.). (Alt. IV)***

This strategy is designed to reduce resource impacts from all boating activities throughout the Sanctuary. An inventory will first be conducted of the existing locations of public and private boat access ramps and their levels of use. Based on this inventory, a boating access plan will be developed to direct new public and private access points, including marinas and mooring areas, to low-impact areas.

Impacts will also be reduced through the use of low-cost administrative techniques such as signs posted at boat ramps, restricted access during certain times of the day, and the closure of access points for a specified amount of time. Prerequisites include developing benthic habitat and bathymetry maps and assessing the distribution of access points.

***B.1.b Conduct a survey to assess public and private boat access throughout the Sanctuary to develop a low-impact access plan; direct new public access to low-impact areas; and modify as appropriate any access affecting sensitive areas throughout the Sanctuary. (Alt. III)***

This strategy is designed to reduce resource impacts from all boating activities throughout the Sanctuary. An inventory will first be conducted of the existing locations of public and private boat access ramps and their levels of use. Based

on this inventory, a boating access plan will be developed that: 1) directs new public access points, including marinas and mooring areas, to low-impact areas; and 2) *requires modification of access ramps directly affecting sensitive areas (i.e., seagrasses, mangroves, hardbottom, etc.) throughout the Sanctuary.*

Impacts will also be reduced through the use of low-cost administrative techniques such as signs posted at boat ramps, restricted access during certain times of the day, and the closure of access points for a specified amount of time. Prerequisites include developing benthic habitat and bathymetry maps and assessing the distribution of access points.

***B.1.c Conduct a survey to assess public and private boat access throughout the Sanctuary to develop a low-impact access plan; implement restrictions on new public access; and require modification of public and private access to reduce impacts to resources and user conflicts throughout the Sanctuary. (Alt. II)***

This strategy is designed to reduce resource impacts from all boating activities throughout the Sanctuary. An inventory will first be conducted of the existing locations of public and private boat access ramps and their levels of use. Based on this inventory, a boating access plan will be developed that: 1) restricts new public access points, including marinas and mooring areas, to low-impact areas; 2) *requires modifications to both public and private access to reduce impacts to resources and user conflicts; and 3) implements restrictions on new public access areas.*

Impacts will also be reduced through the use of low-cost administrative techniques such as signs posted at boat ramps, restricted access during certain times of the day, and the closure of access points for a specified amount of time. Prerequisites include developing benthic habitat and bathymetry maps and assessing the distribution of access points.

***B.2.a Continue ongoing habitat restoration activities and monitor recovery processes. (Alt. IV)***

This strategy supports current efforts to restore and enhance coral, seagrass, and mangrove habitats at severely impacted sites through the help of various organizations, including volunteer groups and NGOs. Restoring these habitats will enhance fishery stocks. Seagrass and coral transplanting are examples of restoration activities, but other techniques must also be developed. Recovery processes (e.g., recruitment and survival) will be monitored at these sites. An extensive demonstration project will be developed for mitigation and restoration techniques following physical disturbances or chronic pollutant inputs. Emergency or long-term restoration zones may be established to allow for sufficient resource recovery.

## Appendix G. Mid-range Alternative Strategies

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### ***B.2.b Conduct a program of restoration research at representative habitat sites within the Sanctuary; develop a restoration plan and implement restoration in severely impacted areas. Monitor recovery processes. (Alt. III)***

*This strategy is designed to promote research and the development of new technologies to restore and enhance coral, seagrass, and mangrove habitats throughout the Sanctuary. Restoring these habitats will enhance fishery stocks. Seagrass and coral transplanting are examples of restoration activities, but other techniques must also be developed. A restoration plan will be developed and implemented for severely impacted areas. Recovery processes (e.g., recruitment and survivability) will be monitored at these sites. An extensive demonstration project will be developed for mitigation and restoration techniques following physical disturbances or chronic pollutant inputs. Emergency or long-term restoration zones may be established to allow for sufficient resource recovery.*

### ***B.2.c Conduct a program of restoration research at representative habitat sites within the Sanctuary; develop a restoration plan and implement restoration in all impacted areas. Monitor recovery processes. (Alt. II)***

*This strategy is designed to promote research and the development of new technologies to restore and enhance coral, seagrass, and mangrove habitats throughout the Sanctuary. Restoring these habitats will enhance fishery stocks. Seagrass and coral transplanting are examples of restoration activities, but other techniques must also be developed. A restoration plan will be developed and implemented for all impacted areas. Recovery processes (e.g., recruitment and survivability) will be monitored at these sites. An extensive demonstration project will be developed for mitigation and restoration techniques following physical disturbances or chronic pollutant inputs. Emergency or long-term restoration zones may be established to allow for sufficient resource recovery.*

### ***B.3.a Develop a removal and disposal plan for derelict and abandoned vessels throughout the Sanctuary and streamline the existing permitting process for the removal of derelict and abandoned vessels from high-use and sensitive areas. (Alt. IV)***

*This strategy will reduce direct and indirect impacts to natural resources from derelict and abandoned vessels. A removal and disposal plan will include: 1) assessing the location and extent of derelict and abandoned vessels; 2) streamlining the existing permitting process for removing derelict and abandoned vessels from high-use and sensitive areas; and 3) requiring the use of environmentally sound removal practices and techniques.*

Screening criteria will also be developed to determine whether or not to move a vessel. Criteria will include possible damage to the environment and the establishment of a policy where the owner of the vessel, if known, would pay for its removal.

### ***B.3.b Develop and implement a removal and disposal plan for derelict and abandoned vessels, streamline the permitting process, and require the removal of all derelict and abandoned vessels throughout the Sanctuary. (Alts. III and II)***

*This strategy will reduce direct and indirect impacts to natural resources from derelict and abandoned vessels. A removal and disposal plan will include: 1) assessing the location and extent of derelict and abandoned vessels; 2) streamlining the existing permitting process for removing derelict and abandoned vessels from high-use and sensitive areas; and 3) requiring the use of environmentally sound removal practices and techniques. It will also require the removal of derelict and abandoned vessels throughout the Sanctuary.*

Screening criteria will also be developed to determine whether or not to move a vessel. Criteria will include possible damage to the environment and the establishment of a policy where the owner of the vessel, if known, would pay for its removal.

### ***B.4.a Establish a channel and “significant features” marking system and associated regulations regarding boat speeds and wakes to reduce natural resource damages, and implement in sensitive areas (e.g., corals, hardbottoms, some mangrove creeks, submerged aquatic vegetation). (Alt. IV)***

*This strategy will reduce damage to natural resources from boating activities by: 1) placing regulatory and informational floating buoys or fixed markers at major shallow-water reefs, shoals, or other significant features; 2) marking frequently used and preferred channels; and 3) reducing boat wakes in sensitive habitats, areas vulnerable to erosion, and high-density areas such as marinas. The strategy will be implemented in sensitive areas (corals, hardbottoms, some mangrove creeks, submerged aquatic vegetation). A survey to identify and map areas of frequent groundings, channels, sites of shallow-water reefs, shoals and other significant features is a prerequisite. This strategy will affect all watercraft, including personal watercrafts (PWC).*

### ***B.4.b Establish a channel/waterway marking system throughout the Sanctuary. (Alts. III and II)***

*This strategy will reduce damage to natural resources from boating activities by: 1) placing regulatory and informational floating buoys or fixed markers at major shallow-water reefs, shoals, or other significant features; 2) marking*

frequently used and preferred channels; and 3) reducing boat wakes in sensitive habitats, areas vulnerable to erosion, and high-density areas such as marinas. *The strategy will be implemented throughout the Sanctuary.* A survey to identify and map areas of frequent groundings, channels, sites of shallow-water reefs, shoals, and other significant features is a prerequisite. This strategy will affect all watercraft, including personal watercraft (PWC).

***B.5.a Develop a response plan for boat groundings throughout the Sanctuary. (Alts. IV, III, and II)***

This strategy will develop a standard response plan to address boat groundings throughout the Sanctuary. The plan should reduce response time, a critical factor in limiting the potential for extensive resource damage. A prerequisite is to identify the available response resources and the affected agencies, and to develop a protocol for responsibility, assessment standards, methods, and training.

***B.6.a Add 10 Sanctuary enforcement officers to deploy in high-use and sensitive areas. (Alt. IV)***

This strategy will increase the presence of law enforcement officers (LEOs) on the water to protect resources and reduce user conflicts. This will be accomplished by hiring 10 more LEOs and deploying them in high-use and sensitive areas. Remote observation techniques may be used to aid enforcement efforts. High-use and sensitive areas will be identified.

***B.6.b Add 30 Sanctuary enforcement officers to deploy in high-use and sensitive areas. (Alt. III)***

This strategy will increase the presence of law enforcement officers (LEOs) on the water to protect resources and reduce user conflicts. This will be accomplished by hiring 30 more LEOs and deploying them in high-use and sensitive areas. Remote observation techniques may be used to aid enforcement efforts. High-use and sensitive areas will be identified.

***B.6.c Add 50 Sanctuary enforcement officers to deploy throughout the Sanctuary. (Alt. II)***

This strategy will increase the presence of law enforcement officers (LEOs) on the water to protect resources and reduce user conflicts. This will be accomplished by hiring 50 more LEOs and deploying them throughout the Sanctuary. Remote observation techniques may be used to aid enforcement efforts.

***B.7.a Reduce pollution discharges (e.g., sanitary wastes, debris, and hydrocarbons) from vessels by enforcing existing regulations, assessing the need for additional regulations, and implementing and enforcing new regulations (i.e., upcoming regulation restricting discharge in State waters). Change the environmental crimes category associated with discharges from felony to civil offense, thereby removing the need to prove criminal intent. (Alts. IV, III, and II)***

This strategy will help avoid further water quality degradation by boaters and live-aboards by: 1) requiring boaters and live-aboards to use holding tanks; 2) restricting the discharge of substances (other than fish waste and exhaust) into nearshore waters; and 3) establishing trash-collection stations. This strategy requires an assessment of where pump-out and trash-collection stations are most needed and where they should be located (e.g., in marinas or elsewhere). The strategy includes a review of the adequacy of existing regulations that address pollution discharges from vessels and the need for additional regulations. This strategy could also reduce pollution by providing civil penalties (e.g., fines) for environmental crimes such as discharging fuel or pumping out a ship-board holding tank. These are currently felonies, and obtaining a conviction requires proving criminal intent, which is often difficult. Reclassifying these actions as civil offenses would make it easier to discourage the pollution of Sanctuary waters.

***B.8.a Conduct a boating fee assessment study to evaluate and reallocate Sanctuary-related fees. (Alt. IV)***

This strategy will examine mechanisms for generating funds for use in Sanctuary management and related research. Boating activity levels will be assessed, and existing fees related to resource utilization in the Sanctuary evaluated. Based on this information, an impact fee plan will be considered for different users in proportion to their use levels. The fee could be implemented through the purchase of a sticker or stamp to be displayed on the boat or fishing license. A process will be developed to properly funnel and utilize existing fees.

***B.8.b Conduct a boating fee assessment study to evaluate and reallocate Sanctuary-related fees; implement appropriate impact fees. (Alts. III and II)***

This strategy will examine mechanisms to generate funds for use in Sanctuary management and related research. Boating activity levels will be assessed and existing fees related to resource utilization in the Sanctuary evaluated. *Based on this information, appropriate impact fees will be implemented, contingent upon the current study to establish user fees for NOAA's national marine sanctuaries, for users in proportion to their use levels.* The fee could be implemented through the purchase of a sticker or stamp to be displayed on the boat or fishing license. A process will be developed to properly funnel and utilize existing fees.

## Appendix G. *Mid-range Alternative Strategies*

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### ***B.9.a Establish a voluntary visitor registration program to assess user activity in the Sanctuary. (Alts. IV, III, and II)***

This strategy will help better understand overall Sanctuary use patterns by determining the areas of the Sanctuary visited most frequently and the types of visitor activities. Visitors can fill out registration forms at all Sanctuary offices, Federal- and State-administered areas and visitor centers and, at the same time, can obtain information on the Sanctuary.

### ***B.10.a Establish damage assessment standards for vessel groundings in the Sanctuary. (Alts. IV, III, and II)***

This strategy will establish a standard damage assessment methodology for vessel groundings on coral reefs and other vulnerable or sensitive habitats. Establishing a standard damage assessment methodology includes improving response times, assessment procedures, and litigation practices. Prerequisites include: 1) developing an assessment procedure manual; 2) assembling assessment response teams; 3) identifying assessment techniques for all habitat types; and 4) determining resource values.

### ***B.11.a Establish permits (e.g., for researchers, educators, emergency response personnel, salvors, salvage operators, animal rescue operations) to conduct activities otherwise prohibited within the Sanctuary; facilitate simplified permitting. (Alts. IV, III, and II)***

This strategy will allow access by special groups (e.g., researchers, educators, emergency response personnel, salvage operators, and animal rescue operations) to restricted areas (e.g., nesting sites, spawning areas, etc.). Permits will be monitored and permit provisions enforced.

### ***B.12.a Expand Federal/State/local cooperative law enforcement and cross-deputization programs and prioritize enforcement areas. (Alts. IV, III, and II)***

This strategy will increase the efficiency and effectiveness of enforcement efforts. It will establish coordination and cooperation among agencies and increase interagency communication by: 1) developing cooperative administrative agreements that establish Federal, State, and local enforcement authority among all officers; 2) scheduling efficient equipment and staff use among all agencies; 3) standardizing training; 4) developing a process for handling violations; 5) standardizing radio communications (i.e., use of a common radio frequency); 6) promoting cooperation with the military in detecting violations; and 7) determining priority enforcement areas. Establishing cooperative agreements and identifying priority areas are prerequisites.

### ***B.13.a Establish regulations and procedural guidelines for commercial salvaging and towing of vessels in need of assistance. (Alt. IV)***

This strategy will reduce damage to natural resources resulting from improper vessel salvage methods by developing standard vessel salvage procedures including: 1) obtaining a permit; 2) notifying authorities; 3) having an authorized observer at the site or receiving permission to proceed; 4) providing operator training; and 5) promoting the use of environmentally sound salvaging and towing practices and techniques. Prerequisites include establishing a Memorandum of Understanding (MOU) with the Coast Guard and the construction of a bond/insurance program.

### ***B.13.b Establish regulations and procedural guidelines for commercial salvaging and towing of vessels in need of assistance. Implement permitting for salvaging and towing throughout the Sanctuary and establish an operator training program. (Alt. III)***

This strategy will reduce damage to natural resources resulting from improper vessel salvage methods by developing standard vessel salvage procedures including: 1) obtaining a permit; 2) notifying authorities; 3) having an authorized observer at the site or receiving permission to proceed; 4) providing operator training; and 5) promoting the use of environmentally sound salvaging and towing practices and techniques. *Permitting for salvaging and towing operations will be implemented throughout the Sanctuary. A program to train operators in environmentally sound methods of towing and salvaging will also be established and promoted.* Prerequisites include establishing an MOU with the Coast Guard and the construction of a bond/insurance program.

### ***B.13.c Establish regulations and procedural guidelines for commercial salvaging and towing of vessels in need of assistance. Implement permitting for salvaging and towing throughout the Sanctuary and require operator training. (Alt. II)***

This strategy will reduce damage to natural resources resulting from improper vessel salvage methods by establishing standard vessel salvage procedures including: 1) obtaining a permit; 2) notifying authorities; 3) having an authorized observer at the site or receiving permission to proceed; 4) requiring operator training; and 5) promoting the use of environmentally sound salvaging and towing practices and techniques. *Permitting for salvaging and towing operations and operator training will be required throughout the Sanctuary.* Prerequisites include establishing an MOU with the Coast Guard and the construction of a bond/insurance program.

**B.15.a Conduct an assessment of current mooring buoy technology to determine impacts to resources and to evaluate which are the most environmentally sound, cost-effective, and functional for use in Sanctuary waters. Develop a comprehensive mooring buoy plan providing for the maintenance of buoys, the placement of buoys as needed, and the implementation of vessel size limits at mooring buoys in sensitive areas. (Alt. IV)**

This strategy decreases user conflicts, prolongs mooring buoy life, and reduces the risk of vessel groundings by: 1) assessing vessel impacts on mooring buoys and natural resources; 2) determining the impacts of mooring buoy technologies on resources; and 3) determining which mooring buoy designs are the most environmentally sound, cost-effective, and functional. A comprehensive mooring buoy plan will be developed providing for the maintenance of buoys, the placement of buoys as needed, and the implementation of vessel size limits at mooring buoys in sensitive areas. The assessment will define vessel size limits.

**B.15.b Conduct an assessment of current mooring buoy technology to determine impacts to resources and to evaluate which are the most environmentally sound, cost-effective, and functional for use in Sanctuary waters. Develop a comprehensive mooring buoy plan providing for the maintenance of buoys, the placement of buoys as needed, and the implementation of vessel size limits at mooring buoys throughout the Sanctuary. (Alts. III and II)**

This strategy decreases user conflicts, prolongs mooring buoy life and reduces the risk of vessel groundings by: 1) assessing vessel impacts on mooring buoys and natural resources; 2) determining the impacts of mooring buoy technologies on resources; and 3) determining which mooring buoy designs are the most environmentally sound, cost-effective and functional. A comprehensive mooring buoy plan will be developed providing for the maintenance of buoys, the placement of buoys as needed, and the implementation of vessel size limits at mooring buoys throughout the Sanctuary. The assessment will define vessel size limits.

**B.16.a Identify subdivisions and coastal areas where dock construction should be prohibited due to inadequate surrounding water depths and the presence of important marine resources. Coordinate the Federal, State, and local permitting process for dock construction. (Alts IV, III, and II)**

Conduct a study to determine areas within the Sanctuary where dock construction should be prohibited because of the lack of channels providing access to navigable waters. This can be done in conjunction with strategy B.4. (Channel Marking). Monroe County is currently permitting dock

construction in areas with inadequate surrounding water depth. The intent of this strategy is to develop a protocol between the ACOE, FL DCA, and Monroe County for only permitting docks in areas where there are accessible channels of adequate depth, and where they will not adversely impact important marine resources.

**B.17.a Develop and implement regulations for the operation of PWC and other motorized vessels within 100 yards of sensitive or critical areas, other boats, and people in the water. Develop and implement regulations and procedural guidelines for commercial PWC rental operations. (Alt. IV)**

This strategy will reduce damage to natural resources resulting from the improper operation of PWCs and other motorized vessels, and will address user-conflict issues. Special-use Areas (strategy Z.5) will be used to establish 100-yard idle-only buffer zones around sensitive areas (e.g., residential shorelines, edges of flats, and areas being used by wading or nesting birds). Riders will be required to operate at idle speeds within 100 yards of other vessels, bridges, persons in the water, persons fishing, and within residential canals. Rental operations will also be required to establish their own zones, subject to permit requirements, where riders can be observed at all times. Areas to be avoided will be marked according to the channel-marking strategy (B.4).

To further protect the resources and reduce user conflicts, rental operations will be required to screen and train their employees on safe and environmentally sound methods of PWC operation. Employees will be given a training manual that they must sign certifying that they understand its contents. In addition, information about the Sanctuary must be made available to clients.

To enhance safe riding, rental operations must be able to effect emergency communications, have rescue and chase vessels available, and have personnel available who are trained in first-aid and CPR.

Users of PWCs must comply with existing laws, including minimum age and equipment requirements and regulations governing vehicle operation (e.g., surfing the wakes of other vessels).

**B.17.b Develop and implement regulations for the operation of PWC and other motorized vessels within 200 yards of sensitive or critical areas, other boats, and people in the water. Develop and implement regulations and procedural guidelines for commercial PWC rental operations. (Alt. III)**

This strategy will reduce damage to natural resources resulting from the improper operation of PWCs and other motorized vessels, and will address user-conflict issues. Special-use Areas (strategy Z.5) will be used to establish 200-yard idle-only buffer zones around sensitive areas (e.g., residential shorelines, edges of flats, and areas being

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used by wading or nesting birds). Riders will be required to operate at idle speeds within 200 yards of other vessels, bridges, persons in the water, persons fishing, and within residential canals. Rental operations will also be required to establish their own zones, subject to permit requirements, where riders can be observed at all times. Areas to be avoided will be marked according to the channel-marking strategy (B.4).

To further protect the resources and reduce user conflicts, rental operations will be required to screen and train their employees on safe and environmentally sound methods of PWC operation. Employees will be given a training manual that they must sign certifying that they understand its contents. In addition, information about the Sanctuary must be made available to clients.

To enhance safe riding, rental operations must be able to effect emergency communications, have rescue and chase vessels available, and have personnel available who are trained in first-aid and CPR.

Users of PWCs must comply with existing laws, including minimum age and equipment requirements and regulations governing vehicle operation (e.g., surfing the wakes of other vessels).

### ***B.17.c Develop and implement regulations for the operation of PWC and other motorized vessels within 300 yards of sensitive or critical areas, other boats, and people in the water. Develop and implement regulations and procedural guidelines for commercial PWC rental operations. (Alt. II)***

This strategy will reduce damage to natural resources resulting from the improper operation of PWCs and other motorized vessels, and will address user-conflict issues. Special-use Areas (strategy Z.5) will be used to establish 300-yard idle-only buffer zones around sensitive areas (e.g., residential shorelines, edges of flats, and areas being used by wading or nesting birds). Riders will be required to operate at idle speeds within 300 yards of other vessels, bridges, persons in the water, persons fishing, and within residential canals. Rental operations will also be required to establish their own zones, subject to permit requirements, where riders can be observed at all times. Areas to be avoided will be marked according to the channel-marking strategy (B.4).

To further protect the resources and reduce user conflicts, rental operations will be required to screen and train their employees on safe and environmentally sound methods of PWC operation. Employees will be given a training manual that they must sign certifying that they understand its contents. In addition, information about the Sanctuary must be made available to clients.

To enhance safe riding, rental operations must be able to effect emergency communications, have rescue and chase vessels available, and have personnel available who are trained in first-aid and CPR.

Users of PWCs must comply with existing laws, including minimum age and equipment requirements and regulations governing vehicle operation (e.g., surfing the wakes of other vessels).

## Fishing

### ***F.1.a Establish a protocol for developing and revising a consistent set of fisheries regulations, and implement throughout the Sanctuary. (Alts. IV, III, and II)***

This strategy will ensure administrative and regulatory coordination between fisheries regulatory agencies operating within Sanctuary waters, and will develop a process for combining and revising existing regulations and developing new regulations. All fisheries and harvesting methods will be included. The Florida Marine Fisheries Commission (FMFC) and Gulf of Mexico and South Atlantic fisheries management councils are currently working on protocols for developing and revising regulations within the Sanctuary, and are deciding on a lead agency to coordinate and facilitate regulatory functions. Identifying and assessing existing regulations are prerequisites, and should also form the basis for identifying additional regulatory needs. Regulations developed under this strategy will ensure that the goals of long-term maintenance of the ecosystem and optimum sustainable yields are met. Any fisheries regulations implemented within the Sanctuary (e.g., gear and fishing method restrictions, fishing area restrictions, and size limits) will be developed through the established protocol.

### ***F.3.a Develop and conduct a research program to assess the impacts of stocking programs on the genetic integrity of native stocks within the Sanctuary. The program will also be used to develop and implement appropriate regulations on the stocking of native and non-native species to protect the genetic integrity of native stocks. (Alt. IV)***

The research will build on native stock genetic integrity research conducted elsewhere to determine the effect of fish stocking on the genetic integrity of native species within the Sanctuary. This research will determine the extent to which changes in the genetic integrity of native stocks have occurred, or are likely to occur, and the effects of these changes on their abundance, distribution, and life histories. Research results will assist in the development and implementation of regulations governing stocking activities.

### ***F.3.b Implement a moratorium on stocking activities. Assess existing research on the impacts of stocking on the genetic integrity of native stocks. Conduct research on natural stock recovery and its role in maintaining genetic integrity. Conduct a re-***

***evaluation of stocking options. The length of the moratorium will depend on the length and results of the assessment. (Alts. III and II)***

The research will build on native stock genetic integrity research conducted elsewhere to determine the effect of fish stocking on the genetic integrity of native species within the Sanctuary. This research will determine the extent to which changes in the genetic integrity of native stocks have occurred, or are likely to occur, and the effects of these changes on their abundance, distribution, and life histories. *A moratorium and re-evaluation of stocking options will allow for the development and implementation of regulations governing stocking activities. The length of the moratorium will depend on the length and results of the assessment.*

***F.4.b Assess, develop, and promote mariculture alternatives for all commercially harvested marine species. Support efforts to eliminate the harvest and landing of live rock. (Alt. III)***

This strategy will reduce fishing pressures on commercially harvested marine species and help satisfy commercial demand for these species. This is a long-term effort designed to identify and develop mariculture techniques and promote the development of environmentally sound mariculture operations. This strategy also complements a provision by the FMFC, which began a three-year phase out of live rock harvesting in July 1992. The Sanctuary will support efforts to eliminate the harvest and landing of live rock in accordance with the FMFC and the protocols established for consistent regulations in strategy F.1.a.

***F.4.c Develop and implement mariculture alternatives for all commercially harvested marine species. Support efforts to eliminate the harvest and landing of live rock. (Alt. II)***

This strategy will reduce fishing pressures on commercially harvested marine species and help satisfy commercial demand for these species. This is a long-term effort designed to identify and develop mariculture techniques and promote the development of environmentally sound mariculture operations. *Once effective mariculture techniques are developed for a given species, regulations will be developed to reduce or eliminate the harvest of that species in the wild.* This strategy also complements a provision by the FMFC, which began a three-year phase out of live rock harvesting in July 1992. The Sanctuary will support efforts to eliminate the harvest and landing of live rock in accordance with the FMFC and the protocols established for consistent regulations in strategy F.1.a.

***F.5.a Assess limited-entry fisheries options for specific Sanctuary fisheries. Develop appropriate regulations that ensure the long-term sustainability of Sanctuary fisheries. (Alt. IV)***

This strategy will involve the assessment of existing fishery regulatory programs that limit the number of persons, vessels, or units of fishing gear utilizing specific fisheries within the Sanctuary, within Florida, and elsewhere. The objective is to determine the extent to which limited-entry management regimes can be used to: 1) protect specific marine life species; 2) increase stock abundance; 3) reduce habitat damage; and 4) reduce user conflicts within the Sanctuary.

***F.5.b Assess limited-entry fisheries options for specific Sanctuary fisheries. Develop appropriate regulations that ensure the long-term sustainability of Sanctuary fisheries. Implement appropriate regulations on a fishery-by-fishery basis. (Alt. III)***

This strategy will involve the assessment of existing fishery regulatory programs that limit the number of persons, vessels, or units of fishing gear utilizing specific fisheries within the Sanctuary, within Florida, and elsewhere. The objective is to determine the extent to which limited-entry management regimes can be used to: 1) protect specific marine life species; 2) increase stock abundance; 3) reduce habitat damage; and 4) reduce user conflicts within the Sanctuary. *This strategy will require the implementation of regulations limiting entry to fisheries that: 1) involve marine life species in need of protection; 2) have low stock abundance; 3) are associated with areas exhibiting severe habitat damage; or 4) have a high degree of user conflicts. Regulations will be developed and implemented in accordance with the FMFC and the protocols established for consistent regulations in strategy F.1.a.*

***F.5.c Assess limited-entry fisheries options for specific Sanctuary fisheries. Develop appropriate regulations that ensure the long-term sustainability of Sanctuary fisheries. Implement regulations for all Sanctuary fisheries. (Alt. II)***

This strategy will involve the assessment of existing fishery regulatory programs that limit the number of persons, vessels, or units of fishing gear utilizing specific fisheries within the Sanctuary, within Florida and elsewhere. The objective is to determine the extent to which limited-entry management regimes can be used to: 1) protect specific marine life species; 2) increase stock abundance; 3) reduce habitat damage; and 4) reduce user conflicts within the Sanctuary. *The strategy requires the implementation of regulations that limit entry to all Sanctuary fisheries. Regulations will be developed and implemented in accordance with the FMFC and the protocols established for consistent regulations in strategy F.1.a.*

**F.6.a Enhance the resolution of existing commercial and recreational fisheries-dependent sampling programs to provide statistics on catch and effort at the Sanctuary level. Initiate a fisheries-independent sampling program to measure Sanctuary-level prerecruitment of economically important species. Conduct a fisheries inventory of species, sizes, ages, harvest, bycatch, timing, distribution, users, socioeconomics, and gear. (Alt. IV)**

This strategy is designed to evaluate and modify existing commercial landing and recreational creel census programs for providing Sanctuary-level, statistically based management information for regulating take. This includes an assessment and modification of information types and mandatory versus voluntary information. A fishery prerecruitment monitoring effort will also be initiated for the long-term prediction of fishery stocks for Sanctuary-level management. This effort is independent of commercial and recreational industry monitoring, and Florida's DEP has begun implementation for other areas in the state. Regulations will be developed and implemented in accordance with the FMFC and the protocols established for consistent regulations in strategy F.1.a.

**F.6.b Enhance the resolution of existing commercial and recreational fisheries-dependent and independent sampling programs to provide statistics on catch and effort. This will be accomplished by establishing statistical areas based on "completeness criteria" including scientific need. Initiate fisheries-independent sampling programs to measure the prerecruitment of economically important species within the statistical areas. (Alts. III and II)**

This strategy is designed to evaluate and modify existing commercial landing and recreational creel census programs for providing statistically based management information for regulating take. *To increase the resolution of the programs, statistical areas will be established to provide information on catch and effort. The number of areas will be based on "completeness criteria" including scientific need.* This includes an assessment and modification of information types and mandatory versus voluntary information. A fishery prerecruitment monitoring effort will also be initiated for the long-term prediction of fishery stocks for Sanctuary-level management. This effort is independent of commercial and recreational industry monitoring, and Florida's DEP has begun implementation for other areas in the state. Regulations will be developed and implemented in accordance with Florida's Marine Fisheries Commission and the protocols established for consistent regulations in strategy F.1.a.

**F.7.a Conduct research on the impacts of artificial reefs on fish and invertebrate populations for long-term management including location, size, materials, etc. Monitor and evaluate habitat modifications caused by the installation of marine structures. Assess and**

**develop regulations for artificial reef construction and evaluate habitat suitability for artificial reefs. (Alts. IV and III)**

This strategy will: 1) determine the impacts of artificial reefs on fish abundance and community composition; 2) develop design criteria including construction materials and appropriate sites; and 3) examine existing regulations/policies that would affect the placement of artificial reefs within the Sanctuary. Regulations can be developed based on research and in accordance with the protocols established in strategy F.1.a. This strategy also will allow for the implementation of existing regulations.

**F.7.c Implement a three-year moratorium on artificial reef development. Conduct research on the impacts of artificial reefs on fish and invertebrate populations for long-term management, including locations, size, materials, etc. Monitor and evaluate habitat modifications caused by the installation of marine structures. Assess and develop regulations for artificial reef construction and evaluate habitat suitability for artificial reefs. (Alt. II)**

This strategy will: 1) determine the impacts of artificial reefs on fish abundance and community composition; 2) develop design criteria including construction materials and appropriate sites; and 3) examine existing regulations/policies which would affect the placement of artificial reefs within the Sanctuary. Regulations can be developed based on research and in accordance with the protocols established in strategy F.1.a. This strategy will also allow for the implementation of existing regulations *and prohibit artificial reef placement/construction within the Sanctuary for three years. This will allow for the development of new Sanctuary-specific regulations and the establishment of implementation methods.*

**F.8.a Implement regulations to prevent the release of exotic species into the Sanctuary. (Alts. IV, III, and II)**

This strategy will prevent the introduction of exotic species into the natural environment of the Sanctuary to ensure that local and ecosystem-level impacts do not occur. The main focus of this strategy involves the control of aquaculture operations. In some cases, prohibitions on the culture of certain species will be considered.

**F.9.a Develop a program for the removal of lost or out-of-season fishing gear, and implement in all areas of the Sanctuary. (Alts. IV, III, and II)**

This strategy will reduce habitat, wildlife, and fish population impacts resulting from fishing gear that has been lost or abandoned including traps, fishing lines, and hooks. Gear removal will be achieved through incentives, volunteer efforts, an extension of the trap removal grace period,

and education and enforcement programs. Implementation will occur throughout the Sanctuary.

***F.10.a Conduct an assessment of methods used to harvest commercial and recreational marine species including corals, fish, and invertebrates. Develop and implement regulations to reduce the effects of current fishing practices on nontargeted species. (Alts. IV, III, and II)***

This strategy will determine the impacts of harvesting methods on species composition and abundance, and the indirect impacts on other species and the environment. The extent of the problem will be assessed, and research will be conducted on the impacts of existing fishing methods and gear. Regulations will be developed and implemented based on research results to reduce the by-catch of incidental species and undersized targeted species. These may include requirements for the use of specific net/trap designs and temporal/spatial restrictions (e.g., spawning areas). Regulations will focus on protecting marine species, increasing species composition and abundance, and reducing adverse impacts on the environment.

***F.11.a Conduct research on alternative fishing gear and methods that minimize impacts on habitat. Implement a voluntary program to encourage the use of low-impact gear and methods. Characterize harvesting stresses affecting outer and inshore reefs and hardbottom ecosystems. (Alt. IV)***

This strategy will facilitate research to develop gear designs and types that minimize impacts to corals, hardbottoms, seagrasses, and other habitats. Biodegradable fishing line, traps, and buoy lines are examples of gear that should be researched. Modified trap designs should also be considered. Fishing methods, including resource handling and gear placement, should be researched to develop methods and gear that minimize impacts to resources, while maintaining gear efficiency. The Sanctuary will implement an effort to encourage the voluntary use of low-impact gear types and fishing methods.

***F.11.b Conduct research on alternative fishing gear and methods that minimize impacts on habitat. Implement a voluntary program to encourage the use of low-impact gear and methods. Implement regulations to require the use of low-impact gear and methods in priority areas. Characterize harvesting stresses affecting outer and inshore reefs and hardbottom ecosystems. (Alt. III)***

This strategy will facilitate research to develop gear designs and types that minimize impacts to corals, hardbottoms, seagrasses and other habitats. Biodegradable fishing line, traps and buoy lines are examples of gear that should be researched. Modified trap designs should

also be considered. Fishing methods, including resource handling and gear placement, should also be researched to develop methods and gear that minimize impacts to resources, while maintaining gear efficiency. The Sanctuary will implement an effort to encourage the voluntary use of low-impact gear types and fishing methods throughout the Sanctuary. *Regulations will be developed requiring the use of low-impact gear and methods in priority areas. Regulatory implementation will be in accordance with strategy F.1.a.*

***F.11.c Conduct research on alternative fishing gear and methods that minimize impacts on habitat. Implement regulations to require the use of low-impact gear and methods Sanctuary-wide. Characterize harvesting stresses affecting outer and inshore reefs and hardbottom ecosystems. (Alt. II)***

This strategy will facilitate research to develop gear designs and types that minimize impacts to corals, hardbottoms, seagrasses, and other habitats. Biodegradable fishing line, traps, and buoy lines are examples of gear that should be researched. Modified trap designs should also be considered. Fishing methods, including resource handling and gear placement, should also be researched to develop methods and gear that minimize impacts to resources while maintaining gear efficiency. The Sanctuary will implement an effort to educate fisheries users about the benefits of low-impact gear types and fishing methods to encourage voluntary compliance with regulations. *Regulations mandating the use of low-impact gear and methods will be required throughout the Sanctuary to provide maximum resource protection.* Regulatory implementation will be conducted in accordance with strategy F.1.a.

***F.12.a Eliminate all finfish traps within the Sanctuary, excluding those set for bait fish. (Alts. IV, III, and II)***

This strategy will increase species diversity, composition, and abundance and will eliminate the harvest of nontargeted species, reducing adverse environmental impacts resulting from placement and recovery activities. This strategy complements existing Florida and South Atlantic fisheries management council regulations.

***F.14.a Conduct an assessment of spearfishing practices and impacts to develop and implement regulations in high-priority areas. (Alt. IV and III)***

This strategy will: 1) determine the impacts of spearfishing on species composition and abundance; 2) reduce incidental habitat damage; and 3) reduce user conflicts. Regulations will be developed and implemented in high-priority areas (i.e., those areas exhibiting a low stock abundance, a high degree of habitat damage, or a high degree of user conflicts). Restrictions may include bag limits, gear prohibitions, or the closure of selected areas

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(e.g., around residential areas). This strategy will also support any existing spearfishing closures in Sanctuary waters.

### ***F.14.c Conduct an assessment of spearfishing practices and impacts to develop and implement regulations throughout the Sanctuary. (Alt. II)***

This strategy is designed to: 1) determine the impacts of spearfishing on species composition and abundance; 2) reduce incidental habitat damage; and 3) reduce user conflicts. *Regulations will be developed and implemented throughout the Sanctuary.* Restrictions may include bag limits, gear prohibitions, or the closure of selected areas (e.g., around residential areas). This strategy will also support any existing spearfishing closures in Sanctuary waters.

### ***F.15.a Develop and conduct a research program to assess the impacts of current sponge harvest methods on the resource and the habitats in which they occur. Develop and implement regulations for high-priority areas. (Alt. IV)***

This strategy will include research and assessment activities to determine which methods have a low adverse impact on both species and habitats and to identify areas that exhibit low abundance, low recovery rates, and habitat damage. Species specific regulations will be developed and implemented in these areas in accordance with the FMFC and the protocols established in strategy F.1.a. Regulations may include bag limits, an increase in minimum size, and/or designating areas closed to harvest. This strategy is specific to nonornamental sponge species, which are currently regulated by the FMFC.

### ***F.15.b Develop and conduct a research program to assess the impacts of current sponge harvest methods on the resource and the habitats in which they occur. Develop and implement regulations throughout the Sanctuary. (Alt. III)***

This strategy will include research and assessment activities to determine which methods have a low adverse impact on both species and habitats and to identify areas that exhibit low abundance, low recovery rates, and habitat damage. *This strategy requires the development and implementation of species specific regulations governing sponge harvest in all habitats in which they occur throughout the Sanctuary* in accordance with the FMFC and the protocols established in strategy F.1.a. Regulations may include bag limits, an increase in minimum size and/or designating areas closed to harvest. This strategy is specific to nonornamental sponge species, which are currently regulated by the FMFC.

### ***F.15.c Establish a three-year moratorium on the harvest of sponges. Develop and conduct a research program to assess the impacts of current sponge harvest methods on the resource and the habitats in which they occur. Develop regulations for implementation after the moratorium. (Alt. II)***

This strategy will include research and assessment activities to determine which methods have a low adverse impact on both species and habitats and to identify areas that exhibit low abundance, low recovery rates, and habitat damage. *The imposed three-year moratorium will be species specific and allow for the full development of regulations governing sponge harvest throughout the Sanctuary* in accordance with the FMFC and the protocols established in strategy F.1.a. Regulations may include bag limits, an increase in minimum size, and/or designating areas closed to harvest. This strategy is specific to nonornamental sponge species, which are currently regulated by the FMFC.

## Land Use

### ***L.1.a Require marinas that have pump-out requirements to install pump-out facilities. (Alts. IV, III, and II)***

This strategy will eliminate marina live-aboard vessels as a source of pollution in the Sanctuary. Although live-aboards within marinas may be a minor contributor to the total pollutant load, marinas are normally located in confined waters that are more susceptible to the impacts of such loading. By requiring marinas to provide pump-out facilities, two problems may be resolved: 1) boats in marinas that don't currently pump-out will be provided with the means to do so; and 2) boats that moor outside of marinas can take advantage of the increased number of pump-out facilities.

### ***L.2.a Conduct an assessment of marina (10 slips or more) compliance with current regulations and standards, including OSHA standards for marina operations. Evaluate interagency cooperation in the marina permit review process and initiate action to eliminate conflicts in agency jurisdictions. Improve marina siting criteria to ensure that only appropriate deep-water access will be permitted and to provide for the proper handling of noxious materials. (Alts. IV, III, and II)***

This strategy will reduce sources of pollution loading associated with marina activities. It will also reduce the pollution of nearshore waters through the implementation of OSHA regulations regarding marina operations. A program will be developed to target activities that have potential impacts on ground and nearshore waters (e.g., bottom paint removal; use of fiberglass, resins, and solvents; fuel transfer; etc.). All marinas will be subject to this program. This strategy will also improve marina operations, the cooperation and coordination of agencies

involved in the marina permitting process, and will develop criteria for selecting sites for developing new or expanding existing marinas.

**L.3.a Evaluate procedures to avoid or reduce fuel spillage during refueling operations. Initiate remedial solutions to any problems identified. (Alt. IV)**

This strategy will require an evaluation of refueling operations through a detailed inventory of fueling facilities and an assessment of typical fuel-handling techniques and technology. Based on the inventory and assessment, short-term, low-cost remedial actions should be initiated in compliance with existing State laws.

**L.3.b Evaluate procedures to avoid or reduce fuel spillage during refueling operations. Initiate remedial solutions to any problems identified. Require the establishment of paved and curbed containment areas for boat maintenance activities such as hull scraping and repainting, mechanical repairs, and lubrication. Require the creation of secondary containment, generally in the form of curbing or synthetic liners, for areas where significant quantities of hazardous or toxic materials are stored. (Alts. III and II)**

This strategy requires an evaluation of refueling operations through a detailed inventory of fueling facilities and an assessment of typical fuel handling techniques and technology. Based on the inventory and assessment, short-term, low-cost remedial actions should be initiated in compliance with existing State laws. *In addition, little effort is now directed at containing and collecting wastes associated with boat maintenance activities such as bottom scraping or mechanical repairs. This strategy will help reduce pollution by establishing containment areas to prevent paint chips or dust and other wastes from entering surface waters. Secondary containment for hazardous or toxic material storage areas will minimize the potential for these substances to enter ground or surface waters.*

**L.4.a Revise regulations to require public and private RV parks to provide pump-out facilities, and implement requirements within three years. (Alts. IV, III, and II)**

This strategy will reduce pollution caused by the inappropriate disposal of wastewater from RVs, campers, and other mobile units, including live-aboards not docked at marinas. It is a regulatory strategy that could be implemented through Monroe County's comprehensive plan and land development regulations. All RV parks (public and private) will be required to have adequate and efficient pump-out facilities. Other pump-out facilities could be identified for use by the transient public. Some facilities could be holding tanks with a scheduled pick up, while others could include a type of on-site waste treatment.

**L.5.a Expand enforcement activities to reduce illegal waste disposal from RVs. (Alts. IV, III, and II)**

This strategy will reduce pollution caused by the illegal dumping of waste by RVs. Monroe County regulations currently prohibit the disposal of waste from RVs. This enforcement strategy will allow all law enforcement branches to enforce cooperatively any illegal disposal of waste by RVs.

**L.6.b Establish a mobile pump-out service through the local government or a franchise with a private contractor which would serve to pump-out live-aboard vessels moored outside of marina facilities. Encourage the use of existing, and the construction of additional, shore-side facilities such as dingy docks, parking areas, showers, and laundries for use by live-aboards. (Alts. III and II)**

This strategy will minimize the pollution impacts of live-aboard vessels located outside marinas within the Sanctuary. Although such live-aboards may be only a minor contributor to the total pollutant load, their mooring areas are normally located in confined waters that are more susceptible to the impacts of such loading. The establishment of this system will provide the incentive for live-aboard vessels to have their bilges and holding tanks pumped out regularly. The provision of shore-side facilities should reduce the potential for pollutants associated with other live-aboard activities to enter surface waters.

**L.7.a Conduct an assessment to identify solid waste disposal sites that pose threats to water quality and/or sensitive areas, based on the results of EPA's Water Quality Plan. Intensify existing monitoring programs around landfills to ensure that no leaching is occurring into marine waters. If problems are discovered, evaluate and implement appropriate remedial actions such as boring or mining, upgrading closure, collecting and treating leachate, constructing slurry walls, or excavating and hauling landfill contents. (Alt. IV, III, and II)**

This strategy will identify potential groundwater contamination problems from existing landfills and other solid waste disposal operations. The assessment will include the locations of disposal areas, the types of materials present at each site, and the movement of leachate off the site. The assessment will also establish a program to cap, mine, or relocate existing solid waste where the volume of leachate has been identified as a problem. In addition, this strategy will provide for the monitoring of old landfills not currently being monitored.

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### ***L.8.a Initiate a study to investigate the feasibility of various solid waste containment/relocation options. (Alt. IV)***

The strategy will involve researching methods of solid waste disposal, other than the creation of new landfills. The study would determine what regulations are necessary to meet State and regional recycling goals, implement retail packaging standards, and require source separation. The study could also address incineration by identifying its impacts, the best available technology, and the need to eventually discontinue its use. Cooperative agreements with other local governments to accept Monroe County's solid waste also should be explored. The South Florida Regional Planning Commission can provide support for a regional discussion of the alternatives for the disposal of solid waste generated in Monroe County.

### ***L.8.b Initiate a study to investigate the feasibility of various solid waste containment/relocation options. Implement containment/relocation options where appropriate within five years. (Alts. III and II)***

The strategy will involve researching methods of solid waste disposal, other than the creation of new landfills. The study would determine what regulations are necessary to meet State and regional recycling goals, implement retail packaging standards, and require source separation. The study could also address incineration by identifying its impacts, the best available technology, and the need to eventually discontinue its use. Cooperative agreements with other local governments to accept Monroe County's solid waste also should be explored. The South Florida Regional Planning Commission can provide support for a regional discussion of the alternatives for the disposal of solid waste generated in Monroe County. *Containment/relocation options will be implemented where appropriate within five years.*

### ***L.9.a Comply with Monroe County policies on solid waste disposal. (Alts. IV, III, and II)***

The fragile natural resources and limited amount of upland sites in the Keys can be protected by expanding the enforcement of current policies and regulations for solid waste disposal. In addition, Monroe County could adopt land development regulations that prohibit new solid waste disposal sites and negotiate a cooperative agreement with other local governments to accept its solid waste.

### ***L.10.a Conduct an assessment and inventory of hazardous materials handling and use in the Florida Keys including facilities, types and quantities of materials, and transport/movement. Add information to the FDEP/EPA/Monroe County GIS database. (Alts. IV, III, and II)***

This strategy will involve cataloging the use of all hazardous materials as defined by the FDEP and the EPA. The resulting inventory would include: 1) the types of hazardous materials used in Monroe and Dade counties; 2) the types of facilities utilizing identified hazardous materials; 3) the specific location of some users; 4) how these material are typically transported; 5) the toxic/noxious/volatile nature of identified hazardous materials; and 6) how these materials impact water quality and resources. This assessment and inventory will be used to develop a hazardous materials management plan for normal use and emergency response and containment. This information will be added to the FDEP/EPA/Monroe County GIS database.

### ***L.11.a Establish licensing requirements for commercial handlers of hazardous materials and biohazardous waste within three years to reduce mishandling and illegal disposal. (Alts. IV, III, and II)***

This strategy will develop a program for the responsible commercial handling of hazardous materials and biohazardous waste. Local licensing will be required as a mechanism to educate commercial handlers and to ensure that hazardous materials are utilized with standards prescribed by the State and Federal governments to protect human and environmental health. The program will focus on the types of uses and activities that could lead to marine resource degradation and/or destruction. The result will be a reduction in all kinds of hazardous material spills and leaks. The illegal dumping of such materials could also be better assessed.

### ***L.12.b Establish a program to increase the availability of hazardous materials collection and transfer stations for nonlicensed users (e.g., households, etc.) within three years. (Alts. III and II)***

This strategy will provide for the safe disposal of hazardous materials from residential and other nonlicensed sources. Since nonlicensed hazardous materials handlers are not regulated, adequate mechanisms for handling such materials are limited. Hazardous materials are frequently flushed down toilets, sinks, etc. The creation of collection and transfer sites will allow for the safe, simple, and efficient disposal of household materials.

**L.14.a Prohibit new dredge and fill permits unless public interest is demonstrated. (Alt. IV)**

This strategy will eliminate the possibility of new dredge and fill activities within the Sanctuary unless public interest can be demonstrated through the ACOE system. Such activities may lead to the direct degradation and/or destruction of sensitive Sanctuary resources. Any areas to be considered to satisfy public interest should focus on the expansion of existing marinas and water-dependent facilities. This prohibition will also apply to upland excavation, where the goal will be to lengthen an existing canal system to expand land/water use or create greater canal flushing.

**L.14.b Prohibit new dredge and fill permits unless public interest is demonstrated and there will be little or no environmental degradation. (Alt. III)**

This strategy will eliminate the possibility of new dredge and fill activities within the Sanctuary unless public interest can be demonstrated through the ACOE system *and if there will be little or no environmental degradation*. Such activities may lead to the direct degradation and/or destruction of sensitive Sanctuary resources. Any areas to be considered to satisfy public interest should focus on the expansion of existing marinas and water-dependent facilities. This prohibition will also apply to upland excavation, where the goal will be to lengthen an existing canal system to expand land/water use or create greater canal flushing.

**L.14.c Prohibit new dredge and fill permits. (Alt. II)**

This strategy will eliminate the possibility of new dredge and fill activities within the Sanctuary. Such activities lead to the direct degradation and/or destruction of sensitive Sanctuary resources. This prohibition will also apply to upland excavation, where the goal will be to lengthen an existing canal system to expand land/water use or create greater canal flushing.

**L.15.a Conduct an inventory and assessment of current or recent maintenance dredging activities throughout the Sanctuary. (Alt. IV)**

This strategy is designed to record the locations, sizes, and independent and cumulative impacts of maintenance dredging within the Sanctuary. Information will be aggregated in a database and/or a GIS to allow managers to evaluate maintenance dredging impacts as related to new permit requests.

**L.15.b Conduct an inventory and assessment of maintenance dredging activities throughout the Sanctuary. Implement low-impact dredging methods for all maintenance dredging. Avoid maintenance dredging whenever possible. (Alts. III and II)**

This strategy is designed to record the locations, sizes and independent and cumulative impacts of maintenance dredging within the Sanctuary. Information will be aggregated in a database and/or a GIS to allow managers to evaluate maintenance dredging impacts as related to new permit requests. *New policies and regulations will be developed that will require low-impact technologies for maintenance dredging and will prohibit such dredging in areas where significant re-establishment of sensitive benthic communities has occurred (i.e., seagrass and coral habitats).*

**L.16.a Initiate a study to investigate the feasibility of water-use reduction and re-use options and thresholds. (Alt. IV)**

This strategy is designed to reduce the amount of water being used in the Keys and to encourage better wastewater treatment by developing standards and practices for water re-use. A plan will be developed containing re-use options, thresholds, water-use reduction incentives, etc.

**L.16.b Initiate a study to investigate the feasibility of water-use reduction and re-use options and thresholds. Implement a plan for water-use reduction and re-use for major users within five years. (Alt. III)**

This strategy is designed to reduce the amount of water being used in the Keys and to encourage better wastewater treatment by developing standards and practices for water re-use. A plan will be developed containing re-use options, threshold levels, water-use reduction incentives, etc.

*The FDEP currently will not permit the re-use of treated wastewater for plants with a capacity of less than 100,000 gallons per day (gpd). This is a disincentive to higher treatment and water conservation, both of which reduce pollution. The FDEP should develop appropriate human health and environmental standards to permit re-use for smaller users. Research and standards should focus on how water from households can be reused in other domestic applications. A water-use reduction and re-use plan will be implemented for major users within five years.*

**L.16.c Initiate a study to investigate the feasibility of water-use reduction and re-use options and thresholds. Implement a plan for water-use reduction and re-use for all users within five years. (Alt. II)**

This strategy is designed to reduce the amount of domestic, commercial and industrial water being used in the Keys

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and to encourage better wastewater treatment by developing standards and practices for water re-use. A plan will be developed containing re-use options, threshold levels, water-use reduction incentives, etc.

The FDEP currently will not permit re-use of treated wastewater for plants with a capacity of less than 100,000 gpd. This is a disincentive to higher treatment and water conservation, both of which reduce pollution. The FDEP should develop appropriate human health and environmental standards to permit re-use for smaller users. Research and standards should focus on how water from households can be reused in other domestic applications. *A water-use reduction and re-use plan will be implemented for all users within five years.*

### **L.17.a Establish consistent interagency regulatory authority addressing all dredge and fill activities. (Alts. IV, III, and II)**

This strategy will establish further levels of interagency coordination and regulatory consistency with respect to the authorities of the FDEP, FDNR, ACOE, and local government. All agencies require permits for development activities within the Sanctuary, and coordination and consistency is essential. Some consolidation of such authority may be helpful through delegation, MOUs, etc.

### **L.18.a Restrict wetland dredge and fill permitting. (Alt. IV)**

This strategy will further restrict the degree of wetland destruction currently occurring within Sanctuary boundaries. Monroe County has recently initiated policies to eliminate any dredge and fill activities within undisturbed wetland areas. This strategy will support this effort and develop consistent approaches with the agencies involved. The result will be reduced wetland destruction, protection of the natural wetland/stormwater filtration processes, and the protection of the habitat of numerous endangered species.

Mitigation banking for permitted development will be considered. Monies will be provided in an amount deemed necessary to re-establish wetlands on adjacent or nearby public lands. Absolute replacement of all permitted wetlands lost will be required, and dollar assessments are expected to be high.

### **L.18.b Restrict wetland dredge and fill permitting. (Alts. III and II)**

This strategy will further restrict the degree of wetland destruction currently occurring within Sanctuary boundaries. Monroe County has recently initiated policies to eliminate any dredge and fill activities within undisturbed wetland areas. This strategy will support this effort and

develop consistent approaches with the agencies involved. The result will be reduced wetland destruction, protection of the natural wetland/stormwater filtration processes, and the protection of the habitat of numerous endangered species. *New dredge and fill projects in functional disturbed wetlands will be required to pass a public interest test. This will reduce the loss of viable wetlands, which serve as buffers to runoff and as habitat for numerous endangered and protected species.*

*Mitigation banking will be considered for permits issued in functional disturbed wetlands. Immediate replacement to functional status will be required in all mitigative efforts. Money will be received to a trust for restoration of public lands only. Where the agency has discretion, permits will not be renewed.*

### **L.19.a Conduct an evaluation of the Monroe County Growth Plan for ecological impacts on the Sanctuary. Identify and recommend additional options to minimize short- and long-term impacts. (Alts. IV, III, and II)**

This strategy will protect the natural resources of the Sanctuary by limiting growth and the associated impacts on resources. EPA's Water Quality Management Plan will begin to establish some standards related to volumes and quantities. Monroe County has recently tied its growth rate to hurricane evacuation standards and determined a 20-year growth cap. These issues will be evaluated comprehensively to establish a population "build-out" that will reduce residential-based impacts.

An intergovernmental acquisition program will be established to help purchase any remaining "unbuildable" lots in Monroe County. The remaining development should be directed at high-density, disturbed subdivisions, especially those serviced by centralized facilities.

### **L.20.a Conduct an assessment of existing public access to shoreline areas. Develop standards and guidelines for improvements to, and construction of, public access areas. (Alt. IV)**

This strategy will provide information on problems associated with existing public access areas, including habitat damage and user conflicts. Existing public access areas will be inventoried, and nondestructive recreational uses identified. Standards and guidelines for improvements to, and the construction of, public access areas will be developed and could include: 1) improvements to supporting infrastructure; 2) restrictions on activities that damage habitats; 3) promotion of nondestructive recreational uses; and 4) the establishment of low-impact construction standards.

**L.20.b Conduct an assessment of existing public access to shoreline areas. Develop standards and guidelines for improvements to, and construction of, public access areas. Acquire shoreline areas for developing and/or regulating public access. (Alts. III and II)**

This strategy will provide information on problems associated with existing public access areas, including habitat damage and user conflicts. Existing public access areas will be inventoried, and nondestructive recreational uses identified. Standards and guidelines for improvements to, and the construction of, public access areas will be developed and could include: 1) improvements to supporting infrastructure; 2) restrictions on activities that damage habitats; 3) promotion of nondestructive recreational uses; and 4) the establishment of low-impact construction standards. *The acquisition of shoreline areas that will help improve and regulate public access while protecting the habitat will be pursued by supporting the existing land acquisition programs (such as the Conservation and Recreational Lands Program) and those implemented by the Monroe County Land Authority and The Nature Conservancy.*

**Recreation**

**R.1.a Develop and implement a program to manage submerged cultural resources (SCRs). Conduct an inventory of SCRs and assess survey and extraction techniques within the Sanctuary. Require permitting throughout the Sanctuary. (Alt. IV)**

This strategy is designed to protect SCRs from undesired disturbances and maintain them as intact as possible for research, education, science, and recreational activities by preparing an SCR Management Plan which will include the following elements:

- 1) Inventory - Compile existing literature into a bibliography and survey and identify location and specific site characteristics including name, age, integrity, and historical and cultural significance.
- 2) Management - Develop a set of management practices, guidelines and regulations addressing the exploration, removal, research, and dispensation of artifacts. Management of SCRs would prohibit unauthorized removal. The division of objects recovered from SCRs would be split 80 percent for the discoverer-recoverer, and 20 percent for the government.
- 3) Permitting - Develop and implement a permitting system for the research, exploration, removal, and dispensation of cultural artifacts, with a provision for exemptions for nondestructive exploration. Require permitting throughout the Sanctuary. Permit privatization of public resources would be consistent with past practices in Florida and Admiralty Court.

4) Enforcement - Ensure compliance with statutes, rules, regulations, and permits such as the Abandoned Shipwreck Act (ASA), Sanctuary regulations, State administration rules, and Federal and State permits through intensive on-site patrols by certified law enforcement officers.

5) Coordination - Ensure comprehensive coordination among all appropriate Federal, State, and local agencies involved in, and responsible for, the management of SCRs through the development and implementation of MOUs.

**R.1.b Develop and implement a program to manage SCRs. Conduct an inventory of SCRs and assess survey and extraction techniques within the Sanctuary. Require permitting throughout the Sanctuary. (Alt. III)**

This strategy is designed to protect SCRs from undesired disturbances and maintain them as intact as possible for research, education, science, and recreational activities by preparing an SCR Management Plan which will include the following elements:

- 1) Inventory - Compile existing literature into a bibliography and survey and identify location and specific site characteristics including name, age, integrity, and historical and cultural significance.
- 2) Management - Develop a set of management practices, guidelines and regulations addressing the exploration, removal, research, and dispensation of artifacts. Management of SCRs would prohibit unauthorized removal. *Disposition of artifacts from approved recovery operations will be consistent with ASA guidelines, 50 percent for the discoverer-recoverer, and 50 percent for the government. However, where the recoverer has arranged for private conservation, long-term public display, guaranteed public access, and public interpretation of artifacts and data, the disposition of objects may be adjusted accordingly.*
- 3) Permitting - Develop and implement a permitting system for the research, exploration, removal, and dispensation of cultural artifacts, with a provision for exemptions for nondestructive exploration. Require permitting throughout the Sanctuary. *The granting of permits will be based upon archaeological and historical value, potential environmental impact, proposed archaeological methods, and proposed public benefit. Permit applications that provide for conservation in museums or similar structures of public access for research, education, or public viewing enjoyment will be given priority over applications where some of the objects are dispersed into private markets.*
- 4) Enforcement - Ensure compliance with statutes, rules, regulations, and permits such as the ASA, Sanctuary regulations, State administration rules, and Federal and State permits through intensive on-site patrols by certified law enforcement officers.
- 5) Coordination - Ensure comprehensive coordination among all appropriate Federal, State, and local agencies

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involved in, and responsible for, the management of SCRs through the development and implementation of MOUs.

### ***R.1.c Develop and implement a program to manage SCRs. Conduct an inventory of SCRs and assess survey and extraction techniques within the Sanctuary. Require permitting throughout the Sanctuary. (Alt. II)***

This strategy is designed to protect SCRs from undesired disturbances and maintain them as intact as possible for research, education, science, and recreational activities by preparing an SCR Management Plan which will include the following elements:

- 1) Inventory - Compile existing literature into a bibliography and survey and identify location and specific site characteristics including name, age, integrity, and historical and cultural significance.
- 2) Management - *Develop a set of management practices, guidelines and regulations addressing the exploration and research of SCR sites, and the removal of artifacts.* Management of SCRs would prohibit unauthorized removal. *Any artifacts recovered would be conserved in museums or similar structures of public access for research, education, or public viewing enjoyment.*
- 3) Permitting - Develop and implement a permitting system for the research, exploration, removal, and dispensation of cultural artifacts, with a provision for exemptions for nondestructive exploration. *Require permitting throughout the Sanctuary. Permits would require that all artifacts recovered be conserved in museums or similar structures of public access for research, education, or public viewing enjoyment.*
- 4) Enforcement - Ensure compliance with statutes, rules, regulations, and permits such as the ASA, Sanctuary regulations, State administration rules, and Federal and State permits through intensive on-site patrols by certified law enforcement officers.
- 5) Coordination - Ensure comprehensive coordination among all appropriate Federal, State, and local agencies involved in, and responsible for, the management of SCRs through the development and implementation of MOUs.

### ***R.2.a Establish a routine survey of recreational activities and use levels within the Sanctuary through a survey of charter and recreational-for-hire vessels, intercept surveys at access points and launch sites, and periodic field surveys. (Alts. IV and III)***

This strategy will provide data on the types, levels, users, and locations of recreational activities within the Sanctuary to better plan for management concerns such as access to sensitive or heavily used areas, user conflicts, and adverse impacts to resources. The survey, to be conducted by non-law-enforcement personnel, will request information on operator and safety equipment and visitor behaviors such

as the use of gloves and buoyancy vests, etc. Data on the number of operators, users, and uses will help shape management decisions on costs (associated with permits, regulations, and other requirements) that may be imposed on users. This survey will be compatible with the current survey to establish user fees for NOAA's national marine sanctuaries.

### ***R.2.c Establish a routine survey of recreational activities and use levels within the Sanctuary through a survey of charter and recreational-for-hire vessels, intercept surveys at access points and launch sites, and periodic field surveys. Establish a permitting and enforcement system to regulate use levels (e.g., number of boats, divers, etc.) for charter and recreational-for-hire vessels. (Alt. II)***

This strategy will protect resources from further damage by requiring commercial charter and rental boat operations to obtain permits that restrict the number of boats and passengers. It will provide data on the types, levels, users and locations of recreational activities in the Sanctuary to better plan for management concerns such as access to sensitive or heavily used areas, user conflicts and adverse impacts to resources. The survey, to be conducted by non-law-enforcement personnel, will request information on operator and safety equipment and visitor behaviors such as the use of gloves and buoyancy vests, etc. Data on the number of operators, users, and uses will help shape management decisions on costs (associated with permits, regulations, and other requirements) that may be imposed on users. This survey will be compatible with the current survey to establish user fees for NOAA's national marine sanctuaries.

### ***R.5.a Conduct a program to study and implement carrying-capacity limits for recreation activities by: 1) assessing the effects of recreation and boating activities on Sanctuary resources; 2) establishing recreational user carrying capacities that minimize wildlife disturbances and other adverse impacts on natural resources; and 3) enforcing carrying-capacity limits in highly sensitive areas. (Alt. IV)***

This strategy will reduce impacts to Sanctuary resources from recreational activities by better understanding the level of use that different habitats can tolerate without degradation. The capacity levels for each activity identified by the research component of this strategy will be enforced in highly sensitive areas such as reefs. The causes of coral mortality (e.g., disease, temperature stress, bleaching, algal overgrowth, and physical damage) will be characterized, as well as physical stresses, especially those affecting outer and inshore reefs.

This research will assess the impacts that recreation activities have on Sanctuary resources and provide a basis for the continued anticipation of problems associated with specific activities and the development of management actions to eliminate/reduce impacts. Impacts such as

wildlife disturbance (especially of commercial and threatened and endangered species), changes in ecosystem balance, degradation of habitat, and other impacts associated with activities such as boating, fishing, diving, etc. will be included.

**R.5.b Conduct a program to study and implement carrying-capacity limits for recreation activities by: 1) assessing the effects of recreation and boating activities on Sanctuary resources; 2) establishing recreational user carrying capacities that minimize wildlife disturbances and other adverse impacts on natural resources; and 3) enforcing carrying-capacity limits in high-use areas and for highly sensitive habitats throughout the Sanctuary. (Alt. III)**

This strategy will reduce impacts to Sanctuary resources from recreational activities by better understanding the level of use that different habitats can tolerate without degradation. The capacity levels for each activity identified by the research component of this strategy *will be enforced in high-use areas and for highly sensitive habitats (i.e., coral, seagrass, hardbottom) throughout the Sanctuary.* The causes of coral mortality (e.g., disease, temperature stress, bleaching, algal overgrowth, and physical damage) will be characterized, as well as physical stresses, especially those affecting outer and inshore reefs.

This research will assess the impacts that recreation activities have on Sanctuary resources and provide a basis for the continued anticipation of problems associated with specific activities and the development of management actions to eliminate/reduce impacts. Impacts such as wildlife disturbance (especially of commercial and threatened and endangered species), changes in ecosystem balance, degradation of habitat, and other impacts associated with activities such as boating, fishing, diving, etc. will be included.

**R.5.c Conduct a program to study and implement carrying-capacity limits for recreation activities by: 1) assessing the effects of recreation and boating activities on Sanctuary resources; 2) establishing recreational user carrying capacities that minimize wildlife disturbances and other adverse impacts on natural resources; and 3) enforcing carrying-capacity limits throughout the Sanctuary. (Alt. II)**

This strategy will reduce the impacts to Sanctuary resources from recreational activities by better understanding the level of use that different habitats can tolerate without degradation. The capacity levels for each activity identified by the research component of this strategy *will be enforced throughout the Sanctuary.* The causes of coral mortality (e.g., disease, temperature stress, bleaching, algal overgrowth, and physical damage) will be characterized as will physical stresses, especially those affecting outer and inshore reefs.

This research will assess the impacts that recreation activities have on Sanctuary resources and provide a basis for the continued anticipation of problems associated with specific activities and the development of management actions to eliminate/reduce impacts. Impacts such as wildlife disturbance (especially commercial and threatened and endangered species), changes in ecosystem balance, degradation of habitat, and other impacts associated with activities such as boating, fishing, diving, etc. will be included.

**R.7.a Prohibit contact with corals in high-use, sensitive, and vulnerable areas. (Alts. IV, III, and II)**

This strategy will reduce the damage to hard coral communities caused primarily by boat anchoring/grounding and divers and snorkelers, by prohibiting contact with coral in high-use, sensitive, and vulnerable areas.

## Water Quality

**W.1.a Conduct a demonstration project to evaluate alternate, nutrient-removing OSDSs. (Alts. IV, III, and II)**

This strategy will provide information to help determine the appropriate role, if any, of alternate OSDSs in wastewater management in the Keys. Although some alternate OSDS designs appear promising, it is not appropriate to proceed with broad-scale installation of these systems until an independent evaluation has been conducted. Alternate OSDSs designed for nutrient removal would be installed and maintained in a manner consistent with actual residential use. Influent, effluent, and groundwater quality (both background and "down-gradient") would be monitored at regular intervals for at least one year. In addition to nutrient removal efficiency, the study would evaluate maintenance and inspection requirements to keep units operating properly.

**W.2.a Conduct a demonstration project to evaluate the installation of a small expandable AWT plant to serve an area of heavy OSDS use with associated water quality problems. (Alts. IV, III, and II)**

This strategy will provide information to help determine whether the elimination of OSDSs would improve water quality in areas believed to be degraded by OSDS-related nutrients. The project would also provide information on the long-term performance of small AWT systems and septic tank effluent pumps or other collection systems. A small, expandable AWT package plant would be installed to serve an area where there is high-density OSDS use in close proximity to confined waters. Preferably, the test area would be one where water-quality problems believed to be related to OSDS nutrients have already been identified. Initial background groundwater and surface-water monitoring would be conducted, and plant influent and effluent

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would be monitored for a minimum of one year after the plant is in operation. Groundwater and surface-water monitoring would continue for three to five years. Most facilities constructed for the demonstration project could be incorporated into a larger system if results are favorable.

### ***W.3.a Establish authority for and implement inspection/enforcement programs to eliminate all cesspits and enforce existing standards for all OSDS and package plants. (Alt. IV)***

This strategy will reduce the amount of pollutants entering groundwater by enforcing existing standards. On-site inspection programs would be implemented to identify and eliminate all cesspits and ensure that OSDSs and package plants are in compliance with existing standards. Penalties would be imposed for noncomplying systems.

Cesspits are illegal and provide no sewage treatment. OSDSs provide adequate sanitary treatment and limited nutrient reduction; however, there is no routine inspection and enforcement program to ensure that these systems are operating properly. Package plants provide secondary treatment and are inspected routinely (although not frequently). The elimination of cesspits and replacement with approved OSDSs would reduce nutrient loading to groundwater and eliminate health hazards from untreated sewage. Aggressive inspection/enforcement programs for OSDSs and package plants could be expected to further reduce nutrient loadings to groundwater.

### ***W.3.b Establish authority for and implement inspection/enforcement programs to eliminate all cesspits and enforce existing standards for all OSDSs and package plants. Develop targets for reductions in wastewater nutrient loadings necessary to restore and maintain water quality and Sanctuary resources. Develop and implement a Sanitary Wastewater Master Plan that evaluates options for upgrading existing systems beyond current standards or constructing community sewage treatment plants based on nutrient reduction targets, cost and cost effectiveness, reliability/compliance considerations, and environmental and socioeconomic impacts. (Alts. III and II)***

This strategy will reduce the amount of pollutants entering groundwater by enforcing existing standards. On-site inspection programs would be implemented to identify and eliminate all cesspits and ensure that OSDSs and package plants are in compliance with existing standards. Penalties would be imposed for noncomplying systems.

Cesspits are illegal and provide no sewage treatment. OSDSs provide adequate sanitary treatment and limited nutrient reduction; however, there is no routine inspection and enforcement program to ensure that these systems are operating properly. Package plants provide secondary treatment and are inspected routinely (although not frequently). The elimination of cesspits and replacement

with approved OSDSs would reduce nutrient loading to groundwater and eliminate health hazards from untreated sewage. Aggressive inspection/enforcement programs for OSDSs and package plants could be expected to further reduce nutrient loadings to groundwater.

*In addition, this strategy would involve research to estimate the level of reduction in wastewater nutrient loading necessary to restore and maintain water quality and Sanctuary resources. Based on these nutrient reduction targets and the results of the wastewater demonstration projects (Strategies W.1 and W.2), a Sanitary Wastewater Master Plan would be developed that would evaluate options for further treatment (e.g., construction of community wastewater plants, upgrading package plants to AWT, or the use of alternate, nutrient-removing OSDSs). The Sanitary Wastewater Master Plan would also specify details of costs, schedules, service areas, etc. for implementation.*

### ***W.4.a Upgrade effluent disposal for the City of Key West's wastewater treatment plant. Evaluate deep-well injection, including the possibility of effluent migration through the boulder zone into Sanctuary waters. Evaluate options for the re-use of effluent, including irrigation and potable re-use. Discontinue the use of ocean outfall and implement deep-well injection, aquifer storage, and/or re-use. Implement nutrient reduction technologies for effluent prior to disposal or re-use. (Alts. IV, III, and II)***

This strategy will reduce direct nutrient loadings to surface waters from the Key West wastewater treatment plant. Use of the ocean outfall would be discontinued (except in emergencies), and effluents would be treated to reduce nutrients and disposed through deep-well injection, aquifer storage, and/or re-use.

Before the use of ocean outfalls is discontinued, both the environmental aspects of deep-well injection and the economics of effluent re-use must be evaluated thoroughly. Studies of deep-well injection need to investigate the possibility of effluent migrating through the boulder zone into Sanctuary waters. Re-use options to be evaluated include irrigation and further treatment to produce potable water. Re-use for local irrigation may be limited due to the small number of application sites. Re-use for irrigation in areas outside the Keys would be considered only if it were proposed for unincorporated Monroe County. Potable re-use, although requiring costly treatment, might be cost-effective in the long-term, considering the current cost of treating and pumping in drinking water from Florida City.

### ***W.5.a Develop and implement water quality standards, including biocriteria, appropriate to Sanctuary resources. (Alts. IV, III, and II)***

This strategy will reduce impacts of pollution on Sanctuary resources by determining water quality conditions to

ensure resource protection. The intent is to implement water quality standards as guidance in determining permitted discharge limitations. OFW standards will be used until research indicates that new, more-stringent regulations are necessary.

**W.6.a Delegate administration of the NPDES program for Florida Keys dischargers to the State of Florida. (Alts. IV, III, and II)**

This strategy will streamline and eliminate unnecessary duplication in the NPDES permitting process. Currently, all surface-water dischargers must receive permits from both the EPA and the FDEP. Although the two agencies coordinate their permitting activities, it would be simpler for both the agencies and permit applicants if the EPA delegated NPDES permitting authority to the State, as has been done in many other states.

**W.7.b Require all NPDES-permitted surface dischargers to develop resource monitoring programs. (Alts. III and II)**

This strategy will help to evaluate environmental impacts of point-source discharges by requiring all NPDES-permitted surface dischargers to develop resource monitoring programs. This could be accomplished in one of two ways: 1) EPA could eliminate the baseline exemption for resource monitoring under the Ocean Discharge Program as it applies to the Keys. All surface dischargers except the City of Key West sewage treatment plant are currently exempted from developing resource monitoring programs because the end of their discharge pipe does not extend beyond the baseline (the mean low-tide line); or 2) FDEP, through the State of Florida's permitting authority, could require resource monitoring when individual NPDES permits come up for renewal. This approach would probably be easier because it can be accomplished under existing rules, whereas eliminating EPA's baseline exemption would require a Federal rule change.

**W.8.a Improve interagency coordination for industrial wastewater discharge permitting. Combine OSDS permitting responsibilities in one agency for commercial establishments, institutions, and multi-family residential establishments utilizing injection wells. (Alts. IV, III, and II)**

This strategy will improve coordination between the EPA, FDEP, and local government agencies relative to industrial wastewater discharge permitting and tracking (HRS is included for special cases such as seafood processing plants). Much of the interagency coordination and tracking is currently handled through a series of Memorandums of Agreement (MOAs) and MOUs. These agreements will be reviewed, evaluated, and revised specifically for the Keys. This could also indirectly reduce wastewater pollution by

refining and simplifying the OSDS permitting process and increasing funds for compliance monitoring and enforcement.

**W.9.a Establish an interagency laboratory capable of processing monitoring and compliance samples. (Alt. IV, III, and II)**

This strategy could indirectly help reduce pollution by creating an interagency laboratory facility for processing compliance monitoring samples, thus reducing the cost of analysis currently conducted outside the Keys. Neither the FDEP nor the FDHRS has FDHRS-certified (or equivalent) laboratory facilities in the Keys. Because of quality control considerations (holding times), it is difficult or impossible to ship compliance/enforcement samples to Tallahassee for analysis, and the use of contracted private laboratory facilities is expensive. This laboratory would not process toxics or status and trends samples from the water quality monitoring program.

**W.10.a Inventory and characterize dead-end canals/basins and investigate alternative management strategies to improve their water quality. (Alt. IV)**

This strategy will examine water quality in nearshore confined areas, with an emphasis on dead-end canals and basins where reduced circulation increases the risk of reduced dissolved oxygen, retention of both dissolved and particulate pollutants, and the potential impacts on benthic and pelagic environments. A comprehensive management plan will be developed for improving water quality in nearshore and confined basins and canals.

**W.10.b Inventory and characterize dead-end canals/basins and investigate alternative management strategies to improve their water quality. Implement improvements (consistent with the strategies developed for wastewater and stormwater) in known hot spots throughout the Sanctuary. (Alt. III)**

This strategy will improve water quality in nearshore confined areas, with emphasis on dead-end canals and basins where reduced circulation increases the risk of reduced dissolved oxygen, retention of both dissolved and particulate pollutants, and potential impacts on benthic and pelagic environments. A comprehensive management plan will be developed for improving water quality in nearshore confined basins and canals. *Improvement strategies will be implemented in all canals and basins identified as hot spots throughout the Sanctuary.*

**W.10.c Inventory and characterize dead-end canals/basins and investigate alternative management strategies to improve their water quality. Implement improvements (consistent with the strategies developed for wastewater and stormwater) throughout the Sanctuary. (Alt. II)**

This strategy will improve water quality in nearshore confined areas, with emphasis on dead-end canals and basins where reduced circulation increases the risk of reduced dissolved oxygen, retention of both dissolved and particulate pollutants, and potential impacts on benthic and pelagic environments. A comprehensive management plan will be developed for improving water quality in nearshore confined basins and canals. *Improvement strategies will be implemented in canals and basins throughout the Sanctuary.*

**W.11.b Identify and retrofit stormwater hot spots using "Best Management Practices," such as grass parking, swales, pollution control structures, and detention/retention facilities. Control stormwater runoff in areas handling toxic and hazardous materials. Install swales and detention facilities along limited sections of US 1. (Alt. III)**

This strategy will reduce loadings of sediment, toxics, and nutrients to Sanctuary waters through engineering methods applied to stormwater hot spots (e.g., commercial and industrial facilities) and limited sections of US 1.

**W.11.c Identify and retrofit stormwater hot spots and degraded areas using "Best Management Practices," such as grass parking, swales, pollution control structures, and detention/retention facilities. Control stormwater runoff in areas handling toxic and hazardous materials. Install swales and detention facilities along numerous sections of US 1. (Alt. II)**

This strategy would reduce loadings of sediment, toxics, and nutrients to Sanctuary waters through engineering methods applied to stormwater hot spots (e.g., commercial and industrial facilities), *degraded areas, and numerous sections of US 1.*

**W.12.a Require that no development in the Florida Keys be exempted from the stormwater permitting process. (Alts. IV, III, and II)**

The SFWMD, which currently has the primary responsibility for stormwater permitting in the Keys, exempts developments of less than 10 acres in size or two acres of impervious surface from having to obtain a stormwater permit. Most development in the Keys falls below this threshold. Local governments are in the process of developing stormwater management ordinances and/or stormwater management master plans. This strategy would require that local government ordinances and master plans cover

all development, with no minimum size threshold for requiring that it go through the stormwater permitting process.

**W.13.a Require local governments to enact and implement stormwater management ordinances and comprehensive stormwater management master plans. Petition the EPA to include the Florida Keys in the stormwater NPDES program if adequate stormwater management ordinances and administrative capabilities to manage such ordinances are not in place by a certain date. (Alts. IV, III, and II)**

This strategy will help reduce stormwater pollutant loadings (e.g., sediment, toxics, and nutrients) by requiring local governments to develop stormwater management ordinances and master plans. There is currently little regulation of stormwater runoff in the Keys. Many developments were constructed before SFWMD stormwater permitting requirements were in place or, if constructed more recently, fell below the acreage thresholds for those regulations. Monroe County recently passed a stormwater ordinance, and other local governments are either developing ordinances and/or have stated in their comprehensive plans that stormwater management master plans will be developed. This strategy would set deadlines for local governments to enact the stormwater ordinances and master plans. As a backup in the event that these ordinances and master plans are not developed in a timely manner, the FDEP would petition the EPA to include the Florida Keys in the stormwater NPDES permitting program for municipal separate storm sewer systems.

**W.14.a Institute a series of "Best Management Practices" and a public education program to prevent pollutants from entering stormwater runoff. (Alts. IV, III, and II)**

This strategy will reduce pollution from stormwater runoff through a variety of programs, including: 1) street sweeping; 2) ordinances aimed at controlling fertilizer application on public and private landscaping; 3) collection locations and a public education program for the proper use and disposal of fertilizers, pesticides, motor oil, and other hazardous chemicals; and 4) strenuous litter-control programs.

**W.15.a Improve and expand oil and hazardous materials response programs throughout the Sanctuary. (Alts. IV, III, and II)**

This strategy will reduce the chance that an oil or hazardous materials spill will have a significant negative impact on Sanctuary resources. This will be accomplished by improving coordination and cooperation between the Federal, State, and local agencies responding to spills; encouraging improvements in response and containment technologies appropriate to the Keys; and creating a spill

contingency plan for the Sanctuary that includes crew and equipment staged in the Keys (possibly including skimmers). As this strategy recognizes that hazardous material spills on land are handled independent of marine spills, improvement measures will be developed for both programs.

***W.16.a Establish a reporting system to ensure that all spills in and near the Sanctuary are reported to Sanctuary managers and managers of impacted areas within the Sanctuary. Establish a geo-referenced Sanctuary spills database. (Alts. IV, III, and II)***

This strategy will ensure that Sanctuary managers are informed of all spills (e.g., of petroleum products) in and near the Sanctuary. Small spills, in particular, are under-reported, although they occur frequently and may have a significant effect on the Sanctuary's water quality. This strategy will establish a reporting system to ensure that all spills documented by various agencies (e.g., the USCG and FDEP) are reported to Sanctuary managers and managers of impacted areas within the Sanctuary. In addition, it would establish a geo-referenced database for the Sanctuary that could be used to keep track of information on spills (e.g., locations, quantities, types of material spilled, and environmental impacts).

***W.17.a Refine the aerial spraying program to further reduce aerial spraying over marine areas. (Alts. IV and III)***

This strategy will reduce the amounts of pesticides entering Sanctuary waters through the refinement of the existing aerial spraying program. Ground spraying by truck is the current method of choice for controlling the adult mosquito population; however, aerial spraying is initiated when the mosquito population reaches a certain threshold, as determined by mosquito landing counts at test sites. Although the Monroe County Mosquito Control District attempts to avoid marine areas when aerially spraying, the potential for pesticides to reach marine waters may be reduced through program refinements. The threshold for initiating aerial spraying would be reviewed to determine whether it could be raised. Also, the program would be reviewed to determine whether the amount of spray released over water could be reduced through the development of a more refined plan for flight lines and the use of improved equipment. Ground spraying of larvicides in currently restricted areas would be reconsidered to reduce the need for aerial spraying of adult mosquito populations. The possibility of eliminating thermal fogs (which contain diesel oil) and implementing ultra-low-volume spraying techniques will be evaluated.

***W.17.c Eliminate all aerial pesticide spraying within five years. (Alt. II)***

This strategy will reduce the potential impacts that aerial pesticide spraying (including that of hormones and other biological agents) may be having on Sanctuary resources by requiring that all spraying conform to existing regulations regarding applications to open-water areas. Over a five-year period, a program of land-based spraying will be implemented and all aerial pesticide application will be eliminated.

***W.18.a Develop and implement an independent research program to assess and investigate the impacts of, and alternatives to, current pesticide practices. Modify the Mosquito Control Program as necessary on the basis of research findings. (Alts. IV, III, and II)***

This strategy will establish a research program to identify the impacts of current spraying practices on Sanctuary resources and will identify alternative means of mosquito control. Since pesticides used in mosquito control are nonspecific to the larval stages of crustaceans, fish, and natural mosquito-control predators, the effects of the chemicals used (and all application methods employed) need to be examined. In addition, the effect of housing patterns, design, and landscaping as they affect the demand for mosquito control, need to be investigated. The results of this research may be used to modify the Mosquito Control Program.

***W.19.a The Steering Committee for the Water Quality Protection Program shall take a leading role in restoring the historical freshwater flow to Florida Bay. In addition, Sanctuary representatives should work with the appropriate Federal, State, and local agencies to ensure that restoration plans and surface water management and improvement plans for South Florida and the Everglades are compatible with efforts to maintain water quality within the Sanctuary. (Alts. IV, III, and II)***

The Steering Committee for the Water Quality Protection Program includes high-level representatives of all relevant agencies and can, therefore, take a leading role in water management issues affecting Florida Bay, including restoring historical freshwater flow. Both short- and long-term solutions must be pursued at high levels of management in both State and Federal agencies.

In addition, Sanctuary representatives should participate in the review and revision of restoration plans and water management plans for Florida Bay and adjacent areas to ensure that these proposals and/or actions will enhance and complement water quality improvement efforts undertaken in the Sanctuary. These plans include, but are not limited to, the Shark River Slough GDM, C-111 basin, Taylor Slough Restoration, West Dade Wellfield, US 1

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widening, National Park Service Everglades Restoration Plan, Lower East Coast Water Supply Plan, and Everglades Surface Water Management and Improvement Plan.

### ***W.20.a Conduct a long-term, comprehensive water quality monitoring program as described in the EPA Water Quality Protection Program. (Alts. IV, III, and II)***

This strategy will provide long-term, comprehensive information about the status and trends of water quality parameters and biological resources in the Sanctuary. It will allow managers to identify or confirm problem areas and determine whether conditions are improving or degrading. In addition, remedial actions taken to reduce pollution would be monitored to evaluate their effectiveness. Water-column parameters to be monitored include temperature, salinity, dissolved oxygen, pH, photosynthetically active radiation, turbidity, nutrients, Chlorophyll-*a*, and alkaline phosphatase activity. Sediment parameters to be monitored include grain size, mineralogy, organic content, nutrients, metals, pesticides, PCBs, petroleum hydrocarbons, and sewage tracers. In addition to the water and sediment sampling, biological monitoring of seagrass, hardbottom, and mangrove communities would be conducted. Seagrass and hardbottom communities (including coral reefs and nearshore hardbottom areas) would be monitored by in situ sampling and remote sensing. Changes in the areal coverage of mangrove communities would be monitored by remote sensing.

### ***W.21.a Develop phased hydrodynamic/water quality models and coupled, landscape-level ecological models to predict and evaluate the outcome of in-place and proposed water quality management strategies. (Alts. IV, III, and II)***

This strategy will develop predictive models that, used with appropriate scientific guidance, would allow resource managers to predict and evaluate the outcome of various management strategies (e.g., engineering actions to reduce wastewater nutrient loadings). Initial conceptual models would be developed, information needs identified, environmental data gathered, and quantitative models developed and refined over the long-term and on a continuous basis to aid in management decisions.

### ***W.22.a Develop a segmentation framework to identify surface water areas sharing common hydrographic properties affecting water quality. Determine the susceptibility of each segment to pollutants based upon all loadings (i.e., land- and water-based) and segment specific hydrographic properties affecting their retention. (Alts. IV, III, and II)***

This strategy will establish a management framework that recognizes the extent to which both regional and local circulation affect temperature, salinity, and the transport of

pollutants and marine life into and within segments of the Sanctuary. To better understand these processes, physical simulation models (e.g., coastal ocean hydrodynamical, circulation, transport, mesoscale meteorological, and hydrographical and hydrological models) will be developed.

This strategy also includes documenting the locations and magnitudes of pollution sources entering the Sanctuary to better understand what areas are at high risk. Sources will include those that are point, nonpoint, and external to the Sanctuary (e.g., permitted discharges, OSDs, stormwater runoff, groundwater leachates, marinas, C-111, Biscayne Bay, Florida Bay, southwest Florida and oceanic fluxes, and gyre-induced upwelling). Pollutants are to be inclusive of nutrients, hydrocarbons, heavy metals, and pesticides. Load estimates will be based on the best available information, and will include engineering estimates where applicable.

### ***W.23.a Conduct a hydrologic/geologic assessment of leachate transport (e.g., from injection wells, land fills, storage tanks, etc.) into nearshore waters. Determine whether, and in what quantities, groundwater nutrients are reaching Sanctuary waters including the Florida Reef Tract. (Alts. IV, III, and II)***

This strategy will better define the influences of various geologic formations (e.g., Miami Oolite, Key Largo Limestone, and Holocene sediment) on groundwater hydrology as they affect the volume, composition, and transport of leachates to nearshore/confined waters as a contributing factor to ambient water quality. The research will also examine the possible effects of groundwater nutrients on the Florida Reef Tract.

### ***W.24.a Conduct research to understand the effect of water transport from Florida Bay on water quality and resources in the Sanctuary. (Alts. IV, III, and II)***

This strategy will research the influence of Florida Bay on the Sanctuary's water quality. Research will include an historical assessment of Everglades/Florida Bay/Florida Keys hydrology, as well as an estimation of present-day, long-term net transport and episodic transport from Florida Bay to the Sanctuary. This strategy will also clarify the role of freshwater inflow and water quality from the Everglades and other freshwater discharges to the southwest shoreline of Florida, Florida Bay, and the Sanctuary. The objective is to provide a scientific basis for efforts to re-establish salinity, temperature, and nutrient regimes to ensure the biological integrity of Florida Bay. The strategy will examine the effects of structural modifications and changes in the timing and volume of freshwater releases from existing structures, as well as land practices affecting the water quality of runoff.

This strategy will also involve studies to document any ecological impacts of Florida Bay waters on Sanctuary communities including seagrasses, coral reefs, nearshore

hardbottom communities, and potentially endangered or threatened species. Documentation of hypothesized impacts could provide a stronger basis for action to restore the historical freshwater flow to Florida Bay.

**W.25.a Conduct research to identify and document causal linkages between water quality (e.g., levels of pollutants, nutrients, salinity, temperature, etc.) and ecological problems in each major ecosystem. (Alts. IV, III, and II)**

This strategy will help understand the cause/effect relationships between pollutants and biological resources. Numerous problems have been identified in Sanctuary biological communities, but the causes in most cases are not understood well enough to: 1) determine whether anthropogenic pollutants are having adverse ecological effects; and 2) predict confidently the ecological benefits of actions to reduce pollution. Research is needed to identify and understand causal linkages between pollutants and specific ecological problems. Studies would identify limiting nutrients, estimate nutrient thresholds, and evaluate interactive effects of nutrients, toxics, and other water quality parameters. Nutrient budgets will be constructed to determine limiting nutrients for each habitat, including seasonal effects and thresholds. The strategy will also establish a framework for investigating the impacts of catastrophic events (such as hurricanes) on water quality and Sanctuary resources. The effects of turbidity, the direction and flow of nearshore currents, nutrient enrichment, and suspended sediment on seagrasses, benthic algae, and coral symbionts will be examined, as will the effects of oil spills on coral reefs. The interactive effects of salinity, temperature, and nutrients on seagrasses and corals will be determined, and water-quality stresses (including changes in nutrients, suspended sediments and circulation patterns) will be characterized. Research could include experimental studies (laboratory, mesocosm, in situ), historical studies (sclerochronology, geological reconstruction), and geographic comparisons.

**W.26.a Develop diagnostic indicators of water quality problems (e.g., tissue C:N:P ratios, alkaline phosphate activity, and shifts in community structure by habitat). Conduct research to identify and evaluate indicators (biochemical and ecological measures to provide early warning of widespread ecological problems) in each type of ecosystem. (Alts. IV, III, and II)**

This strategy will make ecological monitoring simpler, less expensive, and more sensitive to changes in water quality. It would identify and evaluate indicators (biochemical and ecological measures to provide early warning of widespread ecological problems) in each type of ecosystem. These measures could be incorporated into the Water Quality Monitoring Program to provide the basis for resource-oriented water quality standards for the Sanctuary (see strategy W.5).

**W.27.a Conduct research to identify and evaluate innovative monitoring tools and methodologies to detect pollutants and identify cause/effect relationships involving water quality and biological resources. (Alts. IV, III, and II)**

This strategy would identify and evaluate innovative monitoring tools and methodologies to detect pollutants and identify cause/effect relationships involving water quality and biological resources. New or modified monitoring tools and methodologies may be needed because of the unique biota and environmental conditions in the Sanctuary.

**W.28.a Establish a regional database and data management system for recording research results and biological, physical, and chemical parameters associated with Sanctuary monitoring programs. (Alts. IV, III, and II)**

This strategy will develop a regional database including biological, physical, and chemical parameters and instrument records, etc.

**W.29.a Develop a program to disseminate scientific research results including an information exchange network, conferences, and support for the publication of research findings in peer-reviewed scientific journals. (Alts. IV, III, and II)**

This strategy will help disseminate research findings among scientists and resource managers, helping to stimulate discussion and critical thinking and to avoid duplication of effort in preparing research proposals.

**W.31.a Examine the effects of global climate change on the organisms and ecosystems of the Keys. (Alts. IV, III, and II)**

This strategy will examine the effects of stresses associated with global change on the ecosystem. Examples include temperature, salinity, frequency and intensity of storms, turbidity, sea-level change, ultraviolet and visible radiation, etc.

**W.32.a Establish a technical advisory committee for coordinating and guiding research and monitoring activities. (Alts. IV, III, and II)**

This strategy will create an advisory committee to guide the process of setting priorities for research and monitoring. The committee shall be composed of scientists from Federal agencies, State agencies, academic institutions, private nonprofit organizations, and knowledgeable citizens.

***W.33.a. Develop and implement a Sanctuary-wide, intensive ecosystem monitoring program. The objective of the program will be to monitor the status of various biological and ecological indicators of system components throughout the Sanctuary and adjacent areas in order to discern the local and system-wide effects of human and natural disturbances and assess the overall health of the Sanctuary. (Alts. IV, III, and II)***

This strategy will establish an extensive, long-term monitoring program throughout the Sanctuary and adjacent areas. The monitoring program will have three purposes: 1) to supply resource managers with information on the status of the health of living resources and the ecosystem; 2) to determine causal relationships impacting management decisions; and 3) to evaluate the effectiveness of management actions such as zoning. The Ecological Monitoring Program will be fully integrated into the Water Quality Monitoring Program. The elements of the monitoring program will include: 1) a temporal and spatial ecological framework based on current knowledge from which to establish the sampling protocol; 2) status and trends assessments of corals, fishes, seagrasses, benthic organisms, plankton, and mangroves; 3) a fisheries ecology monitoring and research component to examine community composition and function within the habitats of the Sanctuary; 4) a Science Advisory Board to develop and oversee the monitoring program; 5) a sampling protocol; 6) a data analysis, management, and dissemination protocol; 7) a quality assurance/quality control protocol; 8) development of an index of health for the Sanctuary; and 9) a volunteer monitoring program. The development of a spatial, ecological framework for the Sanctuary and the establishment of a Science Advisory Board are prerequisite sites.

## Zoning

***Z.1.a. Establish Wildlife Management Areas that restrict access to especially sensitive wildlife populations and habitats. Such areas would include bird nesting, resting, or feeding areas and turtle nesting beaches. Restrictions could prohibit use, modify the way areas are used or accessed, and specify time periods when use is prohibited. (Alt. IV)***

Wildlife Management Areas are designed to minimize disturbance to wildlife populations and their habitats. Regulations governing access will be designed to protect wildlife populations and habitat, while providing opportunities for public use. Regulations will include various restrictions on access including no-access zones, no-motor-use zones, and idle-speed zones. Zones would be placed in areas considered especially sensitive wildlife habitats. Regulations could also have seasonal components, e.g., nesting season closures. Special-use permits, as specified in strategy B.11.a, will allow for access and activities

otherwise prohibited. This zoning includes measures contained in proposed management plans for the Great White Heron, Key West, and National Key Deer wildlife refuges developed by the U.S. Fish and Wildlife Service and the State of Florida Department of Natural Resources.

***Z.1.b. Establish Wildlife Management Areas that restrict access to especially sensitive wildlife populations and habitats. Such areas would include bird nesting, resting, or feeding areas and turtle nesting beaches. Restrictions could prohibit use, modify the way areas are used or accessed, and specify time periods when use is prohibited. (Alt. III)***

Wildlife Management Areas are designed to minimize disturbance to wildlife populations and their habitats. Regulations governing access will be designed to protect wildlife populations and habitat, while providing opportunities for public use. Regulations will include various restrictions on access including no-access zones, no-motor-use zones, and idle-speed zones. Zones would be placed in areas considered especially sensitive wildlife habitats. Regulations could also have seasonal components, e.g., nesting season closures. Special-use permits, as specified in strategy B.11.a, will allow for access and activities otherwise prohibited. This zoning includes measures contained in proposed management plans for the Great White Heron, Key West, and National Key Deer wildlife refuges developed by the U.S. Fish and Wildlife Service and the State of Florida Department of Natural Resources. *The areas selected for this alternative will be more numerous than those established in Alternative IV.*

***Z.1.c. Establish Wildlife Management Areas that restrict access to especially sensitive wildlife populations and habitats. Such areas would include bird nesting, resting, or feeding areas and turtle nesting beaches. Restrictions could prohibit use, modify the way areas are used or accessed, and specify time periods when use is prohibited. (Alt. II)***

Wildlife Management Areas are designed to minimize disturbance to wildlife populations and their habitats. Regulations governing access will be designed to protect wildlife populations and habitat, while providing opportunities for public use. Regulations will include various restrictions on access including no-access zones, no-motor-use zones, and idle-speed zones. Zones would be placed in areas considered especially sensitive wildlife habitats. Regulations could also have seasonal components, e.g., nesting season closures. Special-use permits, as specified in strategy B.11.a, will allow for access and activities otherwise prohibited. This zoning includes measures contained in proposed management plans for the Great White Heron, Key West, and National Key Deer wildlife refuges developed by the U.S. Fish and Wildlife Service and the State of Florida Department of Natural Resources. *The areas selected for this alternative will be more numerous than those established in Alternative III.*

**Z.2.a Replenishment Reserves are designed to encompass large, contiguous diverse habitats. They are intended to provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life and to protect and preserve all habitats and species. These reserves are intended to protect areas that represent the full range and diversity of resources and habitats found throughout the Sanctuary. The intent is to meet these objectives by minimizing human influences within these areas. (Alt. IV)**

Replenishment Reserves are zones that will be established in accordance with Section 7 (a) (2) of the Florida Keys National Marine Sanctuary and Protection Act for the purpose of ensuring the protection of Sanctuary resources. They are designed to protect habitats and species by limiting consumptive activities, while continuing to allow recreational activities that are compatible with resource protection. This will provide the opportunity for these areas to evolve in a natural state, with a minimum of anthropogenic influence. These zones will protect a limited number of areas that represent the diverse habitats within the Sanctuary and that provide important habitat for sustaining natural resources such as fish and invertebrates. These areas have been selected to protect and enhance biodiversity and provide natural spawning, nursery, or permanent residence areas that will serve to replenish stocks of all species.

There already is scientific evidence that nonconsumptive areas lead to increases in both harvested and nonharvested species. However, questions remain about the usefulness of these areas in the Sanctuary, as well as the best sites, configurations, and locations. In addition, there is uncertainty about the relative impacts of regional water quality, nearby pollution sources, and human uses that already exist in the Sanctuary. Unbiased scientific studies, therefore, will be initiated in the Replenishment Reserves for two purposes: 1) to determine whether the reserves actually protect biological diversity and increase the productivity of important marine life species; and 2) to utilize the reserves as control areas to better understand the impacts of water quality, pollution, and various human uses. Based on the results of these studies, the five-year update of the Management Plan will consider expanding, modifying, or eliminating these zones.

**Z.2.b Replenishment Reserves are designed to encompass large, contiguous diverse habitats. They are intended to provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life and to protect and preserve all habitats and species. These reserves are intended to protect areas that represent the full range of diversity of resources and habitats found throughout the Sanctuary. The intent is to meet these objectives by minimizing human influences within these areas. (Alt. III)**

Replenishment Reserves are zones that will be established in accordance with Section 7 (a) (2) of the Florida Keys National Marine Sanctuary and Protection Act for the purpose of ensuring the protection of Sanctuary resources. They are designed to protect habitats and species by limiting consumptive activities, while continuing to allow recreational activities that are compatible with resource protection. This will provide the opportunity for these areas to evolve in a natural state, with a minimum of anthropogenic influence. These zones will protect a limited number of areas that represent the diverse habitats within the Sanctuary, and that provide important habitat for sustaining natural resources such as fish and invertebrates. These areas have been selected to protect and enhance biodiversity and provide natural spawning, nursery, or permanent residence areas that will serve to replenish stocks of all species. *The areas selected for this alternative will be slightly larger and/or more numerous than those established in Alternative IV.*

There already is scientific evidence that nonconsumptive areas lead to increases in both harvested and nonharvested species. However, questions remain about the usefulness of these areas in the Sanctuary, as well as the best sites, configurations, and locations. In addition, there is uncertainty about the relative impacts of regional water quality, nearby pollution sources, and human uses that already exist in the Sanctuary. Unbiased scientific studies, therefore, will be initiated in the Replenishment Reserves for two purposes: 1) to determine whether the reserves actually protect biological diversity and increase the productivity of important marine life species; and 2) to utilize the reserves as control areas to better understand the impacts of water quality, pollution, and various human uses. Based on the results of these studies, the five-year update of the Management Plan will consider expanding, modifying, or eliminating these zones.

**Z.2.c Replenishment Reserves are designed to encompass large, contiguous diverse habitats. They are intended to provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life and to protect and preserve all habitats and species. These reserves are intended to protect areas that represent the full range of diversity of resources and habitats found throughout the Sanctuary. The intent is to meet these objectives by minimizing human influences within these areas. (Alt. II)**

Replenishment Reserves are zones that will be established in accordance with Section 7 (a) (2) of the Florida Keys National Marine Sanctuary and Protection Act for the purpose of ensuring the protection of Sanctuary resources. They are designed to protect habitats and species by limiting consumptive activities, while continuing to allow recreational activities that are compatible with resource protection. This will provide the opportunity for these areas to evolve in a natural state, with a minimum of anthropogenic influence. These zones will protect a limited number

of areas that represent the diverse habitats within the Sanctuary, and that provide important habitat for sustaining natural resources such as fish and invertebrates. These areas have been selected to protect and enhance biodiversity and provide natural spawning, nursery, or permanent residence areas that will serve to replenish stocks of all species. *The areas selected for this alternative will be slightly larger and/or more numerous than those established in Alternative III.*

There already is scientific evidence that nonconsumptive areas lead to increases in both harvested and nonharvested species. However, questions remain about the usefulness of these areas in the Sanctuary, as well as the best sites, configurations, and locations. In addition, there is uncertainty about the relative impacts of regional water quality, nearby sources of pollution, and human uses that already exist in the Sanctuary. Unbiased scientific studies, therefore, will be initiated in the Replenishment Reserves for two purposes: 1) to determine whether the reserves actually protect biological diversity and increase the productivity of important marine life species; and 2) to utilize the reserves as control areas to better understand the impacts of water quality, pollution, and various human uses. Based on the results of these studies, the five-year update of the Management Plan will consider expanding, modifying, or eliminating these zones.

***Z.3.a Establish nonconsumptive Sanctuary Preservation Areas in a select number of areas that are experiencing a high degree of conflict between consumptive and nonconsumptive uses and in discrete areas that are currently experiencing significant population or habitat declines. These areas will provide for the protection and sustenance of resources, particularly select marine species in high-use and biologically important areas. (Alt. IV)***

These zones will focus on the protection of shallow, heavily used reefs where conflicts occur between user groups, and where concentrated visitor activity leads to resource degradation. They are designed to enhance the reproductive capabilities of renewable resources, protect areas that are critical for sustaining and protecting important marine species, and reduce user conflicts in high-use areas. This will be accomplished through a prohibition of consumptive activities within these areas. These areas have been chosen based on the status of important habitat, the ability of a particular area to sustain and protect the habitat, and the degree of conflict between consumptive and nonconsumptive users.

Research conducted in these areas can provide important information for comparing the effects of natural processes and consumptive activities on species and habitat. Important prerequisites for conducting monitoring and research in these areas are to continue the ongoing, large-scale remote sensing project to locate and map the resources and habitats within the Sanctuary and to assess the status of important marine species and their habitat. The actual size and location of these zones have been determined by

examination of user patterns, aerial photography, and ground-truthing of specific habitats.

***Z.3.b Establish nonconsumptive Sanctuary Preservation Areas in a number of areas that are experiencing a high degree of conflict between consumptive and nonconsumptive uses, and in discrete areas that are currently experiencing significant population or habitat declines. These areas will provide for the protection and sustenance of resources, particularly select marine species in high-use and biologically important areas. (Alt. III)***

These zones will focus on the protection of shallow, heavily used reefs where conflicts occur between user groups, and where concentrated visitor activity leads to resource degradation. They are designed to enhance the reproductive capabilities of renewable resources, protect areas that are critical for sustaining and protecting important marine species, and reduce user conflicts in high-use areas. This will be accomplished through a prohibition of consumptive activities within these areas. These areas have been chosen based on the status of important habitat, the ability of a particular area to sustain and protect the habitat, and the degree of conflict between consumptive and nonconsumptive users.

Research conducted in these areas can provide important information for comparing the effects of natural processes and consumptive activities on species and habitat. Important prerequisites for conducting monitoring and research in these areas are to continue the ongoing, large-scale remote sensing project to locate and map the resources and habitats within the Sanctuary and to assess the status of important marine species and their habitat. The actual size and location of these zones have been determined by examination of user patterns, aerial photography, and ground-truthing of specific habitats. *The areas selected will be slightly larger and/or more numerous than those established in Alternative IV.*

***Z.3.c Establish nonconsumptive Sanctuary Preservation Areas in numerous areas that are experiencing a high degree of conflict between consumptive and nonconsumptive uses, and in discrete areas that are currently experiencing significant population or habitat declines. These areas will provide for the protection and sustenance of resources, particularly select marine species in high-use and biologically important areas. (Alt. II)***

These zones will focus on the protection of shallow, heavily used reefs where conflicts occur between user groups, and where concentrated visitor activity leads to resource degradation. They are designed to enhance the reproductive capabilities of renewable resources, protect areas that are critical for sustaining and protecting important marine species, and reduce user conflicts in high-use areas. This will be accomplished through a prohibition of consumptive activities within these areas. These areas have been

chosen based on the status of important habitat, the ability of a particular area to sustain and protect the habitat, and the degree of conflict between consumptive and nonconsumptive users.

Research conducted in these areas can provide important information for comparing the effects of natural processes and consumptive activities on species and habitat. Important prerequisites for conducting monitoring and research in these areas are to continue the ongoing, large-scale remote sensing project to locate and map the resources and habitats within the Sanctuary and to assess the status of important marine species and their habitat. The actual size and location of these zones have been determined by examination of user patterns, aerial photography, and ground-truthing of specific habitats. *The areas selected will be slightly larger and/or more numerous than those established in Alternative III.*

***Z.4.a Establish an Existing Management Area that recognizes areas that are managed by other agencies where restrictions already exist. Management of these areas within the Sanctuary may require additional regulations or restrictions to adequately protect resources. Any additional management measures will be developed and implemented in coordination with the agency having jurisdictional authority. (Alts. IV, III, and II)***

These zones delineate the existing jurisdictional authority of other agencies (i.e., State parks, aquatic preserves, sanctuaries, and other restricted areas). Their function is to recognize established management areas and to, at a minimum, complement the existing management programs that have been established in those areas. This zone type will serve as a vehicle to accomplish Section 7 (a) (6) of the Florida Keys National Marine Sanctuary and Protection Act by ensuring cooperation and coordination with other agencies.

***Z.5.a Establish zones to address special-use activities and concerns within the Sanctuary. These zones can be used to set aside areas for educational and scientific purposes, restorative, monitoring, or research activities or to establish areas that confine or restrict activities such as power boat racing and personal watercraft use in order to minimize impacts on sensitive habitats and to reduce user conflicts. This zone type will also establish live-aboard areas and mooring fields in areas where adverse environmental impacts will be minimal. (Alts. IV and III)***

This strategy is designed to delineate areas of special concern where specific issues can be addressed through the use of zoning. Using these zones, areas can be set aside for specific uses to reduce user conflicts and

minimize adverse environmental effects from high-impact activities. This will be accomplished by designating selected areas where activities can be conducted with a minimum of disturbance to other users and the environment. Special-use Areas may include areas set aside for research, artificial reef construction, archaeological sites, etc. They will also delineate areas where high-impact activities, such as powerboat racing and personal watercraft use will be allowed. Live-aboard areas and mooring fields will also be confined to specific areas in order to reduce adverse environmental impacts. This is the broadest zoning classification and encompasses the greatest range of management issues. The boundaries of these areas will be selected to address management issues and needs, and may include seasonal or emergency closures of areas.

***Z.5.c Establish zones to address special-use activities and concerns within the Sanctuary. These zones can be used to set aside areas for educational and scientific purposes, restorative, monitoring, or research activities or to establish areas - limited in size and number - that confine or restrict activities, such as powerboat racing and personal watercraft use, in order to minimize impacts on sensitive habitats and to reduce user conflicts. This zone type will also establish a limited number of live-aboard areas and mooring fields in areas where adverse environmental impacts will be minimal. (Alt. II)***

This strategy is designed to delineate areas of special concern where specific issues can be addressed through the use of zoning. Using these zones, areas can be set aside for specific uses to reduce user conflicts and minimize adverse environmental effects from high-impact activities. This will be accomplished by designating selected areas where activities can be conducted with a minimum of disturbance to other users and the environment. Special-use Areas may include areas set aside for research, artificial reef construction, archaeological sites, etc. They will also delineate areas where high-impact activities, such as powerboat racing and personal watercraft use will be allowed. Live-aboard areas and mooring fields will also be confined to specific areas in order to reduce adverse environmental impacts. *The areas selected to confine high-impact activities, live-aboards, and mooring fields will be slightly smaller and less numerous than those established in Alternatives IV and III. This will further restrict the possibility of adverse impacts related to those activities.* This is the broadest zoning classification and encompasses the greatest range of management issues. The boundaries of these areas will be selected to address management issues and needs, and may include the seasonal or emergency closures of areas.

## Education

**E.1.a Develop printed materials to promote public awareness, specifically targeting boaters and divers/snorkelers, of the impacts of their activities on the Sanctuary's resources and environmental quality. Promote the proper use of equipment used for these activities in order to minimize adverse impacts to natural resources. Materials will include brochures, posters, newsletters and contributions to periodicals. Distribute materials in bulk to high-interception locations (e.g., marinas, boat ramps, dive shops, etc.). (Alt. IV)**

Printed materials will be developed to promote public awareness (e.g., visitors, business owners and operators, etc.) and, in particular, boaters' and divers'/snorkelers' awareness of the impacts of their activities on Sanctuary resources and environmental quality. Information will be printed in brochures, posters, newspapers, newsletters, and periodicals.

Materials for boaters and divers will include specific information on the proper use of equipment, Sanctuary regulations related to boating and diving, safe boating and diving/snorkeling practices, Sanctuary habitats and species guides for divers/snorkelers, and direct and indirect impacts of boating and diving on Sanctuary resources.

Printed materials will be distributed in bulk to locations accessible to boaters and divers in particular. These locations will include marinas, boat ramps, and dive shops. Other locations more accessible to the general public include schools, libraries, and Federal, State, and local agencies.

**E.1.b. Develop printed materials to promote public awareness of the impact of their activities, both land- and water-related, on the Sanctuary's resources and environmental quality. Promote the proper use of equipment used for these activities in order to minimize adverse impacts to natural resources. Materials will include brochures, posters, newsletters, contributions to periodicals, environmental nautical charts, color environmental atlases, and a color periodical. Distribute materials in bulk to high-interception locations (e.g., marinas, boat ramps, dive shops, other businesses etc.) and include bulk mailings as a means of distribution. (Alts. III and II)**

Printed materials will be developed to promote public awareness (e.g., visitors, business owners and operators, etc.) and, in particular, boaters', divers'/snorkelers', fishermen's, and homeowners' awareness of the impacts of their activities on Sanctuary resources and environmental quality. Information will be printed in brochures, posters, newspapers, newsletters, and periodicals. *Some brochures will be produced in color on glossy paper stock. Nautical charts will also be printed with relevant environmental*

*information. A color environmental atlas for the Sanctuary will be produced, as will a monthly color periodical.*

Materials for boaters, divers, and fishermen will include specific information on the proper use of equipment, Sanctuary regulations related to *water activities, safe practices for each*, Sanctuary habitats and species guides for users, and direct and indirect impacts of boating, diving, fishing and other water-based activities on Sanctuary resources. *In addition, materials with information directed towards activities on land, such as sewage and solid waste disposal, and stormwater runoff and household activities (e.g., home improvement, yard waste disposal, etc.) that impact the Sanctuary will be produced.*

Printed materials will be distributed in bulk to locations accessible to boaters, divers, and fishermen in particular. These locations will include marinas, boat ramps, dive shops, *aquarium shops, and where fishing licenses are sold*. Other locations more accessible to the general public include schools, libraries, and Federal, State, and local agency offices. *A Sanctuary newsletter will be mailed out in bulk. Other materials will be mailed out with vehicle licenses and registrations and utility bills.*

**E.2.a Inventory and use existing videos, films, and audio materials portraying activities in the Florida Keys and their impacts on Sanctuary resources. Materials will be available from Sanctuary offices. (Alt. IV)**

This strategy is designed to assemble available audio/visual environmental education materials and create a library for use by public and private organizations as well as Sanctuary staff. No new videos or audio tapes will be produced. A slide/photo library will be developed and contributions of materials will be solicited from amateur and professional photographers.

A check-out system will be used to lend out these materials. A video system will be installed in the Sanctuary office to allow visitors to view tapes.

**E.2.b Inventory and use existing videos, films, and audio/visual environmental education materials portraying activities in the Florida Keys and their impacts on Sanctuary resources. Produce a limited number of audios/videos to address gaps in available materials and to address major activities including boating, fishing, diving, etc. Materials will be available at Sanctuary offices and will be distributed to key locations (e.g., dive shops, etc.) throughout South Florida. (Alts. III and II)**

This strategy is designed to assemble all available audio/visual environmental education materials and create a library for use by public and private organizations, as well as Sanctuary staff. *A limited number of new audio and*

visual materials will be developed to address gaps in available materials. A number of videos and other materials will be produced to address major activity/issue areas (e.g., boating impacts, fishing, diving, etc.). A slide/photo library will be developed and contributions of materials will be solicited from amateur and professional photographers.

A check-out system will be used to lend out these materials. The distribution scheme will include libraries at all Sanctuary facilities, as well as at-cost distribution to dive shops and other high-interception locations in the Keys and throughout South Florida.

**E.3.a Develop signs/displays at high-use areas and public and private boat ramps to inform participants in water-based activities of regulations and environmentally sound practices, provide navigation information, and promote awareness of sensitive areas. Produce portable displays with information on Sanctuary resources, regulations, environmental quality, etc. A limited number of signs will be multi-lingual. (Alt. IV)**

Permanent displays/signs will be developed with text limited to Sanctuary resource information and regulations. A portable display will be produced with similar information. Permanent displays/signs will be placed at a limited number of high-use public and private boat ramps. A limited number of multi-lingual signs will also be produced.

**E.3.b Develop signs/displays at high-use areas, all public and some private boat ramps, and some public beach access areas to inform participants in water-based activities of regulations and environmentally sound practices, provide navigation information, and promote awareness of nearby sensitive areas. Portable displays will also be produced with information on Sanctuary resources, regulations, environmental quality, etc. Most of the signs will be multi-lingual. Targeted multi-media displays will be developed with information and impacts on the Sanctuary relevant to the activity targeted. A number of wayside exhibits will be installed.**

**Develop a user-friendly computer system containing information on regulations, access, recreational sites, environmental etiquette, etc. for visitor use at selected sites throughout the Sanctuary within five years. (Alts. III and II)**

Permanent displays/signs will be developed with Sanctuary resource information, regulations, navigation safety and environmental etiquette. A portable display will be produced with similar information. Also multi-media targeted displays (e.g., boating, fishing, diving, etc.) will be produced with information on sound boating practices, nearby sensitive areas, catch-and-release fishing, handling techniques and impacts of hook-and-line fishing on Sanctuary resources. Most of the signs produced will be multi-lingual.

Permanent displays/signs will be placed at all public and some private boat ramps. Signs will also be displayed at some public shoreline access areas. A number of displays will be placed along the roadside throughout the Keys (e.g., Key Largo, Islamorada, Marathon, Big Pine, and Key West).

A network of computer-driven display systems will be set up to provide information to Sanctuary visitors on resources, activities, and the environment. This system must be user-friendly (e.g., touch-screen menus) and will be available for sale to commercial establishments. Updates would take place every six months. The system will be in place in five years.

**E.4.a Develop opportunities for instruction and training. This will include programs conducted by teachers, Sanctuary staff, and volunteers. Training programs (e.g., Coral Reef Classroom, submerged cultural resources, etc.) will also be provided for teachers, environmental professionals, business owners and operators, and law enforcement officials. (Alt. IV)**

This strategy will improve the understanding of Sanctuary programs and purposes and the ecology of the Keys through development of training modules to be used as follows:

- 1) Volunteer training opportunities involving basic education/orientation for new volunteers concerning the marine sanctuary program and specific, task-oriented training designed to assist paid staff in accomplishing monitoring, safety, or public outreach.
- 2) Development of specific packaged presentations on the Sanctuary, its resources, goals, etiquette, and environmental quality targeted at either the primary or secondary education level.
- 3) The Florida Marine Patrol has an environmental awareness program that has produced significant results in the past. This strategy would provide additional funding, allowing the Patrol to improve and increase the range of its existing program.

**E.4.b Develop opportunities for instruction and training. This will include programs (both on the primary and secondary level) conducted by teachers, Sanctuary staff, and volunteers. Participation in existing environmental education programs would also be established, and some programs would be expanded. Training programs (e.g., Coral Reef Classroom, submerged cultural resources, etc.) will also be provided for teachers, environmental professionals, business owners and operators, and law enforcement officials. (Alts. III and II)**

## Appendix G. Mid-range Alternative Strategies

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This strategy will improve the understanding of Sanctuary programs and purposes and the ecology of the Keys through development of training modules to be used as follows:

- 1) Volunteer training opportunities will involve *sophisticated technical* education/orientation for volunteers concerning the marine sanctuary program and specific, task-oriented education designed to assist paid staff in accomplishing *habitat restoration, SCR research and interpretation*, etc.
- 2) Development of specific packaged presentations on the Sanctuary, its resources, goals, etiquette, and environmental quality targeted at *both primary and secondary education levels*. *The programs will include on-site training opportunities for studying a limited number of Sanctuary habitats and SCRs.*
- 3) *Sanctuary interpretive staff will coordinate activities on a limited basis with State, county, and private environmental education programs targeted at specific activities (e.g., boating, fishing, diving, business owners and operators, households, etc.). New environmental education programs for targeted activities will be developed to fill in gaps.*
- 4) The Florida Marine Patrol has an environmental awareness program that has produced significant results in the past. This strategy would provide additional funding allowing the Patrol to improve and increase the range of its existing program.

***E.5.a Establish a program to promote Sanctuary goals and activities through public service announcements (PSAs) in Monroe County that presents an overview of the Sanctuary, its resources, and their ecological significance for limited "no-cost" distribution to radio, cable television stations, and newspapers. Develop limited editorial/contributions for other printed media. PSAs will focus on participants in water-related activities (boaters, divers, etc.). These materials will also be organized into a press packet. (Alt. IV)***

This strategy is designed to develop a program of public service announcements and other media-related materials to educate the public about how their activities impact Sanctuary resources. The media contacted in this strategy will include those based in Monroe County only. The materials are primarily aimed at boaters and divers. The exposure will be limited to a small number of "no-cost" PSAs on radio and TV. A limited number of editorial responses/contributions will be developed for local papers. A "no-cost" program for printing PSAs on manufacturers product packaging will also be established. A basic press package will be produced for distribution to media representatives on request.

***E.5.b Establish a program to promote Sanctuary goals and activities through public service announcements (PSAs) in South Florida, with some national and international public exposure, that presents an overview of the Sanctuary, its resources and their ecological significance for routine distribution to radio, cable television stations, and newspapers. Develop editorial/contributions for other printed media. Funds will be spent on routine media exposure. PSAs would focus on participants in water-related and other activities that affect the Sanctuary (e.g., boaters, divers, household etc.). These materials will also be organized into a press packet. (Alts. III and II)***

This strategy is designed to develop a program of public service announcements and other media-related materials to educate the public about how their activities impact Sanctuary resources. *The PSAs will focus on boating, diving, household activities and other activities that impact the Sanctuary. The areal extent of media exposure will extend to all of South Florida. Some PSAs will be shown to state, national, and international markets. A number of broadcasts will be in languages other than English (primarily Spanish).*

*The exposure will be routine "no-cost" PSAs on radio and TV. Funds will be spent on column space and air time to increase the frequency of broadcast. Routine editorial responses/contributions will be developed for local papers and other printed materials. A "no-cost" program for printing PSAs on manufacturers product packaging will also be established. A basic press package will be produced for distribution to media representatives on request.*

***E.6.b Establish an education advisory council to advise educators on education goals, priorities and funding sources for the Sanctuary. A full-time staff person will be provided. (Alts. III and II)***

This strategy is designed to establish an education advisory council to assist education staff in establishing education priorities, securing funds, and coordinating educational efforts to prevent duplication with other education organizations. The council will be able to rely on a *full-time staff person* provided by the Sanctuary Program.

***E.7.a Promote educational materials and other information about the Sanctuary and its resources at existing Sanctuary offices. (Alt. IV)***

This strategy will establish visitor booths/displays to provide educational materials on Sanctuary resources, etiquette, and environmental quality. Existing Sanctuary offices will provide limited space for distribution on a walk-in basis. No other building space will be dedicated to this function.

**E.7.b Promote educational materials, including bilingual materials and other information about the Sanctuary and its resources, at existing Sanctuary offices and Chambers of Commerce. Establish an interagency visitor center with the U.S. DOI and the Florida DEP. (Alt. III)**

This strategy will establish visitor booths/displays to provide educational materials on Sanctuary resources, etiquette, and environmental quality with materials printed in languages other than English (primarily Spanish). Existing Sanctuary offices will provide limited space for distribution on a walk-in basis. In addition, an interagency visitor center will be established in cooperation with the U.S. DOI (FWS, NPS) and the FDEP to provide visitors and residents with orientation information on various protected and managed areas. Cooperative efforts will allow agencies to pool resources and provide lowest cost options for a special center.

The Sanctuary will also use no-cost/low-cost space in locations where tourist-related information is already distributed (e.g., Chambers of Commerce) for promotional purposes.

**E.7.c Promote educational materials, including bilingual materials and other information about the Sanctuary and its resources, in a visitor center established by and dedicated solely to the Sanctuary. Other smaller centers will be established at major resort locations. Booths/displays will be established in remote locations. (Alt. II)**

This strategy will establish visitor booths/displays to provide educational materials on Sanctuary resources, etiquette, and environmental quality with materials printed in languages other than English (primarily Spanish). Existing Sanctuary offices will provide space for distribution on a walk-in basis. In addition, an interagency visitor center will be established by the Sanctuary Program that will focus only on issues related to the Sanctuary. Mini visitor centers will be established at major resort areas in the Keys (e.g., Key Largo, Marathon, or Key West, depending on the location of the main visitor center).

The Sanctuary will also use no-cost/low-cost space in locations where tourist-related information is already distributed (e.g., Chambers of Commerce, car rental agencies, airports, etc.) to establish booths/displays promoting the Sanctuary.

**E.9.c Establish an ecotourism coordinator/promoter position for the Sanctuary within three years. (Alt. II)**

This strategy will establish an "ecotourism coordinator" to work in conjunction with the Monroe County Tourism Board to promote, assist and coordinate the development of resource-sensitive tourism activities that would have a

minimum impact on Sanctuary resources. They will also assist in development of "ecotourism" companies that promote Sanctuary goals and purposes.

**E.10.a Establish a program to ensure public involvement throughout South Florida in Sanctuary activities by holding public meetings and promoting Sanctuary awareness to extracurricular groups. (Alt. IV)**

This strategy will establish a program to ensure public involvement by holding periodic public meetings throughout South Florida to which commercial and recreational users of Sanctuary resources and the general public will be invited. Sanctuary staff and/or guest speakers will make presentations, and dialogue and feedback from the public will be encouraged.

Limited printed materials will be developed to support presentations to organizations such as 4-H clubs, scouts, and nongovernmental agencies who are making an effort to learn about and support the Sanctuary.

**E.10.b Establish a program to ensure public involvement throughout South Florida in Sanctuary activities by holding public meetings and promoting Sanctuary awareness to extracurricular groups. A Sanctuary "hot line" will be established for the public to report information concerning the Sanctuary. A program will also be established to provide Sanctuary sponsorship of contests/awards. (Alts. III and II)**

This strategy will establish a program to ensure public involvement by having periodic public meetings throughout South Florida to which commercial and recreational users of Sanctuary resources and the general public will be invited. Sanctuary staff and/or guest speakers will make presentations, and dialogue and feedback from the public will be encouraged.

Limited printed materials will be developed to support presentations to organizations such as 4-H clubs, scouts, and nongovernmental agencies who are making an effort to learn about and support the Sanctuary.

Sanctuary-sponsored contests will be established that include logo contests, photo contests, and volunteer of the year contests. An annual award to recognize contributions by individuals and organizations will also be part of the program. "Adopt-a-Reef" will be another valuable Sanctuary-sponsored program.

**E.11.a Organize, support, and/or participate in special events (e.g., trade shows, expositions, grand openings, etc.) that allow for the exchange of Sanctuary information. The Sanctuary will co-sponsor a limited number of conferences and workshops. (Alt. IV)**

## **Appendix G. Mid-range Alternative Strategies**

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This strategy proposes that the Sanctuary Program be involved in special events where Sanctuary information can be distributed.

The Sanctuary Program will also co-sponsor a limited number of conferences and workshops dealing with Sanctuary issues and environmental quality.

***E.11.b Organize, support, and/or participate in special events (e.g., trade shows, expositions, grand openings, etc.) that allow for the exchange of Sanctuary information. The Sanctuary will co-sponsor a limited number of conferences and workshops. The Sanctuary will co-sponsor a number of conferences and workshops, with selected sole sponsorship of some events. This would include a "Sanctuary Awareness Week" and a "grand opening" to the Sanctuary. The Sanctuary Program would co-sponsor other "awareness" events/weeks (e.g., National Fishing Week, etc.). (Alts. III and II)***

This strategy proposes that the Sanctuary Program be involved in special events where Sanctuary information can be distributed.

*The Sanctuary Program will also co-sponsor conferences and workshops dealing with Sanctuary issues and environmental quality. Sole sponsorship of a limited number of events of particular interest/benefit to the Sanctuary will be established. This will include "Sanctuary Awareness Week" and a "grand opening" to further promote public awareness of Sanctuary goals. The Sanctuary Program will co-sponsor other "awareness" events/weeks (e.g., National Fishing Week, etc.) with special-interest groups by providing information on specific activities and their impacts.*

## Strategies in the Preferred Alternative

This appendix presents and describes the strategies that were in the Preferred Alternative for the Draft Florida Keys National Marine Sanctuary Management Plan/Environmental Impact Statement. See Volume I for the Description of the Preferred Alternative for the Final Environmental Impact Statement/Management Plan.

## Boating

**B.1 Conduct a survey to assess public and private boat access throughout the Sanctuary to develop a low-impact access plan; direct new public access to low-impact areas; and modify as appropriate any access affecting sensitive areas throughout the Sanctuary.**

This strategy is designed to reduce resource impacts from all boating activities throughout the Sanctuary. An inventory will first be conducted of the existing locations of public and private boat access ramps and their levels of use. Based on this inventory, a boating access plan will be developed that: 1) directs new public access points, including marinas and mooring areas, to low-impact areas; and 2) requires modification of access ramps directly affecting sensitive areas (i.e., seagrasses, mangroves, hardbottoms, etc.) throughout the Sanctuary.

Impacts will also be reduced through the use of low-cost administrative techniques such as signs posted at boat ramps, restricted access during certain times of the day, and the closure of access points for a specified amount of time. Prerequisites include developing benthic habitat and bathymetry maps and assessing the distribution of access points.

**B.2 Conduct a program of restoration research at representative habitat sites within the Sanctuary; develop a restoration plan and implement restoration in severely impacted areas. Monitor recovery processes.**

This strategy is designed to promote research and the development of new technologies to restore and enhance coral, seagrass, and mangrove habitats throughout the Sanctuary. Restoring these habitats will enhance fishery stocks. Seagrass and coral transplanting are examples of restoration activities, but other techniques must also be developed. A restoration plan will be developed and implemented for severely impacted areas. Recovery processes (e.g., recruitment and survivability) will be monitored at these sites. An extensive demonstration project will be developed for mitigation and restoration techniques following physical disturbances or chronic pollutant inputs. Emergency or long-term restoration zones may be established to allow for sufficient resource recovery.

**B.3 Develop and implement a removal and disposal plan for derelict and abandoned vessels, streamline the permitting process, and require the removal of all derelict and abandoned vessels throughout the Sanctuary.**

This strategy will reduce direct and indirect impacts to natural resources from derelict and abandoned vessels. A removal and disposal plan will include: 1) assessing the location and extent of derelict and abandoned vessels; 2) streamlining the existing permitting process for removing derelict and abandoned vessels from high-use and sensitive areas; and 3) requiring the use of environmentally sound removal practices and techniques. It will also require the removal of derelict and abandoned vessels throughout the Sanctuary.

Screening criteria will also be developed to determine whether or not to move a vessel. Criteria will include possible damage to the environment and the establishment of a policy where the owner of the vessel, if known, would pay for its removal.

**B.4 Establish a channel/waterway marking system throughout the Sanctuary.**

This strategy will reduce damage to natural resources from boating activities by: 1) placing regulatory and informational floating buoys or fixed markers at major shallow-water reefs, shoals, or other significant features; 2) marking frequently used and preferred channels; and 3) reducing boat wakes in sensitive habitats, areas vulnerable to erosion, and high-density areas such as marinas. The strategy will be implemented throughout the Sanctuary. A survey to identify and map areas of frequent groundings, channels, sites of shallow-water reefs, shoals, and other significant features is a prerequisite. This strategy will affect all watercraft, including personal watercraft (PWC).

**B.5 Develop a response plan for boat groundings throughout the Sanctuary.**

This strategy will develop a standard response plan to address boat groundings throughout the Sanctuary. The plan should reduce response time, a critical factor in limiting the potential for extensive resource damage. A prerequisite is to identify the available response resources and the affected agencies, and to develop a protocol for responsibility, assessment standards, methods, and training.

**B.6 Add 30 Sanctuary enforcement officers to deploy in high-use and sensitive areas.**

This strategy will increase the presence of law enforcement officers (LEOs) on the water to protect resources and reduce user conflicts. This will be accomplished by hiring 30 more LEOs and deploying them in high-use and sensitive areas. Remote observation techniques may be

## Appendix H. Strategies in the Preferred Alternative

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used to aid enforcement efforts. High-use and sensitive areas will be identified.

**B.7 Reduce pollution discharges (e.g., sanitary wastes, debris, and hydrocarbons) from vessels by enforcing existing regulations, assessing the need for additional regulations, and implementing and enforcing new regulations (i.e., upcoming regulation restricting discharge in State waters). Change the environmental crimes category associated with discharges from felony to civil offense, thereby removing the need to prove criminal intent.**

This strategy will help avoid further water quality degradation by boaters and live-aboards by: 1) requiring boaters and live-aboards to use holding tanks; 2) restricting the discharge of substances (other than fish waste and exhaust) into nearshore waters; and 3) establishing trash-collection stations. This strategy requires an assessment of where pump-out and trash-collection stations are most needed and where they should be located (e.g., in marinas or elsewhere). The strategy includes a review of the adequacy of existing regulations that address pollution discharges from vessels and the need for additional regulations. This strategy could also reduce pollution by providing civil penalties (e.g., fines) for environmental crimes such as discharging fuel or pumping out a ship-board holding tank. These are currently felonies, and obtaining a conviction requires proving criminal intent, which is often difficult. Reclassifying these actions as civil offenses would make it easier to discourage the pollution of Sanctuary waters.

**B.8 Conduct a boating fee assessment study to evaluate and reallocate Sanctuary-related fees; implement appropriate impact fees.**

This strategy will examine mechanisms to generate funds for use in Sanctuary management and related research. Boating activity levels will be assessed and existing fees related to resource utilization in the Sanctuary evaluated. Based on this information, appropriate impact fees will be implemented, contingent upon the current study to establish user fees for NOAA's national marine sanctuaries, for users in proportion to their use levels. The fee could be implemented through the purchase of a sticker or stamp to be displayed on the boat or fishing license. A process will be developed to properly funnel and utilize existing fees.

**B.9 Establish a voluntary visitor registration program to assess user activity in the Sanctuary.**

This strategy will help better understand overall Sanctuary use patterns by determining the areas of the Sanctuary visited most frequently and the types of visitor activities. Visitors can fill out registration forms at all Sanctuary offices, Federal- and State-administered areas and visitor centers and, at the same time, can obtain information on the Sanctuary.

**B.10 Establish damage assessment standards for vessel groundings in the Sanctuary.**

This strategy will establish a standard damage assessment methodology for vessel groundings on coral reefs and other vulnerable or sensitive habitats. Establishing a standard damage assessment methodology includes improving response times, assessment procedures, and litigation practices. Prerequisites include: 1) developing an assessment procedure manual; 2) assembling assessment response teams; 3) identifying assessment techniques for all habitat types; and 4) determining resource values.

**B.11 Establish permits (e.g., for researchers, educators, emergency response personnel, salvors, salvage operators, animal rescue operations) to conduct activities otherwise prohibited within the Sanctuary; facilitate simplified permitting.**

This strategy will allow access by special groups (e.g., researchers, educators, emergency response personnel, salvage operators, and animal rescue operations) to restricted areas (e.g., nesting sites, spawning areas, etc.). Permits will be monitored and permit provisions enforced.

**B.12 Expand Federal/State/local cooperative law enforcement and cross-deputization programs and prioritize enforcement areas.**

This strategy will increase the efficiency and effectiveness of enforcement efforts. It will establish coordination and cooperation among agencies and increase interagency communication by: 1) developing cooperative administrative agreements that establish Federal, State, and local enforcement authority among all officers; 2) scheduling efficient equipment and staff use among all agencies; 3) standardizing training; 4) developing a process for handling violations; 5) standardizing radio communications (i.e., use of a common radio frequency); 6) promoting cooperation with the military in detecting violations; and 7) determining priority enforcement areas. Establishing cooperative agreements and identifying priority areas are prerequisites.

**B.13 Establish regulations and procedural guidelines for commercial salvaging and towing of vessels in need of assistance. Implement permitting for salvaging and towing throughout the Sanctuary and establish an operator training program.**

This strategy will reduce damage to natural resources resulting from improper vessel salvage methods by developing standard vessel salvage procedures including: 1) obtaining a permit; 2) notifying authorities; 3) having an authorized observer at the site or receiving permission to proceed; 4) providing operator training; and 5) promoting the use of environmentally sound salvaging and towing practices and techniques. Permitting for salvaging and towing operations will be implemented throughout the

Sanctuary. A program to train operators in environmentally sound methods of towing and salvaging will also be established and promoted. Prerequisites include establishing a memorandum of understanding (MOU) with the Coast Guard and the construction of a bond/insurance program.

**B.15 Conduct an assessment of current mooring buoy technology to determine impacts to resources and to evaluate which are the most environmentally sound, cost-effective, and functional for use in Sanctuary waters. Develop a comprehensive mooring buoy plan providing for the maintenance of buoys, the placement of buoys as needed, and the implementation of vessel size limits at mooring buoys throughout the Sanctuary.**

This strategy decreases user conflicts, prolongs mooring buoy life and reduces the risk of vessel groundings by: 1) assessing vessel impacts on mooring buoys and natural resources; 2) determining the impacts of mooring buoy technologies on resources; and 3) determining which mooring buoy designs are the most environmentally sound, cost-effective and functional. A comprehensive mooring buoy plan will be developed providing for the maintenance of buoys, the placement of buoys as needed, and the implementation of vessel size limits at mooring buoys throughout the Sanctuary. The assessment will define vessel size limits.

**B.16 Identify subdivisions and coastal areas where dock construction should be prohibited due to inadequate surrounding water depths and the presence of important marine resources. Coordinate the Federal, State, and local permitting process for dock construction.**

Conduct a study to determine areas within the Sanctuary where dock construction should be prohibited because of the lack of channels providing access to navigable waters. This can be done in conjunction with strategy B.4. (Channel Marking). Monroe County is currently permitting dock construction in areas with inadequate surrounding water depth. The intent of this strategy is to develop a protocol between the ACOE, Florida DCA, and Monroe County for only permitting docks in areas where there are accessible channels of adequate depth, and where they will not adversely impact important marine resources.

**B.17 Develop and implement regulations for the operation of PWCs and other motorized vessels within 200 yards of sensitive or critical areas, other boats, and people in the water. Develop and implement regulations and procedural guidelines for commercial PWC rental operations.**

This strategy will reduce damage to natural resources resulting from the improper operation of PWCs and other

motorized vessels, and will address user-conflict issues. Special-use Areas (strategy Z.5) will be used to establish 200-yard idle-only buffer zones around sensitive areas (e.g., residential shorelines, edges of flats, and areas being used by wading or nesting birds). Riders will be required to operate at idle speeds within 200 yards of other vessels, bridges, persons in the water, persons fishing, and within residential canals. Rental operations will also be required to establish their own zones, subject to permit requirements, where riders can be observed at all times. Areas to be avoided will be marked according to the channel-marking strategy (B.4).

To further protect the resources and reduce user conflicts, rental operations will be required to screen and train their employees on safe and environmentally sound methods of PWC operation. Employees will be given a training manual that they must sign certifying that they understand its contents. In addition, all information about the Sanctuary must be made available to clients.

To enhance safe riding, rental operations must be able to effect emergency communications, have rescue and chase vessels available, and have personnel available who are trained in first-aid and CPR.

Users of PWCs must comply with existing laws, including minimum age and equipment requirements and regulations governing vehicle operation (e.g., surfing the wakes of other vessels).

## Fishing

**F.1 Establish a protocol for developing and revising a consistent set of fisheries regulations, and implement throughout the Sanctuary.**

This strategy will ensure administrative and regulatory coordination between fisheries regulatory agencies operating within Sanctuary waters, and will develop a process for combining and revising existing regulations and developing new regulations. All fisheries and harvesting methods will be included. The Florida Marine Fisheries Commission (FMFC) and Gulf of Mexico and South Atlantic fisheries management councils are currently working on protocols for developing and revising regulations within the Sanctuary, and are deciding on a lead agency to coordinate and facilitate regulatory functions. Identifying and assessing existing regulations are prerequisites, and should also form the basis for identifying additional regulatory needs. Regulations developed under this strategy will ensure that the goals of long-term maintenance of the ecosystem and optimum sustainable yields are met. Any fisheries regulations implemented within the Sanctuary (e.g., gear and fishing method restrictions, fishing area restrictions, and size limits) will be developed through the established protocol.

**F.3 Implement a moratorium on stocking activities. Assess existing research on the impacts of stocking on the genetic integrity of native stocks. Conduct research on natural stock recovery and its role in maintaining genetic integrity. Conduct a reevaluation of stocking options. The length of the moratorium will depend on the length and results of the assessment.**

The research will build on native stock genetic integrity research conducted elsewhere to determine the effect of fish stocking on the genetic integrity of native species within the Sanctuary. This research will determine the extent to which changes in the genetic integrity of native stocks have occurred, or are likely to occur, and the effects of these changes on their abundance, distribution, and life histories. A moratorium and reevaluation of stocking options will allow for the development and implementation of regulations governing stocking activities. The length of the moratorium will depend on the length and results of the assessment.

**F.4 Assess, develop, and promote mariculture alternatives for all commercially harvested marine species. Support efforts to eliminate the harvest and landing of live rock.**

This strategy will reduce fishing pressures on commercially harvested marine species and help satisfy the commercial demand for these species. This is a long-term effort designed to identify and develop mariculture techniques and promote the development of environmentally sound mariculture operations. This strategy also complements a provision made by the FMFC, which began a three-year phase out of live rock harvesting in July 1992. The Sanctuary will support efforts to eliminate the harvest and landing of live rock in accordance with the FMFC and the protocols established for consistent regulations in strategy F.1.

**F.5 Assess limited-entry fisheries options for specific Sanctuary fisheries. Develop appropriate regulations that ensure the long-term sustainability of Sanctuary fisheries. Implement appropriate regulations on a fishery-by-fishery basis.**

This strategy will involve the assessment of existing fishery regulatory programs that limit the number of persons, vessels, or units of fishing gear utilizing specific fisheries within the Sanctuary, within Florida, and elsewhere. The objective is to determine the extent to which limited-entry management regimes can be used to: 1) protect specific marine life species; 2) increase stock abundance; 3) reduce habitat damage; and 4) reduce user conflicts within the Sanctuary. This strategy will require the implementation of regulations limiting entry to fisheries that: 1) involve marine life species in need of protection; 2) have low stock abundance; 3) are associated with areas exhibiting severe habitat damage; or 4) have a high degree of user conflicts. Regulations will be developed and implemented in accor-

dance with the FMFC and the protocols established for consistent regulations in strategy F.1.

**F.6 Enhance the resolution of existing commercial and recreational fisheries-dependent and independent sampling programs to provide statistics on catch and effort. This will be accomplished by establishing statistical areas based on "completeness criteria" including scientific need. Initiate fisheries-independent sampling programs to measure the prerecruitment of economically important species within the statistical areas.**

This strategy is designed to evaluate and modify existing commercial landing and recreational creel census programs for providing statistically based management information for regulating take. To increase the resolution of the programs, statistical areas will be established to provide information on catch and effort. The number of areas will be based on "completeness criteria" including scientific need. This includes an assessment and modification of information types and mandatory versus voluntary information. A fishery prerecruitment monitoring effort will also be initiated for the long-term prediction of fishery stocks for Sanctuary-level management. This effort is independent of commercial and recreational industry monitoring, and Florida's DEP has begun implementation for other areas in the state. Regulations will be developed and implemented in accordance with FMFC and the protocols established for consistent regulations in strategy F.1.

**F.7 Conduct research on the impacts of artificial reefs on fish and invertebrate populations for long-term management including location, size, materials, etc. Monitor and evaluate habitat modifications caused by the installation of marine structures. Assess and develop regulations for artificial reef construction and evaluate habitat suitability for artificial reefs.**

This strategy will: 1) determine the impacts of artificial reefs on fish abundance and community composition; 2) develop design criteria including construction materials and appropriate sites; and 3) examine existing regulations/policies that would affect the placement of artificial reefs within the Sanctuary. Regulations can be developed based on research and in accordance with the protocols established in strategy F.1. This strategy also will allow for the implementation of existing regulations.

**F.8 Implement regulations to prevent the release of exotic species into the Sanctuary.**

This strategy will prevent the introduction of exotic species into the natural environment of the Sanctuary to ensure that local and ecosystem-level impacts do not occur. The main focus of this strategy involves the control of aquaculture operations. In some cases, prohibitions on the culture of certain species will be considered.

**F.9 Develop a program for the removal of lost or out-of-season fishing gear, and implement in all areas of the Sanctuary.**

This strategy will reduce habitat, wildlife, and fish population impacts resulting from fishing gear that has been lost or abandoned including traps, fishing lines, and hooks. Gear removal will be achieved through incentives, volunteer efforts, an extension of the trap removal grace period, and education and enforcement programs. Implementation will occur throughout the Sanctuary.

**F.10 Conduct an assessment of methods used to harvest commercial and recreational marine species including corals, fish, and invertebrates. Develop and implement regulations to reduce the effects of current fishing practices on nontargeted species.**

This strategy will determine the impacts of harvesting methods on species composition and abundance, and the indirect impacts on other species and the environment. The extent of the problem will be assessed, and research will be conducted on the impacts of existing fishing methods and gear. Regulations will be developed and implemented based on research results to reduce the bycatch of incidental species and undersized targeted species. These may include requirements for the use of specific net/trap designs and temporal/spatial restrictions (e.g., spawning areas). Regulations will focus on protecting marine species, increasing species composition and abundance, and reducing adverse impacts on the environment.

**F.11 Conduct research on alternative fishing gear and methods that minimize impacts on habitat. Implement a voluntary program to encourage the use of low-impact gear and methods. Implement regulations to require the use of low-impact gear and methods in priority areas. Characterize harvesting stresses affecting outer and inshore reefs and hardbottom ecosystems.**

This strategy will facilitate research to develop gear designs and types that minimize impacts to corals, hardbottoms, seagrasses, and other habitats. Biodegradable fishing line, traps and buoy lines are examples of gear that should be researched. Modified trap designs should also be considered. Fishing methods, including resource handling and gear placement, should also be researched to develop methods and gear that minimize impacts to resources, while maintaining gear efficiency. The Sanctuary will implement an effort to encourage the voluntary use of low-impact gear types and fishing methods throughout the Sanctuary. Regulations will be developed requiring the use of low-impact gear and methods in priority areas. Regulatory implementation will be in accordance with strategy F.1.

**F.12 Eliminate all finfish traps within the Sanctuary, excluding those set for bait fish.**

This strategy will increase species diversity, composition, and abundance and will eliminate the harvest of nontargeted species, reducing adverse environmental impacts resulting from placement and recovery activities. This strategy complements existing Florida and South Atlantic fisheries management council regulations.

**F.14 Conduct an assessment of spearfishing practices and impacts to develop and implement regulations in high-priority areas.**

This strategy will: 1) determine the impacts of spearfishing on species composition and abundance; 2) reduce incidental habitat damage; and 3) reduce user conflicts. Regulations will be developed and implemented in high-priority areas (i.e., those areas exhibiting a low stock abundance, a high degree of habitat damage, or a high degree of user conflicts). Restrictions may include bag limits, gear prohibitions, or the closure of selected areas (e.g., around residential areas). This strategy will also support any existing spearfishing closures in Sanctuary waters.

**F.15 Develop and conduct a research program to assess the impacts of current sponge harvest methods on the resource and the habitats in which they occur. Develop and implement regulations throughout the Sanctuary.**

This strategy will include research and assessment activities to determine which methods have a low adverse impact on both species and habitats and to identify areas that exhibit low abundance, low recovery rates, and habitat damage. This strategy requires the development and implementation of species specific regulations governing sponge harvest in all habitats in which they occur throughout the Sanctuary in accordance with the FMFC and the protocols established in strategy F.1. Regulations may include bag limits, an increase in minimum size and/or designating areas closed to harvest. This strategy is specific to nonornamental sponge species, which are currently regulated by the FMFC.

## Land Use

**L.1 Require marinas that have pump-out requirements to install pump-out facilities.**

This strategy will eliminate marina live-aboard vessels as a source of pollution in the Sanctuary. Although live-aboards within marinas may be a minor contributor to the total pollutant load, marinas are normally located in confined waters that are more susceptible to the impacts of such loading. By requiring marinas to provide pump-out facilities, two problems may be resolved: 1) boats in marinas that

don't currently pump-out will be provided with the means to do so; and 2) boats that moor outside of marinas can take advantage of the increased number of pump-out facilities.

**L.2 Conduct an assessment of marina (10 slips or more) compliance with current regulations and standards, including OSHA standards for marina operations. Evaluate interagency cooperation in the marina permit review process and initiate action to eliminate conflicts in agency jurisdictions. Improve marina siting criteria to ensure that only appropriate deep-water access will be permitted and to provide for the proper handling of noxious materials.**

This strategy will reduce sources of pollution loading associated with marina activities. It will also reduce the pollution of nearshore waters through the implementation of OSHA regulations regarding marina operations. A program will be developed to target activities that have potential impacts on ground and nearshore waters (e.g., bottom paint removal; the use of fiberglass, resins, and solvents; fuel transfer; etc.). All marinas will be subject to this program. This strategy will also improve marina operations, the cooperation and coordination of agencies involved in the marina permitting process, and will develop criteria for selecting sites for developing new or expanding existing marinas.

**L.3 Evaluate procedures to avoid or reduce fuel spillage during refueling operations. Initiate remedial solutions to any problems identified. Require the establishment of paved and curbed containment areas for boat maintenance activities such as hull scraping and repainting, mechanical repairs, and lubrication. Require the creation of secondary containment, generally in the form of curbing or synthetic liners, for areas where significant quantities of hazardous or toxic materials are stored.**

This strategy requires an evaluation of refueling operations through a detailed inventory of fueling facilities and an assessment of typical fuel handling techniques and technology. Based on the inventory and assessment, short-term, low-cost remedial actions should be initiated in compliance with existing State laws. In addition, little effort is now directed at containing and collecting wastes associated with boat maintenance activities such as bottom scraping or mechanical repairs. This strategy will help reduce pollution by establishing containment areas to prevent paint chips or dust and other wastes from entering surface waters. Secondary containment for hazardous or toxic material storage areas will minimize the potential for these substances to enter ground or surface waters.

**L.4 Revise regulations to require public and private RV parks to provide pump-out facilities, and implement requirements within three years.**

This strategy will reduce pollution caused by the inappropriate disposal of wastewater from RVs, campers, and other

mobile units, including live-aboards not docked at marinas. It is a regulatory strategy that could be implemented through Monroe County's comprehensive plan and land development regulations. All RV parks (public and private) will be required to have adequate and efficient pump-out facilities. Other pump-out facilities could be identified for use by the transient public. Some facilities could be holding tanks with a scheduled pick up, while others could include a type of on-site waste treatment.

**L.5 Expand enforcement activities to reduce illegal waste disposal from RVs.**

This strategy will reduce pollution caused by the illegal dumping of waste by RVs. Monroe County regulations currently prohibit the disposal of waste from RVs. This enforcement strategy will allow all law enforcement branches to enforce cooperatively any illegal disposal of waste by RVs.

**L.6 Establish a mobile pump-out service through the local government or a franchise with a private contractor which would serve to pump-out live-aboard vessels moored outside of marina facilities. Encourage the use of existing, and the construction of additional, shore-side facilities such as dingy docks, parking areas, showers, and laundries for use by live-aboards.**

This strategy will minimize the pollution impacts of live-aboard vessels located outside marinas within the Sanctuary. Although such live-aboards may be only a minor contributor to the total pollutant load, their mooring areas are normally located in confined waters that are more susceptible to the impacts of such loading. The establishment of this system will provide the incentive for live-aboard vessels to have their bilges and holding tanks pumped out regularly. The provision of shore-side facilities should reduce the potential for pollutants associated with other live-aboard activities to enter surface waters.

**L.7 Conduct an assessment to identify solid waste disposal sites that pose threats to water quality and/or sensitive areas, based on the results of EPA's Water Quality Plan. Intensify existing monitoring programs around landfills to ensure that no leaching is occurring into marine waters. If problems are discovered, evaluate and implement appropriate remedial actions such as boring or mining, upgrading closure, collecting and treating leachate, constructing slurry walls, or excavating and hauling landfill contents.**

This strategy will identify potential groundwater contamination problems from existing landfills and other solid waste disposal operations. The assessment will include the locations of disposal areas, the types of materials present at each site, and the movement of leachate off the site. The assessment will also establish a program to cap, mine, or relocate existing solid waste where the volume of leachate has been identified as a problem. In addition, this strategy

will provide for the monitoring of old landfills not currently being monitored.

**L.8 Initiate a study to investigate the feasibility of various solid waste containment/relocation options. Implement containment/relocation options where appropriate within five years.**

The strategy will involve researching methods of solid waste disposal, other than the creation of new landfills. The study would determine what regulations are necessary to meet State and regional recycling goals, implement retail packaging standards, and require source separation. The study could also address incineration by identifying its impacts, the best available technology, and the need to eventually discontinue its use. Cooperative agreements with other local governments to accept Monroe County's solid waste also should be explored. The South Florida Regional Planning Commission can provide support for a regional discussion of the alternatives for the disposal of solid waste generated in Monroe County. Containment/relocation options will be implemented where appropriate within five years.

**L.9 Comply with Monroe County policies on solid waste disposal.**

The fragile natural resources and limited amount of upland sites in the Keys can be protected by expanding the enforcement of current policies and regulations for solid waste disposal. In addition, Monroe County could adopt land development regulations that prohibit new solid waste disposal sites and negotiate a cooperative agreement with other local governments to accept its solid waste.

**L.10 Conduct an assessment and inventory of hazardous materials handling and use in the Florida Keys including facilities, types and quantities of materials, and transport/movement. Add information to the FDEP/EPA/Monroe County GIS database.**

This strategy will involve cataloging the use of all hazardous materials as defined by the FDEP and the EPA. The resulting inventory would include: 1) the types of hazardous materials used in Monroe and Dade counties; 2) the types of facilities utilizing identified hazardous materials; 3) the specific location of some users; 4) how these material are typically transported; 5) the toxic/noxious/volatile nature of identified hazardous materials; and 6) how these materials impact water quality and resources. This assessment and inventory will be used to develop a hazardous materials management plan for normal use and emergency response and containment. This information will be added to the FDEP/EPA/Monroe County GIS database.

**L.11 Establish licensing requirements for commercial handlers of hazardous materials and biohazardous waste within three years to reduce mishandling and illegal disposal.**

This strategy will develop a program for the responsible commercial handling of hazardous materials and biohazardous waste. Local licensing will be required as a mechanism to educate commercial handlers and to ensure that hazardous materials are utilized with standards prescribed by the State and Federal governments to protect human and environmental health. The program will focus on the types of uses and activities that could lead to marine resource degradation and/or destruction. The result will be a reduction in all kinds of hazardous material spills and leaks. The illegal dumping of such materials could also be better assessed.

**L.12 Establish a program to increase the availability of hazardous materials collection and transfer stations for nonlicensed users (e.g., households, etc.) within three years.**

This strategy will provide for the safe disposal of hazardous materials from residential and other nonlicensed sources. Since nonlicensed hazardous materials handlers are not regulated, adequate mechanisms for handling such materials are limited. Hazardous materials are frequently flushed down toilets, sinks, etc. The creation of collection and transfer sites will allow for the safe, simple, and efficient disposal of household materials.

**L.14 Prohibit new dredge and fill permits unless public interest is demonstrated and there will be little or no environmental degradation.**

This strategy will eliminate the possibility of new dredge and fill activities within the Sanctuary unless public interest can be demonstrated through the ACOE system and if there will be little or no environmental degradation. Such activities may lead to the direct degradation and/or destruction of sensitive Sanctuary resources. Any areas to be considered to satisfy public interest should focus on the expansion of existing marinas and water-dependent facilities. This prohibition will also apply to upland excavation, where the goal will be to lengthen an existing canal system to expand land/water use or create greater canal flushing.

**L.15 Conduct an inventory and assessment of maintenance dredging activities throughout the Sanctuary. Implement low-impact dredging methods for all maintenance dredging. Avoid maintenance dredging whenever possible.**

This strategy is designed to record the locations, sizes and independent and cumulative impacts of maintenance dredging within the Sanctuary. Information will be aggre-

gated in a database and/or a GIS to allow managers to evaluate maintenance dredging impacts as related to new permit requests. New policies and regulations will be developed that will require low-impact technologies for maintenance dredging and will prohibit such dredging in areas where significant reestablishment of sensitive benthic communities has occurred (i.e., seagrass and coral habitats).

**L.16 Initiate a study to investigate the feasibility of water-use reduction and re-use options and thresholds. Implement a plan for water-use reduction and re-use for major users within five years.**

This strategy is designed to reduce the amount of water being used in the Keys and to encourage better wastewater treatment by developing standards and practices for water re-use. A plan will be developed containing re-use options, threshold levels, water-use reduction incentives, etc.

The FDEP currently will not permit the re-use of treated wastewater for plants with a capacity of less than 100,000 gallons per day (gpd). This is a disincentive to higher treatment and water conservation, both of which reduce pollution. The FDEP should develop appropriate human health and environmental standards to permit re-use for smaller users. Research and standards should focus on how water from households can be reused in other domestic applications. A water-use reduction and re-use plan will be implemented for major users within five years.

**L.17 Establish consistent interagency regulatory authority addressing all dredge and fill activities.**

This strategy will establish further levels of interagency coordination and regulatory consistency with respect to the authorities of the FDEP, ACOE, and local government. All agencies require permits for development activities within the Sanctuary, and coordination and consistency is essential. Some consolidation of such authority may be helpful through delegation, MOUs, etc.

**L.18 Restrict wetland dredge and fill permitting.**

This strategy will further restrict the degree of wetland destruction currently occurring within Sanctuary boundaries. Monroe County has recently initiated policies to eliminate any dredge and fill activities within undisturbed wetland areas. This strategy will support this effort and develop consistent approaches with the agencies involved. The result will be reduced wetland destruction, protection of the natural wetland/stormwater filtration processes, and the protection of the habitat of numerous endangered species. New dredge and fill projects in functional disturbed wetlands will be required to pass a public interest test. This will reduce the loss of viable wetlands, which serve as buffers to runoff and as habitat for numerous endangered and protected species.

Mitigation banking will be considered for permits issued in functional disturbed wetlands. Immediate replacement to functional status will be required in all mitigative efforts. Money will be received to a trust for restoration of public lands only. Where the agency has discretion, permits will not be renewed.

**L.19 Conduct an evaluation of the Monroe County Growth Plan for ecological impacts on the Sanctuary. Identify and recommend additional options to minimize short- and long-term impacts.**

This strategy will protect the natural resources of the Sanctuary by limiting growth and the associated impacts on resources. EPA's Water Quality Management Plan will begin to establish some standards related to volumes and quantities. Monroe County has recently tied its growth rate to hurricane evacuation standards and determined a 20-year growth cap. These issues will be evaluated comprehensively to establish a population "build-out" that will reduce residential-based impacts.

An intergovernmental acquisition program will be established to help purchase any remaining "unbuildable" lots in Monroe County. The remaining development should be directed at high-density, disturbed subdivisions, especially those serviced by centralized facilities.

**L.20 Conduct an assessment of existing public access to shoreline areas. Develop standards and guidelines for improvements to, and construction of, public access areas. Acquire shoreline areas for developing and/or regulating public access.**

This strategy will provide information on problems associated with existing public access areas, including habitat damage and user conflicts. Existing public access areas will be inventoried and nondestructive recreational uses identified. Standards and guidelines for improvements to, and the construction of, public access areas will be developed and could include: 1) improvements to supporting infrastructure; 2) restrictions on activities that damage habitats; 3) promotion of nondestructive recreational uses; and 4) the establishment of low-impact construction standards. The acquisition of shoreline areas that will help improve and regulate public access while protecting the habitat will be pursued by supporting the existing land acquisition programs (such as the Conservation and Recreational Lands Program) and those implemented by the Monroe County Land Authority and The Nature Conservancy.

## Recreation

**R.1 Develop and implement a program to manage submerged cultural resources. Conduct an inventory of submerged cultural resources (SCRs) and assess survey and extraction techniques within the Sanctuary. Require permitting throughout the Sanctuary.**

This strategy is designed to protect submerged cultural resources from undesired disturbances and maintain them as intact as possible for research, education, science, and recreational activities by preparing an SCR Management Plan which will include the following elements:

- 1) Inventory - Compile existing literature into a bibliography and survey and identify location and specific site characteristics including name, age, integrity, and historical and cultural significance.
- 2) Management - Develop a set of management practices, guidelines and regulations addressing the exploration, removal, research, and dispensation of artifacts. Management of SCRs would prohibit unauthorized removal. Disposition of artifacts from approved recovery operations will be consistent with the Abandoned Shipwreck Act (ASA), 50 percent for the discoverer-recoverer, and 50 percent for the government. However, where the recoverer has arranged for private conservation, long-term public display, guaranteed public access, and public interpretation of artifacts and data, the disposition of objects may be adjusted accordingly.
- 3) Permitting - Develop and implement a permitting system for the research, exploration, removal, and dispensation of cultural artifacts, with a provision for exemptions for nondestructive exploration. Require permitting throughout the Sanctuary. The granting of permits will be based upon archaeological and historical value, potential environmental impact, proposed archaeological methods, and proposed public benefit. Permit applications that provide for conservation in museums or similar structures of public access for research, education, or public viewing enjoyment will be given priority over applications where some of the objects are dispersed into private markets.
- 4) Enforcement - Ensure compliance with statutes, rules, regulations, and permits such as the ASA, Sanctuary regulations, State administration rules, and Federal and State permits through intensive on-site patrols by certified law enforcement officers.
- 5) Coordination - Ensure comprehensive coordination among all appropriate Federal, State, and local agencies involved in, and responsible for, the management of SCRs through the development and implementation of MOUs.

**R.2 Establish a routine survey of recreational activities and use levels within the Sanctuary through a survey of charter and recreational-for-hire vessels, intercept surveys at access points and launch sites, and periodic field surveys.**

This strategy will provide data on the types, levels, users, and locations of recreational activities within the Sanctuary to better plan for management concerns such as access to sensitive or heavily used areas, user conflicts, and adverse impacts to resources. The survey, to be conducted by non-law-enforcement personnel, will request information on operator and safety equipment and visitor behaviors such as the use of gloves and buoyancy vests, etc. Data on the number of operators, users, and uses will help shape management decisions on costs (associated with permits, regulations, and other requirements) that may be imposed on users. This survey will be compatible with the current survey to establish user fees for NOAA's national marine sanctuaries.

**R.5 Conduct a program to study and implement carrying-capacity limits for recreation activities by: 1) assessing the effects of recreation and boating activities on Sanctuary resources; 2) establishing recreational user carrying capacities that minimize wildlife disturbances and other adverse impacts on natural resources; and 3) enforcing carrying-capacity limits in high-use areas and for highly sensitive habitats throughout the Sanctuary.**

This strategy will reduce impacts to Sanctuary resources from recreational activities by better understanding the level of use that different habitats can tolerate without degradation. The capacity levels for each activity identified by the research component of this strategy will be enforced in high-use areas and for highly sensitive habitats (i.e., coral, seagrass, hardbottoms) throughout the Sanctuary. The causes of coral mortality (e.g., disease, temperature stress, bleaching, algal overgrowth, and physical damage) will be characterized, as well as physical stresses, especially those affecting outer and inshore reefs.

This research will assess the impacts that recreation activities have on Sanctuary resources and provide a basis for the continued anticipation of problems associated with specific activities and the development of management actions to eliminate/reduce impacts. Impacts such as wildlife disturbance (especially of commercial and threatened and endangered species), changes in ecosystem balance, degradation of habitat, and other impacts associated with activities such as boating, fishing, diving, etc. will be included.

**R.7 Prohibit contact with corals in high-use, sensitive, and vulnerable areas.**

This strategy will reduce the damage to hard coral communities caused primarily by boat anchoring/grounding and divers and snorkelers, by prohibiting contact with coral in high-use, sensitive, and vulnerable areas.

**Water Quality**

**W.1 Conduct a demonstration project to evaluate alternate, nutrient-removing on site disposal systems (OSDS).**

This strategy will provide information to help determine the appropriate role, if any, of alternate OSDSs in wastewater management in the Keys. Although some alternate OSDS designs appear promising, it is not appropriate to proceed with broad-scale installation of these systems until an independent evaluation has been conducted. Alternate OSDSs designed for nutrient removal would be installed and maintained in a manner consistent with actual residential use. Influent, effluent, and groundwater quality (both background and "down-gradient") would be monitored at regular intervals for at least one year. In addition to nutrient removal efficiency, the study would evaluate maintenance and inspection requirements to keep units operating properly.

**W.2 Conduct a demonstration project to evaluate the installation of a small expandable AWT plant to serve an area of heavy OSDS use with associated water quality problems.**

This strategy will provide information to help determine whether the elimination of OSDSs would improve water quality in areas believed to be degraded by OSDS-related nutrients. The project would also provide information on the long-term performance of small AWT systems and septic tank effluent pumps or other collection systems. A small, expandable AWT package plant would be installed to serve an area where there is high-density OSDS use in close proximity to confined waters. Preferably, the test area would be one where water-quality problems believed to be related to OSDS nutrients have already been identified. Initial background groundwater and surface-water monitoring would be conducted, and plant influent and effluent would be monitored for a minimum of one year after the plant is in operation. Groundwater and surface-water monitoring would continue for three to five years. Most facilities constructed for the demonstration project could be incorporated into a larger system if results are favorable.

**W.3 Establish authority for and implement inspection/enforcement programs to eliminate all cesspits and enforce existing standards for all OSDSs and package plants. Develop targets for reductions in wastewater nutrient loadings necessary to restore and**

**maintain water quality and Sanctuary resources. Develop and implement a Sanitary Wastewater Master Plan that evaluates options for upgrading existing systems beyond current standards or constructing community sewage treatment plants based on nutrient reduction targets, cost and cost effectiveness, reliability/compliance considerations, and environmental and socioeconomic impacts.**

This strategy will reduce the amount of pollutants entering groundwater by enforcing existing standards. On-site inspection programs would be implemented to identify and eliminate all cesspits and ensure that OSDSs and package plants are in compliance with existing standards. Penalties would be imposed for noncomplying systems.

Cesspits are illegal and provide no sewage treatment. OSDSs provide adequate sanitary treatment and limited nutrient reduction; however, there is no routine inspection and enforcement program to ensure that these systems are operating properly. Package plants provide secondary treatment and are inspected routinely (although not frequently). The elimination of cesspits and replacement with approved OSDSs would reduce nutrient loading to groundwater and eliminate health hazards from untreated sewage. Aggressive inspection/enforcement programs for OSDSs and package plants could be expected to further reduce nutrient loadings to groundwater.

In addition, this strategy would involve research to estimate the level of reduction in wastewater nutrient loading necessary to restore and maintain water quality and Sanctuary resources. Based on these nutrient reduction targets and the results of the wastewater demonstration projects (strategies W.1 and W.2), a Sanitary Wastewater Master Plan would be developed that would evaluate options for further treatment (e.g., construction of community wastewater plants, upgrading package plants to AWT, or the use of alternate, nutrient-removing OSDSs). The Sanitary Wastewater Master Plan would also specify details of costs, schedules, service areas, etc. for implementation.

**W.4 Upgrade effluent disposal for the City of Key West's wastewater treatment plant. Evaluate deep-well injection, including the possibility of effluent migration through the boulder zone into Sanctuary waters. Evaluate options for the re-use of effluent, including irrigation and potable re-use. Discontinue the use of ocean outfall and implement deep-well injection, aquifer storage, and/or re-use. Implement nutrient reduction technologies for effluent prior to disposal or re-use.**

This strategy will reduce direct nutrient loadings to surface waters from the Key West wastewater treatment plant. Use of the ocean outfall would be discontinued (except in emergencies), and effluents would be treated to reduce nutrients and disposed through deep-well injection, aquifer storage, and/or re-use.

Before the use of ocean outfalls is discontinued, both the environmental aspects of deep-well injection and the economics of effluent re-use must be evaluated thoroughly. Studies of deep-well injection need to investigate the possibility of effluent migrating through the boulder zone into Sanctuary waters. Re-use options to be evaluated include irrigation and further treatment to produce potable water. Re-use for local irrigation may be limited due to the small number of application sites. Re-use for irrigation in areas outside the Keys would be considered only if it were proposed for unincorporated Monroe County. Potable re-use, although requiring costly treatment, might be cost-effective in the long-term, considering the current cost of treating and pumping in drinking water from Florida City.

**W.5 Develop and implement water quality standards, including biocriteria, appropriate to Sanctuary resources.**

This strategy will reduce the impacts of pollution on Sanctuary resources by determining water quality conditions to ensure resource protection. The intent is to implement water quality standards as guidance in determining permitted discharge limitations. OFW standards will be used until research indicates that new, more-stringent regulations are necessary.

**W.6 Delegate administration of the NPDES program for Florida Keys dischargers to the State of Florida.**

This strategy will streamline and eliminate unnecessary duplication in the NPDES permitting process. Currently, all surface-water dischargers must receive permits from both the EPA and the FDEP. Although the two agencies coordinate their permitting activities, it would be simpler for both the agencies and permit applicants if the EPA delegated NPDES permitting authority to the State, as has been done in many other states.

**W.7 Require all NPDES-permitted surface dischargers to develop resource monitoring programs.**

This strategy will help to evaluate environmental impacts of point-source discharges by requiring all NPDES-permitted surface dischargers to develop resource monitoring programs. This could be accomplished in one of two ways: 1) EPA could eliminate the baseline exemption for resource monitoring under the Ocean Discharge Program as it applies to the Keys. All surface dischargers except the City of Key West sewage treatment plant are currently exempted from developing resource monitoring programs because the end of their discharge pipe does not extend beyond the baseline (the mean low-tide line); or 2) FDEP, through the State of Florida's permitting authority, could require resource monitoring when individual NPDES permits come up for renewal. This approach would probably be easier because it can be accomplished under

existing rules, whereas eliminating EPA's baseline exemption would require a Federal rule change.

**W.8 Improve interagency coordination for industrial wastewater discharge permitting. Combine OSDS permitting responsibilities in one agency for commercial establishments, institutions, and multifamily residential establishments utilizing injection wells.**

This strategy will improve coordination between the EPA, FDEP, and local government agencies relative to industrial wastewater discharge permitting and tracking (HRS is included for special cases such as seafood processing plants). Much of the interagency coordination and tracking is currently handled through a series of MOAs and MOUs. These agreements will be reviewed, evaluated, and revised specifically for the Keys. This could also indirectly reduce wastewater pollution by refining and simplifying the OSDS permitting process and increasing funds for compliance monitoring and enforcement.

**W.9 Establish an interagency laboratory capable of processing monitoring and compliance samples.**

This strategy could indirectly help reduce pollution by creating an interagency laboratory facility for processing compliance monitoring samples, thus reducing the cost of analysis currently conducted outside the Keys. Neither the FDEP nor the FDHRS has FDHRS-certified (or equivalent) laboratory facilities in the Keys. Because of quality control considerations (holding times), it is difficult or impossible to ship compliance/enforcement samples to Tallahassee for analysis, and the use of contracted private laboratory facilities is expensive. This laboratory would not process toxics or status and trends samples from the water quality monitoring program.

**W.10 Inventory and characterize dead-end canals/basins and investigate alternative management strategies to improve their water quality. Implement improvements (consistent with the strategies developed for wastewater and stormwater) in known hot spots throughout the Sanctuary.**

This strategy will improve water quality in nearshore confined areas, with emphasis on dead-end canals and basins where reduced circulation increases the risk of reduced dissolved oxygen, retention of both dissolved and particulate pollutants, and potential impacts on benthic and pelagic environments. A comprehensive management plan will be developed for improving water quality in nearshore confined basins and canals. Improvement strategies will be implemented in all canals and basins identified as hot spots throughout the Sanctuary.

**W.11 Identify and retrofit stormwater hot spots using "Best Management Practices," such as grass parking, swales, pollution control structures, and detention/retention facilities. Control stormwater runoff in areas handling toxic and hazardous materials. Install swales and detention facilities along limited sections of US 1.**

This strategy will reduce loadings of sediment, toxics, and nutrients to Sanctuary waters through engineering methods applied to stormwater hot spots (e.g., commercial and industrial facilities) and limited sections of US 1.

**W.12 Require that no development in the Florida Keys be exempted from the stormwater permitting process.**

The South Florida Water Management District, which currently has the primary responsibility for stormwater permitting in the Keys, exempts developments of less than 10 acres in size or two acres of impervious surface from having to obtain a stormwater permit. Most development in the Keys falls below this threshold. Local governments are in the process of developing stormwater management ordinances and/or stormwater management master plans. This strategy would require that local government ordinances and master plans cover all development, with no minimum size threshold for requiring that it go through the stormwater permitting process.

**W.13 Require local governments to enact and implement stormwater management ordinances and comprehensive stormwater management master plans. Petition the EPA to include the Florida Keys in the stormwater NPDES program if adequate stormwater management ordinances and administrative capabilities to manage such ordinances are not in place by a certain date.**

This strategy will help reduce stormwater pollutant loadings (e.g., sediment, toxics, and nutrients) by requiring local governments to develop stormwater management ordinances and master plans. There is currently little regulation of stormwater runoff in the Keys. Many developments were constructed before SFWMD stormwater permitting requirements were in place or, if constructed more recently, fell below the acreage thresholds for those regulations. Monroe County recently passed a stormwater ordinance, and other local governments are either developing ordinances and/or have stated in their comprehensive plans that stormwater management master plans will be developed. This strategy would set deadlines for local governments to enact the stormwater ordinances and master plans. As a backup in the event that these ordinances and master plans are not developed in a timely manner, the FDEP would petition the EPA to include the Florida Keys in the stormwater NPDES permitting program for municipal separate storm sewer systems.

**W.14 Institute a series of "Best Management Practices" and a public education program to prevent pollutants from entering stormwater runoff.**

This strategy will reduce pollution from stormwater runoff through a variety of programs, including: 1) street sweeping; 2) ordinances aimed at controlling fertilizer application on public and private landscaping; 3) collection locations and a public education program for the proper use and disposal of fertilizers, pesticides, motor oil, and other hazardous chemicals; and 4) strenuous litter-control programs.

**W.15 Improve and expand oil and hazardous materials response programs throughout the Sanctuary.**

This strategy will reduce the chance that an oil or hazardous materials spill will have a significant negative impact on Sanctuary resources. This will be accomplished by improving coordination and cooperation between the Federal, State, and local agencies responding to spills; encouraging improvements in response and containment technologies appropriate to the Keys; and creating a spill contingency plan for the Sanctuary that includes crew and equipment staged in the Keys (possibly including skimmers). As this strategy recognizes that hazardous material spills on land are handled independent of marine spills, improvement measures will be developed for both programs.

**W.16 Establish a reporting system to ensure that all spills in and near the Sanctuary are reported to Sanctuary managers and managers of impacted areas within the Sanctuary. Establish a geo-referenced Sanctuary spills database.**

This strategy will ensure that Sanctuary managers are informed of all spills (e.g., of petroleum products) in and near the Sanctuary. Small spills, in particular, are under-reported, although they occur frequently and may have a significant effect on the Sanctuary's water quality. This strategy will establish a reporting system to ensure that all spills documented by various agencies (e.g., the USCG and FDEP) are reported to Sanctuary managers and managers of impacted areas within the Sanctuary. In addition, it would establish a geo-referenced database for the Sanctuary that could be used to keep track of information on spills (e.g., locations, quantities, types of material spilled, environmental impacts).

**W.17 Refine the aerial spraying program to further reduce aerial spraying over marine areas.**

This strategy will reduce the amounts of pesticides entering Sanctuary waters through the refinement of the existing aerial spraying program. Ground spraying by truck is the current method of choice for controlling the adult mosquito

population; however, aerial spraying is initiated when the mosquito population reaches a certain threshold, as determined by mosquito landing counts at test sites. Although the Monroe County Mosquito Control District attempts to avoid marine areas when aerially spraying, the potential for pesticides to reach marine waters may be reduced through program refinements. The threshold for initiating aerial spraying would be reviewed to determine whether it could be raised. Also, the program would be reviewed to determine whether the amount of spray released over water could be reduced through the development of a more refined plan for flight lines and the use of improved equipment. Ground spraying of larvicides in currently restricted areas would be reconsidered to reduce the need for aerial spraying of adult mosquito populations. The possibility of eliminating thermal fogs (which contain diesel oil) and implementing ultra-low-volume spraying techniques will be evaluated.

***W.18 Develop and implement an independent research program to assess and investigate the impacts of, and alternatives to, current pesticide practices. Modify the Mosquito Control Program as necessary on the basis of research findings.***

This strategy will establish a research program to identify the impacts of current spraying practices on Sanctuary resources and will identify alternative means of mosquito control. Since pesticides used in mosquito control are nonspecific to the larval stages of crustaceans, fish, and natural mosquito-control predators, the effects of the chemicals used (and all application methods employed) need to be examined. In addition, the effect of housing patterns, design, and landscaping as they affect the demand for mosquito control, need to be investigated. The results of this research may be used to modify the Mosquito Control Program.

***W.19 The Steering Committee for the Water Quality Protection Program shall take a leading role in restoring the historical freshwater flow to Florida Bay. In addition, Sanctuary representatives should work with the appropriate Federal, State, and local agencies to ensure that restoration plans and surface water management and improvement plans for South Florida and the Everglades are compatible with efforts to maintain water quality within the Sanctuary.***

The Steering Committee for the Water Quality Protection Program includes high-level representatives of all relevant agencies and can, therefore, take a leading role in water management issues affecting Florida Bay, including restoring historical freshwater flow. Both short- and long-term solutions must be pursued at high levels of management in both State and Federal agencies.

In addition, Sanctuary representatives should participate in the review and revision of restoration plans and water management plans for Florida Bay and adjacent areas to ensure that these proposals and/or actions will enhance and complement water quality improvement efforts undertaken in the Sanctuary. These plans include, but are not limited to, the Shark River Slough GDM, C-111 basin, Taylor Slough Restoration, West Dade Wellfield, US 1 widening, National Park Service Everglades Restoration Plan, Lower East Coast Water Supply Plan, and Everglades Surface Water Management and Improvement Plan.

***W.20 Conduct a long-term, comprehensive water quality monitoring program as described in the EPA Water Quality Protection Program.***

This strategy will provide long-term, comprehensive information about the status and trends of water quality parameters and biological resources in the Sanctuary. It will allow managers to identify or confirm problem areas and determine whether conditions are improving or degrading. In addition, remedial actions taken to reduce pollution would be monitored to evaluate their effectiveness. Water-column parameters to be monitored include temperature, salinity, dissolved oxygen, pH, photosynthetically active radiation, turbidity, nutrients, Chlorophyll-a, and alkaline phosphatase activity. Sediment parameters to be monitored include grain size, mineralogy, organic content, nutrients, metals, pesticides, PCBs, petroleum hydrocarbons, and sewage tracers. In addition to the water and sediment sampling, biological monitoring of seagrass, hardbottom, and mangrove communities would be conducted. Seagrass and hardbottom communities (including coral reefs and nearshore hardbottom areas) would be monitored by in situ sampling and remote sensing. Changes in the areal coverage of mangrove communities would be monitored by remote sensing.

***W.21 Develop phased hydrodynamic/water quality models and coupled, landscape-level ecological models to predict and evaluate the outcome of in-place and proposed water quality management strategies.***

This strategy will develop predictive models that, used with appropriate scientific guidance, would allow resource managers to predict and evaluate the outcome of various management strategies (e.g., engineering actions to reduce wastewater nutrient loadings). Initial conceptual models would be developed, information needs identified, environmental data gathered, and quantitative models developed and refined over the long-term and on a continuous basis to aid in management decisions.

## Appendix H. Strategies in the Preferred Alternative

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**W.22 Develop a segmentation framework to identify surface water areas sharing common hydrographic properties affecting water quality. Determine the susceptibility of each segment to pollutants based upon all loadings (i.e., land- and water-based) and segment specific hydrographic properties affecting their retention.**

This strategy will establish a management framework that recognizes the extent to which both regional and local circulation affect temperature, salinity, and the transport of pollutants and marine life into and within segments of the Sanctuary. To better understand these processes, physical simulation models (e.g., coastal ocean hydrodynamical, circulation, transport, mesoscale meteorological, and hydrographical and hydrological models) will be developed.

This strategy also includes documenting the locations and magnitudes of pollution sources entering the Sanctuary to better understand what areas are at higher risk. Sources will include those that are point, nonpoint, and external to the Sanctuary (e.g., permitted discharges, OSDs, stormwater runoff, groundwater leachates, marinas, C-111, Biscayne Bay, Florida Bay, southwest Florida and oceanic fluxes, and gyre-induced upwelling). Pollutants are to be inclusive of nutrients, hydrocarbons, heavy metals, and pesticides. Load estimates will be based on the best available information and will include engineering estimates where applicable.

**W.23 Conduct a hydrologic/geologic assessment of leachate transport (e.g., from injection wells, land fills, storage tanks, etc.) into nearshore waters. Determine whether, and in what quantities, groundwater nutrients are reaching Sanctuary waters including the Florida Reef Tract.**

This strategy will better define the influences of various geologic formations (e.g., Miami Oolite, Key Largo Limestone, and Holocene sediment) on groundwater hydrology as they affect the volume, composition, and transport of leachates to nearshore/confined waters as a contributing factor to ambient water quality. The research will also examine the possible effects of groundwater nutrients on the Florida Reef Tract.

**W.24 Conduct research to understand the effect of water transport from Florida Bay on water quality and resources in the Sanctuary.**

This strategy will research the influence of Florida Bay on the Sanctuary's water quality. Research will include an historical assessment of Everglades/Florida Bay/Florida Keys hydrology, as well as an estimation of present-day, long-term net transport and episodic transport from Florida Bay to the Sanctuary. This strategy will also clarify the role of freshwater inflow and water quality from the Everglades and other freshwater discharges to the southwest shoreline of Florida, Florida Bay, and the Sanctuary. The objective is to provide a scientific basis for efforts to reestablish salinity,

temperature, and nutrient regimes to ensure the biological integrity of Florida Bay. The strategy will examine the effects of structural modifications and changes in the timing and volume of freshwater releases from existing structures, as well as land practices affecting the water quality of runoff.

This strategy will also involve studies to document any ecological impacts of Florida Bay waters on Sanctuary communities including seagrasses, coral reefs, nearshore hardbottom communities, and potentially endangered or threatened species. Documentation of hypothesized impacts could provide a stronger basis for action to restore the historical freshwater flow to Florida Bay.

**W.25 Conduct research to identify and document causal linkages between water quality (e.g., levels of pollutants, nutrients, salinity, temperature, etc.) and ecological problems in each major ecosystem.**

This strategy will help understand the cause/effect relationships between pollutants and biological resources. Numerous problems have been identified in Sanctuary biological communities, but the causes in most cases are not understood well enough to: 1) determine whether anthropogenic pollutants are having adverse ecological effects; and 2) predict confidently the ecological benefits of actions to reduce pollution. Research is needed to identify and understand causal linkages between pollutants and specific ecological problems. Studies would identify limiting nutrients, estimate nutrient thresholds, and evaluate interactive effects of nutrients, toxics, and other water quality parameters. Nutrient budgets will be constructed to determine limiting nutrients for each habitat, including seasonal effects and thresholds. The strategy will also establish a framework for investigating the impacts of catastrophic events (such as hurricanes) on water quality and Sanctuary resources. The effects of turbidity, the direction and flow of nearshore currents, nutrient enrichment, and suspended sediment on seagrasses, benthic algae, and coral symbionts will be examined, as will the effects of oil spills on coral reefs. The interactive effects of salinity, temperature, and nutrients on seagrasses and corals will be determined, and water-quality stresses (including changes in nutrients, suspended sediments and circulation patterns) will be characterized. Research could include experimental studies (laboratory, mesocosm, in situ), historical studies (sclerochronology, geological reconstruction), and geographic comparisons.

**W.26 Develop diagnostic indicators of water quality problems (e.g., tissue C:N:P ratios, alkaline phosphate activity, and shifts in community structure by habitat). Conduct research to identify and evaluate indicators (biochemical and ecological measures to provide early warning of widespread ecological problems) in each type of ecosystem.**

This strategy will make ecological monitoring simpler, less expensive, and more sensitive to changes in water quality.

It would identify and evaluate indicators (biochemical and ecological measures to provide early warning of wide-spread ecological problems) in each type of ecosystem. These measures could be incorporated into the Water Quality Monitoring Program to provide the basis for resource-oriented water quality standards for the Sanctuary (see strategy W.5).

**W.27 Conduct research to identify and evaluate innovative monitoring tools and methodologies to detect pollutants and identify cause/effect relationships involving water quality and biological resources.**

This strategy would identify and evaluate innovative monitoring tools and methodologies to detect pollutants and identify cause/effect relationships involving water quality and biological resources. New or modified monitoring tools and methodologies may be needed because of the unique biota and environmental conditions in the Sanctuary.

**W.28 Establish a regional database and data management system for recording research results and biological, physical, and chemical parameters associated with Sanctuary monitoring programs.**

This strategy will develop a regional database including biological, physical, and chemical parameters and instrument records, etc.

**W.29 Develop a program to disseminate scientific research results including an information exchange network, conferences, and support for the publication of research findings in peer-reviewed scientific journals.**

This strategy will help disseminate research findings among scientists and resource managers, helping to stimulate discussion and critical thinking and to avoid duplication of effort in preparing research proposals.

**W.31 Examine the effects of global climate change on the organisms and ecosystems of the Keys.**

This strategy will examine the effects of stresses associated with global change on the ecosystem. Examples include temperature, salinity, frequency and intensity of storms, turbidity, sea-level change, ultraviolet and visible radiation, etc.

**W.32 Establish a technical advisory committee for coordinating and guiding research and monitoring activities.**

This strategy will create an advisory committee to guide the process of setting priorities for research and monitoring. The committee shall be composed of scientists from

Federal agencies, State agencies, academic institutions, private nonprofit organizations, and knowledgeable citizens.

**W.33 Develop and implement a Sanctuary-wide, intensive ecosystem monitoring program. The objective of the program will be to monitor the status of various biological and ecological indicators of system components throughout the Sanctuary and adjacent areas in order to discern the local and system-wide effects of human and natural disturbances and assess the overall health of the Sanctuary.**

This strategy will establish an extensive, long-term monitoring program throughout the Sanctuary and adjacent areas. The monitoring program will have three purposes: 1) to supply resource managers with information on the status of the health of living resources and the ecosystem; 2) to determine causal relationships impacting management decisions; and 3) to evaluate the effectiveness of management actions such as zoning. The Ecological Monitoring Program will be fully integrated into the Water Quality Monitoring Program. The elements of the monitoring program will include: 1) a temporal and spatial ecological framework based on current knowledge from which to establish the sampling protocol; 2) status and trends assessments of corals, fishes, seagrasses, benthic organisms, plankton, and mangroves; 3) a fisheries ecology monitoring and research component to examine community composition and function within the habitats of the Sanctuary; 4) a Science Advisory Board to develop and oversee the monitoring program; 5) a sampling protocol; 6) a data analysis, management, and dissemination protocol; 7) a quality assurance/quality control protocol; 8) development of an index of health for the Sanctuary; and 9) a volunteer monitoring program. The development of a spatial, ecological framework for the Sanctuary and the establishment of a Science Advisory Board are prerequisites.

## Zoning

**Z.1 Establish Wildlife Management Areas that restrict access to especially sensitive wildlife populations and habitats. Such areas would include bird nesting, resting, or feeding areas and turtle nesting beaches. Restrictions could prohibit use, modify the way areas are used or accessed, and specify time periods when use is prohibited.**

Wildlife Management Areas are designed to minimize disturbance to wildlife populations and their habitats. Regulations governing access will be designed to protect wildlife populations and habitat, while providing opportunities for public use. Regulations will include various restrictions on access including no-access zones, no-motor-use zones, and idle-speed zones. Zones would be placed in areas considered especially sensitive wildlife habitats. Regulations could also have seasonal components, e.g.,

nesting season closures. Special-use permits, as specified in strategy B.11, will allow for access and activities otherwise prohibited. This zoning includes measures contained in proposed management plans for the Great White Heron, Key West, and National Key Deer wildlife refuges developed by the U.S. Fish and Wildlife Service and the State of Florida Department of Natural Resources. The areas selected for this alternative will be more numerous than those established in Alternative IV.

**Z.2 Replenishment Reserves are designed to encompass large, contiguous diverse habitats. They are intended to provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life and to protect and preserve all habitats and species. These reserves are intended to protect areas that represent the full range of diversity of resources and habitats found throughout the Sanctuary. The intent is to meet these objectives by minimizing human influences within these areas.**

Replenishment Reserves are zones that will be established in accordance with Section 7 (a) (2) of the Florida Keys National Marine Sanctuary and Protection Act for the purpose of ensuring the protection of Sanctuary resources. They are designed to protect habitats and species by limiting consumptive activities, while continuing to allow recreational activities that are compatible with resource protection. This will provide the opportunity for these areas to evolve in a natural state, with a minimum of anthropogenic influence. These zones will protect a limited number of areas that represent the diverse habitats within the Sanctuary, and that provide important habitat for sustaining natural resources such as fish and invertebrates. These areas have been selected to protect and enhance biodiversity and provide natural spawning, nursery, or permanent residence areas that will serve to replenish stocks of all species. The areas selected for this alternative will be slightly larger and/or more numerous than those established in Alternative IV.

There already is scientific evidence that nonconsumptive areas lead to increases in both harvested and nonharvested species. However, questions remain about the usefulness of these areas in the Sanctuary, as well as the best sites, configurations, and locations. In addition, there is uncertainty about the relative impacts of regional water quality, nearby pollution sources, and human uses that already exist in the Sanctuary. Unbiased scientific studies, therefore, will be initiated in the Replenishment Reserves for two purposes: 1) to determine whether the reserves actually protect biological diversity and increase the productivity of important marine life species; and 2) to utilize the reserves as control areas to better understand the impacts of water quality, pollution, and various human uses. Based on the results of these studies, the five-year update of the Management Plan will consider expanding, modifying, or eliminating these zones.

**Z.3 Establish nonconsumptive Sanctuary Preservation Areas in a number of areas that are experiencing a high degree of conflict between consumptive and nonconsumptive uses, and in discrete areas that are currently experiencing significant population or habitat declines. These areas will provide for the protection and sustenance of resources, particularly select marine species in high-use and biologically important areas.**

These zones will focus on the protection of shallow, heavily used reefs where conflicts occur between user groups, and where concentrated visitor activity leads to resource degradation. They are designed to enhance the reproductive capabilities of renewable resources, protect areas that are critical for sustaining and protecting important marine species, and reduce user conflicts in high-use areas. This will be accomplished through a prohibition of consumptive activities within these areas. These areas have been chosen based on the status of important habitat, the ability of a particular area to sustain and protect the habitat, and the degree of conflict between consumptive and nonconsumptive users.

Research conducted in these areas can provide important information for comparing the effects of natural processes and consumptive activities on species and habitat. Important prerequisites for conducting monitoring and research in these areas are to continue the ongoing, large-scale remote sensing project to locate and map the resources and habitats within the Sanctuary and to assess the status of important marine species and their habitat. The actual size and location of these zones have been determined by examination of user patterns, aerial photography, and ground-truthing of specific habitats. The areas selected will be slightly larger and/or more numerous than those established in Alternative IV.

**Z.4 Establish an Existing Management Area that recognizes areas that are managed by other agencies where restrictions already exist. Management of these areas within the Sanctuary may require additional regulations or restrictions to adequately protect resources. Any additional management measures will be developed and implemented in coordination with the agency having jurisdictional authority.**

These zones delineate the existing jurisdictional authority of other agencies (i.e., State parks, aquatic preserves, sanctuaries, and other restricted areas). Their function is to recognize established management areas and to, at a minimum, complement the existing management programs.

**Z.5 Establish zones to address special-use activities and concerns within the Sanctuary. These zones can be used to set aside areas for educational and scientific purposes, restorative, monitoring, or research activities or to establish areas that confine or restrict activities such as power boat racing and personal watercraft use in order to minimize impacts**

***on sensitive habitats and to reduce user conflicts. This zone type will also establish live-aboard areas and mooring fields in areas where adverse environmental impacts will be minimal.***

This strategy is designed to delineate areas of special concern where specific issues can be addressed through the use of zoning. Using these zones, areas can be set aside for specific uses to reduce user conflicts and minimize adverse environmental effects from high-impact activities. This will be accomplished by designating selected areas where activities can be conducted with a minimum of disturbance to other users and the environment. Special-use Areas may include areas set aside for research, artificial reef construction, archaeological sites, etc. They will also delineate areas where high-impact activities, such as powerboat racing and personal watercraft use will be allowed. Live-aboard areas and mooring fields will also be confined to specific areas in order to reduce adverse environmental impacts. This is the broadest zoning classification and encompasses the greatest range of management issues. The boundaries of these areas will be selected to address management issues and needs, and may include seasonal or emergency closures of areas.

## Education

***E.1 Develop printed materials to promote public awareness of the impact of their activities, both land- and water-related, on the Sanctuary's resources and environmental quality. Promote the proper use of equipment used for these activities in order to minimize adverse impacts to natural resources. Materials will include brochures, posters, newsletters, contributions to periodicals, environmental nautical charts, color environmental atlases, and a color periodical. Distribute materials in bulk to high-interception locations (e.g., marinas, boat ramps, dive shops, other businesses etc.) and include bulk mailings as a means of distribution.***

Printed materials will be developed to promote public awareness (e.g., visitors, business owners and operators, etc.) and, in particular, boaters', divers'/snorkelers', fishermen's, and homeowners' awareness of the impacts of their activities on Sanctuary resources and environmental quality. Information will be printed in brochures, posters, newspapers, newsletters, and periodicals. Some brochures will be produced in color on glossy paper stock. Nautical charts will also be printed with relevant environmental information. A color environmental atlas for the Sanctuary will be produced, as will a monthly color periodical.

Materials for boaters, divers, and fishermen will include specific information on the proper use of equipment, Sanctuary regulations related to water activities, safe practices for each, Sanctuary habitats and species guides for users, and direct and indirect impacts of boating, diving,

fishing and other water-based activities on Sanctuary resources. In addition, materials with information directed toward activities on land, such as sewage and solid waste disposal, and stormwater runoff and household activities (e.g., home improvement, yard waste disposal, etc.) that impact the Sanctuary will be produced.

Printed materials will be distributed in bulk to locations accessible to boaters, divers, and fishermen in particular. These locations will include marinas, boat ramps, dive shops, aquarium shops, and where fishing licenses are sold. Other locations more accessible to the general public include schools, libraries, and Federal, State, and local agencies. A Sanctuary newsletter will be mailed out in bulk. Other materials will be mailed out with vehicle licenses and registrations and utility bills.

***E.2 Inventory and use existing videos, films, and audio/visual environmental education materials portraying activities in the Florida Keys and their impacts on Sanctuary resources. Produce a limited number of audios/videos to address gaps in available materials and to address major activities including boating, fishing, diving, etc. Materials will be available at Sanctuary offices and will be distributed to key locations (e.g., dive shops, etc.) throughout South Florida.***

This strategy is designed to assemble all available audio/visual environmental education materials and create a library for use by public and private organizations, as well as Sanctuary staff. A limited number of new audio and visual materials will be developed to address gaps in available materials. A number of videos and other materials will be produced to address major activity/issue areas (e.g., boating impacts, fishing, diving, etc.). A slide/photo library will be developed and contributions of materials will be solicited from amateur and professional photographers.

A checkout system will be used to lend out these materials. The distribution scheme will include libraries at all Sanctuary facilities, as well as at-cost distribution to dive shops and other high-interception locations in the Keys and throughout South Florida.

***E.3 Develop signs/displays at high-use areas, all public and some private boat ramps, and some public beach access areas to inform participants in water-based activities of regulations and environmentally sound practices, provide navigation information, and promote awareness of nearby sensitive areas. Portable displays will also be produced with information on Sanctuary resources, regulations, environmental quality, etc. Most of the signs will be multilingual. Targeted multimedia displays will be developed with information and impacts on the Sanctuary relevant to the activity targeted. A number of wayside exhibits will be installed.***

## Appendix H. Strategies in the Preferred Alternative

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A user-friendly computer system containing information on regulations, access, recreational sites, environmental etiquette, etc. will be developed for visitor use at selected sites throughout the Sanctuary within five years.

Permanent displays/signs with Sanctuary resource information, regulations, navigation safety and environmental etiquette will be developed. A portable display with similar information will be developed. Multimedia targeted displays (e.g., boating, fishing, diving, etc.) with information on sound boating practices, nearby sensitive areas, catch-and-release fishing, handling techniques and impacts of hook-and-line fishing on Sanctuary resources will also be developed. Most of the signs produced will be multilingual.

Permanent displays/signs will be placed at all public and some private boat ramps. Signs will also be displayed at some public shoreline access areas. A number of displays will be located along the roadside throughout the Keys (e.g., Key Largo, Islamorada, Marathon, Big Pine, and Key West).

A network of computer-driven display systems will be set up to provide information to Sanctuary visitors on resources, activities, and the environment. This system must be user-friendly (e.g., touch-screen menus) and will be available for sale to commercial establishments. Updates would take place every six months. The system will be in place in five years.

**E.4 Develop opportunities for instruction and training. This will include programs (both on the primary and secondary level) conducted by teachers, Sanctuary staff, and volunteers. Participation in existing environmental education programs would also be established, and some programs would be expanded. Training programs (e.g., Coral Reef Classroom, submerged cultural resources, etc.) will also be provided for teachers, environmental professionals, business owners and operators, and law enforcement officials.**

This strategy will improve the understanding of Sanctuary programs and purposes and the ecology of the Keys through development of training modules to be used as follows:

1) Volunteer training opportunities will involve *sophisticated technical* education/orientation for volunteers concerning the marine sanctuary program and specific, task-oriented education designed to assist paid staff in accomplishing *habitat restoration, SCR research and interpretation*, etc.

2) Development of specific packaged presentations on the Sanctuary, its resources, goals, etiquette, and environmental quality targeted at *both primary and secondary education levels*. The programs will include *on-site training opportunities for studying a limited number of Sanctuary habitats and SCRs*.

3) *Sanctuary interpretive staff will coordinate activities on a limited basis with State, county, and private environmental education programs targeted at specific activities (e.g., boating, fishing, diving, business owners and operators, households, etc.). New environmental education programs for targeted activities will be developed to fill in gaps.*

4) The Florida Marine Patrol has an environmental awareness program that has produced significant results in the past. This strategy would provide additional funding allowing the Patrol to improve and increase the range of its existing program.

**E.5 Establish a program to promote Sanctuary goals and activities through public service announcements (PSAs) in South Florida, with some national and international public exposure, that presents an overview of the Sanctuary, its resources and their ecological significance for routine distribution to radio, cable television stations, and newspapers. Develop editorial/contributions for other printed media. Funds will be spent on routine media exposure. PSAs would focus on participants in water-related and other activities that affect the Sanctuary (boaters, divers, household etc.). These materials will also be organized into a press packet.**

This strategy is designed to develop a program of public service announcements and other media-related materials to educate the public about how their activities impact Sanctuary resources. The PSAs will focus on boating, diving, household activities and other activities that impact the Sanctuary. The areal extent of media exposure will extend to all of South Florida. Some PSAs will be shown to state, national, and international markets. A number of broadcasts will be in languages other than English (primarily Spanish).

The exposure will be routine "no-cost" PSAs on radio and TV. Funds will be spent on column space and air time to increase the frequency of broadcast. Routine editorial responses/contributions will be developed for local papers and other printed materials. A "no-cost" program for printing PSAs on manufacturers product packaging will also be established. A basic press package will be produced for distribution to media representatives on request.

**E.6 Establish an education advisory council to advise educators on education goals, priorities and funding sources for the Sanctuary. A full-time staff person will be provided.**

This strategy is designed to establish an education advisory council to assist education staff in establishing education priorities, securing funds, and coordinating educational efforts to prevent duplication with other education organizations. The council will be able to rely on a full-time staff person provided by the Sanctuary Program.

**E.7 Promote educational materials, including bilingual materials and other information about the Sanctuary and its resources, at existing Sanctuary offices and Chambers of Commerce. Establish inter-agency visitor centers with the U.S. DOI and the Florida DEP.**

This strategy will establish visitor booths/displays to provide educational materials on Sanctuary resources, etiquette, and environmental quality with materials printed in languages other than English (primarily Spanish). Existing Sanctuary offices will provide limited space for distribution on a walk-in basis. In addition, interagency visitor centers will be established in cooperation with the U.S. DOI (FWS, NPS) and the FDEP to provide visitors and residents with orientation information on various protected and managed areas. Cooperative efforts will allow agencies to pool resources and provide lowest cost options for a special center.

The Sanctuary will also use no-cost/low-cost space in locations where tourist-related information is already distributed (e.g., Chambers of Commerce) for promotional purposes.

**E.10 Establish a program to ensure public involvement throughout South Florida in Sanctuary activities by holding public meetings and promoting Sanctuary awareness to extracurricular groups. A Sanctuary "hot line" will be established for the public to report information concerning the Sanctuary. A program will also be established to provide Sanctuary sponsorship of contests/awards.**

This strategy will establish a program to ensure public involvement by having periodic public meetings throughout South Florida to which commercial and recreational users of Sanctuary resources and the general public will be invited. Sanctuary staff and/or guest speakers will make presentations, and dialogue and feedback from the public will be encouraged.

Limited printed materials will be developed to support presentations to organizations such as 4-H clubs, scouts, and nongovernmental agencies who are making an effort to learn about and support the Sanctuary.

*Sanctuary-sponsored contests will be established that include logo contests, photo contests, and volunteer of the year contests. An annual award to recognize contributions by individuals and organizations will also be part of the program. "Adopt-a-Reef" will be another valuable Sanctuary-sponsored program.*

**E.11 Organize, support, and/or participate in special events (e.g., trade shows, expositions, grand openings, etc.) that allow for the exchange of Sanctuary information. The Sanctuary will cosponsor a limited number of conferences and workshops. The Sanctuary will cosponsor a number of conferences and workshops, with selected sole sponsorship of some events. This would include a "Sanctuary Awareness Week" and a "grand opening" to the Sanctuary. The Sanctuary Program would cosponsor other "awareness" events/weeks (e.g., National Fishing Week, etc.).**

This strategy proposes that the Sanctuary Program be involved in special events where Sanctuary information can be distributed.

*The Sanctuary Program will also cosponsor conferences and workshops dealing with Sanctuary issues and environmental quality. Sole sponsorship of a limited number of events of particular interest/benefit to the Sanctuary will be established. This will include "Sanctuary Awareness Week" and a "grand opening" to further promote public awareness of Sanctuary goals. The Sanctuary Program will cosponsor other "awareness" events/weeks (e.g., National Fishing Week, etc.) with special-interest groups by providing information on specific activities and their impacts.*

Appendix J is not available electronically. For a paper copy of Appendix J, please contact:

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## Historically Recorded and Documented Submerged Cultural Resources of Monroe County, Florida

NAME	GENERAL LOCATION	YEAR LOST
9 CANNON WRECK	Dry Tortugas	Unknown
A. HAYFORD	Dry Tortugas	1905
A51		Unknown
A53		Unknown
A54		Unknown
A55		Unknown
A56		Unknown
ABBIE CARSON	Off Key West	1876
ACASTA	Dry Tortugas	1818
ADAM W. SPIES	40 miles West of Stirrup Key	1906
ADAM W. SPIES	40 miles West of Stirrup Key	1909
ADELAIDE	On Pickles Reef	1894
ADELAIDE BAKER	Coffins Patch	1889
ADELAYDA	Elbow Reef	1863
AGAMEMNON	Grecian Shoal	1858
AGENORA	Carysfort Reef	1836
AITAHA	Carysfort Reef	1844
AJAX	Carysfort Reef	1836
ALASCO	Conch Reef	1842
ALBERT MEYER	Florida Keys	1927
ALEXANDER	Keys Gulf of Florida	1752
ALLIGATOR LIGHT WRECK		Unknown
ALLIGATOR REEF WRECK		Unknown
ALMIRANTA OR SAN FRANCISCO DE ASIS	Off Long Key	1733
ALUIDA	Carysfort Reef	1844
AMAZON	Dry Rocks	1872
AMELIA	Three miles from Key West	1914
AMERICA	Dry Tortugas	1836
AMERICA	American Shoal	1885
AMERICANO	Florida Keys	1814
AMOS WATCHHILT	Key West	1830
AMULET	Florida Keys	1831
ANDREW JACKSON	Key West	1942
ANDROMACHE	Florida Keys	1805
ANDROMACHE	Florida Keys	1823
ANGELA	Agamemnon Reef, Southeast of Key West	1866
ANN & ELIZABETH	Florida Keys	1774
ANN HARLEY	Loggerhead Shoal	1858
ANN OF LONDON	Florida Keys	1822
ANNA M. STAMMER	Duck Key	1906
ANNA THERESA	Florida Keys	1768
ANNIE OF SCARBOROUGH	Florida Keys	1819
ANSON	Key Vacas	1843
APPHIA & AMELIA	American Shoals	1897
AQUILLO	French Reef	1871
ARAGO	East Sambo Key	1928
ARAGO	Sambo Key	1928
ARCADIA	Dry Tortugas	1893
ARIETAS	Dry Tortugas	1886
ARTHUR	Dry Tortugas	1887
ATHALIA	Carysfort Reef	1844
ATHALIA	On Western Dry Rocks	1854
ATHENAISE	Southwest point of the Quicksands	1876
ATHENE		1943
ATLANTA	Dry Tortugas	1865

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
ATLANTICA	Florida Straits off Marquesas and closer to Cuban Shore	1944
ATLAS	Gulf of Florida, Florida Keys	1816
AURORA	Southwest Reef of Tortugas	1879
BAGDAD	Key West	1921
BAHAMA	Carysfort Reef	1835
BAJA CALIFORNIA		1942
BARGE WRECK		Unknown
BARILLA	Florida Keys	1819
BAYRONTON	Off Key West	1919
BEATRICE	Dry Tortugas	1895
BELL HOOPER	Southwest Reef Tortugas	1890
BELLE	Sugarloaf Key	1836
BEN CUSHING	French Reef	1862
BENJAMIN HALE	On Bird Key Shoals	1893
BENJAMIN LITCHFIELD	Near the Lightship at Sand Key	1848
BENWOOD		1942
BETSEY	Florida Keys	1818
BIG PINE KEY WRECK	Big Pine Key	Unknown
BILLANDER BETTY	Looe Key	1744
BILLOW	Dry Tortugas	1837
BIRGINIA 3	Boca Chica	1910
BLAKELY	Carysfort Light	1835
BOSILJKA	Several miles North-Northwest of Key West and North-Northeast of Marquesas	1942
BRAGANZA	Near Key West	1909
BRANDT	Carysfort Reef	1817
BRAZOS	Dry Tortugas	1917
BRICK WRECK	Dry Tortugas	Unknown
BRIDESMAID	Tennessee Reef	1890
BRIG	Florida Keys	1819
BRITANNIA	Florida Keys	1803
BRONZE CANNON WRECK	American Shoal	Unknown
BRONZE WRECK	Turtle Shoal	Unknown
C. W. WELLS	35 Miles South-Southwest of Dry Tortugas	1921
C. WHITING	Carysfort Reef	1865
C.C. FOWLER	Washerwoman Shoal	1859
CABINET	Florida Keys	1811
CALDWELL H. COLT	Dry Tortugas	1922
CALLIOPE	Florida Keys	1804
CANTON	Dry Tortugas	1848
CAPITANA	Florida Keys	1623
CAPITANA EL RUBI SEGUNDO	Off Key Largo, near Davis Reef	1733
CARAQUENA	Sandbornes or West Sambos, near Key West.	1858
CARMALITA COMPOSITE	Dry Tortugas	1893
CAROLINE	Key West	1842
CAROLINE NESMITH	Carysfort Reef	1865
CARRIE S. ALLEN	Key West	1923
CATHERINE GREEN	Florida Keys	1794
CAV. IVANISSIVECK	Quicksands	1889
CAY	Near Matabumbe Key	1775
CERES	Dry Tortugas	1824
CERRO GORDO	Loggerhead Reef	1860
CETEWAJO	Bird Key, Tortugas	1885
CHARLES R. CAMPBELL	Dry Tortugas	1886
CHARLES THE FIFTH	Carysfort Reef	1842
CHAVEZ, N.S. DEL CARMEN, S. ANTONIO DE PADUA	Cayo De Matecumbe El Viejo, Upper Matecumbe Key, near Tavernier Key	1733
CIMBRUS	Dry Rocks	1853
CITY OF HOUSTON	Approximately 12 Miles From Key West, on the Shoals near Saddle Bunches	1876
CITY OF WASHINGTON	Elbow Reef	1917
CLIFFORD N. CARVER	Tennessee Reef	1913

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
CLYDE	Key West	1897
COL. T SHEPPARD	Key West	1843
COLONY	Culbins Patches during heavy gale	1853
COLUMBIA	At Crayfish Key, Key West	1841
COMMISSARY	Key West	1846
CONCORD	Tortugas Reef	1831
CONCORDIA	At Key Vaca	1855
CONSERVATIVE	Long Key Reef	1844
COOT		1942
CORDELIS	Loo Choo Key	1860
COSMOPOLITE	Florida Keys	1821
COSSACK	Florida Keys	1816
COURIER	Knights Key	1836
CRAIG WRECK OR SAN FRANCISCO	Off Long And Craig Keys	1733
CURLER	Southwest Key in the Marquesas	1894
CURREO	Carysfort Reef	1829
CUTTER MORRIS	Key West	1846
CYNTHIANA	Key West	1927
DAHLIA	Pickels Reef	1865
DELTA SHOALS STEEL WRECK	Southwest Delta Shoals	Unknown
DEODUEUS	Molasses Reef	1876
DESPATCH	Carysfort Reef	1817
DIRECTOR	Elbow Reef	1862
DOLCOUTH	North Key Spit, Tortugas	1883
DOLPHIN	Gulf of Florida	1752
DORIS	Carysfort Reef	1831
DOROTHY FOSTER	Pickles Reef	1836
DUMFRIES	Dry Tortugas	1831
DWIGHT	Eastern Dry Rocks	1865
E. G. WILLARD	At Long Key	1853
E. J. BULLOCK	Southwest of Dry Tortugas	1938
E. K. BROWN	Riding Rocks	1871
E.J. WATTE	Little Pelican Shoals	1886
EAGLE	Maranzie Reef	1801
EARL KING	Long Reef	1891
EAST KEY WRECK	Dry Tortugas	1850
EAST KEY WRECK 2	Dry Tortugas	Unknown
EBEN PREBLE	Probably in the Lower Keys	1846
EDITH	West of Key West	1877
EDNA LOUISE	30 miles from Key West	1914
EDWARD S. LUCKENBACH	30 miles North of Key West	1942
EDWARD T. STOTESBURY	Knight's Key	1910
EL AVISO CONSULADO	Pacific Reef	1733
EL GRAND PODER DE DIOS Y SANTA ANA	Matecumbe Key	1733
EL INFANTE, ALIAS NUESTRA SENORA DE	Cayo De Vivoras, Little Conch Reef	1733
BALVANEDA		
EL LERRI	Lower Matecumbe Key	1733
EL NUEVA VICTORIOSA	Off Key Largo	1771
ELEANOR	On the Tortugas	1836
ELENORA	Southwest Reef, Tortugas	1885
ELIZA	Carysfort Reef	1818
ELIZA	Rodriquez Key	1853
ELIZA PLUMMER	Probably the Lower Keys	1832
ELIZA W. DALTON	Struck Bird Key but taken to Long Cay	1855
ELIZABETH	Near Light Ship	1847
ELIZABETH BRUCE	Elbow Reef	1854
ELLA HAND	Stirrup Key	1838
EMIGRANT	Alligator Reef	1856
EMILIE	8 Miles South-Southwest of the Northwest Light	1877
EMMA ELIZA	Cudjoe Key	1909
ENERGIA	Molasses Reef	1877
ENGLISH COUNTY	Florida Keys	1782

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
ENGLISH MERCHANT SHIP	American Shoals	Unknown
ENGLISH SHIP	Florida Keys	1782
ERICKSON	Key West area	
ERICKSON		Unknown
EUROPA	Florida Keys	1817
EVANDALE	French Reef	1875
EVELINE	Near Key West	1874
EVENLY	Florida Keys	1943
EXCELSIOR	Grecian Shoal, North of Carysfort Light	1879
EXCELSIOR	Grecian Shoals or Carysfort Light	1880
EXCHANGE	Off Key West on Reef	1846
EXERTON	Dry Tortugas	1831
F.A. KILBURN	American Shoal Light	1918
FANNIE AND FAY	Dry Tortugas	1925
FANNY A. EVERETT	American Shoals	1853
FERNANDIA	Elbow Key	1860
FERNONIA	Carysfort Reef	1845
FISCHER,ROBINS,CLAUSE	Dry Tortugas	Unknown
FISHING SCHOONER WRECK		Unknown
FLAGLER SHIPPING DOCKS	Marathon End of 7 Mile Bridge	1906
FLORA	Florida Keys	1789
FLORA	Dry Tortugas	1836
FLORA	Dry Rocks	1848
FLORENCE	Tortugas	1831
FLORENCE ROGERS	West of Alligator Reef Light Station near Indian Key	1875
FLORIDA	Florida Reef	1831
FLORIDA	Key West	1909
FLORIDA	Dry Tortugas	1910
FLORIDANA	Cayo De Vivoras	1777
FLY	Florida Keys	1789
FOLOMER	Southwest Reef, Tortugas	1881
FORREST	A Reef located one days sailing out of Key West	1838
FRANCES	Alligator Reef	1846
FRANCES & LUCY	Florida Keys	1822
FRANCIS	Dry Rocks	1856
FRANCIS ASHBY	At Loggerhead Key (American Shoals)	1843
FRANKLIN	Florida Keys	1823
FREDDIE L. PORTER	Dry Tortugas	1887
FREDDIE W. ALTON	The Dock at Key West	1909
FUERTE	Florida Keys	1742
FURTE	Florida Keys	1742
GALAXY	Dry Tortugas	1831
GALLO INDIANA	Long Key	1733
GALVESTON	Duck Key	1876
GANYMEDE	Matecumbe Bar	1850
GARDEN PIKE	Sugar Loaf Key	
GENERAL CLARK	Florida Keys	1793
GENERAL WILSON	Key West	1846
GEORGE III	Carysfort Reef	1824
GEORGE PEABODY	American Shoals	1878
GEROGES	Molasses Reef	1876
GLAMO	Marquesas Reef	1905
GOLCONDA	30 miles East of Key West	1869
GOLOENK		Unknown
GRACE CLARK	At Grand Key during a Norther	1852
GRANITE WRECK	Conch Reef	Unknown
GRECIAN	Carysfort Reef	1836
GREENVILLE PACKET	Dry Tortugas	1765
GUERRERO	Carysfort Reef	1827
GULFSTATE		1943
GUNDOR		1942
GUTENBERG	Bird Key, Tortugas	1884

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
GUTENBERG	Dry Tortugas	1885
H. H. CONWAY		1944
H. W. STAFFORD	Key West	1846
HAMILTON	Ajax Reef	1780
HANNIBAL	Elbow Reef	1890
HAROLDINE	Off Bear's Cut	1906
HARRIET AND MARTHA	Dry Tortugas	1854
HARRY B. RITTER	Southwest Reef, Tortugas	1895
HEBRUS	Pickles Reef	1838
HECTOR	Florida Keys	1800
HELEN E. BOOKER	Elbow Key, or according to one source, Carysfort Reef	1857
HENRIETTA MARIE	New Ground Reef near the Marquesas Keys	1700
HENRIETTA MARIE	New Ground Reef	1796
HENRY	Key West	1831
HENRY	Marquesas	1848
HENRY J. MAY	Southwest Reef in Dry Tortugas	1875
HENRY J. MAY	Southwest end of Loggerhead Reef	1877
HENRY MEANER	Far out to sea West of the Dry Tortugas	1878
HERBERT MAY	Marquesas Reef	1922
HERMIS		1942
HERRERA, S.N. DE BELEM Y S. ANTONIO DE PADUA	East of Matecumbe Key	1733
HIGHLANDER	Carysfort Reef	1812
HILTON	Carysfort	1937
HMS CARYSFORD	Carysfort Reef	1793
HMS FLY	Shoreward side of Little Conch Reef	1805
HMS LOOE	Looe Key	1744
HMS TYGER	Florida Keys	1742
HMS WINCHESTER	Southwest of Carysfort Reef	1695
HOLMES	East Key, Tortugas	1859
HONDURAS	Key West	1870
HOPE	Pickles Reef	1878
HOPE FOR PEACE	Carysfort Reef	1821
HORACE	Pickles Reef	1860
HUDSON	Little Sand Key	1848
HUGH DE PAYENS	Abandoned off the Tortugas, she was later seen drifting upside down in the Florida Channel between Sal Key and Key West.	1919
HURRICANE	Key West	1846
HYDER ALLEY	Marquesas Key Shoals	1838
IDA C. SOUTHARD	Approximately 20 miles bearing West off Sombrero Light	1894
IMPULSE	Key West	1909
INDIAN HUNTER	French Reef	1859
IRENE	Dry Tortugas	1907
IRIS	Florida Reef	1846
IRON BALLAST WRECK	Dry Tortugas	Unknown
IRON BALLAST WRECK	Dry Tortugas	Unknown
ISAAC ALLERTON	Key West	1856
ISABELLA	Bahia Honda Key	1855
ISABELLA	On French Reef	1875
ISABELLA REED	Conch Reef	1850
ISHURIA	Mosquito Bank	1896
ISLAND BELLE	Key West	1926
ISLAND HOME	Near Sand Key Light (one source says Marquesas Key)	1882
IVORY WRECK	Delta Shoal	Unknown
J. A. MOFFET		1942
J.W. ROWLAND	Pickles Reef	1860
JALAPO	5 miles East of Marquesas	1876
JAMES W. LAWRENCE	Middle Sandbornes	1865
JERUSALEM	Florida Keys Reef	1815
JESUS SENORA DEL ROSARIO	Florida Keys	1622
JOHAN CARL	Florida Keys	1825
JOHN HENRY SHERMAN	Garden Key	1926

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
JOHN HENRY SHERMAN	Dry Tortugas	1928
JOHN HOWELL	Dry Tortugas	1847
JOSEPH A. DAVIS	Grecian Shoals	1866
JOSEPH BAKER	Dry Tortugas	1881
JOSEPH BAKER	North Cay Flat, Tortugas	1891
JOSHUA H. MARVELL	Dry Tortugas	1887
JUDITH	Fowey Rocks	1748
JUNO	Carysfort Reef	1812
KEY WEST	Key West	1846
KEY WEST	Key West Harbor	1870
KINGSTON	Off Key Largo	1752
L. W. MAXWELL	Eastern Dry Rocks	1854
LA MARGARITA	Marquesas Key	1622
LA REUNION	Probably in Lower Florida Keys	1846
LADY FRANKLIN	French Reef	1862
LAFAYETTE	Key West	1846
LAKE CITY	Key West	1918
LALIA	Southwest Reef, Tortugas	1883
LANCASTER	Florida Keys	1752
LAS MULAS	Man Key	1860
LAURA	Carysfort Reef	1835
LEO	Tortugas	1831
LEONE	At Key West while entering Port	1872
LEOPARD	Florida Keys	1823
LEVINIA ADAMS	Looe Key	1855
LEWIS H. GOWARD	Key West	1921
LEWIS J. STOCKER	Key West	1878
LILY WHITE	30 miles Northwest of Key West	1897
LINEDORA	Carysfort Reef	1846
LITTLE CONCH REEF WRECK	Tavernier Key	Unknown
LIVELY	Florida Keys	1791
LIVELY	Florida Keys	1819
LOGGERHEAD KEY WRECK	Dry Tortugas	Unknown
LOGGERHEAD KEY WRECK 2	Dry Tortugas	Unknown
LOGGERHEAD REEF WRECK 3	Dry Tortugas	Unknown
LOGGERHEAD REEF WRECK 4	Dry Tortugas	Unknown
LOGGERHEAD REEF WRECK 5	Dry Tortugas	1850
LOGGERHEAD REEF WRECK 6	Dry Tortugas	Unknown
LONDON	Rebecca Shoal	1892
LONE STAR	North Dry Rocks	1891
LONG KEY REEF WRECK	Dry Tortugas	Unknown
LONG KEY REEF WRECK 2	Dry Tortugas	1850
LOUIS H	Sombrero Key Light	1919
LOUISIANA	South point of Carysfort Reef	1836
LOUISOANA	Off Sombrero Reef	1910
LOVELY ANN	Florida Keys	1792
LUCY M	50 miles Northwest of Key West	1881
LUISA A	Loggerhead Key	1882
MABEL	Pulaski Shoals Flat Reef, Tortugas	1891
MAGDALEN	Florida Keys	1816
MAGNOLIA	Key West	1910
MAJESTIC	Carysford Reef	1835
MAJESTIC	Key West	1943
MALCOM	French Reef	1858
MANAGUA		1942
MANATEE	Key West	1907
MANCHESTER	Florida Reef	1841
MANDARIN	Elbow Reef	1848
MANZANILLO	Several miles South of Key West	1942
MARCIA REYNOLDS	20 miles Northwest by West of Sombrero Light	1884
MARIA	Dry Tortugas	Unknown
MARIA	Ludberry Reef	1796
MARIA	Dry Tortugas	1806

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
MARIA	Caryford Reef	1831
MARIA	Carysfort Reef	1835
MARIA		1944
MARIA		1949
MARIA FERGUSON	Dry Tortugas	1870
MARIA FERGUSON	Tortugas	1871
MARIA LOUISA	Dry Tortugas near Bird Key Harbor	1918
MARIE J. THOMPSON		Unknown
MARIE J. THOMPSON	Key West area	1935
MARINER	French Reef	1856
MARQUIS DE POMBAL	Florida Keys	1817
MARS	Dry Rocks	1851
MARTHA GILCHRIST	Dry Tortugas	1858
MARTHA REGAN	Marquesas Shoal	1859
MARY	Key Tavernier Creek	1836
MARY & PRISCILLA	Off Key Largo	1752
MARY E. BRIGGS	French Reef	1879
MARY ELIZA	Dry Tortugas	1911
MARY HART	Mosquito Shoal	1831
MARY HOWLAND	Delta Shoal	1839
MARY LONDON	Looe Key	1855
MARYLAND	Washerwoman Shoal	1849
MATAWA	Near Key West	1872
MATHILDA	Quicksands	1897
MATTHEW VON BREE	Yucatan Reef, a small reef near Alligator Reef	1852
MAY	Florida Keys	1752
MAYFLOWER	Carysfort Reef	1855
MEDFORD	Blown five miles from Key West toward Sand Key	1909
MEGGIE	Southwest Point of Loggerhead Reef	1877
MELEMORA	Key West	1846
MEMPHIS	Conch Reef	1877
MENEMOM SANFORD	Carysfort Reef	1862
MERCHANT	Carysfort Reef	1808
MERRI ENGLAND	French Reef	1878
MERRIE ENGLAND	Pickles Reef, just Southwest of the Lighthouse	1877
MERRIMACK	Florida Keys	1817
METEOR	Pickles Reef	1854
MEXICO	Shoals of the Tortugas	1891
MEZZIE	Dry Tortugas	1877
MINERVA	Near Light Ship, Carysfort	1847
MINI	Pickles Reef	1859
MISS SANDRA	Outside jetty of Northwest Channel Key West	Unknown
MISSISSIPPI	Looe Key	1829
MODESTE	Off Key Largo	1819
MOLLIE EMMA	30 Miles East of Key West	1876
MONROE COUNTY	At Key West	1928
MOONSTONE	Near Carysfort Reef	1894
MORRIS	Key West	1846
MORTOUN	Near Key Vaca	1848
MOUNT PLEASANT	Plantation Key	1905
MOUNT VERNON	Carysfort Reef	1844
MOUNTAIN HOME	North of Key West	1875
MT. HOPE	Key West	1831
MULHOUSE	Quicksands near the Tortugas	1859
MULLER	Sugarloaf Reef	1869
MUNGER T. BALL	Far out to sea, many miles West of Cape Sable	1942
MUTTER SCHULTZ	American Shoal	1870
N. KIMBALL	Dry Rocks	1853
N.M. TERRY	Eastern French Reef	1864
N.S. DE LAS ANGIUSTIAS Y SAN RAFAEL	Off the Long Key Bridge	1733
NADA	Inside of Tennessee Reef of Long Key	1894
NAFFAW	Florida Keys	1741

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
NANCY HAWKS	Florida Reef	1926
NANCY W. STEVENS	Southwest Reef in Dry Tortugas	1849
NANNIE C. BOHLIN	Near Garden Key, Dry Tortugas	1909
NANNU	Key West	1828
NAPOLEON	Key West	1846
NATCHEZ	Carysfort Reef	1836
NAVIGATOR	Key West	1846
NELLIE M. SLADE	Dry Tortugas	1900
NEPENTHE	Tavernier Key	1932
NEW ORLEANS	Dry Tortugas	1850
NEW YORK	Dry Tortugas	1842
NEWARK	Carysfort Reef	1845
NEY	Pickels Reef	1859
NICHOLAS ADOLPH	Amelia Island Bar	1814
NOAH' ARK	Florida Keys	1795
NOR WESTER	Key West Harbor	1938
NOR'WESTER	Key West	1872
NORDKYN	Coffins Patch (one source says Vacas Key)	1875
NORLINDO	Far out to sea West of the Dry Tortugas	1942
NORMAN	Conch Reef	1836
NORMAN H. DAVIS	Key West	1942
NORTH AMERICA	Delta Shoal	1842
NORTHAMPTON	Molasses Reef	1883
NORTHERN LIGHT	Grand Key	1855
NORTHERN LIGHT	Florida Keys	1930
NUUESTRA SENORA DE ATOCHA	Marquesas Key	1622
NUUESTRA SENORA DE CONCEPCION Y SAN JOSEPHE	Key Largo	1689
NUUESTRA SENORA DEL POPULO	Cabeza De Los Martires, in Biscayne National Park	1733
NUUESTRA SENORA DEL ROSARIO	Matacumbe Key	1622
OCONEE	Stirrup Key	1845
OLD RIVER	Matacumbe Key	1947
OLIVE & ELIZA	Key West	1846
OMAHA	Presumed to be in Lower Florida Keys	1869
ORACLE	Conch Reef	
ORION	Florida Keys	1812
ORION	Sand Key	1839
ORLEANS	Carysfort Reef	1826
OSMOND	Dry Tortugas, Southwest Key	1898
OSTEAN	Navy Harbor, Key West	1858
OSTERVALD	Far out to sea off Florida Bay area in Gulf of Mexico	1858
OTHELLO	Collins Patch (likely Coffins Patch)	1832
OXFORD	Bearing Northeast by North of Carysfort Light on Pickles Reef	1894
PACIFIC	East Key of the Tortugas	1857
PACKET SHIP	Sandy Key	1841
PACKET SHIP	Key West	1842
PARGO	Cape Sabal	1905
PATRIARCA SAN JOSE	Pickles Reef	1870
PAULINE	Pickles Reef	1854
PEERLESS	Near Boot Key, Marathon Area	1909
PEGUOT	Key Vacas	1842
PELTON	Key West	
PENDLETON BROTHERS	Dry Tortugas	1913
PENNEKAMP WRECK		Unknown
PETRIE	Washerwoman Shoal	1888
PHILLIS	Florida Keys	1752
PHOENIX	Key Vaca	1857
PIGEON KEY WRECK	Narrow Channel, Northeast side of Pigeon Key	1906
PILGRIM	Dry Tortugas	1843
PILITA	Carysfort Reef	1851
PIZARRO	Carysfort Reef	1835

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
PLANTER		1921
PLATINA	Carysford Reef	1846
POACHER	South of Dry Tortugas	1840
POINT-A-PETRE	Carysfort Reef	1825
POINTE-A-PETRE	Florida Keys	1824
POLO(?)		1733
PRAIRIE BIRD	Key West Harbor	1875
PRAIRIE ROSE	Marquesas Keys	1876
PRINCE UMBERTO	Duck Key	1888
PRISCILLA L. RAY	Key West	1920
PROVIDENCE	Florida Keys	1805
PULASKI	On the Tortugas (possible that Pulaski Shoal was named after this vessel)	1832
PULASKI LIGHT WRECK	Dry Tortugas	Unknown
QUEBEC	Florida Keys	1818
QUEEN ANNE	Florida Keys	1752
QUOQUE	Carysfort Reef	1920
R-12	Off Key West	1943
R. B. GOVE	Dry Tortugas	1882
R. BOWERS	Southwest Reef, Dry Tortugas	1895
R. E. LEE	On a shoal (presumed to be in Lower Florida Keys)	1877
RACE	At Knights Key	1906
RAILROAD SITE	Nikes Channel	Unknown
RAINBOW	Thomas Harbor Key	1855
RANDOLPH GRONING	N'Th Key, Dry Tortugas	1847
RASK	Quicksands	1886
RATTLER	Carysfort Reef, Key Largo, Monroe County	1805
REBECCA	Dry Tortugas	1843
REBECCA BARTON	Key West	1866
REBECCA SHOAL IRON WRECKAGE	Dry Tortugas	Unknown
REFUSE SITE	Spanish Harbor Bridge	1906
RESTLESS	Lower Florida Keys	1872
REVENGE	Key West	1825
RHEE GALLEY	Florida Keys	1774
RHODE ISLAND	Florida Keys	1752
RIBS BARE WRECK		Unknown
RINGGOLD	Northwest Channel, Key West	1865
RIVER SMITH	Carysfort Reef	1858
RIVERSIDE	Quicksands, East by Northeast of Rebecca Shoal Light	1896
ROBERT	Key West	1918
ROBERT MORRIS	Pelican Shoal	1853
ROBIN HOOD		1924
ROSALINA	Pickles Reef	1837
ROSE MURPHY	Sand Key Light	1927
ROSE MURPHY	Sand Key Light	1927
ROSEMARY	Key West	1930
RUDOLPH GRONING	Dry Tortugas	1842
RUDOLPH GRONING	Southwest Reef, Tortugas	1843
RUGGED	50 Miles Southeast of Miami	1943
RUM RUNNER WRECK	Vicinity of Rodriguez Key	Unknown
S-16	14 Miles South Southwest of Key West	1944
S. O. CO. NO. 90	Dry Tortugas	1906
S.R. MALLORY	Key West	1909
S.S. GEORGE CROMWELL	Lower Florida Keys	1872
S.S. LEE	Off the Tortugas	1874
SADINO	Pulaski Shoal on the Southwest Reef, Tortugas	1888
SAMUEL H. CRAWFORD	Near Pickles Reef	1877
SAMUEL LAWRENCE	Grecian Shoal	1860
SAN ANTON	Florida Keys	1521
SAN ANTONIO	On reef near Key West	1768
SAN FELIPE		1733
SAN FERNANDO	Coffin Patch	1733



**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
SPARKLING WATER	Northwest of Tortugas	1875
SPEEDWELL	Carysfort Reef off Key Largo	1796
SPEEDWELL	Off the Marquesas, 18 miles from Key West	1899
SPINDRIFT		1944
SPLENDID	Florida Reef	1831
SPLENDID	Marquesas Key	1832
ST. JAMES	Conch Key	1871
ST. MARK	Carysfort Reef	1846
ST. MARY'S	Sambo	1847
STAR	Either Conch Key or Conch Reef	1870
STEEL WRECK	Dry Tortugas	Unknown
STERLING	On Conch Reef	1854
STILLMAN F. KELLEY	Salt Key Bank	1909
STRANGER	Western Dry Rocks	1836
STURTEVANT		1945
SUBMERGED WRECK		1944
SUECO DE ARIZON, N.S. DEL ROSARIO, S.ANTONIO ETC.	Off Duck Key	1733
SULTANA	Rogers River (probably the Rogers River North of Cape Sable)	1910
SUNSHINE	Near Cross Key (connecting Florida Keys with Mainland)	1949
SWEETHEART	Long Key	1904
SWEETHEART	Off Long Key	1904
SWIFT	Off Key Largo	1824
SWIVEL GUN SITE	Dry Tortugas	Unknown
SYLPH	Sambo	1904
SYLPHIDE	Dry Tortugas	1850
TAGLIONI	Carysfort Light Ship	1848
TALLAHASSEE	Dry Tortugas	1836
TARTAR	East Key Reef, Dry Tortugas	1855
TENNESSEE	Long Key	1832
TEVONIA	Carysfort Reef	1845
THENDARA	Key West	1926
THEODORE	Florida Keys	1824
THEOPHILUS	Alligator Reef	1836
THIROVA	Turtle Reef	Unknown
THOMAS CLOONEY	Bay Point, in Sugarloaf Sound	1927
THOMAS P. BARKLOW	Florida Bay	1874
THOMAS R. PILLSBURY	Off the Tortugas	1878
THREE SISTERS	Carysfort Reef	1816
TIGER	Eastern Sandbornes	1860
TILAMON	Delta Shoals	1852
TOISON	Key West	1831
TOLOMEO	Dry Tortugas	1881
TOMAS DE RESA	Turtle Reef	1871
TONAWANDA	Elbow, Grecian Shoals	1866
TRES PUENTES, N.S. DE BELEM Y S. JUAN BAUTISTA		1733
TRITON	Off Snake Creek, Tavernier in the Florida Keys	
TRITON	Key West Harbor	1909
TRUE BRITON	Rebecca Shoal at the Quicksands	1889
TRUE BRITON	Rebecca Shoals	1889
U-157	Off Key West	1942
UNITED STATES	Quicksands	1835
UNITY	Carysfort Reef off Key Largo	1817
UNKNOWN	13 miles South of Sand Key	
UNKNOWN	Boca Chica Key area	
UNKNOWN	Key West area	
UNKNOWN	Key West area	
UNKNOWN		Unknown
UNKNOWN		Unknown
UNKNOWN	Bahia Honda	Unknown
UNKNOWN	Delta Shoal	Unknown
UNKNOWN	Looe Key (Loose Key?)	Unknown

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
UNKNOWN	Marathon end of 7 Mile Bridge	Unknown
UNKNOWN	Molasses Reef area	Unknown
UNKNOWN	Near Elbow Reef Tower	Unknown
UNKNOWN	Bamboo Banks, off Northwest End of Grassy Key on Gulf Side	Unknown
UNKNOWN	North end of Carysfort Reef	Unknown
UNKNOWN	Turtle Reef	Unknown
UNKNOWN	Key Largo area	1530
UNKNOWN	Off Plantation Key	1533
UNKNOWN	Off Upper Matecumbe Key	1550
UNKNOWN	Off Vaca Key	1550
UNKNOWN	Los Cayos De Los Martires (Key Largo Area)	1551
UNKNOWN	Off Saddlebunch Keys	1554
UNKNOWN	Florida Keys	1577
UNKNOWN	Wrecked at head of Los Martires (Elliot Key Or Key Largo?)	1579
UNKNOWN	Caught in hurricane and many ships wrecked in Florida Keys	1589
UNKNOWN	Florida Keys, Monroe County	1590
UNKNOWN	Alligator Reef	1595
UNKNOWN	Off Alligator Reef	1595
UNKNOWN	Florida Keys	1619
UNKNOWN	Florida Keys	1619
UNKNOWN	Keys, Monroe County	1619
UNKNOWN	Dry Tortugas	1621
UNKNOWN	Matacumbe Key	1622
UNKNOWN	Off Marquesas Keys	1623
UNKNOWN	Off Upper Matecumbe Key	1623
UNKNOWN	Florida Keys	1630
UNKNOWN	Keys of Matecumbe	1634
UNKNOWN	Bamboo Banks, Florida Keys, Monroe County	1644
UNKNOWN	Coral Reef at Dry Tortugas	1649
UNKNOWN	3 miles off Crawl Key	1656
UNKNOWN	Key West	1677
UNKNOWN	Key West	1677
UNKNOWN	Key West	1677
UNKNOWN	Florida Keys	1688
UNKNOWN	Florida Keys	1740
UNKNOWN	Florida Keys	1752
UNKNOWN	Florida Keys	1752
UNKNOWN	Florida Keys	1752
UNKNOWN	Reefs off Key Largo	1767
UNKNOWN	Florida Keys	1768
UNKNOWN	Florida Keys	1768
UNKNOWN	Florida Keys	1768
UNKNOWN	Florida Keys	1769
UNKNOWN	Florida Keys	1770
UNKNOWN	Florida Keys	1770
UNKNOWN	Florida Keys	1771
UNKNOWN	Matacumbe Key	1775
UNKNOWN	Florida Keys	1781
UNKNOWN	Florida Keys	1785
UNKNOWN	Off Pidgeon Key	1788
UNKNOWN	Florida Reef	1790
UNKNOWN	Florida Reef	1790
UNKNOWN	Carysfort Reef	1792
UNKNOWN	Carysfort Reef	1792
UNKNOWN	Carysfort Reef	1792
UNKNOWN	Florida Keys	1792
UNKNOWN	Florida Keys	1792
UNKNOWN	One hour from Key Largo	1799
UNKNOWN	Carysfort Reef	1815

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
UNKNOWN	Carysfort Reef	1815
UNKNOWN	Carysfort Reef	1815
UNKNOWN	Carysfort Reef	1815
UNKNOWN	Carysfort Reef	1817
UNKNOWN	Carysfort Reef	1817
UNKNOWN	Carysfort Reef	1818
UNKNOWN	Carysfort Reef	1818
UNKNOWN	Carysfort Reef	1818
UNKNOWN	Carysfort Reef	1819
UNKNOWN	Carysfort Reef	1819
UNKNOWN	Carysfort Reef	1819
UNKNOWN	Florida Keys	1819
UNKNOWN	Carysfort Reef	1821
UNKNOWN	Carysfort Reef	1821
UNKNOWN	Carysfort Reef	1822
UNKNOWN	Carysfort Reef	1822
UNKNOWN	Eastern Florida Keys	1822
UNKNOWN	Florida Keys	1822
UNKNOWN	Florida Keys	1822
UNKNOWN	Ledbury Reef	1822
UNKNOWN	Carysfort Reef	1824
UNKNOWN	Carysfort Reef	1824
UNKNOWN	Carysfort Reef	1824
UNKNOWN	Florida Keys	1824
UNKNOWN	Florida Keys	1824
UNKNOWN	Southwest end of Carysfort Reef	1824
UNKNOWN	Carysfort Reef	1829
UNKNOWN	Looe Key	1830
UNKNOWN	Dry Tortugas	1840
UNKNOWN	Key West	1841
UNKNOWN	Key West	1841
UNKNOWN	Key West area	1841
UNKNOWN	Key West	1842
UNKNOWN	Key West	1844
UNKNOWN	Key West	1844
UNKNOWN	Key West	1846
UNKNOWN	20 miles West of Carysfort Reef	1853
UNKNOWN	On Carysfort Reef	1854
UNKNOWN		1855
UNKNOWN	At Sand Key	1857
UNKNOWN	At Stirrup Key	1857
UNKNOWN	Key West	1866
UNKNOWN	Key West	1866
UNKNOWN	Key West	1870
UNKNOWN	Key West	1870
UNKNOWN	Key West	1872
UNKNOWN	Key West	1872
UNKNOWN	Key West	1875
UNKNOWN	Key West	1875
UNKNOWN	Channel near Western Dry Rocks at entrance to Key West Harbor	1876
UNKNOWN	Key West	1881
UNKNOWN	Jetty at Northwest entrance to Key West	1896
UNKNOWN	Key West	1897
UNKNOWN	Key West	1897
UNKNOWN	By Northwest Passage Lighthouse	1903
UNKNOWN	Marathon end of 7 Mile Bridge	1906
UNKNOWN	Spanish Harbor Bridge	1906
UNKNOWN	Key West	1909
UNKNOWN	Key West	1909
UNKNOWN	Key West	1909
UNKNOWN	Boca Chica	1910
UNKNOWN	Tennessee Reef	1913

**Appendix I. Historically Recorded and Documented Submerged Cultural Resources**

<b>NAME</b>	<b>GENERAL LOCATION</b>	<b>YEAR LOST</b>
UNKNOWN		1919
UNKNOWN	Delta Shoal	1919
UNKNOWN	Florida Keys	1919
UNKNOWN	Key West	1921
UNKNOWN	South of Boca Chica	1921
UNKNOWN	Key West	1926
UNKNOWN	Key West	1928
UNKNOWN	South of Sambo Key	1942
UNKNOWN		1948
UNKNOWN	Several miles West of the Tortugas	1948
UNKNOWN		1949
UNKNOWN WRECK		Unknown
UNKNOWN WRECK	Craig Key	Unknown
UNKNOWN WRECKS	Near Sand Key	
USS ALLIGATOR	Southeast of the Light on Ocean Side of Alligator Reef	1822
USS ALLIGATOR	Reef in Keys named after it, Alligator Reef	1822
USS EAGLE BOAT		1948
USS RESTLESS	Off Cape Sable	1864
USS STURTEVANT	Less than 12 miles from Key West	1942
VACA CAY BALLAST MOUND	Vacas Key	Unknown
VENGERN	Pickles Reef	1877
VIDETTE	90 miles Southeast of Sand Island Light	1887
VIGILANT	Key West	1828
VILLANEUVA	Probably in Lower Florida Keys	1846
VINEYARD	Off Long Key on East side of the Bank	1830
VIRGINIA	Boca Chica	1910
VISITACION	Key Largo	1550
VITRIC		1944
VOLUNTEER	Sand Key	1905
W. EMPIRE	Tortugas	1855
W. J. COLLE	Key West	1930
WALKER KEY WRECK	Conch Reef	Unknown
WALTER D. WALLETH	Off Loggerhead Light bearing East by Northeast	1895
WALTHAM	Matecumbe Key	1865
WANDERER	Florida Bay near Money Key	1909
WANDERING CHIEF	Elbow Reef	1894
WARSAW	Probably in Lower Florida Keys	1846
WATT	Florida Keys	1815
WELLINGTON	Dry Tortugas Shoals	1844
WEST TURTLE SHOAL WRECK	Coffins Patch area, on West Turtle Shoals	Unknown
WILLIAM CHESNUT	Presumed to be in Lower Keys area	1859
WILLIAM JARVIS	Marquesas Key	1860
WILLIAM M. JONES	Dry Tortugas at Pulaski Shoals	1875
WILLIAM M. JONES	Pulaski Shoal, 10 miles West-Southwest of Loggerhead Light, 5 miles South-Southwest of East Key, Tortugas	1877
WILLIAM R. WILSON	Pickles Reef	1908
WILLIAM R. WILSON	Pickles Reef	1912
WILLIAM S. FEARWELL	Miller Reef, on bank of the Tortugas.	1882
WILLIAM T. DUGAN	Sand Key	1857
WILLIAM TELL	Bird Key near the Tortugas Light	1831
WRECK #12	Delta Shoals	Unknown
Y. P. 331		1944
YC 891	Off Key West	1943
YC 898 & 899	Off Key West	1942
YCK 8	Off Key West	1943
YOLE	Looe Key	1876
YORK	Carysfort Reef	1846
YUCATAN	French Reef	1847
ZODIAC	Elbow Cay (Reef)	1875
ZOTOFF	Dry Tortugas, Southwest Reef	1844

Note: Data from the State of Florida's Archaeological Site Files, Monroe County database. The database includes both historically-recorded and known archaeological sites. Some archaeological sites do not yet have historical names or dates assigned.

## Proposed FKNMS Designation Document

### Proposed Designation Document for the Florida Keys National Marine Sanctuary

On November 16, 1990, the Florida Keys National Marine Sanctuary and Protection Act, P.L. 101-605, set out as a note to 16 U.S.C. 1433, became law. The Florida Keys National Marine Sanctuary and Protection Act designated an area of waters and submerged lands, including the living and nonliving resources within those waters, as described in 16 U.S.C. 1433 note, the Florida Keys National Marine Sanctuary.

While this statutory designation obviated the need for a document to "designate" the area and characteristics of the Sanctuary, a designation document is still needed to identify what types of activities may be subject to the regular Federal rulemaking process in the future, as opposed to the more extensive and costly Sanctuary designation process. In that sense, the designation document acts like a character i focusing future Sanctuary regulations, as well as putting limits on what regulations can be proposed, without going through the entire designation process again.

#### Article I. Effect of Designation

The Sanctuary is already statutorily designated. There are no proposed modifications to the area. The effect of this designation document is primarily limited to identifying the types of activities (scope of regulations) which may be implemented through Federal rulemaking procedures at some time in the future, if necessary.

Nothing in this designation document is intended to restrict activities that do not cause an adverse effect to the resources or property of the Sanctuary or that do not pose harm to users of the Sanctuary.

Title III of the Marine Protection, Research, and Sanctuaries Act of 1972 as amended (the "Act" or "MPRSA"), 16 U.S.C. 1431 et seq. authorizes the issuance of such final regulations as are necessary and reasonable to implement the designation, including managing and protecting the conversation, recreational, ecological, historical, research, educational and esthetic resources and qualities of he Florida Keys National Marine Sanctuary. Section 1 of Article IV of this Designation Document lists activities of the type that will be regulated initially, or may have to be regulated subsequently, in order to protect

Sanctuary resources and qualities. Listing does not necessarily mean that a type of activity will be regulated; however, if a type of activity is not listed it may not be regulated, except on an emergency basis, unless Section 1 of Article IV is amended to include the type of activity by the procedures outlined in section 304(a) of the MPRSA.

#### Article II. Description of the Area

The Florida Keys National Marine Sanctuary boundary encompasses approximately 2,800 square nautical miles (9,500 square kilometers) of coastal and oceanic waters, and the submerged lands thereunder, surrounding the Florida Keys in Florida. The Sanctuary boundary extends from the northeasternmost point of Biscayne National Park out to the Dry Tortugas, a linear distance of approximately 320 kilometers. The boundary on the Atlantic Ocean side of the Florida Keys runs south from Biscayne National Park following the 300-foot isobath, which curves in a southwesterly direction along the Florida Keys archipelago ending at the Dry Tortugas. The boundary on the Gulf of Mexico side of the Florida Keys runs in an easterly direction from the Dry Tortugas parralleling the Florida Keys, approximately five miles to the north, and then follows the Everglades National Park boundary until Division Point at which time the boundary follows the western shore of Manatee Bay, Barnes Sound, and Card Sound. The boundary then follows the southern boundary of Biscayne National Park and up its eastern boundary until its northeasternmost point.

The shoreward boundary of the Sanctuary is the mean high-water mark. The Sanctuary boundary encompasses all of the Florida coral reef tract, all of the mangrove islands of the Florida Keys, and some of the seagrass meadows of Florida Keys. The precise boundary of the Sanctuary is set forth at the end of this Designation Document. This area is the same as that area designated by Congress as a Sanctuary in P.L. 101-605.

#### Article III. Characteristics of the Area that Give it Particular Value

The Florida Keys extend approximately 220 miles southwest from the southern tip of the Florida peninsula. Adjacent to the Florida Keys land mass are located spectacular, unique, nationally significant marine environments, including seagrass meadows, mangrove islands, and extensive living coral reefs. These marine environments support rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical,

research, educational, and aesthetic values which give this area special national significance. These environments are the marine equivalent of tropical rain forests in that they support high levels of biological diversity, are fragile and easily susceptible to damage from human activities, and possess high value to human beings if properly conserved. These marine environments are subject to damage and loss of their ecological integrity from a variety of sources of disturbance.

The Florida Keys are a limestone island archipelago. The Keys are located at the southern edge of the Floridian Plateau, a large carbonate platform made of a depth of up to 7,000 meters of marine sediments, which have been accumulating for 150 million years and have been structurally modified by subsidence and sea level fluctuation. The Keys region is generally divided into five distinct areas: the Florida reef tract, one of the world's largest coral reef tracts and the only barrier reef in the United States; Florida Bay, described as an active lime-mud factory because of the high carbonate content of the silts and muds; the Southwest Continental Shelf; the Straits of Florida; and the Keys themselves.

The 2.4 million-acre Sanctuary contains one of North America's most diverse assemblages of terrestrial, estuarine, and marine fauna and flora, including, in addition to the Florida reef tract, thousands of patch reefs, one of the world's largest seagrass communities covering 1.4 million acres, mangrove fringed shorelines, mangrove islands, and various hardbottom habitats. These diverse habitats provide shelter and food for thousands of species of marine plants and animals, including over 50 species of animals identified by either Federal or State law as endangered or threatened. Federal, State, local, and private organizations currently protect, preserve and set regulations at 121 sites throughout the Keys, covering approximately 2.0 million acres.

The Keys were at one time a major seafaring center for European and American trade routes in the Caribbean, and submerged cultural and historic resources (i.e., shipwrecks) abound in the surrounding waters. In addition, the Sanctuary may contain substantial archaeological resources of pre-European cultures.

The uniqueness of the marine environment draws multitudes of visitors to the Keys. The major industry in the Florida Keys is tourism, including activities related to the Keys' marine resources, such as dive shops, charter fishing and dive boats and marinas, as

well as hotels and restaurants. The abundance of the resources also supports a large commercial fishing employment sector.

The number of visitors to the Keys grows each year, with a concomitant increase in the number of residents, homes, jobs, and businesses. As population grows and the Keys accommodate ever-increasing resource-use pressures, the quality and quantity of Sanctuary resources are increasingly threatened. These pressures require coordinated and comprehensive monitoring and research of the Florida Keys' region.

#### Article IV. Scope of Regulations

##### Section 1. Activities Subject to Regulation

The following activities are subject to regulation under the NMSA, either throughout the entire Sanctuary or within identified portions of the Sanctuary or in areas adjacent to the Sanctuary, to the extent necessary and reasonable. Such regulation may include prohibitions to ensure the protection and management of the conservation, recreational, ecological, historical, research, educational or aesthetic resources and qualities of the area. The following 16 activities subject to regulation are simply listed here in the Designation Document. Detailed definitions and explanations of the following "activities subject to regulation" are clearly defined in applicable and appropriate sections within the Sanctuary management plan: \_

1. Exploring for, developing, or producing oil, gas or minerals (e.g., clay, stone, sand, gravel, metalliferous ores and nonmetalliferous ores or any other solid material or other matter of commercial value) in the Sanctuary;
2. Touching, climbing on, taking, removing, moving, collecting, harvesting, injuring, destroying or causing the loss of, or attempting to take, remove, move, collect, harvest, injure, destroy or cause the loss of coral;
3. Drilling into, dredging or otherwise altering the seabed of the Sanctuary, except incidental to allowed fishing and boating practices or construction activities permitted by county, state, or federal regulatory agencies; or constructing, placing or abandoning any structure, material or other matter on the seabed of the Sanctuary, except as authorized by appropriate permits (i.e., artificial reefs), and allowed fishing activities;

4. Discharging or depositing, from within or from beyond the boundary of the Sanctuary, any material that subsequently enters the Sanctuary and injures a Sanctuary resource or quality;
5. Operation of watercraft:
  - a) So as to injure coral, hardbottoms, seagrass, mangroves, or any other immobile organism attached to the seabed,
  - b) Carelessly in the vicinity of drivers, fishermen, and boaters,
  - c) so as to disturb marine mammals, marine reptiles, or bird rookeries.
6. Diving or boating activities that pose a threat to harm Sanctuary resources and other users of the Sanctuary
7. Artificial stocking or release of native or exotic species;
8. Tampering with markers by defacing, marking, or damaging in any way or displacing, removing, or tampering with signs, notices, or placards, or with any navigational aides, monuments, stakes, posts, mooring buoys, boundary buoys, trap buoys, or scientific equipment;
9. Removal, injury, preservation, curation, and management of historic resources without the appropriate state and /or federal permits;
10. Taking, removing, moving, catching, collecting, harvesting, feeding, injuring, destroying, or causing the loss of, or attempting to take, remove, move, catch, collect, harvest, feed, injure, destroy or cause the loss of a marine mammal, marine reptile, or bird, without the appropriate state and /or federal permits;
11. Possessing or using explosives or releasing electrical charges or substances poisonous or toxic to fish and other living resources within the Sanctuary boundary or adjacent to the Sanctuary boundary (possession of ammunition is not to be construed as explosives);
12. Interfering with, obstructing, delaying or preventing an investigation, search, seizure or disposition of seized property in connection with enforcement of the Act or any regulation or permit issued under the Act.
13. Implementation of a marine zoning plan that prohibits the taking or removing Sanctuary resources from areas within the Sanctuary that so designated, except as permitted i.e no harvest and research-only zones;
14. Removal and disposal of illegal lost or out-of-season gear discovered within the Sanctuary boundary; removal of vessels grounded, lodged stuck or otherwise perched on coral reefs, hardbottoms, or seagrasses; and removal from any location within the Sanctuary and disposal of derelict or abandoned vessels or other vessels for which ownership cannot be determined or for which owner takes no action for removal or disposal; and salvaging and towing of abandoned or disabled vessels or of vessels otherwise needing salvaging or towing;
15. Harvest of marinelife as defined and regulated by the State of Florida marinelife rule (cite rule# currently found at \_\_\_\_);
16. Development or conduct of mariculture activities Sanctuary waters.

Section 2. Emergencies

Where necessary to prevent or minimize the destruction of, loss of, or injury to a Sanctuary resource or quality; or minimize the imminent risk of such destruction, loss or injury, any activity; including any not listed in Section 1 of this Article, is subject to immediate temporary regulation, including prohibition, in accordance with the Administrative Procedure Act.

Article V. Effect on Leases, Permits, Licenses, and Rights

If any valid regulation issued by any Federal, State or local authority of competent jurisdiction, regardless of when issued, conflicts with a Sanctuary regulation, the regulation deemed by the Director, Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, or his or her designee to be more protective of Sanctuary resources and qualities shall govern.

Pursuant to section 304(c) (1) of the Act, 16 U.S.C. § 1434(c) (1), no valid lease, permit, license, approval or other authorization issued by any Federal, State, or local authority of competent jurisdiction, or any

## Appendix K. Proposed FKNMS Designation Document

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right of subsistence use or access, may be terminated by the Secretary of Commerce, or his or her designee, as a result of this designation, or as a result of any Sanctuary regulation, if such authorization or right was in existence on the effective date of Sanctuary designation (November 16, 1990). However, the Secretary of Commerce or designee may regulate the exercise (including, but not limited to, the imposition of terms and conditions) of such authorization or right consistent with the purposes for which the Sanctuary is designated.

In no event may the Secretary or designee issue a permit authorizing, or otherwise approving: 1) the exploration for, development of, or production of industrial materials within the Sanctuary; or 2) the disposal of dredged material within the Sanctuary (except by a certification, pursuant to Section 940.10, of valid authorizations in existence on the effective date of Sanctuary designation). Any purported authorizations issued by other authorities after the effective date of Sanctuary designation for any of these activities within the Sanctuary shall be invalid.

### Article VI. Alteration of this Designation

The terms of designation, as defined under Section 304(a) of the Act, may be modified only by the procedures outlined in section 304(a) of the MPRSA, including public hearings, consultation with interested Federal, State, and local agencies, review by the appropriate Congressional committees, and the Governor of the State of Florida, and approval by the Secretary of Commerce or designee.

### Florida Keys National Marine Sanctuary Boundary Coordinates (based on North American datum of 1983.)

The boundary of the Florida Keys National Marine Sanctuary—

(a) begins at the northeasternmost point of Biscayne National Park located at approximately 25 degrees 39 minutes north latitude, 80 degrees 5 minutes west longitude, then runs eastward to the 300-foot isobath located at approximately 25 degrees 39 minutes north latitude, 80 degrees 4 minutes west longitude;

(b) then runs southward and connects in succession the points at the following coordinates:

(i) 25 degrees 34 minutes north latitude, 80 degrees 4 minutes west longitude,

(ii) 25 degrees 28 minutes north latitude, 80 degrees 5 minutes west longitude, and

(iii) 25 degrees 21 minutes north latitude, 80 degrees 7 minutes west longitude;

(iv) 25 degrees 16 minutes north latitude, 80 degrees 8 minutes west longitude;

(c) then runs southwesterly approximating the 300-foot isobath and connects in succession the points at the following coordinates:

(i) 25 degrees 7 minutes north latitude, 80 degrees 13 minutes west longitude,

(ii) 24 degrees 57 minutes north latitude, 80 degrees 21 minutes west longitude,

(iii) 24 degrees 39 minutes north latitude, 80 degrees 52 minutes west longitude,

(iv) 24 degrees 30 minutes north latitude, 81 degrees 23 minutes west longitude,

(v) 24 degrees 25 minutes north latitude, 81 degrees 50 minutes west longitude,

(vi) 24 degrees 22 minutes north latitude, 82 degrees 48 minutes west longitude,

(vii) 24 degrees 37 minutes north latitude, 83 degrees 6 minutes west longitude,

(viii) 24 degrees 40 minutes north latitude, 83 degrees 6 minutes west longitude,

(ix) 24 degrees 46 minutes north latitude, 82 degrees 54 minutes west longitude,

(x) 24 degrees 44 minutes north latitude, 81 degrees 55 minutes west longitude,

(xi) 24 degrees 51 minutes north latitude, 81 degrees 26 minutes west longitude, and

(xii) 24 degrees 55 minutes north latitude, 80 degrees 56 minutes west longitude;

(d) then follows the boundary of Everglades National Park in a southerly then northeasterly direction through Florida Bay, Buttonwood Sound, Tarpon Basin, and Blackwater Sound;

(e) after Division Point, then departs from the boundary of Everglades National Park and follows the western shoreline of Manatee Bay, Barnes Sound, and Card Sound;

(f) then follows the southern boundary of Biscayne National Park to the southeasternmost point of Biscayne National Park; and

(g) then follows the eastern boundary of Biscayne National Park to the beginning point specified in paragraph (a).

Appendix L is not available electronically. For a paper copy of Appendix L, please contact:

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