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GUANA RIVER MARSH

AQUATIC PRESERVE MANAGEMENT PLAN

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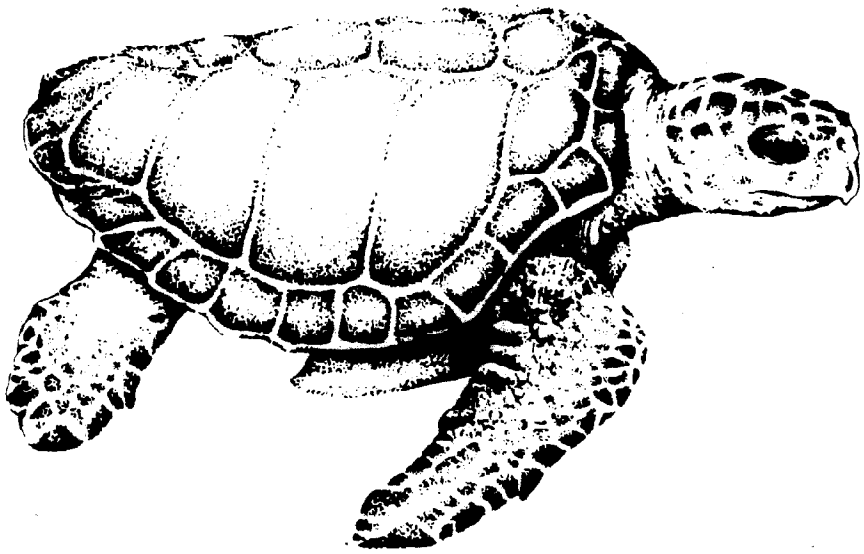

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DEPARTMENT OF NATURAL RESOURCES

GUANA RIVER MARSH

AQUATIC PRESERVE MANAGEMENT PLAN

ADOPTED

DECEMBER 17, 1991

VIRGINIA WETHERELL

Executive Director

Florida Department of Natural Resources

This plan was prepared by

the Bureau of Submerged Lands and Preserves
Division of State Lands

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EXECUTIVE SUMMARY

The Guana River Marsh Aquatic Preserve is comprised of an extensive northeast Florida barrier ecosystem representing a complete cross-section of a relatively undisturbed barrier island (beach and dunes), sea island (upland peninsula), and associated wetlands and open waters. The preserve has a rich association of habitats including vast estuarine systems, a 2,364 acre man-made freshwater/brackish water impoundment, freshwater marshes and ponds, sandy beaches, natural dune systems, and open ocean. The submerged lands of the estuaries are a mosaic of salt marsh, tidal flats, oyster bars, and tidal creeks. This diversity of community types provides food and habitat for a variety of resident and migratory fish and wildlife, many of which are threatened or endangered.

The preserve encompasses approximately 40,000 acres, including 11,500 acres within the state-owned Guana River tract. The property was purchased by the state in 1984 with Conservation and Recreation (C.A.R.L.) and Save Our Coast (S.O.C.) funds because of its unique character. Within its boundaries can be found uncommon upland habitats such as extensive areas of undisturbed Atlantic coastal strand (scrub) vegetation, extraordinary beaches with high dunes stabilized with natural coastal vegetation, and extensive maritime hammock.

Encroaching developments and the resulting water quality degradation from stormwater runoff and other non-point sources into the Guana and Tolomato rivers are the current major threats to this preserve. As growth extends southward from the Jacksonville area and development increases on the adjacent uplands to the west and south, impacts on the preserve will significantly increase.

Submerged lands are selected as aquatic preserves based upon their outstanding biological, aesthetic, and/or scientific values. The Guana River system was designated an aquatic preserve in 1985 for the primary purpose of preserving the biological resources in the area and maintaining these resources in their essentially natural condition.

The main objective of the resource management program for the Guana River Marsh Aquatic Preserve is the protect the preserve's natural resources for the benefit of future generations. The management of the preserve will be directed toward the maintenance essentially natural or existing conditions. On-site management activities include actions by field personnel to protect plant communities, animal life, geological features, archeological sites, and water resources of the preserve. Management activities will also focus on cumulative impacts and encroachments.

The Guana River Marsh Aquatic Preserve has been divided into several management areas. The classification of each management area is based upon the resource value of submerged lands associated with existing and future land uses on the adjacent uplands. The intent of these management areas is to make potential development activities and uses of the preserve compatible with resource protection goals. The major uses of the preserve are recreational and commercial fishing and shellfish harvesting, boating, swimming, surfing, commercial navigation, adjacent land uses and their attendant facilities (e.g., docks, boat ramps, etc.). Maintaining the continued health of the preserve involves minimizing adverse impacts from all uses within and adjacent to the preserve on the system.

This management plan outlines the relationship between the Department of Natural Resources' central office and field staff. Criteria for the review of specific development proposals within the preserves's boundaries are also provided. Public, private, and commercial uses that are allowable pursuant to statutory direction and other applicable authorities of the aquatic preserve are discussed. These uses are subject to the approval of the Board of Trustees or their designee. Approval is normally predicated upon demonstration that the proposed use is environmentally sound, and in the opinion of the Board, necessary for the public.

Various federal, state, regional, and local organizations oversee laws and regulations which apply to all of the lands and waters within the aquatic preserve; therefore, the aquatic preserve management program's objective is to compliment agency programs whenever it is in the preserves interest. Both field personnel and central office staff will coordinate extensively with many agencies to assure effective management and protection.

To enhance management and protection of the aquatic preserve, research and education programs will also be developed. These programs will operate in close coordination with similar programs established in the area. Research and education needs for the aquatic preserve are defined.

The management of the preserve and protection of the resources included within its boundaries will be enhanced by continually identifying and resolving specific program needs. Meeting these needs, which may include legislative support, administrative rule changes, resource protection capabilities, and funding and staffing needs, will relieve some stress on the resources or personnel involved in management of the preserve. In the future, the field staff will develop and submit a status report that summarizes the program's needs and suggests measures to be taken to resolve these needs.

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Copies of the legal description of the Guana River Marsh Aquatic Preserve, as well as copies of Chapters 253 and 258, F.S., and Chapter 18-21, F.A.C., may be obtained from:

Bureau of Submerged Lands and Preserves
Department of Natural Resources
3900 Commonwealth Blvd.
Mail Station 125
Tallahassee, FL 32399-3000

CHAPTER I

INTRODUCTION

The Guana River Marsh Aquatic Preserve is located on the east coast of Florida in St. Johns County, between Jacksonville and St. Augustine. It was designated an aquatic preserve by the Florida Legislature in 1985 and represents one of 42 such preserves in Florida (Figure 1). The aquatic preserve covers approximately 40,000 acres, including 11,500 acres within the state-owned Guana River tract, and 25,000 acres of open Atlantic Ocean. The boundaries of the preserve include all tidal lands and islands, inland ponds, sandbars, shallow banks, submerged bottom, lands waterward of mean high water (MHW), and other lands to which the state holds title (Figure 2).

The preserve has a rich association of habitats including estuarine systems along the Tolomato and Guana Rivers; a large (2,364 acre) man-made freshwater/brackish water impoundment; and open ocean. Numerous freshwater ponds and extensive salt marshes are located within the boundaries of the preserve. This diversity provides habitat for a wide variety of resident and migratory wildlife. Bird rookeries, including a sizable breeding population of the endangered wood stork, are found within the preserve. The area also contains 13 miles of high-energy beach fronting the Atlantic Ocean, which provides breeding and nesting habitat for ground-nesting shorebirds such as the threatened least tern. The beach also provides nesting areas for threatened and endangered sea turtles.

Besides possessing the numerous aquatic resources mentioned above, the preserve contains several rare upland habitats within the Guana River tract. The 11,500 acre property was purchased by the state of Florida in 1984 with Conservation and Recreation Lands (C.A.R.L.) and Save Our Coast (S.O.C.) funds because of its unique character. The Guana property represents a complete cross-section of a relatively undisturbed barrier island (beach and dunes) and sea island (upland peninsula). Within its boundaries can be found an unusually extensive natural area of undisturbed Atlantic coastal strand (scrub) vegetation, excellent ocean-front beach with high dunes stabilized with native coastal vegetation, and extensive maritime hammock containing an unusual natural association of mature trees.

The preserve also contains archeological and historic resources such as numerous aboriginal middens, aboriginal burial grounds, and artifacts of aboriginal, Spanish colonial and British origin.

This combination of natural and cultural resources provides an outstanding example of an essentially natural northeast Florida barrier ecosystem found nowhere else in the region. Purchase of these lands was deemed necessary because of their

environmental sensitivity and to protect several species of endangered and threatened plants and animals.

Encroaching developments and the resulting water quality degradation from stormwater runoff and other non-point sources into the Guana River are the current major threats to this preserve. As growth extends southward from the Jacksonville area and development increases on the adjacent uplands to the west and south, impacts on this preserve will significantly increase.

The process of developing this management plan involved collecting an inventory of resource information, coordinating with other plans that have been developed for the area, and identifying resource problems and management issues relating to the present and future uses of the preserve and adjacent uplands. Supporting management initiatives were developed to be consistent with statutory authority and the overall intent of the Aquatic Preserve Program for helping ensure that the submerged land resources of the preserve remain for future generations to enjoy.

Fourteen management plans, covering 21 of the 42 designated aquatic preserves in the state, have been adopted by reference into the existing aquatic preserves rule (Chapter 18-20, Florida Administrative Code). This management plan will be subsequently incorporated into rule following its approval by the Board of Trustees of the Internal Improvement Trust Fund.

Specifically, this plan is divided into ten chapters according to their management application:

Chapter II cites the statutory authorities upon which this resource management program and plan are built.

Chapter III provides a description of the Guana River Marsh Aquatic Preserve and details the physical and biological components of the preserve as well as any cultural resources.

Chapter IV provides information on the current and future uses of this preserve and use of the adjacent uplands.

Chapter V delineates various management areas within the preserve. These areas are defined by taking into account the biological resources, the physical parameters, and the aesthetic values, in conjunction with the use of the adjacent uplands.

Chapter VI discusses specific needs and issues particular to the Guana River Marsh Aquatic Preserve. Management initiatives have been developed in addressing each need and/or issue.

Chapter VII outlines site-specific goals, objectives, and tasks required to meet the management needs of the preserve for resource management, resource protection, research, and environmental education.

Chapter VIII identifies local, regional, state, and federal agencies, their authorities and programs, and how they relate and assist in protection and management of this preserve. It also identifies non-governmental organizations, interest groups, and individuals that can assist in management.

Chapter IX projects future staffing and fiscal needs necessary for providing effective management and protection of the preserve, as well as supporting research and environmental education.

Chapter X outlines a monitoring program for recording and reporting resource changes, and establishes a tracking system for detailing the progress and accomplishments in resource management.

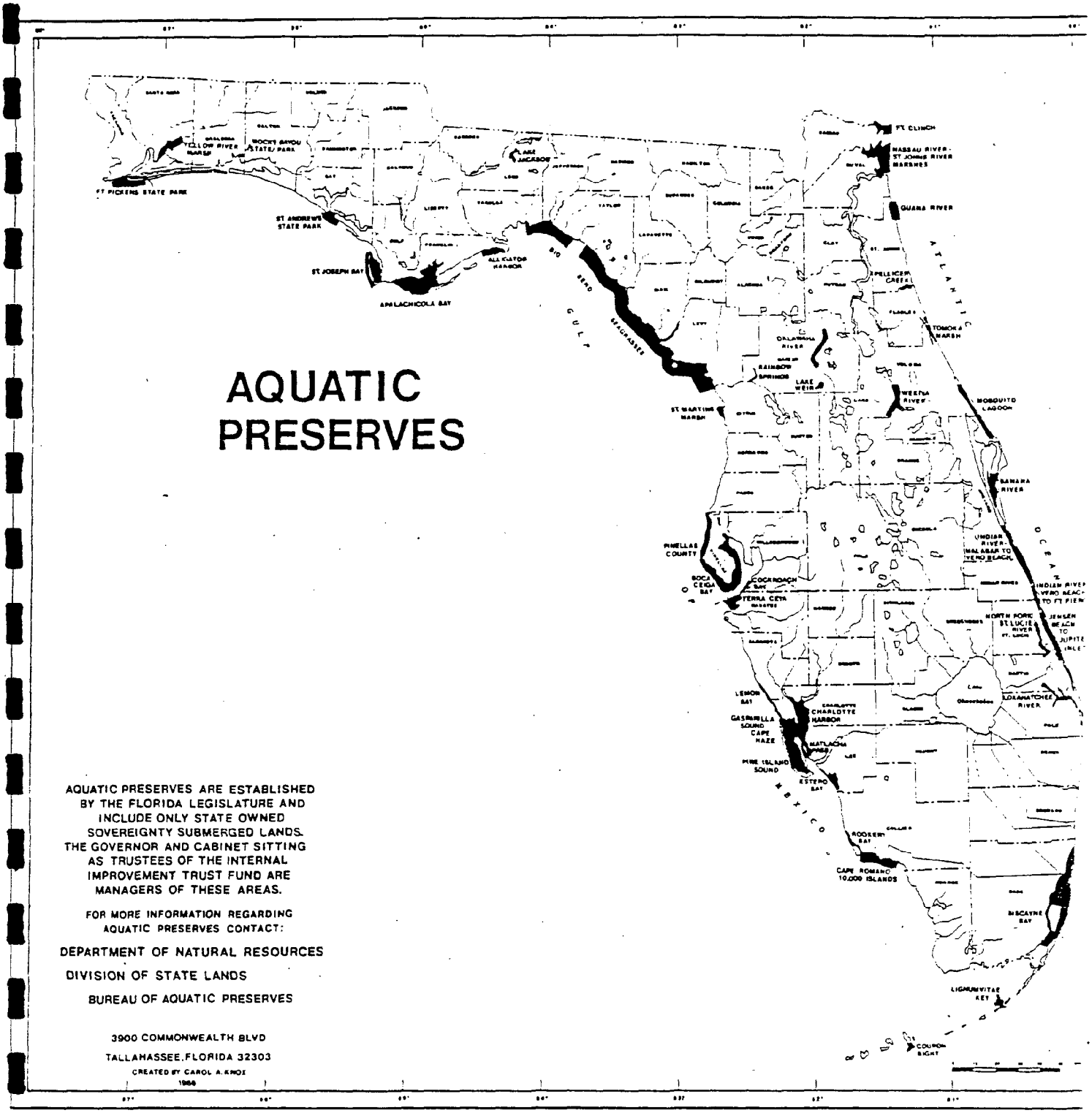
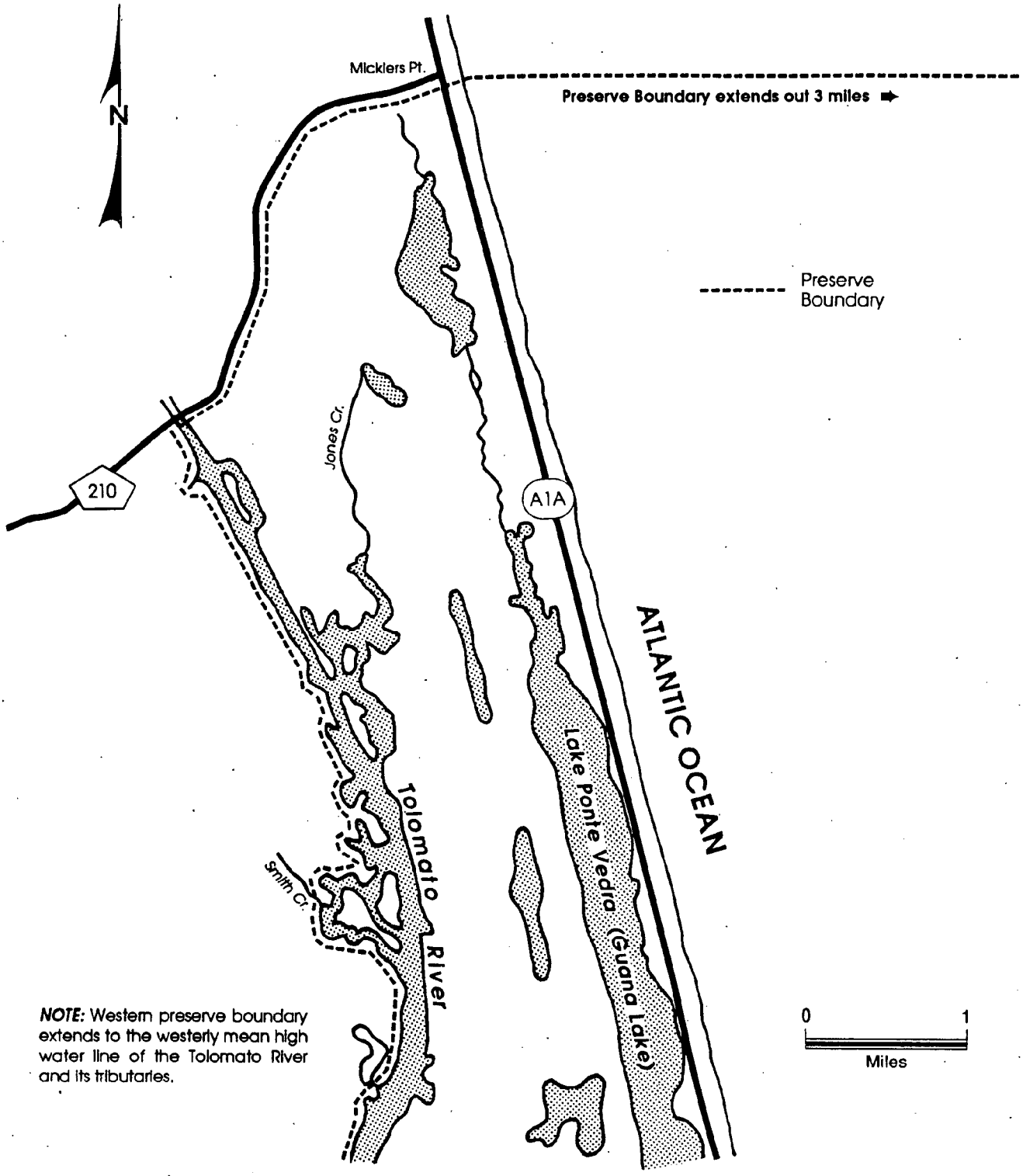


FIGURE 1. **Florida Aquatic Preserves**

FIGURE 2. **Guana River Marsh Aquatic Preserve**



NOTE: Western preserve boundary extends to the westerly mean high water line of the Tolomato River and its tributaries.

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$ 10 651 0 Guana River (Fla.) %
$ 11 651 0 Tolomato River (Fla.) %
$ 12 650 0 Marshes 'z Florida. %
$ 13 650 0 Aquatic resources 'z Florida 'z Guana River. %
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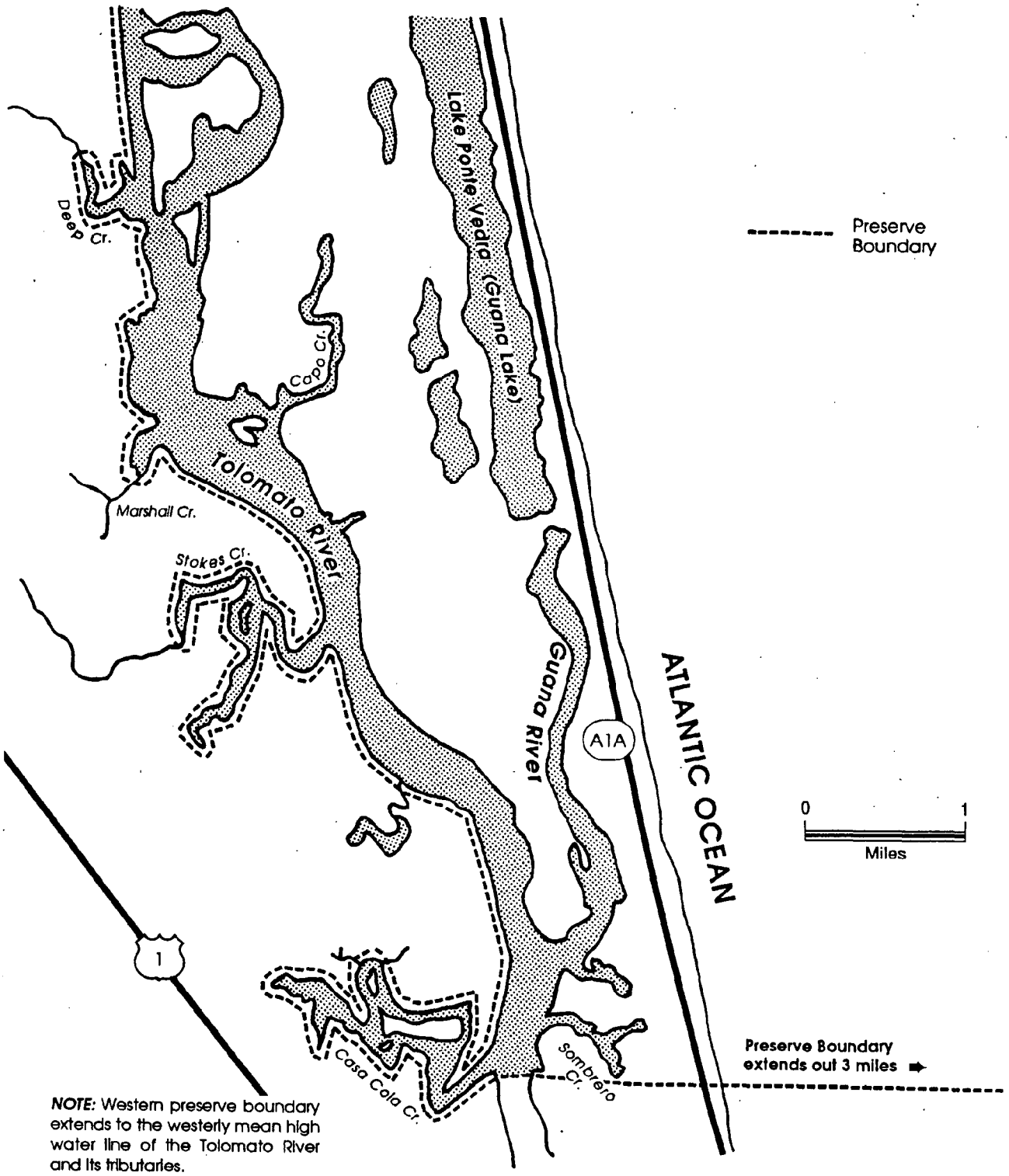
FIGURE 2. **Guana River Marsh Aquatic Preserve**



CHAPTER II

MANAGEMENT AUTHORITY

A. STATUTORY AUTHORITY

The fundamental laws of the State of Florida providing management authority for the Guana River Marsh Aquatic Preserve are contained in Chapters 258 and 253, Florida Statutes (F.S.). These statutes establish the proprietary role of the Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund, as Trustees over all sovereignty submerged lands. In addition, these statutes empower the Trustees to adopt and enforce rules and regulations for managing all sovereignty submerged lands, including aquatic preserves.

In particular, Sections 258.35-258.46, F.S., enacted in 1975 by the Florida Legislature, represent the **Florida Aquatic Preserve Act**. These statutes set forth a standardized set of management criteria for all designated aquatic preserves, and represent the primary laws governing use of sovereignty submerged lands within aquatic preserves.

The Legislative intent for establishing aquatic preserves is stated in Section 258.36, F.S.: **"It is the intent of the Legislature that the state-owned submerged lands in areas which have exceptional biological, aesthetic, and scientific value, as hereinafter described, be set aside forever as aquatic preserves or sanctuaries for the benefit of future generations."** This statement along with the other applicable laws clearly mark the direction for management of aquatic preserves. Management will emphasize the maintenance of essentially natural conditions, and will include only sovereign or state-owned submerged lands and lands leased by the state and specifically authorized for inclusion as part of a preserve.

Management responsibilities for aquatic preserves may be fulfilled directly by the Board of Trustees or by staff of the Division of State Lands of the Department of Natural Resources through delegation of authority. Other governmental bodies may also participate in the management of aquatic preserves under appropriate instruments of authority issued by the Board of Trustees. The Division staff serve as the primary managers who implement provisions of the management plans and rules applicable to the aquatic preserves. Staff evaluate proposed uses or activities in the preserve, and assess the possible impacts on the natural resources. Project reviews are primarily evaluated in accordance with the criteria in Sections 258.35-46, F.S. (Florida Aquatic Preserves Act), Chapter 18-20, Florida Administrative Code (Rules of Florida Aquatic Preserves), and in accordance with the policies set forth in this plan.

Staff comments on proposed uses are submitted for consideration in developing recommendations to be presented to the Board of Trustees. This mechanism provides a basis for the Board of Trustees to evaluate public interest and the merits of any project while also considering potential environmental impacts upon the aquatic preserves. Any activity located on sovereignty submerged lands will require a consent of use, a lease or easement, or other approval from the Board of Trustees. Consent of use may be granted on small projects from the Division of State Lands in accordance with the authority delegated by the Board.

BACKGROUND

The laws supporting aquatic preserve management are the direct result of the public's awareness and interest in protecting Florida's aquatic environment. The rampant dredge and fill activities that occurred in the late 1960's fostered this widespread concern.

In 1967, the Florida Legislature passed the Randall Act (Chapter 67-393, Laws of Florida), which established procedures regulating previously unrestricted dredge and fill activities on state-owned submerged lands. That same year, the legislature provided the statutory authority (Section 253.03, F.S.) for the Board of Trustees to exercise proprietary control over state-owned lands. Also, in 1967, government focus on protecting Florida's productive water bodies from development led the Board of Trustees to establish a moratorium on the sale of submerged lands to private interests. That same year, an Interagency Advisory Committee (IAC) was created to develop strategies for the protection and management of state-owned submerged lands.

In 1968, the Florida Constitution was revised to declare in Article II, Section 7, the state's policy of conserving and protecting natural resources and scenic beauty. That constitutional provision also established the authority for the legislature to enact measures for the abatement of air and water pollution. Later that same year, the IAC issued a report recommending the establishment of twenty-six aquatic preserves.

On October 21, 1969, the Governor and Cabinet acted upon the recommendations of the IAC and adopted, by resolution, eighteen of the water bodies as aquatic preserves. Other preserves were individually adopted at subsequent times through 1989, including Guana River Marsh in 1985.

B. ADMINISTRATIVE RULES GOVERNING AQUATIC PRESERVES

Chapters 18-20 and 18-21, Florida Administrative Code (F.A.C.), are the two administrative rules directly applicable to the uses of aquatic preserves specifically,

and submerged lands in general. The general rules in Chapter 18-20, F.A.C., are supplemental to the rules in Chapter 18-21, F.A.C, in the regulation of activities in aquatic preserves.

1. CHAPTER 18-20, F.A.C.

Chapter 18-20, F.A.C., specifically addresses aquatic preserves and derives its authority from Sections 258.35, 258.36, 258.37, and 258.38, F.S. The intent of this rule is contained in Section 18-20.001, F.A.C., which states:

"(1) All sovereignty lands within a preserve shall be managed primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife, and public recreation including hunting and fishing where deemed appropriate by the board and the managing agency.

(2) The aquatic preserves which are described in Chapter 73-534, Laws of Florida, Sections 258.39, 258.391, 258.392, and 258.393, Florida Statutes, future aquatic preserves established pursuant to general or special acts of the legislature, and in Rule 18-20.002, Florida Administrative Code, were established for the purpose of being preserved in essentially natural or existing condition so that their aesthetic, biological and scientific values may endure for the enjoyment of future generations.

(3) The preserves shall be administered and managed in accordance with the following goals:

(a) to preserve, protect, and enhance these exceptional areas of sovereignty submerged lands by reasonable regulation of human activity within the preserves through the development and implementation of a comprehensive management program;

(b) to protect and enhance the waters of the preserves so that the public may continue to enjoy the traditional recreational uses of those waters such as swimming, boating, and fishing;

(c) to coordinate with federal, state, and local agencies to aid in carrying out the intent of the Legislature in creating the preserves;

(d) to use applicable federal, state, and local management programs, which are compatible with the intent and provisions of the act and these rules, and to assist in managing the preserves;

(e) to encourage the protection, enhancement, or restoration of the biological, aesthetic, or scientific values of the preserves, including but not limited to the modification of existing man-made conditions towards their natural condition, and discourage activities which would degrade the aesthetic, biological, or scientific values, or the quality, or utility of a preserve, when reviewing applications, or when developing and implementing management plans for the preserves;

(f) to preserve, promote, and utilize indigenous life forms and habitats, including but not limited to: sponges, soft coral, hard corals, submerged grasses, mangroves, saltwater marshes, freshwater marshes, mud flats, estuarine, aquatic and marine reptiles, game and non-game fish species, estuarine, aquatic, and marine invertebrates, estuarine, aquatic, and marine mammals, birds, shellfish and mollusks;

(g) to acquire additional title interests in lands wherever such acquisitions would serve to protect or enhance the biological, aesthetic, or scientific values of the preserve;

(h) to maintain those beneficial hydrologic and biologic functions, the benefits of which accrue to the public at large."

2. CHAPTER 18-21, F.A.C.

Chapter 18-21, F.A.C., controls activities conducted on sovereignty submerged lands in general and is predicated on the provisions of Sections 253.03, and 253.12, F.S. The stated intent of this administrative rule is:

"(1) to aid in fulfilling the trust and fiduciary responsibilities of the Board of Trustees of the Internal Improvement Trust Fund for the administration, management, and disposition of sovereignty lands;

(2) to insure maximum benefit and use of sovereignty lands for all citizens of Florida;

(3) to manage, protect, and enhance sovereignty lands so that the public may continue to enjoy traditional uses including, but not limited to, navigation, fishing and swimming;

(4) to manage and provide maximum protection for all sovereignty lands, especially those important to public drinking water supply, shellfish

harvesting, public recreation, and fish and wildlife propagation and management;

(5) to insure that all public and private activities on sovereignty lands which generate revenues or exclude traditional public uses provide just compensation for such privileges;

(6) to aid in the implementation of the State Lands Management Plan."

C. RELATIONSHIP TO OTHER APPLICABLE PLANS AND PROGRAMS

The State Comprehensive Plan, established by Chapter 187, F.S., provides long-range policy guidance for the orderly social, economic and physical growth of the state. As such, the State Comprehensive Plan provides direction for the management of the physical resources within the state. The goals, objectives and policies set forth in this aquatic preserve management plan are designed to be consistent with those in the State Comprehensive Plan that pertain to the water resources, coastal and marine resources and natural systems.

The Conceptual State Lands Management Plan, adopted on March 17, 1981, and amended by the Board of Trustees on July 7, 1981 and March 15, 1983, contains specific policies concerning spoil islands, submerged land leases, "Outstanding Native Florida Landscapes," unique natural features, seagrass beds, archaeological and historical resources, and endangered species. These policies provide some of the fundamental direction for formulating management plans and policies of the Aquatic Preserves Program.

The Local Government Comprehensive Plan (LGCP) for St. Johns County is required by the Local Government Comprehensive Planning and Land Development Regulation Act to have a comprehensive management plan with elements relating to different governmental functions (e.g., housing, physical facilities, conservation, land use, coastal zone protection, etc). Each plan, in effect, is intended to guide the future development of each respective county. Cities and counties are to adopt land development regulations and conform to the criteria, policies, and practices of their comprehensive plans, which must be updated periodically as required by recent statutory amendments.

The intent of the Aquatic Preserve Program is to guide county governments during their planning process towards developing local planning criteria and standards that will be consistent with the objectives of the program. St. Johns County's draft LGCP was submitted to the state for review in April, 1990. Bureau staff have reviewed conservation/coastal management and land use elements and made the following recommendations for the conservation/coastal management element:

1. A policy be adopted indicating that all activities involving the use of sovereignty submerged lands shall comply with Chapter 18-20 or 18-21, F.A.C., and 2. Policies should be adopted indicating that appropriate agencies will be consulted to help protect rare, endangered, or threatened species and their habitats. The draft LGCP was subsequently revised as a result of several state agencies' recommendations. The revised LGCP was adopted by the Board of County Commissioners of St. Johns County on September 14, 1990. The adopted LGCP was submitted to the state on October 10, 1990 for final approval. However, the Department of Community Affairs (DCA) determined that the plan was not in compliance. A Compliance Agreement between the DCA and St. Johns County was finalized in June, 1991. When the final LGCP is approved, applicable policy statements will be incorporated into this management plan.

The Conceptual Management Plan for the Guana River Wildlife Management Area (WMA) was approved by the Board of Trustees on August 14, 1990. This plan was prepared by the Bureau of Wildlife Management, Division of Wildlife, Florida Game and Fresh Water Fish Commission (FGFWFC). The plan identifies the management needs and objectives to conserve, protect, restore, maintain, or enhance the quality of natural and/or man-modified aquatic resources on the WMA. Other objectives are designed to provide both consumptive and non-consumptive recreational uses. These objectives are consistent with those presented in this aquatic preserve management plan.

The Guana River State Park Unit Management Plan was approved by the Board of Trustees on August 14,1990. Prepared by the Division of Recreation and Parks, DNR, this plan serves as the basic statement of policy and direction for the management of Guana River State Park as a unit of Florida's state park system. Resource and recreation management needs and objectives provide consistency with those set forth in this aquatic preserve management plan.

The Surface Water Improvement and Management Act (SWIM), Chapter 87-97, Laws of Florida, was enacted by the Legislature in response to the declining quality of the state's surface water resources. The purpose of the SWIM program is to correct and prevent problems through suface water improvement and management. The St. John's River Water Management District (SJRWMD) design's and implements these programs for the St. John's River and associated drainage basins, including the Tolomato and Guana River subbasin. This program may offer future funding and oversight for the Guana River Marsh Aquatic Preserve.

Pursuant to section 161.161, F.S., the Florida Department of Natural Resources, Division of Beaches and Shores is required to develop and maintain a comprehensive, long-term management plan for Florida's beaches on a district-by-district basis. Responsibilities include identification of areas of critical beach erosion, determination of the most viable means to address identified erosion problems, to recommend a list of beach erosion control projects, and to

recommend solutions for enhancing and protecting beach resources for review and action by the Governor and Cabinet and State Legislature. Prepared by the Division's Office of Beach Management, the Beach Restoration Management Plan for District VII is currently available in final draft form dated November, 1990. The beaches of the Guana River Marsh Aquatic Preserve are within District VII and issues concerning beach management for St. Johns County are addressed in the plan.

CHAPTER III

DESCRIPTION OF AQUATIC PRESERVE

A. LOCATION/BOUNDARY

The Guana River Marsh Aquatic Preserve is located in northeast St. Johns County seven miles south of Jacksonville Beach and seven miles north of St. Augustine. The preserve is bounded on the north by County Road (CR) 210 and Mickler's Road, on the east by the Atlantic Ocean, on the south by the south line of Section 18, Township 6 South, Range 30 East, and on the west by the westerly Mean High Water Line (MHWL) of the Tolomato River and its tributaries. The eastern boundary extends three miles into the Atlantic Ocean to the state territorial limits. The preserve covers approximately 40,000 acres including 11,500 acres within the state-owned Guana River tract and 25,000 acres of open Atlantic Ocean. State Road (SR) A1A bisects the preserve from north to south.

The Guana River Marsh Aquatic Preserve includes all the sovereignty submerged lands and other state-owned lands lying within the above-described boundaries (Figure 2, page 7).

B. PHYSIOGRAPHY

The topographic features of the Guana River Marsh Aquatic Preserve consist of beach dunes, a lagoon, relict ridges and swales and reflect the marine origin of the landscape.

The preserve is located in the lower part of the Atlantic Coastal Plain. The coastal region occupies a physiographic division known as the Coastal Lowlands. This region of the Florida Plateau is described by Cooke (1945) as a belt of land along the coast, extending 30 to 60 miles inland, that is flat, poorly drained, and characterized by ancient marine terraces and dune ridges.

There are seven or possibly eight marine terraces, each formed at different sea levels during the Pleistocene epoch (White, 1970). These terraces were formed prehistorically by waves, currents, and the rise and fall of sea levels. When the sea level remained stationary for long periods, the waves and currents would erode the sea floor to form a fairly level surface. Each time the sea level dropped, a part of the sea floor was left exposed as a level plain or terrace. The terraces tend to be parallel to the present Atlantic shoreline and become progressively higher from east to west (Kojima and Hunt, 1980). Over time, the level plains of the terraces were modified or destroyed by stream erosion.

The Guana River tract lies within the Silver Bluff terrace, a sea bed formed in the late Pleistocene when Atlantic Beaches were one to four miles landward of the present shoreline and sea levels were five to ten feet higher than at present. The Holocene topographic features, formed during the past 10,000 years, are composed of the recent remnant beach and dune ridges, swamps, marshes, tidal flats, creeks, rivers and estuarine bottoms.

The largest contiguous land area within the preserve is the Guana peninsula between the Tolomato and Guana rivers. The peninsula is 12.5 miles long and varies in width from .25 to .75 mile. The peninsula tapers to a point at the south end at the confluence of the Tolomato and Guana Rivers. An earthen dam was constructed across the Guana River in 1957 to form Lake Ponte Vedra (Guana Lake) from the middle and upper reaches of the Guana River. The supposition is that the Guana peninsula (including Lake Ponte Vedra) is a piece of the mainland consisting of elongated, coastal, sandy ridges and low troughs that are being inundated as the sea level rises (FGFWFC,1990). A topographic profile of the Guana River peninsula is shown in Figure 3.

A low broad ridge extends along the east side of the peninsula from the south point to the north end of the tract. The general elevation of the ridge is 10 - 15 feet above mean sea level (MSL). The ridge drops off abruptly to the east down to the shoreline of Lake Ponte Vedra. The ridge drops off gradually to the west and the west side of the Guana peninsula is nearly level. From the west slope of the peninsular ridge, at an elevation of ten feet, the land dips gradually to the Tolomato River where low, nearly level salt marshes are inundated by tidal fluctuation twice daily. This type of tidal marsh is also found adjacent to the lower Guana River in the southern portion of the preserve.

The upper, inland reaches of the estuarine tidal marshes, flats and creeks receive a limited amount of fresh water through drainage and may be classified within a range from saline to brackish or freshwater swamps and marsh basins.

The largest contiguous wetland within the preserve is the vast estuarine marsh system associated with the Tolomato River. The largest interior wetland on the Guana River tract is Lake Ponte Vedra, which includes the impounded bed of the Guana River, and extends northward from the dam for a distance of approximately ten miles. The earthen dam with a water control structure acts as a partial barrier to tidal surge so that the resulting lake is brackish or freshwater depending on the distance north from the dam. The impoundment inundates approximately 2,364 acres, providing both open water and marsh habitats for a number of migratory and resident wildlife species.

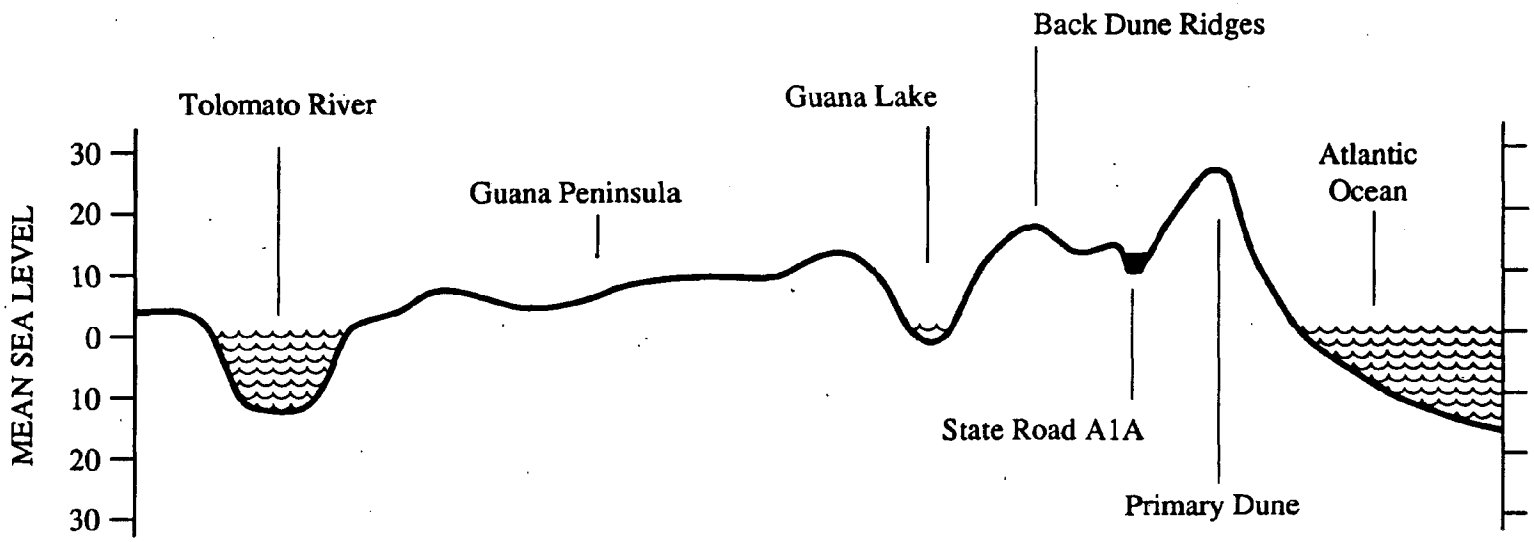


FIGURE 3.

A topographic profile of the Guana River peninsula and dune system. This cross-section is adapted from Figure 21, Technical Report No. SJ80-4, St. Johns River Management District.

A distinct topographic feature of the Guana River tract is the high dunes between State Road A1A and the beach. The dunes rise to an elevation of 35-40 feet above MSL at the north end of Guana State Park beach; with the highest dune crest at 42.5 feet. The high dunes extend about one mile from the north boundary of Guana State Park beach, then gradually decrease in height to crest elevations of 25-30 feet at the south end. The dune system extends west of State Road A1A to the shoreline of Lake Ponte Vedra. At the north end of the property, there is a single dune ridge between the highway and the lake. Further south, there are two ridges in the back dune area west of the highway.

The Guana dune system is high and stabilized with vegetation. These features provide an effective storm barrier. The 100 year storm surge elevation projected by the National Oceanic and Atmospheric Administration (NOAA) for the South Ponte Vedra area is about 9 feet; the tide range is 4.5 feet. With crest elevations ranging from 25 to more than 40 feet, it is unlikely that the Guana dunes will be overwashed by "northeasters" or tropical storms except in areas that have been damaged by pedestrian or vehicular traffic. These dunes, however, could be significantly eroded from such storms.

C. GEOLOGY/SOILS

Surface deposits and underground formations within the aquatic preserve contain typical coastal geologic strata. The subsurface geology consists of limestone beds at depths ranging from sea level to more than 300 feet below sea level. The Ocala Formation, formed in the Eocene epoch, is the uppermost layer of a series of limerock strata which collectively form the Floridan Aquifer. This formation lies about 250 feet below land surface. Overlying this stratum is the Hawthorn Formation which consists of various marine sediments, including clay deposits and lenses of shell and sand. The top of the Hawthorn Formation is about 100 feet below the surface. The surface area is blanketed by Pleistocene and Recent deposits in varying depths.

The soils of the uplands within the Guana River Marsh Aquatic Preserve are derived from sandy marine sediments. They are primarily of two general soil map units outlined by the Soil Conservation Service (SCS).

The sand ridges and flatwoods areas of the Guana peninsula consist of the Astatula-Tavares map unit. These soils are nearly level to sloping, excessively drained and moderately well-drained soils that are sandy throughout.

The coastal dunes along State Road A1A are made up of the Fripp-Satellite-Paola map unit. This unit consists of soils on narrow, rolling sandy ridges interspersed with narrow swales. These soils are excessively drained sandy soils in the primary and secondary dunes and somewhat poorly drained in the swales.

The beach consists of quartz sand, shells, shell fragments, and pebbles derived from exposures of the Anastasia Formation (Tanner, 1960). This formation consists of a sandy coquina held together by calcareous cement, and obtained its name from Anastasia Island opposite St. Augustine (Cooke, 1945).

The salt marsh soils are derived from the deposition of estuarine clay sediment and organic detritus. These are the soils of the estuarine tidal marshes along the boundary of the Tolomato and Guana Rivers. They are in the Pellicer-Tisonia map unit and are nearly level, very poorly drained, and are subject to frequent tidal flooding. Typically, the surface layer is very dark brown silty clay loam about 10 inches thick. The soil is flooded twice daily by normal high tides. Organic matter content is very high, while natural fertility is limited by excess salt.

This Pellicer soil is not suited to cultivated crops, improved pasture, or trees. The high salt, sulfur, and clay content, and low strength severely restrict the use of this soil for agricultural purposes. The soil becomes extremely acid when it is dry for long periods. The low soil strength will not support grazing cattle or equipment.

Potential for community development is low. The hazard of flooding, excessive wetness, and low strength make the soil poorly suited to the construction of buildings or roads.

Areas of this soil are important wildlife habitats. The native flora and fauna provide important links in the food chain for many recreational and commercial finfish and shellfish.

More information regarding the soil types in the preserve can be found in the USDA publication, Soil Survey of St. Johns County (1983).

D. CLIMATE

The climate of the northeast Florida coastal region is under a pronounced maritime influence (NOAA, 1982). The heat of summer and cold of winter are moderated by the close proximity of the Gulf Stream. As a result; this area experiences a humid, subtropical climate characterized by long summers with heavy rainfall and mild, dry winters.

Specifically, the average maximum and minimum temperatures range from 81 to 58 degrees Fahrenheit (F), respectively. The mean annual temperature is about 70 degrees F near the coast and about 72 degrees F inland. The average annual rainfall is about 53 inches, of which 50-60% falls between June and October. Ocean breezes tend to retard the movement of rainstorms moving west to east, so the amount of rain falling directly on the coast is less than in the interior regions (Jones & Mehta, 1978).

E. HYDROLOGY

The Guana River Marsh Aquatic Preserve is located within the Florida East Coast Drainage Basin which encompasses approximately 5,700 square kilometers of the east coast from north of St. Augustine to south of Vero Beach (FDER, 1979), and drains directly into the Atlantic Ocean or into coastal lagoons (Snell and Anderson, 1970). The majority of the watersheds in this basin are drained into lagoons by relatively small creeks. This basin is divided into upper and lower sub-basins. The Upper East Coast sub-basin contains seven drainage areas, including the Tolomato and Guana Rivers.

There are six types of water resources present on or adjacent to the Guana River tract: marine waters of the Atlantic Ocean; estuarine waters of the Tolomato River and its tributaries and the Guana River below the dam; freshwater and brackish water wetland and surface waters of Lake Ponte Vedra; peninsula ponds; swamps, and man-made water features such as ditches and five artesian wells.

The marine waters of the preserve encompass approximately 25,00 acres of open Atlantic Ocean. These waters stretch down the 13 miles of preserve beaches from the MHWL along the Atlantic shore eastward three miles to the state territorial limits.

The Tolomato River has a drainage basin encompassing 84 square miles. The river is part of the Atlantic Intracoastal Waterway (AIW) and is maintained as such. Dredging has straightened the course of the river at some points and established spoil islands which are now partially or entirely vegetated.

Smith Creek, Deep Creek, Sweetwater Creek, Marshall Creek, Stokes Creek, and Casa Cola Creek all drain in the Tolomato River from the west. Smith, Deep, and Sweetwater Creeks drain a large wetland area to the west of the preserve known as Cabbage Swamp. The six creeks are included in the preserve boundaries upstream to the extent of tidal influence. Capo Creek, Jones Creek, and Sombrero Creek flow west into the Tolomato River from state-owned lands within the Guana River tract and are entirely within the preserve boundaries.

The headwaters of the Guana River originate in the Diego Plains drainage basin north of the preserve in Ponte Vedra Beach. From there the river flows south to join the Tolomato River. In 1957 an earthen dam was constructed across the Guana River creating Lake Ponte Vedra. This shallow impoundment (2,364 acres) extends ten miles north from the dam. South of the dam the river follows its original meandering course past Guana Point to join the Tolomato River. At high tide, saline water floods the adjoining tidal marshes as well as flooding through the gates of the water control structure on the dam creating a brackish/freshwater lake. The Diego Plains drainage basin encompasses approximately 7,800 acres extending from the dam 17 miles north into Jacksonville Beach.

Several freshwater basin marshes or ponds exist on the property. Some of these ponds are fed from the artesian wells which are scattered through the property. The wells, permitted by the SJRWMD, extend into the Floridan Aquifer and can be turned on by means of a control valve in order to regulate water levels in the associated ponds. Water levels are also manipulated through a series of water control structures and drainage ditches.

The natural hydrology of the Guana River property has been significantly altered over the last fifty years. The construction of the dam, the inland wells, the water control structures, dikes, and drainage ditches have altered the natural flow patterns of the surface and ground water.

F. WATER QUALITY

Limited water quality data have been collected on most of the preserve area. The Department of Environmental Regulation 1990 Florida Water Quality Assessment 305(b) Technical Appendix classifies the water quality in the Tolomato River (AIW) and the adjacent Atlantic Ocean as "fair". The sampling station data have indicated a stable trend in overall water quality in the 1980-1989 assessment.

The assessment of water quality in the AIW, in general, indicated more serious water quality problems both north and south of the Guana River Marsh Aquatic Preserve. It was noted that there was a consistent dissolved oxygen sag near Ponte Vedra Beach north of the preserve. This was most likely due to untreated urban stormwater and a horse ranch sludge site in close proximity (DER, 1990). Factors contributing to water quality problems immediately south of the preserve include airport and aircraft repair plant runoff from nearby St. Augustine Airport. Further south, factors include urban runoff, wastewater treatment plants, scallop processing, and port activities in the Matanzas River around St. Augustine. These conditions outside of the preserve boundaries have led to the degradation of water quality within the preserve.

No water quality data were available for the Lake Ponte Vedra portion of the preserve. However, it is theorized that runoff containing nutrient and chemical residues from residential and resort developments to the north may negatively affect water quality in the lake and adjacent tidal waters. The drainage basin of the lake extends from the dam 17 miles north into Jacksonville Beach. This area has recently been subjected to high developmental pressure. Expansive residential and resort communities have been constructed in this area. Developments such as Sawgrass, Ponte Vedra, L'Atrium, and Marsh Landing are within this watershed. Residential and golf course development warrants concern for water quality and the water resources of the preserve.

The inland wildlife ponds are supplemented with Floridan Aquifer water to maintain artificial surface water elevations. Downward percolation of the pond water (120 mg/l Cl^-) has increased local shallow aquifer chloride concentration from original values of less than 60 mg/l Cl^- to higher values (Figure 4). Deeper zones (58 feet) still yield concentration of 60 mg/l Cl^-. Water from the unconfined aquifer exhibits a strong hydrogen sulfide odor (Frazee and McClaugherty, 1979).

Septic tanks are the primary means of domestic waste disposal for single-family dwellings in and adjacent to the aquatic preserve. These tanks and associated drainfields represent a potential non-point source of pollution, mainly due to poor siting, construction, and maintenance. High densities of septic tanks, in conjunction with unsuitable soils and high water table conditions, can be a principle cause of bacterial and viral contamination to ground and surface waters.

There are no municipal wastewater treatment plants (WWTP) within the boundaries of the preserve. There are six package type WWTPs in the preserve area. Only one plant (Grumman-St. Augustine Corporation) discharges into the Tolomato River. The discharge point is south of the preserve boundaries. This plant has relatively low volume and the effluent must travel approximately one mile via a drainage ditch before discharging. The remaining five package WWTPs are removed from the shoreline and utilize either drainfields or evaporation-percolation ponds (DNR, 1985). There are no industrial waste discharges into waters of the preserve.

All surface waters of the state are classified by DER according to designated uses. Each classification has corresponding water quality criteria. Criteria applicable to a classification are designed to maintain the minimum conditions necessary to assure the suitability of water for the designated use of the classification.

Surface waters within the Guana River Marsh Aquatic Preserve are classified as Class III and Class II. Class III waters are designated for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. Class II waters are designated for shellfish propagation or harvesting.

The Tolomato River and tributaries, from a line connecting Spanish Landing to Booth Landing south to an east-west line through the AIW marker 55, are designated Class II waters. The Guana River and tributaries, from Guana Lake Dam south to the Tolomato River are also designated Class II. All other surface waters within the preserve are designated Class III (Figure 5).

The DNR Shellfish Environmental Assessment Section further delineates Class II waters into specific harvesting areas: Approved, Conditionally Approved, or Prohibited. This classification system allows for oysters and clams to be harvested when the water quality meets specific standards, specifically fecal coliform levels. The National Shellfish Sanitation Program establishes guidelines and standards for

shellfish control. The public health risk of consuming raw or partially cooked shellfish harvested from waters conforming to these guidelines is acceptable.

In northern St. Johns County, shellfish can be harvested in Approved areas in the absence of hurricanes, red tides, sewage spills, oil spills, chemical spills, and other pollutional events. In the event of closure following such catastrophic occurrences, the area may be reopened when acceptable water samples and shellfish meat samples have been obtained. In Conditionally Approved areas, rainfall amounts further dictate when shellfish can be harvested. These areas are closed to harvesting when rainfall, as recorded in St. Augustine, meets or exceeds 2.0 inches in any 72-hour period. One acceptable set of water quality samples from the stations in the Conditionally Approved area will be required to reopen the area after a closure. Shellfish cannot be harvested at any time within a Prohibited area.

Prior to 1985, both the Tolomato and Guana River Class II areas were classified as Approved harvesting areas. Bacteriological water quality survey data from September 1978 through March 1984 indicated that these areas should be reclassified. In 1985 they were reclassified to their current status of Conditionally Approved (AIW Marker 28 south to AIW Marker 47) and Prohibited.

Surface waters within the Guana River Tract were designated as "Outstanding Florida Waters" (OFW) on May 14, 1986. Because of their natural attributes, these waterbodies are assigned additional protection through the DER.

Chapter 17-302, F.A.C., addresses the water quality standards by which OFW designated waterbodies are managed. Permit applications for activities that lower ambient water quality standards within OFW designations are normally denied.

G. BIOLOGICAL COMMUNITIES

The diversity of biological communities within the Guana River Marsh Aquatic Preserve is one of the preserves most unique features. This association of natural communities provides habitat for a wide variety of resident and migratory wildlife including over 20 species of mammals, over 200 species of birds, over 30 species of reptiles, seven species of amphibians, and around 75 species of fish.

Game animals on the Guana River tract include native and migratory species. Gray squirrels, white-tailed deer, quail, rabbits, rails, mourning doves, and wood ducks are year-round residents. Migratory game includes an estimated wintering population of approximately 10,000 ducks, 30,000 coots, snipes, rails, doves and some woodcock (DNR, 1985). The total wetland area of the preserve can potentially support 50,000 wintering ducks.

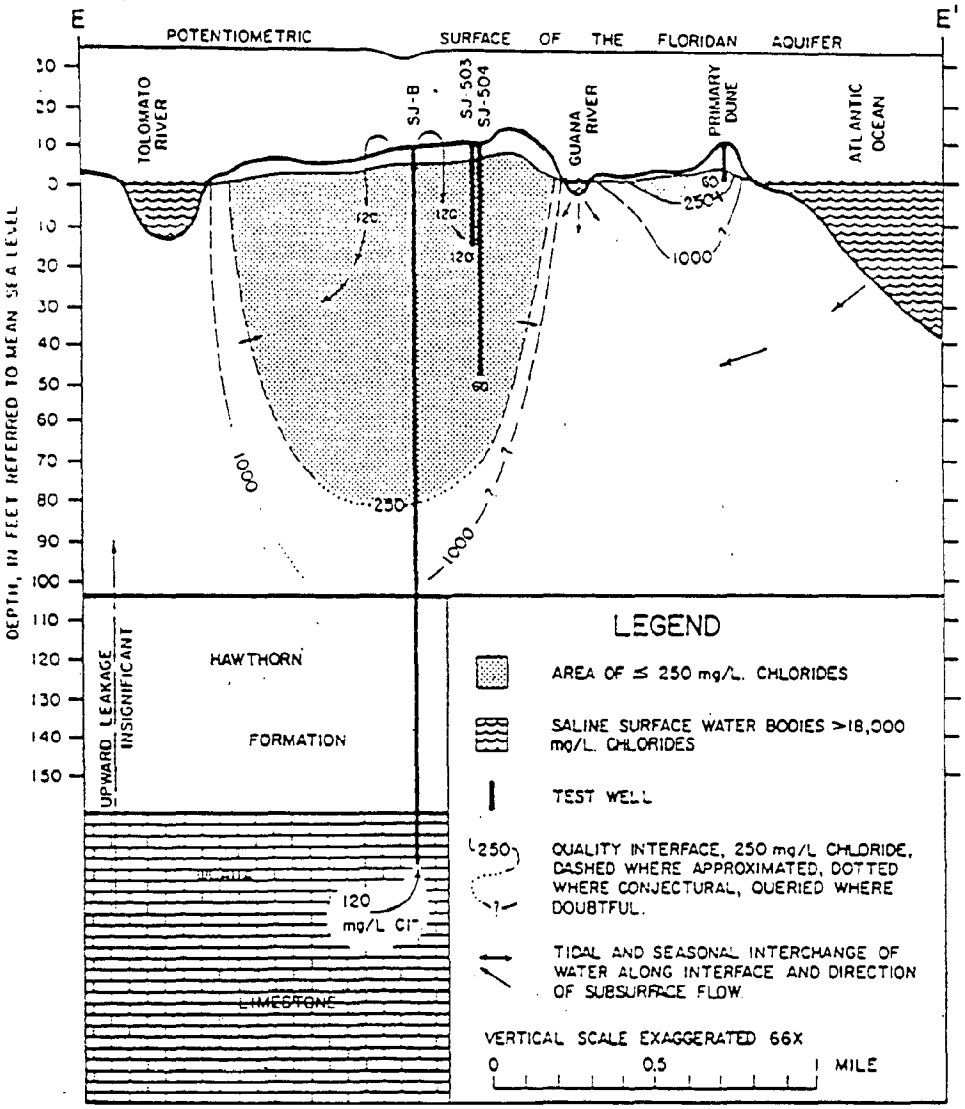


FIGURE 4.

General Cross Section E-E' of the Guana River Wildlife Management Area, South Ponte Vedra Beach, Florida, Showing Quality Interfaces (Source: SJRWMD, 1979)

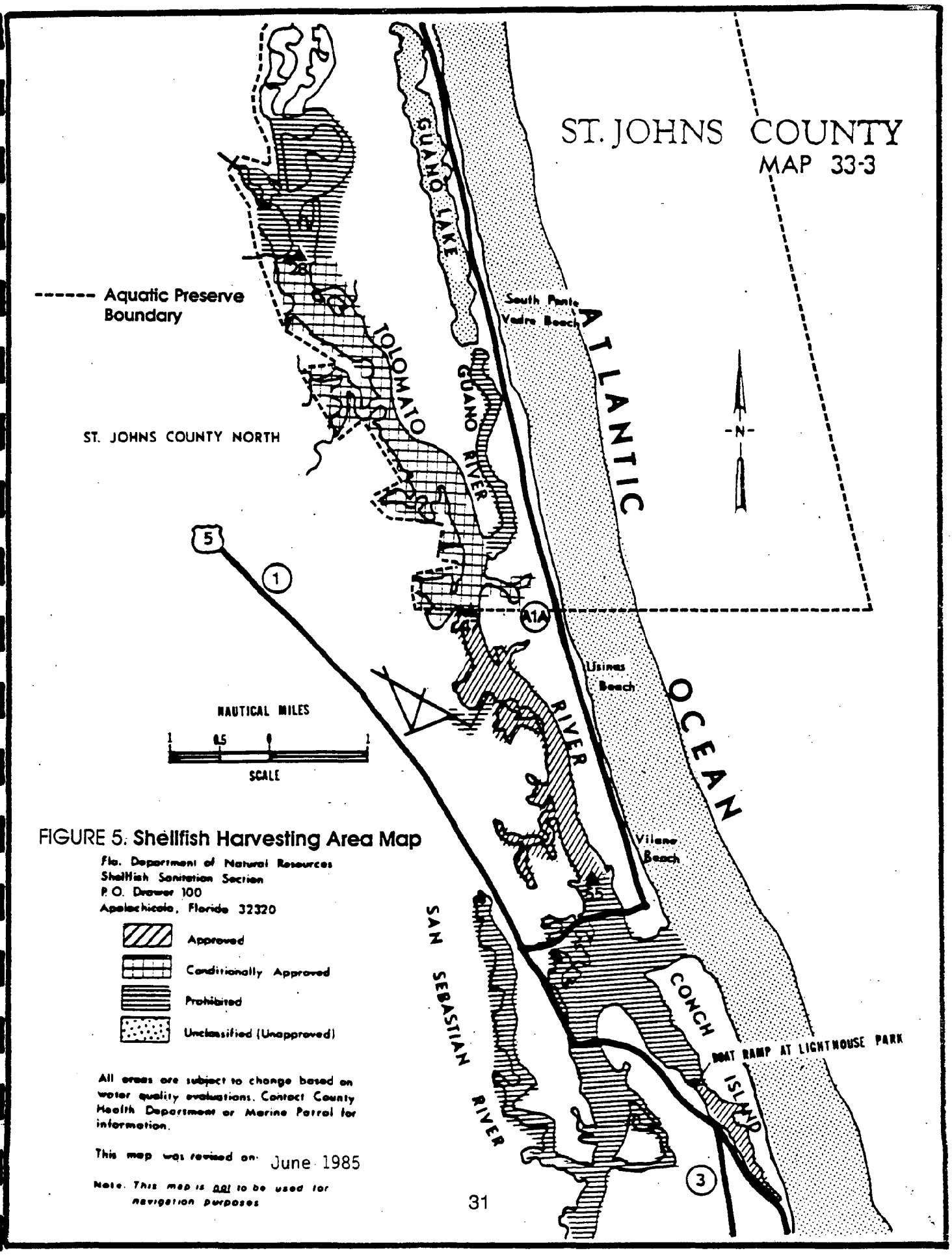


FIGURE 5. Shellfish Harvesting Area Map

Fla. Department of Natural Resources
Shellfish Sanitation Section
P.O. Drawer 100
Apalachicola, Florida 32320

- Approved
- Conditionally Approved
- Prohibited
- Unclassified (Unapproved)

All areas are subject to change based on water quality evaluations. Contact County Health Department or Marine Patrol for information.

This map was revised on: June 1985

Note: This map is not to be used for navigation purposes

Numerous non-game migrants utilize the tract due to its unique coastal location. Many are small and inconspicuous, such as warblers. These species migrate on a fly-way to and from South America and use the coastal forested areas as resting sites between migration over the Atlantic.

The Guana River Marsh Aquatic Preserve contains thirteen distinct biological communities: tidal flats, tidal beaches, tidal marsh, oyster bars, basin marsh, cypress swamp, hardwood swamp, Atlantic beach dune, coastal strand, pine flatwoods, scrub, shell middens, and maritime hammock. A wetland vegetation map is provided in Figure 6.

Tidal flats, tidal beaches, tidal marsh, and oyster bars are marine and estuarine communities and will be described in detail. Basin marshes, cypress swamps, and hardwood swamps are palustrine communities and will be discussed briefly. Atlantic beach dune, coastal strand, pine flatwoods, scrub, shell middens, and maritime hammock are upland communities and the reader is referred to General Assessment of the Guana River State Lands Upland Biological Communities (DNR, 1985).

1. TIDAL FLATS

Tidal flats are estuarine mineral-based unconsolidated substrate communities consisting of mud and sand flats associated with river mouths, channels and creeks. These flats lie between the extreme spring high and low tide lines in lagoons and estuaries. While these areas may seem relatively barren, these communities may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms.

The intertidal flats are inhabited by microscopic benthic algae. Pomeroy (1959) suggested that "mud algae" may contribute as much as one-third of the total estuarine productivity in Georgia. Algae-based food webs eliminate the loss of energy associated with trophic intermediates (i.e., bacteria and fungi) in detritus-based food webs. Infaunal organisms in subtidal zones can reach the tens of thousands per square meter, making these areas important feeding grounds for many bottom feeding fish, such as redfish, flounder, spot, and sheepshead. The intertidal and supratidal zones are extremely important feeding grounds for numerous species of birds and invertebrates.

Fauna commonly associated with tidal flats are listed in Table 1.

Table 1

FAUNA COMMONLY ASSOCIATED WITH TIDAL FLATS

Invertebrates

- amphipods
- polychaete worms
- horseshoe crabs
- blue crabs
- fiddler crabs
- bivalve molluscs
- gastropod molluscs

Birds

- American oystercather
- semipalmated plover
- black-bellied plover
- ruddy turnstone
- willet
- least sandpiper
- western sandpiper
- sanderling
- common tern
- least tern
- royal tern
- black skimmer
- herring gull
- ring-billed gull
- laughing gull
- fish crow
- great blue heron
- little blue heron
- great egret
- snowy egret

Fishes

- striped anchovy
- bay anchovy
- Atlantic menhaden
- Atlantic spadefish
- spotted seatrout
- spot
- silversides
- Atlantic croaker
- striped mullet
- threadfin herring
- pigfish
- summer flounder
- southern flounder
- sea robins
- red drum
- lookdown
- puffers
- Atlantic needle fish
- inshore lizardfish
- Atlantic stingray
- sheepshead
- pinfish

(Peterson et al., 1979)
(City of Jacksonville, 1984)
(FNAI, 1990)
(St. Johns County, 1990)

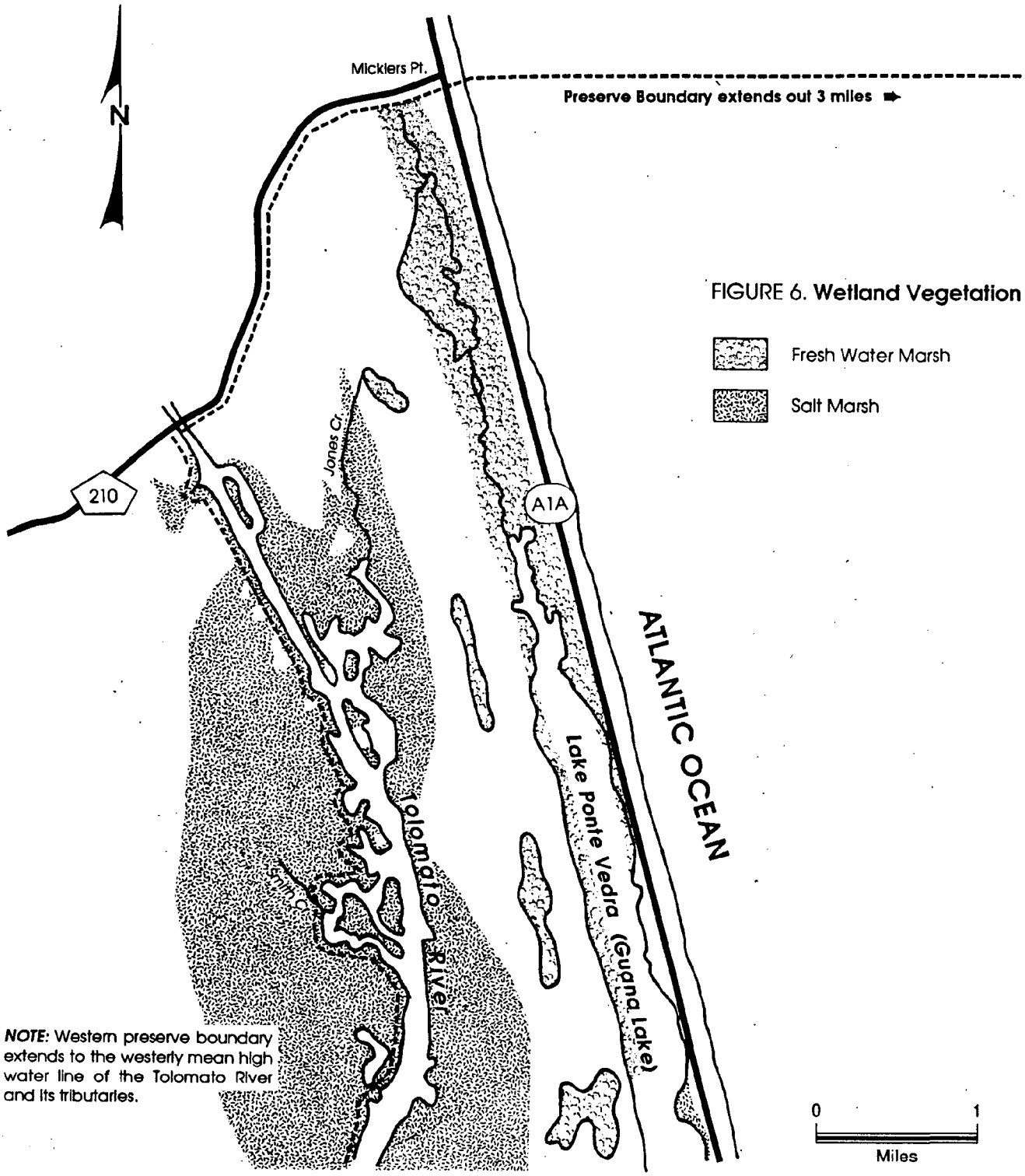


FIGURE 6. **Wetland Vegetation**

Fresh Water Marsh

Salt Marsh

NOTE: Western preserve boundary extends to the westerly mean high water line of the Tolomato River and its tributaries.

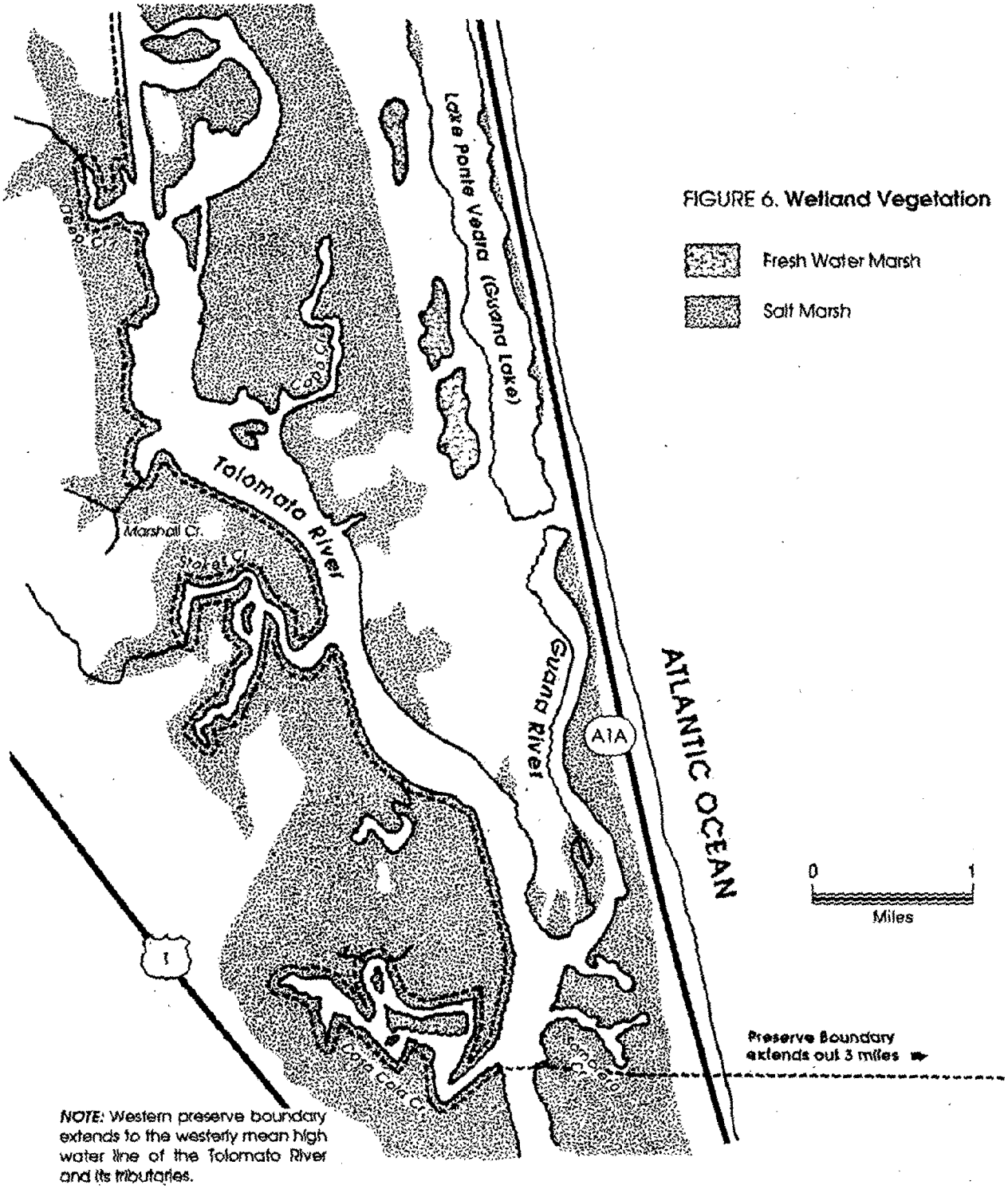


FIGURE 6. **Wetland Vegetation**

Fresh Water Marsh

Salt Marsh

2. TIDAL BEACHES

Tidal beaches are marine mineral-based unconsolidated substrate communities found along the shoreline of the Atlantic Ocean. The beach substrate is mainly coquina with white quartz sand. Although the turbulent wave conditions appear to result in an unstable and harsh environment, the surf zone is an important habitat for a variety of animal life. For species adapted to this environment, the wave energy may provide a subsidy by supplying plankton and detritus to secondary filter feeders, exposing prey to fishes, and concentrating plankton along the swash zone (Ross, 1983). Swash zones also act as biological purification systems for coastal water.

Organic matter from the ocean, especially macroscopic algae, is acted upon by bacteria in the beach sands. The bacteria are, in turn, eaten by nematodes, flatworms, protozoa, and amphipods. In the high energy zone of the beach, permanent residents are primarily burrowing marine life such as ghost shrimp, polychaetes, and sea cucumbers. At low tide, shore birds actively feed on the many burrowing organisms.

For some fish species, the surf zone is used only by larval stages, with juveniles occurring in other, primarily lower salinity, environments. Other species spawn offshore and utilize the surf zone as a juvenile nursery area. A third group spawns offshore and nearshore and may be found in the surf zone as larvae, juveniles, or even adults.

The upper beaches of the preserve are important nesting areas for the threatened least tern and loggerhead turtle. The endangered Atlantic green and Atlantic leatherback turtles occasionally nest in this region.

Fauna commonly associated with tidal beaches are listed in Table 2.

Table 2

FAUNA COMMONLY ASSOCIATED WITH TIDAL BEACHES

Birds	Invertebrates
American oystercatcher	ghost shrimp
semipalmated plover	mole crabs
Wilson's plover	polychaete worms
black-bellied plover	razor clams
ruddy turnstone	acorn worms
willet	sea cucumbers
least sandpiper	gastropods

western sandpiper
semipalmated sandpiper
sanderling
common tern
least tern
royal tern
black skimmer
herring gull
laughing gull
ring-billed gull
fish crow
godwits
redknots

sand dollars
brittle stars
horseshoe crabs
copepods
nematodes
flatworms
amphipods

Fishes

Florida pompano
Gulf kingfish
flounder
lizardfish
killifish
whiting
scaled sardines
striped anchovy
Gulf menhaden
bay anchovy
sea catfish
Atlantic threadfin
white mullet
Atlantic bumper
pinfish
Atlantic croaker
silversides

Reptiles

Atlantic loggerhead turtle
Atlantic green turtle
Atlantic leatherback turtle

(Johnson et al., 1974)
(FNAI, 1990)
St. Johns County, 1990)

3. TIDAL MARSH (SALT MARSH, BRACKISH MARSH)

The tidal marsh is an estuarine floral based community. This is the largest community within the Guana River Marsh Aquatic Preserve and exists along the boundaries of the Tolomato and Guana Rivers and in the southern portions of Lake Ponte Vedra. This is an extremely productive community that begins at the supra-tidal zone and gradually slopes to the intertidal rivers and creeks. Tidal marshes are subjected to rapid changes in salinity, drainage, tidal fluctuation and temperature. This rigorous environment restricts the number of species that can inhabit the marsh and creates the

distinct vegetation zones that are characteristic of tidal marshes. Zonation of plant species within the tidal marsh is dependent on elevation, depth of tidal flooding, and salinity.

The vegetation of the salt marsh community consists of a number of species in the grass (Poaceae), sedge (Cyperaceae), and rush (Juncaceae) families. The tidal marsh within the preserve is dominated by smooth cordgrass (Spartina alterniflora). Smooth cordgrass is well adapted to sea-strength salinity, 35 parts per thousand (ppt), and occurs in the regularly flooded or low marsh (zone between MLW and MHW). Smooth cordgrass becomes mixed with glasswort (Salicornia spp), saltwort (Batis maritima), sea purslane (Sesuvium portulacastrum), and salt grass (Distichlis spicata) on sandy substrates near the high water mark.

Areas of high marsh (zone between MHW and MLW spring tide) occur where tidal flow is restricted and are dominated by black needlerush (Juncus roemerianus). Other commonly occurring species in the high marsh include sea oxeye (Borrichia frutescens), sea lavender (Limonium carolinianum), marsh elder (Iva frutescens), and groundsel tree (Baccharis halimifolia). Some black mangrove (Avicennia germinans) is scattered throughout the preserve's salt marshes although no viable populations exist due to their intolerance of freezing temperatures.

Widgeon grass (Ruppia maritima) is a submerged aquatic herb which prefers brackish water less than 25 parts per thousand salinity. It is one of the most valuable of submerged aquatic plants for fish and wildlife food and cover.

Tidal fluctuation is the most important ecological factor in salt marsh communities. The frequency and physical action of tidal flooding attributes to the fragmentation of vegetation and the rate of decomposition. The nutrients, sediments and detritus from the uplands filter into the marsh contributing to this highly productive environment. The changing water levels allow for the cycling of these nutrients and gives marine and estuarine fauna access to the marsh. This exchange or flushing action helps to make salt marshes one of the most biologically productive natural communities in the world, even to the degree of surpassing the most intensive agricultural practices.

Decomposing organic matter generated from the salt marsh vegetation provides an essential link in the estuarine - oceanic food cycle. Bacteria and fungi modify detritus by converting lignins and cellulose into proteins, fats, and sugars. These microorganisms act as the first consumers in a detrital-based food web. The second trophic level is dominated by detritivores rather than herbivores. Blue crabs, shrimp, and fish such as the striped mullet and killifish belong in this group. These detritivores are consumed by

carnivorous fish. Figure 7 illustrates the dynamics of a typical marsh food web and its importance to top carnivores extending outside the salt marsh community.

A great number of invertebrates and fish, including most of the commercially and recreationally important species such as shrimp, blue crab, oysters, sharks, grouper, snapper and mullet, use salt marshes throughout part or all of their life cycles. The habitat provides ideal protection and an abundant food supply for juvenile and adult fish, birds and invertebrates, and forms the perfect "nursery" grounds.

Tidal creeks are preferred by many commercially important species such as blue crab, shrimp, mullet, menhaden, and many other fishes. According to Seaman (1985), at least 75% of Florida's recreational and commercial fish depend on estuaries for at least part of their life. In Florida, at least 72% of the 89 commercially-landed species of finfish and shellfish and 74% of the 84 recreational species are estuarine-dependent.

Seaman (1985), goes on to say that penaeid shrimp, which use the marsh for refuge and feeding, represent the most economically important fishery in Florida with a 1980 dockside value of $48,107,789.

The amount of salt marsh vegetation is directly related to the yields of penaeid shrimp. Alterations of freshwater flow and reduced water quality from runoff have been shown to have an affect on penaeid shrimp (Seaman, 1985).

According to the Department of Natural Resources, 1988 Assessment of Fisheries Habitat: Northeast Florida, the loss or alteration of wetland habitats, resulting from population growth and development, is probably the most important issue affecting coastal fisheries in northeast Florida. The secondary effects of development that act to stabilize the landscape (e.g., dredging, filling, bulkheading, channelization) alter freshwater inflow and increase pollutants, thereby contributing to reduced fisheries production.

Salt marshes are also extremely important because of their abilities to buffer storms and to filter out pollutants from the water. The dense composition of roots and stems holds the unstabilized soils together, reduces the impact of storm wave surge, and protects shorelines from erosion. The plants, animals and soils filter, absorb, and neutralize many pollutants, such as heavy metals, pesticides, and sewage effluents, before they can reach adjacent marine and estuarine communities. This removal of excess nutrients and pollutants is in a manner analogous to tertiary waste treatment. These are additional factors that make tidal marshes an extremely valuable natural resource.

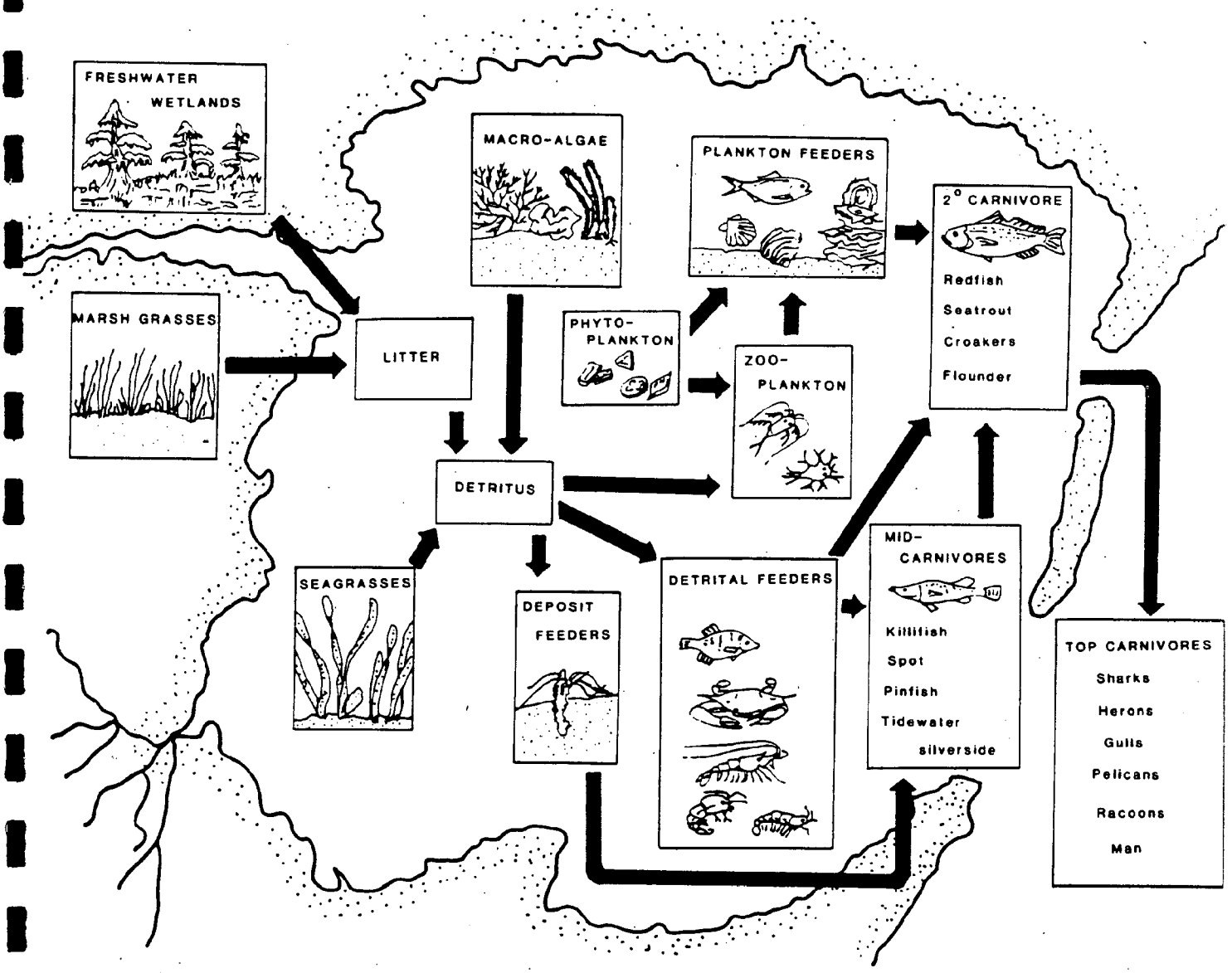


FIGURE 7.

Generalized marsh-estuarine food web (Durako et al., 1985).

The high density of plant stems and roots effectively anchors sediments from upland runoff or from littoral and storm currents. As suspended solids from runoff are restrained, water clarity increases, thereby providing suitable habitat for phytoplankton and submerged vegetation. Decaying marsh plants and transported detritus which are also trapped by the living plants, accumulate to form peat deposits. Together these accretion processes build land.

Fauna commonly associated with salt marsh communities are listed in Table 3. Marine mammals such as the bottle-nosed dolphin and West Indian manatee occasionally travel the open waters of the Tolomato River (AIW) and also the Guana River north to the Guana Dam. In fact, three manatee mortalities have been reported for the Tolomato River between 1974 and 1990.

Table 3

FAUNA COMMONLY ASSOCIATED WITH SALT MARSH COMMUNITIES

Mammals
- marsh rabbit
- rice rat
- raccoon
- bobcat
- river otter

Fishes
- lady fish
- Atlantic menhaden
- sea catfish
- spot
- mummichog
- silverside
- striped mullet
- spadefish
- pinfish
- spotted sea trout
- red drum
- weakfish
- croaker
- northern kingfish
- jack crevalle
- lookdown

Birds
- great blue heron
- great egret
- snowy egret
- little blue heron
- tricolored heron
- cattle egret
- green-backed heron
- black-crowned night heron
- white ibis
- wood stork
- green-winged teal
- ring-necked duck
- hooded merganser
- osprey
- northern harrier
- clapper rail
- black-bellied plover
- wilson's plover
- semipalmated plover
- American oystercatcher
- willet
- spotted sandpiper
- ruddy turnstone

Florida pompano
pigfish grunt
threadfin herring
southern fluke
summer flounder
bluefish
butterfish
sharks
mojarra
sheepshead minnow
striped kilifish
clam worm
groupers
snappers

Reptiles

American alligator
diamonback terrapin

western sandpiper
least sandpiper
dunlin
short-billed dowitcher
marsh wren
seaside sparrow

Invertebrates

barnacles
marsh periwinkle
fan worm
salt marsh snail
blue crab
hard-shelled clam or quahog
fiddler crab
horseshoe crab
penaeid shrimp
grass shrimp

(City of Jacksonville, 1984)
(FNAI, 1990)
(St. Johns County, 1990)

A component of the tidal marsh community is the brackish marsh community. Brackish marshes are found in preserve areas such as the managed Diego Pond, higher zones of the tidal marsh, and north-central portions of Lake Ponte Vedra. Brackish marshes have salinity levels of about one-third sea strength. Salinity is strongly influenced by rain water runoff. Vegetation consists mainly of species found in the saltmarsh, but includes additional species less tolerant of higher salinity levels. Some representatives are: cattail (Typha domingensis), dwarf spikerush (Eleocharis parvula), saltmarsh bulrush (Scirpus robustus), rush (Juncus spp.), and muhly grass (Muhlenbergia capillaris).

4. OYSTER BARS

Oyster bars are estuarine faunal based mollusk reef communities typically characterized as concentrations of sessile mollusks occurring in intertidal and subtidal zones. This community is common in the low-energy, sedimentary environment characteristic of the continuous strands of saltmarsh occurring along the Tolomato and Guana Rivers and in the southern portion of Lake Ponte Vedra.

The extensive surface area of an oyster reef provides essential habitat for a wide variety of organisms. Every square meter of oyster bed provides up to 50 square meters of hard substrate (Bahr and Lanier, 1981). This substrate is colonized by many suspension- and deposit-feeding macrofaunal consumers such as barnacles, polycheates, amphipods, and mud crabs. These are preyed upon by carnivores, such as the blue crab and black drum. Oyster reefs that are exposed during low tides are frequented by a multitude of shorebirds, wading birds, raccoons, and other vertebrates.

One of the functions of the oyster reef inhabitants in a saltmarsh ecosystem is to mineralize organic carbon and release nitrogen and phosphorus in forms usable by the primary producers (phytoplankton and benthic algae).

Oyster reefs also affect the physiography and hydrology of estuary by modifying current velocities and changing sedimentation rates and patterns. Oyster reefs trap sediment, stabilize erosional processes, and provide a stable island of hard substrate.

Historically, oysters have been an important commercial product in St. Johns County. The National Marine Fisheries Service (NMFS) reports that 65,179 pounds of oyster meats valued at $81,511 were harvested in St. Johns County in 1980.

The major threats to oyster reefs continue to be pollution and high levels of turbidity. Oysters are filter feeders, filtering up to 100 gallons of water a day. In addition to filtering food, they also filter and accumulate toxins from polluted waters. Declining oyster populations can be expected in coastal waters that are being dredged or are receiving pollutant-laden stormwater runoff or drainage from untreated or improperly treated residential or industrial sewage systems.

Fauna commonly associated with oyster reef communities are listed in Table 4.

Table 4

FAUNA COMMONLY ASSOCIATED WITH THE OYSTER REEF COMMUNITY

Invertebrates	Fishes
stone crab	menhaden
blue crab	lizard fish
mud crab	toadfish
mussel	catfish

ivory barnacle
amphipods
shore shrimp
clams
mud worms
oyster drill
polychaetes

pinfish
sea trout
spot
black drum
mullet
sheepshead minnow
sheepshead

Birds

American oystercatcher
boat-tailed grackle
fish crow
ruddy turnstone
dunlin

Mammals

raccoon

(Bahr and Lanier, 1981)
(City of Jacksonville, 1984)
(FNAI, 1990)

5. BASIN MARSH (FRESHWATER MARSH)

The basin marsh community is a freshwater community found in the interior lakes, marshes, borrow areas, and northern portions of Lake Ponte Vedra. It is characterized as an herbaceous or shrubby wetland. Vegetation consists almost entirely of low growing wetland species but graduates into other communities. Open areas of relatively permanent water within the marsh are considered to be Marsh Lakes communities.

Basin marshes have a cover composed primarily of emergent grasses and sedges, but also include leafy aquatics and various submergent species. Plant diversity and species richness are characteristically much higher than that found in higher salinity brackish and salt marshes.

Annual emergent grasses are the most abundant vegetation with other grasses such as sawgrass and sand cordgrass existing on slightly higher marshlands. Other emergent plants include softstem bulrush, woolgrass bulrush, smartweeds, foxtail grass, wild millets, and water primrose. The most abundant submerged species is widgeon grass which constitutes an extensive bottom cover, extending to the water surface. Other submergents include muskgrass, pondweeds, naiads, coontail, and bladderwort. Floating aquatics consist mainly of duckweeds.

Wildlife of the basin marsh includes birds (e.g. roseate spoonbill, anhinga), reptiles (e.g. American alligator, Florida watersnake), amphibians (e.g. leopard frogs), and fish (e.g. Florida gar, largemouth bass and sunfish).

Ecotones formed by basin marshes adjoining hammock areas function as important day-use areas for many bird species such as roseate spoonbills, wood storks, white ibis, egrets, and yellow-crowned night herons.

Inland freshwater marshes are dependent upon the seasonal hydroperiod or management that mimics natural water level fluctuations. Shortened hydroperiods will permit the invasion of mesophytic species, while longer hydroperiods will convert marsh into lake. Fire is also necessary to control hardwood encroachment.

Man-modified wetlands should be managed in lieu of becoming stagnant. Proper water controls and drainage are vital for synchronizing management objectives and flexibility (FGFWFC, 1990.)

6. CYPRESS SWAMP (DOME SWAMP)

This community is comprised of relatively small wetlands located in the northern portion of the Guana peninsula. They are characterized as shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow in the shallower water at the outer edge, while bigger trees grow in the deeper water in the interior. Vegetation is dominated by pond cypress, swamp tupelo, maple, loblolly bay, pond pine,and button bush.

The cypress swamps are important communities in the Guana River Marsh Aquatic Preserve in that they serve as bird rookeries or resting areas for listed species. One swamp is a rookery for the wood stork (Mycteria americana). This rookery occupies a cove-shaped portion of a larger swamp. Numerous wood stork fledglings seemed to be most abundant on dead or largely defoliated cypresses, with one tree containing up to 15 fledglings (DNR, 1985). Fledgling tri-colored heron (Egretta tricolor) and anhingas were also present in this rookery.

Another cypress swamp is used as a day rest area by white ibis (Eudocimus albus) (Endangered, FNAI).

7. HARDWOOD SWAMP

Hardwood swamps are floodplain wetland forested communities that occur on the northern portions of the Guana peninsula, primarily in poorly drained depressions and floodplain zones. Plant species diversity is low, with the overstory dominated by gum, oaks, and maples. Hardwood swamps usually occur in close association with basin marsh communities.

Hardwood swamps harbor a diverse array of animals including both temporary and permanent residents. Typical animals include salamanders, frogs, toads, snakes, alligators, various bird species, shrews, rats, mice, opossum, beaver, racoon, and bear.

The maintenance of natural hydrologic regimes is critical to the health of hardwood swamps and to the downstream systems with which they are connected. Species composition and the functional relationships throughout a floodplain system are negatively impacted by hydrological alterations such as artificial impoundments, river diversion projects, pesticide use, forest clearcutting, or intensive agriculture.

H. LISTED SPECIES

Table 5 catalogs listed animal species that are known or are likely to occur within the Guana River Marsh Aquatic Preserve. These species have been given legal protection pursuant to the U. S. Fish and Wildlife Service (USFWS) Endangered Species Act of 1973, and/or the Florida Game and Fresh Water Fish Commission (FGFWFC) regulations.

Listed species may be classified as endangered, threatened, of special concern, or are candidates for such listing. Endangered species are those threatened with extinction if the deleterious factors affecting their populations continue. These are species whose numbers have already declined to such a critically low level, or whose habitats have been so seriously reduced or degraded that without active assistance, survival is questionable. Threatened species are those likely to become endangered in the foreseeable future if current trends continue. Species of special concern are those that warrant special attention even though they do not fit the other categories. These species, although perhaps not rare, may be especially vulnerable to certain types of exploitation or environmental changes and have experienced long term population declines. Species of this designation may also have potential impact on endangered or threatened populations of other species.

A major objective of this plan's management policy is to identify, map, and protect the endangered and threatened species habitat within the preserve boundary and provide input in decisions that would affect known habitat of these species on adjacent lands and in marine areas.

In many cases, these species will benefit most from proper management of their natural communities. Natural systems management will simultaneously help preserve the listed species which inhabit those systems. At times, however, additional management measures, such as increasing public awareness through interpretive literature and programs, are needed because of the disturbed condition

of some communities, or because of unusual circumstances which aggravate the particular problems of a species.

In natural and man-modified habitats within the WMA, FGFWFC management objectives include maintaining, increasing, and ensuring the abundance and/or distribution of threatened and endangered wildlife.

The beach at Guana River is nesting habitat for two threatened species, the least tern and loggerhead turtle, and possibly two endangered species, the leatherback turtle and the green turtle.

Local turtle watch groups have monitored loggerhead nesting at Guana River since 1981. Their survey results indicate that Guana is an active nesting beach: the average nesting density over a five-year period, 1981-1985, was 5.2 nests per mile. More recent data from a 1990 beach index survey indicates 59 nests occurred over about 4.2 miles of beach at Guana River State Park. This data would result in a density of 14.0 nests per mile in this area.

There is a significant nesting colony of least terns along Guana beach. Monitoring over the past few years has shown that the beach is used by as many as 100 pairs of nesting terns. The nests were dispersed over a mile of beach in the north-central portion of the preserve.

The north coast region of Florida, including St. Johns County, is of great importance as a travel corridor for manatees moving between winter habitat in south Florida and feeding and resting areas along the east coast of Florida and into south Georgia. Preferred warm weather feeding and and resting sites typically lie along quiet creeks, rivers, and embayments on the mainland side of the Atlantic Intracoastal Waterway (AIW). Therefore, the Tolomato River would be a likely area that the manatees would use as they travelled up and down the east coast.

There is a colony of roseate spoonbills (species of special concern) which regularly roost in trees along "Big Savannah Pond", the southernmost artesian-fed basin marsh in the preserve. There were 32 birds observed in this area on August 21, 1985 (DNR, 1985). Wood storks (endangered) also roost in the same area and have nested in a cypress dome at the north end of the Guana peninsula.

The interior freshwater marshes (basin marshes) of the preserve are important feeding and nesting sites for several other birds that are species of special concern. The little blue heron, tri-colored heron, snowy egret, and limpkin are all dependent on these type of wetlands for their survival. Loss of habitat, water management practices on uplands, and the introduction of pesticides into the food web are some of the events occuring outside of the preserve that imperil these species survival.

Peregrine falcons wintering in Florida require an area that has a plentiful and dependable supply of birds for food. Florida's coastal areas provide optimum wintering habitat in regions where ducks, coots, and herons abound. Impoundments and marshy lakes, like Lake Ponte Vedra, attract wintering peregrines. Management and use of wetlands to maximize wildlife productivity will benefit the peregrine falcon in the preserve.

The bald eagle population in Florida has declined by at least 50% in the past 30 years (Robertson, 1978). Persistent pesticides may have played a role in the decline. Over most of Florida, however, destruction of coastal nesting habitat and disturbance of nesting eagles by man were undoubtedly the major causes of the decline.

The Eastern brown pelican has suffered a similar fate on a national level. A massive die-off in Texas and Louisiana during the 1960's prompted the federal government to list the pelican as an endangered species until 1984. It appears that local populations have remained stable and the pelican has been deleted from the endangered category and is now considered to be a species of special concern in Florida.

The Florida mink is confined to the coastal zones of the northern half of the Florida peninsula. This mink presumably feeds almost entirely on food resources in marine and estuarine environments. The high rate of disappearance of coastal marshes makes the fate of this rare mink of critical concern.

Not included in Table 5 are species that are likely to occur in the preserve and have legal protection through the Convention on International Trade in Endangered Species (CITES). These include: osprey (Pandion haliaetus), northern harrier (Circus cyaneus), merlin (Falco columbarius), eastern American kestrel (Falco sparverius sparverius), river otter (Lutra canadensis) and bobcat (Lynx rufus).

In addition, the Florida Natural Areas Inventory (FNAI) identifies rare and endangered species. Those likely to occur in the preserve but are not listed in Table 5 or the CITES list include: great egret (Casmerodius albus), white ibis (Eudocimus albus), least bittern (Ixobrychus exilis), yellow-crowned night heron (Nyctanassa violacea), black-crowned night heron (Nycticorax nycticorax), hairy woodpecker (Picoides villosus), glossy ibis (Plegadis falcinellus), black skimmer (Rynchops niger) caspian tern (Sterna caspia), royal tern (Sterna maxima), sandwich tern (Sterna sandvicensis) , southeastern big-eared bat (Plecotus rafinesquii), opposum pipe fish (Oostethus brachyurus), sea lamprey (Petromyzon marinus), and spotted turtle (Clemmys guttata).

Table 5

Listed Wildlife Species
Likely to Occur In Guana River Marsh Aquatic Preserve

COMMON NAME/SCIENTIFIC NAME	Listed Status FGFWFC	USFWS
BIRDS:		
Brown pelican *Pelecanus occidentalis*	SSC	
Little blue heron *Egretta caerulea*	SSC	
Tricolored/Louisiana heron *Egretta tricolor*	SSC	
Snowy egret *Egretta thula*	SSC	
Limpkin *Aramus guarauna*	SSC	C2
American oystercatcher *Haematopus palliatus*	SSC	
Least tern *Sterna antillarum*	T	
Bald eagle *Haliaeetus leucocephalus*	T	E
Wood stork *Mycteria americana*	E	E
Piping plover *Charadrius melodus*	T	T
Southeastern American kestrel *Falco sparverius paulus*	T	C2

Florida scrub jay *Aphelocoma coerulescens*	T	T
Roseate spoonbill *Ajaia ajaia*	SSC	
Peregrine falcon *Falco peregrinus*	E	T
Kirtland's warbler *Dendroica kirtlandii*	E	E
MAMMALS:		
West Indian manatee *Trichechus manatus latirostris*	E	E
Right whale (migratory) *Balaena glacialis*	E	E
Humpback whale (migratory) *Megaptera novaeangliae*	E	E
Florida black bear *Ursus americanus floridanus*	T	C2
Round-tailed muskrat *Neofiber alleni*		C2
Florida mink *Mustela vison lutensis*		C2
REPTILES:		
American alligator *Alligator mississippiensis*	SSC	T(S/A)
Eastern indigo snake *Drymarchon corais couperi*	T	T

Gopher tortoise Gopherus polyphemus	SSC	C2
Atlantic loggerhead turtle Caretta caretta caretta	T	T
Atlantic green turtle Chelonia mydas mydas	E	E
Leatherback turtle Dermochelys coriacea	E	E

FISH:

Atlantic sturgeon Acipenser oxyrhynchus	SSC	PT*
Common snook Centropomus undecimalis	SSC	
Shortnose sturgeon Acipenser brevirostrum	E	E

*Applicable only to the subspecies A.o. desotoi (Gulf sturgeon)

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FGFWFC	=	Florida Game & Fresh Water Fish Commission
USFWS	=	United States Fish & Wildlife Service
E	=	Endangered
T	=	Threatened
T(S/A)	=	Threatened Due to Similarity of Appearance
C1	=	A candidate for federal listing, with enough substantial information on biological vulnerability and threats to support proposals for listing.
C2	=	A candidate for listing, with some evidence of vulnerability, but for which not enough data exist to support listing.
PE	=	Proposed Endangered
PT	=	Proposed Threatened

I. CULTURAL RESOURCES

The Guana River Marsh Aquatic Preserve contains several significant prehistoric and historic cultural sites. The history of the area dates back more than 4,000 years and artifacts found have included samples ranging from a late Archaic period (ca. 2500-1000 B.C.) arrowhead to late 19th century pottery.

To date, the Division of Historical Records, Department of State, has identified 23 archeological and historic sites. These sites are located primarily in the maritime hammock habitat on the Guana peninsula. Extensive archeological work has not been conducted and the discovery of up to 40 additional sites is anticipated within maritime hammock environments on the tract. To date there have been no archeological or historic sites recorded on the Atlantic coastal beaches and dunes, on the coastal strand between SR A1A and the tidal marsh, or on the estuarine marsh along the Tolomato and Guana Rivers.

A preliminary walkover survey identified eight of the 23 known sites as being archeologically significant. Three of the sites are not considered to be archeologically or historically significant and the remainder are considered to be potentially significant and should be protected until further detailed assessments can be performed.

Notable among the significant sites are:

1. "Shell Bluff Landing" - This is an extensive midden site located on the west side of the Guana peninsula along the shoreline of the Tolomato River. Artifacts representing the cultures of the area from the Orange period (ca. 2500 B.C.) to Recent times have been found at the site. On February 8, 1991, the Florida National Register Review Board approved the nomination of this site for listing in the National Register of Historic Places. The site has experienced extensive shoreline erosion problems over the years and much of the midden has been lost to the encroaching Tolomato River.

2. "Guana River Shell Ring" - This is a large (100 meter diameter) shell ring made up of oyster, clam, conch, and coquina shells located on the east side of the Guana peninsula adjacent to Lake Ponte Vedra (formerly part of Guana River). Artifacts found indicate a late Archaic period (ca. 2500-1000 B.C.) date for the ring's construction. This is the only Archaic shell ring reported to date in the State of Florida. It is considered to be eligible for listing in the National Register of Historic Places.

3. "Guana River Site" - This extensive shell midden site extends over 100 meters along a ridge overlooking Lake Ponte Vedra. The midden is

made up of layers of zones believed to date from the preceramic Archaic period (prior to 2500 B.C.) in the lowest zone to historic European occupation, Spanish or British (ca. A.D. 1763-1900) in the upper zone. This site appears to have been occupied (or reoccupied) over a period of several thousand years.

CHAPTER IV

REGIONAL LAND USE AND DEVELOPMENT

A. PREVIOUS USES

The Guana River tract contains archeological sites that indicate that there were both prehistoric and Spanish-era settlements on the property. Spanish colonial and early English inhabitants used the area for ranching and farming activities. Early farm crops included rice, indigo, and sugar cane. A network of dikes, levees, and ditches and the remains of a rice or sugar mill still exist on the property. The uses of these lands during the nineteenth and twentieth centuries included logging, hunting, fishing, camping, and beach recreation. Evidence of a sawmill and logging tram roads further indicate that the area was used as a source of lumber by early settlers in the Jacksonville-St. Augustine area. Intense pine timber harvest began during the late 1930's and continued until the 1970's (FGFWFC, 1990).

The Guana River tract was purchased in parcels by Stockton, Whatley, Davin and Company (SWD) or predecessor firms (i.e., Ponte Vedra Corporation, State Investment Company, and other entities) between 1931 and 1980. Plans were prepared for multi-phase development of the property as a resort community. SWD tried unsuccessfully to sell the land to the state for a park as early as 1965. Several attempts to effect a purchase by either the state or federal government ended in SWD eventually taking the property off the market (FGFWFC, 1990).

In 1957, the Florida Game and Fresh Water Fish Commission (FGFWFC) leased part of the Guana River unit as a wildlife management area (WMA). The FGFWFC undertook numerous projects and wildlife management procedures, including construction of an earthen dam and water control structure across the Guana River, which created Lake Ponte Vedra (1957-1962). Lake Ponte Vedra (Guana Lake) was a cooperative effort between the landowner and the FGFWFC designed to increase and enhance habitat for wintering waterfowl in northeast Florida. Saltwater and freshwater fishing were excellent and hunting opportunities were developed. The lake was officially designated a fish management area from 1964 to 1981.

During the 1960's, the landowner, the FGFWFC, and Anastasia Mosquito Control District jointly developed selected interior ponds by installing earthen dikes, drainage ditches, and water control structures. Artesian wells on the interior ponds were installed between 1955 and 1965 to assist in water management for fish and wildlife. During the summer of 1981, the WMA lease agreement was not renewed by SWD.

The property was sold to Gate Petroleum Company of Jacksonville in July, 1983. In the following three years, the state acquired the property under the auspices of

the CARL and SOC Programs. Management authority was granted to DNR, Division of Recreation and Parks (DRP), by Interim Management Agreement No. 745-0009 on July 25, 1985, for a period of twelve months. A conceptual land use plan was prepared by DRP in cooperation with the FGFWFC and the Department of State, Division of Archives, History and Records Management. The land use plan phase of the planning process included the recommendation that the Guana River tract be divided into a state park managed by DRP and a WMA managed by FGFWFC.

The Guana River State Park covers 2,398 acres including the southern portion of the Guana River tract and 4.6 miles of beach front property along SR A1A. DRP entered into a 50 year lease agreement (No. 3462) with the Board of Trustees of the Internal Improvement Trust Fund (Board) on January 8, 1988. A management plan was approved by the Board on August 14, 1990.

On April 1, 1988, the Board entered into a 50 year lease agreement (Nos. 770-9006 & 3585) with the FGFWFC for management of the WMA. The WMA consists of 9,815 acres in the northern and central portions of the tract. Open water areas, marshes, and uplands are to be managed under a multiple-use management program to include production of game and non-game fish and wildlife, and multiple public uses including both consumptive and non-consumptive recreation. The FGFWFC has a management plan that was approved by the Board on August 14, 1990.

On July 11, 1984, the Board entered into a 50 year lease agreement with State Investment Company. These leased premises are used for a convenience store and an automobile service station. The parcel covers 3.34 acres.

A Land Use Agreement between DNR and the North Florida Council, Boy Scouts of America was executed on January 9, 1989, for a period of 25 years. This agreement provides for access to and use of lands designated within Guana River State Park for camp facilities to be used for 180 days a year. Advance written approval by DNR must be obtained prior to development of facilities, structures or improvements with regards to purpose, location and design. An overall site plan, indicating the purposes and location of facilities is subject to approval by the Governor and Cabinet. The property covers approximately 175 acres.

B. ADJACENT UPLAND USES

Based on existing development conditions and Future Land Use Maps of St. Johns County, the adjacent upland uses in this preserve are categorized as follows: Single-family residential, multi-family residential, commercial, industrial, agricultural, public recreation, and conservation. These broad categories identify the upland use adjacent to state-owned submerged lands and do not necessarily reflect

county, State, or Federal zoning terminologies. The adjacent land use categories are delineated in Figure 8.

Single-Family Residential: For the purposes of this plan, this category includes: (1) low density and (2) medium density residential areas as delineated on the St. Johns County Future Land Use Map. Low density areas have an allowable density of 1-2 dwelling units per acre (du/acre) in mainland areas and .4-2 du/acre in the coastal corridor east of the AIW. Medium density areas have an allowable density of 2-8 du/acre in mainland areas and 2-5 du/acre in the coastal corridor.

1. Low density residential - There are two low density residential areas located in the preserve. The Mickler's Landing area is located in the coastal corridor at the northern boundary of the preserve and covers 313 acres. This area begins at the intersection of SR A1A and Mickler's Road and extends in a southerly direction along both east and west sides of SR A1A approximately 2.5 miles to the northern limits of Guana River State Park. The northern portion of the east side tract is moderately developed with oceanfront single-family residences while the southern portion is nearing buildout. The tract west of SR A1A that borders the marshes of Lake Ponte Vedra is currently undeveloped. The second low density area is located on the mainland in the southwest corner of the preserve. This tract is east of U.S. 1 and begins at the southern boundary of the preserve at Casa Cola Creek. It extends in a northerly direction 4.5 miles to approximately 0.5 mile north of Shannon Road and borders the marshes and tidal creeks of the Tolomato River. The majority of this area is sparsely developed at this time. There is moderate development of single-family residences in the Stokes Landing area. A few small, private docks are scattered along the tidal creeks in this low density zone. One small subdivision, Casa Cola Landing, is currently being developed along the marshes of Casa Cola Creek and contains ten 3/4-1 acre marsh-front lots. Island Landing subdivision is located along Capo Island Drive north of Casa Cola Landing and borders the marshes of Stokes Creek. This subdivision was approved in 1987 for 240 mobile home sites and 70 single-family lots. The infrastructure (roads, central sewer and water, storm water retention) was constructed but final development did not take place. The future of the project is uncertain.

2. Medium Density Residential - There are three medium density residential areas located in the preserve. The largest is a tract of approximately 250 acres along the east side of SR A1A. This tract begins 6.7 miles south of the intersection of SR A1A and Mickler's Road and extends in a southerly direction 5.6 miles to the southern boundary of the preserve. The property consists of oceanfront single-family residences and vacation rentals on lots varying from 75 to 150 ft. wide. Turtle Shores, a single-family subdivision, is located at the southern limits of the preserve and includes residences on both sides of SR A1A. The second medium density area is located in the

northern section of the preserve along Neck Road. This area is moderately developed with single-family residences. The properties on the east side of Neck Road border the marshes of Lake Ponte Vedra. There are a few single-family docks present. The third and smallest medium density area is located on the southeast corner of the intersection of CR 210 and the AIW. This 20 acre area along Canal Road is fully developed on small lots facing either the AIW to the west or a man-made canal to the east and south. There are ten single-family docks present in the AIW.

Multi-Family Residential: For the purposes of this plan this category includes high density residential areas as delineated on the St. Johns County Future Land Use Map. High density areas have an allowable density of 2-13 du/acre in both mainland and coastal corridor areas. There is one multi-family residential area in the preserve. It is located on SR A1A 1.2 miles south of Mickler's Road and is sandwiched between two low-density zones. The property contains a 93 unit oceanfront condominium complex and tennis courts that are west of A1A bordering the marshes of Lake Ponte Vedra.

Commercial: There are three small areas adjacent to state-owned submerged lands in the preserve that are designated commercial. Palm Valley Fish Camp, although north of the preserve boundary, is located within a commercial zone that extends southward into the preserve. This zone is located on the east bank of the AIW on both north and south sides of the CR 210 bridge. The southern half, which is inside the preserve, hosts no commercial activities.

Another commercial zone is located on Mickler's Road at the northern tip of the marshes of Lake Ponte Vedra. This area contains a bar/restaurant with no water-dependent structures. The third commercial zone is located south of the Guana Dam entrance road on the west side of SR A1A. This 19 acre site is situated on Guana River State Park land but is designated for commercial land use. The state leases 3.35 acres to a private company for a convenience store and automobile service station. There are no water-dependent structures present on the property. Another small parcel in the same vicinity is leased to the South Ponte Vedra Beach Volunteer Fire Department.

Industrial: There is one zone designated industrial on the St. Johns County Future Land Use Map that borders the preserve. It is located in the southwest corner of the preserve adjacent to the tidal marshes associated with Casa Cola Creek. This zone contains the St. Augustine Airport and the Grumman-St. Augustine Corporation, an industry that modifies and overhauls aircraft.

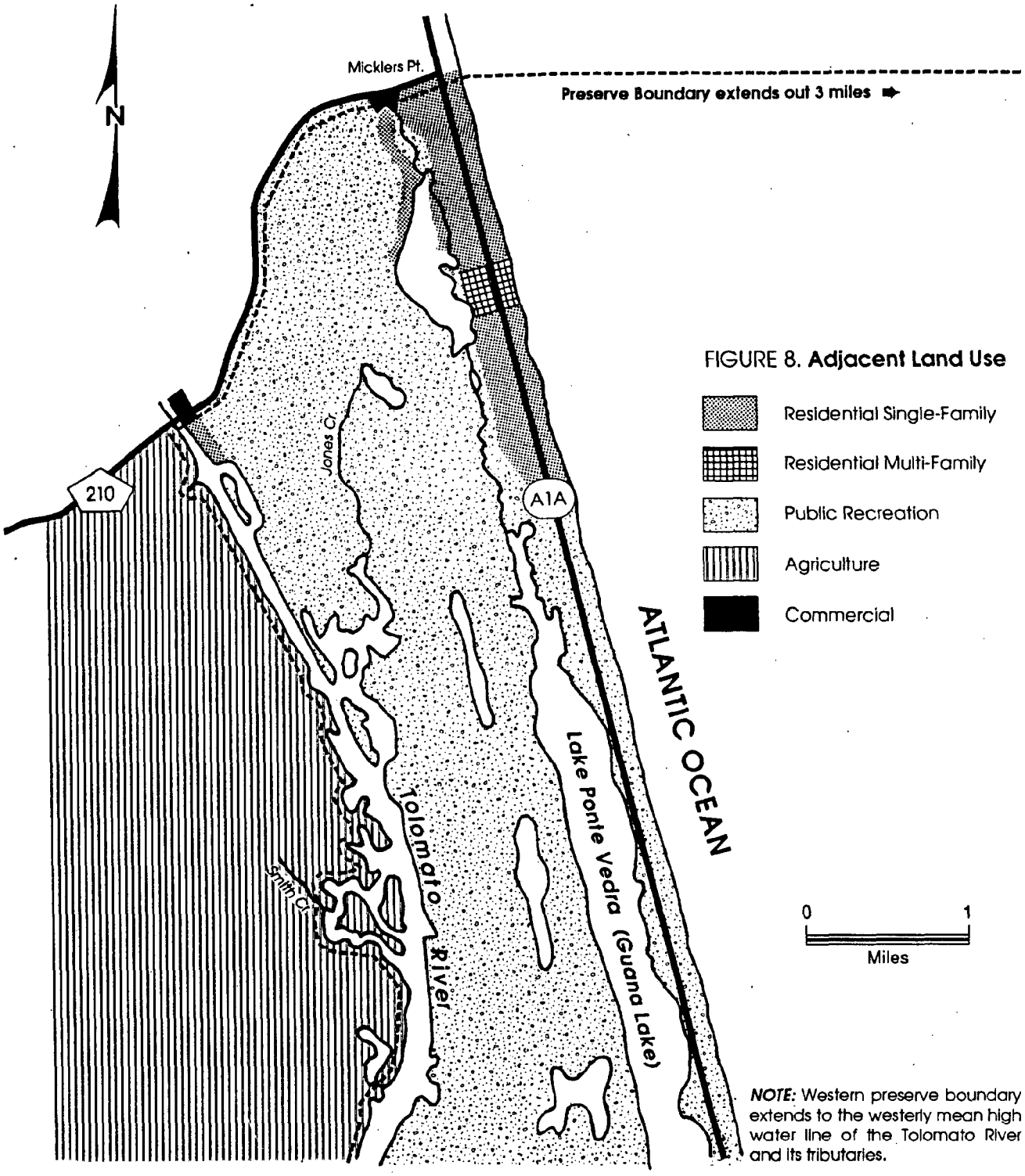

FIGURE 8. **Adjacent Land Use**

NOTE: Western preserve boundary extends to the westerly mean high water line of the Tolomato River and its tributaries.

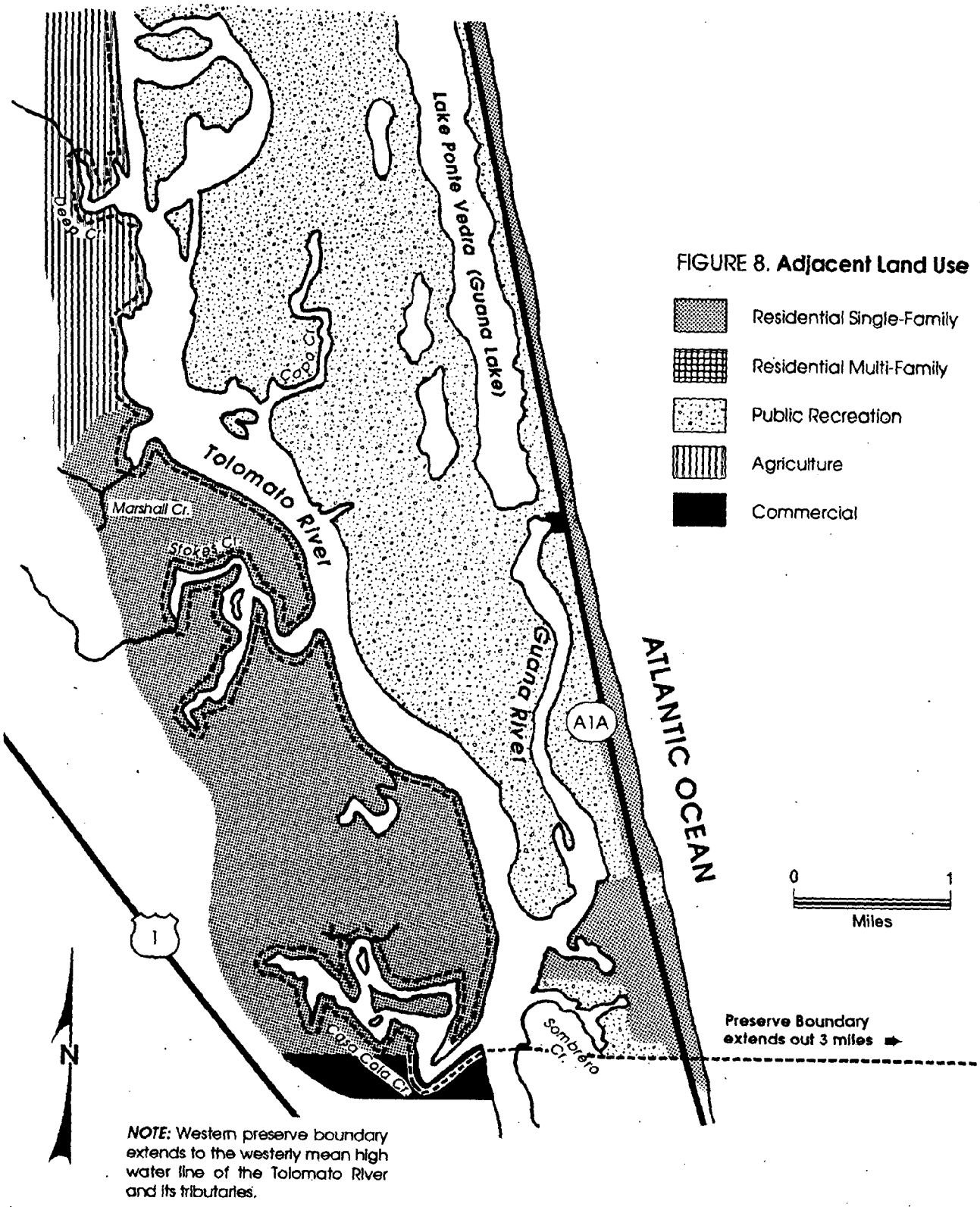

FIGURE 8. **Adjacent Land Use**

- Residential Single-Family
- Residential Multi-Family
- Public Recreation
- Agriculture
- Commercial

Agricultural: This category represents areas adjacent to the preserve that are designated "Rural/Silviculture" on the St. Johns County Future Land Use Map. This designation includes all uplands adjacent to the westerly MHWL of the Tolomato River and its tributaries beginning at CR 210 and extending south to 0.5 mile north of Shannon Road. This category contains the largest contiguous tract of privately owned upland bordering the preserve. At the present time, this large tract of land remains almost completely undeveloped. There are a few single-family residences adjacent to Deep Creek at the east end of Pine Island Road. Pine Island Fish Camp is also located in the immediate vicinity. The fish camp offers boat rentals and has a boat ramp and docking facilities. The majority of the property north of Pine Island Road to CR 210 is owned by Davis Diversified Industries, Inc., a Jacksonville-based company. The land is currently managed for its timber resources.

All residential and related development of lands designated as "Rural/Silviculture" are required to be reviewed by the Planned Rural Development District (PRD) of St. Johns County. The minimum parcel size which can be submitted for review is 100 acres. Parcels submitted to PRD review must contain two distinct areas, a "Development Area" and a "Reserve Area" which is to be designated open space. The permitted density of the Development Area is based on the ratio of Development Area to Reserve Area. Allowable densities range from 1 du/2.5 acres to 2 du/acre. A minimum buffer of 200 feet is required between Development Areas and adjacent land uses. Owners of lands whose size does not meet the minimum acreage threshold for PRD development are permitted to construct one single-family residence on each exempt parcel subject to all other applicable county land development regulations.

Public Recreation: This category includes upland usage by the general public at no charge as well as federal, state, county or municipal parks that charge a nominal fee.

Guana River State Park contains almost 2,400 acres and provides a unique setting for public recreation. Upland recreational uses are currently limited to hiking, bicycling, and nature study. Proposed upland activities include group camping, primitive camping, picnicking, and horseback riding.

The Guana River Wildlife Management Area provides upland recreational activities such as hunting, hiking, bicycling, horseback riding, photography, and nature study.

South Ponte Vedra Beach Recreational Park is an oceanside recreation area on SR A1A in the southern reaches of the preserve. The park is on state-owned land and is maintained by St. Johns County through an informal use agreement. The park provides 30 parking spaces and picnic facilities.

Conservation: Both the FGFWFC and DRP have ongoing programs for upland conservation in the preserve. Ecological burn plans coordinated with the Department of Agriculture and Consumer Services, Division of Forestry focus on the need to maintain fire-dependent communities. Prescribed burning is used to reduce hazardous fuel accumulation and to increase species diversity and richness. Non-fire dependent plant communities are to be managed passively, without fire. Certain roads, trails, observation points, and parking areas will be designated to reduce unregulated travel, mechanical damage to plant communities, and unnecessary disturbance of sensitive wildlife and habitat. Roads not used for management will be allowed to revert to a natural condition. Other upland conservation measures include cultural resources protection, exotic species control, native species restoration, restoration of disturbed areas, and listed species protection.

C. USES OF THE PRESERVE

The uses of the Guana River Marsh Aquatic Preserve can be divided into five general categories: private, commercial, public recreation, public transportation, and conservation.

Private: Private uses are reflected in the presence of several docks associated with adjacent upland single-family residences along the Tolomato River and its tidal creeks and on Lake Ponte Vedra.

Commercial: Pine Island Fish Camp, located on Deep Creek, is the only fish camp in the preserve. Facilities include a boat ramp, a dock, and boat and motor rental. Other commercial uses of the preserve include crabbing, shrimping, fishing, and shellfish harvesting. There are six shellfish leases approved under Chapter 370, F.S. These leases cover a total area of 204 acres.

Public Recreation: The preserve offers exceptional water-related recreational activities. Guana River State Park provides two beach access areas for Atlantic Ocean swimming, surfing, and fishing. The Guana Dam Use Area provides access to both Lake Ponte Vedra and the Guana River for recreational fishing, boating, crabbing and shrimping. Two boat ramps are proposed for this area. Parking and boat launch facilities are provided by the FGFWFC in Lake Ponte Vedra at Six-Mile Landing. The FGFWFC Wildlife Management Area provides excellent fresh and brackish water fishing opportunities in Lake Ponte Vedra and inland ponds. Selected ponds are stocked with bass and bluegill. The Tolomato River and its tributaries are popular boating and fishing areas.

Public Transportation: The Tolomato River is part of the Atlantic Intracoastal Waterway and is heavily used by vessels as a navigation route to inlets north and south of the preserve and as access to other portions of the preserve.

Conservation: The FGFWFC and DRP have ongoing programs to conserve, protect, restore, maintain, or enhance the quality of natural and/or man-modified aquatic resources of the preserve. DRP has a restoration plan for a disturbed marsh area of about 25-30 acres. This site has been ditched or drained in the past. Restoration is possible with the backfilling of ditches and some restoration of natural water flow patterns. The FGFWFC has a similar plan for an area in the WMA. Both agencies have ecological burn plans to restore fire-adapted wetland communities to their natural condition (see **B. ADJACENT UPLAND USES**: Conservation).

The most extensive of the aquatic conservation programs in the preserve is the FGFWFC's wetland management program on Lake Ponte Vedra and the inland ponds of the WMA. Water level manipulations will emulate natural wetland fluctuations to enhance conditions for fish and wildlife. The use of natural tidal currents and precipitation to provide the spacial and structural requirements for fish and wildlife is a form of natural habitat management. Drawdowns will allow oxidation of accumulated organic matter which will allow lake and pond bottoms to become firm, providing a suitable substrate for plant germination and growth. The multi-purposed management objectives for Lake Ponte Vedra include a multi-species management plan for game and non-game wildlife and fisheries, and multiple consumptive and non-consumptive public activities. Short-term water management objectives include: (1) control of cattails and rank stands of submergent vegetation. (FGFWFC staff, in coordination with DNR's Bureau of Aquatic Plant Management, have been able to manage nuisance levels of cattails.); (2) restore natural wildlife and fish habitats; and (3) restore traditional public use and access. Long term objectives include: (1) maintain and enhance a mosaic of natural plant communities under a multi-species management plan; (2) provide a desirable interspersion of wildlife food and cover plants and open water; and (3)...increased public recreational use of the lake resources (FGFWFC, 1990).

The WMA contains seven inland ponds comprising 184 acres and averaging 26.3 acres in size. Five of the ponds have regulated artesian wells that are capped with discharge valves. Water levels are controlled by the wells, water control structures (spillways), and a series of drainage ditches. Through water level manipulations, the interior ponds are to be managed as a complex of wetland habitats to provide high levels of productivity and diversity for fish and wildlife conservation.

D. PLANNED USE

Nearly 897,000 people live within a 60 mile radius of the Guana River Marsh Aquatic Preserve. The northeast Florida region (Baker, Clay, Duval, Flagler, Nassau, Putnam and St. Johns counties) is one of the state's fastest growing regions. It has experienced a 27 percent increase in population since 1970. By 1995, the region is expected to grow by an additional 15 percent. Over 2.9 million out-of-state tourists visited the region in 1985. The population of St. Johns County has, like the rest of the region, been increasing over the last 20 years. Growth in the unincorporated area has been dynamic. The population of the unincorporated areas increased by more than 70 percent between 1980 and 1988. County-wide growth increased by over 56 percent during those same years. Population estimates and projections are provided in Table 6.

TABLE 6

ST. JOHNS COUNTY POPULATION ESTIMATES AND PROJECTIONS

1980 THROUGH 2005

Year	County	Unincorporated Areas	Percent Increase
1980	51,303	37,370	N/A
1985	68,822	53,506	43.2
1988	80,278	63,797	19.2
1990	93,800	77,488	21.5
1995	116,200	98,637	27.3
2000	138,500	119,894	21.6
2005	161,800	141,614	18.1

Source: St. Johns County Planning Department, 1988

PERCENT INCREASE IN TOTAL POPULATION

1980-1988	1988-2005
56.4%	101.5%

These dramatic increases in population growth affect water resources and wildlife habitat and, generally, increase the potential for environmental degradation. Impacts from urban development including the filling of marshes, increased erosion, and alterations such as bulkheading, would have negative effects on the aquatic resources of the preserve. The degradation of water quality from stormwater runoff, wastewater effluent, and oil/gas residue from increased boat traffic will also have an impact. Along with the destruction of land and vegetation, many animal species will not adapt to the changes, and may also vanish.

CHAPTER V

MANAGEMENT AREAS

A. INTRODUCTION

This chapter divides the Guana River Marsh Aquatic Preserve into separate management areas and delineates the general rule criteria for allowable uses (e.g., activities and structures) associated with each area. Each management area is classified by the value of natural and cultural resources (e.g., types, occurrence) on submerged lands adjacent to the differing types of upland use (e.g., residential, commercial).

The purpose of this chapter is four-fold: (1) to provide a better understanding of the general rule criteria designed to preserve and protect resources and habitat, (2) to identify the types of allowable uses on state-owned submerged lands within a preserve, (3) to provide local planners with a guide for land use decisions, and (4) to provide both the staff of the Bureau of Submerged Lands and Preserves and other agencies a continuity of direction in the management of this aquatic preserve. As such, this intent will afford habitat protection while lending some measure of predictability for allowable public and private uses in the aquatic preserve.

Prior to providing the criteria for specific resource management areas, it is important that the intent, jurisdiction, and limitations of Florida's Aquatic Preserve Program be reiterated. Section 258.36, F.S. states that "It is the intent of the Legislature that the state-owned submerged lands in areas which have exceptional biological, aesthetic, and scientific value...be set aside forever as aquatic preserves or sanctuaries for the benefit of future generations." The program has jurisdiction over the use of state-owned submerged lands within the boundaries of a given preserve. Activities which occur outside the boundaries of an aquatic preserve or which do not directly affect state-owned submerged lands are not within the jurisdiction of the Aquatic Preserve Program (e.g., adjacent upland uses, regulation of commercial fishing).

There are a number of differences between the rules governing uses of state-owned submerged lands within an aquatic preserve relative to those not within an aquatic preserve. The principal difference is that uses of the submerged lands within an aquatic preserve must be shown to be "in the public interest" before they can be authorized as opposed to being "not contrary to the public interest" for non-aquatic preserve areas.

B. MANAGEMENT AREA CLASSIFICATIONS

A key component of the management program for any aquatic preserve is the division of the preserve into management areas. The classification of management areas in an aquatic preserve is based upon the resource value of submerged lands within the preserve associated with existing and future land uses on the adjacent uplands as designated in the local government comprehensive plan(s). As in the delineation of upland uses through zoning, the delineation of a preserve into management areas is two-fold: (1) to identify areas of public and private uses, and (2) to provide standards with which proposed uses and activities must comply. The intent of these management area classifications is to make potential development activities compatible with resource protection goals.

Designated or existing land uses are incorporated into the classification of management areas because use of the adjacent uplands has a direct bearing on the intensity of demand for uses of state-owned submerged lands. As mentioned earlier, the Aquatic Preserve Program has no jurisdiction over the designated use of the adjacent uplands. The incorporation of a designated land use into the management area classification is simply an acknowledgement of a local government's decision as to how a specific upland area can be developed. In general, land uses to be incorporated in the classification of submerged lands management areas for all preserves include:

Agriculture (AG): This category represents state-owned submerged lands adjacent to land designated on a local government future land use map as agriculture/ silviculture. It is intended to include sparsely populated areas used primarily for agricultural and/or forestry purposes.

Single-Family (SF): This category represents state-owned submerged lands adjacent to land designated on a local government future land use map as single-family residential. It is intended to include areas using the adjacent portion of the preserve solely for private recreational activities.

Multi-Family (MF): This category represents state-owned submerged lands adjacent to land designated on a local government future land use map as multi-family residential. It is intended to include areas where more than one private residence are using the adjacent portion of the preserve solely for private recreational activities. The associated residences include townhouses, trailer parks, condominiums, apartments, and any other group of multi-family dwellings. This category also includes a group of single-family property owners (i.e., homeowners association) that proposes to use state-owned submerged lands for the mutual benefit of the group.

Commercial-Industrial (CI): This category represents state-owned submerged lands adjacent to land designated on a local government future

land use map as commercial or industrial. The category is also intended to incorporate uses associated with structures that charge fees or generate revenue. Examples of commercial uses include: marinas, restaurants, fish houses, and yacht clubs that charge membership fees.

Public Recreation (PR): This category represents state-owned submerged lands adjacent to land designated on a local government future land use map as public recreation/conservation and is utilized for the purposes of public recreation. It is intended to include (1) areas where structures are used by the general public at no charge and (2) federal, state, and municipal parks that charge a nominal fee.

Open-water (OW): This category represents state-owned submerged lands within an aquatic preserve which are of a distance of greater than 500 feet from land.

Classifications of management areas are also derived from the resource value of the state-owned submerged lands adjacent to the upland property. Each of the land use classifications listed above is assigned an appropriate number to define the resource value of the adjacent submerged lands. The methodology used to determine this resource value shall be consistent with the latest methodology approved by the Bureau of Submerged Lands and Preserves.

If an area within the preserve is identified as a **Primary Resource Protection Area (PRPA)**, then it will be assigned a resource value of "**1**". A PRPA essentially combines Resource Protection Areas 1 and 2, as defined in Sections 18-20.003(31), and 18-20.003(32), F.A.C.

Submerged areas that are characterized by the absence of the above resource attributes will be identified as a **Secondary Resource Protection Area (SRPA)** and assigned a resource value of "**2**". A SRPA is a Resource Protection Area 3 as defined by Section 18-20.003(33), F.A.C.

As stated previously, resource values are to be incorporated into the classification of management areas. For instance, if a submerged area within the preserve is determined to have a resource value of 1 and the adjacent uplands is zoned as single-family residential (SF), then this management area would be classified as **SF/1**.

In the following section of this chapter, minimum criteria are outlined for a number of uses and activities that can occur in this preserve. These minimum criteria, provided by Chapter 18-20, F.A.C., apply to the uses and activities designated for each management area.

Areas requiring specialized management policies will be referred to as **special management areas** and such areas will be labeled with the additional letter "**a**". These areas would include tracts within the preserve which are under multiple agency management where the primary managing agency is one other than the Department of Natural Resources. The role of the Aquatic Preserve Program within these areas will be that of cooperation and coordination with the primary managing agency and its policies providing that such policies are consistent with the Florida Aquatic Preserve Act, Chapter 258, F.S., and Rules of Florida Aquatic Preserves, Chapter 18-20, F.A.C.

C. MINIMUM CRITERIA FOR ALLOWABLE USES

Chapter 18-20, F.A.C. provides the minimum standards with regard to the utilization of state-owned submerged lands within an aquatic preserve as authorized by the Board of Trustees and DNR. It should be noted that other regulatory agencies' rules and jurisdictions over activities may also apply within aquatic preserves (DER, ACOE, SJRWMD, FGFWFC, DRP). In addition, the DNR's Division of Beaches and Shores regulates coastal construction in beach management areas through the establishment of the Coastal Construction Control Line. This line defines the area within which special structural design consideration is required to insure protection of the beach-dune system.

The minimum standards for each allowable use are detailed below.

All Dock Structures: Section 18-20.004(5)(a), F.A.C. states that all docking facilities within an aquatic preserve shall meet the following standards and criteria:

1. no dock shall extend waterward of the mean or ordinary high water line more than 500 feet or 20 % of the width of the waterbody at that particular location, whichever is less;

2. areas of significant biological, scientific, historic, and/or aesthetic value require special management considerations. Modifications to docks in these areas may be more restrictive and shall be determined on a case-by-case basis;

3. the number, lengths, drafts, and types of vessels allowed to utilize the proposed facility may be stipulated;

4. where local governments have more stringent standards and criteria for docking facilities, the more stringent standards for the protection and enhancement of the aquatic preserve shall prevail.

Private Residential Single Docks: Section 18-20.004(5)(b), F.A.C., states that private residential single docks, as defined by Section 18-20.003(23), F.A.C., shall conform to the following specific design standards and criteria:

1. any main access pier shall be limited to a maximum width of four feet;

2. must be designed and constructed to ensure maximum light penetration;

3. may extend out from the shoreline no further than to a maximum depth of -4 feet at Mean Low Water (MLW);

4. when the water depth is -4 feet MLW at an existing bulkhead, the maximum dock length from the bulkhead shall be 25 feet, subject to modifications accommodating shoreline vegetation overhang;

5. wave break devices shall be designed to allow for maximum water circulation and built in such a manner as to be part of the dock structure;

6. the maximum size of the terminal platform shall not exceed 160 square feet;

7. dredging to obtain navigable water depths is strongly discouraged.

In the interests of clarification, the term "private residential single docks" refers to those docks associated with single-family residences that are used for private recreational purposes.

Private Residential Multi-Slip Docks: Section 18-20.004(5)(c), F.A.C., states that private residential multi-slip docks, as defined by Section 18-20.003(24), F.A.C., shall conform to the following design standards and criteria:

1. the area of sovereignty submerged land preempted by the docking facility shall not exceed the square footage amounting to ten times the riparian waterfront footage of the affected waterbody of the applicant, or the square footage attendant to providing a single dock in accordance with the criteria for private residential single docks, whichever is greater. A conservation easement or other such restriction acceptable to the Board must be placed on the riparian shoreline, used for the calculation of the 10:1 threshold, to conserve and protect shoreline resources and subordinate/waive any further riparian rights of ingress and egress for additional docking facilities;

2. docking facilities and access channels shall be prohibited in Resource Protection Areas 1 and 2 (= PRPA), except as allowed pursuant to Section 258.42(3)(e)1, F.S., while dredging in Resource Protection Area 3 (= SRPA) shall be strongly discouraged;

3. water depths adjacent to and within the proposed mooring area shall have a minimum clearance of one foot between the deepest draft vessel and the submerged bottom at MLW;

4. main access piers and connecting walks shall not exceed six feet in width;

5. terminal platforms shall not exceed eight feet in width;

6. finger piers shall not exceed three feet in width and 25 feet in length;

7. pilings may be utilized as required to provide adequate mooring capabilities;

8. specific provisions of Section 18-20.004(5)(d), F.A.C., for commercial, industrial, and other revenue generating/income related docking facilities shall also apply to private residential multi-slip docks.

Commercial-Industrial Docking Facilities and Marinas: Section 18-20.004(5)(d), F.A.C., states that commercial, industrial, and other revenue generating/income related docking facilities, as defined by Section 18-20.003(10), F.A.C., shall conform to the following specific design criteria and standards:

1. docking facilities shall only be located in or near areas with good circulation, flushing, and adequate water depths;

2. docking facilities shall not be located in Resource Protection Areas 1 and 2 (= PRPA); however, main access piers may be allowed to pass through Resource Protection Area 1 or 2 that are located along the shoreline to reach an acceptable Resource Protection 3 (= SRPA), provided that such crossing will generate minimal environmental impact;

3. the siting of docking facilities shall take into account the access of boat traffic to avoid marine seagrass beds or other aquatic resources in the surrounding area;

4. the siting of new facilities within the preserve shall be secondary to the expansion of existing facilities when such expansion is consistent with other standards;

5. the location of new facilities and expansion of existing facilities shall consider the use of upland dry storage as an alternative to multiple wet slip docking;

6. marina siting will be coordinated with local governments to ensure consistency with local plans and ordinances;

7. marinas shall not be sited within state designated manatee sanctuaries;

8. in any areas with known manatee concentrations, manatee warning/notice and/or speed limit signs shall be erected at the marina and/or ingress and egress channels, according to Florida Marine Patrol specifications.

Exceptions to the standards and criteria for any docking facility may be considered, but only upon demonstration that such exceptions are necessary to ensure reasonable riparian ingress and egress.

Lease or Transfer of Lands: Section 18-20.004 (1)(b), F.A.C., states that there shall be no further lease or transfer of sovereignty lands within an aquatic preserve unless such transaction is in the public interest. Section 18-20.004(2), F.A.C., specifically defines the public interest test (see Appendix A for a copy of Chapter 18-20, F.A.C.). Section 18-20.004(1)(e), F.A.C., states that a lease, easement, or consent of use may be authorized only for the following activities: (1) a public navigation project; (2) maintenance of an existing navigation channel; (3) installation or maintenance of approved navigational aids; (4) creation or maintenance of a commercial/industrial dock, pier, or marina; (5) creation or maintenance of private docks; (6) minimum dredging of navigation channels attendant to docking facilities; (7) creation or maintenance of shore protection structures; (8) installation or maintenance of oil and gas transportation facilities; (9) creation, maintenance, replacement, or expansion of facilities required for the provision of public utilities; and (10) other activities which are a public necessity or which are necessary to enhance the quality and quantity of the preserve and which are consistent with the Florida Aquatic Preserves Act (Sections 258.35 - 258.46, F.S.). Section 18-20.004(1)(f), F.A.C., states that structures to be built in, on, or over sovereignty lands are limited to those necessary to conduct water-dependent activities.

Utility Easements: Section 18-20.004(3)(c), F.A.C., states that utility cables, pipes, and other such structures shall be constructed and located in a manner that will cause minimal disturbance to submerged resources (e.g., seagrass beds, oyster bars) and do not interfere with traditional uses. It will be the policy to encourage the placement of utilities into designated corridors or existing easements within the Guana River Marsh Aquatic Preserve.

Spoil Disposal: Section 18-20.004(3)(d), F.A.C., states that spoil disposal within an aquatic preserve shall be strongly discouraged and may be approved only where the applicant has demonstrated that there is no other reasonable alternative and that the spoiling activity may be beneficial to, or at a minimum, not harmful to the quality or utility of the preserve. It will be the policy to not recommend approval of spoil disposal onto a PRPA within the Guana River Marsh Aquatic Preserve. Exceptions to this criteria may be granted where beach quality sand is transferred and deposited onto shoreline beaches as part of an approved beach restoration management plan.

Piers: Piers shall be constructed in accordance with the minimum criteria provided by Section 18-20.004(5)(b), F.A.C. In addition, the following conditions apply to all piers: (1) the entire structure will be elevated to a minimum of 5 feet above the MHWL, (2) hand rails will be installed around the perimeter of the structure, (3) at least one "Docking Prohibited" sign will be posted and maintained on each side of the pier, (4) no temporary or permanent mooring of vessels will be permitted, and (5) dredging is prohibited when associated with pier construction and maintenance.

Ramps: Boat ramps will be reviewed on a case-by-case basis. Determining factors to be reviewed include: (1) the elimination or alteration of natural resources or habitat (e.g., seagrasses, shoreline vegetation, nesting areas), (2) the amount of dredging and/or filling of submerged lands, and (3) accessibility to the ramp from water and land routes.

Additional criteria for the repair, replacement, and expansion of existing structures are provided for in Chapter 18-21, F.A.C. Replacement and expansion of structures must comply with the minimum criteria provided for in Chapter 18-20, F.A.C.

For the purposes of this plan, the following conditions will apply: (1) the Atlantic Intracoastal Waterway (AIW) navigation channel is exempt from aquatic preserve rules and regulations, pursuant to Section 258.40, F.S., and functions only as a boundary between management areas; and (2) certain activities are generally permissible in all management areas. These activities include shoreline stabilization, maintenance dredging, and maintenance of channel markers. Where appropriate to protect environmental resources, certain conditions or restrictions may be placed on these type of activities. For example, seawalls in some locations may be discouraged and riprap may be required to be placed along a seawall, in order to provide additional habitat.

D. MANAGEMENT AREAS

In this section, each management area is delineated with boundaries, descriptions, and allowable uses. Specific criteria and supporting rationale for each special management area are also provided. Due to changes that may occur from the rezoning of adjacent uplands and altering biological conditions on submerged lands, the final decision on approving, modifying or denying uses of the submerged lands within the preserve will be made based on field surveys and assessments of project sites. Figure 9 is a map of all management areas within this preserve. The purpose of providing this map is to give some general guidance and an understanding of where the management areas lie within the preserve.

The determination of management area classifications have been based on information presented earlier. In the event that a site visit concludes that the management area for a specific site is different from that shown on the map in

Figure 9, the determination made during the site visit will be judged as the correct determination.

Some management areas may have a specific activity occurring within that is not reflective of the overall upland use. As an example, an upland parcel consists of a fishcamp surrounded by single-family homes. The fishcamp may have preceded residential development and the aquatic preserve designation; therefore, it would be unreasonable to remove the facility. Conversely, marina expansion and new commercial-type activities may not be allowed in this management area because of the presence aquatic resources and/or the upland zoning restrictions. In such cases, the specific activity will be recognized as a "non-conforming use".

MANAGEMENT AREA AG/1

(agriculture/primary resource protection area)

Boundaries: Begin at the westerly MHWL of the Tolomato River approximately 2000 feet south of CR 210 bridge; then proceed southerly along the MHWL of said river and its tributaries to an east-west line approximately 0.5 mile north of Shannon Road; then proceed easterly along said line to the AIW navigation channel; proceed northerly along said channel to an east-west line 2000 feet south of CR 210 bridge; then west to the point of beginning (POB).

Description: The submerged lands of this management area are characterized by expansive reaches of tidal marsh dominated mainly by smooth cordgrass. The marsh varies in width from a few hundred feet in the extreme northern section to nearly a mile in the central sections. Numerous named and unnamed tidal creeks flow through the marsh. Tidal flats and oyster beds are abundant. Spoil islands dot the marsh adjacent to the Tolomato River as a result of the dredging of the AIW. The marsh rises slightly in elevation along the fringes that abut the uplands to the west. These fringe areas are dominated by black needlerush. The shoreline is in a natural, unaltered state throughout most of the area. The adjacent uplands are largely undeveloped except for a few single-family residences at the east end of Pine Island Road. A non-conforming use feature of this agricultural zone is the presence of a commercial fishcamp on Deep Creek. The fishcamp has a boat ramp and docking facilities and offers boat rentals.

A large tract of land held in private single ownership adjoins this management area and is the largest such upland tract abutting the preserve. The tract extends northward from Pine Island Road to CR 210. The land is currently in an undeveloped state and is managed for its timber resources. There are no reported plans for development at this time. A large area of freshwater wetland known as Cabbage Swamp transects the tract from north to south. The pressures of population growth in unincorporated areas of St. Johns County may lead to future

development of this property for any number of uses. The combination of freshwater wetland habitat in its interior and its ability to buffer the adjacent preserve marshes and surface waters make this tract of land a high priority for state acquisition.

Allowable Uses: Private residential single docks and piers; utility easements (in designated corridors).

MANAGEMENT AREA AG/2

(agriculture/secondary resource protection area)

Boundaries: Begin at the westerly MHWL of the Tolomato River at the CR 210 bridge south right-of-way; proceed southerly along the MHWL of said river approximately 2000 feet; then easterly to the center line of the AIW navigation channel; then proceed northerly along said line to the CR 210 bridge south right-of-way; then west to the POB.

Description: The submerged lands of this management area are characterized by the unvegetated open water bottoms of the AIW. This area is in an upland cut portion of the AIW and the shoreline drops off rapidly into deep water. There is little or no littoral zone present. Some salt marsh vegetation is present in scattered breaks in the shoreline bluffs. The adjacent uplands are undeveloped. There is a dock and shoreline riprap immediately south of the CR 210 bridge.

Allowable Uses: Private residential single docks and piers; utility easements.

MANAGEMENT AREA SF/1

(single-family/primary resource protection area)

There are three major areas in the preserve that are designated this classification.

1. **Boundaries**: All the beaches and submerged lands along the Atlantic Ocean that are adjacent to uplands in the preserve which are designated single-family residential. These management areas extend 500 feet waterward of the MHWL.

   Description: The beaches and submerged bottoms along the Atlantic shore consist mainly of white quartz sand, shells, and shell fragments. In most areas, the upper beach has no vegetative cover. Sea oats and beach elder are present at the base of the primary dunes. These dunes have been highly altered or destroyed to accommodate residential construction. These

beach management areas are designated as primary resource protection areas because they serve as nesting habitat for listed species (e.g., loggerhead turtles).

2. **Boundaries**: Begin at the intersection of the easterly MHWL of the Tolomato River and the southern boundary of the preserve; proceed northerly along said MHWL for a distance of one mile; then west to the center line of the Guana River; then southwest along said center line to the Tolomato River; then south, east, and southeast to the POB.

   Description: This management area is adjacent to a one mile stretch of single-family tract along the west side of SR A1A at the southern boundary of the preserve. The submerged lands are characterized by tidal salt marsh, tidal flats, and oyster bars associated with the Guana River, Tolomato River, and Sombrero Creek. The shoreline remains in a natural, unaltered state.

3. **Boundaries**: Begin at the intersection of the AIW navigation channel and the southern boundary of the preserve; proceed northerly along said channel to an east-west line 0.5 mile north of Shannon Road; then west along said line to the MHWL of the Tolomato River; then southerly along said MHWL to the southern boundary of the preserve; then east to the POB.

   Description: The submerged lands of this area are characterized by expansive salt marshes associated with the Tolomato River, Stokes Creek, Casa Cola Creek, and many unnamed tidal creeks. The marsh is as much as a mile wide in the southern half of the area. Tidal flats and oyster bars are abundant throughout the entire area. Most of the adjacent uplands are sparsely developed. There is moderate development of single-family residences in the Stokes Landing area. A few small, private docks are scattered along the tidal creeks.

Allowable Uses: Private residential single docks and piers; utility easements (in designated corridors); beach restoration (where beach quality sand is transferred and deposited onto shoreline beaches as part of an approved beach restoration management plan). **Motorized vehicular traffic is not an authorized activity on sovereign submerged lands within PRPA beach management areas.**

MANAGEMENT AREA SF/1a

(single-family/primary resource protection area)
special management area

Boundaries: This management area includes the submerged lands adjacent to single-family tracts that border Lake Ponte Vedra in the extreme northern sector of

the preserve. The tracts are located along the east side of Neck Road and west of SR A1A.

Description: The submerged lands are characterized by freshwater marshes dominated by annual emergent grasses. Submergent vegetation includes widgeon grass, musk grass, pond weeds, and coontail. The upland properties along Neck Road are moderately developed with single-family residences. A few small, private docks and bulkheads have been constructed. The tract along the west side of SR A1A is currently undeveloped. This special management area lies within the WMA managed by FGFWFC.

Allowable Uses: private residential single docks and piers; utility easements (in designated corridors).

MANAGEMENT AREA SF/2

(single-family/secondary resource protection area)

Boundaries: Begin at the easterly MHWL of the Tolomato River at a point 300 feet south of CR 210 bridge; proceed southerly along said MHWL for a distance of 1700 feet to the mouth of a man-made canal; then west to the center line of the AIW navigation channel; then northerly along said line for a distance of 1700 feet; then east to the POB.

Description: The submerged lands of this management area are characterized by the unvegetated open water bottoms of the AIW. This area is in an upland cut portion of the AIW and the shoreline drops off rapidly to deep water. The adjacent uplands contain single-family residences on small lots. The shoreline has been armored with bulkheads and riprap revetments. There are ten private, single docks in the area.

Allowable Uses: Private residential single docks and piers; utility easements.

MANAGEMENT AREA MF/1

(multi-family/primary resource protection area)

Boundaries: This area consists of a stretch of beach and submerged bottoms along the Atlantic Ocean beginning 1.2 miles south of the intersection of SR A1A and Mickler's Road and extending south for a distance of 0.4 mile. The management area extends 500 feet waterward of MHW.

Description: The beaches and submerged bottoms along the Atlantic shore consist mainly of white quartz sand, shells, and shell fragments. In most areas, the upper beach has no vegetative cover. The adjacent uplands contain a 93 unit condominium complex. This beach management area is designated a primary resource protection area because it serves as nesting habitat for listed species (e.g., loggerhead turtles).

Allowable Uses: Private residential docks (a single two-slip dock built in accordance with standards and criteria for private residential single docks); piers; utility easements (in designated corridors); beach restoration (where beach quality sand is transferred and deposited onto shoreline beaches as part of an approved beach restoration management plan). **Motorized vehicular traffic is not an authorized activity on sovereign submerged lands within PRPA beach management areas.**

MANAGEMENT AREA MF/1a

(multi-family/primary resource protection area)
special management area

Boundaries: The submerged lands of Lake Ponte Vedra adjacent to the multi-family parcel described above. The management area extends 500 feet waterward of the OHWL of Lake Ponte Vedra.

Description: The submerged lands are characterized by freshwater marshes dominated by cattail. Other emergent vegetation include bullrush and sawgrass. The adjacent upland parcel contains tennis courts provided for residents of the oceanfront condominium complex. The shoreline remains unaltered. This special management area lies within the WMA managed by FGFWFC.

Allowable Uses: Private residential docks (a single two-slip dock built in accordance with standards and criteria for private residential single docks); piers; utility easements (in designated corridors).

MANAGEMENT AREA CI/1

(commercial-industrial/primary resource protection area)

There are two areas in the preserve that are designated this classification.

1. **Boundaries**: A small cove at the northeast reach of the Guana River.

Description: The cove lies adjacent to upland state-owned land that is leased for commercial purposes. The property contains a convenience store and automobile service station. The cove has a narrow fringe of saltmarsh vegetation (cordgrass, needlerush) along the perimeter. The shore is unaltered and there are no water-dependent structures present.

2. **Boundaries**: An area of submerged lands in the southwest corner of the preserve that border an upland tract zoned "Industrial" on the St. Johns County Future Land Use Map. The tract includes the St. Augustine Airport, the Grumman-St. Augustine Corporation, and the St. Augustine Rod and Gun Club.

   Description: The submerged lands are characterized by saltmarshes, tidal flats, tidal creeks, and oyster bars associated with the southern reaches of Casa Cola Creek. There are no water-dependent structures currently in the area.

Allowable Uses: A single, two-slip dock built in accordance with standards and criteria for private residential single docks; piers; utility easements (in designated corridors). A commercial dock, however, may be permitted to pass over a primary resource protection area in order to reach a secondary resource protection area.

MANAGEMENT AREA CI/1a

(commercial-industrial/primary resource protection area)
special management area

Boundaries: A small tract of submerged land at the extreme northern tip of Lake Ponte Vedra at Mickler's Road.

Description: The submerged lands are characterized as freshwater marsh typical of the northern reaches of Lake Ponte Vedra. The adjacent upland is zoned commercial and contains a bar/restaurant. The shoreline is natural and there are no water-dependent structures present. This special management area lies within the WMA managed by FGFWFC.

Allowable Uses: A single, two-slip dock built in accordance with standards and criteria for private residential single docks; piers; utility easements (in designated corridors). A commercial dock, however, may be permitted to pass over a primary resource protection area in order to reach a secondary resource protection area.

MANAGEMENT AREA CI/2

(commercial-industrial/secondary resource protection area)

Boundaries: Begin at the easterly MHWL of the Tolomato River at the south right-of-way of CR 210 bridge; proceed southerly along said MHWL for a distance of 300 feet; then west to the center line of the AIW navigation channel; then northerly along said line for a distance of 300 feet; then east to the POB.

Description: The submerged lands of this area are characterized by the unvegetated water bottoms of the AIW. The shoreline drops off rapidly to deep water. The adjacent uplands are zoned commercial. There is a single-family residence on the property and the shoreline contains riprap and a private single dock.

Allowable Uses: Commercial docks and piers; marinas; ramps; utility easements.

MANAGEMENT AREA PR/1

(public recreation/primary resource protection area)

This management area includes all the state-owned submerged lands that border the uplands of the Guana River State Park. Management agreement No. 745-0017 and a subsequent amendment provides management authority to the Division of Recreation and Parks over sovereign submerged lands lying within 400 feet of the MHW or OHW line, or within 400 feet of the emergent edge of wetland vegetation, within the riparian area of the State Park unit. In areas of overlapping management authority between the Aquatic Preserve Program and DRP, Aquatic Preserve staff will coordinate closely with DRP staff on matters of resource protection and restoration.

There are three areas within the preserve that fall in the **PR/1** classification.

1. **Boundaries:** The sovereign submerged lands adjacent to the uplands of the Guana peninsula and the coastal tract west of SR A1A that comprise the Guana River State Park. The western boundary shall be the AIW navigation channel and eastern boundary shall be the easterly MHWL of the Guana River.

   Description: The submerged lands of this management are characterized by the saltmarshes, tidal creeks, tidal flats, and oyster bars associated with the reaches of the Tolomato and Guana Rivers that surround the State Park.

2. **Boundaries**: All the beaches and submerged lands along the Atlantic Ocean that are adjacent to the Guana River State Park. The area comprises approximately 4.2 miles of contiguous shoreline and 0.4 miles of non-contiguous parcels. The management area extends 500 feet waterward of the MHWL.

   Description: The beaches and submerged bottoms along the Atlantic shore consist mainly of white quartz sand, shells, and shell fragments. In most areas, the upper beach berm has a sparse vegetative cover of sea oats and beach elder. The primary dunes are stabilized with herbaceous vegetation and are relatively undisturbed. These beach management areas are designated as primary resource protection areas because they serve as nesting habitat for listed species (e.g., loggerhead turtle, least tern). Vehicles are not allowed on the 4.2 miles of beach within Guana River State Park pursuant to DRP policy.

3. **Boundaries**: This area is a 147 acre out-parcel of Guana River State Park land located at the southern boundary of the preserve.

   Description: The submerged lands are characterized by the salt marshes, tidal creeks, tidal flats, and oyster bars associated with Sombrero Creek.

Allowable Uses: Utility easements (in designated corridors); public docks (meeting the requirements of a private residential single dock); ramps; piers; beach restoration (where beach quality sand is deposited onto shoreline beaches as part of an approved beach restoration management plan). **Motorized vehicular traffic is not an authorized activity on sovereign submerged lands within PRPA beach management areas.**

MANAGEMENT AREA PR/1a

(public recreation/primary resource protection area)
special management area

This special management area includes all sovereign submerged lands bordering state-owned uplands within the WMA managed by the FGFWFC. There are three areas in the preserve that fall into this classification.

1. **Boundaries**: Begin at the easterly MHWL of the Tolomato River at a point 2000 feet south of CR 210 bridge; proceed southerly along the MHWL of said river and its tributaries to its intersection with an east-west line dividing the WMA from the Guana River State Park; then proceed westerly along said line to its intersection with the AIW navigation channel; then northerly along

said channel to a point 2000 feet south of CR 210 bridge; then east to the POB.

Description: The submerged lands of this area are characterized by vast expanses of tidal saltmarsh associated with the Tolomato River, Capo Creek, Jones Creek, and numerous unnamed tidal creeks. The marsh is over one mile wide in some areas. Tidal flats, oyster bars, and spoil islands are abundant. The shoreline remains in an unaltered, natural state. The FGFWFC has constructed a boardwalk and observation tower on Capo Creek as part of an interpretive trail system.

2. **Boundaries**: This area includes all submerged lands below the OHWL of Lake Ponte Vedra with the exception of the single-family and commercial zones along the northern tip.

   Description: The lake and its associated wetlands combine a myriad of biological communities. Saltmarsh, tidal flats, and oyster bars are common in the high salinity zones in the southern reaches. The salinity of the lake decreases as you proceed north where salt marshes blend into brackish marsh which, in turn, give way to freshwater marsh in the northern reaches. The areal extent and location of the communities can vary over time. Specific water level manipulations for Lake Ponte Vedra are designed by FGFWFC. The FGFWFC has constructed an observation tower on the west bank of the lake as part of an interpretive trail system.

3. **Boundaries**: The seven inland ponds of the WMA. These include Big Savannah, Little Savannah, Reitchies, Booths, Cooks, McNeils, and Diego Ponds.

   Description: The ponds vary in area and depth and water level manipulations are designed by FGFWFC. The primary community type in the ponds is basin marsh, with the exception of Diego Pond. Diego Pond is tidally influenced by Jones Creek and the pond is best characterized as brackish marsh. The FGFWFC has constructed a boardwalk and observation platform on Big Savannah Pond as part of an interpretive trail system.

Allowable Uses: Utility easements (in designated corridors); public docks (meeting the requirements of a private residential single dock); ramps; piers.

MANAGEMENT AREA OW/2

(open water/secondary resource protection area)

Boundaries: Open water areas of the Atlantic Ocean beginning 500 feet from MHW and extending easterly three miles to the state territorial limit

Description: The submerged bottoms in this open water area are characterized by unvegetated benthic substrate typical of nearshore areas of the Atlantic Ocean in this region.

Allowable Uses: Utility easements; spoil disposal; private leases.

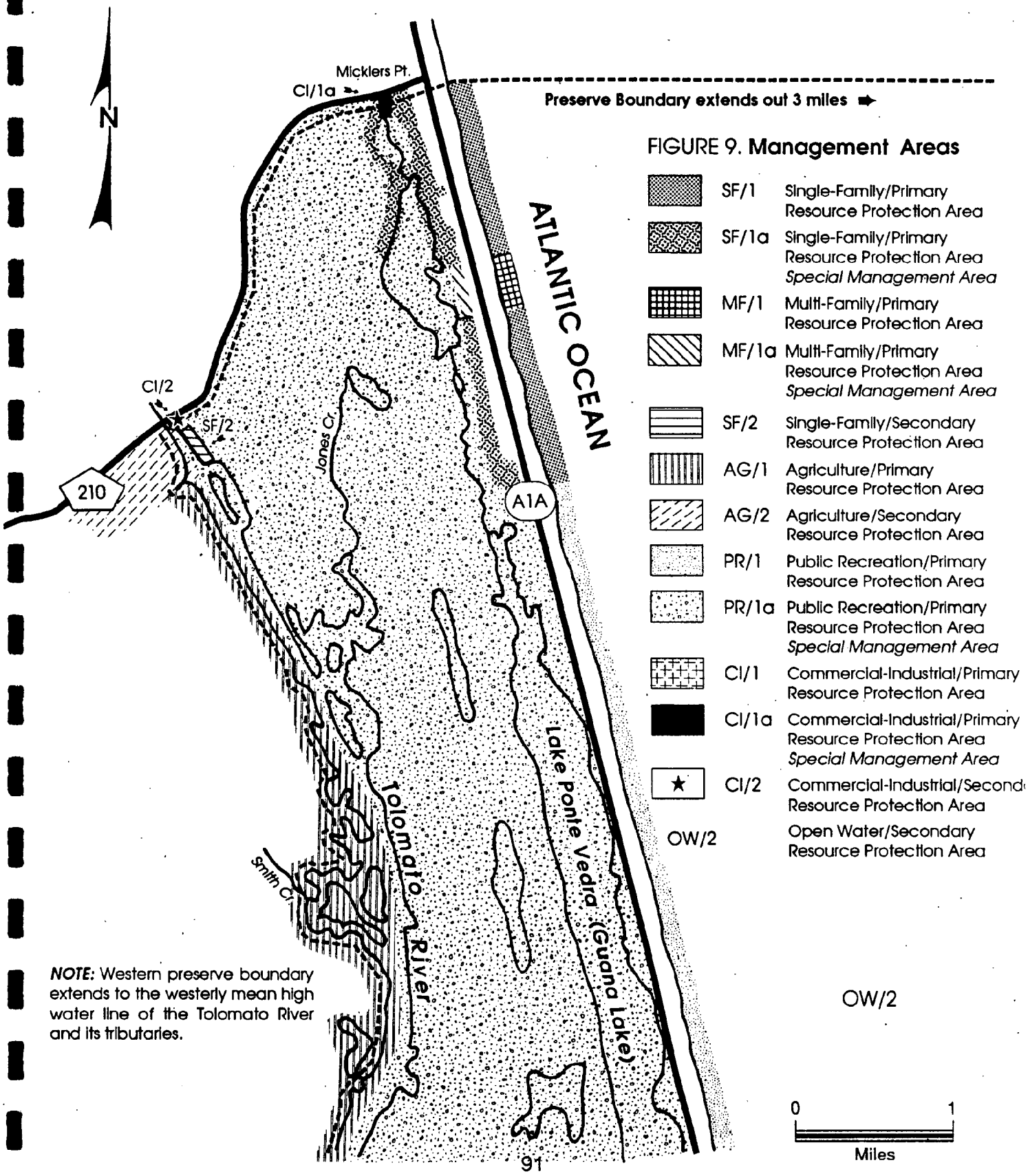

FIGURE 9. **Management Areas**

SF/1	Single-Family/Primary Resource Protection Area
SF/1a	Single-Family/Primary Resource Protection Area *Special Management Area*
MF/1	Multi-Family/Primary Resource Protection Area
MF/1a	Multi-Family/Primary Resource Protection Area *Special Management Area*
SF/2	Single-Family/Secondary Resource Protection Area
AG/1	Agriculture/Primary Resource Protection Area
AG/2	Agriculture/Secondary Resource Protection Area
PR/1	Public Recreation/Primary Resource Protection Area
PR/1a	Public Recreation/Primary Resource Protection Area *Special Management Area*
CI/1	Commercial-Industrial/Primary Resource Protection Area
CI/1a	Commercial-Industrial/Primary Resource Protection Area *Special Management Area*
★ CI/2	Commercial-Industrial/Second Resource Protection Area
OW/2	Open Water/Secondary Resource Protection Area

NOTE: Western preserve boundary extends to the westerly mean high water line of the Tolomato River and its tributaries.

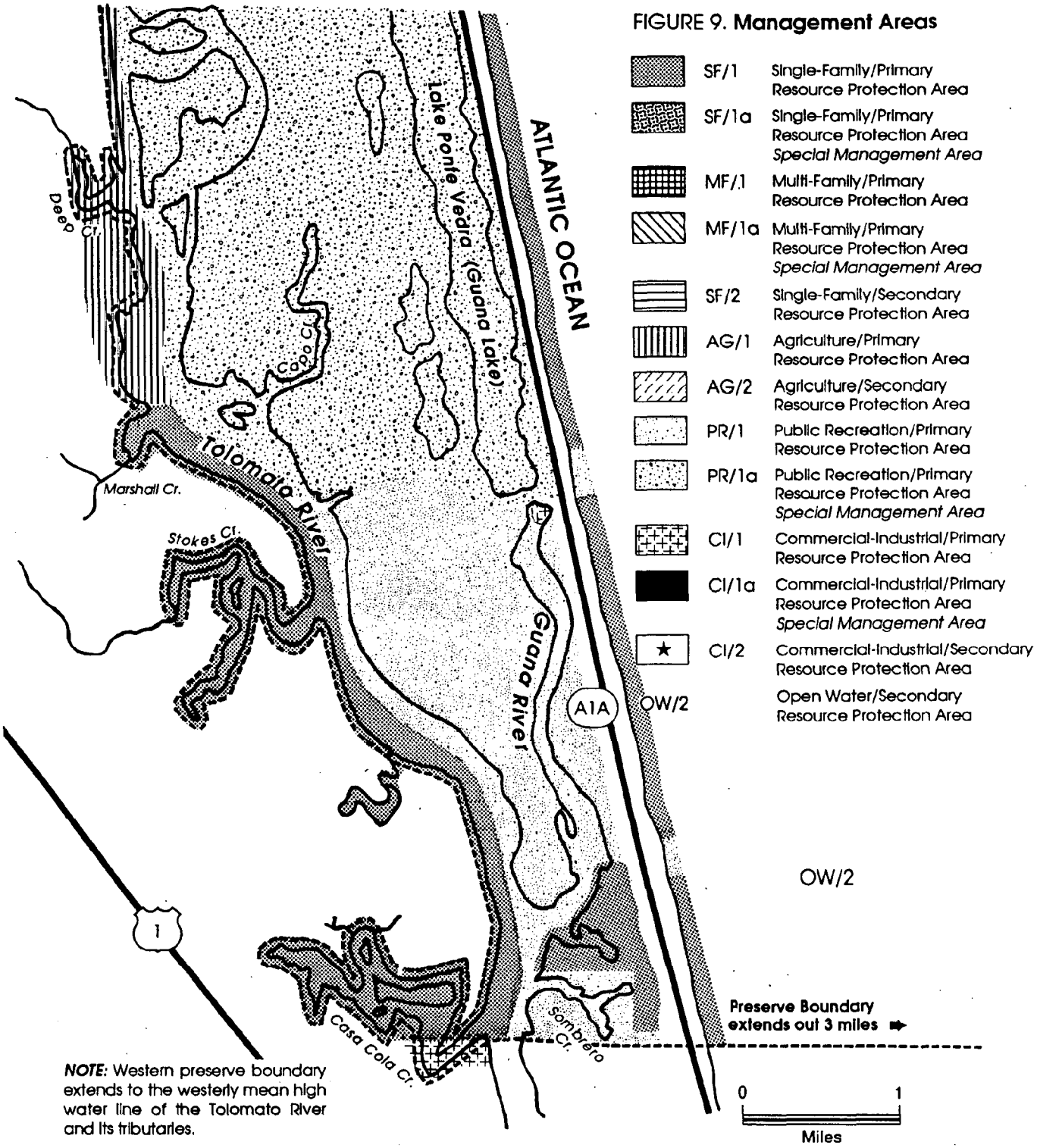

FIGURE 9. **Management Areas**

NOTE: Western preserve boundary extends to the westerly mean high water line of the Tolomato River and its tributaries.

CHAPTER VI

SITE SPECIFIC MANAGEMENT ISSUES AND NEEDS

The first part of this chapter deals with management issues and special needs of the Guana River Marsh Aquatic Preserve. The management issues involve specific activities, as opposed to permitted structures, that directly affect the biological integrity of the preserve. The issues that are specific to this area include, but are not limited to: the protection of listed species and their habitat, the protection of bird feeding and resting areas, acquisition of additional property, and upland development. Special needs of the preserve include, but are not limited to: staffing, resource data, and research. Other issues and needs may arise as future use intensifies and these will be identified as they develop.

The second part of the chapter establishes management initiatives for these issues, providing additional management direction not set forth by Chapter 258, F.S., Chapter 18-20, F.A.C., or Chapter V of this plan. These management initiatives are intended to be used as a tool by the Department of Natural Resources in managing the preserve, and in encouraging the local governments and/or other agencies to provide the necessary restrictions for resolving those issues and/or needs.

A. MANAGEMENT ISSUES AND SPECIAL NEEDS

1. PROTECTION OF LISTED SPECIES AND THEIR HABITAT

Species whose existence is threatened are currently listed by four agencies: the Florida Game and Fresh Water Fish Commission (FGFWFC), the Florida Department of Agriculture and Consumer Services (DACS), the U. S. Fish and Wildlife Service (USFWS), and the Convention on International Trade in Endangered Species of Wild Fauna and Floras (CITES). Each agency has its own focus, and the regulations regarding what level of protection is given to which species reflects this orientation. For example, the FGFWFC does not designate plant species, whereas the DACS addresses plants only.

Listed species are afforded some protection by other agencies as well. These measures do overlap and, thus, reinforce each other. The DNR is actively involved in protecting manatees and sea turtles, both of which are listed by the FGFWFC and the USFWS. The Marine Fisheries Commission (MFC) regulates the taking of certain salt water species which includes snapper, sea trout, grouper, black drum, and redfish. All of these species are present in this preserve. Some of the protected species are detailed in the following:

Marine Turtles: The beach/berm habitats of the preserve are known nesting areas for marine turtles. At the present time, vehicular traffic is permitted, by county ordinance, on the beach below the line of natural vegetation. Vehicles are not allowed on the 4.2 miles of beach within Guana River State Park. Vehicles pose a significant threat to nesting marine turtles, nests, and hatchlings. Beach lighting during the nesting season disorients hatchlings and may contribute significantly to mortality when young turtles crawl onto roadways instead of towards the water. Entanglement with nets, traps and fishing lines, ingested plastics, poaching (eggs or turtles), and wounds from boat propellers are also serious problems.

Manatees: The AIW is of great importance as a travel corridor for manatees moving between winter habitat in south Florida and feeding and resting areas along the east of Florida and into south Georgia. The minimum estimated population of manatees on the east coast is 800. The principle threats to manatees in this area, as well as in other parts of Florida, are: 1) increasing levels of boat traffic in essential travel corridors, feeding and resting areas, warm-water refuges and freshwater sources and 2) loss of essential habitat. Other significant threats are entanglement with nets, traps, and fishing lines and ingested plastics.

Listed Bird Species: Colonial wading and diving birds nest in the interior portions of the preserve and use the area extensively for feeding and resting. Lake Ponte Vedra, the inland ponds, and the saltmarsh areas are especially attractive to them. Encroaching development and destruction of saltmarsh disrupts or destroys vital habitat and inhibits expansion of nesting areas. Ground nesting birds, the least tern in particular, are equally subject to disturbance from foot and vehicular traffic.

Other Listed Wildlife Species: As new species are listed or more information becomes available about the life histories and habitat needs of presently listed species, certain activities and management policies may need to be established or revised to reflect these changes. For the present, all state owned lands will be maintained in their "essentially natural condition", as listed species' affinity for these types of areas has been demonstrated.

Listed Plant Species: To the greatest extent possible, state owned lands within the preserve should be protected from land clearing and topographic alterations that would negatively impact habitats for these plants. Collecting, vehicular and foot traffic, altered water flow and herbicides represent serious impacts to the plants themselves and the habitat required for their survival. Pineland communities that would benefit from ecological burning should be identified and appropriate measures taken to institute a fire regime when deemed necessary. Restoration of historic plant communities and eradication of invasive exotic plants would also enhance habitat for these species and wildlife.

2. BEACH DRIVING

At the present time, motorized vehicular traffic is permitted, by county ordinance, below the natural vegetation line on the beaches adjacent to the Atlantic Ocean in St. Johns County. Vehicles are not allowed on the 4.2 miles of beach within Guana River State Park. The coarse coquina sand and steep profiles of the beaches in the preserve make driving on the wet sand area difficult. Drivers are forced to cross the dry sand area, damaging the foredunes, pioneer dune vegetation and sea turtle nesting habitat. Due to the negative environmental impacts resulting from this activity, motorized vehicular traffic shall not be considered an authorized activity on sovereign submerged lands within PRPA beach management areas of the preserve, and therefore will be prohibited.

3. ACQUISITION OF ADDITIONAL PROPERTY

The majority of adjacent uplands west of the preserve are privately owned. These lands contain important resources such as archeological sites, endangered or threatened species habitat, and freshwater wetlands. Efforts should be made to acquire portions of these lands that border the aquatic preserve to form a linking corridor of public lands. This land corridor would help to create a protective buffer for the aquatic resources, prevent the development of sensitive areas, maintain species viability and diversity and allow the removal of disruptive uses. Acquisition of these upland properties by the Conservation and Recreation Lands (CARL) program would help to ensure compatible management goals and would limit the possibility of negative impacts on the aquatic preserve.

4. UPLAND DEVELOPMENT

The regulation of upland development is the responsibility of local government and the Department of Community Affairs (DCA) not the Bureau of Submerged Lands and Preserves. Nevertheless, upland development activity has the potential to have significant adverse impact on the natural resources of the aquatic preserve.

The best avenue for the staff associated with the Guana River Marsh Aquatic Preserve to help control upland development activities is to work closely with the local government. The Local Government Comprehensive Plan (LGCP) for St. Johns County has already been prepared. It is not too late, however, for staff associated with the Aquatic Preserve Program to be actively involved in the preparation of land development regulations and local ordinances necessary to implement the goals, objectives, and policies of the LGCP. Aquatic preserve staff could also work cooperatively with the county on monitoring the implementation of the policies of the LGCP which relate to protecting and conserving the natural resources of the preserve.

5. STAFFING NEEDS

The implementation of this management plan is heavily dependent on the placement of adequate staffing necessary to obtain resource data and other information about the aquatic preserve. Staffing, funding, and equipment needs are addressed in Chapter IX.

6. RESEARCH NEEDS

Declining oyster populations and closure of previously approved shellfish harvesting area are priority issues in the preserve area. Water quality research and monitoring will hopefully provide a better understanding of the causes, processes, extent and severity of shellfish decline. Knowledge of the sources, concentrations and long term effects of pollutants that enter waters of the preserve are needed. Additional research needs of the preserve include an applied coastal research program, estuarine ecology studies, listed species biology and ecology studies, performing a detailed archeological survey of the area and designing methods for protecting significant cultural resources.

B. MANAGEMENT INITIATIVES

This section of the plan contains a number of management initiatives that address the issues identified as being particular to the Guana River Marsh Aquatic Preserve. Adoption of these initiatives will provide specific direction for managing those issues not addressed directly by statute or rule. The major management initiatives for these issues include:

1. Protect, and where possible, enhance habitats of species endangered, threatened, and of special concern within the aquatic preserve.

2. Expand the resource inventory and natural habitat maps within the aquatic preserve.

3. Encourage the development of local government ordinances that will prohibit motorized vehicular traffic on the beaches north of Surfside Avenue in Vilano Beach because of their unique physiological and biological nature.

4. Encourage the development of local government ordinances that will regulate beach lighting during marine turtle nesting season.

5. Encourage acquisition, where feasible, of privately owned uplands and wetlands adjacent to the aquatic preserve, through state or local government land acquisition programs.

6. Encourage the assistance of federal, state and local government agencies in implementing the Aquatic Preserve Management Plan, especially in areas of protection of natural and cultural resources and the enforcement of applicable resource laws and ordinances.

7. Seek full-time staffing of the preserve as outlined in Chapter IX of this plan.

8. Establish a close working relationship with local government and attend both planning and zoning and county commission meetings whenever there is an appropriate issue on the agenda.

9. Closely coordinate with county and city government on the preparation, adoption, and enforcement of land development regulations which will protect the natural resources of the aquatic preserve.

10. Develop a cooperative working relationship with adjacent landowners to develop and implement management criteria conducive to the long-term protection of both upland and submerged habitats.

11. Encourage the placement of docks and piers in locations that traverse the least amount of wetland vegetation.

12. Encourage property owner associations to incorporate the communal use of an individual private residential single dock or a private residential multi-slip dock, within their community, as opposed to the building of numerous personal docks.

13. In coordination with the scientific community, establish a prioritized list of research and monitoring needs for the aquatic preserve.

14. Encourage, through the efforts of the Department of Environmental Regulation and the St. John's River Water Management District, the maintenance and upgrading of the water quality, and ensure the natural seasonal flow of freshwater and tidal fluctuations of saltwater into the preserve.

CHAPTER VII

MANAGEMENT ACTION PLAN

This chapter establishes the guidelines which allow for the management and protection of the Guana River Marsh Aquatic Preserve's natural and cultural resources for the benefit of future generations (Section 258.35, F.S.).

Before an effective program can be designed to manage and protect natural resources, the function, importance, and location of the resources must be defined. Additional efforts will consist of identifying those activities or parameters that affect these resources, either positively or negatively. This information will form the foundation from which action will be initiated to manage and protect these resources. The management strategies for an aquatic preserve program must consist of a variety of components such as resource management, resource protection, research, and environmental education.

In general, the role of the management program for the preserve includes: (1) providing information on the ecological functions and economic importance of the natural resources within the preserve, (2) overseeing those activities that affect the natural resources within the preserve, (3) ensuring that accurate biological and physical information is considered in permit-related issues and planning decisions, (4) ensuring that all statutes and rules regarding the preserve's natural resources are followed and that violations are enforced by the appropriate authorities, (5) conducting site surveys for specific activities, (6) coordinating with other resource management and enforcement agencies, (7) educating the public on the inherent and economic values associated with natural resources, (8) conducting or cooperating with other entities to conduct pertinent research projects, and (9) developing a comprehensive management program that can be periodically updated.

A. RESOURCE MANAGEMENT

The overall goals of resource management within aquatic preserves are: (1) maintaining current, detailed resource inventories, (2) assessing the impact of human activities on the resources, (3) establishing habitat restoration programs, and (4) cooperating with other agencies in water quality improvement.

GOAL A.1: CONDUCT AND MAINTAIN RESOURCE INVENTORIES

Objective A.1.1: To conduct and maintain a resource inventory of submerged and emergent vegetation.

Task A.1.1.1: Conduct an inventory of submerged and emergent vegetation by using available satellite imagery (e.g., LANDSAT), aerial photography, and groundtruthing efforts. This inventory shall be conducted once every three years.

Task A.1.1.2: The database generated from this inventory will be used to create and maintain biological resource maps

Task A.1.1.3: Staff will coordinate this inventory effort with FGFWFC, Guana River State Park, and DRP District 4 staff.

Objective A.1.2: To conduct an inventory of listed species and their habitats.

Task A.1.2.1: Conduct an inventory of listed species and their habitats by using data from existing literature, managing agencies, field observations, and current research studies, if available. This inventory shall be conducted once every two years.

Task A.1.2.2: Staff will coordinate this inventory effort with FGFWFC, Guana River State Park, and DRP District 4 staff.

Objective A.1.3: To conduct an inventory of wading and diving birds and their habitats.

Task A.1.3.1: Conduct an inventory of coastal birds that feed, roost and nest throughout the preserve by using existing literature, bird counts, field observations, and current research studies, if available. This inventory shall be conducted once every three years.

Task A.1.3.2: Staff will coordinate this inventory effort with FGFWFC, Guana River State Park, and DRP District 4 staff.

GOAL A.2: ASSESS THE EFFECT OF HUMAN ACTIVITIES AND CUMULATIVE IMPACTS

Objective A.2.1: To inventory and assess the effects of human activities on the natural resources of the preserve.

Task A.2.1.1: Survey and inventory human activities in the preserve. This survey shall contain at a minimum:

a) types of structures (dock, pier, seawall, riprap, piling, utility pole, etc.);

b) design of structures (width, length, height above MHW or OHW, square footage of access pier and terminal platform, number and size of finger piers, construction material, etc.);

c) the water depth at the terminus of the structure and/or relation to MHW/OHW line for shoreline stabilization;

d) the number, size, and drafts of boats using the structure;

e) the functional condition of the structure;

f) any accessory facilities and ancillary uses associated with the structure;

g) the structure's use category (e.g., single-family, commercial);

h) an inventory of the biological resources within the preempted area and within 25 feet of the structure or activity;

i) a survey of all dredged areas including:
   1) the length, width, and depth of the dredged area;
   2) depth profiles of the surrounding area;
   3) traditional use of the area;
   4) biological resources in the dredged and surrounding area;
   5) review of information on pre-existing resource conditions, if available; and
   6) whether the dredged area is a private or public project.

j) a survey of all shoreline stabilization projects including:
   1) location and total length of riparian shoreline;
   2) the length of shoreline stabilization;
   3) design of the project;
   4) review of existing and pre-existing biological resources in the vicinity of the structure, if available; and
   5) whether the project is effective in stabilizing the shoreline.

k) an assessment of existing beach driving practices and resulting impacts

l) a determination as to whether the structure or activity complies with the applicable statute or rule and with lease, easement or consent of use conditions, where appropriate.

Objective A.2.2: To assess cumulative impacts of activities and structures on the resources of the preserve.

Task A.2.2.1: All activities and structures will be surveyed as outlined in Task A.2.1.1. and appropriate files kept and updated every three years to establish net loss or gain of resources as related to structures or activities.

Task A.2.2.2: Files shall contain at a minimum:

a) size, configuration and preempted area of the structure and related use;

b) a survey of the biological resources within the preempted area and within 25 feet of the preempted area;

c) condition and extent of those resources as related to previous surveys (vegetation expanding or declining, prop scouring, establishment of different type of community, etc.) and;

d) whether existing use is consistent with type use activity authorized.

GOAL A.3: HABITAT RESTORATION

Objective A.3.1: Restore or enhance suitable habitats or resources where feasible.

Task A.3.1.1: Using resource inventories generated from Goal A.1., identify those resource areas that have been negatively impacted by external influences. These influences may include, but are not limited to: spoil banks, dredged areas, clearings, dumping, mosquito ditches, erosion, abandoned vessels, exotic vegetation, and roads.

Task A.3.1.2.: Prioritize potential restoration areas according to severity of impact to the immediate resources and to the overall functional integrity of the preserve.

Task A.3.1.3.: Develop procedures and guidelines for addressing the priority areas for restoration, such as exotic plant removal, beach clean-up, removal or planting of spoil banks, revegetating marsh areas, removal of derelict vessels, filling in mosquito ditches, reestablishing historic water flows, etc.

Task A.3.1.4.: Investigate and contact other agencies, groups, institutions, and individuals who may be available to provide scientific, logistic, financial,

enforcement, manpower or other support in accomplishing the habitat restoration or enhancement.

Task A.3.1.5.: Coordinate with and assist FGFWFC and Guana River State Park staff in implementing habitat restoration projects in the WMA and state park. Coordinate habitat restoration efforts with DRP District 4 staff.

Task A.3.1.6.: Monitor and review progress on restoration projects.

GOAL A.4: IMPROVE WATER QUALITY

Objective A.4.1: To coordinate with DER, FGFWFC, the St. John's River Water Management District, and local governments toward improving water quality in the preserve.

Task A.4.1.1.: Acquire, maintain, and review all records of water quality data for the preserve area.

Task A.4.1.2.: Coordinate with regulatory and managing agencies in identifying and managing areas within the preserve that may be contributing to undesirable impacts to waters of the preserve.

Task A.4.1.3.: Encourage local governments to retrofit existing untreated stormwater management systems with detention/retention areas.

Task A.4.1.4.: Request local governments to require onsite stormwater retention and buffer areas for new development sites.

Task A.4.1.5.: Coordinate with St. John's River Water Management District and local governments toward improving the management of surface water and stormwater discharges into the preserve.

Task A.4.1.6.: Report suspected or identified instances of violations to appropriate regulatory and enforcement agencies.

GOAL A.5: COORDINATE WITH LOCAL GOVERNMENTS ON LAND USE PLANNING

Objective A.5.1: To coordinate with local planning departments, regional planning councils, and the Department of Community Affairs to develop/revise/evaluate local government comprehensive plans and amendments.

Task A.5.1.1: Establish role as field representative for DNR Aquatic Preserves with local governments.

Task A.5.1.2: Contact local planners to assist in the development of policies and ordinances that regulate activities affecting state-owned submerged lands.

B. RESOURCE PROTECTION

In order to maintain the biological integrity of the aquatic preserve, it is imperative to protect the resources that comprise the system. Since it is not feasible to target all of the organisms adequately, the primary thrust of the resource protection element is the protection of the various habitats that make up the preserve. The goals of the aquatic preserve program, with regard to resource protection, therefore include (1) protection of submerged vegetation, (2) protection of emergent vegetation, and (3) protection of habitat of listed species.

GOAL B.1: PROTECTION OF SUBMERGED AND EMERGENT VEGETATION

Objective B.1.1: To minimize potential damage to submerged and emergent vegetation through the review of applications for use of state-owned land in the aquatic preserve.

Task B.1.1.1: Field staff will develop a written policy describing a scientifically based, standardized method to inventory the submerged and emergent biological resources at the proposed project site. At a minimum, this policy will contain the following information:

a) The area to be surveyed:
   1) will be described as a polygon, and
   2) will include the proposed location of the activity/structure and the adjacent area surrounding the project. The size of this adjacent

area shall be determined by the methods described in the written policy.

b) How the survey is to be performed:
   1) Two areas within the survey area will be assessed:

      i. the submerged bottom, including:
         * a description of all communities/habitats,
         * a description of the bottom type,
         * depth profiles,
         * tidal amplitude and stage (where appropriate), and
         * a physical description of the surrounding waterbody;

      ii. the shoreline (where appropriate), including:
         * a description of the vegetation,
         * a description of any existing structures,
         * notation of any nesting birds, and
         * notation of any listed species.

c) A definition of a Resource Protection Area. This definition will be used to determine if significant resources exist within the expected area of impact. It will consider, but is not limited to:
   1) seagrasses and algae,
   2) mangroves and marsh grass,
   3) harvested bivalves,
   4) unvegetated soft-bottom communities,
   5) hard-bottom communities,
   6) listed species, and
   7) nesting sites for solitary or colonial birds.

Task B.1.1.2.: If at the time of adoption of this management plan the Department's "**Methods Manual for Field Inspections within Aquatic Preserves**" has been adopted, it will be used to assess resources within the preserve.

Task B.1.1.3: Coordinate with the appropriate regional DNR planner in order to process the field staff comments in a timely manner.

Task B.1.1.4: Coordinate with other appropriate agencies that have regulatory authority for these projects.

Objective B.1.2: To ensure that structures and projects that have been authorized are in compliance with the authorized conditions.

Task B.1.2.1: Coordinate with the appropriate regional DNR planner to receive copies of all letters of consent, easement agreements, lease agreements, and other forms of authorizations.

Task B.1.2.2: Report variations from the authorized conditions to the appropriate DNR enforcement agent.

Task B.1.2.3: Coordinate with other appropriate agencies that have regulatory authority for these projects.

Objective B.1.3: To ensure that structures and projects that have been built or are occurring have been authorized.

Task B.1.3.1: Report activities that do not appear to have been authorized to the appropriate DNR enforcement agent.

Task B.1.3.2: Coordinate, when possible, with other appropriate agencies that have regulatory authority for these projects.

GOAL B.2: PROTECTION OF LISTED SPECIES HABITAT

Objective B.2.1: To comply with Objective C.2.1 through the implementation of Tasks C.2.1.1 and C.2.1.2.

Objective B.2.2: To ensure that these habitats are given maximum protection through the permit-review process.

Task B.2.2.1: Recommend modifications to proposed projects in order to take into account known habitat of listed species over state-owned submerged land.

Task B.2.2.2: Field staff will coordinate with the Florida Game and Fresh Water Fish Commission when listed species habitat or "significant use areas" could be affected by proposed activities.

C. RESEARCH

Effective management of any biological system relies almost entirely on information as to how that system functions, and research is the foundation upon which this information is based. Estuarine systems are incompletely understood, and it is essential that some of the gaps in this understanding are filled. Therefore, the goals of the research program within the Bureau of Submerged Lands and Preserves are primarily directed toward applied research, rather than toward basic, or theoretical, research.

The goals of the research program are: (1) to gain a better understanding of those factors that are essential to the continued biological integrity of the major wetland habitats (beds of submerged vegetation, oyster bars, marshes, and tidal flats) within the aquatic preserve, and (2) to gain a better understanding of those factors that govern the continued survival and propagation of listed species that use the aquatic preserve for any portion of their life cycle.

GOAL C.1: DETERMINE THE FACTORS THAT AFFECT THE INTEGRITY OF ESTUARINE HABITATS

Objective C.1.1: To determine the primary factors that affect the survival of marsh plant species.

Task C.1.1.1: Whenever possible, participate in research on the biology and ecology of the marsh plant species present.

Task C.1.1.2: Pursue, at the bureau level, funding to conduct research on the colonization rates of all marsh plant species.

Task C.1.1.3.: Pursue, at the bureau level, funding to conduct research on the effects of dock/pier shading on the various species of marsh plants present.

Objective C.1.2: To determine the primary factors that affect the functioning of tidal flats.

Task C.1.2.1: Whenever possible, participate in compiling an inventory of the benthic infauna present in tidal flats.

Task C.1.2.2: Whenever possible, participate in research on the changes in tidal flat configurations.

Task C.1.2.3: Whenever possible, participate in research on the rates of colonization by submerged and emergent vegetation on tidal flats.

Objective C.1.3.: To determine the primary factors that affect the survival and functioning of oyster bars.

Task C.1.3.1.: Whenever possible, participate in compiling an inventory of oyster densities and populations, and the benthic infauna present in the oyster bars.

Task C.1.3.2.: Whenever possible, participate in research on the changes in oyster densities and populations.

Task C.1.3.3.: Whenever possible, participate in water quality studies designed for the classification of the shellfish growing waters.

GOAL C.2: DETERMINE THE FACTORS WHICH AFFECT SURVIVAL AND PROPAGATION OF LISTED SPECIES

Objective C.2.1: To determine which portions of the preserve serve as habitat for listed species.

Task C.2.1.1: Coordinate with the Florida Game and Fresh Water Fish Commission, the U.S. Fish and Wildlife Service, the Division of Recreation and Parks, the Florida Audubon Society, and any other relevant group to determine which listed species use what portion of the aquatic preserve for various aspects of their biology and ecology.

Task C.2.1.2: If additional information is necessary, establish a system of seasonal monitoring sites to determine the preserve's use by listed species, particularly by birds.

Objective C.2.2.: To determine the species composition, distribution, abundance, seasonality, and size classes of marine turtles that utilize the aquatic preserve.

Task C.2.2.1: Whenever possible, participate in research on the biology and life history of marine turtles and the factors affecting their nesting habits in the aquatic preserve.

Task C.2.3.2: Coordinate with and, if necessary, lend assistance on a local level to the Division of Marine Resources' marine turtle research and conservation program.

Objective C.2.3.: To determine the distribution, abundance, seasonality, and size classes of manatees that utilize the aquatic preserve.

Task C.2.2.1: Whenever possible, participate in research on the biology and life history of manatees and the factors affecting their utilization of the aquatic preserve.

Task C.2.3.2: Coordinate with and, if necessary, lend assistance on a local level to the Division of Marine Resources' manatee research programs.

GOAL C.3: DETERMINE THE FACTORS THAT AFFECT THE INTEGRITY OF BEACH-DUNE ECOSYSTEMS

Objective C.3.1: Identify those beach-dune areas that have been negatively impacted by external influences.

Task C.3.1.1: Coordinate with the Division of Beaches and Shores on coastal research activities.

Task C.3.1.2: Coordinate with local governmemts to assess existing beach driving activities and the resulting impacts.

D. ENVIRONMENTAL EDUCATION

The integrity of the biological systems within the preserve can be affected, both directly and indirectly, by the public's enjoyment of the preserve. Without a biologically "healthy" preserve, water quality will deteriorate, fisheries will fail due to loss of habitat, and many species of birds will disappear. One of the primary aims of the aquatic preserve program, therefore, is to educate the public as to the importance of the factors that affect the integrity of the preserve. This public is composed of a number of segments: (1) students [e.g., elementary, college]; (2) waterfront property owners; (3) visitors and new residents; (4) user groups [e.g., developers and marine contractors]; (5) special interest groups (e.g., Audubon Society, boating clubs); and (6) local, regional, and state government agencies that are involved in making decisions regarding the preserve.

The overall goal of the environmental education element is to instruct individuals as to the importance of preserving natural and cultural resources so they may consider all issues prior to making decisions that affect these resources. In general, the purpose of this element is to educate the public hoping they become responsible users of the preserve. Two DNR publications, Environmental Education in Florida: Needs and Goals, and A Guide for Environmental Education, are available references to aid in accomplishing this goal.

GOAL D.1: EDUCATE THE PUBLIC TOWARD WISE RESOURCE USE

Objective D.1: To provide information to existing environmental education programs at public and private schools and to coordinate with other local educational centers.

Task D.1.1: Notify the county School Board of the aquatic preserve's environmental education efforts and the availability of its staff to assist or provide guidance for their existing educational programs.

Task D.1.2: Coordinate with and assist the Guana River State Park staff on their scheduled interpretive talks.

Objective D.2: To establish and conduct educational programs in the county where such programs do not currently exist.

Task D.2.1: Notify the county School Board of the field staff's intent to establish environmental education programs in their jurisdictional area.

Task D.2.2: Conduct off-site classroom instruction and field trips in the preserve, in coordination with the appropriate manager (DRP,FGFWFC).

Task D.2.3: Conduct or assist in informal seminars, classes, workshops for public discussion of current resource management issues, resource utilization, and regulatory activities. Public forums such as these should involve private and public interests.

Objective D.3: To produce educational literature and materials that inform the public of the preserve's natural and cultural resources and the importance of preserving and protecting these resources.

Task D.3.1: Develop brochures, pamphlets, and/or booklets that describe to the public; (1) the purpose of and activities conducted at the local aquatic

preserve office and (2) general information on the preserve's ecosystem and its cultural history. If feasible, this task will include video presentations.

Task D.3.2: Upon approval from DNR Office of Communication, submit newspaper articles or radio announcements designed to educate the general public about the ecological functions and economic importance of the natural resources within a preserve. This approach may be the vehicle with which to disseminate the findings of recent research efforts to the public.

Objective D.4: To provide informal workshops to instruct other environmental educators on the preserve's natural resources.

Task D.4.1: Schedule instructional workshops designed to teach other environmental educators.

Objective D.5: To establish an on-site environmental education center.

Task D.5.1: Pursue, at the bureau level, the necessary funds to construct an environmental learning center in conjunction with that of FGFWFC and Guana River State Park.

CHAPTER VIII

MANAGEMENT COORDINATION NETWORK

This chapter presents a general overview of the various federal, state, regional, and local agencies that regulate or hold any interest in the management or use of the Guana River Marsh Aquatic Preserve. A reference matrix of these regulatory programs and their jurisdictions is presented in Table 7. One function of the aquatic preserve program is to coordinate with these agencies to achieve common goals relevant to aquatic preserve management.

A. FEDERAL AGENCIES

A number of federal agencies have property interests, construction activities, regulation programs, research activities, and land/wildlife management programs that deal either directly or indirectly with the aquatic preserves. These federal agencies include: U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Environmental Protection Agency, U.S. Geological Survey, U.S. Fish and Wildlife Service, and the National Marine Fisheries Service.

The **U.S. Army Corps of Engineers (COE)** has jurisdiction over inland navigable waters under the Rivers and Harbors Act of 1899. A revision of the Rivers and Harbors Act in 1968 extended the Corps' jurisdiction, allowing the agency to consider the fish and wildlife, conservation, pollution, aesthetics, ecology, and other relevant factors of a project. The Corps Regulatory Program was expanded in 1972 to include the Federal Water Pollution Control Act Amendments, now known as the Clean Water Act (CWA). Section 404 of this act requires the Corps to control dredge and fill activities. In 1977, amendments to the CWA extended this jurisdictional responsibility to wetlands. The Corps also contributes 50% of the funds reimbursed to the Water Management Districts by the Department of Natural Resources for aquatic plant control.

The **U.S Coast Guard (USCG)** regulates boating safety, enforces maritime law, operates search and rescue missions, and conducts surveillance and interdiction of contraband importation. USCG also regulates construction of bridges, causeways, and aerial utilities that may pose navigational hazards and the placement and maintenance of public navigation aids. Joint responsibility for the discharge or spillage of oil or other hazardous substances into surface waters is shared with EPA.

The **U.S. Environmental Protection Agency (EPA)** has jurisdiction over surface waters in the state. Enforcement authority was given under the Clean Water Act of 1968 and broadened under the 1977 revision. In general, the EPA is responsible

for pollution control and abatement, including: air, water, noise, solid waste, toxic waste, and radiation. The agency reviews permits issued by the Department of Environmental Regulation for the treatment, disposal, and storage of hazardous wastes. Authority is divided between EPA and USCG regarding the discharge of oil or hazardous substances into surface water.

The **U.S. Geological Survey (USGS)** performs surveys and research pertaining to topography and water resources of the Guana River Marsh region.

The **U.S. Fish and Wildlife Service (USFWS)** is responsible for fish and wildlife and their habitat as authorized in: the Coastal Barrier Resources Act (COBRA), National Environmental Protection Act, Migratory Bird Act, Endangered Species Act, and the Fish and Wildlife Coordination Act (FWCA). Under provision of the FWCA, USFWS must be consulted before COE can submit a plan for Congressional approval. The USFWS comments on the impacts of proposed projects on endangered species, migratory birds, and other fish and wildlife and their habitats. They are directed to prepare environmental impact assessments or statements for proposed projects by the COE and are authorized to issue "Jeopardy Opinion" against any proposed project which will negatively affect an endangered species (Barile et al., 1987).

The **National Marine Fisheries Service (NMFS)**, under the Department of Commerce, is involved with fisheries management.

In accordance with the federal consistency review process, the Bureau of Submerged Lands and Preserves reviews the federal programs and activities as to how they affect the objectives of the aquatic preserve management program. This review is coordinated through the Florida Department of Environmental Regulation's Office of Coastal Management in order to enforce the provisions of the Federal Coastal Zone Management Act of 1972, as amended.

B. STATE AGENCIES

Eight state agencies have programs that affect the resources or regulate activities within the aquatic preserves: Department of Natural Resources, Department of Environmental Regulation, Department of Health and Rehabilitative Services, Game and Freshwater Fish Commission, Department of Community Affairs, Marine Fisheries Commission, Department of State, and the Department of Transportation.

Although not a state agency, the Office of Planning and Budgeting of the Governor's Executive Office, in conjunction with the DER's Office of Coastal Management, is responsible for administering project reviews applicable to Florida's Coastal Management Program Federal Consistency evaluation process. This process includes all projects in the state that involve federal permitting, federal

assistance or control federal activities. Each project must undergo this additional review to determine if the project is consistent with established programs, policies, and rules of the state, including aquatic preserves.

The **Department of Natural Resources' (DNR)** jurisdiction include state lands, sovereignty submerged lands, and marine resources which include marine research projects.

The Division of Marine Resources has several programs beneficial to aquatic preserves. The Marine Research laboratory in St. Petersburg has several projects including resource protection area mapping, a survey of the status of oyster bars, and fishery habitat utilization studies which generate valuable resource management information. They also administer a permitting program for the collection of certain marine species and the use of certain chemicals. The Aquatic Preserve Program receives notification of issuance of permits within the preserve. Marine Resources also conducts a variety of research projects, including those aimed at manatee and marine turtle protection.

The Division of Law Enforcement's Marine Patrol enforces statutes relating to marine resources, fishery management laws, boating safety, vessel titling/registration and illegal narcotics.

The Division of State Lands is granted authority under Chapters 18-20 and 18-21, F.A.C., "Sovereignty Submerged Land Management", which gives DNR the responsibility to regulate commercial and residential docks and other structures and activities conducted on submerged lands. In addition to the work related to aquatic preserves, the Division of State Lands is charged with overseeing uses, sales, leases, or transfers of all state-owned lands. The aquatic preserve staff interact with other staff of State Lands in all transactions concerning submerged lands within the preserve, including acquisition of privately titled submerged lands or contiguous uplands important to the integrity of the preserve. Land acquisition is conducted through the Conservation and Recreation Lands (CARL) program, authorized under Chapter 253, F.S.

The Division of Resource Management is responsible for the management of aquatic plants, mineral resources, oil and gas exploration, and geologic studies. Under Chapter 16C F.S., responsibility is given for various aquatic plant control programs, including permitting for mechanical, biological, and chemical control of aquatic plants. Permits are also necessary under Chapter 16C-52 F.S., "Aquatic Plant Importation, Transportation, Cultivation and Possession", for any persons cultivating, vegetating, or collecting aquatic plants. The Division of Resource Management also supervises state Navigation Districts and Canal Authority.

The Division of Beaches and Shores is responsible for managing erosion control, hurricane protection, coastal flood control, shoreline and offshore rehabilitation, and

the regulation of work activities likely to affect the physical condition of the beach and shore (Chapter 161, F.S.).

The Division of Recreation and Parks oversees operations at the Guana River State Park. Since the principle functions of research, education, and resource management are closely compatible with the aquatic preserve and they are located adjacent to one another, the programs will be closely integrated.

The **Department of Environmental Regulation (DER)** has a broad range of responsibilities and receives its authority from State Law and some delegated from EPA. Generally, the DER responsibilities include water management, water quality, potable water, air quality, coastal management, wetland protection, power plant siting, hazardous and solid wastes.

These responsibilities are accomplished through the following regulatory mechanisms: (1) establishment of state standards designed to protect natural systems and prevent harmful pollutants from entering these systems; (2) application of these standards through the permitting of potential sources of pollution and monitoring discharges for compliance; and (3) initiation of enforcement action for non-compliance with these standards.

The DER's rules significant to the aquatic preserve management program are Chapters 17-301, 17-302, 17-4, and 17-312, F.A.C. Authority for these rules is based in Chapter 403, F.S. Chapter 17-301 and 17-302, F.A.C., addresses water quality standards with the most stringent category being "Outstanding Florida Waters" (OFW). As an OFW, ambient conditions, instead of prescribed values, become the water quality standards for the waterbody. The Guana River Marsh became an OFW upon its purchase as C.A.R.L. and S.O.C. lands and was officially designated as such in 1986. Chapter 17-4, F.A.C., addresses permit requirements and Chapter 17-312, F.A.C., covers dredge and fill activities.

Section 253.77, F.S., as amended by the Warren S. Henderson Wetlands Protection Act of 1984, requires that any person requesting the use of state-owned lands shall have prior approval of the Trustees. As a result of this amendment, an interagency agreement between DNR and DER provides for comments from DNR staff, on behalf of the Board of Trustees, into the DER permitting process for proposed activities in aquatic preserves.

The **Department of Health and Rehabilitative Services (HRS)** has responsibilities to protect the public's health by overseeing functions that involve water supply, on-site sewage disposal, septic tank cleaning, solid waste control, and hazardous wastes. Authority for these responsibilities is found in Chapters 154, 381, and 386, F.S., and in the 10D Series of F.A.C., known as the "Sanitary Code." Within each county, HRS functions as the county's health department and oversees–these jurisdictional responsibilities.

Also affecting the public's health and the aquatic preserve program is the arthropod (mosquito) control program, which is usually administered through the local mosquito control district. Each of these public health programs holds the potential to create significant impacts upon the aquatic preserves.

The **Game and Fresh Water Fish Commission (GFWFC)** was created pursuant to Article IV, Section 9 of the State Constitution. The GFWFC is empowered to exercise the regulatory and executive powers of the state with respect to wild animal life and freshwater aquatic life. Authority for the implementation of specific regulations and their enforcement, for all wildlife, is provided in the rules and regulations of Chapters 39.101 and 39.102, F.A.C. The Office of Environmental Services reviews projects which may affect local fish and wildlife habitat. The GFWFC is the state coordinator of the non-game Wildlife and Endangered Species Program in Florida. The Division of Wildlife also designates Critical Wildlife Management Areas to protect listed species, oversees habitat restoration and includes the State Waterfowl and Alligator Coordinators. Local staff of the Bureau of Wildlife Management manage the 9,815 acre Guana River Wildlife Management Area within the Guana River Marsh Aquatic Preserve under a management agreement with DNR. General regulations for this "Type I" WMA can be found in Chapter 39-15.004, F.A.C. Regulations specific to the Guana River WMA can be found in Chapter 39-15.065(16), F.A.C. The Division of Law Enforcement has law enforcement officers that patrol state lands, including aquatic preserves. The Division of Fisheries oversees fisheries management, including fish re-stocking of freshwater rivers and lakes.

The **Department of Community Affairs (DCA)** and the Regional Planning Councils are authorized under Section 380.06, F.S., for administering the Development of Regional Impact (DRI) review program. The DRI process was established to provide a review and monitoring procedure for development projects potentially affecting the health, safety or welfare of citizens of more than one county.

Additionally, the DCA designates Areas of Critical State Concern (ACSC). These designations are intended to protect the areas of the state where development has endangered or may endanger resources of regional or statewide significance. Under an ACSC designation, the local governments are required to submit new or existing land development regulations to DCA for review and approval. According to Section 380.05, F.S., the entire land development process will require the state's supervision until that local government modifies its land development practices to conform to the principles guiding development within an ACSC.

The DCA also oversees the development of Local Government Comprehensive Plans (LGCP) for both counties and municipalities, as required by the Local Government Comprehensive Planning and Land Development Regulation Act, Chapter 163, Part II, F.S. Subsection 163.3203(5), F.S., provides that DCA shall adopt rules for the review of local government land development regulations.

Within one year of submission for review by DCA, local governments are required to adopt land development regulations which are consistent with their comprehensive plans, pursuant to Subsection 163.3167(2), F.S. The two elements within these plans that bear most directly on the Aquatic Preserve Program are the Coastal Zone Management Element and the Conservation Element.

The **Marine Fisheries Commission (MFC)** was established as a rulemaking authority pursuant to Section 370.027, F.S. The seven members appointed by the Governor are delegated full rulemaking authority over marine life (subject to approval by the Trustees), with the exception of endangered species. This authority covers the following areas: (a) gear specifications, (b) prohibited gear, (c) bag limits, (d) size limits, (e) species that may not be sold, (f) protected species, (g) closed areas, (h) quality control codes, (i) open/closed seasons, and (j) special considerations related to egg-bearing individuals, and (k) relaying of clams and oysters. The MFC is also instructed to make annual recommendations to the Trustees regarding marine fisheries research priorities.

The **Department of State (DOS), Division of Historical Resources (DHR)** has the responsibility granted under Chapter 267, F.S., regarding the preservation and management of Florida's archaeological and historical resources. This responsibility includes those cultural resources located on state-owned lands, including aquatic preserves.

The **Department of Transportation (DOT)** has responsibilities that include right-of-way and surface water runoff in the areas of roads, bridges, and causeways. The DOT also updates a state-wide aerial photographic survey every four years, rotating on a district basis.

C. REGIONAL AGENCIES

At the regional level, the management coordination network includes the St. Johns River Water Management District, the Northeast Florida Regional Planning Council, and the Florida Inland Navigation District. These organizations conduct activities that are on a broader scale than those of local governments, but are on a smaller scale than the state level.

The **St. John's River Water Management District (SJRWMD)** was created by Chapter 61-69, Laws of Florida, as a public corporation for carrying out Chapter 378, F.S., and is governed by provisions of Chapter 373, F.S. Chapters 40C-4 and 40C-40 were adopted to ensure continued protection of the water resources of the District including wetlands and other natural resources. The rules in these chapters are to implement the surface water management permit system mandated in Part IV of Chapter 373, F.S. The statutes resulted from passage of Chapter 84-79, Laws of Florida, the Warren G. Henderson Wetlands Protection Act of 1984.

SJRWMD has jurisdiction over and administers the permitting program for water use, well construction, stormwater discharge, surface water management, groundwater withdrawals, water level control and provides control of exotic plants (primarily hydrilla and water hyacinths) in cooperation with the COE.

It is the intent of the Florida Legislature (Chapter 87-97, Section 1-6, Laws of Florida) through the Surface Water Improvement Management (SWIM) Act, that the water management districts "design and implement plans and programs for the improvement and management of surface water." The SWIM legislation required each water management district to prepare a prioritized list of regionally significant waterbodies in need of restoration or preservation. The St. Augustine Management Unit, consisting of the Tolomato and Matanzas basins, has been ranked number 12 on the SRJWMD SWIM prioritization list. The SJRWMD has not yet developed a SWIM management plan for these basins.

The **Northeast Florida Regional Planning Council (NEFRPC)** serves as a regional planning body for county and municipal governments. Its many functions include: (1) providing assistance to local governments with planning expertise, (2) serving as the regional representative for the DRI review process, (3) serving as a regional clearinghouse for state and federal projects and programs, (4) assisting local governments in securing grants, (5) conveying information from the local governments to the state and federal levels, and (6) preparing and administering the Regional Comprehensive Policy Plan.

The **Florida Inland Navigation District (FIND)** is a multi-county district created by the Legislature to provide spoil sites for maintenance of the Atlantic Intracoastal Waterway. Presently, FIND holds four disposal easements adjacent to and within the Guana River Marsh Aquatic Preserve and is developing management plans to replace these disposal areas with two permanent upland spoil sites along the western boundary of the preserve.

D. LOCAL GOVERNMENT

Local governments are the incorporated cities and counties that border the preserve. The Guana River Marsh Aquatic Preserve is located entirely within St. Johns County. No incorporated municipalities lie adjacent to or are within the preserve boundaries. The key area of interaction between county and/or municipal government and the Guana River Marsh Aquatic Preserve is the area of land use on the adjacent uplands and its associated impacts on and uses of the aquatic resources of the preserve. To this end, there are two basic areas of concern: local government comprehensive plans and local ordinances and regulations.

Local Government Comprehensive Plans

Local (municipal and county) governments are required by the Local Government Comprehensive Planning Act of 1975 (Section 163.3161, F.S.), (as amended by Chapter 85-55, Laws of Florida, to the Local Government Comprehensive Planning and Land Development Regulation Act) to develop and adopt comprehensive plans to guide their future development. The plans are to be composed of elements relating to different governmental functions (i.e., housing, physical facilities, conservation, land use, coastal zone protection, etc.). These plans must meet the approval of state agencies and be consistent with minimum standards set in Chapter 9J-5, F.A.C.

The coastal management element of the Local Government Comprehensive Plan, along with the land use and conservation elements, establishes long range plans for orderly and balanced development, with particular attention to the identification and protection of environmental resources in the planning area. Conformance with the criteria, policies, and practices of a local government comprehensive plan is required for all development within local government jurisdiction.

Local Government Codes

The local development and zoning codes (e.g., building codes) provide the major local regulation that defines what an owner can do on a particular parcel of property. The zoning prescribes the allowable uses and the intensity of those uses. Certain land use and land use intensities adjacent to an aquatic can lead to profound impacts on the resources of the preserve.

Within one year after the approval of their Local Government Comprehensive Plan, local governments are required to amend their land development regulations to be consistent with the provisions of the plan. St. Johns County ordinances that relate to the management and protection of resources within the Guana River Marsh Aquatic Preserve are listed in Appendix B.

TABLE 7: MANAGEMENT COORDINATION NETWORK

LOCAL AGENCIES

LGT	Local Governments (Cities, Towns, Municipalities)
CGT	County Governments
LDD	Local Drainage Districts
MCD	Mosquito Control Districts
ICD	Inlet Commissions/Districts
SWC	Soil and Water Conservation Districts

STATE AGENCIES

DCA	Florida Department of Community Affairs
DER	Florida Department of Environmental Regulation
DNR	Florida Department of Natural Resources
GFC	Florida Game and Freshwater Fish Commission
HRS	Florida Department of Health and Rehabilitative Services
DOS	Florida Department of State
DOT	Florida Department of Transportation
FMP	Florida Marine Patrol
FSG	Florida Sea Grant
MFC	Marine Fisheries Commission
DAC	Florida Department of Agriculture and Consumer Services

REGIONAL AGENCIES

RPC	Regional Planning Council
WMD	Water Management Districts
FIN	Florida Inland Navigation District

FEDERAL AGENCIES

CG	United States Coast Guard
COE	United States Army Corps of Engineers
EPA	United States Environmental Protection Agency
FWS	United States Fish and Wildlife Service
NMF	National Marine Fisheries Service
GS	United States Geological Survey

Source: modified from the Indian River Lagoon Joint Reconnaissance Report, 1987

	Local						Regional					State										Federal				
	LGT	CGT	LDD	MCD	ICD	SWC	RPC	WMD	FIN	DAC	DCA	DER	DNR	GFC	HRS	DOS	DOT	FMP	FSG	MFC	CG	COE	EPA	FWS	NMF	GS
Dredge and Fill Permitting	●	●						●	●			●	●	●						●	●	●	●	●		●
Docks, Fishing Piers, Seawalls	●	●										●	●									●				
Marinas	●	●					●				●	●	●							●		●		●		
Submerged Lands Management									●				●	●												
Habitat Protection	●	●					●	●			●	●	●	●				●		●		●		●	●	
Mangroves/Wetlands Protection	●	●					●	●			●	●	●	●								●		●		
Seagrass Protection	●	●					●	●			●	●	●									●		●	●	
Habitat Restoration		●						●			●	●	●	●			●					●		●		
Mangroves/Wetlands Restoration		●		●				●			●	●	●	●								●		●		
Seagrass Restoration								●			●	●	●									●		●		●
Resource Inventory							●	●	●		●	●	●	●					●	●				●	●	
Manatees/Porpoises	●	●					●				●		●	●										●	●	
Endangered Species	●	●					●				●		●	●			●	●	●	●	●			●	●	●
Shellfish/Aquaculture		●		●						●		●	●	●												
Public Awareness/Education		●						●	●		●	●	●	●				●	●	●	●	●	●	●	●	
Research				●				●				●	●	●					●						●	
Fisheries Research				●							●		●	●					●	●				●	●	
Fisheries Management				●							●		●	●					●	●				●	●	
Recreational Fishing											●		●	●				●	●	●				●	●	
Commercial Fishing											●		●	●				●	●	●				●	●	
Wildlife Management								●			●			●				●		●		●		●	●	
Mosquito Impoundments		●		●							●		●									●				
Historical/Archeological Sites	●	●					●				●		●			●										
Water Quality	●	●		●		●	●	●			●	●	●		●			●					●	●		
Nonpoint Source Pollution	●	●				●	●	●			●	●	●		●		●					●	●	●		
Point Source Pollution	●	●					●	●			●	●	●		●							●	●	●		
Oil/Chemical Spills		●					●	●			●	●	●					●			●	●	●	●		
Drainage/Freshwater Control	●	●	●			●	●	●			●	●	●									●		●		
Emergency Response	●	●					●				●	●	●	●				●								
Upland Development	●	●					●	●			●															
Land Use Planning	●	●					●				●		●													
Navigational/Boating	●	●			●		●		●				●	●	●			●	●		●	●		●		
Recreational Areas	●	●					●		●				●	●				●	●			●		●		●
Bridges and Roads		●					●	●			●	●	●				●				●	●				●

CHAPTER IX

STAFFING AND FISCAL NEEDS

Historically, the Aquatic Preserves Program has been largely dependent on federal coastal zone grant funds for its operation, and as a result, the funding of both field positions and central office positions has been limited.

In order for the Guana River Marsh Aquatic Preserve to be managed in accordance to the goals, objectives, and tasks set forth in this plan, adequate funding, staffing and equipment is essential. At the present time, management of this preserve and three others in northeast Florida (Ft. Clinch, Nassau River-St. John's River Marshes, Pellicer Creek) is handled out of the Jacksonville Field Office. Currently there is not legislative funding for additional staffing at the four aquatic preserves. It is anticipated that one field office with at least two full time employees would be able to provide adequate staffing to cover these four preserves. An annual review of the accomplishments of the program relative to the tasks listed in Chapter VII will help to determine if the initial staffing estimate is adequate to meet the legislative intent of the program.

A budget covering projected staff time, equipment, travel and other expenses for this area, which would include Guana River Marsh Aquatic Preserve, is found in Table 8. The budget is required to fulfill the short range needs of the preserve as described in this management plan, and accomplish the Department goal of on-site management for all aquatic preserves by 1991, as expressed in the Agency Functional Plan.

TABLE 8

ESTIMATED BUDGET FOR THE FIRST TWO YEARS FOR GUANA RIVER MARSH, NASSAU RIVER-ST. JOHN'S RIVER MARSHES, FT. CLINCH, AND PELLICER CREEK AQUATIC PRESERVES

SALARY	1st YEAR	2nd YEAR
ES II (with benefits)	$ 33,836	$ 34,851
ES I (with benefits)	28,224	29,071
Secretary (with benefits)	17,255	17,773
Subtotal	$ 79,315	81,695
OPERATING CAPITAL OUTLAY		
Vehicle	$ 15,000	
16' Boat/motor/trailer	12,000	
Office Equipment	3,500	
Computer	3,600	
Subtotal	$ 34,100	
OPERATING EXPENSES		
Office Rent/Gas/Phone	$ 19,000	$ 21,000
TOTAL COST	$ 132,415	$ 102,695

CHAPTER X

RESOURCE AND PROGRESS MONITORING PROGRAM

To ensure that the management plan is effectively implemented, it will be necessary to institute two programs that will: (1) monitor changes in the biological resources over time, and (2) record any accomplishments achieved by the Guana River Marsh Aquatic Preserve Program. These monitoring programs will consist of the following:

A. RESOURCE MONITORING

To monitor changes in the natural resources, a geographic information system (GIS) will be required. A GIS is a computer-based system that is used to capture, edit, display, and analyze geographic information. The first GIS programs were developed about 20 years ago to manage large collections of natural resource and environmental information. Since their development, they have been used in other areas such as utilities mapping, inventory management, and land use planning; however, their most important function continues to be natural resource management.

Future use of the GIS system will include the periodic inventory, compilation, and analysis of temporal and spatial data concerning the present state of the natural resources within the preserve. Historical aerial photography will be computerized for comparison with later data to conduct a temporal analysis of resource abundance. Detailed monitoring of revegetation/restoration efforts can also be computer analyzed. The on-line access to these natural resource databases will facilitate informed management decisions concerning the use and protection of submerged lands and their resources. Cooperation and file sharing is possible with other agencies handling such data with identical and similar systems.

B. PROGRESS MONITORING

For this phase of the management plan to be effectively implemented, it is necessary to monitor the accomplishments and progress of the Guana River Marsh Aquatic Preserve Program on a regular basis. The purpose of this element is to detail the program's accomplishments in its pursuit of the objectives outlined in Chapter VII. This information, to be submitted in a report once every three years to the Bureau Chief, will include an update of the biological resources' status within the preserve as well as identifying current human activities. This report will detail the following:

1. The state of the natural environment of the aquatic preserve.

    a. Through the use of resource inventories and the GIS system, document the status of each biological resource (e.g., saltmarsh loss or gain).

    b. Identify the current number of structures and activities started or completed in the preserve. These structures/activities will be categorized as follows:

        1) authorized projects (e.g., private residential single docks, multi-family fishing piers),
        2) unauthorized projects, and
        3) projects not in compliance with the original authorization

2. A list of accomplishments of those tasks outlined in Chapter VII.

    a. Each task will be listed and the activities required to complete that task will be detailed. If the task was not done or not completed, an explanation will be given. If the explanation was due to insufficient funding/staff, then this fact will be detailed so that an update of Chapter IX can be made.

3. Any new goals and/or objectives will be reflected in an update of Chapter VII.

BIBLIOGRAPHY

Bahr, L. M., and W. P. Lanier. 1981. The Ecology of Intertidal Oyster Reefs of the South Atlantic Coast: A Community Profile. U. S. Fish Wildlife Service, Off. Bio. Serv., Washington, D. C. FWS/OBS-81/15. 105 pp.

City of Jacksonville. 1984. Water Quality Assessment in the Jaxport area with Analysis and Plan for the Estuarine Marsh System. 120 pp.

Cooke,C. W. 1945. Geology of Florida, Florida Geological Survey Bulletin 29. Tallahassee, Florida. 339 pp.

Daiber, C. Franklin, 1982. Animals of the Tidal Marsh. Van Nostrand Reinhold Company, N.Y. 422 pp.

Durako, J.Michael, Michael D. Murphy, and Kenneth D. Haddad. 1988. Assessment of Fisheries Habitat: Northeast Florida. Florida Marine Research Publication, Number 45. Florida Department of Natural Resources, Bureau of Marine Research, St. Petersburg, 51 pp.

Florida Department of Environmental Regulation. 1979. Biological Aspects of Water Quality in Florida. Part II: Nassau-St. Mary's, St. Johns and East Coast Drainage Basins. Tech Ser. Vol. 4. 402 pp.

Florida Department of Environmental Regulation. 1990. Fla. Water Quality Assessment. 305(b) Technical Appendix. 321 pp.

Florida Department of Natural Resources. 1985. Guana River State Land Conceptual Plan. 52 pp.

Florida Department of Natural Resources. 1985. Comprehensive Shellfish Growing Area Survey: North St. Johns County. Tallahassee, Florida. 68 pp.

Florida Department of Natural Resources. 1989. Guana River State Park Unit Management Plan. Tallahassee, Florida. 88 pp.

Florida Game and Fresh Water Fish Commission. 1990. A Conceptual Management plan for the Guana River Wildlife Management Area (St. John's County, Florida). Tallahassee, Florida. 108 pp.

Florida Game and Fresh Water Fish Commission. 1990. Off. Lists of Endangered and Potentially Endangered Fauna and Florida in Florida. Tallahassee, Florida. 23 pp.

Florida Natural Areas Inventory. 1990. Guide to Natural Communities of Florida. Tallahassee, Florida. 111 pp.

Florida Natural Areas Inventory. 1990. Matrix of Habitats and Distribution by County of Rare/Endangered Species in Florida. Tallahassee, Florida. 92 pp.

Frazee, J. M., Jr., and D. R. McClaugherty. 1979. Investigation of Groundwater Resources and Saltwater Intrusion in the Coastal Areas of Northeast Florida. Technical Publication SJ80-4. St. John's River Water Management District, Palatka, Florida. 136 pp.

Johnson, A. Sydney, H. D. Hillestad, S. F. Shan Holtzer and G. F. Shanholtzer. 1974. An Ecological Survey of the Coastal Region of Georgia. National Park Service. Scientific Monograph Series, No. 3. 233 pp.

Jones, C. P., and A. J. Mehta. 1978. Ponce de Leon Inlet. Glossary of Inlets Report No. 6, Rep. No. 23. Florida Sea Grant, Gainesville, Florida. 57 pp.

Kojima, H., and S. D. Hunt. 1980. Fort George Inlet. Glossary of Inlets Report No. 10, Rep. No. 38. Florida Sea Grant, Gainesville, Florida. 52 pp.

National Oceanic and Atmospheric Administration. 1982. Local climatological data, Annual Summary with Comparative Data 1982, Jacksonville, Florida. National Oceanic and Atmospheric Administration, Asheville, North Carolina.

Peterson, C. H., and N. M. Peterson, 1979. The Ecology of Intertidal Flats of North Carolina: A Community Profile. U. S. Fish Wildlife Service, Office of Biological Services, Washington, D.C. FWS/OBS-79/39. 73 pp.

Pomeroy, L. R. 1959. Algal productivity in saltmarshes of Georgia. Limnol. Oceanogr. 4: 386-397.

Readle, E. L. 1983. Soil Survey of St. Johns County, Florida. Soil Conservation Service. U. S. Department of Agriculture. 196 pp.

Robertson, W. B. 1978. Southern Bald Eagle. Pp. 27-30 IN Kale, H. W. II, ed. Rare and Endangered Biota of Florida, Vol. 2, Birds. University Presses of Florida, Gainesville.

Ross, S. T. 1983. A review of surf zone icthyofaunas in the Gulf of Mexico, Pp. 25-34 in S. V. Shabica, N. B. Cofer, and E. W. Cake, Jr., eds Proc. of the northern Gulf of Mexico Estuaries and Barrier Islands Research Conference, 1983, Biloxi, Mississippi, U. S. Dept. Int., Natl. Park Serv. SE Reg. Off., Atlanta, Georgia.

Seaman, Jr., William. 1985. Florida Aquatic Habitat and Fishery Resources. Florida Chapter of American Fisheries Society. Gainesville, Florida. 153 pp.

Schreiber, R.W. 1978. Eastern Brown Pelican. Pp. 23-25 IN Kale, H.W. II, ed. Rare and Endangered Biota of Florida, Vol. 2, Birds. University Presses of Florida, Gainesville.

Snell, L. J., and W. Anderson. 1970. Water Resources of Northeast Florida. Rep. of Investigation No. 54. Fla. Dept. Nat. Resour. Bureau of Geology. 77 pp.

Snyder, H. 1978. Peregrine Falcon. Pp 7-9 IN Kale, H.W. II, ed. Rare and Endangered Biota of Florida, Vol. 2, Birds. University Presses of Florida, Gainesville.

St. Johns County Planning Dept. 1990. Draft, St. Johns County Comprehensive Plan: 2005. Florida.

Tanner, W. F. 1960. Florida Coastal Classification. Gulf Coast Assoc. Geol. Trans. Soc. 10: 259-266.

White, William A. 1970. The Geomorphology of the Florida Peninsula. Geological Bull. No. 51. Fla. Dept. of Natural Resources, Bureau of Geology. Tallahassee, Florida.

CHAPTER 18-20
FLORIDA AQUATIC PRESERVES

18-20.001 Intent.
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18-20.003 Definitions.
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18-20.005 Uses, Sales, Leases, or Transfer of Interests in Lands, or Materials, Held by the Board. (Repealed)
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18-20.014 Enforcement.
18-20.015 Application Form. (Repealed)
18-20.016 Coordination with Other Governmental Agencies.
18-20.017 Lake Jackson Aquatic Preserve.

Library References: Riparian rights to navigable waters, I. Henry Dean, 55 Fla. Bar J. 247, 250 (Mar., 1981).

18-20.001 Intent.

(1) All sovereignty lands within a preserve shall be managed primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife, and public recreation, including hunting and fishing where deemed appropriate by the board, and the managing agency.

(2) The aquatic preserves which are described in 73-534, Laws of Florida, Sections 258.39, 258.391, 258.392 and 258.393, Florida Statutes, future aquatic preserves established pursuant to general or special acts of the legislature, and in Rule 18-20.002, Florida Administrative Code, were established for the purpose of being preserved in an essentially natural or existing condition so that their aesthetic, biological and scientific values may endure for the enjoyment of future generations.

(3) The preserves shall be administered and managed in accordance with the following goals:

(a) To preserve, protect, and enhance these exceptional areas of sovereignty submerged lands by reasonable regulation of human activity within the preserves through the development and implementation of a comprehensive management program;

(b) To protect and enhance the waters of the preserves so that the public may continue to enjoy the traditional recreational uses of those waters such as swimming, boating, and fishing;

(c) To coordinate with federal, state, and local agencies to aid in carrying out the intent of the Legislature in creating the preserves;

(d) To use applicable federal, state, and local management programs, which are compatible with the intent and provisions of the act and these rules, and to assist in managing the preserves;

(e) To encourage the protection, enhancement or restoration of the biological, aesthetic, or scientific values of the preserves, including but not limited to the modification of existing manmade conditions toward their natural condition, and discourage activities which would degrade the aesthetic, biological, or scientific values, or the quality, or utility of a preserve, when reviewing applications, or when developing and implementing management plans for the preserves;

(f) To preserve, promote, and utilize indigenous life forms and habitats, including but not limited to: sponges, soft coral, hard corals, submerged grasses, mangroves, salt water marshes, fresh water marshes, mud flats, estuarine, aquatic, and marine reptiles, game and non-game fish species, estuarine, aquatic and marine invertebrates, estuarine, aquatic and marine mammals, birds, shellfish and mollusks;

(g) To acquire additional title interests in lands wherever such acquisitions would serve to protect or enhance the biological, aesthetic, or scientific values of the preserves;

(h) To maintain those beneficial hydrologic and biologic functions, the benefits of which accrue to the public at large.

(4) Nothing in these rules shall serve to eliminate or alter the requirements or authority of other governmental agencies, including counties and municipalities, to protect or enhance the preserves provided that such requirements or authority are not inconsistent with the act and this chapter.

Specific Authority 120.53, 258.43(1) FS. Law Implemented 258.35, 258.36, 258.37, 258.39, 258.393 FS, Chapter 80-280 Laws of Florida. History—New 2-23-81, Amended 6-7-85, Formerly 16Q-20.01, Transferred from 16Q-20.001.

18-20.002 Boundaries and Scope of the Preserves.

(1) These rules shall only apply to those sovereignty lands within a preserve, title to which is vested in the board, and those other lands for which the board has an appropriate instrument in writing, executed by the owner, authorizing the inclusion of specific lands in an aquatic preserve pursuant to Section 2(2) of Chapter 73-534, Laws of Florida, Sections 258.40(1) and 258.41(5), Florida Statutes, future aquatic preserves established through general or special acts of the legislature, and pursuant to Rule 18-20.008, Florida Administrative Code. Any publicly owned and maintained navigation channel authorized by the United States Congress, or other public works project authorized by the United States Congress, designed to improve or maintain commerce and navigation shall be deemed to be excluded from the

provisions of this chapter, pursuant to Subsection 258.40(2), Florida Statutes. Furthermore, all lands lost by avulsion or by artificially induced erosion shall be deemed excluded from the provisions of this chapter pursuant to Subsection 258.40(3), Florida Statutes.

(2) These rules do not apply to Boca Ciega Bay, Pinellas County or Biscayne Bay Aquatic Preserves.

(3) These rules are promulgated to clarify the responsibilities of the board in carrying out its land management functions as those functions apply within the preserves. Implementation and responsibility for environmental permitting of activities and water quality protection within the preserves are vested in the Department of Environmental Regulation. Since these rules are considered cumulative with other rules, a person planning an activity within the preserves should also consult the other applicable department rules (Chapter 18-21, Florida Administrative Code, for example) as well as the rules of the Department of Environmental Regulation.

(4) These rules shall not affect previous actions of the board concerning the issuance of any easement or lease; or any disclaimer concerning sovereignty lands.

(5) The intent and specific provisions expressed in 18-20.001(e) and (f) apply generally to all existing or future aquatic preserves within the scope of this chapter. Upon completion of a resource inventory and approval of a management plan for a preserve, pursuant to 18-20.013, the type designation and the resource sought to be preserved may be readdressed by the Board.

(6) For the purpose of clarification and interpretation, the legal description set forth as follows do not include any land which is expressly recognized as privately owned upland in a pre-existing recorded mean high water line settlement agreement between the board and a private owner or owners. Provided, however, in those instances wherein a settlement agreement was executed subsequent to the passage of the Florida Coastal Mapping Act, the determination of the mean high water line shall be in accordance with the provisions of such act.

(7) Persons interested in obtaining details of particular preserves should contact the Bureau of State Lands Management, Department of Natural Resources, 3900 Commonwealth Blvd., Tallahassee, FL 32303 (telephone 904-488-2297).

(a) The preserves are described as follows:

1. Fort Clinch State Park Aquatic Preserve, as described in the Official Records of Nassau County in Book 108, pages 343-346, and in Book 111, page 409.

2. Nassau River — St. Johns River Marshes Aquatic Preserve, as described in the Official Records of Duval County in Volume 3183, pages 547-552, and in the Official Records of Nassau County in Book 108, pages 232-237.

3. Pellicer Creek Aquatic Preserve, as described in the Official Records of St. Johns County in Book 181, pages 363-366, and in the Official Records of Flagler County in Book 33, pages 131-134.

4. Tomoka Marsh Aquatic Preserve, as described in the Official Records of Flagler County in Book 33, pages 135-138, and in the Official Records of Volusia County in Book 1244, pages 615-618.

5. Wekiva River Aquatic Preserve, as described in Section 258.39(30), F.S.

6. Mosquito Lagoon Aquatic Preserve, as described in the Official Records of Volusia County in Book 1244, pages 619-623, and in the Official Records of Brevard County in Book 1143, pages 190-194.

7. Banana River Aquatic Preserve, as described in the Official Records of Brevard County in Book 1143, pages 195-198, less those lands dedicated to the U. S. A. prior to the enactment of the act, until such time as the U. S. A. no longer wishes to maintain such lands for the purpose for which they were dedicated, at which time such lands would revert to the board, and be managed as part of the preserve.

8. Indian River — Malabar to Sebastian Aquatic Preserve, as described in the Official Records of Brevard County in Book 1143, pages 199-202, and in the Official Records of Indian River County in Book 368, pages 5-8.

9. Indian River — Vero Beach to Fort Pierce Aquatic Preserve, as described in the Official Records of Indian River County in Book 368, pages 9-12, and in the Official Records of St. Lucie County in Book 187, pages 1083-1086.

10. Jensen Beach to Jupiter Inlet Aquatic Preserve, as described in the Official Records of St. Lucie County in Book 218, pages 2865-2869.

11. North Fork, St. Lucie Aquatic Preserve, as described in the Official Records of Martin County in Book 337, pages 2159-2162, and in the Official Records of St. Lucie County in Book 201, pages 1676-1679.

12. Loxahatchee River — Lake Worth Creek Aquatic Preserve, as described in the Official Records of Martin County in Book 320, pages 193-196, and in the Official Records of Palm Beach County in Volume 1860, pages 806-809.

13. Biscayne Bay — Cape Florida to Monroe County Line Aquatic Preserve, as described in the Official Records of Dade County in Book 7055, pages 852-856, less, however, those lands and waters as described in Section 258.165, F. S., (Biscayne Bay Aquatic Preserve Act of 1974), and those lands and waters within the Biscayne National Park.

14. Lignumvitae Key Aquatic Preserve, as described in the Official Records of Monroe County in Book 502, pages 139-142.

15. Coupon Bight Aquatic Preserve, as described in the Official Records of Monroe County in Book 502, pages 143-146.

16. Cape Romano — Ten Thousand Islands Aquatic Preserve, as described in the Official Records of Collier County in Book 381, pages 298-301.

17. Rookery Bay Aquatic Preserve, as described in Section 258.39(31), FS.

18. Estero Bay Aquatic Preserve as described in Section 258.39(28), Florida Statutes.

19. Pine Island Sound Aquatic Preserve, as described in the Official Records of Lee County in Book 648, pages 732-736.

20. Matlacha Pass Aquatic Preserve, as described in the Official Records of Lee County in Book 800, pages 725-728.

21. Gasparilla Sound — Charlotte Harbor Aquatic Preserve, as described in Section 258.392, F.S.

22. Cape Haze Aquatic Preserve, as described in Section 258.39(29), F.S.

23. Cockroach Bay Aquatic Preserve, as described in Section 258.391, F.S.

24. St. Martins Marsh Aquatic Preserve, as described in the Official Records of Citrus County in Book 276, pages 238-241.

25. Alligator Harbor Aquatic Preserve, as described in the Official Records of Franklin County in Volume 98, pages 82-85.

26. Apalachicola Bay Aquatic Preserve, as described in the Official Records of Gulf County in Book 46, pages 77-81, and in the Official Records of Franklin County in Volume 98, pages 102-106.

27. St. Joseph Bay Aquatic Preserve, as described in the Official Records of Gulf County in Book 46, pages 73-76.

28. St. Andrews State Park Aquatic Preserve, as described in the Official Records of Bay County in Book 379, pages 547-550.

29. Rocky Bayou State Park Aquatic Preserve, as described in the Official Records of Okaloosa County in Book 593, pages 742-745.

30. Yellow River Marsh Aquatic Preserve, as described in the Official Records of Santa Rosa County in Book 206, pages 568-571.

31. Fort Pickens State Park Aquatic Preserve, as described in the Official Records of Santa Rosa County in Book 220, pages 60-63, in the Official Records of Escambia County in Book 518, pages 659-662, less the lands dedicated to the U. S. A. for the establishment of the Gulf Islands National Seashore prior to the enactment of the act, until such time as the U. S. A. no longer wishes to maintain such lands for the purpose for which they were dedicated, at which time such lands would revert to the board and be managed as part of the preserve.

32. For the purpose of this section the boundaries of the Lake Jackson Aquatic Preserve, shall be the body of water in Leon County known as Lake Jackson in Sections 1, 2, 3, 5, 10, 11 and 14, Township 1 North, Range 1 West and Sections 11, 12, 13, 14, 15, 21, 22, 23, 26, 27, 28, 29, 32, 33, 34, and 35, Township 2 North, Range 1 West lying below the ordinary high water line. Such lands shall include the submerged bottom lands and the water column upon such lands, as well as all publicly owned islands, within the boundaries of the preserve. Any privately held upland within the boundaries of the preserve shall be deemed to be excluded therefrom; provided that the Board may negotiate an arrangement with any such private upland owner by which such land may be included in the preserve.

33. Terra Ceia Aquatic Preserve, as described in Section 258.393, Florida Statutes.

34. Future aquatic preserves established pursuant to general or special acts of the legislature.

Specific Authority 120.53, 258.43(1) FS. Law Implemented 258.39, 258.391, 258.392, 258.393, 258.40, 258.41, 258.42, 258.43, 258.44, 258.45 FS. History—New 2-23-81, Amended 8-7-85, Formerly 16Q-20.02, Transferred from 16Q-20.002.

18-20.003 Definitions. When used in these rules, the following words shall have the indicated meaning unless the context clearly indicates otherwise:

(1) "Act" means the provisions of Section 258.35 through 258.46, F.S., the Florida Aquatic Preserve Act.

(2) "Activity" means any project and such other human action within the preserve requiring board approval for the use, sale, lease or transfer of interest in sovereignty lands or materials, or which may require a license from the Department of Environmental Regulation.

(3) "Aesthetic values" means scenic characteristics or amenities of the preserve in its essentially natural state or condition, and the maintenance thereof.

(4) "Applicant" means any person making application for a permit, license, conveyance of an interest in state owned lands or any other necessary form of governmental approval in order to perform an activity within the preserve.

(5) "Beneficial biological functions" means interactions between flora, fauna and physical or chemical attributes of the environment, which provide benefits that accrue to the public at large, including, but not limited to: nutrient, pesticide and heavy metal uptake; sediment retention; nutrient conversion to biomass; nutrient recycling and oxygenation.

(6) "Beneficial hydrological functions" means interactions between flora, fauna and physical geological or geographical attributes of the environment, which provide benefits that accrue to the public at large, including, but not limited to: retardation of storm water flow; storm water retention; and water storage, and periodical release;

(7) "Biological values" means the preservation and promotion of indigenous life forms and habitats including, but not limited to: sponges, soft corals, hard corals, submerged grasses, mangroves, saltwater marshes, fresh water marshes, mud flats, marine, estuarine, and aquatic reptiles, games and non-games fish species, marine, estuarine, and aquatic mammals, marine, estuarine, and aquatic invertebrates, birds and shellfish.

(8) "Board" means the Governor and Cabinet sitting as the Board of Trustees of the Internal Improvement Trust Fund.

(9) "Channel" means a trench, the bottom of which is normally covered entirely by water, with the upper edges of its sides normally below water.

(10) "Commercial, industrial and other revenue generating/income related docks" means docking facilities for an activity which produces income, through rental or any other means, or which serves as an accessory facility to other rental, commercial or industrial operations. It shall include, but not be limited to docking for: marinas, restaurants, hotels, motels, commercial fishing, shipping, boat or ship construction, repair, and sales.

(11) "Department" means the State of Florida Department of Natural Resources, as administrator for the board.

(12) "Division" means the Division of State Lands, which performs all staff duties and functions related to the administration of lands title to which is, or will be, vested in the board, pursuant to section 253.002, F.S.

(13) "Dock" means a fixed or floating structure, including moorings, used for the purpose of berthing buoyant vessels either temporarily or indefinitely.

(14) "Essentially natural condition" means those functions which support the continued existence or encourage the restoration of the diverse population of indigenous life forms and habitats to the extent they existed prior to the significant development adjacent to and within the preserve.

(15) "Extreme hardship" means a significant burden, unique to the applicant and not shared by property owners in the area. Self-imposed circumstances caused to any degree by actions of any person subsequent to the enactment of the Act shall not be construed as an extreme hardship. Extreme hardship under this act shall not be construed to include any hardship which arises in whole or in part from the effect of other federal, state or local laws, ordinances, rules or regulations. The term may be inherent in public projects which are shown to be a public necessity.

(16) "Fill" means materials from any source, deposited by any means onto sovereignty lands, either for the purpose of creating new uplands or for any other purpose, including spoiling of dredged materials. For the purpose of this rule, the placement of pilings or riprap shall not be considered to be filling.

(17) "Lease" means a conveyance of interest in lands, title to which is vested in the board, granted in accordance with specific terms set forth in writing.

(18) "Marina" means a small craft harbor complex used primarily for recreation.

(19) "Oil and gas transportation facilities" means those structures necessary for the movement of oil and gas from the production site to the consumer.

(20) "Person" means individuals, minors, partnerships, corporations, joint ventures, estates, trusts, syndicates, fiduciaries, firms, and all other associations and combinations, whether public or private, including governmental entities.

(21) "Pier" means a structure in, on, or over sovereignty lands, which is used by the public primarily for fishing, swimming, or viewing the preserve. A pier shall not include a dock.

(22) "Preserve" means any and all of those areas which are exceptional areas of sovereignty lands and the associated water body so designated in Section 258.39, 258.391, and 258.392, F.S., including all sovereignty lands, title to which is vested in the board, and such other lands as the board may acquire or approve for inclusion, and the water column over such lands, which have been set aside to be maintained in an essentially natural or existing condition of indigenous flora and fauna and their supporting habitat and the natural scenic qualities and amenities thereof.

(23) "Private residential single dock" means a dock which is used for private, recreational or leisure purposes for a single family residence, cottage or other such single dwelling unit and which is designed to moor no more than two boats.

(24) "Private residential multi-slip dock" means a docking facility which is used for private recreational or leisure purposes for multi-unit residential dwellings which shall include but is not limited to condominiums, townhouses, subdivisions and other such dwellings or residential areas and which is designed to moor three or more boats. Yacht clubs associated with residential developments, whose memberships or utilization of the docking facility requires some real property interest in the residential area, shall also be included.

(25) "Public interest" means demonstrable environmental, social, and economic benefits which would accrue to the public at large as a result of a proposed action, and which would clearly exceed all demonstrable environmental, social, and economic costs of the proposed action. In determining the public interest in a request for use, sale, lease, or transfer of interest in sovereignty lands or severance of materials from sovereignty lands, the board shall consider the ultimate project and purpose to be served by said use, sale, lease, or transfer of lands or materials.

(26) "Public navigation project" means a project primarily for the purpose of navigation which is authorized and funded by the United States Congress or by port authorities as defined by Section 315.02(2), F.S.

(27) "Public necessity" means the works or improvements required for the protection of the health and safety of the public, consistent with the Act and these rules, for which no other reasonable alternative exists.

(28) "Public utilities" means those services, provided by persons regulated by the Public Service Commission, or which are provided by rural cooperatives, municipalities, or other governmental agencies, including electricity, telephone, public water and wastewater services, and structures necessary for the provision of these services.

(29) "Quality of the preserve" means the degree of the biological, aesthetic and scientific values of the preserve necessary for present and future enjoyment of it in an essentially natural condition.

(30) "Resource management agreement" means a contractual agreement between the board and one

or more parties which does not create an interest in real property but merely authorizes conduct of certain management activities on lands held by the board.

(31) "Resource Protection Area (RPA) 1" — Areas within the aquatic preserves which have resources of the highest quality and condition for that area. These resources may include, but are not limited to corals; marine grassbeds; mangrove swamps; salt-water marsh; oyster bars; archaeological and historical sites; endangered or threatened species habitat; and, colonial water bird nesting sites.

(32) "Resource Protection Area 2" — Areas within the aquatic preserves which are in transition with either declining resource protection area 1 resources or new pioneering resources within resource protection area 3.

(33) "Resource Protection Area 3" — Areas within the aquatic preserve that are characterized by the absence of any significant natural resource attributes.

(34) "Riparian rights" means those rights incident to lands bordering upon navigable waters, as recognized by the courts of this state and common law.

(35) "Sale" means a conveyance of interest in lands, by the board, for consideration.

(36) "Scientific values" means the preservation and promotion of certain qualities or features which have scientific significance.

(37) "Shore protection structure" means a type of coastal construction designed to minimize the rate of erosion. Coastal construction includes any work or activity which is likely to have a material physical effect on existing coastal conditions or natural shore processes.

(38) "Sovereignty lands" means those lands including, but not limited to: tidal lands, islands, sandbars, shallow banks, and lands waterward of the ordinary or mean highwater line, to which the State of Florida acquired title on March 3, 1845, by virtue of statehood, and of which it has not since divested its title interest. For the purposes of this rule sovereignty lands shall include all submerged lands within the boundaries of the preserve, title to which is held by the board.

(39) "Spoil" means materials dredged from sovereignty lands which are redeposited or discarded by any means, onto either sovereignty lands or uplands.

(40) "Transfer" means the act of the board by which any interest in lands, including easements, other than sale or lease, is conveyed.

(41) "Utility of the preserve" means fitness of the preserve for the present and future enjoyment of its biological, aesthetic and scientific values, in an essentially natural condition.

(42) "Water dependent activity" means an activity which can only be conducted on, in, over, or adjacent to, water areas because the activity requires direct access to the water body or sovereignty lands for transportation, recreation, energy production or transmission, or source of water and where the use of the water or sovereignty lands is an integral part of the activity.

Specific Authority 258.43(1) FS. Law Implemented 258.37, 258.43(1) FS. History—New 2-25-81. Amended 8-7-85. Formerly 16Q-20.03. Transferred from 16Q-20.003.

18-20.004 Management Policies, Standards and Criteria. The following management policies, standards and criteria are supplemental to Chapter 18-21, Florida Administrative Code (Sovereignty Submerged Lands Management) and shall be utilized in determining whether to approve, approve with conditions or modifications or deny all requests for activities on sovereignty lands in aquatic preserves.

(1) GENERAL PROPRIETARY

(a) In determining whether to approve or deny any request the Board will evaluate each on a case-by-case basis and weigh any factors relevant under Chapter 253 and/or 258, Florida Statutes. The Board, acting as Trustees for all state-owned lands, reserves the right to approve, modify or reject any proposal.

(b) There shall be no further sale, lease or transfer of sovereignty lands except when such sale, lease or transfer is in the public interest (see Section 18-20.004(2) Public Interest Assessment Criteria).

(c) There shall be no construction of seawalls waterward of the mean or ordinary high water line, or filling waterward of the mean or ordinary high water line except in the case of public road and bridge projects where no reasonable alternative exists.

(d) There shall, in no case, be any dredging waterward of the mean or ordinary high water line for the sole or primary purpose of providing fill for any area landward of the mean or ordinary high water line.

(e) A lease, easement or consent of use may be authorized only for the following activities:

1. a public navigation project;

2. maintenance of an existing navigational channel;

3. installation or maintenance of approved navigational aids;

4. creation or maintenance of a commercial/industrial dock, pier or a marina;

5. creation or maintenance of private docks for reasonable ingress and egress of riparian owners;

6. minimum dredging for navigation channels attendant to docking facilities;

7. creation or maintenance of a shore protection structure;

8. installation or maintenance of oil and gas transportation facilities;

9. creation, maintenance, replacement or expansion of facilities required for the provision of public utilities; and

10. other activities which are a public necessity or which are necessary to enhance the quality or utility of the preserve and which are consistent with the act and this chapter.

(f) For activities listed in paragraphs 18-20.004(1)(e)1.—10. above, the activity shall be

designed so that the structure or structures to be built in, on or over sovereignty lands are limited to structures necessary to conduct water dependent activities.

(g) For activities listed in paragraphs 18-20.004(1)(e)7., 8., 9. and 10. above, it must be demonstrated that no other reasonable alternative exists which would allow the proposed activity to be constructed or undertaken outside the preserve.

(h) The use of state-owned lands for the purpose of providing private or public road access to islands where such access did not previously exist shall be prohibited. The use of state-owned lands for the purpose of providing private or public water supply to islands where such water supply did not previously exist shall be prohibited.

(i) Except for public navigation projects and maintenance dredging for existing channels and basins, any areas dredged to improve or create navigational access shall be incorporated into the preempted area of any required lease or be subject to the payment of a negotiated private easement fee.

(j) Private residential multi-slip docking facilities shall require a lease.

(k) Aquaculture and beach renourishment activities which comply with the standards of this rule chapter and Chapter 18-21, Florida Administrative Code, may be approved by the board, but only subsequent to a formal finding of compatibility with the purposes of Chapter 258, Florida Statutes, and this rule chapter.

(l) Other uses of the preserve, or human activity within the preserve, although not originally contemplated, may be approved by the board, but only subsequent to a formal finding of compatibility with the purposes of Chapter 258, Florida Statutes, and this rule chapter.

(2) PUBLIC INTEREST ASSESSMENT CRITERIA

In evaluating requests for the sale, lease or transfer of interest, a balancing test will be utilized to determine whether the social, economic and/or environmental benefits clearly exceed the costs.

(a) GENERAL BENEFIT/COST CRITERIA:

1. any benefits that are balanced against the costs of a particular project shall be related to the affected aquatic preserve;

2. in evaluating the benefits and costs of each request, specific consideration and weight shall be given to the quality and nature of the specific aquatic preserve. Projects in the less developed, more pristine aquatic preserves such as Apalachicola Bay shall be subject to a higher standard than the more developed urban aquatic preserves such as Boca Ciega Bay; and,

3. for projects in aquatic preserves with adopted management plans, consistency with the management plan will be weighed heavily when determining whether the project is in the public interest.

(b) BENEFIT CATEGORIES:

1. public access (public boat ramps, boatslips, etc.);

2. provide boating and marina services (repair, pumpout, etc.);

3 improve and enhance public health, safety, welfare, and law enforcement;

4. improved public land management;

5. improve and enhance public navigation;

6. improve and enhance water quality;

7. enhancement/restoration of natural habitat and functions; and

8. improve/protect endangered/threatened/unique species.

(c) COSTS:

1. reduced/degraded water quality;

2. reduced/degraded natural habitat and function;

3. destruction, harm or harassment of endangered or threatened species and habitat;

4. preemption of public use;

5. increasing navigational hazards and congestion;

6. reduced/degraded aesthetics; and

7. adverse cumulative impacts.

(d) EXAMPLES OF SPECIFIC BENEFITS:

1. donation of land, conservation easements, restrictive covenants or other title interests in or contiguous to the aquatic preserve which will protect or enhance the aquatic preserve;

2. providing access or facilities for public land management activities;

3. providing public access easements and/or facilities, such as beach access, boat ramps, etc.;

4. restoration/enhancement of altered habitat or natural functions, such as conversion of vertical bulkheads to riprap and/or vegetation for shoreline stabilization or re-establishment of shoreline or submerged vegetation;

5. improving fishery habitat through the establishment of artificial reefs or other such projects, where appropriate;

6. providing sewage pumpout facilities where normally not required, in particular, facilities open to the general public;

7. improvements to water quality such as removal of toxic sediments, increased flushing and circulation, etc.;

8. providing upland dry storage as an alternative to wetslip; and

9. marking navigation channels to avoid disruption of shallow water habitats.

(3) RESOURCE MANAGEMENT

(a) All proposed activities in aquatic preserves having management plans adopted by the Board must demonstrate that such activities are consistent with the management plan.

(b) No drilling of oil, gas or other such wells shall be allowed.

(c) Utility cables, pipes and other such structures shall be constructed and located in a manner that will cause minimal disturbance to submerged land resources such as oyster bars and submerged grass beds and do not interfere with traditional public uses.

(d) Spoil disposal within the preserves shall be strongly discouraged and may be approved only

structures shall be constructed and located in a manner that will cause minimal disturbance to submerged land resources such as oyster bars and submerged grass beds and do not interfere with traditional public uses.

(d) Spoil disposal within the preserves shall be strongly discouraged and may be approved only where the applicant has demonstrated that there is no other reasonable alternative and that activity may be beneficial to, or at a minimum, not harmful to the quality and utility of the preserve.

(4) RIPARIAN RIGHTS

(a) None of the provisions of this rule shall be implemented in a manner that would unreasonably infringe upon the traditional, common law and statutory riparian rights of upland riparian property owners adjacent to sovereignty lands.

(b) The evaluation and determination of the reasonable riparian rights of ingress and egress for private, residential multi-slip docks shall be based upon the number of linear feet of riparian shoreline.

(c) For the purposes of this rule, a private, residential, single docking facility which meets all the requirements of Rule 18-20.004(5) shall be deemed to meet the public interest requirements of Rule 18-20.004(1)(b), Florida Administrative Code. However, the applicants for such docking facilities must apply for such consent and must meet all of the requirements and standards of this rule chapter.

(5) STANDARDS AND CRITERIA FOR DOCKING FACILITIES

(a) All docking facilities, whether for a single or multi-slip residential or commercial, shall be subject to the following standards and criteria:

1. no dock shall extend waterward or the mean or ordinary high water line more than 500 feet or 20 percent of the width of the waterbody at that particular location whichever is less;

2. certain docks may fall within areas of special or unique importance. These areas may be of significant biological, scientific, historic and/or aesthetic value and require special management considerations. Modifications may be more restrictive than the normally accepted criteria. Such modifications shall be determined on a case-by-case analysis, and may include, but shall not be limited to changes in location, configuration, length, width and height;

3. the number, lengths, drafts and types of vessels allowed to utilize the proposed facility may also be stipulated; and

4. where local governments have more stringent standards and criteria for docking facilities, the more stringent standards for the protection and enhancement of the aquatic preserve shall prevail.

(b) Private residential single docks shall conform to the following specific design standards and criteria:

1. any main access dock shall be limited to a maximum width of four (4) feet;

2. the dock decking design and construction will insure maximum light penetration, with full consideration of safety and practicality;

3. the dock will extend out from the shoreline no further than to a maximum depth of minus four (−4) feet (mean low water);

4. when the water depth is minus four (−4) feet (mean low water) at an existing bulkhead the maximum dock length from the bulkhead shall be 25 feet, subject to modifications accommodating shoreline vegetation overhang;

5. wave break devices, when necessary, shall be designed to allow for maximum water circulation and shall be built in such a manner as to be part of the dock structure;

6. terminal platform size shall be no more than 160 square feet; and

7. dredging to obtain navigable water depths in conjunction with private residential, single dock applications is strongly discouraged.

(c) Private residential multi-slip docks shall conform to the following specific design standards and criteria:

1. the area of sovereignty, submerged land preempted by the docking facility shall not exceed the square footage amounting to ten times the riparian waterfront footage of the affected waterbody of the applicant, or the square footage attendant to providing a single dock in accordance with the criteria for private residential single docks, whichever is greater. A conservation easement or other such use restriction acceptable to the Board must be placed on the riparian shoreline, used for the calculation of the 10:1 threshold, to conserve and protect shoreline resources and subordinate/waive any further riparian rights of ingress and egress for additional docking facilities;

2. docking facilities and access channels shall be prohibited in Resource Protection Area 1 or 2, except as allowed pursuant to Section 258.42(3)(e)1., Florida Statutes, while dredging in Resource Protection Area 3 shall be strongly discouraged;

3. docking facilities shall only be approved in locations having adequate existing water depths in the boat mooring, turning basin, access channels, and other such areas which will accommodate the proposed boat use in order to insure that a minimum of one foot clearance is provided between the deepest draft of a vessel and the bottom at mean low water;

4. main access docks and connecting or cross walks shall not exceed six (6) feet in width;

5. terminal platforms shall not exceed eight (8) feet in width;

6. finger piers shall not exceed three (3) feet in width, and 25 feet in length;

7. pilings may be utilized as required to provide adequate mooring capabilities; and

8. the following provisions of Rule 18-20.004(5)(d) shall also apply to private residential multi-slip docks.

(d) Commercial, industrial and other revenue generating/income related docking facilities shall conform to the following specific design standards and criteria:

1. docking facilities shall only be located in or near areas with good circulation, flushing and adequate water depths;

2. docking facilities and access channels shall be prohibited in Resource Protection Area 1 or 2, except as allowed pursuant to Sections 258.42(3)(e)1., Florida Statutes; while dredging in Resource Protection Area 3 shall be strongly discouraged;

3. the docking facilities shall not be located in Resource Protection Area 1 or 2; however, main access docks may be allowed to pass through Resource Protection Area 1 or 2, that are located along the shoreline, to reach an acceptable Resource Protection Area 3, provided that such crossing will generate minimal environmental impact;

4. beginning July 1, 1986 new docking facilities may obtain a lease only where the local governments have an adopted marina plan and/or policies dealing with the siting of commercial/industrial and private, residential, multi-slip docking facilities in their local government comprehensive plan;

5. the siting of the docking facilities shall also take into account the access of the boat traffic to avoid marine grassbeds or other aquatic resources in the surrounding areas;

6. the siting of new facilities within the preserve shall be secondary to the expansions of existing facilities within the preserve when such expansion is consistent with the other standards;

7. the location of new facilities and expansion of existing facilities shall consider the use of upland dry storage as an alternative to multiple wet-slip docking;

8. marina siting will be coordinated with local governments to insure consistency with all local plans and ordinances;

9. marinas shall not be sited within state designated manatee sanctuaries; and

10. in any areas with known manatee concentrations, manatee warning/notice and/or speed limit signs shall be erected at the marina and/or ingress and egress channels, according to Florida Marine Patrol specifications.

(c) Exceptions to the standards and criteria listed in Rule 18-20.004(5), Florida Administrative Code, may be considered, but only upon demonstration by the applicant that such exceptions are necessary to insure reasonable riparian ingress and egress.

(6) MANAGEMENT AGREEMENTS

The board may enter into management agreements with local agencies for the administration and enforcement of standards and criteria for private residential single docks.

(7) In addition to the policies, standards and criteria delineated in subsections (1) through (6), the provisions of the following management plans apply to specific aquatic preserves and are incorporated herein by reference. Where regulatory criteria in 18-20, F. A. C., may differ with specific policies in the management plans listed herein, the general rule criteria shall prevail.

	Date Adopted
Alligator Harbor	September 23, 1986
Banana River	September 17, 1985
Cockroach Bay	April 21, 1987
Estero Bay	September 6, 1983
Charlotte Harbor (Cape Haze, Gasparilla Sound-Charlotte Harbor, Matlacha Pass and Pine Island Sound)	May 18, 1983
Indian River-Malabar to Vero Beach	January 21, 1986
Indian River Lagoon (Vero Beach to Fort Pierce and Jensen Beach to Jupiter Inlet)	January 22, 1985
Loxahatchee River-Lake Worth Creek	June 12, 1984
Nassau River-St. Johns River Marshes and Fort Clinch State Park	April 22, 1986
North Fork of the St. Lucie River	May 22, 1984
St. Joseph Bay	June 2, 1987
St. Martins Marsh	September 9, 1987
Terra Ceia	April 21, 1987
Wekiva River	August 25, 1987

Specific Authority 258.43(1) FS. Law Implemented 258.41, 258.42, 258.43(1), 258.44 FS. History—New 2-25-81, Amended 6-7-85, Formerly 16Q-20.004, Transferred from 16Q-20.004, Amended 9-4-88.

18-20.005 Uses, Sales, Leases, or Transfer of Interests in Lands, or Materials, Held by the Board.

Specific Authority 258.43(1) FS. Law Implemented 253.02, 253.12, 258.42 FS. History—New 2-25-81, Repealed 6-7-85, Formerly 16Q-20.05, Transferred from 16Q-20.005.

18-20.006 Cumulative Impacts. In evaluating applications for activities within the preserves or which may impact the preserves, the department recognizes that, while a particular alteration of the preserve may constitute a minor change, the cumulative effect of numerous such changes often results in major impairments to the resources of the preserve. Therefore, the department shall evaluate a particular site for which the activity is proposed with the recognition that the activity may, in conjunction with other activities adversely affect the preserve which is part of a complete and interrelated system. The impact of a proposed activity shall be considered in light of its cumulative impact on the preserve's natural system. The department shall include as a part of its evaluation of an activity:

(1) The number and extent of similar human actions within the preserve which have previously affected or are likely to affect the preserve, whether considered by the department under its current authority or which existed prior to or since the enactment of the Act; and

(2) The similar activities within the preserve

which are currently under consideration by the department; and

(3) Direct and indirect effects upon the preserve and adjacent preserves, if applicable, which may reasonably be expected to result from the activity; and

(4) The extent to which the activity is consistent with management plans for the preserve, when developed; and

(5) The extent to which the activity is permissible within the preserve in accordance with comprehensive plans adopted by affected local governments, pursuant to section 163.3161, F.S., and other applicable plans adopted by local, state, and federal governmental agencies;

(6) The extent to which the loss of beneficial hydrologic and biologic functions would adversely impact the quality or utility of the preserve; and

(7) The extent to which mitigation measures may compensate for adverse impacts.

Specific Authority 258.43(1) FS. Law Implemented 258.36, 258.43, 258.44 FS. History—New 2-25-81, Formerly 16Q-20.006, Transferred from 16Q-20.006.

18-20.007 Protection of Riparian Rights.

Specific Authority 258.43(1) FS. Law Implemented 258.123, 258.124(8), 258.44 FS. History—New 2-25-81, Repealed 8-7-85, Formerly 16Q-20.07, Transferred from 16Q-20.007.

18-20.008 Inclusion of Lands, Title to Which Is Not Vested in the Board, in a Preserve.

(1) Lands and water bottoms which are within designated aquatic preserve boundaries, or adjacent thereto and which are owned by other governmental agencies, may be included in an aquatic preserve upon specific authorization for inclusion by an appropriate instrument in writing executed by the agency.

(2) Lands and water bottoms which are within designated aquatic preserve boundaries or adjacent thereto, and which are in private ownership, may be included in an aquatic preserve upon specific authorization for inclusion by an appropriate instrument in writing executed by the owner.

(3) The appropriate instrument shall be either a dedication in perpetuity, or a lease. Such lease shall contain the following conditions:

(a) The term of the lease shall be for a minimum period of ten years.

(b) The board shall have the power and duty to enforce the provisions of each lease agreement, and shall additionally have the power to terminate any lease if the termination is in the best interest of the aquatic preserve system, and shall have the power to include such lands in any agreement for management of such lands.

(c) The board shall pay no more than $1 per year for any such lease.

Specific Authority 258.43(1) FS. Law Implemented 258.40, 258.41 FS. History—New 2-25-81, Formerly 16Q-20.008, Transferred from 16Q-20.008.

18-20.009 Establishment or Expansion of Aquatic Preserves.

(1) The board may expand existing preserves or establish additional areas to be included in the aquatic preserve system, subject to confirmation by the legislature.

(2) The board may, after public notice and public hearing in the county or counties in which the proposed expanded or new preserve is to be located, adopt a resolution formally setting aside such areas to be included in the system.

(3) The resolution setting aside an aquatic preserve area shall include:

(a) A legal description of the area to be included. A map depicting the legal description shall also be attached.

(b) The designation of the type of aquatic preserve.

(c) A general statement of what is sought to be preserved.

(d) A statement that the area established as a preserve shall be subject to the management criteria and directives of this chapter.

(e) A directive to develop a natural resource inventory and a management plan for the area being established as an aquatic preserve.

(4) Within 30 days of the designation and establishment of an aquatic preserve, the board shall record in the public records of the county or counties in which the preserve is located a legal description of the preserve.

Specific Authority 258.43(1) FS. Law Implemented 258.41 FS. History—New 2-25-81, Formerly 16Q-20.09, Transferred from 16Q-20.009.

18-20.010 Exchange of Lands. The board in its discretion may exchange lands for the benefit of the preserve, provided that:

(1) In no case shall an exchange result in any land or water area being withdrawn from the preserve; and

(2) Exchanges shall be in the public interest and shall maintain or enhance the quality or utility of the preserve.

Specific Authority 258.43(1) FS. Law Implemented 258.41(5), 258.42(1) FS. History—New 2-25-81, Formerly 16A-20.10, Transferred from 16Q-20.010.

18-20.011 Gifts of Lands. The board in its discretion may accept any gifts of lands or interests in lands within or contiguous to the preserve to maintain or enhance the quality and utility of the preserve.

Specific Authority 258.43(1) FS. Law Implemented 258.42(5) FS. History—New 2-25-81, Formerly 16Q-20.11, Transferred from 16Q-20.011.

18-20.012 Protection of Indigenous Life Forms. The taking of indigenous life forms for sale or commercial use is prohibited, except that this prohibition shall not extend to the commercial taking of fin fish, crustacea or mollusks, except as prohibited under applicable laws, rules or regulations. Members of the public may exercise their rights to fish, so long as not contrary to other statutory and regulatory provisions controlling such activities.

Specific Authority 258.43(1) FS. Law Implemented 258.43(1) FS. History—New 2-25-81, Formerly 16Q-20.12, Transferred from 16Q-20.012.

18-20.013 Development of Resource Inventories and Management Plans for Preserves.

(1) The board authorizes and directs the division to develop a resource inventory and management plan for each preserve.

(2) The division may perform the work to develop the inventories and plans, or may enter into agreements with other persons to perform the work. In either case, all work performed shall be subject to board approval.

Specific Authority 258.43(1) FS. Law Implemented 253.03(7), 253.03(8) FS. History—New 2-25-81, Amended 6-7-85, Formerly 16Q-20.13, Transferred from 16Q-20.013.

18-20.014 Enforcement. The rules shall be enforced as provided in Section 258.46.

Specific Authority 258.43(1) FS. Law Implemented 258.46 FS. History—New 2-25-81, Formerly 16Q-20.14, Transferred from 16Q-20.014.

18-20.015 Application Form.

Specific Authority 253.43(1) FS. Law Implemented 258.43 FS. History—New 2-25-81, Repealed 6-7-85, Formerly 16Q-20.15, Transferred from 16Q-20.015.

18-20.016 Coordination with Other Governmental Agencies. Where a Department of Environmental Regulation permit is required for activities on sovereignty lands the department will coordinate with the Department of Environmental Regulation to obtain a copy of the joint Department of Army/Florida Department of Environmental Regulation permit application and the biological survey. The information contained in the joint permit application and biological assessment shall be considered by the department in preparing its staff recommendations to the board. The board may also consider the reports of other governmental agencies that have related management or permitting responsibilities regarding the proposed activity.

Specific Authority 253.43(1) FS. Law Implemented 258.43 FS. History—New 2-25-81, Formerly 16Q-20.16, Transferred from 16Q-20.016.

18-20.017 Lake Jackson Aquatic Preserve. In addition to the provisions of Rules 18-20.001 through 18-20.016, the following requirements shall also apply to all proposed activities within the Lake Jackson Aquatic Preserve. If any provisions of this Rule are in conflict with any provisions of Rules 18-20.001 through 18-20.016 or Chapter 73-534, Laws of Florida, the stronger provision for the protection or enhancement of the aquatic preserve shall prevail.

(1) No further sale, transfer or lease of sovereignty lands in the preserve shall be approved or consummated by the Board, except upon a showing of extreme hardship on the part of the applicant or when the board shall determine such sale, transfer or lease to be in the public interest.

(2) No further dredging or filling of sovereignty lands of the preserve shall be approved or tolerated by the Board of Trustees except:

(a) Such minimum dredging and spoiling as may be authorized for public navigation projects or for preservation of the lake according to the expressed intent of Chapter 73-534, Laws of Florida; and

(b) Such other alteration of physical conditions as may be necessary to enhance the quality or utility of the preserve.

(3) There shall be no drilling of wells, excavation for shell or minerals, and no erection of structures (other than docks), within the preserve, unless such activity is associated with activity authorized by Chapter 73-534, Laws of Florida.

(4) The Board shall not approve the relocations of bulkhead lines within the preserve.

(5) Notwithstanding other provisions of this act, the board may, respecting lands lying within the Lake Jackson basin:

(a) Enter into agreements for and establish lines delineating sovereignty and privately owned lands;

(b) Enter into agreements for the exchange and exchange sovereignty lands for privately owned lands;

(c) Accept gifts of land within or contiguous to the preserve.

Specific Authority 258.39(26) FS. Law Implemented 258.39(26), 258.43 FS. History—New 6-7-85, Formerly 16Q-20.017, Transferred from 16Q-20.017.

APPENDIX B

ST. JOHN'S COUNTY ORDINANCES

ORDINANCE NO. 73-2

AN ORDINANCE OF THE COUNTY OF ST. JOHNS, STATE OF FLORIDA, TO HELP PREVENT EROSION ALONG THE ATLANTIC OCEAN; TO PROTECT CHILDREN; TO REGULATE TRAFFIC AND TO PROHIBIT MOTOR VEHICLES FROM ENTERING ANY OF THE BEACHES EXCEPT BY OPEN ROADS, STREETS OR RIGHTS OF WAY; PROVIDING PENALTIES FOR VIOLATION AND PROVIDING TIME FOR TAKING EFFECT.

ORDINANCE NO. 73-9

AN ORDINANCE OF THE COUNTY OF ST. JOHNS, STATE OF FLORIDA, REGULATING THE CONSTRUCTION AND LOCATION OF SEWAGE DISPOSAL PLANTS IN THE INCORPORATED AREAS OF ST. JOHNS COUNTY, FLORIDA, AND PROHIBITING SAID PLANTS FROM BEING LOCATED IN CERTAIN AREAS AND REQUIRING APPROVAL OF THE PLANS AND SPECIFICATIONS BY THE BOARD OF COUNTY COMMISSIONERS, PROVIDING CERTAIN EXEMPTIONS, PROVIDING PENALTIES FOR VIOLATION AND PROVIDING TIME FOR TAKING EFFECT.

ORDINANCE NO. 76-18

AN ORDINANCE OF THE UNINCORPORATED AREA OF ST. JOHNS COUNTY RELATING TO THE CONTROL AND REGULATION OF THE ENVIRONMENT; MAKING CERTAIN FINDINGS OF FACT; INCLUDING A FINDING THAT THE PROVISIONS OF THIS ORDINANCE PROVIDE FOR REGULATION OF AIR, WATER, SOILS POLLUTION AND EXCAVATION AND FILL OPERATIONS; PROVIDING GENERAL DEFINITIONS; ADOPTING AND INCORPORATING BY REFERENCE, THE LAWS OF FLORIDA THAT REGULATE OR CONTROL MINING, EXCAVATION AND FILL OPERATIONS AND LAWS OF FLORIDA THAT REGULATE OR CONTROL THE POLLUTION OF AIR, WATER OR SOILS AND ADOPTING THE RULES AND REGULATIONS PROMULGATED UNDER SUCH LAWS; PROVIDING FOR ENFORCEMENT AND PROVIDING THAT VIOLATORS SHALL BE PUNISHED BY BOTH CIVIL AND CRIMINAL PENALTIES; REQUIRING PERMITS FOR THE ALTERATION, CONSTRUCTION AND USE OF ANY INSTRUMENT,

BUILDING, OR DEVISE THAT MAY RESULT IN AIR, WATER, OR SOILS POLLUTION; REQUIRING PERMITS FOR MINING, FILL AND EXCAVATION OPERATIONS; ESTABLISHING THE PROCEDURE FOR THE OBTAINING OF A PERMIT; PROVIDING FOR THE SUSPENSION OR REVOCATION OF PERMITS; PROVIDING THE PARTY; PROVIDING ADDITIONAL REMEDIES IN CASE OF VIOLATION; PROVIDING A SEVERABILITY CLAUSE AND A SAVING CLAUSE; ADOPTING FLORIDA STATUTES; PROVIDING THE MANNER IN WHICH THIS ORDINANCE SHALL BECOME EFFECTIVE.

ORDINANCE NO. 81-71

ORDINANCE OF THE COUNTY OF ST. JOHNS, STATE OF FLORIDA, AMENDING ORDINANCE 73-9 WHICH IS THE ORDINANCE REGULATING THE CONSTRUCTION AND LOCATION OF SEWAGE DISPOSAL PLANTS IN THE UNINCORPORATED AREAS OF ST. JOHNS COUNTY, FLORIDA. THIS AMENDMENT REGULATES EFFLUENT BEING DISCHARGED IN ANY BODY OF WATER IN ST. JOHNS COUNTY AND PROVIDES THAT EACH DAY VIOLATION EXISTS CONSTITUTES A SEPARATE OFFENSE, AND ESTABLISHES AN EXEMPTION PROCEDURE TO THE ORIGINAL ORDINANCE.

ORDINANCE NO. 86-16

AN ORDINANCE OF THE COUNTY OF ST. JOHNS, STATE OF FLORIDA ADOPTING ADDITIONAL CONSTRUCTION REGULATIONS AND STANDARDS FOR CONSTRUCTION WITHIN THE COASTAL BUILDING ZONE AND COASTAL BARRIER ISLANDS; DESCRIBING THE LAND AREAS AND THE TYPES OF CONSTRUCTION TO WHICH THIS ORDINANCE SHALL APPLY; REQUIRING THAT APPLICATIONS FOR BUILDING PERMITS FOR CONSTRUCTION WITHIN SUCH AREAS BE CERTIFIED BY A FLORIDA REGISTERED ARCHITECT OR ENGINEER; PROVIDING DEFINITIONS; PROVIDING COASTAL CONSTRUCTION AND DESIGN REQUIREMENTS; REGULATING RELOCATION OF CONSTRUCTION; REGULATING REMOVAL OR IMPAIRMENT OF PUBLIC ACCESS RIGHTS; PROVIDING REFERENCES; PROVIDING FOR SEVERABILITY; PROVIDING PENALTIES; AND PROVIDING AN EFFECTIVE DATE.

APPENDIX C

PARTIAL LIST OF THE FAUNA OF THE GUANA RIVER MARSH AQUATIC PRESERVE

INVERTEBRATES

Barnacles	Balanus spp.
Marsh periwinkle	Littorina irrorata
Blue crab	Callinectes sapidus
Stone crab	Mennipe mercenaria
Hermit crab	Pagurus spp.
Horseshoe crab	Limulus polypemus
Fiddler crabs	Uca spp.
Hard clam or quahog	Mercenaria spp.
Eastern oyster	Crassotrea virginica
White shrimp	Penaeus setiferus
Brown shrimp	Penaeus aztecus
Pink shrimp	Penaeus duarorum
Mantis shrimp	Squilla empusa
Ghost shrimp	Callianassa spp.
Grass shrimp	Palaemonetes spp.
Coquina	Donax variabilis
Oyster drills	Urosalpinx spp.
Southern acorn worm	Ptychodera bahamensis
Razor clams	Ensis spp.
Saltmarsh snail	Melampus coffeus
Scuds	Gammarus spp.
Beach fleas	Talorchestia spp.
Sea stars	Class Asteroidea
Brittle stars	Class Ophiuroidea
Sea urchins	Class Echinoidea
Sea cucumbers	Class Holothuroidea
Cow killer	Dasymutilla occidentalis
Long-tailed skipper	Urbanus proteus
Giant swallowtail	Papilio cresphontes
Golden silk spider	Nephila clavipes
Grass spider	Agelenopsis spp.
Crablike spiny orb weaver	Gasteracantha elipsoides
Centruroides scorpion	Centruroides spp.

AMPHIBIANS

Southern toad	Bufo terrestris
Oak toad	Bufo quercus
Bullfrog	Rana catesbeiana
Leopard frog	Rana sphenocephala
Green treefrog	Hyla cinera
Barking treefrog	Hyla gratiosa
Florida cricket frog	Acris dorsalis

REPTILES

Leatherback sea turtle	Dermochelys coriacea coriacea
Loggerhead sea turtle	Caretta caretta caretta
Green sea turtle	Chelonia mydas mydas
Florida box turtle	Terrapene carolina bauri
Florida mud turtle	Kinosternon surbrum
Florida cooter	Chrysemys floridana
Florida softshell	Trionyx ferox
Florida snapping turtle	Chelydra serpentina osceola
Gopher tortoise	Gopherus polyphemus
Florida red-bellied turtle	Chrysemys nelsoni
Diamondback terrapin	Malaclemy terrapin
Diamondback rattlesnake	Cortalus admanteus
Dusky pygmy rattlesnake	Sistrurus miliariaus barbouri
Florida cottonmouth	Agkistrodon piscivorus
Florida watersnake	Nerodia fasciate
Eastern coachwhip	Mesticophis flagellum
Scarlet kingsnake	Lampropeltis triangulum
Yellow rat snake	Elaphe obsoleta
Red rat snake	Elaphe guttata
Eastern indigo snake	Drymarchon corais couperi
Southern black racer	Coluber constrictor priapus
Rough green snake	Opheodrys aestivus
Eastern garter snake	Thamnophis sirtalis
Eastern ribbon snake	Thamnophis sauritus
Eastern coral snake	Micrurus fulvius
Scarlet snake	Cemophora coccinea
American alligator	Alligator mississipiensis
Green anole	Anolis caroliniensis
Five-lined skink	Eumeces inexpectatus
Broadhead skink	Eumeces laticeps
Six-lined racerunner	Cnemidophorus sexlineatus
Eastern glass lizard	Ophisaurus ventralis
Ground skink	Scinella lateralis
Greater siren	Siren lacertina

FISHES

Flounders	Paralichthys spp.
Redfish	Sciaenops ocellatus
Atlantic croaker	Micropogon undulatus
Sheepshead	Archosargus probatocepalus
Spotted seatrout	Cynoscion nebulosus
Weakfish	Cynoscion regalis
Striped mullet	Mugil cephalus
White mullet	Mugil curema
Snook	Centropomus undecimalis
Florida gar	Lepisosteus osseus
Largemouth bass	Micropterus floridanus
Bluegill	Lepomis macrochirus
Stumpknocker	Lepomis punctatus
Bowfin	Amia calva
Brown bullhead	Ictalurus nebulosus
Pinfish	Lagodon rhomboides
Redear sunfish	Lepomis microlophus
Warmouth	Lepomis gulosus
Mosquitofish	Gambusia affinis
Mollies	Poecilia spp.
Gizzard shad	Dorosoma cepedianum
Hickory shad	Alosa mediocris
Threadfin shad	Dorosoma petenense
Lake chubsucker	Erimyzon sucetta
Golden shiner	Notemigonus crysoleucus
Redbreasted sunfish	Lepomis auritus
Jack crevalle	Caranx hippos
Amberjack	Seriola dumerili
Atlantic stingray	Dasyatis sabina
Pigfish	Orthopristis chrysoptera
Black drum	Pogonias cromis
Silver perch	Bairdiella chrysoura
Ladyfish	Elops saurus
Spot	Leiostomus xanthurus
Menhaden	Brevoortia spp.
Anchovy	Anchoa spp.
Mojarra	Eucinostomus spp.
Needlefish	Strongylura spp.
Hardhead catfish	Arius felis
Killifish	Fundulus spp.
Sheepshead minnow	Cyprinodon variegatus
American eel	Anquilla rostrata
Tarpon	Megalops atlantica

Bluefish	Pomatomus saltatrix
Sandbar shark	Carcharhinus plumbeus
Bull shark	Carcharhinus leucas
Tiger shark	Galeocerdo cuvieri
Hammerhead sharks	Sphyrna spp.
Blacktip shark	Carcharhinus limbatus
Remora	Remora remora
Stargazers	Astroscopus spp.
Scaled sardine	Harengula pensacolae
Inshore lizardfish	Synodus foetens
Toadfish	Opsanus tau
Silversides	Menidia spp.
Black seabass	Centropristis striata
Sandperch	Diplectrum formosum
Groupers	Epinephelus spp.
Cobia	Rachycentron canadum
Florida pompano	Trachinotus carolinus
Lookdown	Selene vomer
Snappers	Lutjanus spp.
Grunts	Haemulon spp.
Southern kingfish	Menticirrhus americanus
Gulf kingfish	Menticirrhus littoralis
Atlantic bumper	Chloroscombus chrysurus
Atlantic spadefish	Chaetodipterus faber
Great barracuda	Sphyraena barracuda
Spanish mackerel	Scomberomorus maculatus
King mackerel	Scomberomorus cavalla
Little tunny	Euthynnus alletteratus
Butterfish	Peprilus spp.
Searobins	Prionotus spp.
Filefish	Monacanthus spp.
Triggerfish	Balistes spp.
Cowfish	Lactophrys spp.
Puffers	Sphoeroides spp.
Gobies	Gobiosoma spp.

BIRDS

Common loon	Gavia immer
Pie-billed grebe	Podilymbus podiceps
Horned grebe	Podiceps auritus
Brown pelican	Pelecanus occidentalis
White pelican	Pelecanus erythrorynchos
Double-crested cormorant	Phalocrocorax auritus

American anhinga	Anhinga anhinga
Great blue heron	Ardea herodias
Little blue heron	Egretta caerulea
Tricolored heron	Egretta tricolor
Great egret	Casmeroides albus
Snowy egret	Egretta thula
Cattle egret	Bubulcus ibis
Black-crowned night heron	Nycticorax nycticorax
Yellow-crowned night heron	Nycticorax violaceous
Green heron	Butorides striatus
Least bittern	Ixobrychus exilis
American bittern	Botaurus lentigonosus
Wood stork	Mycteria americana
Glossy ibis	Pledagis falcinellus
White ibis	Eudocimus albus
Roseate spoonbill	Ajaia ajaja
Fulvous whistling-duck	Dendrocygna bicolor
Gadwall	Anas strepera
Mallard	Anas platyrhynchos
American black duck	Anas ruprides
Northern pintail	Anas acuta
American widgeon	Anas americana
Northern shoveler	Anas clypeata
Blue-winged teal	Anas discors
Mottled duck	Anas fulvigula
Green-winged teal	Anas crecca
Wood duck	Aix sponsa
Ringneck duck	Aythya collaris
Canvasback	Aythya valisineria
Redhead	Aythya americana
Lesser scaup	Aythya affinis
Greater scaup	Aythya marila
Bufflehead	Bucephala albeola
Ruddy duck	Oxyura jamaicensis
Red-breasted merganser	Mergus serator
Hooded merganser	Lophodytes cucullatus
Black scoter	Melanitta nigra
Brant	Branta bernicla
Snow goose	Chen caerulecens
Tundra swan	Cygnus columbianus
Turkey vulture	Cathartes aura
Black vulture	Coragyps atratus
Swallow-tailed kite	Elanoides forficatus
Sharp-skinned hawk	Accipiter striatus
Northern harrier	Circus cyaneus

Red-tailed hawk	Buteo jamaicensis
Red-shouldered hawk	Buteo lineatus
Bald eagle	Haliaeetus leucocephalus
Osprey	Pandion haliaetus
American kestrel	Falco sparverius
Merlin	Falco columbarius
Peregrine falcon	Falco peregrinus
Common bobwhite	Colinus virginianus
Wild turkey	Meleagris gallopavo
Virginia rail	Rallus limicola
Clapper rail	Rallus longirostris
King rail	Rallus elegans
Sora	Porzana carolina
American coot	Fulica americana
Common moorhen	Gallinula chloropus
Purple gallinule	Porphyrula martinica
Amercan oystercatcher	Haemotopus palliatus
Black-necked stilt	Himantopus mexicanus
Black-bellied plover	Pluvialis squatarola
Semipalmated plover	Charadrius semipalmatus
Piping plover	Charadrius melodus
Wilson's plover	Charadrius wilsonia
Killdeer	Charadrius vociferus
American woodcock	Philohela minor
Common snipe	Gallinago gallinago
Short-billed dowitcher	Limnodromus griseus
Long-billed dowitcher	Limnodromus scolopaceus
Red knot	Calidris canutus
Marbled godwit	Limosa fedoa
Willet	Catoptrophorus semipalmatus
Greater yellowlegs	Tringa melanoleuca
Lesser yellowlegs	Tringa flavipes
Solitary sandpiper	Tringa solitaria
Sanderling	Calidris alba
Dunlin	Calidris alpina
Least sandpiper	Calidris minutilla
Semipalmated sandpiper	Calidris pusilla
Western sandpiper	Calidris mauri
Spotted sandpiper	Actitus macularia
Ruddy turnstone	Arenaria interpres
Greater black-backed gull	Larus marinus
Lesser black-backed gull	Larus fuscus
Herring gull	Larus argentatus
Ring-billed gull	Larus delawarensis
Laughing gull	Larus atricilla

Bonaparte's gull	Larus philadelphia
Gull-billed tern	Sterna nilotica
Sandwich tern	Sterna sandvicensis
Royal tern	Sterna maxima
Caspian tern	Sterna caspia
Least tern	Sterna antillarum
Common tern	Sterna hirundo
Forster's tern	Sterna forsteri
Black tern	Chlidonias niger
Black skimmer	Rynchops niger
Mourning dove	Zenaida macroura
Ground dove	Columbina passerina
Rock dove	Columba livia
Yellow-billed cuckoo	Coccyzus americanus
Screech owl	Otus asio
Great horned owl	Bubo virginianus
Barred owl	Strix varia
Common nighthawk	Chordeiles minor
Chuck-will's widow	Caprimulgus carolinensis
Whip-poor will	Caprimulgus vociferus
Chimney swift	Chaetura pelagica
Ruby-throated hummingbird	Archilochus colubris
Belted kingfisher	Ceryle alcyon
Common flicker	Colaptes auratus
Red-bellied woodpecker	Melanerpes carolinus
Red-headed woodpecker	Melanerpes erythrocephalus
Pileated woodpecker	Dryocopus pileatus
Red-cockaded woodpecker	Picoides borealis
Downy woodpecker	Picoides pubescens
Hairy woodpecker	Picoides villosus
Yellow-bellied sapsucker	Sphyrapicus varius
Eastern kingbird	Tyrannus tyrannus
Western kingbird	Tyrannus verticalis
Gray kingbird	Tyrannus dominicensis
Great crested flycatcher	Myiarchus crinitus
Eastern phoebe	Sayornis phoebe
Eastern pewee	Contopus virens
Purple martin	Progne subis
Barn swallow	Hirundo rustica
Tree swallow	Tachycineta bicolor
Rough-winged swallow	Stelgidopteryx serripennis
Blue jay	Cyanocitta cristata
Florida scub jay	Aphelocoma coerulescens
Fish crow	Corvus ossifragus
American crow	Corvus brachyrynchos

Tufted titmouse	Parus bicolor
Carolina chickadee	Parus carolinensis
Brown-headed nuthatch	Sitta pusilla
Red-breasted nuthatch	Sitta canadensis
House wren	Troglodytes aedon
Carolina wren	Thryothorus ludovicianus
Marsh wren	Cistothorus palustris
Sedge wren	Cistothorus platensis
Brown thrasher	Toxostoma rufum
Gray catbird	Dumetella carolinensis
Northern mockingbird	Mimus polyglottos
American robin	Turdus migratorius
Hermit thrush	Catharus guttatus
Veery	Catharus fuscescens
Swainson's thrush	Catharus ustulatus
Gray-cheeked thrush	Catharus minimus
Wood thrush	Hylocichla mustelina
Ruby-crowned kinglet	Regulus calendula
Blue-gray gnatcatcher	Polioptila caerulea
Water pipit	Anthus spinoletta
Cedar waxwing	Bombycilla cedrorum
Loggerhead shrike	Lanius ludovicianus
European starling	Sturnus vulgaris
Red-eyed vireo	Vireo olivaceus
Yellow-throated vireo	Vireo flavifrons
Whie-eyed vireo	Vireo griseus
Solitary vireo	Vireo solitarius
Northern parula	Parula americana
Yellow-throated warbler	Dendroica dominica
Black-throated green warbler	Dendroica virens
Blackpoll	Dendroica striata
Black-throated blue warbler	Dendroica caerulescens
Magnolia warbler	Dendroica magnolia
Yellow-rumped warbler	Dendroica coronata
Cape May warbler	Dendroica tigrina
Blackburnian warbler	Dendroica fusca
Pine warbler	Dendroica pinus
Prairie warbler	Dendroica discolor
Palm warbler	Dendroica palmarum
Yellow warbler	Dendroica petechia
Chestnut-sided warbler	Dendroica pensylvanica
Bay-breasted warbler	Dendroica castanea
Prothonotary warbler	Protonotaria citrea
Black-and-white warbler	Mniotilta varia
American redstart	Stenophaga ruticilla

Worm-eating warbler	Helmitheros vermivorus
Orange-crowned warbler	Vermivora celata
Tennessee warbler	Vermivora peregrina
Nashville warbler	Vermivora ruficapilla
Hooded warbler	Wilsonia citrina
Common yellowthroat	Geothlypis trichas
Northern waterthrush	Seiurus noveboracensis
Louisiana waterthrush	Seiurus motacilla
Ovenbird	Seiurus aurocapillus
House sparrow	Passer domesticus
Eastern meadowlark	Sturnella magna
Northern oriole	Icterus galbula
Red-winged blackbird	Agelaius phoeniceus
Brown-headed cowbird	Molothrus ater
Common grackle	Quiscalas quiscula
Boat-tailed grackle	Quiscalas major
Bobolink	Dolichonyx oryzivorus
Summer tanager	Piranga rubra
Scarlet tanager	Piranga olivacea
Dark-eyed junco	Junco hyemalis
Northern cardinal	Cardinalis cardinalis
American goldfinch	Carduelis tristis
Indigo bunting	Passerina cyanea
Painted bunting	Passerina ciris
Rose-breasted grosbeak	Pheucticus ludovicianus
Rufous-sided towhee	Pipilo erythrophthalmus
White-crowned sparrow	Zonotrichia leucophrys
White-throated sparrow	Zonotrichia albicollis
Field sparrow	Spizella pusilla
Chipping sparrow	Spizella passerina
Swamp sparrow	Melospiza georgiana
Song sparrow	Melospiza melodia
Vesper sparrow	Pooecetes gramineus
Savannah sparrow	Passerculus sanwichensis
Sharp-tailed sparrow	Ammodramus caudacutus
Seaside sparrow	Ammodramus maritimus
Grasshopper sparrow	Ammodramus savannarum
Fox sparrow	Passerella iliaca
Purple finch	Carpodacus purpureus

MAMMALS

Short-tail shrew	Blarina brevicauda
Eastern mole	Scalopus aquaticus
Racoon	Procyon lotor
Opossum	Didelphis virginiana
Eastern cottontail	Sylvilagus floridanus
Marsh rabbit	Sylvilagus palustris
Striped skunk	Mephitis mephitis
Nine-banded armadillo	Dasypus novemcinctus
Gray fox	Urocyon cinereoargenteus
River otter	Lutra canadensis
Southern flying squirrel	Glaucomys volans
Feral hog	Sus scrofa
Gray squirrel	Sciurus carolinensis
Cotton rat	Sigmodon hispidus
Cotton mouse	Peromyscus gossypinus
Southeastern pocket gopher	Geomys pinetis
White-tailed deer	Odocoileus virginianus
Bobcat	Lynx rufus
Seminole bat	Nycteris seminolis
Red bat	Lasiurus borealis
Rafinesque's big-eared bat	Plecotis rafinesquii
Eastern spotted skunk	Spilogale putorius
Eastern woodrat	Neotoma floridana
Florida black bear	Ursus americanus floridanus
Round-tailed muskrat	Neofiber alleni
Florida mink	Mustela vison lutensis
Atlantic bottlenose dolphin	Tursiops truncatus
Right whale (migratory)	Balaena glacialis
Humpback whale (migratory)	Megaptera novaeangliae
Pygmy sperm whale (migratory)	Kogia breviceps
Manatee	Trichechus manatus latirostris

(DNR, 1985) (DNR, 1989) (FGFWFC, 1990)

APPENDIX D

PARTIAL LIST OF THE FLORA OF THE GUANA RIVER MARSH AQUATIC PRESERVE

Pond pine	Pinus serotina
Sand pine	Pinus clausa
Longleaf pine	Pinus palustris
Slash pine	Pinus elliottii
Sand live oak	Quercus geminata
Myrtle oak	Quercus myrtifolia
Chapman's oak	Quercus chapmanii
Water oak	Quercus nigra
Laurel oak	Quercus laurifolia
Live oak	Quercus virginiana
Southern red cedar	Juniperus silicicola
Cabbage palm	Sabal palmetto
Pignut hickory	Carya glabra
Southern magnolia	Magnolia garndiflora
Swamp bay	Persea palustris
Loblolly bay	Gordonia lasianthus
Redbay	Persea borbonia
Black cherry	Prunus serotina
Carolina willow	Salix caroliniana
Wax myrtle	Myrica cerifera
Common persimmon	Diospyros virginiana
Buttonbush	Cephalanthus occidentalis
Pond cypress	Taxodium ascendens
Red maple	Acer rubrum
Swamp black gum	Nyssa sylvatica var. biflora
Sweetgum	Liquidambar styraciflua
Black mangrove	Avicennia germinans
Groundsel tree	Baccharis halimifolia
Bamboo	Bambusa sp.
Swamp dogwood	Cornus stricta
Bottlerush three-awn	Aristida spiciformis
Winged sumac	Rhus copallina
Saw palmetto	Serenoa repens
Indian pipe	Monotropa uniflora
Staggerbush	Lyonia ferruginea
Poor joe	Diodia teres
Cinnamon fern	Osmunda cinnamomea

Bracken fern	Pteridium aquilinum
Paspalum	Paspalum spp.
Bluestem	Andropogon spp.
Greenbrier	Smilax spp.
Fly-poison	Amianthium muscaetoxicum
Yellow-star grass	Hypoxis juncea
Pointed blue-eyed grass	Sisyrinchium angustifolium
Ladie's tresses	Spiranthes spp.
Poorman's pepper	Lepidium virginicum
Blackberry	Rubus spp.
Sensitive briar	Schrankia microphylla
Wild sensitive plant	Cassia nictitans
Hop clover	Trifolium dubium
Partridge pea	Cassia chamaecrista
Beggar's lice	Desmodium spp.
Milk pea	Gallactia elliottii
Spurred butterfly pea	Centrosema virginianum
Wood sorrell	Oxalis florida
Yellow milkwort	Polygala lutea
Orange milkwort	Polygala nana
Yaupon	Ilex vomitoria
Gallberry	Ilex glabra
St. Andrew's cross	Hypericum hypericoides
St. Peter's wort	Hypericum stans
Naked St. John's-wort	Hypericum nudiflorum
St. John's-wort	Hypericum spp.
Meadow beauty	Rhexia mariana
Tarflower	Befaria racemosa
Fetterbush	Lyonia lucida
Huckleberry	Gaylussacia spp.
Blueberry	Vaccinium spp.
Common deerberry	Vaccinium stamineum
Shiny blueberry	Vaccinium myrsinites
Sparkleberry	Vaccinium arboreum
Yellow jessamine	Gelsimium sempervirens
Dodder	Cuscuta spp.
American beauty berry	Callicarpa americana
Tyre-leaved sage	Salvia lyrata
Horse nettle	Solanum carolinense
Toadflax	Linaria canadensis
Southern plantain	Plantago virginica
Thistle	Carduus spp.
Deer's-tongue	Trilisa odoratissima

Thoroughwort	Eupatorium spp.
Rabbit tobacco	Gnaphalium obtusifolium
Pineland aster	Aster walteri
Resurrection fern	Polypodium polypodioides
Switch cane	Arundinaria tecta
Uniola	Uniola spp.
Needle grass	Stipa avenacea
Panic grass	Panicum dichotomiflorum
Nutrush	Scleria spp.
Spanish moss	Tillandsia usneoides
Sanish bayonet	Yucca spp.
Orchid	Ochidaceae
Spiny coral-root	Corallorhiza wisteriana
Red mulberry	Morus rubra
Mistletoe	Phoradendron serotinum
Hog plum	Prunus umbellata
Plum	Prunus spp.
Indian firecracker	Erythrina herbacea
Violet wood sorrel	Oxalis corymbosa
Tread softly	Cnidoscolus stimulosus
American holly	Ilex opaca
Large gallberry	Ilex coriacea
Virginia creeper	Parthenocissus quinquefolia
Prickly sow thistle	Sonchus asper
Black nightshade	Solanum pseudogracile
Common ragweed	Ambrosia artemisifolia
Sweet goldenrod	Solidago odora
Prickly ash	Xanthoxylum clava-herculis
Coastal white snakeroot	Eupatorium aromaticum
Camphorweed	Heterotheca subaxillaris
Wild bean	Strophostyles helvola
Seaside panicum	Panicum amarum var. amarulum
Seaside spurge	Chamaecyse bombensis
Winterberry	Ilex ambigua
Russian thistle	Salsola kali
Sida	Sida rhombifolia
Croton	Croton grandulosus
Sandbur	Cenchrus spp.
Indigo bush	Amotpha fruticosa
Sea beach atriplex	Atriplex arenaria
Wild olive	Osmanthus americanus
Florida privet	Foriestiera segregata
Southern buckthorn	Bumelia tenax
Papaw	Asimina parviflora
Pin-weed	Lechea racemulosa

Gopher apple	Licania michauxii
Pokeweed	Phytolacca rigida
Coralbean	Erythrina herbacea
Bladderpod	Sesbania vesicaria
Dune evening primrose	Oenothera humifusa
Seaside pennywort	Hydrocotyle bonariensis
Frog fruits	Phylla nodiflora
Railroad vine	Ipomoea pes-caprae
Beach morning-glory	Ipomoea stolonifera
Standing cypress	Ipomopsis rubra
Lantana	Lantan camara
Seashore elder	Iva imbricata
Silverleaf croton,Beach tea	Croton punctatus
Bull nettle	Cnidoscolus stimulosus
Passion flower	Passiflora incarnata
Butterfly pea	Clitoria mariana
Dayflower	Commelina erecta
Horse mint	Monarda punctata
Climbing hempweed	Mikania scandens
Muscadine	Vitis rotundifolia
Wild grape	Vitis spp.
Pepper vine	Ampelopsis arborea
Prickly-pear cactus	Opuntia spp.
Devil's walkingstick	Aralia spinosa
Trumpet creeper	Campsis radicans
Cross vine	Bignonia capreolata
Hairy ruellia	Ruellia caroliniensis
Narrow-leaved cattail	Typha angustifolia
Broad-leaved cattail	Typha latifolia
Tropical cattail	Typha domingensis
Arrowhead	Sagittaria spp.
Smooth cordgrass	Spartina alterniflora
Marshhay cordgrass	Spartina patens
Sand cordgrass	Spartina bakeri
Widgeon-grass	Ruppia maritima
Arrowgrass	Triglochin stiata
Salt marsh bulrush	Scirpus robustus
Black needlerush	Juncus roemerianus
Glasswort	Salicornia spp.
Aster	Aster spp.
Sea blite	Sueda linearis
Sea oxeye	Borrichia frutescens
Salt marsh fleabane	Pluchea purpuracens
Muhly grass	Muhlenbergia capillaris
Sea purslane	Sesuvium maritinum

Saltwort	Batis maritima
Sea lavender	Limonium carolinianum
Wedgescale	Sphenopholis obtusata
Giant foxtail	Setaria magna
Foxtail	Setaria spp.
Wild millet	Echinochloa walteri
American cupscale	Sacciolepis striata
Cutgrass	Laessia hexandra
Nutgrass	Cyperus spp.
Umbrella sedge	Cyperus filicinus
Flatsedge	Cyperus strigosus
Spikerush	Eleocharis spp.
Bald rush	Psilocarya nitens
Woolgrass bulrush	Scirpus cyperinus
Soft-stem bulrush	Scirpus validus
Bulrush	Scirpus spp.
Beakrush	Rynchospora spp.
Sawgrass	Cladium jamaicense
Sedge	Carex spp.
Yellow-eyed grass	Xyris spp.
Bogbuttons	Lachnocaulon spp.
Spiderwort	Tradescantia spp.
Pickerelweed	Pontederia cordata
Rush	Juncus dichtomus
Softrush	Juncus effusus
Rush	Juncus spp.
Redroot	Lachnanthes caroliniana
Blue flag	Iris virginica
Lizard's-tail	Saururus cernuus
Hestate-leaved dock	Rumex hastatulus
Dock	Rumex spp.
Smartweed	Polygonum spp.
Pigweed	Amaranthus spp.
White waterlily	Nymphea odorata
Pink sundew	Drosera capillaris
Polygala	Polygala cymosa
Hibiscus	Hibiscus spp.
Bedstraw St. John's-wort	Hypericum galioides
Water primrose	Ludwigia octovalis
Long-leaf violet	Viola lanceolata
Pennywort	Hydrocotyle spp.
Mock bishop's-weed	Ptilimnium capillaceum
Mermaid-weed	Proserpinaca pectinata
Germander	Teucrinum canadense
Marsh pink	Sabatia bartramii

Rough skullcap	Scutelleria integrifolia
Skullcap	Scutelleria spp.
Blue water hyssop	Bacopa caroliniana
Water hyssop	Bacopa monnieri
Hedge hyssop	Gratiola ramosa
Violet butterwort	Pinaguicula vulgaris
Lobelia	Lobelia nuttallii
Marsh-fleabane	Pluchea rosea
Begger-ticks	Bidens alba
Blanket-flower	Gaillardia pulchella
Muskgrass	Chara spp.
Mosquito fern	Azolla caroliniana
Water fern	Salvinia rotundifolia
Sago pondweed	Potamogeton pectinatus
Pondweeds	Potamogeton spp.
Southern naiad	Najs guadalupenis
Marine naiad	Najas marina
Naiads	Najas spp.
Duckweed	Spirodela polyrhiza
Duckweed	Lemna spp.
Bog-mat	Wolffiella floridana
Big moss	Mayaca fluviatilis
Coontail	Ceratophyllum spp.
Floating bladderwort	Utricularia inflata
Bladderwort	Utricularia spp.

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