LONG KEY STATE PARK

UNIT MANAGEMENT PLAN

APPROVED

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Recreation and Parks

SEPTEMBER 1, 2004

Department of Environmental Protection

Jeb Bush
Governor

Marjorie Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 140
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

September 1, 2004

Ms. BryAnne White
Office of Park Planning
Division of Recreation and Parks
3900 Commonwealth Blvd.; M.S. 525
Tallahassee, Florida 32399

Re: Long Key State Park Lease # 3672

Ms. White:

On August 20, 2004, the Acquisition and Restoration Council recommended approval of the Long Key State Park management plan.

On September 1, 2004, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for Long Key State Park. Pursuant to Section 253.034, Florida Statutes, and Chapter 18-2, Florida Administrative Code **this plan's ten-year update will be due on September 1, 2014**.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Please forward copies of all permits to this office upon issuance.

Sincerely,

Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

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INTRODUCTION

Long Key State Park is located in Monroe County about 12 miles southwest of Islamorada (see Vicinity Map). Access to the park is from U.S. Highway 1 on Long Key, after the town of Layton. The main entrance is at mile marker 67 ½. Long Key State Park occupies more than half of the island of Long Key and is bisected by U.S. Highway 1 with approximately 50 acres occurring on the Florida Bay side and the remaining acreage occurring on the Atlantic Ocean side. The vicinity map also reflects significant land and water resources existing near the park.

Long Key State Park was acquired in 1961, through a donation to the state. Currently the park contains approximately 980 acres. Park acreage has been calculated on the composition of natural communities, in addition to ruderal and developed areas.

At Long Key State Park, public outdoor recreation and conservation is the designated single use of the property (see Addendum 1). There are no legislative or executive directives that constrain the use of this property.

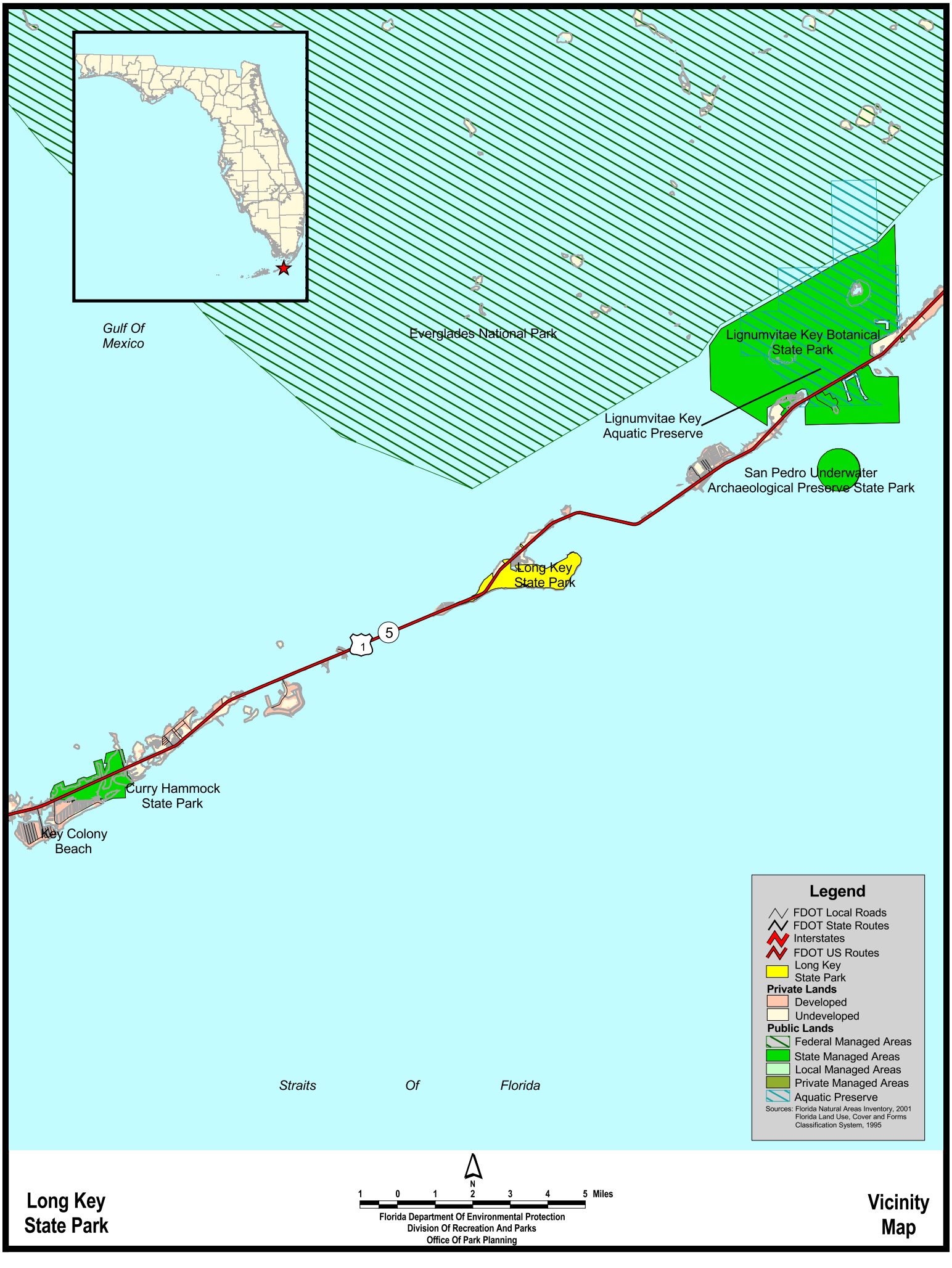
PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Long Key State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the February 5, 1998 approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state, or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes, and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

The plan consists of two interrelated components. Each component corresponds to a particular aspect of the administration of the park. The resource management component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management problems and needs are identified, and specific management objectives are established for each resource type. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, and restoration of natural conditions.

The land use component is the recreational resource allocation plan for the unit. Based on considerations such as access, population, and adjacent land uses, an optimum allocation of the physical space of the park is made, locating use areas and proposing types of facilities and volume of use to be provided.

In the development of this plan, the potential of the park to accommodate secondary management purposes (“multiple uses”) was analyzed. These secondary purposes were considered within the context of the Division’s statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation, and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation.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Florida Department Of Environmental Protection
Division Of Recreation And Parks
Office Of Park Planning
Long Key State Park
Vicinity Map

Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park and should be discouraged.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions, and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

The use of private land managers to facilitate restoration and management of this unit was also analyzed. Decisions regarding this type of management (such as outsourcing, contracting with the private sector, use of volunteers, etc.) will be made on a case-by-case basis as necessity dictates.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes, and Chapter 62D-2, Florida Administrative Code, the Division of Recreation and Parks (Division) is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

> It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.

The Trustees have also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division’s Operations Procedures Manual (OPM) and cover such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of Long Key State Park, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park's natural, aesthetic, and educational attributes.

Park Goals and Objectives

The following park goals and objectives express the Division's long-term intent in managing the state park. At the beginning of the process to update this management plan, the Division reviewed the goals and objectives of the previous plan to determine if they remain meaningful and practical and should be included in the updated plan. This process ensures that the goals and objectives for the park remain relevant over time.

Estimates are developed for the funding and staff resources needed to implement the management plan based on these goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector, for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Natural and Cultural Resources

1. Protect, restore and maintain natural communities
- **A.** Designate the Long Key peninsula and all park lands on the Florida Bay side of U.S. Highway 1 as Protected Zones.
- **B.** Include in the park boundary all submerged bottom of Long Key Bight and adjacent wetlands.
- **C.** Continue planting vegetative buffer along fence-line adjacent to U.S. Highway 1.
- **D.** Re-evaluate beach erosion project for accuracy of results; and modify project if necessary; then continue with monthly monitoring.

2. Protect, restore, and maintain native species diversity, and natural relative abundance
- **A.** Continue monitoring endangered Sargent's Cherry palm (*Pseudophoenix sargentii* ssp. *sargentii*), tree cactus (*Pilosocereus robinii*), and jumping cactus (*Opuntia triacantha*).
- **B.** Designated plant species were surveyed and mapped in 2001. Populations will need to be re-mapped every five years.
- **C.** Survey and map designated animal species
- **D.** Continue to work with law enforcement to protect against poaching in the park.
- **E.** Continue to monitor sea turtle nesting activity.
- **F.** Develop inventory of vertebrate and invertebrate species in the park.
- **G.** Conduct survey of submerged communities.
- **H.** Conduct survey of non-vascular plants.
- **I.** Conduct survey of all listed species in coastal rock barren and monitor size and distribution of each population.
- **J.** Secure funding for native plant species restoration projects.

3. Maintain active exotic removal program in throughout the park.
- **A.** Protect and restore natural communities by continuing exotic removal program

throughout the park.

B. Continue planting vegetative buffer between campsites with native shade trees so that that the Australian pine trees (*Casuarina equisetifolia*) can be removed.

4. Protect and maintain water quality conditions.

A. Management activities will include maintaining the water quality at Long Key State Park. Water quality testing is not done by DEP staff, but Monroe County tests the water adjoining the Long Key Transfer Station that is adjacent to the park.

B. Measures will be taken to prevent soil erosion or other adverse impacts to the surrounding submerged park waters and the waters of the Florida Keys National Marine Sanctuary.

5. Protect park boundaries to improve resource management and avoid encroachment.

A. Acquire all inholdings and additions that are identified in the Monroe County Land Acquisition Proposed Additions to Existing State Parks and the Florida Park Service District 5 Proposed Additions and Inholdings, which is reviewed and updated annually.

B. Survey and post all park boundaries.

6. Protect, restore and maintain cultural resources

A. Any future park development that may impact undisturbed areas of the park will follow established archaeological monitoring procedures.

B. All archaeological sites and their associated artifacts will be protected from vandalism, erosion and other forms of encroachment.

7. Continue to develop and maintain interpretive and educational programs for natural and cultural resources.

Recreational Goals

8. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at Long Key State Park.

A. Investigate the feasibility of expanding the Golden Orb Nature Trail to Long Key Point.

B. Investigate renovations to Golden Orb Nature Trail to improve ADA accessibility.

C. Improve Golden Orb and Layton Nature Trails with interpretive signs and displays including kiosks.

D. Continue cooperation with the Florida Keys Overseas Heritage Trail project with ideas for improvements to the bike path that parallels the boundary of the park along U.S. Highway 1.

E. Improve quality of campsites and facilities.

9. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.

A. Seek funding through partnerships with other agencies such as Sea Grant for educational displays and materials.

Park Administration/Operations

10. Replace outdated buildings in campground facilities to conform to ADA standards.

11. Develop a separate Citizen Support Organization (CSO) for Long Key State Park, which currently is part of the CSO for the Friends of the Islamorada Area State Parks.

12. Provide direction on fund raising efforts and develop activities on behalf of the park in cooperation with this new developed CSO.

13. Continue to seek funding for exotic removal.

14. Continue to seek funding for native plant restoration projects.

15. Survey, post and maintain all park boundaries.

Management Coordination

The park is managed in accordance with all applicable Florida Statutes and administrative rules. Agencies having a major or direct role in the management of the park are discussed in this plan.

The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Wetland Resources aids staff in planning and construction activities seaward of the Coastal Construction Line. In addition, the Bureau of Beaches and Wetland Resources aid the staff in the development of erosion control projects. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses.

Current ongoing management coordination activities at the park include exotic plant removal projects coordinated with the DEP, Bureau of Invasive Plant Management and the Florida Keys Exotic Plant Task Force. Law enforcement activities are managed through the Florida Park Patrol, with assistance from the Florida Fish and Wildlife Commission and the Monroe County Sheriff's Office. Management and maintenance of the US 1 right of way and signage within the park is coordinated by the park with the Florida Department of Transportation. Management of potential impacts from the Long Key Solid Waste Transfer Station, located on the northwest side of US 1 and bounded both to the northeast and southwest by state park property, is coordinated with the Monroe County Department of Public Works.

Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on February 11, 2004. The purpose of this meeting was to present the draft management plan to the public. A DEP Advisory Group meeting was held on February 12, 2004. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss the draft management plan.

Other Designations

Long Key State Park is within an Area of Critical State Concern as defined in section 380.05, Florida Statutes. The park is a component of the Florida Greenways and Trails System.

All waters within the unit have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Surface waters in this unit are also classified as Class III waters by DEP. This unit is not within or adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

The Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The stated management measures in this plan are consistent with the Department's overall mission in ecosystem management. Cited references are contained in Addendum 2.

The Division's philosophy of resource management is natural systems management. Primary emphasis is on restoring and maintaining, to the degree practicable, the natural processes that shape the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management may be implemented when the recovery or persistence of a species is problematic provided it is compatible with natural systems management.

The management goal of cultural resources is to preserve sites and objects that represent all of Florida's cultural periods as well as significant historic events or persons. This goal may entail active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management is often affected by conditions and occurrences beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program (to assess resource conditions, evaluate management activities, and refine management actions), review of local comprehensive plans, and review of permit applications for park/ecosystem impacts.

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Long Key State Park is part of the physiographic region of high coral keys with maximum elevations reaching approximately six to eight feet. The intertidal and submerged areas of the park are no more than ten feet below mean sea level. The edge of the continental shelf parallels the Keys approximately seven miles offshore.

Some of the topography of both the uplands and the submerged land has been altered by human activity. This activity includes dredging for navigational purposes and filling wetlands to create adequate elevations for park development and road installation.

Geology

The geological formation of the Florida Keys from Soldier Key to Bahia Honda is Key Largo limestone. Built by the coral polyps of ancient coral reef formations, these fossilized remains are similar to the present living coral reefs offshore. As sea level has fluctuated over time, the land mass of south Florida has alternately been submerged and exposed above the level of the water. Approximately 120,000 years ago, sea level dropped close to its present level exposing the coral and allowing for the formation of the islands of the Florida Keys. When the area of the Keys is submerged, the limestone from ancient coral reefs provides the necessary substrate for new

growth of coral formations and coral reefs. Subsequently, the Key Largo limestone is quite thick, as much as 145 feet in some areas of the Upper Keys (Hoffmeister, 1974).

Soils

Information published in the U.S. Department of Agriculture's Classification and Correlation of the Soils of Monroe County Keys Area Florida identifies nine soil types at Long Key State Park. They are Pennekamp gravelly muck, Matecumbe muck, Rock Outcrop-Tavernier complex, Islamorada muck, Keylargo muck, Udorthents-Urban land complex, Rock Outcrop-Cudjoe complex, Bahiahonda fine sand, and Beaches (see Soils Map).

Pennekamp gravelly muck is found in the upland hammock areas typically at the highest elevations. It is characterized by a thin layer of organic debris and leaf layer over the limestone rock. Soil in this unit is well drained. Pennekamp gravelly muck is found in close association with Matecumbe muck, which is found at lower elevations that are subject to occasional flooding. In the low intertidal area, the soil unit is Rock Outcrop-Tavernier complex. In this soil unit, the mangrove tidal swamps are subject to daily flooding by tides causing the soil to be poorly drained. The exposed limestone rock has weathered into smooth caprock pitted with solution holes filled with accumulated marl soil. In addition to the Rock Outcrop-Tavernier complex, Islamorada muck, Key Largo muck, and Rock Outcrop-Cudjoe complex are associated with mangrove tidal swamps. However, in the Rock Outcrop-Cudjoe complex most of the map unit consists of exposed bedrock. Udorthents-Urban land complex includes constructed upland areas where land has been altered by dredging and filling for development. The Bahiahonda fine sand complex is on coastal strands and hardwood hammocks on the upland communities of Bahia Honda and Long Key. Flooding is rare in this map complex, which typically has elevations of four to seven feet above sea level. Bahiahonda map unit grades into Beaches soil complex, which is a mixture of approximately sixteen inches of sand over top of approximately forty-four inches of fine sand, muck or other soil. This soil complex is subjected to change by tides, erosion and wind, and is usually not vegetated. Addendum 3 contains detailed soil descriptions.

Management activities will comply with those practices that will best prevent soil erosion in order to conserve the soil resources of this site, and the water resources of this park and the adjacent Florida Keys National Marine Sanctuary.

Minerals

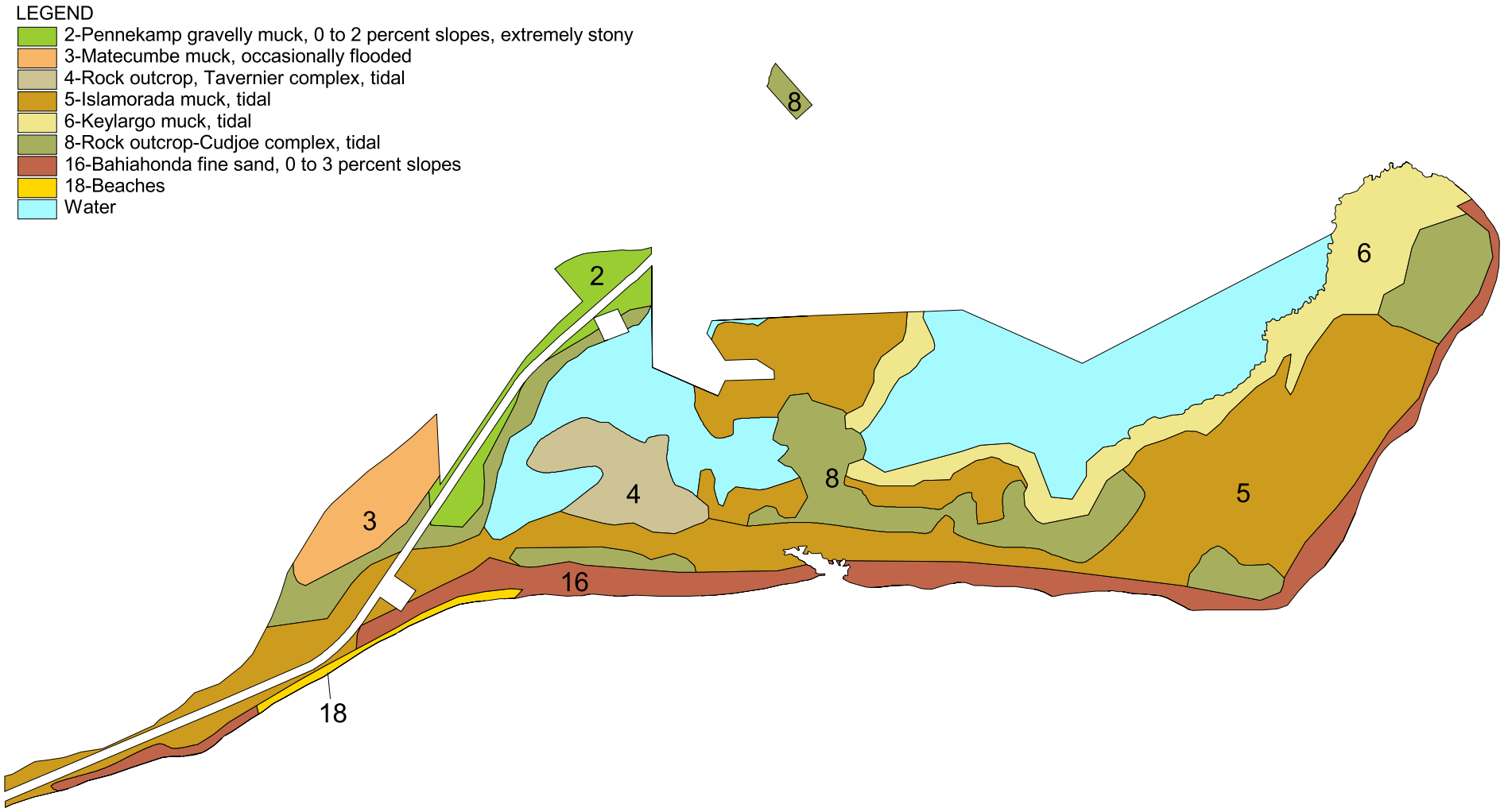
Key Largo limestone is the major mineral deposit at Long Key State Park. Minor mineral deposits are calcite and halite.

Hydrology

The primary natural source of freshwater in the Florida Keys is rain. Historically, early settlers collected rainwater in cisterns or used water from wells and solution holes that tapped the small, shallow freshwater lenses. These lenses form in the limestone above sea level during the rainy season. Until recently, nearshore freshwater upwelling, an extension of the Biscayne Aquifer, occurred in at least one location on northern Key Largo. Drainage of the Everglades and the subsequent canalization of southeast Florida (including canals in the Florida Keys) resulted in saltwater intrusion into the Biscayne Aquifer and changed the regional hydrology. Only on the larger islands such as Key Largo and Big Pine Key is rainwater retained for an extended period. This is not the case at Long Key State Park.

Natural Communities

The system of classifying natural communities employed in this plan was developed by the



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Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

LONG KEY STATE PARK

SOILS MAP

Florida Natural Areas Inventory (FNAI) FNAI Descriptions. The premise of this system is that physical factors, such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas which are similar with respect to these factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs.

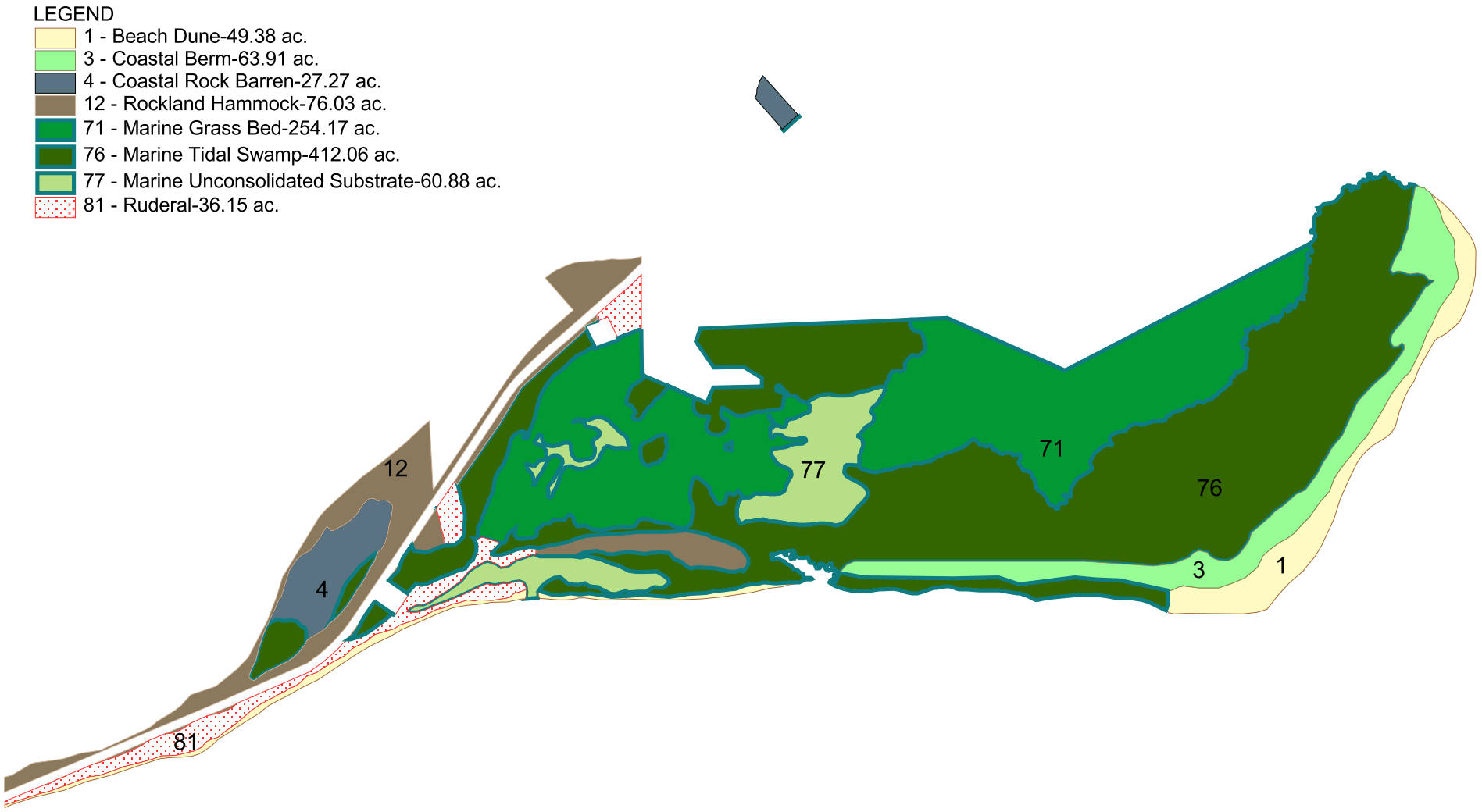
The park contains seven distinct natural communities (see Natural Communities Map) in addition to ruderal and developed areas. Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

Beach dune. There is a gradual slope from land to the coral reef tract and then to the drop off of the continental shelf approximately seven miles offshore. As a result, the Florida Keys are protected from significant wave activity resulting in the low energy shoreline of mangrove vegetation with very few naturally occurring beaches. However, there is a narrow beach and low dune at the west end of the park, interrupted by a fringe of mangroves, then a slightly wider community as the island extends to the east and around to Long Key point. The native plant community includes important dune vegetation that aid in preserving the dynamics of this ecosystem. These include sea oats (*Uniola paniculata*), sea purslane (*Sesuvium portulacastrum*), railroad vine (*Ipomoea pes-caprae*), sea lavender (*Argusia gnaphalodes*), and wild poinsettia (*Poinsettia cyathophora*). Slightly above this line of vegetation are the shrubby dune species including bay cedar (*Suriana maritima*), nickerbean (*Caesalpinia bonduc*), white indigo berry (*Randia aculeata*), and seven-year apple (*Genipa clusiifolia*).

A major attraction of Long Key State Park is the campground, which is located at the west end of the park on the beach dune. Exotic species particularly Australian pine and portia (*Thespesia populnea*) have historically been a problem in this area, adversely affecting nesting sea turtles and causing beach erosion. Several exotic removal projects were funded to remove invasive species and replant with native vegetation. However, Hurricanes Georges and Irene in 1998 and 1999 caused major damage to the beach dune and destroyed the campground. Monies were available to rebuild the campground, but funds were sparse to replant the beach dune and buffer zones in between the campsites. However, park management was able to secure some funding which has enabled park staff to replant these areas with the appropriate native vegetation. Although some Australian pines remain in the campground, they will be removed as the native vegetation fills in and provides the necessary shade for the park visitors.

Coastal berm. A narrow coastal berm parallels a section of the beach on the peninsula known as Long Key point. This berm is characterized by a ridge of storm deposited sediment that is subjected to an accumulation of flotsam. The substrate is coarse calcareous sand that has accumulated to an elevation of several feet. The coastal berm on the point grades into marine tidal swamp on the northwest and beach dune on the southeast.

Due to the higher elevation on the northeast end of the point, this habitat was not as seriously impacted by recent storm activity. However, lower areas of elevation on the coastal berm were subjected to overwash and large amounts of sand were deposited especially on the backside of the berm. Typical species found on this coastal berm include blackbead (*Pithecellobium keyense*), white indigo berry, Spanish stopper, prickly pear cactus (*Opuntia stricta*), and hogplum



LONG KEY
STATE PARK

Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

NATURAL COMMUNITIES
MAP

(*Ximenia americana*). A major exotic removal project was recently undertaken at Long Key point to remove Australian pine, beach naupaka (*Scaevola sericea*), and latherleaf (*Colubrina asiatica*). Follow-up treatment continues by park staff.

Coastal rock barren. The coastal rock barren is a very rare community, occurring in scattered patches along a few shorelines in the Florida Keys. The substrate is exposed cap rock pitted with small solution holes. This habitat is sparsely vegetated with salt tolerant species and herbaceous vegetation. At Long Key State Park, a coastal rock barren occurs on the bayside of U.S. Highway 1 and is surrounded by rockland hammock. It was first described by botanist George Avery, who named it "Conrad's Crazy Cactus Patch". This is one of only a few locations of the endangered jumping cactus (*Opuntia triacantha*), which can be found in the pitted limestone rock where detrital material accumulates. Other listed species found in this rock barren include Mexican hibiscus (*Cienfuegosia yucatanensis*), creeping morning glory (*Evolvulus convolvuloides*), wild cotton (*Gossypium hirsutum*), Cape Sable thoroughwort (*Chromolaena frustrata*), and wild hibiscus (*Hibiscus poeppigii*). Species that are more common include buttonwood (*Conocarpus erecta*), blackbead, cat's claw (*Pithecellobium unguis-cati*), barbed-wire cactus (*Acanthocereus tetragonus*), a variety of air plants (*Tillandsia* spp.), orchids (*Encyclia* spp.) and herbaceous vegetation.

Due to man-made disturbances, mainly past mosquito control activities, this area has been altered both topographically and vegetatively. A recent exotic removal project has made a big impact on the woody species that were invading this fragile community. Park staff continues with follow-up exotic treatment.

There is a low-lying area found in association with the coastal rock barren that is best described as an overwash plain or a saltpan. This overwash plain has areas of exposed caprock with thick marl deposits and algal mats in the depressions. The soil over the Key Largo limestone is sandy marl mixed with shell debris and coral fragments. The higher ground is sparsely vegetated with salt tolerant shrubs, including saltwort (*Batis maritima*), glasswort (*Salicornia* spp.), and dwarfed mangroves. Most of the area is low-lying and dotted with tidal ponds that serve as feeding grounds for migratory birds such as ducks, and for wading birds such as herons, egrets, spoonbills, and ibis. At high tide, it is partially or totally inundated by saltwater.

The most recent addition to the park is a six-acre parcel located on the bayside northeast of the city of Layton. The interior is a high quality coastal rock barren with few woody species and mostly herbaceous groundcover scattered among the exposed limestone substrate. It is in excellent condition with no signs of exotic species, except along the Florida Department of Transportation's right-of-way. Mangroves are found on the edge on the bayside as well as along the edge of U.S. Highway 1. Species in this coastal rock barren include, Key grass (*Monanthochloe littoralis*), sand atriplex (*Atriplex pentandra*), buttonwood, mayten (*Maytenus phyllanthoides*), Christmas berry (*Lycium carolinianum*), and several rare species including jumping cactus sky-blue morning glory (*Jacquemontia pentantha*), and Mexican hibiscus. Although portions of this coastal rock barren remain dry, parts of it are subject to tidal fluctuations.

Rockland hammock. Higher elevations on Long Key sustain rockland hammock habitat. The hammock is found in three separate areas of the park. The northernmost rockland hammock occurs on the bayside northeast of the Long Key transfer station. The elevation in this hammock is slightly lower than that of the rockland hammock on the oceanside of U.S. Highway 1, and as a result, species composition here differs from the higher elevation hammock. The main canopy

trees in this hammock are gumbo limbo (*Bursera simaruba*), crabwood (*Gymnanthes lucida*), and poisonwood (*Metopium toxiferum*). Understory trees include white stopper (*Eugenia axillaris*), Spanish stopper (*Eugenia foetida*), and Florida thatch palm (*Thrinax radiata*). The Layton Trail winds through a small portion of this hammock, which is in excellent condition with only minor infestations of exotic species.

Another area of rockland hammock in the park is also found on the bayside of U.S. Highway 1, but is west of the Long Key transfer station. It surrounds the coastal rock barren community, which is a rare plant community found in very few areas throughout the Keys. Due to previous man-made disturbances, infestations of exotic species were a major threat in this section of hammock. However, recent exotic removal efforts have greatly decreased the number of exotic species, with follow-up removal a high priority for park staff.

The largest rockland hammock at Long Key occurs on the oceanside of U.S. Highway 1 and is higher in elevation than the hammocks on the bayside. The Golden Orb Nature Trail winds through a section of this hammock, as well as through several other habitats, providing the visitor with an overview of most of the plant communities found in the park. Typical species in this hammock include milkbark (*Drypetes diversifolia*), gumbo limbo, torchwood (*Amyris elemifera*), rock key blolly (*Guapira floridana*), blolly (*G. discolor*), white stopper, inkwood (*Exothea paniculata*), Guiana plum (*Drypetes lateriflora*), and poisonwood (*Metopium toxiferum*).

The rockland hammock is an important community for many species of vertebrates and invertebrates that utilize this habitat on a diurnal or seasonal cycle. Although the threatened white crowned pigeon (*Patagioenas leucocephala*) nests in marine tidal swamp habitat, it feeds primarily on the berries found in the rockland hammock. The hammock also provides important food and refuge for a host of migratory birds, resident birds, snakes, spiders, butterflies, and land crabs (*Cardisoma guanhumi*).

Sargent's cherry palm (*Pseudophoenix sargentii* ssp. *sargentii*) is a rare palm that was historically found on Elliott Key, Sands Key and Long Key. This species was collected from Long Key by landscape enthusiasts, and combined with tropical storm events, was eventually extirpated. The Florida Park Service with the cooperation of Fairchild Tropical Garden and Biscayne National Park reintroduced Sargent's cherry palm into Long Key State Park in the early 1990's. Fruits were collected from Elliott Key in Biscayne National Park (the only remaining wild population) and outplanted at several sites in the park.

Long Key has been subjected to several hurricanes and tropical storms in the past five years. Hurricane Georges, the most significant impact to the park, caused major damage to some areas but only minor damage to the rockland hammock. Toppled trees and limbs have created canopy gaps in the hammock that has altered the dynamics and the species distribution of this habitat. Flooding was apparent in lower elevations of the hammock impacting some hammock species, which are not tolerant of saltwater inundation.

Marine grass beds. The submerged land along the shoreline and in Long Key Bight consists of marine grass beds. Unlike algae, seagrass are true flowering plants with roots, flowers, and seeds. However, the main method of propagation is often by rhizomes that extend laterally from the plants. Turtle grass (*Thalassia testudinum*), Cuban shoal grass (*Halodule wrightii*), and manatee grass (*Syringodium filiforme*) are the predominant species in the park. In sheltered coves of Long Key Bight, the much scarcer widgeon grass (*Ruppia maritima*) occurs. Although found

at a number of sites in the Keys, this species generally prefers more northern locations and lower salinities.

Seagrass beds are important to the health of the surrounding marine communities by trapping sediment and protecting the offshore reefs by keeping the water clear. They also cycle nutrients and are highly productive areas that serve as nursery and feeding grounds for several species of fish and invertebrates, which migrate between the reefs, seagrass beds and mangroves on a diurnal or seasonal pattern. Among these are gray snapper (*Lutjianus griseus*), black mullet (*Mugil cephalus*), spiny lobster (*Panulirus argus*), and pink shrimp. The endangered green and hawksbill turtles (*Chelonia mydas* and *Eretmochelys imbricata*) and the threatened loggerhead turtle (*Caretta caretta*) feed on seagrass as part of their diet, as does the endangered manatee (*Trichechus manatus latirostris*).

Marine tidal swamp. The marine tidal swamp at Long Key State Park is in excellent condition. Found in low elevation areas of the park, the predominant species are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), and white mangrove *(Languncularia racemosa*). Red mangroves are established along the shoreline with their prop roots submerged in water. Typical species found attached to or living near the red mangrove prop roots include snapper (*Lutjanus* spp.), mosquitofish (*Gambusia affinis*), oysters (*Isognomon alatus*), barnacles (*Lepas anatifera*), mangrove crabs (*Goniopsis cruentata*), and fiddler crabs (*Uca pugilator*). The black mangroves are typically found landward of the red mangroves in the intertidal zone. Adapted to daily saltwater inundation, salinity fluctuations, and anaerobic soils, black mangroves extend pneumatorphores above the surface of the soil to aid in gas exchange. The white mangroves can be found in association with the black mangroves, but prefer slightly higher ground that is not prone to daily tides. Other salt tolerant vegetation found in association with the white mangrove are buttonwood, saltwort, sea ox-eye daisy (*Borrichia* spp.), and sand atriplex (*Atriplex pentandra*).

The marine tidal swamp is a critical habitat in south Florida, and the health of this ecosystem is vital to the health of the other submerged communities. Mangroves are considered a nursery ground since the detrital material produced from decaying leaf litter is an important food source for many organisms that spend their early development in the mangrove environment. Many of these organisms are important resources in the Keys either as commercial or recreational industries. Such organisms include mullet (*Mugil* sp.), shrimp (*Penaeus duorarum*), snapper (*Lutjanus* spp.), blue crab (*Callinectes* sp.), snook (*Centropomus undecimalis*), and tarpon (*Megalops atlanticus*).

Mangroves also help to protect upland habitats from wind and wave action as well as providing a filtration system by trapping sediment via their extensive root system.

There is a low-lying area found in association with the marine tidal swamp in the park that is best described as an overwash plain or a saltpan. There is little or no exposed caprock and the soil over the Key Largo limestone is sandy marl mixed with shell debris and coral fragments. It is located on the Golden Orb Nature Trail and is bordered by mangrove tidal swamp and grading into the rockland hammock. This area is influenced by spring high tides, and will flood during heavy rains. Vegetation found here includes inkberry (*Scaevola plumieri*), black torch (*Erithalis fruticosa*), joewood (*Jacquinia keyensis*), poisonwood, seven-year apple, bay cedar and other hardy species. It is in excellent condition with no known exotic vegetation.

Marine unconsolidated substrate. This habitat consists primarily of unvegetated loose sand and

marl depositions derived from calcareous algae, mollusks and foraminifera. Despite the barren appearance of this marine community, the unconsolidated substrate supports a diverse array of infaunal organisms including worms, mollusks, shrimp, crabs, and burrowing fish. The more shallow areas provide an excellent foraging ground for wading birds.

Ruderal/developed. At Long Key, developed areas include the shop, ranger station, two residence areas and the campground. Located at the west-end of the park the campground is a popular tourist destination with visitors returning year after year. Historically, the predominant vegetation in the campground was Australian pine, which provided shade to the campsites. Exotic removal projects have been funded to remove exotics and replant with native beach, dune and buffer vegetation. In 1998 and 1999, several hurricanes and tropical storms seriously impacted the park. Hurricane Georges destroyed the campground in 1998 and the park was closed for many weeks while it underwent extensive repairs. Unfortunately, in 1999, the path of Hurricane Irene included the Florida Keys and the campground again was destroyed. Sand was blown off the campsites, onto, and across the park road. A majority of the Australian pine trees were destroyed, as was the native dune vegetation. Money was secured to rebuild the campground after these events, however, money was not made available to replant with native vegetation. Park management was able to secure funding through donations and private sources to begin the process of restoring this area with native vegetation. The Australian pines that remain will be removed as the native vegetation reaches a height where it will provide needed shade to the campsites. Removing exotic species and replanting with appropriate native vegetation west and north of the campground road has been completed in an effort to restore those natural areas.

Designated Species

Designated species are those that are listed by the Florida Natural Areas Inventory (FNAI), U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDA) as endangered, threatened or of special concern. Addendum 5 contains a list of the designated species and their designated status for this park. Management measures will be addressed later in this plan.

Two federally listed plants are found at Long Key State Park, Garber's spurge (*Chamaescyce garberi*) and tree cactus (*Pilosocereus robinii*). Garber's spurge is found in scattered locations throughout the Keys and is an ephemeral plant throughout the park. However, the population of tree cactus is limited to only a few sites in the Keys. At Long Key, a population of approximately 30 individual is found in two different hammock locations.

Several listed species are of significance because of the rarity of the species in the United States. These include jumping cactus, blue mistflower (*Ageratum littorale*), Mexican hibiscus, creeping morning glory, Cape Sable thoroughwort, wild hibiscus, and Florida Key's indigo (*Indigofera mucronata* var. *keyensis*).

Listed as a state endangered species, Sargent's cherry palm was historically found on Elliott Key, Sands Key and Long Key. However, due to poaching and tropical storm activity, Sargent's cherry palm was extirpated from Long Key. In 1991, working in cooperation with Fairchild Tropical Garden and Biscayne National Park, Florida Park Service District biology staff re-introduced this rare palm to Long Key State Park (on file in the District Biology office, Deaton, 1991). Monitoring is currently conducted annually.

Long Key is also home to state and federally listed bird species including peregrine falcon

(*Falco peregrinus*), bald eagle (*Haliaeetus leucocephalus*), and least tern (*Sterna antillarum*) as well as numerous wading bird and shorebird species. Other designated species include West Indian manatee (*Trichechus manatus latirostris*), Atlantic loggerhead turtle (*Caretta caretta*), Atlantic green turtle (*Chelonia mydas*), Leatherback turtle (*Dermochelys coriacea*), Eastern indigo snake (*Drymarchon corais couperi*), and Atlantic hawksbill turtle (*Eretmochelys imbricata*).

The Division is working with researchers from the University of Florida to study the potential for reintroduction of Miami Blue butterflies to Long Key State Park. Reintroduction will be considered, based on the outcome of that research, and on the outcome of a lawsuit that has been brought by the Monroe County Mosquito Control District against reintroduction of the species to Everglades and Biscayne National Parks.

Special Natural Features

The coastal rock barren community is a special natural feature at Long Key State Park. It is home to several listed species including jumping cactus, Mexican daisy, wild cotton, and Florida Keys indigo, and is listed by the Florida Natural Areas Inventory as one of the best examples of this critically endangered habitat.

Cultural Resources

Evaluating the condition of cultural resources is accomplished using a three part evaluative scale, expressed as good, fair, and poor. These terms describe the present state of affairs, rather than comparing what exists against the ideal, a newly constructed component. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair judgment is cause for concern. Poor describe an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action to reestablish physical stability.

The Florida Master Site File (FMSF) lists one archaeological site, Mo2088 within Long Key State Park. This site is bisected by U.S. Highway 1, and is in fair condition. It consists of shell scatter dating to the Glades I period, and extends approximately 2000 square meters and to a depth of 10-30 cm. Thousands of marine shell fragments are dispersed along the rocky and marl flats that represent a transitional zone between the upland ridge and a mangrove wetland. According to Robert Carr (1987), who conducted a survey of the Middle Keys, this wetland is of particular importance because it “appears to be a relict channel, now heavily silted, that during prehistoric times may have provided canoe access between the bay and the Atlantic.” Areas of exposed bedrock are prevalent, and some areas of fine gray, silty marl occur sporadically along the flats.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan

was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of early successional communities such as sand pine scrub and coastal strand.

During the development of this plan, an analysis was made regarding the feasibility of timber management activities for this park. Because of the natural resources and the habitat types found at this site, timber management is not appropriate at Long Key State Park.

Additional Considerations

Long Key State Park includes 400 feet of Sovereign Submerged Areas on both the oceanside and the bayside of the park. Management of these submerged communities includes prohibiting boat launching from the beach in the campground and limiting the access of boaters close to shore.

With the construction of U.S. Highway 1, natural tidal flow was disrupted and the coastal rock barren is only inundated with saltwater during storm events. The absence of regular tidal influences is affecting the plant community because hardwood species are slowly encroaching into the rock barren. In order to maintain the integrity of this rare plant community, active management may include manual removal of some of the hardwood species.

Management Needs and Problems

1. Exotic plant and animal species management
2. Acquire proposed inholdings and additions
3. Protection of rare plant communities, particularly the coastal rock barren
4. Replacing outdated buildings with those that conform to ADA standards.
5. Resolve boundary disputes with adjacent landowners
6. Monitor the Monroe County transfer station in Layton for potential impacts to the park
7. Review and comment on the microwave tower lease renewal for impacts to the resources of the park.

Management Objectives

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division's primary objective in natural resource management is to maintain and restore, to the extent possible, to the conditions that existed before the ecological disruptions caused by man. The objective for managing cultural resources is to protect these resources from human-related and natural threats. This will arrest deterioration and help preserve the cultural resources for future generations to enjoy.

1. Continue with exotic species removal throughout park
2. Secure funding for native plant species for restoration projects.
3. Monitor Monroe County mosquito control activities in the park for potential impacts particularly to invertebrate species.
4. Obtain funding for research needs.

Management Measures for Natural Resources

Hydrology

Ground water management is not applicable at this site. Management activities will follow generally accepted best management practices to prevent soil erosion and conserve water resources at the park. This includes maintaining or improving the water quality at Long Key

State Park to prevent any adverse impacts to the surrounding waters of the Florida Keys National Marine Sanctuary.

Prescribed Burning

The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within the unit's natural communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are implemented for each zone. The park burn plan is updated annually to meet current conditions. All prescribed burns are conducted with authorization from the Department of Agriculture and Consumer Services, Division of Forestry (DOF). Wildfire suppression activities will be coordinated between the Division and the DOF.

There are no fire-adapted communities at Long Key State Park.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species.

The designated species at this site require the protection of the habitat in order to ensure their survival. At Long Key State Park concerns regarding this protection include protection from poaching, mosquito spraying (which adversely impact invertebrate species), and invasive exotic plant control. All designated plant species have been mapped using a Trimble GPS unit. Several species undergo regular monitoring, while others are monitored on an informal basis. A survey of the coastal rock barren to map the population and distribution of the designated species found within the habitat is a high priority.

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species, as well. They may also harbor diseases or parasites that significantly affect non-resistant native species. Consequently, it is the strategy of the Division to remove exotic species from native natural communities.

The threat of exotic infestation at Long Key State Park comes from several sources; exotic species found within the park, those spread by natural means (i.e.: birds, wind and water), and those spread from neighboring developments. The most serious exotic plant threats at Long Key are lather leaf, Australian pine, Brazilian pepper (*Schinus terebinthifolius*), and lead tree (*Leucaena leucocephala*). Other species such as beach naupaka, mahoe (*Hibiscus tiliaceus*), portia, and sapodilla (*Manilkara zapota*) are cause for concern, but currently occur in small numbers in the park. Care must be taken to remove these species before they spread throughout the park.

Extensive exotic removal projects were initiated in the past five years by park management to control the invasive species in the park. Because of the progress made to date, Long Key can be considered to be in a maintenance phase with the exotic species work consisting of follow-up treatment by park staff.

The potential exotic animal threats include black rat (*Rattus rattus*), Cuban brown anole (*Anolis*

sagrei sagrei), feral and domestic cats (*Felis domesticus*), and fire ants. Green iguanas (*Iguana iguana*) and other exotic reptiles from the trade are becoming an increasing threat throughout the Keys. Green iguanas are occasionally observed in Long Key and should be removed where possible. Exotic animal removal methods will vary depending upon the species, but will include trapping and the use of approved pesticides.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

The only potential problem species at Long Key are raccoons when they are found to be predating upon sea turtle nests. Depending upon the location of the nests, removal and/or relocation are potential options during the turtle-nesting season.

Management Measures for Cultural Resources

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. Approval from Department of State, Division of Historical Resources (DHR) must be obtained before taking any actions, such as development or site improvements that could affect or disturb the cultural resources on state lands (see DHR Cultural Management Statement).

Actions that require permits or approval from DHR include development, site excavations or surveys, disturbances of sites or structures, disturbances of the substrate, and any other actions that may affect the integrity of the cultural resources. These actions could damage evidence that would someday be useful to researchers attempting to interpret the past.

Any future park development that may impact undisturbed areas of the park will follow established archaeological monitoring procedures, with all ground disturbing activities being conducted in accordance with DHR's policies and procedures. If any archaeological or cultural sites are found, disturbances to these sites should be prevented.

All archaeological sites and their associated artifacts will be protected from vandalism, erosion and other forms of encroachment.

Research Needs

Natural Resources

Any research or other activity that involves the collection of plant or animal species on park lands requires a collecting permit from the Department of Environmental Protection. Additional permits from the Florida Fish and Wildlife Conservation Commission, the Department of Agriculture and Consumer Services, or the U.S. Fish and Wildlife Service may also be required.

1. Continue with Sargent’s cherry palm project.
2. Map all designated species in the coastal rock barren to understand the size and distribution of each population.
3. Re-evaluate methodology of beach erosion project that will produce the most accurate results, and then continue with beach erosion measurements.
4. Map all designated plant species every five years (mapped in 2001).

5. Survey and map all designated animal species.
6. Conduct survey of Liguus tree snail population.
7. Conduct survey of macroinvertebrates populations
8. Conduct complete survey of vertebrate populations.
9. Conduct survey of herpetological fauna
10. Conduct survey of non-vascular plants.
11. Conduct survey of submerged communities.

Cultural Resources

1. Any future park development that may impact undisturbed areas of the park will follow established archaeological monitoring procedures, with all ground disturbing activities being conducted in accordance with Division policy. If any archaeological or cultural sites are found, disturbances to these sites should be prevented.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 6. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available (see Addendum 6).

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund (board) are being managed for the purposes for which they were acquired and in accordance with a land management plan adopted pursuant to s. 259.032, the board of trustees, acting through the Department of Environmental Protection (department). The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

Long Key State Park was subject to a land management review on November 19, 2002. The review team made the following determinations:

1. The land is being managed for the purpose for which it was acquired.
2. The actual management practices, including public access, were in compliance with the management plan for this site.

LAND USE COMPONENT

INTRODUCTION

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Division of Recreation and Parks. These responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation opportunities for Florida's citizens and visitors.

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management, through public workshops, and environmental groups. With this approach, the Division objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified. The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park. Any new facilities needed to support the proposed activities are described and located in general terms.

EXTERNAL CONDITIONS

An assessment of the conditions that exist beyond the boundaries of the unit can identify any special development problems or opportunities that exist because of the unit's unique setting or environment. This also provides an opportunity to deal systematically with various planning issues such as location, regional demographics, adjacent land uses and park interaction with other facilities.

Long Key State Park is located within Monroe County, about 14 miles south of Islamorada in the Florida Keys. The populations of Monroe and the adjacent Miami-Dade County have grown 9 percent since 1990, and are projected to grow an additional 8 percent by 2010 (BEBR, University of Florida, 2000). As of 2000, 17 percent of residents in these counties were in the 0-14 age group, 42 percent in the 15-44 age group, 27 percent in the 45-64 age group, and 14 percent were aged 65 and over, which reflects the state average for these groupings (BEBR, University of Florida, 2000). Nearly 97,000 people reside within 50 miles of the park, which includes the cities of Marathon, Islamorada, Key Largo and Homestead (Census, 2000).

Long Key State Park recorded 80,214 visitors in FY 2002-2003. This represents a net increase over the last five years. By Division estimates, these visitors contributed $3,113,712 in direct economic impact and the equivalent of 62 jobs to the local economy (Florida Department of Environmental Protection, 2003).

Existing Use of Adjacent Lands

The Keys are one of the fastest growing areas in Florida, with over 40,000 permanent residents and millions of tourist visitors. Adjacent land use to Long Key State Park consists primarily of commercial and single family residences. The residential and commercial development is to the north and south of the park, with the Atlantic Ocean to the east and

Florida Bay to the west. A Monroe County Landfill and waste transfer station is located approximately midway through the park along the north side of U.S. Highway 1.

Several state parks including Indian Key Historic State Park, John Pennekamp Coral Reef State Park, Windley Key Fossil Reef Geologic State Park, Curry Hammock State Park, and Bahia Honda State Park are all located within a 30-minute drive of Long Key. The offshore area on both the Atlantic and Florida Bay sides of the island is included in the Florida Keys National Marine Sanctuary. Recreational opportunities offered at these public lands include hiking, fishing, camping, swimming, snorkeling, SCUBA diving, and environmental and historical study.

Planned Use of Adjacent Lands

Given the continued residential growth rate of this area of Florida and its popularity among out-of-state visitors, development of lands to the north and south of Long Key to maximum allowable densities should be anticipated. Residential and commercial development, supporting tourism will predominate. Anticipated problems resulting from this development include increased congestion on U.S. Highway 1, higher demand for the park's resources, and water quality impacts. No road improvement projects are currently planned for U.S. Highway 1.

PROPERTY ANALYSIS

Effective planning requires a thorough understanding of the unit's natural and cultural resources. This section describes the resource characteristics and existing uses of the property. The unit's recreation resource elements are examined to identify the opportunities and constraints they present for recreational development. Past and present uses are assessed for their effects on the property, compatibility with the site, and relation to the unit's classification.

Recreation Resource Elements

This section assesses the unit's recreation resource elements those physical qualities that, either singly or in certain combinations, supports the various resource-based recreation activities. Breaking down the property into such elements provides a means for measuring the property's capability to support individual recreation activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Land Area

Long Key State Park contains approximately 980 acres of land area featuring seven ecologically distinct natural communities in addition to ruderal and developed areas. Included in this park are the following land-based natural communities: beach dune, coastal berm, coastal rock barren, and rockland hammock. The coastal rock barren community is a special natural feature at Long Key State Park. It is listed by the Florida Natural Areas Inventory as one of the best examples of this critically endangered habitat.

Water Area

The state park is bordered on the east by the Atlantic Ocean, on the west by Florida Bay, and on the north and south by natural channels between Keys. The lagoon, on the northeastern shore of the unit, provides approximately 140 acres of open water, surrounded by mangrove forest. The lagoon and vegetated shoreline are the unit's most prominent natural features. These waters are among the park's most important resources as they provide not only wildlife habitat but also scenic vistas and great recreational opportunities.

Shoreline

There are over six miles of natural shoreline on the Atlantic Ocean and approximately 1 1/2 miles of shoreline on Florida Bay. The bayside shoreline areas have been heavily colonized by mangroves. These mangrove areas play an important role in maintaining water quality in Florida Bay, and are important scenic and interpretive resources for the park.

Natural Scenery

As with other areas in the Keys, the natural scenery at Long Key State Park is one of the major visitor attractions. The Atlantic Ocean, Florida Bay, and adjacent waters provide views that encourage nature observation and photography. An on-going program of exotic removal and extensive replanting of native species should continue to improve the visual character of this park.

Significant Wildlife Habitat

The shoreline and adjacent wetlands provide suitable habitat for many wildlife species, such as sea turtles and other species previously identified in the Resource Management Component of the plan.

Archaeological and Historical Features

There is one known archaeological site located within Long Key State Park. The site, listed in fair condition, consists of shell scatter that dates back to the Glades I period.

Assessment of Use

All legal boundaries, significant natural features, structures, facilities, roads, trails and easements existing in the unit are delineated on the base map (see Base Map).

Past Uses

Prior to state acquisition a portion of the property on the north end was owned by Monroe County and used as a wayside park. The south end was in private ownership with no significant development.

Recreational Uses

Recreational activities available at the Long Key State Park include picnicking, swimming, bicycling, shoreline fishing, canoeing, nature study and overnight camping.

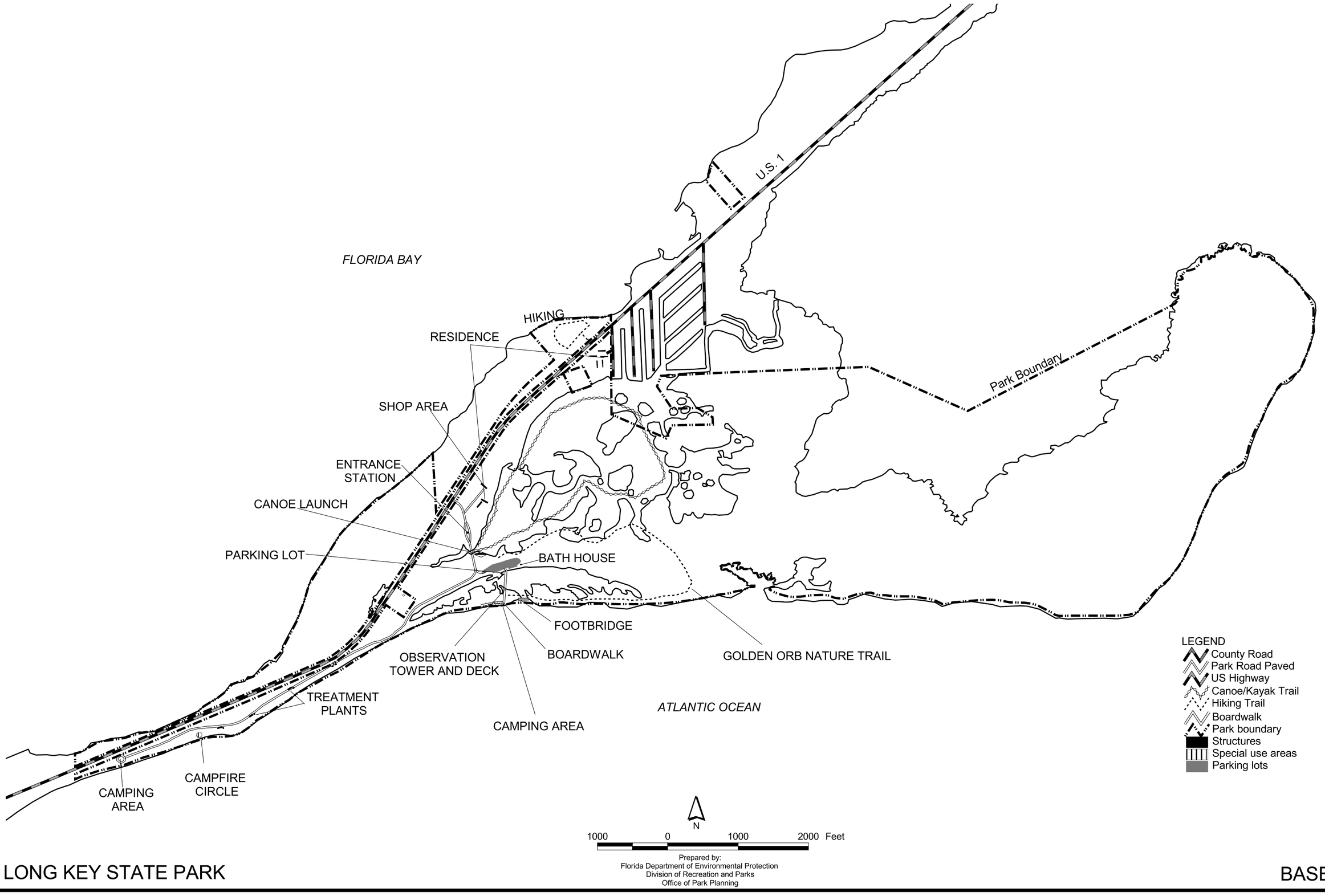
Other Uses

The right of way of U.S. Highway 1 bisects the boundary of the park. The Florida Keys Overseas Heritage Trail (OHT) will pass by the state park on a separate bicycle-pedestrian facility along that right of way in the future.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Long Key State Park, all mangrove areas and shoreline dune systems have been designated



Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

LONG KEY STATE PARK

BASE MAP

as protected zones as delineated on the Conceptual Land Use Plan. In addition, the entire eastern peninsula is designated as a protected zone to recognize the unique natural habitat and undeveloped conditions found there (see the Natural Communities Map).

Existing Facilities

Recreation Facilities

Camping Area
Campsites (60)
Residences (2)
Campfire circle
Bathhouses (3)

Atlantic Recreation Area
Footbridge
Elevated boardwalk
Observation tower
Camping platforms (6)
Canoe launch
Nature Trail

Support Facilities

Ranger station
Shop facility
Residence trailers (5)
Day use restrooms (2)
Central wastewater treatment plant
Lift stations (3)
Picnic tables
Parking area

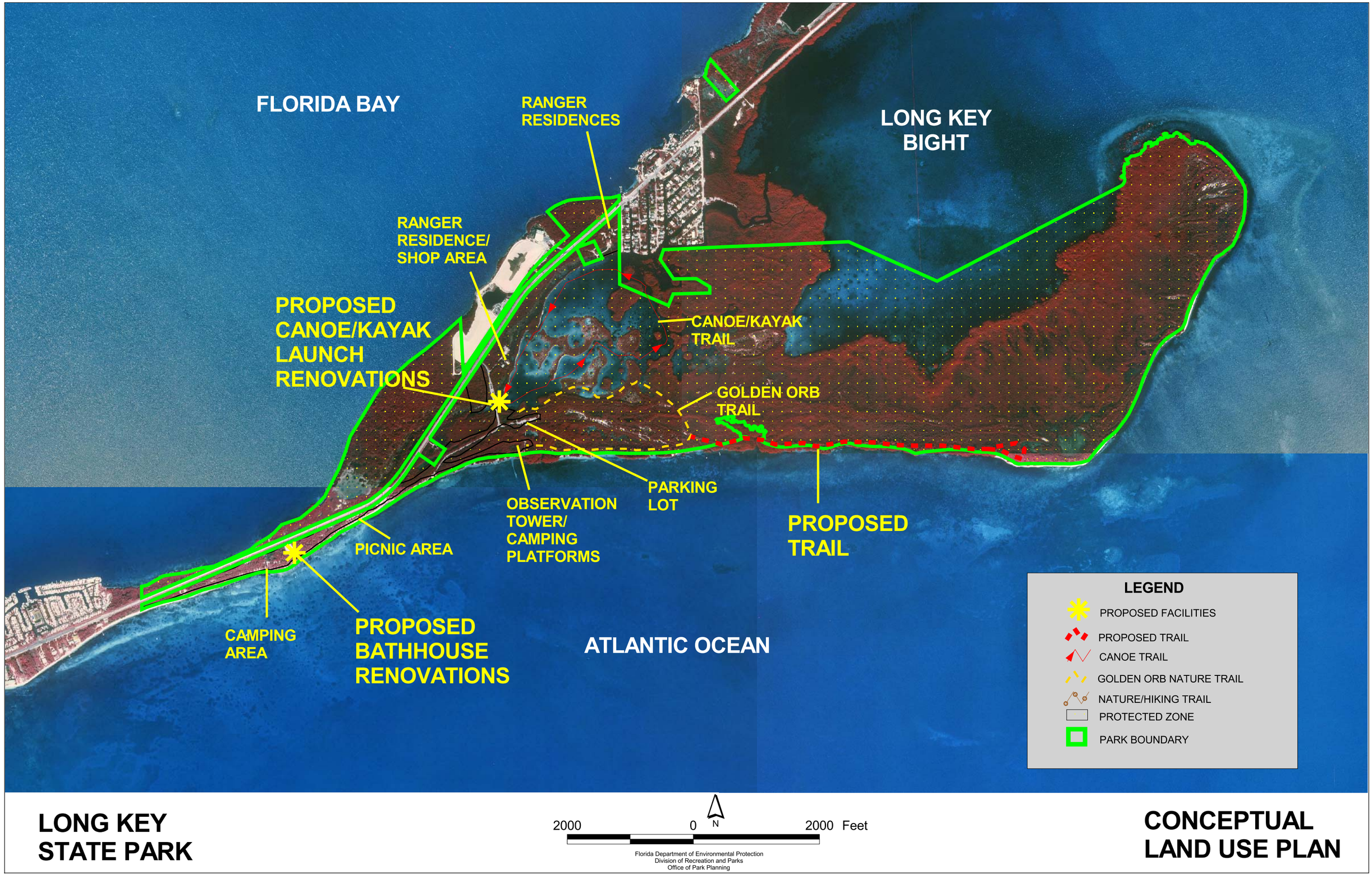
CONCEPTUAL LAND USE PLAN

The following narrative represents the current conceptual land use proposal for this park. As new information is provided regarding the environment of the park, cultural resources, recreational use, and as new land is acquired, the conceptual land use plan may be amended to address the new conditions (see Conceptual Land Use Plan). A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

During the development of the unit management plan, the Division assesses potential impacts of proposed uses on the resources of the property. Uses that could result in unacceptable impacts are not included in the conceptual land use plan. Potential impacts are more thoroughly identified and assessed through the site planning process once funding is available for the development project. At that stage, design elements, such as sewage disposal and stormwater management, and design constraints, such as designated species or cultural site locations, are more thoroughly investigated. Advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. Federal, state and local permit and regulatory requirements are met by the final design of the projects. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses and Proposed Facilities

Long Key State Park is a popular recreation area in the middle Keys. The large number of out-of-state visitors that currently frequent the Keys will continue to increase, thus increasing the demand on Long Key to provide outdoor recreation opportunities. The existing activities at Long Key State Park should be continued. The Florida Keys Overseas Heritage Trail will



LONG KEY STATE PARK

2000 0 N 2000 Feet

Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

CONCEPTUAL LAND USE PLAN

eventually pass along the boundary of the park on the U.S. Highway 1 right-of-way. It will have a great effect on Long Key State Park by increasing the numbers of visitors arriving at the park.

Recreation Facilities

Trails. A trail should be extended past the Golden Orb Nature Trail into the protected zone on the eastern peninsula for both enhancing visitor enjoyment of the park as well allowing additional resource management access to the peninsula. This trail will need some bridging in order to traverse the slough.

Canoe launch improvements. The canoe launch that allows visitors to canoe/kayak through the lagoon area needs to be brought up to ADA standards.

Camping area landscape improvements. The camping area needs native landscape improvements to buffer sites from on another and increase camper privacy.

Interpretive exhibits. Interpretation is a major focus of the Florida State Park system. Interpretive displays and exhibits will be needed throughout the park including in the picnic areas, the camping areas, along hiking trails and at the overlook as well as other places.

Potential interpretive themes for Long Key include rare and endangered species, the natural communities and cultural history of the Keys, mangrove ecosystems, and Leave-No-Trace ethics.

Resource management authority. It is also recommended that the Division obtain management authority over Long Key Bight, the lagoon, for resource management purposes.

Support Facilities

Camping area bathhouse renovations. Two of the camping area restrooms need renovation to meet ADA standards.

Park road repaving. The park road and parking lots need repaving.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 6. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

Recreation Facilities

Trail
Canoe launch ADA improvements
Camping area landscape improvements (2)
Interpretive exhibits

Support Facilities

Camping area bathhouse renovations (ADA – 2)
Park road repaving

Existing Use and Optimum Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural

values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 1).

The optimum carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 1.

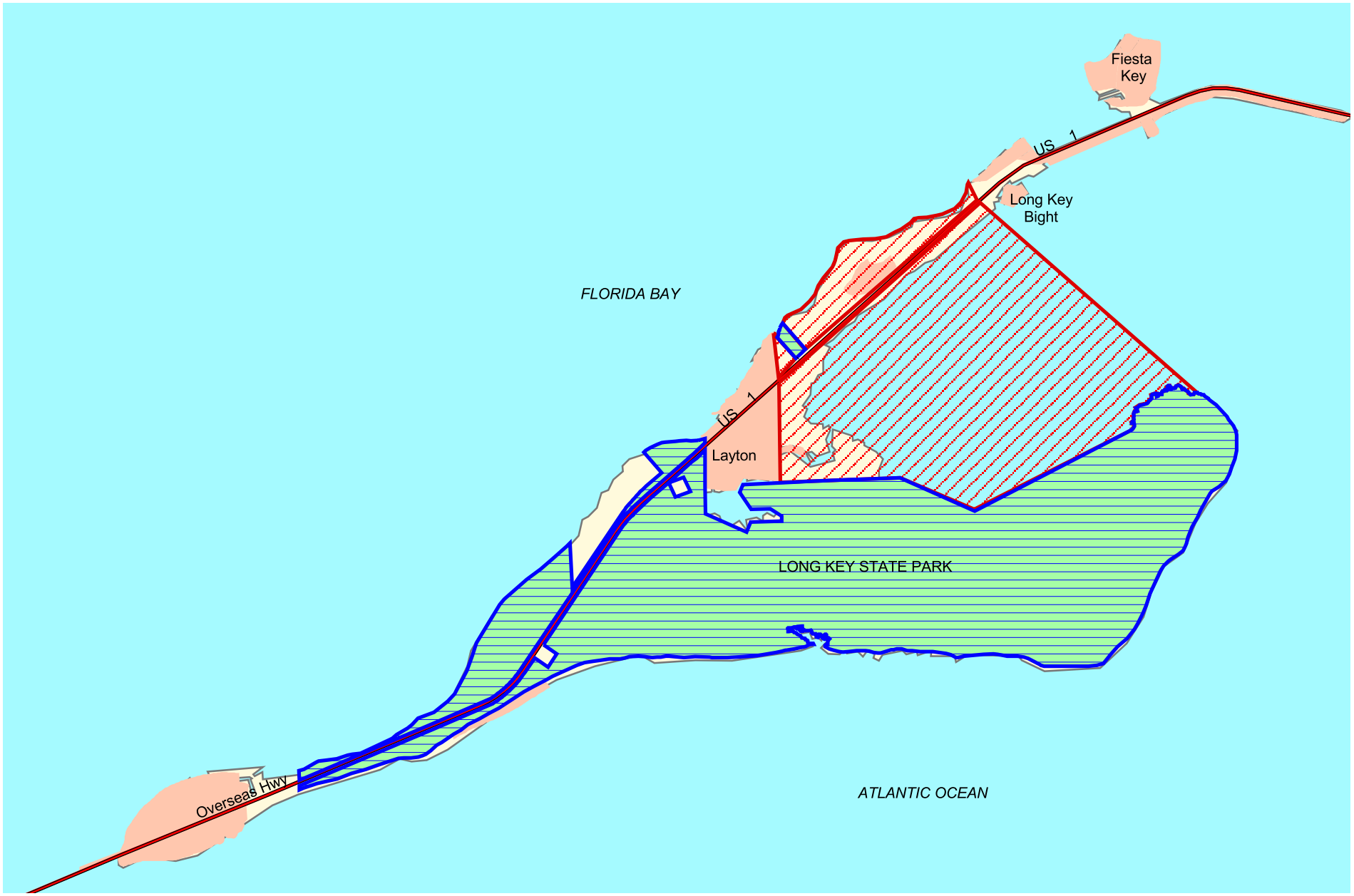
Table 1--Existing Use And Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	**One Time**	**Daily**	**One Time**	**Daily**	**One Time**	**Daily**
Trails						
Hiking/nature	20	80	20	80	40	160
Picnicking /swimming	352	704			352	704
Camping						
Standard	240	240			240	240
Primitive	24	24			24	24
Fishing						
Shoreline	20	40			20	40
Boating						
Canoeing/kayaking	16	32			16	32
TOTAL	**672**	**1,120**	**20**	**80**	**692**	**1,200**

Optimum Boundary

As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency.

Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property’s identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not to be used as the basis for permit denial or the imposition of permit



LONG KEY STATE PARK

N

1000 0 1000 2000 Feet

Prepared by:
Florida Department of Environmental Protection
Division Of Recreation and Parks
Office of Park Planning

LEGEND
Park Boundary
Optimum Boundary

OPTIMUM BOUNDARY MAP

conditions.

Approximately 150 acres have been identified for addition to Long Key State Park (see Optimum Boundary Map). The acquisition of these lands, also known as the North Layton Hammock Site under the CARL project, will significantly enhance ownership cohesiveness, management goals relating to resource protection and recreation opportunities, and enhance the state's ability to protect environmentally unique and irreplaceable lands. It is also recommended that the Division obtain management authority over Long Key Bight, the lagoon, for resource management purposes. It is also recommended that the Division obtain management authority over Long Key Bight, the lagoon, for resource management purposes. At this time, no lands are considered surplus to the needs of the park.

Addendum 1—Acquisition History

Purpose and Sequence of Acquisition

The Florida Board of Parks and Historic Memorials (FBPHM), predecessor in interest to the Division of Recreation and Parks (Division) initially acquired Long Key State Park to develop and manage the property as fishing and camping areas and for other park and recreational purposes.

The FBPHM obtained title to the property constituting the initial area of Long Key State Park on September 21, 1961. The County Commissioners of Monroe County donated the property. Since this donation, the State of Florida has acquired several parcels under LATF, WCFW, P2000/A and I, and CARL programs and added them to Long Key State Park.

Lease Agreement

On September 28, 1967, the FBPHM conveyed title and interest in Long Key State Park to the Board of Trustees of the Internal Improvement Trust Fund (Trustees). On January 23, 1968, the Trustees leased Long Key State Park back to the FBPHM under Lease No. 2324. This lease is for a period of ninety-nine (99) years and will expire on January 23, 2067. In 1988, the Trustees assigned a new lease number, Lease Number 3672, to Long Key State Park, without changing the terms and conditions of Lease No. 2324. According to Lease No. 3672, the Division manages Long Key State Park only for the development, conservation and protection of natural and cultural resources, and for resource-based public outdoor recreation compatible with the conservation and protection of the property.

Title Interest

The Trustees hold fee simple title of Long Key State Park.

Special Conditions On Use

The Long Key State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

Outstanding Reservations

Following is a listing of outstanding rights, reservations, and encumbrances that apply to Long Key State Park.

Instrument:	Sublease Agreement
Instrument Holder:	Division
Beginning Date:	January 28, 1991
Ending Date:	For a period of 25 years.
Outstanding Rights, Uses, Etc.:	The sublease grants the right of ingress and egress to the Florida Department of General Services to install, maintain, and utilize a radio tower and place an equipment shelter and an emergency generator.

Instrument:	Warranty Deed
Instrument Holder:	Sidarlan Development Company
Beginning Date:	June 8, 1973
Ending Date:	Forever
Outstanding Rights, Uses, Etc.:	The deed is subject to utility easements and reservations of petroleum products to the State of Florida as stated in a certain title insurance policy dated May 24, 1973.

Instrument:	Deed
Instrument Holder:	Monroe County
Beginning Date:	May 1, 1969
Ending Date:	No specific date is given.
Outstanding Rights, Uses, Etc.:	According to the deed, if the subject land is not used for park purposes, the property shall revert to instrument holder. The deed was corrected on January 11, 1970, to include a reversionary clause.

Instrument:	Right-of-way Agreement
Instrument Holder:	Del Layton, Mary V. Layton
Beginning Date:	December 31, 1963
Ending Date:	Forever
Outstanding Rights, Uses, Etc.:	The agreement allows the Sidarlen Development Corp. to dredge a navigable channel along Layton Drive.

Instrument:	Agreement
Instrument Holder:	Sidarlen Development Corp., Ralph E. Lewis
Beginning Date:	July 24, 1961
Ending Date:	No specific date is given.
Outstanding Rights, Uses, Etc.:	The agreement allows the instrument holders to install and construct a water main system.

Instrument:	Quitclaim Deed
Instrument Holder:	Halvard Risteigen, Inga Risteigen, Thomas A. Curtis, Augustina Curtis
Beginning Date:	June 29, 1961
Ending Date:	Forever
Outstanding Rights, Uses, Etc.:	The deed is subject to certain dedication of roadway of lands found in Commonwealth Land Title dated April 12, 1973.

Long Key State Park

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Represented by:
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Friends of Islamorada Area State Parks
Post Office Box 838
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Mr. John E. Fusco
PO Box 517
Long Key, FL 33001

The Advisory Group appointed to review the proposed land management plans for Long Key State Park was held at the Layton City Hall, on February 12, 2004. Mayor Carol MacLaren, Mr. Noble Hendrix, Mr. Randal T. Grau, Mr. Billy Causey, Mr. M.J. Neel, Mr. Chris Bergh, Ms. Susan Sprunt, and Mr. Frank Woll did not attend. Mr. Billy Causey expressed his support for the plan via written comments. Mr. Jerry Smith represented Mr. and Mrs. Gerald Palmer. All other appointed Advisory Group members were present. Attending staff were Mr. George Jones, Mr. Danny Jones, Ms. Catherine Close, Ms. Janice Duquesnel, and Ms. K.C. Bloom. Mr. John E. Fusco also attended as an interested citizen.

Ms. Bloom began the meeting by explaining the purpose of the advisory group and reviewing the meeting agenda. She also provided a brief overview of the Division's planning process and summarized public comments received during the previous evening's public workshop and written comments submitted by non-attending members of the Advisory Group. She then asked each member of the advisory group to express his or her comments on the plan.

Summary Of Advisory Group Comments

Ms. Jean Murphy stated that she has lived in Layton since 1990, but that she hadn't been to the park until **Ms. Close** conducted a presentation about the park at a meeting of the Garden Club. She was unaware of what the park had to offer but since learning about the park, has become a supporter. **Ms. Murphy** suggested that the Division do more in terms of local advertising. **Ms. Bloom** stated that her suggestion was valid and explained about the marketing team up in Tallahassee and their responsibilities. **Ms. Close** responded that she also intended on marketing the park more on a local level and conducting more outreach programs in the upcoming years and explained that she has been hindered by rebuilding from two hurricanes. **Ms. Murphy** stated that she'd be happy to do any promoting within the local region. **Mr. Jones** thanked **Ms. Murphy** for her comments.

Ms. Tina Heinze provided that she was in favor of the proposed trail but does not want to see recreation harm the protection of species. **Ms. Close** stated that as part of the mission of the Florida Park Service, the Division must provide recreation while preserving and interpreting Florida's natural and cultural resources. She continued that the Division is constantly working on a balancing act but does a good job in preserving the resources while allowing public access and use. **Ms. Close** also stated that the proposed trail is not at all invasive and will be an invaluable educational tool while also allowing additional resource management access. **Ms. Heinze** agreed that the Division does a good job in providing recreation while preserving resources and stressed that she would definitely like to see more interpretation and education in the parks. She also stated that the Division should acquire as much land as possible in the area.

Mr. Clarence Feagin stated his support for the park plan and complimented the inclusiveness of the park planning process.

Mr. Jerry Smith provided that he appreciates the park but that the only complaint he has heard is that it takes too long to get reservations. He continued that as a representative of Mr. Palmer, that Mr. Palmer was satisfied with the park plan. **Ms. Close** stated that the Division only recently began work with Reserve America, but that the Division is working closely with the company to ensure everything flows smoothly. She also stated that she appreciates her

close working relationship with **Mr. Palmer**.

Mr. Hal Halenza responded that as a long term resident of Layton, he knows that Dell Layton would be happy to see the park surround the community as is possible based on the optimum boundary. He expressed support for the park as well as the park plan. **Mr. Halenza** continued that he'd be happy to be a member of the Friends of Long Key State Park and will help out in any way possible. **Ms. Close** explained that in terms of the optimum boundary, the bight has been included in order to help eliminate excessive anchorage as has been seen at previous times. She also stated that the park would not eliminate access to the area, rather the bight would continue to be open to some recreational activities.

Mr. Skip Harring stated that he has been an active member of Friends of Islamorada Area State Parks for a number of years and that he is excited to help launch a CSO at Long Key. He thinks that land acquisitions in the area are vitally important and that the community would like to see the park expand as much as possible. **Mr. Harring** provided that the expansion of the trail would be a positive thing for the park. **Mr. Jones** explained the state land acquisition process and stated that the Keys are an area of Critical Concern for the state. He also encouraged citizens to get involved and let the state know they support more land acquisitions.

The meeting was then adjourned.

Staff Recommendation

A number of excellent discussions took place during the Advisory Group meeting. With minor revisions, staff recommends approval of the management plan as submitted.

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Addendum 3—Soil Descriptions

(2) Pennekamp gravelly muck, 0 to 2 percent slopes, extremely stony - The Pennekamp series consists of well drained soils that are shallow to rippable coral limestone bedrock. The depth to bedrock is 4 to 16 inches. These soils formed in material weathered from the coral limestone bedrock. They generally have a thin overburden of sapric material. They are on uplands. Slopes range from 0 to 2 percent. The taxonomic class is loamy-skeletal, carbonatic, isohyperthermic Lithic Rendolls.

This soil is on tropical hammocks in the upland of the upper keys. About 10 percent of the surface of this soil is covered with stones that are dominantly 10 to 20 inches in diameter. Individual areas are subject to rare flooding from hurricanes and other tropical storms. Elevations are dominantly 5 to 15 feet above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 78 degrees F, and the mean annual precipitation is about 50 inches.

The Pennekamp soil is dominant in this map unit. Soils in areas on the keys between Upper Matecumbe Key and Big Pine Key are more sandy than the Pennekamp soil; however, uses and interpretations are the same as those of the Pennekamp soil. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Pennekamp soil are the moderately well drained, organic Matecumbe soils in the slightly lower position on the landscape and the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils and very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the significantly lower positions on the landscape.

The Pennekamp soil is well drained. It has a seasonal high water table at a depth of 3.5 to 5.0 feet during the wet periods of most years. Permeability is moderately rapid.

Most areas of this soil support native vegetation and are used as habitat for tropical hammock species. Some areas have been developed for residential, urban or recreation use. Characteristic vegetation for the soils in the survey area include poisonwood, wild tamarind, gumbo limbo, strangler fig and wild coffee.

Depth to bedrock and the flooding are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development and salinity facilities.

(3) Matecumbe muck, occasionally flooded - The Matecumbe series consists of moderately well drained soils that are very shallow to rippable coral or oolitic limestone bedrock. The depth to limestone or coral limestone bedrock is 2 to 9 inches. These soils formed in organic material in varying stages of decomposition. Slopes are 0 to 1 percent. The taxonomic class is Euic, isohyperthermic Lithic Tropofolists.

This soil is on tropical hammocks in the uplands throughout the keys. Individual areas are subject to occasional flooding from hurricanes and other tropical storms. Elevations are less that 15 feet above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature ranges from 74 to 78 degrees F, and the mean annual precipitation ranges from 50 to 65 inches.

The Matecumbe soil is dominant in this map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Matecumbe soil are the well drained, mineral Keyvaca and Pennekamp soils in the higher position on the landscape; the somewhat poorly drained, marly

Saddlebunch soils in the landscape positions similar to those of the Matecumbe soil; and the poorly drained, marly Cudjoe, Keywest and Lignumvitae soils and very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the lower positions on the landscape.

The Matecumbe soil is moderately well drained. It has a seasonal high water table at a depth of 1.5 to 3.0 feet during the wet periods of most years. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for tropical hammock species. Some areas have been developed for residential, urban, or recreational use. Characteristic vegetation for the soils in the survey area include; poisonwood, wild tamarind, mahogany, tree cactus, crabwood, thatch palm, satinleaf, paradise tree, and stopper.

Depth to bedrock, the flooding, and an excessive amount of humus are severe limitation affecting most uses of this soil, including most kinds of building site and recreational development.

(4) Rock outcrop - Tavernier complex, tidal - The Tavernier series consists of very poorly drained soils that are shallow to rippable coral limestone bedrock. The depth to bedrock is dominantly 3 to 16 inches but ranges to 20 inches. These soils formed in sapric material. The taxonomic class is Euic, isohyperthermic, shallow Lithic Troposaprists.

This map unit is in mangrove swamps throughout the keys. Individual areas are subject to daily flooding by tides. Elevations are less than 2 feet above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 75 degrees F, and the mean annual precipitation is about 55 inches.

Approximately 60 percent of this map unit consists of areas of exposed bedrock. These areas are dominantly 1 to 4 inches above the surface of the surrounding soil and range from approximately 2 feet to more than 200 feet in diameter. The Tavernier soil is dominant in about 35 percent of his map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Tavernier soil are the very poorly drained, organic Islamorada and Keylargo soils in landscape positions similar to those of the Tavernier soil; the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils in the slightly higher positions on the landscape; and the moderately well drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

The Tavernier soil is very poorly drained. The seasonal high water table is at or near the surface during much of the year. Permeability is rapid.

Most areas of this map unit support native vegetation and are used for wetland wildlife. Some areas have been developed for residential, urban, or recreational use. Characteristic vegetation for the soils in the survey area include red and black mangrove, and saltwort.

The flooding, the depth to bedrock and the wetness are severe limitations affecting most uses of this map unit, including most kinds of building site and recreational development.

(5) Islamorada muck, tidal - The Islamorada series consists of very poorly drained soils that are moderately deep to rippable coral or oolitic limestone bedrock. The depth to bedrock is 20 to 50 inches. These soils formed in sapric material. Slopes are less than 1 percent. Taxonomic

class is Euic, isohyperthermic Lithic Troposaprists.

This soil is dominantly on the upper keys in mangrove swamps. Individual areas are subject to daily flooding by tides. Elevations are dominantly at or below sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 75 degrees F, and the mean annual precipitation is about 50 inches.

The Islamorada soil is dominant in this map unit. Areas of the Tavernier soils are also included. These soils have bedrock within a depth of 20 inches. Other areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Islamorada soil are the very poorly drained, organic Keylargo and Tavernier soils in landscape positions similar to those of the Islamorada soil; the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils in the slightly higher positions on the landscape;a nd the moderately well drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

The Islamorada soil is very poorly drained. The seasonal high water table is at or near the surface during much of the year. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for wetland wildlife. Some areas have been developed for residential or recreation use. Characteristic vegetation for the soils in the survey areas include red and black mangrove.

The wetness, the flooding, and depth to bedrock are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development.

(6) Keylargo muck, tidal - The Keylargo series consists of very poorly drained soils that are deep to rippable coral or oolitic limestone bedrock. The depth to bedrock is 50 to 90 inches. These soils formed in sapric material. Slopes are less than 1 percent. The taxonomic class is Euic, isohyperthermic Typic Troposaprists.

This soil is dominantly on the upper keys but can occur throughout the keys. It is in mangrove swamps. Individual areas are subject to daily flooding by tides. Elevations are dominantly at or below sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature is about 75 degrees F, and the mean annual precipitation is about 50 inches.

The Keylargo soil is dominant in this map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Keylargo soil are the very poorly drained, organic Islamorada and Tavernier soils in landscape positions similar to those of the Keylargo soil; the poorly drained, marly Cudjoe, Lignumvitae, and Keywest soils in the slightly higher positions on the landscape; and the moderately well drained, organic Matecumbe soils and somewhat poorly drained, marly Saddlebunch soils in the significantly higher positions on the landscape.

The Keylargo soil is very poorly drained. The seasonal high water table is at or near the surface during much of the year. Permeability is rapid.

Most areas of this soil support native vegetation and are used as habitat for wetland wildlife. A few areas have been developed for residential or recreation use. Characteristic vegetation

for the soils in the survey areas include red and black mangrove.

The wetness, an excessive amount of humus, and the flooding are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development.

(7) Udorthents-Urban land complex - This map unit is in constructed upland areas adjacent to areas of water throughout the keys. Individual areas are subject to rare flooding from hurricanes and other tropical storms. Elevations vary, depending on the thickness of the fill material, but they are dominantly 3 to 10 feet above sea level, according to National Geodetic Vertical Datum of 1929.

The Udorthents dominantly consist of crushed oolitic limestone or coral bedrock that has been spread over the original soil material. They commonly are about 32 inches of extremely gravelly sand underlain by about 40 inches of marl. The marl is underlain by coral bedrock. Other areas of soils are underlain by muck and other soil material. Houses and other urban structures cover up to 40 percent of most areas of the Udorthents; however, the soils can still be observed.

Soils that are associated in this map unit are all of the other soils that are in the keys.

The Udorthents are moderately well drained. They have a seasonal high water table at a depth of 2 to 4 feet during the wet periods of most years. Permeability is variable.

This map unit generally supports no vegetation. The stones and droughtiness are severe limitations affecting any kind of landscaping activity. The Udorthents were developed for urban use, and many areas are being used for this purpose.

The stones, seepage, and the wetness are moderate or severe limitations affecting most uses of this map unit, including most kinds of building site and recreational development.

(8) Rock Outcrop-Cudjoe complex, tidal – The Cudjoe series consists of poorly drained soils that are shallow to rippable coral or oolitic limestone bedrock. The depth to bedrock is 3 to 20 inches. These soils form in calcareous marl and are in tidal and other flooded areas. Slopes are 0 to 1 percent. The taxonomic class is loamy, carbonatic, isohypertimic shallow Tropic Fluvaquents.

This map unit is in mangrove swamps throughout the keys. Individual areas are frequently flooded by tides. Elevations are 0 to 1 foot above sea level, according to National Geodetic Vertical Datum of 1929. The mean annual temperature ranges from 75 to 78 degrees F, and the mean annual precipitation ranges from 40 to 50 inches.

Approximately 60 percent of this map unit consists of areas of exposed bedrock. These areas are dominantly 1 to 4 inches above the surface of the surrounding soil and range from approximately 2 feet to more than 200 feet in diameter. The Cudjoe soil is dominant in about 40 percent of this map unit. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Cudjoe soil are the well drained, mineral Keyvaca and Pennekamp soils, moderately well drained, organic Matecumbe soils, and somewhat poorly drained, marly Saddlebunch soils in the higher positions on the landscape; the poorly drained, marly Keywest and Lignumvitae soils in landscape positions similar to those of the Cudjoe soil; and the very poorly drained, organic Islamorada, Keylargo, and Tavernier soils in the

lower positions on the landscape.

The Cudjoe soil is poorly drained. The seasonal high water table is within a depth of 6 inches during the wet periods of most years. Permeability is moderate or moderately rapid.

Most areas of this map unit support native vegetation and are used as habitat for wetland wildlife. Some areas have been developed for residential, urban, or recreational use. Characteristic vegetation for the soils in the survey areas include red and black mangrove, saltwort and glasswort.

The flooding, the depth to bedrock, and the wetness are severe limitation affecting most uses of this map unit, including most kinds of building site and recreational development.

(16) Bahiahonda, 0 to 3 percent slopes – The Bahiahonda series consists of moderately well drained soils that are deep to rippable coral limestone bedrock. The depth to bedrock is 60 to 90 inches. These soils formed insandy marine material and shells overlying the limestone bedorck. They are on uplands. Slopes range from 0 to 3 percent. The taxonomic class is Isohyperthermic, uncoated Aquic Quartzipsamments.

This soil is on coastal strands and tropical hammocks in the uplands on Bahia Honda Key and Long Key. Individual areas area subject to rare flooding from hurricanes and other tropical storms. Elevation are dominantly 4 to 7 feet above sea level, according National Geodetic Vertical Datum of 1929.

The Bahiahonda soil is dominant in this map unit. Soils in area on Long Key are wetter than the Bahiahonda soil and have slightly more limitations. They have a high water table at a depth of 1.5 to 2.5 feet. Areas that have different uses and interpretations are rare and generally are adjacent to the boundaries of the map unit.

Soils that are associated with the Bahiahonda soils are the moderately well drained, organic Matecumbe soils in landscape positions similar to those of the Bahiahonda soil; the poorly drained marly Cudjoe soils in the slightly lower positions on the landscape; and the very poorly drained, organic Islamorada and Keylargo soils and Beaches in the significantly lower positions on the landscape.

The Bahiahonda soil is moderately well drained. It has a seasonal high water table at a depth of 2.5 to 3.5 feet during the wet periods of most years. Permeability is rapid.

Most areas of this soils support native vegetation and are used as habitat for woodland wildlife. A few areas have been developed for recreational use. Some areas support invader, or exotic species. These invader species are dominantly Australian pine. Characteristic vegetation for the soils in this survey include poisonwood, crabwood, stopper, and gumbo limbo.

The wetness, the flooding, and seepage are severe limitations affecting most uses of this soil, including most kinds of building site and recreational development.

(18) Beaches – This map unit consists of barren areas adjacent to the Atlantic Ocean on the lower keys Individual areas are subject to shallow flooding by tides and to deep flooding from hurricanes and other tropical storms. Elevations are at or near sea level, according to National Geodetic Vertical Datum of 1929.

The beaches are miscellaneous areas that have been reworked by the tides. They commonly

consist of about 16 inches of sand underlain by about 44 inches of fine sand. The fine sand is underlain by muck and other soil or nonsoil material at a depth of about 60 inches. The width and shape of the Beaches can change during each major storm.

The beaches are adjacent to Bahiahonda soils. They are also adjacent to Urban land and water. The Bahiahonda soils and the Urban land are in the higher positions on the landscape. This map unit is poorly drained. It has a seasonal high water table at the surface. Permeability is rapid or very rapid.

Most areas of this map unit are not vegetated. The Beaches are used for recreational activities, such as sunbathing and fishing, and as access areas for swimming and wading.

Addendum 4—Plant And Animal List

Long Key State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Indian mallow	*Abutilon permolle*	
Cinnecord +	*Acacia choriophylla*	76
sweet acacia	*Acacia farnesiana*	
barb-wire cactus	*Acanthocereus tetragonus*	4, 12
golden leather fern	*Acrostichum aureum*	12, 76
giant leather fern	*Acrostichum danaeifolium*	
false foxglove	*Agalinis maritima*	
false sisal	*Agave decipiens*	
sisal hemp*	*Agave sisalana*	
blue-mist flower	*Ageratum littorale*	4, 12
chaff flower	*Alternanthera flavescens*	
notch-leaved amaranth*	*Amaranthus blitum*	
spiny amaranth	*Amaranthus spinosus*	
toothcups	*Ammannia latifolia*	
torchwood	*Amyris elemifera*	
bushy bluestem	*Andropogon glomeratus var. pumilus*	
sea lavender	*Argusia gnaphalodes*	1
Blodgett's silverbush	*Argythamnia blodgettii*	81
sand atriplex	*Atriplex pentandra*	
black mangrove	*Avicennia germinans*	
salt bush	*Baccharis halimifolia*	
water hyssop	*Bacopa monnieri*	
saltwort	*Batis maritima*	
Spanish needle	*Bidens alba var. radiata*	
green shrimp plant*	*Blechum pyramidatum*	
samphire	*Blutaparon vermiculare*	
red spiderling	*Boerhavia diffusa*	
sea ox-eye daisy	*Borrichia arborescens*	
sea oxeye	*Borrichia frutescens*	
pitted bluestem*	*Bothriochloa pertusa*	
Bahama strong bark	*Bourreria succulenta*	
gumbo limbo	*Bursera simaruba*	
gray nicker-bean	*Caesalpinia bonduc*	
southern sea rocket	*Cakile lanceolata*	
bay-bean	*Canavalia rosea*	
Jamaica caper	*Capparis cynophallophora*	
limber caper	*Capparis flexuosa*	
goatweed	*Capraria biflora*	
papaya*	*Carica papaya*	
natal plum*	*Carissa macrocarpa*	
love vine	*Cassytha filiformis*	
Australian pine*	*Casuarina equisetifolia*	
Madagascar periwinkle*	*Catharanthus roseus*	
southern sandbur	*Cenchrus echinatus*	

Long Key State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
coastal sandbur	*Cenchrus incertus*	
Blodgett's spurge	*Chamaesyce blodgettii*	
Garber's spurge	*Chamaesyce garberi*	1, 81
hairy spurge	*Chamaesyce hirta*	
hyssopleaf sandmat	*Chamaesyce hyssopifolia*	
seaside spurge	*Chamaesyce mesembryanthemifolia*	
lamb's quarters*	*Chenopodium ambrosioides*	
snowberry	*Chiococca alba*	
Cape Sable thoroughwort	*Chromolaena frustrata*	4
yellow hibiscus	*Cienfuegosia yucatanensis*	4
fiddlewood	*Citharexylum spinosum*	
pigeon plum	*Coccoloba diversifolia*	
seagrape	*Coccoloba uvifera*	
coconut palm*	*Cocos nucifera*	
coffee colubrina	*Colubrina arborescens*	
latherleaf*	*Colubrina asiatica*	
day flower	*Commelina erecta*	
buttonwood	*Conocarpus erecta*	
silver buttonwood	*Conocarpus erecta f. sericea*	
cordia	*Cordia globosa*	4, 12
geiger tree*	*Cordia sebestena*	
rhacoma	*Crossopetalum rhacoma*	12
fragrant milkweed	*Cynanchum northropiae*	
leafless cynanchum	*Cynanchum scoparium*	
Bermuda grass*	*Cynodon dactylon*	
royal flatsedge	*Cyperus elegans*	
limestone flatsedge	*Cyperus fuligineus*	
false saw grass	*Cyperus ligularis*	
umbrella sedge	*Cyperus planifolius*	
pinebarren flatsedge	*Cyperus retrorsus*	
Egyptian grass*	*Dactyloctenium aegyptium*	
royal poinciana*	*Delonix regia*	
virgate mimosa	*Desmanthus virgatus*	
beggarweed	*Desmodium incanum*	
false-mint	*Dicliptera sexangularis*	
Southern crabgrass	*Digitaria ciliaris*	
saltgrass	*Distichlis spicata*	
red-edged Dracaena*	*Dracaena marginata*	
milkbark	*Drypetes diversifolia*	12
Guiana plum	*Drypetes lateriflora*	
false daisy	*Eclipta prostrata*	
goose grass*	*Eleusine indica*	
tasselflower*	*Emilia fosbergii*	
dollar orchid	*Encyclia boothiana var. erythronioides*	4, 12

* Non-native Species

Long Key State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
butterfly orchid	*Encyclia tampensis*	
pothos*	*Epipremnum pinnatum*	
feather lovegrass*	*Eragrostis amabilis*	
gophertail lovegrass*	*Eragrostis ciliaris*	
Dominican lovegrass*	*Eragrostis prolifera*	
black torch	*Erithalis fruticosa*	3, 76
beach creeper	*Ernodea littoralis*	
white stopper	*Eugenia axillaris*	
Spanish stopper	*Eugenia foetida*	
grassleaf spurge*	*Euphorbia graminea*	
finger grass	*Eustachys petraea*	
seaside gentian	*Eustoma exaltatum*	
creeping morning glory	*Evolvulus alsinoides*	
creeping morning glory	*Evolvulus convolvuloides*	4
inkwood	*Exothea paniculata*	
weeping fig*	*Ficus benjamina*	
shortleaf fig	*Ficus citrifolia*	
India rubber tree*	*Ficus elastica*	
hurricane grass	*Fimbristylis cymosa*	
chestnut sedge	*Fimbristylis spadicea*	
yellowtop	*Flaveria linearis*	
stalkless yellowtop	*Flaveria trinervia*	
segregata	*Foresteria segregata*	
milk pea	*Galactia striata*	
milk-pea	*Galactia volubilis*	
seven-year apple	*Genipa clusiifolia*	
wild cotton	*Gossypium hirsutum*	4
lignum vitae	*Guaiacum sanctum*	12
blolly	*Guapira discolor*	
rock key blolly	*Guapira floridana*	
crabwood	*Gymnanthes lucida*	
scorpion tail	*Heliotropium angiospermun*	
seaside heliotrope	*Heliotropium curassavicum*	
bladder mallow	*Herissantia crispa*	
wild hibiscus	*Hibiscus poeppigii*	4
mahoe*	*Hibiscus tiliaceus*	
marsh pennywort	*Hydrocotyle umbellata*	
night-blooming cereus*	*Hylocereus undatus*	
spider lily	*Hymenocallis latifolia*	
wild indigo	*Indigofera miniata*	
Florida Keys indigo	*Indigofera mucronata var. keyensis*	4
wild indigo*	*Indigofera spicata*	
moon-flower	*Ipomoea alba*	
morning glory	*Ipomoea indica var. acuminata*	

* Non-native Species

Long Key State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
railroad vine	*Ipomoea pes-caprae ssp. brasiliensis*	
moonvine	*Ipomoea violaceae*	
bloodleaf	*Iresine diffusa*	
beach elder	*Iva imbricata*	
sky blue morning glory	*Jacquemontia pentanthos*	4
joewood	*Jacquinia keyensis*	4, 12
black ironwood	*Krugiodendron ferreum*	
white mangrove	*Languncularia racemosa*	
wild lantana	*Lantana involucrata*	
wild bamboo	*Lasiacis divaricata*	
peppergrass	*Lepidium virginicum*	
green sprangle top	*Leptochloa dubia*	
lead tree*	*Leucaena leucocephala*	
sea lavender	*Limonium carolinianum*	
Christmas berry	*Lycium carolinianum*	
wild tamarind+	*Lysiloma latisiliquum*	
wild dilly	*Manilkara jaimiqui subsp. emarginata*	12
sapodilla*	*Manilkara zapota*	
mayten	*Maytenus phyllanthoides*	4
marsh elder	*Melanthera nivea*	
poor man's patch	*Mentzelia floridana*	
poisonwood	*Metopium toxiferum*	
key grass	*Monanthochloe littoralis*	
Indian mulberry*	*Morinda citrifolia*	
cheeseweed	*Morinda royoc*	
sensitive plant	*Neptunia pubescens var. pubescens*	
ground orchid*	*Oeceoclades maculata*	
prickly-pear cactus	*Opuntia stricta*	3
jumping cactus	*Opuntia triacantha*	4
lady's sorrel	*Oxalis corniculata*	
beach grass	*Panicum amarum*	
pellitory	*Parietaria floridana*	
coral panicum	*Paspalidium chapmanii*	
salt joint grass	*Paspalum setaceum*	
salt joint grass	*Paspalum vaginatum*	
corky-stemmed passionflower	*Passiflora suberosa*	
wild allamanda	*Pentalinon luteum*	
creeping charlie	*Phyla nodiflora*	
Rock Carolina leaf flower	*Phyllanthus caroliniensis var. saxicola*	
Mascarene island leafflower*	*Phyllanthus tenellus*	
ground cherries	*Physalis walteri*	
tree cactus	*Pilosocereus robinii*	12
Jamaica dogwood	*Piscidia piscipula*	
cockspur	*Pisonia aculeata*	

* Non-native Species

Long Key State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
blackbead	*Pithecellobium keyense*	
cat's claw	*Pithecellobium unguis-cati*	
marsh fleabane	*Pluchea odorata*	
wild plumbago	*Plumbago scandens*	
wild poinsettia	*Poinsettia cyathophora*	
wild poinsettia	*Poinsettia heterophylla*	
rustweed	*Polypremum procumbens*	
purslane	*Portulaca oleracea*	
purslane	*Portulaca rubricaulis*	
Sargent's cherry palm	*Pseudophoenix sargentii ssp. sargentii*	3, 12
wild coffee	*Psychotria nervosa*	
white indigo-berry	*Randia aculeata*	
darling plum	*Reynosia septentrionalis*	12
mangrove rubber vine	*Rhabdadenia biflora*	
red mangrove	*Rhizophora mangle*	
least snoutbean	*Rhynchosia minima*	
rougeberry	*Rivina humilis*	
wild lettuce*	*Rorippa palustris*	
Britton's wild petunia*	*Ruellia brittoniana*	
cabbage palm	*Sabal palmetto*	
annual glasswort	*Salicornia bigelovii*	
woody glasswort	*Salicornia perennis*	
bowstring hemp*	*Sansevieria hyacinthoides*	
soapberry	*Sapindus saponaria*	
milkweed vine	*Sarcostemma clausum*	
inkberry	*Scaevola plumieri*	1
beach naupaka*	*Scaevola sericea*	
Florida boxwood	*Schaefferia frutescens*	
Brazilian pepper*	*Schinus terebinthifolius*	
gulf graytwig	*Schoepfia chrysophylloides*	
Bahama senna	*Senna mexicana var. chapmanii*	
dangle-pod	*Sesbania herbacea*	
sea purslane	*Sesuvium portulacastrum*	
foxtail grass	*Setaria macrosperma*	
spreading fan petals	*Sida abutifolia*	
broomweed	*Sida acuta*	
fringed fanpetals	*Sida ciliaris*	
Indian hemp	*Sida rhombifolia*	
saffron plum	*Sideroxylon celastrinum*	
mastic	*Sideroxylon foetidissimum*	
greenbrier	*Smilax havanensis*	
American black nightshade	*Solanum americanum*	
Bahama nightshade	*Solanum bahamense*	
Necklace pod *	*Sophora tomentosa var. occidentalis*	

*** Non-native Species**

Long Key State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
necklace-pod	*Sophora tomentosa var. truncata*	
saltmeadow cordgrass	*Spartina patens*	
prickly cordgrass	*Spartina spartinae*	
Florida false buttonweed	*Spermacoce floridana*	
coral dropseed grass	*Sporobolus domingensis*	
West Indian dropseed*	*Sporobolus indicus var.pyramidalis*	
whorled dropseed	*Sporobolus pyramidatus*	
coastal dropseed	*Sporobolus virginicus*	
blue porterweed	*Stachytarpheta jamaicensis*	
St. Augustine grass*	*Stenotaphrum secundatum*	
pencil flower	*Stylosanthes hamata*	
sea blite	*Suaeda linearis*	
bay-cedar	*Suriana maritima*	
West Indian mahogany+	*Swietenia mahagoni*	
arrowhead vine*	*Syngonium podophyllum*	
yellow elder*	*Tecoma stans*	
portia*	*Thespesia populnea*	
Key thatch	*Thrinax morrisii*	12
Florida thatch palm	*Thrinax radiata*	12
stiff-leaved wild pine	*Tillandsia fasciculata var. densispica*	12
twisted air plant	*Tillandsia flexousa*	12
silvery wild pine	*Tillandsia paucifolia*	
Spanish moss	*Tillandsia usneoides*	
giant wild pine	*Tillandsia utriculata*	12
soldier bush	*Tournefortia volubilis*	
oyster plant*	*Tradescantia spathacea*	
desert horsepurslane	*Trianthema portulacastrum*	
puncture weed*	*Tribulus cistoides*	
Mexican daisy*	*Tridax procumbens*	
yellow alder*	*Turnera ulmifolia*	
sea oats	*Uniola paniculata*	
Dominican panicum	*Urochloa adspersa*	
simpleleaf chastetree*	*Vitex trifolia*	
waltheria	*Waltheria indica*	
Washington palm*	*Washingtonia robusta*	
hog-plum	*Ximenia americana*	
Spanish bayonet	*Yucca aloifolia*	
wild lime	*Zanthoxylum fagara*	

* **Non-native Species**

Long Key State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
	INVERTEBRATES	
Wide banded forest snail	*Drymaeus multilineatus latizonatus*	12, 76
Florida tree snail	*Liguus fasciatus*	12
Banded tree snail	*Orthalicus floridensis*	12
Crab spider	*Gasteracantha cancriformis*	All types
Golden orb spider	*Nephila clavipes*	All types
Preying mantis	*Stagmomantis carolina*	All types
Gulf Fritillary Butterfly	*Agraulis vanillae*	All types
Orange Sulphur Butterfly	*Colias eurytheme*	All types
Barred sulphur	*Eurema daira daira*	All types
Zebra Butterfly	*Heliconius charithonius*	All types
Fiery skipper	*Hylephila phyleus*	All types
Cassius blue	*Leptotes cassius theonus*	All types
GiantSwallowtail Butterfly	*Papilio cresphontes*	All types
Buckeye butterfly	*Precis coenia*	All types
Long-tailed Skipper	*Urbanus proteus*	All types
Loggerhead sponge	*Speciospongia vesparia*	69, 71
Cuban garden snail*	*Zacrysia provisoria*	12,81
Portugese man-of-war	*Physalia physalis*	Offshore
Upside-down jellyfish	*Cassiopeia xamachana*	76
Starlet coral	*Siderastrea radians*	68, 69, 71
Finger coral	*Porites porites*	69, 69, 71
Queen conch	*Strombus gigas*	68, 69, 71
Pink shrimp	*Penaens duorarum*	68, 69, 71, 76
Crawfish	*Panuliris argus*	68, 69, 71, 76
Mangrove crab	*Aratus pisonii*	76
Mangrove crab	*Goniopsis cruentata*	76
Fiddler crab	*Uca pugilator*	76
Barnacle	*Lepas anatifera*	76
Oyster	*Isognomon alatus*	76
Land hermit crab	*Coenobita clypeatus*	12, 81
Ant	B*rachymyrmex depilis*	All types
Ant	*Camponotus planatus*	All types
Ant	*Hypoponera opaciceps*	All types
Ant	*Quadristruma emmae*	All types
Ant	*Strumigenys gundlachi*	All types
Fire ant *	*Solenopsis invicta*	All types
Ant	*Tapinoma melanocephalum*	All types
Ant	*Trachymyrmex septentrionalis*	All types
Ant	*Trachymyrmex* sp. nr. j*amaicensis*	All types
Ant	*Xenomyrmex floridanus*	All types
	FISH	

* Non-native Species

Long Key State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Sergeant major	*Abudefduf saxatilis*	71,76, 77
Surgeonfish	*Acanthurus bahianus*	71,76, 77
Doctorfish	*Acanthurus chirurgus*	71,76, 77
Blue tang	*Acanthurus coeruleus*	71,76, 77
Eagle ray	*Aetobatus narinari*	71,76, 77
Bonefish	*Albula vulpes*	71,76, 77
Orange filefish	*Aleterus schoepfi*	71,76, 77
Scrawled filefish	*Aluterus scriptus*	71,76, 77
Porkfish	*Anisotremus virginicus*	71,76, 77
Sea bream	*Archosargus rhomboidalis*	71,76, 77
Trumpetfish	*Aulostomus maculatus*	71,76, 77
Spotfin hogfish	*Bodianus pulchellus*	71,76, 77
Spanish hogfish	*Bodianus rufus*	71,76, 77
Saucereye porgy	*Calamus calamus*	71,76, 77
Sharpnose puffer	*Canthigaster rostrata*	71,76, 77
Bar jack	*Caranx ruber*	71,76, 77
Snook	*Centropomus undecimalis*	71,76, 77
Atlantic spadefish	*Chaetodiperus faber*	71,76, 77
Foureye butterflyfish	*Chaetodon capistratus*	71,76, 77
Spotfin butterflyfish	*Chaetodon ocellatus*	71,76, 77
Reef butterflyfish	*Chaetodon sedentarius*	71,76, 77
Banded butterflyfish	*Chaetodon striatus*	71,76, 77
Bluelip parrotfish	*Cryptotomus roseus*	71,76, 77
Sea trout	*Cynoscion nebulosus*	71,76, 77
Southern stingray	*Dasyatis americana*	71,76, 77
Balloonfish	*Diodon holocanthus*	71,76, 77
Porcupinefish	*Diodon hystrix*	71,76, 77
Spottail pinfish	*Diplodus holbrooki*	71,76, 77
Sharksucker	*Echeneis naucrates*	71,76, 77
Rock hind	*Epinephelus adscensionis*	71,76, 77
Graysby	*Epinephelus cruentatus*	71,76, 77
Red grouper	*Epinephelus morio*	71,76, 77
Nassau grouper	*Epinephelus striatus*	71,76, 77
Spotted drum	*Equetus punctatus*	71,76, 77
Mosquitofish	*Gambusia affinis*	71, 76, 77
Yellowfin mojarra	*Gerres cinereus*	71,76, 77
Nurse shark	*Ginglymostoma cirratum*	71,76, 77
Goldspot goby	*Gnatholepis thompsoni*	71,76, 77
Neon goby	*Gobiosoma oceanops*	71,76, 77
Green moray	*Gymnothorax funebris*	71,76, 77
Spotted moray	*Gymnothorax moringa*	71,76, 77
Caesar grunt	*Haemulon carbonarium*	71,76, 77
Smallmouth grunt	*Haemulon chrysargyreum*	71,76, 77
French grunt	*Haemulon flavolineatum*	71,76, 77

*** Non-native Species**

Long Key State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Spanish grunt	*Haemulon macrostomum*	71,76, 77
Cottonwick	*Haemulon melanurum*	71,76, 77
Sailor's choice	*Haemulon parra*	71,76, 77
White grunt	*Haemulon plumieri*	71,76, 77
Bluestriped grunt	*Haemulon sciurus*	71,76, 77
Yellowhead wrasse	*Halichoeres garnoti*	71,76, 77
Ballyhoo	*Hemiramphus brasiliensis*	71,76, 77
Blue angelfish	*Holacanthus bermudensis*	71,76, 77
Queen angelfish	*Holacanthus ciliaris*	71,76, 77
Bermuda chub	*Kyphosus sectartrix*	71,76, 77
Hogfish	*Lachnolaimus maximus*	71,76, 77
Spotted trunkfish	*Lactophrys bicaudalis*	71,76, 77
Honeycomb cowfish	*Lactophrys polygonia*	71,76, 77
Mutton snapper	*Lutjanus analis*	71,76, 77
Schoolmaster	*Lutjanus apodus*	71,76, 77
Gray snapper	*Lutjanus griseus*	71,76, 77
Dog snapper	*Lutjanus jocu*	71,76, 77
Mahogany snapper	*Lutjanus mahogoni*	71,76, 77
Lane snapper	*Lutjanus synagris*	71,76, 77
Tarpon	*Megalops atlanticus*	71,76, 77
Black mullet	*Mugil cephalus*	71,76, 77
Black grouper	*Mycteroperca bonaci*	71,76, 77
Yellowtail snapper	*Ocyurus chrysurus*	71,76, 77
Gray angelfish	*Pomacanthus arcuatus*	71,76, 77
French angelfish	*Pomacanthus paru*	71,76, 77
Dusky damselfish	*Pomacentrus fuscus*	71,76, 77
Beaugregory	*Pomacentrus leucostictus*	71,76, 77
Bicolor damselfish	*Pomacentrus partitus*	71,76, 77
Three spot damselfish	*Pomacentrus planifrons*	71,76, 77
Cocoa damselfish	*Pomacentrus variabilis*	71,76, 77
Spotted goatfish	*Pseudupeneus maculatus*	71,76, 77
Midnight parrotfish	*Scarus coelestinus*	71,76, 77
Blue parrotfish	*Scarus coeruleus*	71,76, 77
Striped parrotfish	*Scarus croicensis*	71,76, 77
Rainbow parrotfish	*Scarus guacamaia*	71,76, 77
Princess parrotfish	*Scarus taeniopterus*	71,76, 77
Queen parrotfish	*Scarus vetula*	71,76, 77
Greenblotch parrotfish	*Sparisoma atomarium*	71,76, 77
Redband parrotfish	*Sparisoma aurofrenatum*	71,76, 77
Redtail parrotfish	*Sparisoma chrysopterum*	71,76, 77
Bucktooth parrotfish	*Sparisoma radians*	71,76, 77
Yellowtail parrotfish	*Sparisoma rubripinne*	71,76, 77
Stoplight parrotfish	*Sparisoma viride*	71,76, 77
Bandtail puffer	*Sphoeroides spengleri*	71,76, 77

* Non-native Species

Long Key State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Great barracuda	*Sphyraena barracuda*	71,76, 77
Hammerhead shark	*Sphyrna lewini*	71,76, 77
Permit	*Trachinotus falcatus*	71,76, 77
Yellow stingray	*Urolophus jamaicensis*	71,76, 77

Reference for additional species:

Ray, G. C., and C. R. Robins, 1985. A field guide to Atlantic coast fishes of North America. Houghton Mifflin Company, 512 pp.

AMPHIBIANS

Green tree frog	*Hyla cinero*	12
Cuban tree frog *	*Hyla septentrionales*	12, 81

REPTILES

Striped mud turtle	*Kinosternon bauri*	76
Florida box turtle	*Terrapene carolina bauri*	12, 81
Mangrove terrapin	*Malaclemys terrapin rhizophorarium*	76
Atlantic green turtle	*Chelonia mydas*	Offshore
Atlantic hawksbill	*Eretmochelys imbricata*	Offshore
Atlantic loggerhead	*Caretta caretta*	Offshore
Atlantic ridley	*Lepidochelys kempii*	Offshore
Atlantic leatherback	*Dermochelys coriacea*	Offshore
Ashy gecko *	*Spaerodactylus cinereus*	12, 81
Reef gecko	*Spaerodactylus notatus*	12, 81
Green anole	*Anolis carolinensis*	12, 81
Cuban brown anole *	*Anolis sagrei sagrei*	12, 81
Green iguana *	*Iguana iguana*	All
Southeastern five-lined skink	*Eumeces inexpectatus*	1, 12
Six-lined racerunner	*Cnemidophorus sexlineatus sexlineatus*	1, 4, 12
Florida Keys mole skink	*Eumeces egregius egregius*	4, 12, 81
Eastern narrowmouth toad	*Gastrophryne carolinensis carolinensis*	12
Cuban treefrog *	*Osteopilus septentrionalis*	12, 81
Florida water snake	*Nerodia fasciata pictiventris*	76
Mangrove water snake	*Natrix fasciata compressicauda*	76
Florida brown snake	*Storeria dekayi victa*	12
Peninsula ribbon snake	*Thamnophis sauritus sackeni*	12
Southern ringneck snake	*Diadophys punctatus*	12
Southern black racer	*Coluber constrictor priapus*	12
Rough green snake	*Opheodris aestivus*	12
Eastern indigo snake	*Drymarchon corais couperi*	12
Corn snake	*Elaphe guttata*	12, 81
Rosy rat snake	*Elaphe guttata rosacea*	12

* Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Key rat snake	*Elaphe obsoleta deckerti*	12
Scarlet king snake	*Lampropeltis trianglum elapsoides*	12, 81
Florida cottonmouth	*Agkistrodon piscivorus conanti*	3, 4, 76
	BIRDS	
Common loon	*Gavia immer*	76
Brown pelican	*Pelecanus occidentalis*	76
Double-crested cormorant	*Phalacrocorax auritus*	76
Magnificent frigatebird	*Fregata magnificens*	Overhead
Great blue heron	*Ardea herodias*	76
Great egret	*Casmerodius albus*	76
Snowy egret	*Egretta thula*	76
Reddish egret	*Egretta rufescens*	76
Cattle egret	*Bulbulcus ibis*	81
Louisiana heron	*Egretta tricolor*	76
Little blue heron	*Egretta caerulea*	76
Green heron	*Butorides striatus*	76
Yellow-crowned night heron	*Nycticorax violaceus*	1, 76
Woodstork	*Mycteria americana*	76
White ibis	*Eudocimus albus*	76
Roseate spoonbill	*Ajaia ajaja*	76
Blue-winged teal	*Anas discors*	76
Lesser scaup	*Aythya affinis*	76
Red-breasted merganser	*Mergus serrator*	Offshore
Turkey vulture	*Cathartes aura*	All types
Swallow-tailed kite	*Elanoides forficatus*	All types
Bald eagle	*Haliaeetus leucocephalus*	12,76
Sharp-shinned hawk	*Accipiter striatus*	12, 81
Short-tailed hawk	*Buteo brachyurus*	Overflying
Red-shouldered hawk	*Buteo lineatus*	12, 81
Broad-winged hawk	*Buteo platypterus*	12, 81
Swainson's hawk	*Buteo swainsoni*	Overflying
Northern harrier	*Circus cyaneus*	81
Osprey	*Pandion haliaetus*	76
Merlin	*Falco columbarius*	12, 81
Peregrine falcon	*Falco peregrinus*	12, 81
American kestrel	*Falco sparverinus*	81
Limpkin	*Aramus guarauna pictus*	76
Sora rail	*Porzana carolina*	76
Killdeer	*Charadrius vociferus*	1
Black-bellied plover	*Pluvialis squatarola*	1
Black-necked stilt	*Himantopus mexicanus*	76
Spotted sandpiper	*Actitis macularia*	1, 4
Solitary sandpiper	*Tringa solitaria*	1

*** Non-native Species**

Long Key State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Willet	*Catoptrophorus semipalmatus*	1, 4
Greater yellowlegs	*Tringa melanoleuca*	1, 4
Lesser yellowlegs	*Tringa flavipes*	1, 4
Ruddy turnstone	*Arenaria interpres*	1
Sanderling	*Calidris alba*	1
Least sandpiper	*Calidris minutilla*	1
Short-billed dowitcher	*Limnodromus griseus*	1
Red knot	*Calidris canutus*	1
Whimbrel	*Numenius phaeopus*	1
Laughing gull	*Larus atricilla*	1, 4
Ring-billed gull	*Larus delawarensis*	1
Herring gull	*Larus argentatus*	1
Common tern	*Sterna hirundo*	1
Least tern	*Sterna albifrons*	1
Royal tern	*Sterna maxima*	1
Black skimmer	*Rynchops niger*	1
White-crowned pigeon	*Patagioenas leucocephala*	12, 76
Mourning dove	*Zenaida macroura*	81
Ground dove	*Columbina passerina*	81
Black-billed cuckoo	*Coccyzus erythropthalmus*	12, 76
Yellow-billed cuckoo	*Coccyzus americanus*	12, 76
Mangrove cuckoo	*Coccyzus minor*	12, 76
Smooth-billed ani	*Crotophaga ani*	12
Chuck-will's widow	*Caprimulgus carolinensis*	12
Whip-poor-will	*Caprimulgus vociferus*	12
Common nighthawk	*Chordeiles minor*	Overflying
Chimney swift	*Chaetura pelagica*	Overflying
Ruby-throated hummingbird	*Archilochus colubris*	81
Belted kingfisher	*Ceryle alcyon*	76
Red-bellied woodpecker	*Melanerpes carolinus*	12, 81
Pileated woodpecker	*Dryocopus pileatus*	Migrating
Eastern kingbird	*Tyrannus tyrannus*	12, 81
Gray kingbird	*Tyrannus dominicensis*	12, 81
Great crested flycatcher	*Myiarchus crinitus*	12, 81
Eastern phoebe	*Sayornis phoebe*	12, 81
Eastern wood pewee	*Contopus virens*	12, 81
Barn swallow	*Hirundo rustica*	Overflying
Purple martin	*Progne subis*	Overflying
Fish crow	*Corvus ossifragus*	All types
Mockingbird	*Mimus polyglottos*	12, 81
Gray catbird	*Dumetella cardinensis*	12, 81
Brown thrasher	*Toxotoma rufum*	12, 81
American robin	*Turdus migratorius*	12, 81
Gray-cheeked thrush	*Catharus minimus*	12, 81

* Non-native Species

Long Key State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Blue-gray gnatcatcher	*Polioptila caerulea*	12
Rugy-crowned kinglet	*Regulus calendula*	12, 81
Cedar waxwing	*Bombycilla cedrorum*	12, 81
Loggerhead shrike	*Lanius ludovicianus*	81
White-eyed vireo	*Vireo griseus*	12
Yellow-throated vireo	*Vireo flavifrons*	12
Solitary vireo	*Vireo solitarius*	12
Black-whiskered vireo	*Vireo altiloquus*	12
Red-eyed vireo	*Vireo olivaceus*	12
Bahama bananaquit	*Coereba flaveola*	12
Black-and-white warbler	*Mniotilta varia*	12, 81
Prothonotary warbler	*Protonotaria citrea*	12
Worm-eating warbler	*Helmitheros vermivorous*	12
Northern parula	*Parula americana*	12, 81
Yellow warbler	*Dendroica petechi*	12
Cape May warbler	*Dendroica tigerina*	12
Black-throated blue warbler	*Dendroica caerulescens*	12
Yellow-rumped warbler	*Dendroica coronata*	12
Yellow-throated warbler	*Dendroica dominica*	12
Blackpoll warbler	*Dendroica striata*	12
Prairie warbler	*Dendroica discolor*	12
Palm warbler	*Dendroica palmarum*	12
Magnolia warbler	*Dendroica magnolia*	12
Ovenbird	*Seiurus aurocapilla*	12
Northern waterthrush	*Seiurus noveboracensis*	12
Louisiana waterthrush	*Seiurus motacilla*	12
Common yellowthroat	*Geothlypis trichas*	12
American redstart	*Setophaga ruticilla*	12
Cardinal	*Cardinal cardinalis*	12
Rose-breasted grosbeak	*Pheucticus ludovicianus*	12
Indigo bunting	*Passerina cyanea*	81
Painted bunting	*Passerina ciris*	81
Savannah sparrow	*Passerculus sandwichensis*	12
Chipping sparrow	*Spizella passerina*	12
Bobolink	*Dolichonyx oryzivorous*	81
Red-winged blackbird	*Agelaius phoeniceus*	76, 81
Common grackle	*Quiscalus quiscula*	All types
Northern oriole	*Icterus galbula*	12
Brown-headed cowbird	*Molothrus ater*	12
Summer tanager	*Piranga rubra*	81
House sparrow *	*Passer domesticus*	81
	MAMMALS	
Opossum	*Didelphis marsupialis*	All types

* Non-native Species

Long Key State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Raccoon	*Procyon lotor*	All types
Black rat	*Rattus rattus*	All types
Marsh rabbit	*Sylvilagus palustria*	3, 4, 12
West Indian manatee	*Trichechus manatus latirostris*	Offshore
Atlantic bottlenose dolphin	*Tursiops truncatus*	Offshore

*** Non-native Species**

TERRESTRIAL

1. Beach Dune
2. Bluff
3. Coastal Berm
4. Coastal Rock Barren
5. Coastal Strand
6. Dry Prairie
7. Maritime Hammock
8. Mesic Flatwoods
9. Coastal Grasslands
10. Pine Rockland
11. Prairie Hammock
12. Rockland Hammock
13. Sandhill
14. Scrub
15. Scrubby Flatwoods
16. Shell Mound
17. Sinkhole
18. Slope Forest
19. Upland Glade
20. Upland Hardwood Forest
21. Upland Mixed Forest
22. Upland Pine Forest
23. Xeric Hammock

PALUSTRINE

24. Basin Marsh
25. Basin Swamp
26. Baygall
27. Bog
28. Bottomland Forest
29. Depression Marsh
30. Dome
31. Floodplain Forest
32. Floodplain Marsh
33. Floodplain Swamp
34. Freshwater Tidal Swamp
35. Hydric Hammock
36. Marl Prairie
37. Seepage Slope
38. Slough
39. Strand Swamp
40. Swale
41. Wet Flatwoods
42. Wet Prairie

LACUSTRINE

43. Clastic Upland Lake
44. Coastal Dune Lake
45. Coastal Rockland Lake
46. Flatwood/Prairie Lake
47. Marsh Lake

LACUSTRINE—Continued

48. River Floodplain Lake
49. Sandhill Upland Lake
50. Sinkhole Lake
51. Swamp Lake

RIVERINE

52. Alluvial Stream
53. Blackwater Stream
54. Seepage Stream
55. Spring-Run Stream

ESTUARINE

56. Estuarine Composite Substrate
57. Estuarine Consolidated Substrate
58. Estuarine Coral Reef
59. Estuarine Grass Bed
60. Estuarine Mollusk Reef
61. Estuarine Octocoral Bed
62. Estuarine Sponge Bed
63. Estuarine Tidal Marsh
64. Estuarine Tidal Swamp
65. Estuarine Unconsolidated Substrate
66. Estuarine Worm Reef

MARINE

67. Marine Algal Bed
68. Marine Composite Substrate
69. Marine Consolidated Substrate
70. Marine Coral Reef
71. Marine Grass Bed
72. Marine Mollusk Reef
73. Marine Octocoral Bed
74. Marine Sponge Bed
75. Marine Tidal Marsh
76. Marine Tidal Swamp
77. Marine Unconsolidated Substrate
78. Marine Worm Reef

SUBTERRANEAN

79. Aquatic Cave
80. Terrestral Cave

MISCELLANEOUS

81. Ruderal
82. Developed

MTC Many Types Of Communities

OF Overflying

Addendum 5—Designated Species List

Long Key State Park

Designated Species

Plants

Common Name/ *Scientific Name*	Designated Species Status FDA	USFWS	FNAI
Cinnecord *Acacia choriophylla* +	E		G4,S1
Barbed-wire cactus *Acanthocereus pentagonus*	T		
Golden leather fern *Acrostichum aureum*	T		G5,S3
Blue mistflower *Ageratum littorale*	E		G3,S2
Sea lavender *Argusia gnaphalodes*	E		
Garber's spurge *Chamaesyce garberi*	E	T	G1,S1
Cape Sable thoroughwort *Chromolaena frustrata*	E		
Mexican hibiscus *Cienfuegosia yucatanensis*	E		G2,G4,S1
Cordia *Cordia globosa*	E		
Rhacoma *Crossopetalum rhacoma*	T		
Milkbark *Drypetes diversifolia*	E		G3,G4,S2
Dollar orchid *Encyclia boothiana*	E		G4?T4?Q,S1
Black torch *Erithalis fruticosa*	T		
Creeping morning glory *Evolvulus convolvuloides*	E		
Wild cotton *Gossypium hirsutum*	E		G4,G5,S3?
Lignum vitae *Guaiacum sanctum*	E		G4,G5,S2
Wild hibiscus *Hibiscus poeppigii*	E		
Florida Key's indigo *Indigofera mucronata* var. *keyensis*	E		
sky blue morning glory *Jacquemontia pentanthos*	T		
Joewood *Jacquinia keyensis*	T		G4,S3
wild dilly *Manilkara jaimiqui subsp. emarginata*	T		

Long Key State Park

Designated Species

Plants

Common Name/ *Scientific Name*	**Designated Species Status** FDA	USFWS	FNAI
Mayten *Maytenus phyllanthoides*	T		
Prickly pear cactus *Opuntia stricta*	T		
Jumping cactus *Opuntia triacantha*	E		G2,G4,S1
Tree cactus *Pilosocereus robinii*	E	E	G1,S1
Sargent's cherry palm *Pseudophoenix sargentii ssp. sargentii*	E		G3,G4,S1
Red ironwood *Reynosia septentrionalis*	T		
Inkberry *Scaevola plumieri*	T		
Key thatch palm *Thrinax morrisii*	E		G4,G5,S3
Florida thatch palm *Thrinax radiata*	E		G4,G5,S2
Giant air plant, wild pine *Tillandsia fasciculata*	E		
Twisted air plant *Tillandsia flexuosa*	T		G4,S3
Giant wild pine *Tillandsia utriculata*	E		

Long Key State Park

Designated Species

Animals

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
REPTILES			
Atlantic loggerhead turtle *Caretta caretta*	T	T	G3,S3
Atlantic green turtle *Chelonia mydas*	E	E	G3,S2
Leatherback turtle *Dermochelys coriacea*	E	E	G3,S2
Eastern indigo snake *Drymarchon corais couperi*	T	T	G4T3,S3
Red rat snake *Elaphe guttata*			G5T2Q,S2
Atlantic hawksbill turtle *Eretmochelys imbricata*	E	E	G3,S1
Florida Keys mole skink *Eumeces egregius egregius*	SSC		G4T2,S1
Atlantic ridley turtle *Lepidochelys kempi*	E	E	G1,S1
Florida brown snake *Storeria dekayi*	T		G5T1Q,S1
Florida ribbon snake *Thamnophis sauritus*	T		G5T1Q,S1
BIRDS			
Roseate spoonbill *Ajaia ajaja*	SSC		G5,S2S3
Limpkin *Aramus guarauna pictus*	SSC		G5,S3
Great white heron *Ardea herodias*			G5T2,S2
Short-tailed hawk *Buteo swainsoni*			G4?,S3
Mangrove cuckoo *Coccyzus minor*			G4,S3
White crowned pigeon *Patagioenas leucocephala*	T		G3,S3
Prairie warbler *Dendroica discolor*			G5T3,S3
Little blue heron *Egretta caerulea*	SSC		G5,S4
Reddish egret *Egretta rufescens*	SSC		G4,S2
Snowy egret *Egretta thula*	SSC		G5,S4

Long Key State Park

Designated Species

Animals

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
Tricolored heron *Egretta tricolor*	SSC		G5,S4
Swallow-tailed kite *Elanoides forficatus*			G4,S2S3
White ibis *Eudocimus albus*	SSC		G5,S4
Merlin *Falco columbarius*			G4,SU
Peregrine falcon *Falco peregrinus*	E	E	G4,S2
American kestrel *Falco sparverinus*	T		G5T3T4,S3?
Magnificent frigatebird *Fregata magnificens*			G5,S1
Bald eagle *Haliaeetus leucocephalus*	T	T	G4,S3
Worm-eating warbler *Helmintheros vermivorous*			G5,S1
Woodstork *Mycteria americana*	E	E	G4,S2
Yellow-crowned night heron *Nycticorax violaceus*			G5,S3?
Osprey *Pandion haliaetus*	SSC		G5,S3S4
Brown pelican *Pelecanus occidentalis*	SSC		G4,S3
Black skimmer *Rynchops nigra*	SSC		G5,S3
Louisiana waterthrush *Seiurus motacilla*			G5,S3
American redstart *Setophaga ruticilla*			G5,S3
Least tern *Sterna antillarum*	T		G4,S3
Royal tern *Sterna maxima*			G5,S3
Black-whiskered vireo *Vireo altiloquus*			G5,S3
INVERTEBRATES			
Mangrove crab *Aratus pisonii*			G5,S2S3

Long Key State Park

Designated Species

Animals

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
Wide banded forest snail *Drymaeus multilineatus latizonatus*			G?T?,SU
Mangrove crab *Goniopsis cruentata*			G5,S3S4
Florida tree snail *Liguus fasciatus*	SSC		
Banded tree snail *Orthalicus floridensis*			G3,S3
MAMMALS			
West Indian manatee *Trichechus manatus latirostris*	E	E	G2S2

Rank Explanations
For FNAI Global Rank, FNAI State Rank, Federal Status, And State Status

The Nature Conservancy and the Natural Heritage Program Network (of which FNAI is a part) define an element as any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. An element occurrence (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element.

Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks to each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element occurrences, estimated abundance (number of individuals for species; area for natural communities), range, estimated adequately protected EOs, relative threat of destruction, and ecological fragility.

Federal and State status information is from the U.S. Fish and Wildlife Service; and the Florida Game and Freshwater Fish Commission (animals), and the Florida Department of Agriculture and Consumer Services (plants), respectively.

FNAI GLOBAL RANK DEFINITIONS

G1	=	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2	=	Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
G4	=	apparently secure globally (may be rare in parts of range)
G5	=	demonstrably secure globally
GH	=	of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
GX	=	believed to be extinct throughout range
GXC	=	extirpated from the wild but still known from captivity or cultivation
G#?	=	tentative rank (e.g.,G2?)
G#G#	=	range of rank; insufficient data to assign specific global rank (e.g., G2G3)
G#T#	=	rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
G#Q	=	rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
G#T#Q	=	same as above, but validity as subspecies or variety is questioned.
GU	=	due to lack of information, no rank or range can be assigned (e.g., GUT2).
G?	=	not yet ranked (temporary)
S1	=	Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2	=	Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
S4	=	apparently secure in Florida (may be rare in parts of range)
S5	=	demonstrably secure in Florida
SH	=	of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
SX	=	believed to be extinct throughout range
SA	=	accidental in Florida, i.e., not part of the established biota
SE	=	an exotic species established in Florida may be native elsewhere in North America
SN	=	regularly occurring, but widely and unreliably distributed; sites for conservation hard to determine
SU	=	due to lack of information, no rank or range can be assigned (e.g., SUT2).
S?	=	not yet ranked (temporary)

Rank Explanations
For FNAI Global Rank, FNAI State Rank, Federal Status, And State Status

LEGAL STATUS

N = Not currently listed, nor currently being considered for listing,by state or federal agencies.

FEDERAL **(Listed by the U. S. Fish and Wildlife Service - USFWS)**

LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.

PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.

LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.

PT = Proposed for listing as Threatened Species.

C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.

E(S/A) = Endangered due to similarity of appearance.

T(S/A) = Threatened due to similarity of appearance.

STATE

Animals **(Listed by the Florida Fish and Wildlife Conservation Commission - FFWCC)**

LE = Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.

LT = Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

LS = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

Plants **(Listed by the Florida Department of Agriculture and Consumer Services - FDACS)**

LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973,as amended.

LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

Addendum 6—Priority Schedule And Cost Estimates

Long Key State Park

Priority Schedule And Cost Estimates

Estimates are developed for the funding and staff resources needed to implement the management plan based on goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Resource Management

1.	Exotic vegetation removal. Estimated cost (annually):	$5,000.
2.	Continue planting vegetative buffer along fence-line adjacent to U.S. Highway 1. (0-5 years). Total estimated cost:	$7,500.
3.	Continue native species restoration planting (0-10 years). Estimated cost:	$50,000.
4.	Fund research on non-vascular plant inventory (0-10 years). Estimated cost:	$5,000.
5.	Fund research on Liguus tree snail population (0-10 years). Estimated cost:	$8,000.
6.	Fund research on listed species distribution in coastal rock barren (0-10 years). Estimated cost:	$8,000.

Operations

7.	Survey, post and fence all boundaries. Estimated cost:	$200,000.

Total Estimated Cost: $283,500.

Long Key State Park

Capital Improvements

Item	Quantity	Unit	Unit Price	Multiplier	Amount
Recreation Facilities					
6 Ft. Boardwalk	750.000	LF	$75.00	1.50	$84,375.00
Canoe Launch Renovations (ADA)	1.000	LS	$50,000.00	1.50	$75,000.00
Interpretive Exhibit Upgrades and Displays	1.000	LS	$35,000.00	1.50	$52,500.00
Medium Area Native Plant Buffer Landscape	1.000	LS	$50,000.00	1.50	$75,000.00
Nature Trail	6000.000	LF	$2.00	1.50	$18,000.00
Support Facilities					
Bathhouse Renovations (ADA)	2.000	LS	$150,000.00	1.50	$450,000.00
Repaved Parking (10 Car)	3.000	per 10	$6,000.00	1.50	$27,000.00
Two Lane Road (repaving)	1.000	mile	$128,356.00	1.50	$192,534.00
			Sub-Total		$974,409.00
			20 Percent Contingency Fee		$194,881.80
			Total		**$1,169,290.80**

NOTE: These preliminary cost estimates, based on Divisions standards, do not include costs for site-specific elements not evident at the conceptual level of planning. Additional costs should be investigated before finalizing budget estimates. All items fall in the new facility construction category © of the uniform cost accounting system required by ch. 259.037 F.S.

ADDITIONAL INFORMATION

FNAI Descriptions

DHR Cultural Management Statement

Descriptions Of Natural Communities Developed By FNAI

This summary presents the hierarchical classification and brief descriptions of 82 Natural Communities developed by Florida Natural Areas Inventory and identified as collectively constituting the original, natural biological associations of Florida.

A Natural Community is defined as a distinct and recurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment. For more complete descriptions, see Guide to the Natural Communities of Florida, available from Florida Department of Natural Resources.

The levels of the hierarchy are:

Natural Community Category - defined by hydrology and vegetation.

Natural Community Groups - defined by landform, substrate, and vegetation.

Natural Community Type - defined by landform and substrate; soil moisture condition; climate; fire; and characteristic vegetation.

TERRESTRIAL - Upland habitats dominated by plants which are not adapted to anaerobic soil conditions imposed by saturation or inundation for more than 10% of the growing season.

XERIC UPLANDS - very dry, deep, well-drained hills of sand with xeric-adapted vegetation.

Sandhill - upland with deep sand substrate; xeric; temperate; frequent fire (2-5 years); longleaf pine and/or turkey oak with wiregrass understory.

Scrub - old dune with deep fine sand substrate; xeric; temperate or subtropical; occasional or rare fire (20 - 80 years); sand pine and/or scrub oaks and/or rosemary and lichens.

Xeric Hammock - upland with deep sand substrate; xeric-mesic; temperate or subtropical; rare or no fire; live oak and/or sand live oak and/or laurel oak and/or other oaks, sparkleberry, saw palmetto.

COASTAL UPLANDS - substrate and vegetation influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms.

Beach Dune - active coastal dune with sand substrate; xeric; temperate or subtropical; occasional or rare fire; sea oats and/or mixed salt-spray tolerant grasses and herbs.

Coastal Berm - old bar or storm debris with sand/shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; buttonwood, mangroves, and/or mixed halophytic herbs and/or shrubs and trees.

Coastal Grassland - coastal flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; grasses, herbs, and shrubs with or without slash pine and/or cabbage palm.

Coastal Rock Barren - flatland with exposed limestone substrate; xeric; subtropical; no fire; algae, mixed halophytic herbs and grasses, and/or cacti and stunted shrubs and trees.

Coastal Strand - stabilized coastal dune with sand substrate; xeric; subtropical or temperate; occasional or rare fire; dense saw palmetto and/or seagrape and/or mixed stunted shrubs, yucca, and cacti.

Maritime Hammock - stabilized coastal dune with sand substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods and/or live oak.

Shell Mound - Indian midden with shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods.

MESIC UPLANDS - dry to moist hills of sand with varying amounts of clay, silt or organic material; diverse mixture of broadleaved and needleleaved temperate woody species.

Bluff - steep slope with rock, sand, and/or clay substrate; hydric-xeric; temperate; sparse grasses, herbs and shrubs.

Slope Forest - steep slope on bluff or in sheltered ravine; sand/clay substrate; mesic-hydric; temperate; rare or no fire; magnolia, beech, spruce pine, Shumard oak, Florida maple, mixed hardwoods.

Upland Glade - upland with calcareous rock and/or clay substrate; hydric-xeric; temperate; sparse mixed grasses and herbs with occasional stunted trees and shrubs, e.g., eastern red cedar.

Upland Hardwood Forest - upland with sand/clay and/or calcareous substrate; mesic; temperate; rare or no fire; spruce pine, magnolia, beech, pignut hickory, white oak, and mixed hardwoods.

Upland Mixed Forest - upland with sand/clay substrate; mesic; temperate; rare or no fire; loblolly pine and/or shortleaf pine and/or laurel oak and/or magnolia and spruce pine and/or mixed hardwoods.

Upland Pine Forest - upland with sand/clay substrate; mesic-xeric; temperate; frequent or occasional fire; longleaf pine and/or loblolly pine and/or shortleaf pine, southern red oak, wiregrass.

ROCKLANDS - low, generally flat limestone outcrops with tropical vegetation; or limestone exposed through karst activities with tropical or temperate vegetation.

Pine Rockland - flatland with exposed limestone substrate; mesic-xeric; subtropical; frequent fire; south Florida slash pine, palms and/or hardwoods, and mixed grasses and herbs.

Rockland Hammock - flatland with limestone substrate; mesic; subtropical; rare or no fire; mixed tropical hardwoods, often with live oak.

Sinkhole - karst feature with steep limestone walls; mesic-hydric; subtropical or temperate; no fire; ferns, herbs, shrubs, and hardwoods.

MESIC FLATLANDS - flat, moderately well-drained sandy substrates with admixture of organic material, often with a hard pan.

Dry Prairie - flatland with sand substrate; mesic-xeric; subtropical or temperate; annual or frequent fire; wiregrass, saw palmetto, and mixed grasses and herbs.

Mesic Flatwoods - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash

pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

Prairie Hammock - flatland with sand/organic soil over marl or limestone substrate; mesic; subtropical; occasional or rare fire; live oak and/or cabbage palm.

Scrubby Flatwoods - flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; longleaf pine or slash pine with scrub oaks and wiregrass understory.

PALUSTRINE - Wetlands dominated by plants adapted to anaerobic substrate conditions imposed by substrate saturation or inundation during 10% or more of the growing season. Includes non-tidal wetlands; tidal wetlands with ocean derived salinities less than 0.5 ppt and dominance by salt-intolerant species; small (less than 8 ha), shallow (less than 2 m deep at low water) water bodies without wave-formed or bedrock shoreline; and inland brackish or saline wetlands.

WET FLATLANDS - flat, poorly drained sand, marl or limestone substrates.

Hydric Hammock - lowland with sand/clay/organic soil, often over limestone; mesic-hydric; subtropical or temperate; rare or no fire; water oak, cabbage palm, red cedar, red maple, bays, hackberry, hornbeam, blackgum, needle palm, and mixed hardwoods.

Marl Prairie - flatland with marl over limestone substrate; seasonally inundated; tropical; frequent to no fire; sawgrass, spikerush, and/or mixed grasses, sometimes with dwarf cypress.

Wet Flatwoods - flatland with sand substrate; seasonally inundated; subtropical or temperate; frequent fire; vegetation characterized by slash pine or pond pine and/or cabbage palm with mixed grasses and herbs.

Wet Prairie - flatland with sand substrate; seasonally inundated; subtropical or temperate; annual or frequent fire; maidencane, beakrush, spikerush, wiregrass, pitcher plants, St. John's wort, mixed herbs.

SEEPAGE WETLANDS - sloped or flat sands or peat with high moisture levels maintained by downslope seepage; wetland and mesic woody and/or herbaceous vegetation.

Baygall - wetland with peat substrate at base of slope; maintained by downslope seepage, usually saturated and occasionally inundated; subtropical or temperate; rare or no fire; bays and/or dahoon holly and/or red maple and/or mixed hardwoods.

Seepage Slope - wetland on or at base of slope with organic/sand substrate; maintained by downslope seepage, usually saturated but rarely inundated; subtropical or temperate; frequent or occasional fire; sphagnum moss, mixed grasses and herbs or mixed hydrophytic shrubs.

FLOODPLAIN WETLANDS - flat, alluvial sand or peat substrates associated with flowing water courses and subjected to flooding but not permanent inundation; wetland or mesic woody and herbaceous vegetation.

Bottomland Forest - flatland with sand/clay/organic substrate; occasionally inundated; temperate; rare or no fire; water oak, red maple, beech, magnolia, tuliptree, sweetgum, bays, cabbage palm, and mixed hardwoods.

Floodplain Forest - floodplain with alluvial substrate of sand, silt, clay or organic soil; seasonally inundated; temperate; rare or no fire; diamondleaf oak, overcup oak, water oak, swamp chestnut oak, blue palmetto, cane, and mixed hardwoods.

Floodplain Marsh - floodplain with organic/sand/alluvial substrate; seasonally inundated; subtropical; frequent or occasional fire; maidencane, pickerelweed, sagittaria spp., buttonbush, and mixed emergents.

Floodplain Swamp - floodplain with organic/alluvial substrate; usually inundated; subtropical or temperate; rare or no fire; vegetation characterized by cypress, tupelo, black gum, and/or pop ash.

Freshwater Tidal Swamp - river mouth wetland, organic soil with extensive root mat; inundated with freshwater in response to tidal cycles; rare or no fire; cypress, bays, cabbage palm, gums and/or cedars.

Slough - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; pop ash and/or pond apple or water lily.

Strand Swamp - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; cypress and/or willow.

Swale - broad, shallow channel with sand/peat substrate; seasonally inundated, flowing water; subtropical or temperate; frequent or occasional fire; sawgrass, maidencane, pickerelweed, and/or mixed emergents.

BASIN WETLANDS - shallow, closed basin with outlet usually only in time of high water; peat or sand substrate, usually inundated; wetland woody and/or herbaceous vegetation.

Basin Marsh - large basin with peat substrate; seasonally inundated; temperate or subtropical; frequent fire; sawgrass and/or cattail and/or buttonbush and/or mixed emergents.

Basin Swamp - large basin with peat substrate; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; vegetation characterized by cypress, blackgum, bays and/or mixed hardwoods.

Bog - wetland on deep peat substrate; moisture held by sphagnum mosses, soil usually saturated, occasionally inundated; subtropical or temperate; rare fire; sphagnum moss and titi and/or bays and/or dahoon holly, and/or mixed hydrophytic shrubs.

Coastal Interdunal Swale - long narrow depression wetlands in sand/peat-sand substrate; seasonally inundated, fresh to brackish, still water; temperate; rare fire; graminoids and mixed wetland forbs.

Depression Marsh - small rounded depression in sand substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; frequent or occasional fire; maidencane, fire flag, pickerelweed, and mixed emergents, may be in concentric bands.

Dome Swamp - rounded depression in sand/limestone substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; cypress, blackgum, or bays, often tallest in center.

LACUSTRINE - Non-flowing wetlands of natural depressions lacking persistent emergent vegetation except around the perimeter.

Clastic Upland Lake - generally irregular basin in clay uplands; predominantly with inflows, frequently without surface outflow; clay or organic substrate; colored, acidic, soft water with low mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Coastal Dune Lake - basin or lagoon influenced by recent coastal processes; predominantly sand substrate with some organic matter; salinity variable among and within lakes, and subject to saltwater intrusion and storm surges; slightly acidic, hard water with high mineral content (sodium, chloride).

Coastal Rockland Lake - shallow basin influence by recent coastal processes; predominantly barren oolitic or Miami limestone substrate; salinity variable among and within lakes, and subject to saltwater intrusion, storm surges and evaporation (because of shallowness); slightly alkaline, hard water with

high mineral content (sodium, chloride).

Flatwoods/Prairie Lake - generally shallow basin in flatlands with high water table; frequently with a broad littoral zone; still water or flow-through; sand or peat substrate; variable water chemistry, but characteristically colored to clear, acidic to slightly alkaline, soft to moderately hard water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Marsh lake - generally shallow, open water area within wide expanses of freshwater marsh; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

River Floodplain Lake - meander scar, backwater, or larger flow-through body within major river floodplains; sand, alluvial or organic substrate; colored, alkaline or slightly acidic, hard or moderately hard water with high mineral content (sulfate, sodium, chloride, calcium, magnesium); mesotrophic to eutrophic.

Sandhill Upland Lake - generally rounded solution depression in deep sandy uplands or sandy uplands shallowly underlain by limestone; predominantly without surface inflows/outflows; typically sand substrate with organic accumulations toward middle; clear, acidic moderately soft water with varying mineral content; ultra-oligotrophic to mesotrophic.

Sinkhole Lake - typically deep, funnel-shaped depression in limestone base; occurs in most physiographic regions; predominantly without surface inflows/outflows, but frequently with connection to the aquifer; clear, alkaline, hard water with high mineral content (calcium, bicarbonate, magnesium).

Swamp Lake - generally shallow, open water area within basin swamps; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

RIVERINE - Natural, flowing waters from their source to the downstream limits of tidal influence and bounded by channel banks.

Alluvial Stream - lower perennial or intermittent/seasonal watercourse characterized by turbid water with suspended silt, clay, sand and small gravel; generally with a distinct, sediment-derived (alluvial) floodplain and a sandy, elevated natural levee just inland from the bank.

Blackwater Stream - perennial or intermittent/seasonal watercourse characterized by tea-colored water with a high content of particulate and dissolved organic matter derived from drainage through swamps and marshes; generally lacking an alluvial floodplain.

Seepage Stream - upper perennial or intermittent/seasonal watercourse characterized by clear to lightly colored water derived from shallow groundwater seepage.

Spring-run Stream - perennial watercourse with deep aquifer headwaters and characterized by clear water, circumneutral pH and, frequently, a solid limestone bottom.

SUBTERRANEAN - Twilight, middle and deep zones of natural chambers overlain by the earth's crust and characterized by climatic stability and assemblages of trogloxenic, troglophilic, and troglobitic organisms.

Aquatic Cave - cavernicolous area permanently or periodically submerged; often characterized by troglobitic crustaceans and salamanders; includes high energy systems which receive large quantities

of organic detritus and low energy systems.

Terrestrial Cave - cavernicolous area lacking standing water; often characterized by bats, such as Myotis spp., and other terrestrial vertebrates and invertebrates; includes interstitial areas above standing water such as fissures in the ceiling of caves.

MARINE/ESTUARINE (The distinction between the Marine and Estuarine Natural Communities is often subtle, and the natural communities types found under these two community categories have the same descriptions. For these reasons they have been grouped together.) - Subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

Consolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of nonliving compacted or coherent and relatively hard, naturally formed mass of mineral matter (e.g., coquina limerock and relic reefs); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Unconsolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of loose mineral matter (e.g., coralgal, gravel, marl, mud, sand and shell); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Octocoral Bed - expansive subtidal area occupied primarily by living sessile organisms of the Class Anthozoa, Subclass Octocorallia (e.g., soft corals, horny corals, sea fans, sea whips, and sea pens); sponges, stony corals, nondrift macrophytic algae and seagrasses spares, if present.

Sponge Bed - expansive subtidal area occupied primarily by living sessile organisms of the Phylum Porifera (e.g., sheepswool sponge, Florida loggerhead sponge and branching candle sponge); octocorals, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

Coral Reef - expansive subtidal area with elevational gradient or relief and occupied primarily by living sessile organisms of the Class Hydrozoa (e.g., fire corals and hydrocorals) and Class Anthozoa, Subclass Zoantharia (e.g., stony corals and black corals); includes deepwater bank reefs, fringing barrier reefs, outer bank reefs and patch reefs, some of which may contain distinct zones of assorted macrophytes, octocorals, & sponges.

Mollusk Reef - substantial subtidal or intertidal area with relief from concentrations of sessile organisms of the Phylum Mollusca, Class Bivalvia (e.g., molluscs, oysters, & worm shells); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Worm Reef - substantial subtidal or intertidal area with relief from concentrations of sessile, tubicolous organisms of the Phylum Annelida, Class Polychaeta (e.g., chaetopterids and sabellarids); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Algal Bed - expansive subtidal, intertidal or supratidal area, occupied primarily by attached thallophytic or mat-forming prokaryotic algae (e.g, halimeda, blue-green algae); octocorals, sponges, stony corals and seagrasses sparse, if present.

Grass Bed - expansive subtidal or intertidal area, occupied primarily by rooted vascular macrophytes, (e.g., shoal grass, halophila, widgeon grass, manatee grass and turtle grass); may include various epiphytes and epifauna; octocorals, sponges, stony corals, and attached macrophytic algae sparse, if present.

Composite Substrate - expansive subtidal, intertidal, or supratidal area, occupied primarily by Natural Community elements from more than one Natural Community category (e.g., Grass Bed and Algal Bed species; Octocoral and Algal Bed species); includes both patchy and evenly distributed occurrences.

Tidal Marsh - expansive intertidal or supratidal area occupied primarily by rooted, emergent vascular macrophytes (e.g., cord grass, needlerush, saw grass, saltwort, saltgrass and glasswort); may include various epiphytes and epifauna.

Tidal Swamp - expansive intertidal and supratidal area occupied primarily by woody vascular macrophytes (e.g., black mangrove, buttonwood, red mangrove, and white mangrove); may include various epiphytes and epifauna.

DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities

Physiography

Upland - high area in region with significant topographic relief; generally undulating
Lowland - low area in region with or without significant topographic relief; generally flat to gently sloping
Flatland - generally level area in region without significant topographic relief; flat to gently sloping
Basin - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations
Depression - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter
Floodplain - lowland adjacent to a stream; topography influenced by recent fluvial processes
Bottomland - lowland not on active floodplain; sand/clay/organic substrate

Hydrology

occasionally inundated - surface water present only after heavy rains and/or during flood stages
seasonally inundated - surface water present during wet season and flood periods
usually inundated - surface water present except during droughts

Climatic Affinity of the Flora

tropical - community generally occurs in practically frost-free areas
subtropical - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy
temperate - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

Fire

annual fire - burns about every 1-2 years
frequent fire - burns about every 3-7 years
occasional fire - burns about every 8-25 years
rare fire - burns about every 26-100 years
no fire - community develops only when site goes more than 100 years without burning

LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS

anise - *Illicium floridanum*
bays:
  swamp bay -*Persea palustris*
  gordonia -*Gordonia lasianthus*
  sweetbay -*Magnolia virgiana*
beakrush - *Rhynchospora* spp.
beech - *Fagus grandifolia*
blackgum - *Nyssa biflora*
blue palmetto - *Sabal minor*
bluestem - *Andropogon* spp.
buttonbush - *Cephalanthus occidentalis*
cabbage palm - *Sabal palmetto*
cacti - *Opuntia* and *Harrisia* spp.,
  predominantly *stricta* and *pentagonus*
cane - *Arundinaria gigantea* or *A. tecta*
cattail - *Typha* spp.
cedars:
  red cedar - *Juniperus silicicola*
  white cedar - *Chamaecyparis thyoides* or *C. henryi*
cladonia - *Cladonia* spp.
cypress - *Taxodium distichum*
dahoon holly - *Ilex cassine*
diamondleaf oak - *Quercus laurifolia*
fire flag - *Thalia geniculata*
Florida maple - *Acer barbatum*
gallberry - *Ilex glabra*
gums:
  tupelo - *Nyssa aquatica*
  blackgum - *Nyssa biflora*
  Ogeechee gum - *Nyssa ogeche*
hackberry - *Celtis laevigata*
hornbeam - *Carpinus caroliniana*
laurel oak - *Quercus hemisphaerica*
live oak - *Quercus virginiana*
loblolly pine - *Pinus taeda*
longleaf pine - *Pinus palustris*
magnolia - *Magnolia grandiflora*
maidencane - *Panicum hemitomon*
needle palm - *Rhapidophyllum hystrix*
overcup oak - *Quercus lyrata*
pickerel weed - *Pontederia cordata* or *P. lanceolata*
pignut hickory - *Carya glabra*
pop ash - *Fraxinus caroliniana*
pond apple - *Annona glabra*
pond pine - *Pinus serotina*
pyramid magnolia - *Magnolia pyramidata*
railroad vine - *Ipomoea pes-caprae*
red cedar - *Juniperus silicicola*
red maple - *Acer rubrum*
red oak - *Quercus falcata*
rosemary - *Ceratiola ericoides*
sagittaria - *Sagittaria lancifolia*
sand pine - *Pinus clausa*
saw palmetto - *Serenoa repens*
sawgrass - *Cladium jamaicensis*
scrub oaks - *Quercus geminata, Q. chapmanii, Q. myrtifolia,Q. inopina*
sea oats - *Uniola paniculata*
seagrape - *Coccoloba uvifera*
shortleaf pine - *Pinus echinata*
Shumard oak - *Quercus shumardii*
slash pine - *Pinus elliottii*
sphagnum moss - *Sphagnum* spp.
spikerush - *Eleocharis* spp.
spruce pine - *Pinus glabra*
St. John's wort - *Hypericum* spp.
swamp chestnut oak - *Quercus prinus*
sweetgum - *Liquidambar styraciflua*
titi - *Cyrilla racemiflora*, and *Cliftonia monophylla*
tuliptree - *Liriodendron tulipfera*
tupelo - *Nyssa aquatica*
turkey oak - *Quercus laevis*
water oak - *Quercus nigra*
waterlily - *Nymphaea odorata*
white cedar - *Chamaecyparis thyoides*
white oak - *Quercus alba*
willow - *Salix caroliniana*
yucca - *Yucca aloifolia*

A. GENERAL DISCUSSION

Archaeological and historic sites are defined collectively in 267.021(3), F.S., as "historic properties" or "historic resources." They have several essential characteristics that must be recognized in a management program.

First of all, they are a finite and non-renewable resource. Once destroyed, presently existing resources, including buildings, other structures, shipwreck remains, archaeological sites and other objects of antiquity, cannot be renewed or revived. Today, sites in the State of Florida are being destroyed by all kinds of land development, inappropriate land management practices, erosion, looting, and to a minor extent even by well-intentioned professional scientific research (e.g., archaeological excavation). Measures must be taken to ensure that some of these resources will be preserved for future study and appreciation.

Secondly, sites are unique because individually they represent the tangible remains of events that occurred at a specific time and place.

Thirdly, while sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. Sites can be understood properly only in relation to their natural surroundings and the activities of inhabitants of other sites. Managers must be aware of this "systemic" character of historic and archaeological sites. Also, it should be recognized that archaeological sites are time capsules for more than cultural history; they preserve traces of past biotic communities, climate, and other elements of the environment that may be of interest to other scientific disciplines.

Finally, the significance of sites, particularly archaeological ones, derives not only from the individual artifacts within them, but equally from the spatial arrangement of those artifacts in both horizontal and vertical planes. When archaeologists excavate, they recover, not merely objects, but also a record of the positions of these objects in relation to one another and their containing matrix (e.g., soil strata). Much information is sacrificed if the so-called "context" of archaeological objects is destroyed or not recovered, and this is what archaeologists are most concerned about when a site is threatened with destruction or damage. The artifacts themselves can be recovered even after a site is heavily disturbed, but the context -- the vertical and horizontal relationships -- cannot. Historic structures also contain a wealth of cultural (socio-economic) data that can be lost if historically sensitive maintenance, restoration or rehabilitation procedures are not implemented, or if they are demolished or extensively altered without appropriate documentation. Lastly, it should not be forgotten that historic structures often have associated potentially significant historic archaeological features that must be considered in land management decisions.

B. STATUTORY AUTHORITY

Chapter 253, Florida Statutes ("State Lands") directs the preparation of "single-use" or "multiple-use" land management plans for all state-owned lands and state-owned sovereignty submerged lands. In this document, 253.034(4), F.S., specifically requires that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites, as well as other fragile resources..."

Chapter 267, Florida Statutes is the primary historic preservation authority of the state. The importance of protecting and interpreting archaeological and historic sites is recognized in 267.061(1)(a), F.S.:The rich and unique heritage of historic properties in this state, representing more than 10,000 years of human presence, is an important legacy to be valued and conserved for present and future generations. The destruction of these nonrenewable historic resources will engender a significant loss to the state's quality of life, economy, and cultural environment. It is therefore declared to be state policy to:

1. Provide leadership in the preservation of the state's historic resources; [and]
2. Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

Responsibilities of the Division of Historical Resources in the Department of State pursuant to 267.061(3), F.S., include the following:

1. Cooperate with federal and state agencies, local Governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.
2. Develop a comprehensive statewide historic preservation plan.
3. Identify and nominate eligible properties to the National Register of Historic Places and otherwise administer applications for listing properties in the National Register of Historic Places.
4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.
5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.
6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.
7. Take such other actions necessary or appropriate to locate, acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.
8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.
9. Establish guidelines for state agency responsibilities under subsection (2).

Responsibilities of other state agencies of the executive branch, pursuant to 267.061(2), F.S., include:

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.
2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way that adversely affects the character, form, integrity, or other qualities that contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.
3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently

transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.

4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.
5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.
6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

Section 267.12 authorizes the Division to establish procedures for the granting of research permits for archaeological and historic site survey or excavation on state-owned or controlled lands, while Section 267.13 establishes penalties for the conduct of such work without first obtaining written permission from the Division of Historical Resources. The Rules of the Department of State, Division of Historical Resources, for research permits for archaeological sites of significance are contained in Chapter 1A-32, F.A.C.

Another Florida Statute affecting land management decisions is Chapter 872, F.S. Section 872.02, F.S., pertains to marked grave sites, regardless of age. Many state-owned properties contain old family and other cemeteries with tombstones, crypts, etc. Section 872.05, F.S., pertains to unmarked human burial sites, including prehistoric and historic Indian burial sites. Unauthorized disturbance of both marked and unmarked human burial site is a felony.

C. MANAGEMENT POLICY

The choice of a management policy for archaeological and historic sites within state-owned or controlled land obviously depends upon a detailed evaluation of the characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

Sites on privately owned lands are especially vulnerable to destruction, since often times the economic incentives for preservation are low compared to other uses of the land areas involved. Hence, sites in public ownership have a magnified importance, since they are the ones with the best chance of survival over the long run. This is particularly true of sites that are state-owned or controlled, where the basis of management is to provide for land uses that are minimally destructive of resource values.

It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

The generalized management policy recommended by the Division of Historical Resources includes the following:

1. State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)
2. Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.
3. In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.
4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to

occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological site is discouraged. There are many endangered sites in Florida (on both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.
6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).
7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

In addition to the above management policy for archaeological and historic sites on state-owned land, special attention shall be given to those properties listed in the National Register of Historic Places and other significant buildings. The Division recommends that the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Revised 1990) be followed for such sites.

The following general standards apply to all treatments undertaken on historically significant properties.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of

missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

Divisions of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

D. MANAGEMENT IMPLEMENTATION

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.
2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.
3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.
4. The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.
5. Land managers will update information on recorded sites and properties.
6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

A. Historic Sites

(1) Type of structure (dwelling, church, factory, etc.).
(2) Known or estimated age or construction date for each structure and addition.
(3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).
(4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.
(5) Specific features including location, number and appearance of:
(a) Important decorative elements;
(b) Interior features contributing to the character of the building;

(c) Number, type, and location of outbuildings, as well as date(s) of construction;
(d) Notation if property has been moved;
(e) Notation of known alterations to building.

B. Archaeological Sites

(1) Site location (written narrative and mapped location).
(2) Cultural affiliation and period.
(3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).
(4) Threats to site (deterioration, vandalism, etc.).
(5) Site size (acreage, square meters, etc.).
(6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
(7) Description of surrounding environment.

7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.

8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.

9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.

10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.

11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.

12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

Questions relating to the treatment of archaeological and historic resources on state lands may be directed to:

Compliance Review Section
Bureau of Historic Preservation
Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

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