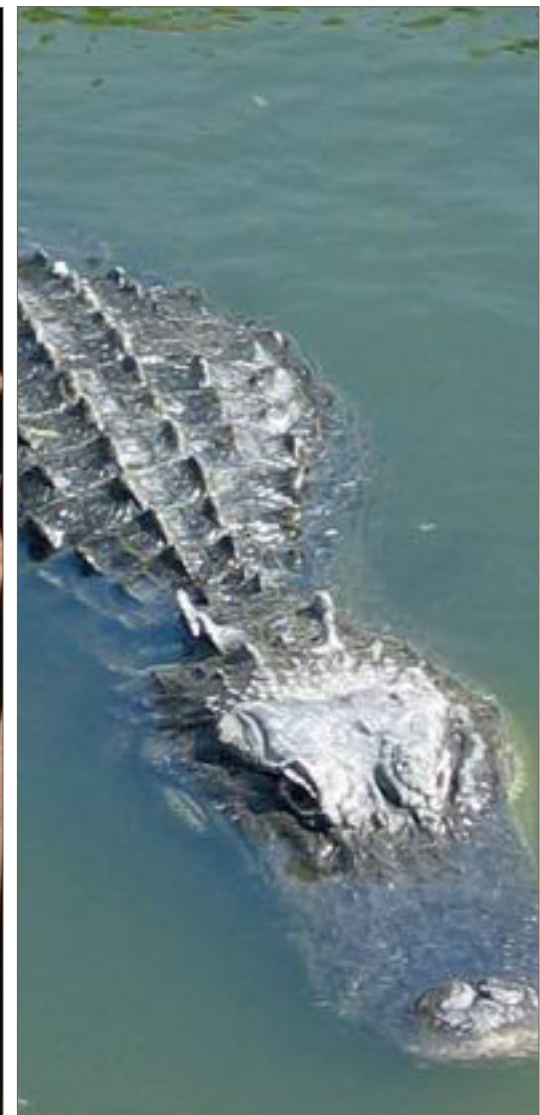
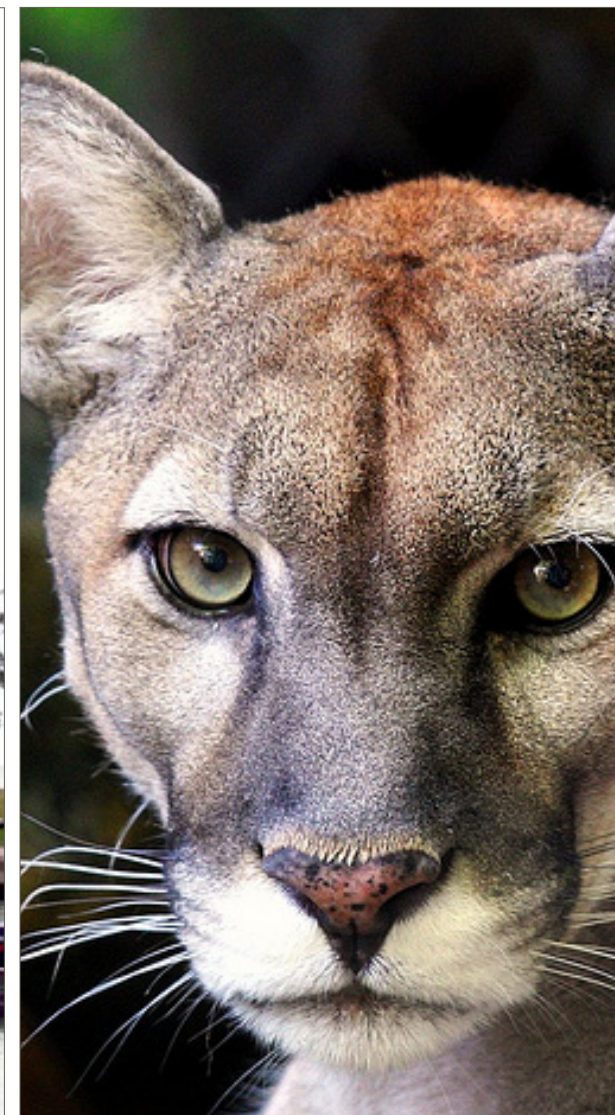


National Park Service
U.S. Department of the Interior
Everglades National Park
Florida



Flamingo Master Plan and Design Program

June 2010



Indefinite Quantity Contract
No. 1443C2000091000
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1.0 executive summary



Florida Panther

Everglades National Park (the Park) is recognized nationally and internationally as a significant natural and cultural resource. It is the only place in the United States that is designated as an International Biosphere Reserve, a World Heritage Site, and a Wetland of International Importance. The Park was authorized by the United States Congress in 1934 and dedicated by President Harry S. Truman in 1947. Everglades National Park was explicitly set aside as a permanent wilderness for the preservation of the unique biotic communities, cultural resources spanning 5,000 years of human history and the exceptional landscape of the Everglades. Flamingo, which began as a small coastal farming settlement in the 1880s, is the largest developed area within the Park.

The initial phase of construction at Flamingo began in 1956 as part of the National Park Service's Mission 66 program of park development. Mission 66 was an initiative by Park Service director Conrad L. Wirth, with the intent of modernizing, enlarging and reinventing the park system within ten years, to coincide with the 50th anniversary of the National Park Service. Flamingo was one of eight pilot projects conceived under Mission 66, selected for planning and development since the Everglades was a relatively new National Park with little existing development. The sensitive ecological environment and no set architectural or site design, as contrasted to other National Parks, provided an ideal test candidate for the new philosophies of Mission 66.

Construction of facilities at Flamingo began in 1956; by 1958, much of the visitor facilities of Flamingo were completed, including the visitor center, lodge, marina, campgrounds, employee housing, and other supporting facilities and services. The architectural design for Flamingo (and other National Park Service Mission 66 projects) contrasted greatly with the prior periods of National Park construction that utilized rustic materials, a romantic, naturalistic character, and a high level of craftsmanship. Mission 66 design focused on inexpensive contemporary materials, a simplified design vocabulary and advanced construction techniques.

From its construction in the mid- to late 1950s, Flamingo provided services and facilities to an ever-increasing visitor population; providing both day use and overnight accommodations and visitor and interpretive facilities. The harsh climate of the Florida coast combined with the age of the facilities led to the susceptibility of damage from hurricanes and tropical storms. In 2005, hurricanes Katrina and Wilma destroyed or heavily damaged a number of the facilities at Flamingo, including the lodge, restaurant, and visitor center. This led to either decreasing or discontinuing visitor services in the near term.

Currently, Flamingo has limited visitor services due to damage sustained in 2005. With Flamingo historically having the only overnight accommodations within the Park (other than tent and RV camping), the National Park Service implemented a planning process in 2006 to determine the future of the site. The Flamingo Commercial Services Plan was developed to identify options and a desired direction for Flamingo.

This Master Plan project focuses on the most critical features of the selected plan from the Flamingo Commercial Services Plan. The Master Plan provides guidance to establish a “New Flamingo” that is an eco-friendly destination with a greater variety of lodging experiences and visitor services. The vision of the selected plan integrates principles of sustainable design for facilities, compatibility with the site and landscape, and energy conservation while seeking ways to minimize adverse impacts to natural and cultural resources. The Master Plan should guide planning, design, construction, restoration and use of Flamingo for the next 50 years.

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Everglades National Park typical vegetation

2.1 History of Everglades National Park

Early in the twentieth century, the unique natural and biological features of the Everglades attracted the attention of conservationists, who saw the significant vast resources threatened by increasing development. Prior to the 1880s, seasonal rains and spillover from Lake Okeechobee created a large natural water system in the Everglades. A campaign to drain the Everglades was introduced by Napoleon Bonaparte Broward in his bid for governor in 1904. This accelerated construction of canals between 1905 and 1910 to drain the wetlands and create agricultural lands greatly depleted the wetlands and transformed the landscape of the Everglades.

Between 1915-1922, the Ingraham Highway was constructed to connect Homestead with Flamingo. As more people came to southern Florida and development increased, additional water was diverted to canals to supply both farms and urban development, and was regulated to control flooding. The diversion of water, coupled with increased pollution, greatly altered the natural water regime that was already impacted by the earlier efforts to drain the wetlands.

As a result of the mass killings of birds in the Everglades by plume hunters, the Audubon Society hired the first game warden in the country in 1902 to protect the Everglades. The Florida Federation of Women’s Clubs lobbied for the establishment of Royal Palm State Park, which was established in 1917; by the 1920s, the National Park Service also supported increasing conservation efforts in the region.

In 1928, the United States Congress passed legislation to investigate the feasibility of creating an Everglades National Park. The Park was authorized by Congress on May 30, 1934, but was not dedicated until 1947, as the authorization coincided with the arrival of the Great Depression and funding for land purchases for the Park was scarce. When the Park was established, it was explicitly stated that it was to be permanently reserved as a wilderness. The park was established to be “...a wilderness where no development...or plan for the entertainment of visitors shall be undertaken which will interfere with the preservation of the unique flora and fauna of the essential primitive natural conditions now prevailing in the area.”

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The Purpose of the Park is as “a public park for the benefit of the people. It is set aside as a permanent wilderness preserving essential primitive conditions including the natural abundance, diversity, behavior, and ecological integrity of its flora and fauna.”

“Here are no lofty peaks seeking the sky, no mighty glaciers or rushing streams wearing away the uplifted land. Here is a land, tranquil in its quiet beauty, serving not as the source of water, but as the last receiver of it. To its natural abundance we owe the spectacular plant and animal life that distinguishes this place from all others in our country.” (President Harry S. Truman, December 6, 1947, at the dedication of Everglades National Park.)

In November of 1978, the Everglades Wilderness was formally designated; this designation provided legislative protection for approximately 93 percent of the Park.¹ The designation included all of the keys in Florida Bay. The legislation also created a class of wilderness called “submerged marine wilderness” (meaning the bottomlands, but not the water column, are managed as wilderness). This took into account more than 500,000 acres of the navigable waters of the Park, including Florida and Whitewater Bays, the backcountry waters, and the Ten Thousand Islands area along the Gulf Coast. Excluded from the Wilderness designation were lands at the north park boundary that were reserved for Native American use, a corridor along the road to Flamingo, and the existing developed areas, including Flamingo. The name of the wilderness area was changed from Everglades Wilderness to Marjory Stoneman Douglas Wilderness in 1997.¹

In 1989, Congress passed the Everglades National Park Protection and Expansion Act. The law added 109,600 acres to the northeast corner of the Park to increase the level of protection of the Park’s outstanding natural values, and among other things, authorized the Modified Water Deliveries Project, and directed the NPS to expedite construction of the Marjory Stoneman Douglas Visitor Center in Everglades City.

Today Everglades National Park is a sanctuary for wild animals, plants, birds, and people - including the more than 6 million people who live within a 50-mile driving distance of the Park - in an increasingly urbanized regional landscape.

¹ Today, 86 percent of the Park is dedicated wilderness. The percentage has decreased as additional lands were acquired for the Park.

2.2 Significance of Everglades National Park

The purpose of Everglades National Park (the Park) is a public park for the benefit and enjoyment of the people. It is set apart as a permanent wilderness preserving essential primitive conditions, including the natural abundance, diversity, behavior, and ecological integrity of the unique flora and fauna. The Park is recognized nationally and internationally as a significant natural and cultural resource.²

- It is a unique subtropical wetland that is the hydrological connection between central Florida’s freshwater ecosystem and the marine systems of Florida Bay and the Gulf of Mexico. It is the only place in the United States jointly designated an International Biosphere Reserve, a World Heritage Site, and a Wetland of International Importance.
- It comprises the largest subtropical wilderness reserve in North America. The park contains vast ecosystems, including freshwater marshes, tropical hardwood, pine rockland, extensive mangrove estuaries, and seagrasses, which support a diverse mix of tropical and temperate plants and animals.
- It serves as sanctuary for the protection of more than 20 federally listed and 70 state-listed threatened and endangered species, as well as numerous species of special concern. Many of these species face tremendous pressure from natural forces and human influences in the South Florida Ecosystem.
- It provides important foraging and breeding habitat for more than 400 species of birds (including homeland to world-renowned wading bird populations), and functions as a primary corridor and refuge for migratory and wintering bird populations.
- It includes archeological and historical resources spanning approximately 5,000 years of human history, revealing adaptation to and exploitation of its unique environment.
- It preserves natural and cultural resources associated with the homeland of Native Americans of Florida (including the Miccosukee Tribe of Indians of Florida, the Independent Traditional Seminole Nation of Florida, the Seminole Tribe of Florida, and the Seminole Nation of Oklahoma).

² Significance, purpose and interpretive theme statements were taken from the Everglades National Park General Management Plan Newsletter #5, published in March 2009.



White Ibis

- It preserves the remnants of a nationally significant hydrologic resource that sustains South Florida’s human population and serves as a global experiment in restoration.
- It provides the public with the opportunity to experience Everglades’ wilderness for recreation, reflection, and solitude in proximity to a major metropolitan area.

Interpretive Themes

Primary interpretive themes are those ideas and concepts about Everglades National Park that are key to helping visitors gain an understanding of the Park. The themes, which are based on the Park’s purpose and significance, provide the foundation for all interpretive media and programs in the Park. The themes do not include everything that may be interpreted, but rather they identify the ideas that are critical to understanding and appreciating the Park’s importance.

Interpretive themes for Everglades National Park are as follows:

- Everglades National Park serves as a dynamic laboratory for innovative scientific investigations that identify and monitor a vast array of fragile and unique resources. The revelations from this work inform good environmental decision making throughout the world, which protects ecosystems subject to the needs and desires of human populations.
- The water-dominated landscape of the Everglades has offered a myriad of experiences, challenges, and opportunities to humans that have inhabited this place for the last 6,000 years.
- The Everglades landscape is of great cultural importance to distinct groups of past and present Native Americans. Historically these parklands served as a home; a source of abundant natural and cultural resources; a place of refuge; and today, a reminder of past and present challenges, trials, and injustices.
- The greater Everglades ecosystem is the liquid heart of South Florida, where the seasonal ebb and flow of water over unique geography defines the environment, supports the region’s web of life, and challenges humans to comprehend their relationship to nature and wilderness.
- Everglades National Park provides an opportunity for people to understand and experience the value of a diverse wilderness in proximity to vast development. The park’s designation as a World Heritage Site, an International Biosphere Reserve, and a Wetland of International Significance attests to its importance as a benchmark for monitoring environmental impact and revealing change.
- Everglades National Park’s diverse habitats (both temperate and tropical) and protected status demonstrate its value as a critical sanctuary for wild animals, plants, and birds in an increasingly urbanized landscape. Species from those most common to those highly endangered reveal life histories that are intimately tied to these places’ natural cycles of abundance, flood, fire, hurricane, drought, life, and death.

2.3 History of Flamingo

Flamingo is the largest developed area within Everglades National Park. Flamingo was established in the 1880s as a small coastal farming settlement on the eastern end of Cape Sable. While large areas of the Everglades wetlands were drained and converted to agriculture and development, Flamingo remained isolated and accessible only by boat. The village was named in 1893 when the post office was established, and was one of several scattered settlements along Cape Sable following the Seminole Wars. Residents of the village made a living by making charcoal, raising vegetables, hunting birds for their plumage, and catching fish, all of which were sold in Key West. Being so isolated, the village was slow to develop and had a population of only 49 in 1910.

The original Flamingo settlement consisted of a complex of unpaved roads, docks and piers, and a collection of buildings including a small mill for grinding sugarcane and a small general store. The village had a small post office that was constructed in 1893, and small houses built on stilts along the bay. A two-story house on pilings, named “Robert’s Hotel,” was built in 1915 and served the occasional visitor, but was destroyed in a 1926 hurricane.

Another small group of buildings was thought to have been located west of the existing Flamingo. This included a clubhouse with five rooms and a screened-in dining porch, which served as a hotel for visitors and land developers.

The Ingraham Highway was built in 1921, providing a land connection from Royal Palm to Flamingo, and giving greater connection between the small community and the broader region. The majority of the settlement’s residents were relocated in the 1940s when the National Park was dedicated; all residents were gone by 1951.

In 1954, the Ingraham Highway was improved and the bay dredged to create boat slips at Flamingo; construction of the concrete bulkheads and piers around the marina followed in 1955. At the same time, a proposal was developed for the site to create visitor facilities that would be managed by a concessioner. The original scope of the proposal was criticized for being too “resort-like,” with conservation groups arguing that the extents of the development would compromise habitat and the natural resources.

Due to the nature of the landscape of the Everglades, facilities were developed around the perimeter of the Park and a peripheral circulation system and visitor contact system evolved, with the

“Here are no lofty peaks seeking the sky, no mighty glaciers or rushing streams wearing away the uplifted land. Here is a land, tranquil in its quiet beauty, serving not as the source of water, but as the last receiver of it. To its natural abundance we owe the spectacular plant and animal life that distinguishes this place from all others in our country.”

- President Harry S. Truman, December 6, 1947, at the dedication of Everglades National Park

exception of a 38-mile paved road cutting through the Park to Flamingo from the main visitor center near Homestead. Portions of the road existed prior to establishment of the Park, with most of the developed components of the Park found along it. This road provides the only connection between the coastal waterways and the peripheral highway routes.

The initial phase of construction at Flamingo began in 1956 (as part of the National Park Service’s Mission 66 endeavor) with construction of the service station, the marina store, and the first employee housing unit. In 1957, construction of the visitor center was begun, along with the first five buildings of the lodge and the fish cleaning station at the marina.

In the summer of 1958, finalization of construction of Flamingo was underway with the creation of Camping Loop A; erection of the flagpole in front of the visitor center and landscaping around the visitor center, a campground, picnic grounds, and parking lots. The swimming pool at the lodge was constructed in 1959, along with the maintenance office, boat shop, and boat shelter.

By 1960, the majority of the planned Mission 66 construction projects had been completed at Flamingo. Hurricane Donna made landfall on the Florida coast on September 10, 1960, damaging many of the newly constructed facilities. Extensive repairs were undertaken in 1961-1962, and hundreds of trees and shrubs planted to replace what was uprooted by the storm. Following the repairs, the next and final phases of the original Mission 66 plan were begun with a variety of camping and overnight accommodations constructed between 1964 and 1967. By 1968, the development of the site as envisioned by the Mission 66 plan was complete.

Through the 1970s and 1980s, various repair, maintenance and renovation projects occurred at Flamingo.

In 2005, the facilities at Flamingo were severely damaged or destroyed by six- to eight-foot storm surges from hurricanes Katrina and Wilma. Damaged facilities included the visitor center; the Flamingo Lodge, restaurant and cottages; and employee housing. Destroyed facilities included the amphitheater, picnic and campground comfort stations, the camp tender's residence, and some staff residence buildings.

The amphitheater and picnic and campground comfort stations were reconstructed in 2008. In 2008 and 2009, portions of the maintenance building, the Flamingo Lodge, and duplex cottages were demolished due to significant structural damage incurred during the 2005 hurricanes. Following several months of closure and repair, the marina, campgrounds, marina store, and a portion of the Flamingo Visitor Center were reopened.

2.4 Significance of Flamingo and Mission 66

The Flamingo Mission 66 District is a significant example of early Mission 66 development that represents the Park Service Modern architectural style and planning concepts that became standard in future Mission 66 projects. Mission 66 was a ten-year endeavor by the Park Service to develop new visitor centers, administrative buildings, and support facilities at over 100 National Parks. The program focused on cost efficient construction utilizing modern materials and a modern architectural style. The intent of Mission 66 was to revitalize the National Park System and to encourage visitation in the increasingly mobile and affluent American public following World War II. The program was envisioned to elevate the National Parks to modern standards of comfort and efficiency, while also conserving the natural and cultural resources.

Mission 66 architecture sought to redefine the image of the National Park Service and to reflect the changing values in post-World War II American society. A cost-effective approach to design and construction was essential, with emphasis placed on functional, sturdy, unobtrusive buildings and not on grand architectural design. Modern building technologies and materials were seen as ways to minimize cost, construction time, and the overall impact to the surrounding landscape and natural resources. The Mission 66 program was not defined by an overall style, but rather was influenced by changes in social, technological, and economic ideas following World War II.

Park Service Modern architecture (as the Mission 66 buildings came to be called) was influenced by modern design philosophies of the 1950s that explored advanced construction techniques, inexpensive contemporary materials, and a simplified design vocabulary. This was in stark contrast with the prewar-architectural style that embodied rustic materials, high levels of craftsmanship, and a romantic design character. The materials that were encouraged in the new designs were concrete block, steel, stone veneer, and vinyl tile. Functionality of the building and site planning was foremost in Park Service Modern architecture with the setting, spatial requirements, and visitor experience also considerations in the design and planning. The integration of the interior architecture and exterior spaces was explored to create a relationship between the built and the natural. Typical architectural design strategies included low horizontal massing, a muted color palette, and textured materials.

Park Service Modern architecture has been described as having the following qualities:

- The building is sited in relation to an overall plan of visitor flow within the Park; and is located either near the Park entrance, en route to a major park destination, or at a park destination.
- Building design emphasizes floor plan organization. This allowed for the segregation of public areas from administrative areas, and also emphasized and directed efficient visitor flow through the building itself. A central lobby space is often at the arrival point, with trails or other park destinations often accessed as the visitor moves through the building.
- Building program centralizes numerous park services, including information, interpretation, restrooms, and administrative offices.
- Building makes use of the formal vocabulary and materials of contemporary (1945-1972) modern architecture, including flat roofs, window walls (and other unorthodox fenestration), exposed steel supports, and concrete and concrete block construction.
- Overlapping functional space (free plans) is sometimes evident in the floor plan. Public areas are usually on one level, or on split-levels, and segregated from administrative areas.
- Interior and exterior public spaces are integrated, often separated by windows, window walls, glass doors, or wooden doors with windows.
- Entrances, exits, and other doorways are wide, providing easy movement of crowds. Entrances are often sheltered by porches, ramadas, arcades, etc. Restrooms are often located nearby, with a separate outdoor entrance.
- Building emphasizes visitor's experience of spatial procession. This sequence of spaces often features ramps, as well as significant views of park landscapes, either from terraces or through large windows.
- Siting of visitor center is near a landscape or attraction to be interpreted. Sometimes interpretive programs are extended into the visitor center itself.
- Building's elevations create a primarily low-profile, horizontal effect.
- Building harmonizes with its setting through horizontality of massing, color, and texture of materials. Use of textured concrete, concrete block, and stone veneers in facades often gives the building a generally rough exterior texture and often features earth-toned colors.

- Building footprint is often ell-shaped or rectangular around a central courtyard, or a variation of this theme.
- Naturalistic planting is used to partially screen the building, utility areas, and parking, as well as to restore areas disturbed in construction. Large planter boxes are often used to define entrances.
- Outdoor spaces and site work, including parking lots, paths, amphitheaters, terraces, and patios are often incorporated into the visitor center complex.

Everglades National Park was undeveloped as planning began for Mission 66, and Flamingo was seen as an ideal candidate to test the ideas of Mission 66, as the Park needed support and interpretive facilities. As one of eight pilot projects (Mount Rainier, Yellowstone, Chaco Canyon National Monument, Shiloh National Military Park, Adams Mansion National Historic Site, Fort Laramie, Everglades, and Mesa Verde³) within the National Park System, plans for Flamingo were drawn up in 1956 by the National Park Service Eastern Office of Design and Construction, in collaboration with local architect Harry L. Keck of Coral Gables, Florida.

Keck was strongly influenced by Le Corbusier modernism in the design of the visitor center. The visitor center is described in the Cultural Landscape Inventory 75% Draft:

“The structure was supported on concrete columns, which created a covered pedestrian space under the building. A concrete breezeway and wide access ramp linked the concessionaire building, visitor center, and public courtyard and framed views of the surrounding natural environment and marina. The horizontal massing of the structure was accentuated by ribbon windows and a low-sloping roof. The building was constructed of concrete block, coquina stone veneer, and raised stucco panels. The east façade featured a window wall that looked on the marina. The open plan of the building accommodated restroom facilities, administrative offices, a central lobby, and a museum, and was directly connected to the restaurant wing with a two-story breezeway.”

3 “Mission 66 Visitor Centers: The History of a Building Type”. Sara Allaback, Ph.D., U.S. Department of the Interior, National Park Service, Cultural Resources Stewardship and Partnerships, Park Historic Structures and Cultural Landscapes. Washington, D.C., 2000

The pilot study determined that the Mission 66 program would focus on the visitor experience through the improvement to and standardization of facilities, providing interpretive resources such as a visitor center, additional staff, trails, and maps. Guest and employee lodging facilities were also considered important. Visitor centers were a new type of facility developed as part of Mission 66 for the National Parks. Preliminary design standards and guidelines established for the Mission 66 program were used in the pilot projects.

In 2006, the Florida State Historic Preservation Office (SHPO) determined that the Flamingo Visitor Center, service station, 1950s-1960s staff housing buildings, and maintenance area boat canopy were potentially eligible for listing on the National Register of Historic Places. Other Mission 66 structures were deemed ineligible due to loss of integrity. The Flamingo Mission 66 Developed Area district incorporates the visitor center, marina, campgrounds, employee housing, and public lodging facilities.

Flamingo Mission 66 Developed Area List of Resources⁴

Date	Resource
1955-56	Boat basin, concrete bulkheads, piers
1956-57	Service station, marina store, staff housing building numbers 416, 439 and 440, electric generating plant
1957	Roads and parking, visitor center and lodge, fish cleaning shelter/comfort station, maintenance boat basin
1957-58	Water supply system and pumping stations
1958	Camping Loop ‘A’, flagpole; trees and shrubs planted around the visitor center, in parking areas, campgrounds and picnic grounds; incinerator
1958-59	Concrete picnic tables, benches, drinking fountains, and charcoal grills
1959	Swimming pool at the lodge
1959-60	Maintenance office, boat shop, and boat shelter
1960s	Camping Loop ‘T’ and concessioner dormitory housing (year is unknown)
1960-61	House trailers installed for concessioner
1962	New trees and shrubs planted
1964	Twelve cottages and a service building; lodge expansion; camping loops ‘B’ and ‘C’
1966-67	Staff cottages

4 List obtained from the 75% Draft, Cultural Landscape Inventory, Flamingo Mission 66 Developed Area, Everglades National Park. The period of significance has been determined to be 1955-1966 for Flamingo; the resources listed in the table were constructed during this time, but not all are considered contributing features of the Historic District.

In addition to the historic significance of the Mission 66 period of development, there are additional significant values of Flamingo. Located on the southern coast of Florida, Flamingo provides a variety of attractions for visitors including subtropical natural history, a unique wilderness setting, and a wide range of recreational activities.

Located at the center of the greatest wilderness east of the Rockies, Flamingo is the jumping off point for the 99-mile Wilderness Waterway and many shorter boating/paddling adventures. The area surrounding Flamingo is a birder’s paradise, home to such distinctive species as the Roseate Spoonbill, Reddish Egret, Mangrove Cuckoo, White-crowned Pigeon, and a host of other birds. The waters around Flamingo provide refuge for the threatened American Crocodile, which is much less common than the alligator; the mangrove swamps are home to manatees. The wild beaches of Cape Sable serve as a major nesting ground for sea turtles.⁵

Unique tropical vegetation is found throughout Flamingo and surrounding areas, including sea grape, Jamaica dogwood, black ironwood, and manchineel. The area is one of the world’s premiere fishing hotspots, where anglers pursue mangrove snapper, redfish, snook, tarpon, and many other game fish on Florida Bay and in the backcountry via the Buttonwood Canal.

5 “Welcome to Flamingo!” visitor center exhibit, National Park Service – Everglades National Park. June 2009.

2.5 Project Background

The 2005 hurricanes caused substantial damage to already aged Flamingo facilities. The Flamingo lodge, cottages, restaurant, and gift shop were forced to shut down, and the houseboats were destroyed. Historically, Flamingo has been the only area within the Park to provide overnight accommodations other than tent and recreational vehicle (RV) camping. The closure of the facilities and services at Flamingo led to the National Park Service implementing a planning process in October of 2006 to determine the site's future. A Commercial Services Plan and Environmental Assessment was developed to identify options and a desired direction for Flamingo.

Through the public process of developing the Commercial Services Plan, a selected alternative for the site was established. The preferred vision integrates principles of sustainable design for facilities, compatibility with the site and landscape, and energy conservation while seeking ways to minimize adverse impacts to natural and cultural resources. The plan for Flamingo should “integrate principles of sustainability in site and facility design and energy conservation; identify ways to minimize adverse impacts to natural and cultural resources; and seek to have Flamingo function in a more efficient and pedestrian friendly way.”

Residents from the area surrounding Florida Bay and Everglades National Park (and visitors from beyond) view the Park and Flamingo as special places to visit and desire to see the commercial facilities of Flamingo rebuilt as soon as possible.

Interpretive and recreational activities are oriented towards natural history interpretation, environmental education, and wilderness exploration. Visitors pursue various activities within the Park and Flamingo including camping, picnicking, hiking, boating, paddling, fishing, wildlife viewing and photography, and observing the natural beauty of the landscape.

2.6 Project Purpose

The purpose of the Master Plan is to guide redevelopment and restoration at Flamingo, consistent with the overall direction established by the Commercial Services Plan approved in 2008. The design program outlines the facility improvements (architecture, infrastructure, site and landscape) and uses that have been identified as desirable and that will be incorporated into the Master Plan. Objectives of the Master Plan include the following:

- To enhance visitor appreciation and stewardship of park resources, integrate Flamingo facilities into the Park environment, and showcase the area's natural surroundings.
- Incorporate “hurricane resistant” design.
- Incorporate sustainable design practices and LEED principles.
- Incorporate South Florida vernacular architectural style.
- Incorporate “Eco-Tourism” principles.
- Consider potential climate change and incorporate design elements addressing the same in the Master Plan.
- Verify the consistency of Master Plan and design program with the Flamingo Commercial Services Plan Finding of No Significant Impact (FONSI).
- Comply with accessibility design standards.
- Consider constructability, park use (wear and tear), and maintenance and operations as design solutions are developed.
- Confirm, during development of the Master Plan, that the design program and budget are consistent with the Park's goals for the Flamingo redevelopment.
- Perform ongoing quality assurance and quality control during Master Plan development.
- Consider the unique location and environmental conditions of the area.
- Follow building code requirements for high-hazard flood zones, and recognize the intense variability of seasonal weather.
- Provide the concessioner with a reasonable opportunity to earn a profit.
- Allow for and provide a range of appropriate visitor opportunities.
- Minimize the impacts to the natural and cultural resources of the Park.

2.7 Flamingo and Climate Change

This section of the Flamingo Master Plan addresses the issue of climate change - how the climate of South Florida is expected to change, what the National Park Service is doing to address the issue, and what this means for the Flamingo Master Plan.

How will Climate Change Affect South Florida?

The earth's climate is changing. Carbon dioxide (CO₂) concentrations in earth's atmosphere have risen 31 percent since 1750, and there is strong evidence that this is in part due to human causes such as deforestation and burning of fossil fuels. When gases like CO₂ build up in the atmosphere, they prevent heat from escaping. Coastal air temperatures and sea surface temperatures are rising. Sea level rise is one expected effect of rising temperatures - one that may have dramatic consequences on coastal areas in general and South Florida in particular because of its low elevation and flat landscape. More intense hurricane activity is another expected effect of climate change.

SEA LEVEL RISE

The United Nations Intergovernmental Panel on Climate Change (IPCC) predicts a 7- to 23-inch rise in global sea level between now and 2100 due to the expansion of warming seawater and the contributions of melting glaciers (IPCC 2007). The National Academy of Sciences (2008) reviewed available research and projections of sea level rise for South Florida, and concluded that sea level in South Florida could possibly rise as much as 14 inches by mid-century and 36 inches by the end of the century if rising greenhouse gas emissions are not curbed.

Even the more modest projections imply a potentially large impact on the low-lying Everglades and the near-coastal built environment. Low-lying coastal regions will be particularly susceptible to inundation. Everglades National Park has an elevation lower than 3 feet in most places. Mangrove trees – which stabilize sediments – might be able to keep pace with slowly rising sea levels by accumulating soil and effectively raising ground elevation. However, if sea level rise is rapid, coastal estuarine and nearby freshwater habitats could be inundated by rising seawater.

WARMING OCEANS AND HURRICANES

According to IPCC, sea surface temperatures may increase 2°F to 5°F by 2100. A sea surface of 80°F or more - combined with favorable humidity and wind conditions - is enough to fuel powerful hurricanes. Some scientists expect that in the future, as ocean temperatures continue to rise, hurricanes will be more frequent and intense. Others warn that long-term trend analyses can be potentially biased because hurricanes are now more easily detected and monitored as a result of better technology. One thing is certain; when intense hurricanes do occur, storm surge flooding that often accompanies such storms will be made worse by sea level rise, placing both natural ecosystems and man-made facilities at even greater risk.

Although there is uncertainty about the pace and exact effects of climate change, there is little doubt that the natural ecosystems and built environment of South Florida are very likely to experience changing weather patterns and more extreme events than the region has historically experienced.

What is the National Park Service Doing About Climate Change?

NPS managers and scientists working in South Florida are planning for climate change. By protecting natural areas from pollution and over-harvesting, restoring already damaged ecosystems, and modifying and improving park facilities, the parks will endure despite the added threat of climate change.

At the national level, there is now sufficient knowledge about climate change for the National Park Service (NPS) to address the issue on an agency-wide basis. In early 2009, NPS created the Climate Change Response Steering Committee to serve as an advisory body to the Park Service director and NPS's National Leadership Council. The committee has developed a draft Climate Change Response Strategy to understand, communicate, and cope with the effects of rapid climate change. This strategy defines goals and objectives to guide NPS actions in four integrated areas or components: science, adaptation, mitigation, and communication. These components and related goals are outlined below.

SCIENCE

The NPS will learn from and apply the best available climate change science and collaborate with scientific agencies and institutions to meet the specific needs of management as it confronts the challenges of climate change.

SCIENCE GOALS

- Use the best available scientific data and knowledge to inform decision making in regard to climate change.
- Collaborate with partners to develop, test, and distribute the best results from climate change models to inform NPS activities.
- Work with others to inventory and monitor key attributes of the natural resources, cultural resources, and visitor experiences likely to be impacted by climate change. Systematically assess the vulnerability of these resources to climate change.
- Acquire, provide, and apply scientific information to reduce the National Park System's carbon footprint.

ADAPTATION

In a changing climate, adaptation means adjustments in both natural ecosystems and human behaviors. The NPS's ability to remain flexible in its response as new information is acquired, yet consistent with its policies and legal mandates, is critical for effective adaptation. The NPS will work to build its adaptation capacity.

ADAPTATION GOALS

- Incorporate climate change considerations and responses in all levels of the NPS planning framework.
- Implement adaptation strategies that promote ecosystem resilience and enhance restoration, conservation, and preservation of park natural resources.
- Develop, prioritize, and implement management strategies to preserve climate-sensitive cultural resources.
- Include climate related vulnerability assessments in project approval and funding decisions.
- Enhance the sustainable maintenance, design, and construction of park infrastructure.

MITIGATION

To do our part in mitigating the cause of climate change, we will reduce the National Park System's carbon footprint through energy efficient practices and integrating mitigation into all business practices, planning, and the NPS culture.

MITIGATION GOALS

- Substantially reduce the National Park System's carbon footprint from 2008 levels by 2016 through aggressive commitment to greener operations.
- Integrate climate change mitigation into NPS business practices and culture.
- Incorporate biological carbon sequestration as a mitigation option where it is consistent with the NPS mission.

COMMUNICATION

Through clear, directed communication, we will raise our employees' and the public's awareness of the implications of climate change for national parks and the efforts that we can make to lessen the impacts. We will train employees and managers in the four components of this strategy.

COMMUNICATION GOALS

- Coordinate and distribute climate change information throughout the NPS.
- Increase climate change knowledge and understanding within the NPS.
- Provide external communications about the implications of climate change and the NPS response.
- Model and communicate sustainable practices that lead by example.

How is Climate Change Being Addressed at Flamingo?

One of the first questions to ask, given climate change projections, is "Should the NPS abandon Flamingo, or should facilities be rebuilt there?" To answer this question, the NPS considered the expected life span of the facilities in the context of sea level rise projections. The Energy Independence and Security Act of 2007 directs that decisions about federal facilities be made considering a study period of 40 years. Assuming it takes 10 years to complete rebuilding of Flamingo facilities, decisions we make today should reflect sea level conditions 50 years from now. By 2060, sea level is projected to have risen as much as 14-16 inches in South Florida. Nonetheless, the NPS believes that it makes sense to rebuild at Flamingo for the following reasons:

- Provided the facilities at Flamingo are planned and designed with climate change in mind, the facilities proposed in this plan should be capable, during their useful life, of coping with the projected effects of climate change. This includes potential sea level rise and greater storm surge associated with more frequent and intense hurricanes.

- There is no suitable alternate location within Everglades National Park for replacing Flamingo facilities. Most of Everglades National Park is designated wilderness, where developed facilities are inappropriate and not permitted. Just as importantly, Flamingo’s real attraction is its coastal location, with views of Florida Bay and access to the Park’s more than 600,000 acres of marine and estuarine waters.
- As a historically disturbed (filled and elevated) area that has accommodated visitor and operational facilities for the past 50 or so years, it make sense to use Flamingo in this way for the next 50 years, albeit in a more sustainable, climate-change aware way. Fifty years from now, the question of whether facilities should remain at Flamingo will need to be reconsidered in the context of updated climate change projections and observed climate change effects like sea level rise, increased storm surge, and increased hurricane intensity.
- In future years, climate change impacts on the Park in general, and Flamingo in particular, will be better understood and future projections may become more accurate than they are today. This critical information, gained through direct observation, monitoring, and updated modeling, would allow the NPS and the Flamingo concessioner to potentially re-assess the identified project phasing strategy described in this plan. This knowledge would allow for adjustments in implementation to better manage park resources, provide for quality visitor experiences, and ensure wise use of funds.
- This Master Plan for Flamingo is an opportunity for the NPS to play a leadership role in (1) adapting to climate change, (2) rebuilding Flamingo in a way that protects taxpayers’ investments while reducing the area’s contributions to climate change, and (3) engaging the public in conversations about changing climate and sustainability. The ways that the NPS intends to accomplish this are outlined below, organized according to the four components of the NPS Climate Change Response Strategy. More specifics on planning, design, and technology are provided in Section 4 of this document.

SCIENCE

- Use the best available scientific data and knowledge about climate change to inform decision making at Flamingo.
- Work collaboratively to inventory and monitor resources and visitor experiences likely to be affected by climate change, and manage Flamingo facilities and activities adaptively to minimize such impacts.
- Acquire, provide, and apply scientific information to reduce the “carbon footprint” at Flamingo.

ADAPTATION

Consolidate and minimize the developed footprint by building only what is truly needed and economically feasible, and by using spaces under elevated structures for other purposes (parking, shaded gathering areas, etc.) that would not be adversely impacted by flooding.

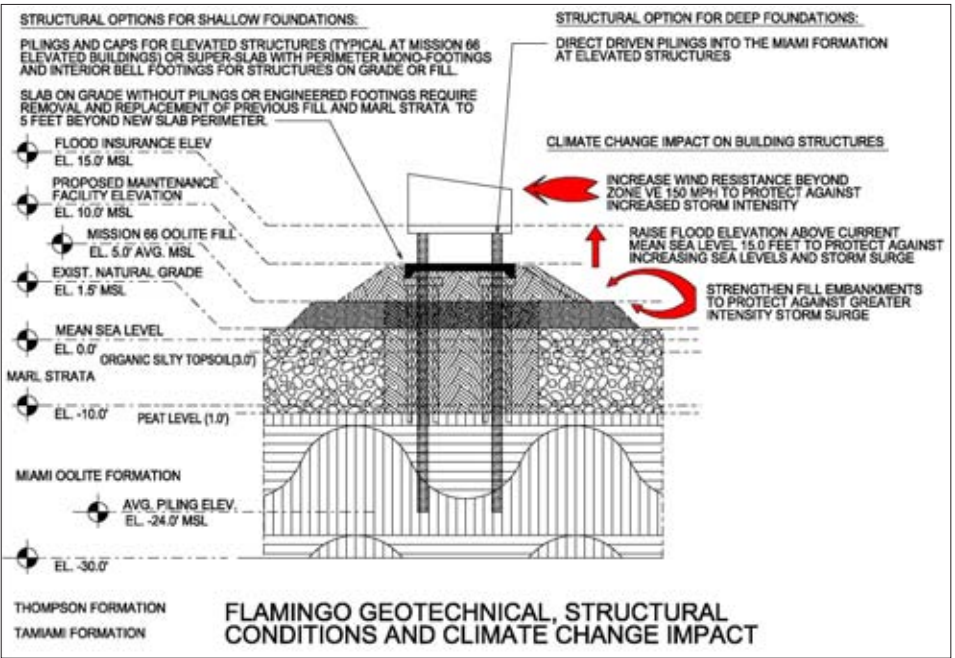
- Keep infrastructure simple to reduce long-term maintenance needs and vulnerability to strong winds, storm surges, and salt-water corrosion.
- Restore previously disturbed areas that are no longer needed for facilities.
- Consider how development can best be sited, oriented, and designed to take maximum advantage of natural conditions such as breezes, natural light, energy from the sun, shade, etc.
- Elevate and armor structures - especially overnight lodging and housing - to withstand storm surges and sea level rise impacts.
- Build facilities to withstand Category 4 or greater hurricane-force winds.
- Adaptively reuse existing infrastructure where possible.
- Use low-cost, mobile buildings that can be moved or removed when conditions warrant (e.g., eco-tents that are disassembled and stored during summer/fall, when visitor use is lower and hurricanes are likely).
- Use native and/or local landscape plants and materials that ameliorate harsh environmental conditions, fit into the landscape, and require little special care.

MITIGATION

- Design and construct facilities that use the least amount of energy and water practicable. Use sustainable technologies such as solar power, graywater recycling, natural ventilation, ground-coupled cooling systems, and low-flow water fixtures to reduce energy and water consumption.
- Use sustainable and conservation materials and practices during construction, operations, and maintenance.
- Rebuild and restore in a way that encourages visitors and staff to walk, ride bicycles, or use shuttles instead of driving within Flamingo.

COMMUNICATION

- Through training, make NPS staff and concessions employees based at Flamingo aware of climate change issues and responses.
- Teach visitors and staff about natural systems, ecosystem restoration, and “ecosystem services.”
- Incorporate the latest information about climate change into interpretive programs so that visitors understand the causes and effects of climate change, and how they can reduce their contributions to climate change.
- Showcase sustainable features and technologies as an integral part of the interpretive programs and visitor experience at Flamingo.
- Communicate with park neighbors, partners, and the general public about the implications of climate change and the Park’s response at Flamingo.

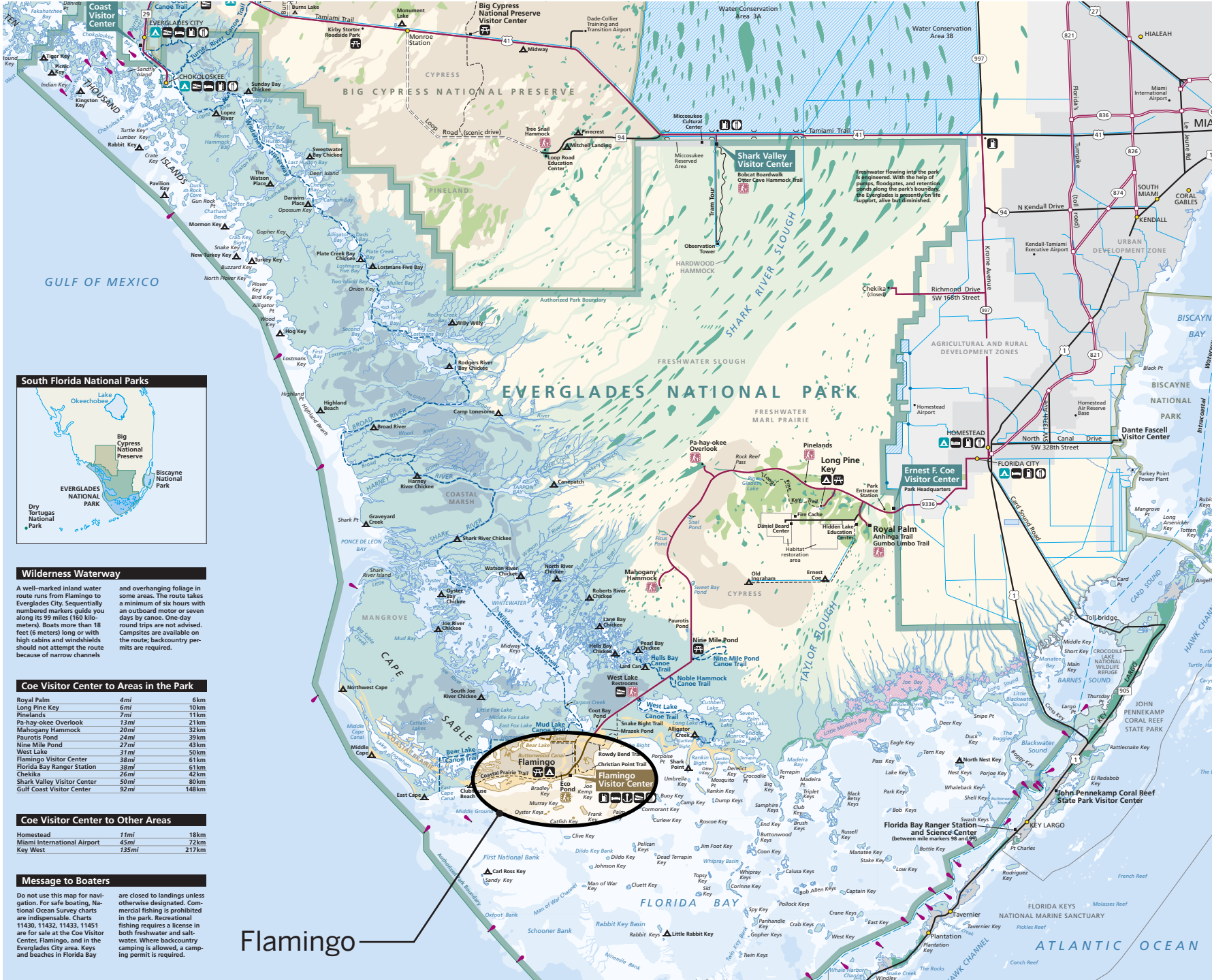


Primary information for this diagram based on Nodarse & Associates Geotechnical Reports, August 2007

3.0 flamingo today

Everglades National Park is located on the southernmost mainland area of Florida, encompassing approximately 1.5 million acres and is the largest subtropical wilderness in North America. The Park is a designated World Heritage Site, an International Biosphere Reserve, and a Wetland of International Significance. The Park was officially dedicated as Everglades National Park in December 1947. At its southernmost area is the Flamingo Developed Area, the largest developed area in the Park. Flamingo is at the terminus of the 38-mile long main park road that extends southwest from the main park visitor and administration center near Homestead, Florida. While the primary mission of Everglades National Park is the conservation of natural and cultural resources, Flamingo has been developed to provide a destination for interpretive, educational, and recreational programs for the Park's visitors. Flamingo was conceptualized by the National Park Service in the early 1950s to meet the goals of the federally sponsored Mission 66 program, a development program with the primary goal to improve deteriorated and dangerous conditions in the National Parks - the result of a massive visitor boom after World War II. Since its development, visitors to both the Park and Flamingo have grown, with park visitation in 2009 of 900,882 visitors.

Visitors come to the Park for an experience that cannot be found anywhere else in the world. A wide variety of activities await and include fishing, boating, kayaking, canoeing, birding, hiking, camping, biking, and wildlife viewing. The Park's diversity attracts visitors of all types from all over the world, with interests as varied as they are.



Everglades National Park, Source: NPS

The extensive variety of activities is influenced by the varying climatic conditions and seasons of use. Peak visiting times typically range from December to April during the winter dry season. During the dry season, visitors have greater access to Park Service led tours and programs as well as more available facilities. Relief from nuisance insects - including mosquitoes and biting flies - during the winter season allows for a more pleasant outdoor experience. Wildlife tend to congregate in greater numbers at water holes that have lower water levels during the dry period, making wildlife viewing during this season more accessible. A large number of bird species winter in warm South Florida and their presence provide a haven for bird enthusiasts.

During the wet summer months between May and November, there are limited facility hours, more facility closures, and fewer recreational opportunities than during the dry season. As water levels rise, animals disperse, making wildlife viewing sporadic and more difficult. The increased water levels also bring elevated numbers of nuisance insects, compromising the outdoor experience. Heat, humidity, and the possibility of tropical storms and hurricanes may also impact visitor comfort and trip coordination.¹

In 2005, Flamingo was severely damaged by storm surges of up to nine feet during hurricanes Katrina and Wilma. Prior to the hurricanes, Flamingo offered a wide range of visitor services including a visitor center, marinas, stores, campgrounds for individuals and groups, a range of overnight accommodations in the Flamingo Lodge and in cottages, a service station, staff housing, and administrative and maintenance facilities. Prior to the hurricanes, these facilities and some services had been in decline due to their age and the harsh Flamingo environment. Much of this infrastructure was damaged or destroyed in the hurricanes, leaving a number of the facilities damaged beyond repair. Since 2005, the heavily damaged or destroyed facilities have been demolished and removed. Today Flamingo offers minimal visitor services at the marina with the only overnight accommodations offered at the campgrounds.

In 2006, the National Park Service approved funding to study how best to rebuild the Flamingo Developed Area with the goal of restoring a full range of visitor services including overnight accommodations. The plan that resulted is the Flamingo Commercial Services Plan and Environmental Assessment, which was approved in July 2008. Since the approval of the Flamingo Commercial Services Plan, several elements of the selected plan received emergency hurricane



Flamingo Visitor Center Area Enlarged Map, Source: NPS

¹ NPS 2008 Flamingo Commercial Services Plan

funding, largely as replacement-in-kind projects; these projects have been completed. The work included rebuilding the outdoor amphitheater, constructing elevated park housing structures, constructing several park maintenance buildings, and constructing two backcountry camping platforms (“chickees”) in Florida Bay.

Everglades National Park has been administratively listed on the National Register of Historic Places, although official National Register documentation had not been generated as of 2009. The Flamingo Developed Area was not specifically identified in the National Register listing, but elements of Flamingo have been identified by the Florida SHPO as eligible for listing.

The Flamingo Mission 66 Developed Area is classified as a historic district under the National Register of Historic Places under Criterion A for its association with the Mission 66 initiative within the National Park Service. It is also classified under Criterion C for embodying distinctive characteristics of Park Service Modern design. The district boundaries were established to include all of the significant cultural landscape features within the developed area. The historic district boundary for Flamingo follows the eastern, western and northern boundaries of tracts acquired by the federal government for the establishment of Flamingo. The southern boundaries of the tracts have changed over time due to filling the bay for construction of the visitor center and marina, as well as wind and water erosion. Thus, the southern boundary is considered to be the shoreline of the Park.

The Flamingo Mission 66 Developed Area district contains a number of features that are considered contributing to the historic district, which are identified on Map 3.1.3, Historic District Boundary and Contributing Features.

3.1 Existing Conditions and Resources

Site visits were conducted with the design team and client group over four days in September 2009 and were followed a month later with a four-day workshop at Everglades National Park in October 2009. A general review and analysis of the site and architecture was conducted at that time.

Information regarding the site was collected from a number of available sources and is incorporated in this section. In conjunction with site visits and in coordination with park staff, the design team developed and analyzed the existing conditions to prepare for Master Plan development. The following existing conditions and resources are summarized from information presented in the Flamingo Commercial Services Plan and from on-site visits.

Topography and Geology

The development area consists of low, flat topography with elevations no greater than seven feet above sea level. Topographic variation at Flamingo is no more than three feet throughout. While flat, the Flamingo Developed Area has had a great amount of topographic modifications through the introduction of fill material. Areas constructed on fill include the visitor center and marina complex, maintenance and housing areas, the main park road roadbed, and camping loops. The fill material consisted of oolite lime rock and gravel overburden.

The parent material is limestone bedrock that is soft and erosion prone. Exposed limestone, called caprock, hardens when exposed to atmosphere and lies typically 10-40 inches below soil surface.

Soils

There are four common soils found in the development area: marl, peat, sand, and rock outcroppings.

Compaction, disturbance, and erosion are the three major causes of soil degradation. Degradation of non-fill soils has primarily occurred in areas where visitors have moved outside designated areas. Shoreline erosion is occurring due to increased frequency of waves hitting the shore from recreational and commercial boats. This erosion results in loss of habitat including loss of useable land, increased sedimentation, decreased water quality, and release of nutrients.

The development area is built on structural fill because the natural soils are not stable enough for construction. The flat topography allows for minor disturbance when leveling, grading and excavating for the proposed development. Soil disturbance and compaction are of concern with the use of heavy machinery. Exposed soil can more easily be eroded by wind and water. To minimize impacts, construction should be limited to the dry season when there is less rainfall and runoff. Mitigation precautions and soil rehabilitation should be taken during construction as outlined in the Flamingo Commercial Services Plan and Environmental Assessment.

Air Quality

Everglades is a Class I designated area - the highest requirement of air quality protection. The Park participates in a number of air quality monitoring programs that are listed in the Commercial Services Plan. Due to the remoteness of Flamingo, there is little air pollution. Existing pollution occurs in the form of local emissions from vehicles and motorboats and occasional reduced visibility due to high humidity and salt mist.² There are no present plans for prescribed burning of vegetation. There are currently no exceedances of the Class I criteria within the Park.

Master Plan improvements will likely bring increased numbers of visitors and subsequently, increased emissions. Measures taken by the Park to reduce on-site vehicular travel within Flamingo, such as houseboats, the shuttle, and the bike sharing system, will help keep emissions to a minimum.

Soundscapes

The remoteness of Flamingo provides visitors with an escape from the noise of suburban and urban areas. The Park is active in preserving an often-overlooked natural resource: the absence of human induced sound. The acoustic environment of Flamingo and the surrounding wilderness and backcountry areas is important to the quality of visitor experience and preservation of wildlife habit. As man-made noise levels increase, so do the impacts on wildlife. Many species of wildlife depend on a degree of silence for communication and survival. The Park works with the NPS Natural Sound Program on soundscape issues and monitoring. Desired conditions for soundscapes in the Park will be identified in its general management plan.

² NPS 2008.

Water

The two major watersheds of Everglades are the Shark River Slough and the Taylor Slough, which outlet near Flamingo at the southern coast of Florida. The Flamingo development is not subject to overland flow from these watersheds because of the fill on which the development is built. Surface water in the area includes Florida Bay, Buttonwood Canal, and Eco-Pond. The Eco-Pond is a ten acre artificial pond, which was built to treat wastewater but is now in the process of returning to a natural state. Groundwater exists in an unconfined aquifer that flows from the north.

All of the water bodies in Everglades National Park are designated Outstanding Florida Waters and are monitored and protected carefully. The high water quality makes these water bodies more susceptible to degradation.

WATER QUALITY

The development area is affected by external and internal pollution sources. Everglades as a whole is impacted by runoff of excess nutrients and contaminants such as fertilizers and pesticides from developments to the north. The development is impacted by on-site non-point source pollution including runoff from boat ramps, fueling facilities, housing/landscaped areas, and parking lots.³

Currently there are no stormwater management facilities or best management practices in place to keep runoff from entering the Park's water bodies. Dredging is an activity that occurs on occasion to allow for boat tours. Oil and gas spills are also a threat to water quality, though spill control kits are provided to lessen the impact in the event of an accident.

WETLANDS

Flamingo is surrounded by wetland habitats that support wildlife. The development area itself does not support wetlands but there are roughly six types of wetlands found near the development area: Estuarine intertidal wetlands, broad-leaved evergreen scrub-shrub wetlands, emergent coastal prairie and salt marsh, broad-leaved evergreen forested wetland, excavated permanently flooded palustrine wetland – unconsolidated bottom, and estuarine subtidal wetland. These wetland types are described in further detail in the Commercial Services Plan.

FLOODPLAINS

The entire development area is within the 100-year floodplain and is also considered a high hazard zone. A sub-zone of the 100-year floodplain is the Federal Emergency Management Agency (FEMA) VE zone (Storm Wave Hazard)⁴ and is the area closest to shore that is subject to storm wave action. While hurricanes are a threat and affect the VE zone, the area can also be impacted by periodic storm surges not associated with hurricanes.

Normal protocol for floodplains within the National Park Service standards is not to develop the area. Due to the entire Flamingo Commercial Services already being built within floodplain, the facilities must comply with the Monroe County floodplain management standards as well as the State of Florida building codes.

Considerable damage occurred in 2005 because of hurricanes Wilma and Katrina. The damages resulted in the lost use of structures and the deposit of flood debris and material from Florida Bay that covered much of the developed area.

Wilderness

The Flamingo developed area is not within the Park's designated wilderness boundary. However, human activity within the area and travel to and from the area can impact the surrounding wilderness, including the vast submerged marine resources of Florida Bay and the Park's backcountry. Flamingo plays a significant role in broadening people's understanding and exploration of the Park's wilderness. At the same time, motorboat use originating from Flamingo and elsewhere perpetuates damage to the extremely shallow, Florida Bay submerged marine wilderness. Everglades National Park is the largest remaining subtropical wilderness in the United States and is designated as an International Biosphere Reserve, highlighting the importance of the area for species preservation.

The Park manages the wilderness according to the Wilderness Act of 1964. Management strategies include limiting development to areas of existing services and necessary utilities and infrastructure, instituting a leave-no-trace philosophy, and enforcing wilderness regulations and the Director's Order #41 (direction within the National Park Service on meeting requirements of Wilderness Act).

⁴ NPS 2008. The VE Zone is the 100-year floodplain with 150 mph winds and storm wave hazard.

Wildlife and Wildlife Habitat

It is surprising for many first time visitors to the Everglades to learn of the diversity of ecosystems and vegetation due to seemingly miniscule variances in site characteristics such as elevation. However, these variations create rich habitats that support multiple and diverse communities of plants and wildlife. Again, while the main project area is developed, it is surrounded by these fascinating systems.

The Flamingo developed area consists mainly of artificially maintained vegetation or mowed lawn. The Commercial Services Plan describes the vegetative communities in detail, but following is a list for reference of the plant/aquatic communities: coastal prairie, salt marshes, mangrove swamps, coastal strand, tropical hardwood hammocks, freshwater (Eco-Pond), and marine/estuarine.

The vegetative communities provide valuable habitat for the unique wildlife found near the development area. For a complete species list, refer to the Flamingo Commercial Services Plan.

Night Sky

Currently lighting at night is minimal. Due to closed overnight accommodations, there is a decreased effect on night skies, migratory birds, and nocturnal wetland species. Potential effects of night skies may include visitors with RVs and lights associated with camping including headlights, flashlights, and campfires.

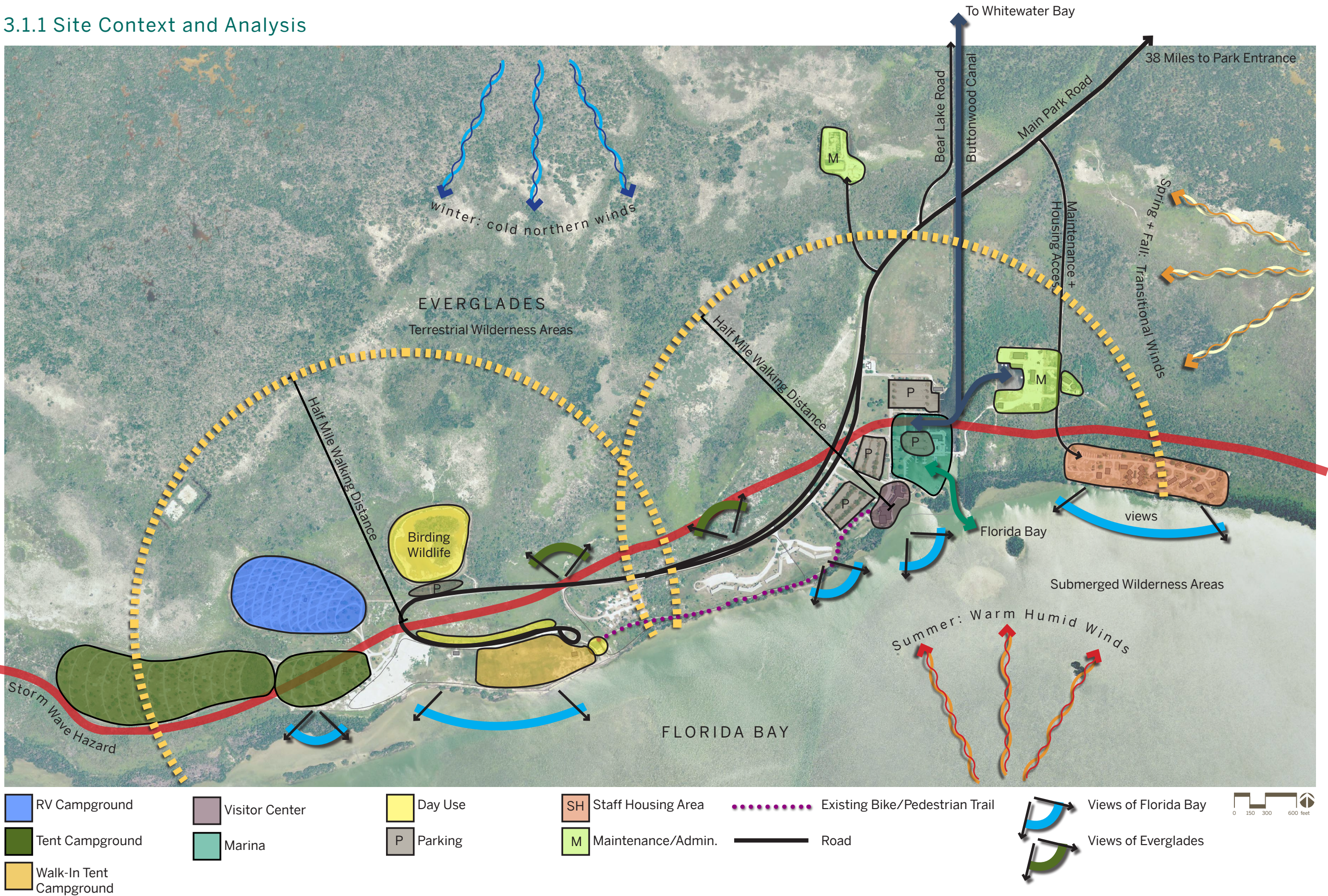
With the addition of rebuilt facilities and new facilities, including the eco-tents, there may be increased effects on nocturnal wildlife. As the Master Plan is developed, additional roadway, parking, and pedestrian area lighting is a recommended addition for safety and security of the visitor and staff. New lighting should meet the requirements of the International Dark-Sky Association (IDA), and existing historic site and building light fixtures should be renovated to help reduce light pollution.

Views

The majority of the site offers expansive views of the Florida Bay as well as the interior areas of the Park. On-site, elevated buildings such as the visitor center provide views from indoors as well as under/through the structure to the Bay and to the Everglades. Views to the interior areas of the Park offer opportunity for watching wildlife, particularly birding.

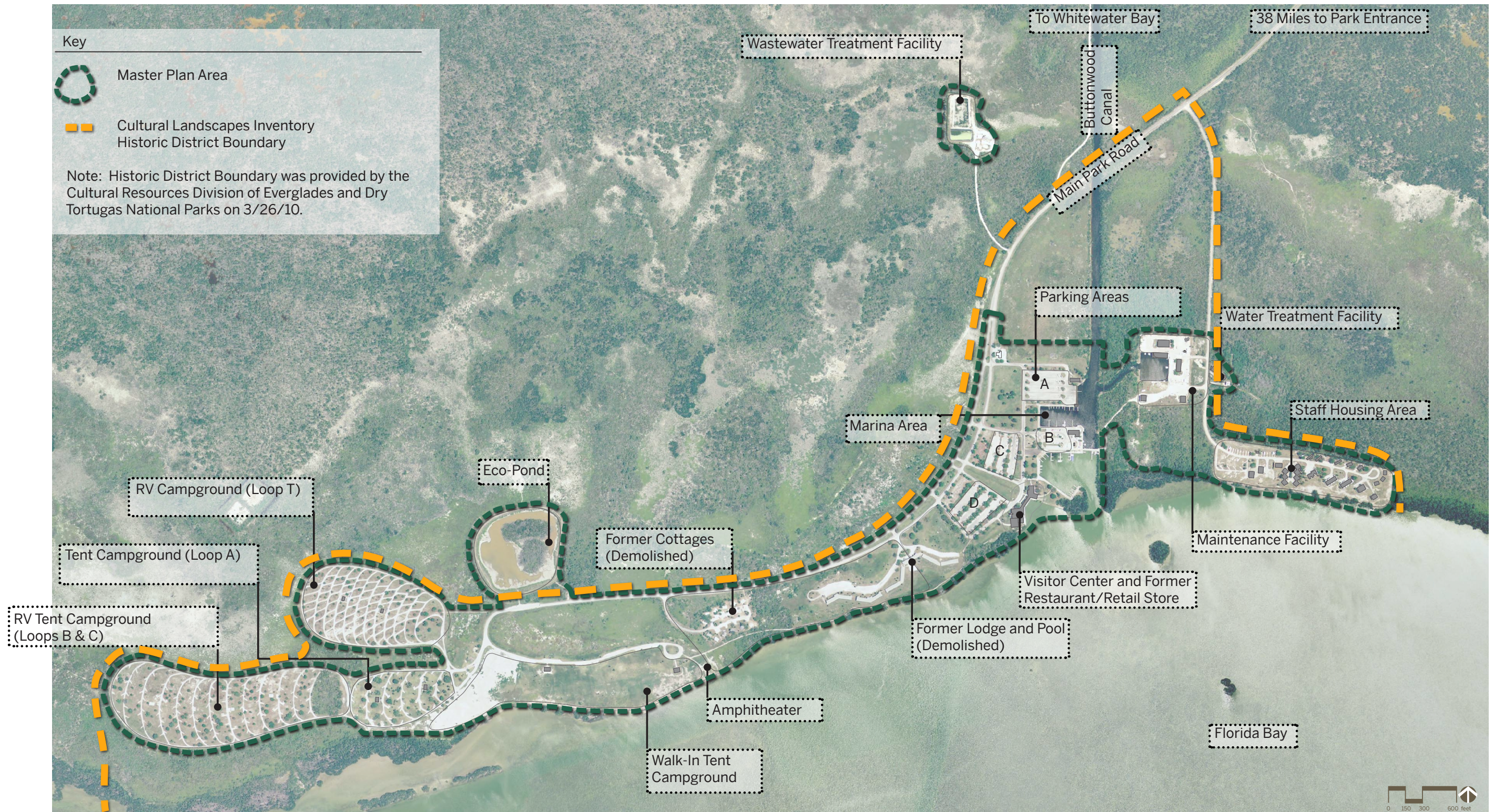
³ NPS 2008.

3.1.1 Site Context and Analysis

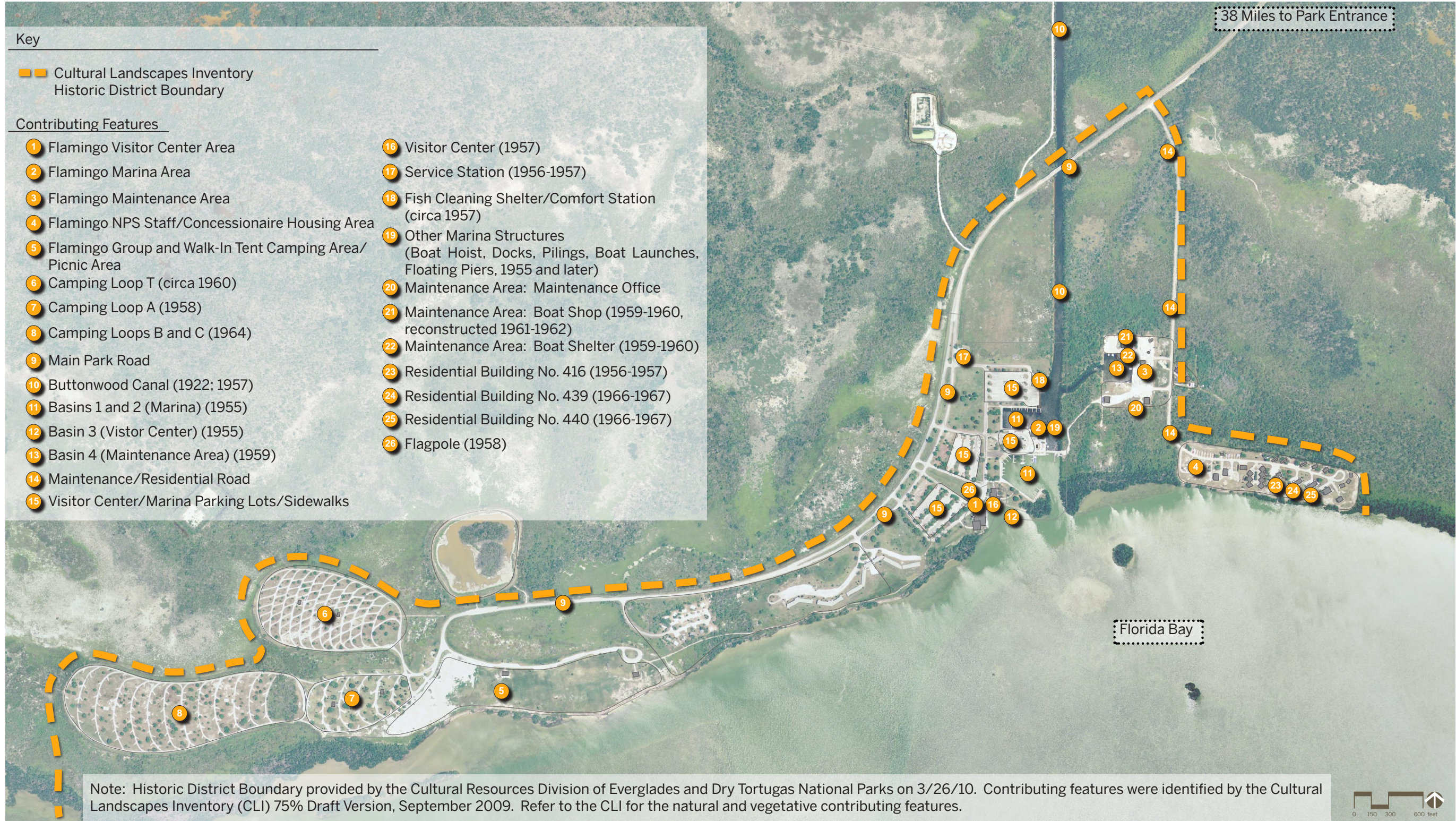


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3.1.2 Existing Site Plan



3.1.3 Historic District Boundary and Contributing Features



3.1.4 Existing Site Photographs



RV Campground (Loop T)



Former Lodge and Cottage Area



Tent Campground (Loop A)



Visitor Center Area



Loops B & C



Eco-Pond



Historic Structures



Camping and Eco-Tent Area



Historic Structures



3.1.4 Existing Site Photographs, continued



Employee Housing



Parking Area C



Former Lodge/Restaurant/Pool (Demolished)



Parking Area D



Parking Area A



Marina Area



Parking Area B



Maintenance Facility



3.1.5 Existing Facilities

The following table summarizes the existing facilities of the Flamingo Developed Area.

Program Area		Description	Vehicle Parking Quantity	Approximate Area (s.f.)	Notes
Flamingo Area Entry					
1	Entry Sign	1	-	-	Dual post mounted sign
2	Mission 66 Gas Station	1	8 +/-	400 s.f. +/-	Mission 66 structure, no parking striping, open pavement space only
3	Site Landscape and Irrigation	yes	-	-	Native plants, no irrigation
4	Emergency Heli-Pad	1	-	-	Grass landing area adjacent to entry
Marina					
1	Parking Lots	asphalt	36 + 80 trailers	140,000 s.f. paved	Historical layout and designation of boat trailer parking is unknown
2	Retail Building - Marina Store	1	-	900 s.f.	Store is run by concessioner; small space
3	Fish Cleaning + Restroom Building	1	-	1,750 s.f.	Square feet under roof, screened, not all enclosed; Mission 66 to be preserved
4	Site Furnishings	yes	-	-	Picnic benches
5	Site Landscape and Irrigation	yes	-	-	Native plants, no irrigation
6	Site Lighting	yes	-	-	Lighting in parking areas
7	Site Signage	yes	-	-	Directional signs
8	Fuel Storage and Pumps	yes	-	-	Fuel tanks moved here recently, 3 sets of (2) pumps (gas/diesel)
9	Canoe and Kayak Rentals	yes	-	-	Via retail store
10	Bicycle Rentals	yes	-	-	Via retail store
11	Boat Ramps	2	-	-	1 in Florida Bay basin; 1 in Whitewater Bay/Backcountry basin
12	Canoe and Kayak Launches	2	-	-	1 in Florida Bay basin; 1 in Whitewater Bay/Backcountry basin
13	Boat Docks	yes	-	-	Multiple in each basin
14	Back Country Chickees	2	-	na	Damaged in hurricanes, new ones are under construction
15	Houseboats	6	-	-	6 rental house boats (sleep 10 each) = 60 people total
Visitor Center (VC)					
1	Parking Lots	asphalt	184 + 60 trailers	280,000 s.f. paved	Historical layout and designation of boat trailer parking is unknown
2	Visitor Center Building	1	-	17,630 s.f.	Mission 66 structure to be preserved
3	Pedestrian Circulation and Plazas	yes	-	-	Concrete and asphalt walks
4	Site Furnishings	yes	-	-	Very few left after damage from hurricanes
5	Site Landscape and Irrigation	yes	-	-	Native plants, minimal irrigation
6	Site Lighting	yes	-	-	Lights along walks and in parking areas
7	Site Signage	yes	-	-	Some signage
Lodge and Cottage Area					
1	Parking Lots	yes	-	-	No longer existing; previously developed fill area
2	Former Lodge Building	7 buildings	120	55,000 s.f.	74 rooms total, destroyed during hurricanes, demolished in early 2009; previously developed fill area
4	Former Cottage Buildings	24 units/12 buildings	30	16,900 s.f.	24 units total, destroyed during hurricanes, demolished in early 2009; previously developed fill area
5	Pedestrian Circulation and Plazas	yes	-	-	No longer existing
6	Site Furnishings	yes	-	-	No longer existing
7	Site Landscape and Irrigation	yes	-	-	Native landscape, irrigation unknown, no longer existing
8	Site Lighting	yes	-	-	No longer existing
9	Site Signage	yes	-	-	No longer existing

3.1.5 Existing Facilities, continued

Program Area		Description	Vehicle Parking Quantity	Approximate Area (s.f.)	Notes
Amphitheater					
1	Road Circulation	yes	-	-	Located at cul-de-sac at end of main park road
2	Parking Lots	yes	23	-	Parking is shared with camping
3	Amphitheater	yes	-	-	Was recently rebuilt, 120 person capacity, seating and screen
4	Pedestrian Circulation and Trails	yes	-	-	Asphalt trail (6' wide) from driveway to seating, all weather surface within seating area
5	Site Furnishings	yes	-	-	PT wood and recycled lumber seating
6	Site Landscape and Irrigation	no	-	-	None
7	Site Lighting	yes	-	-	Some existing lighting
8	Site Signage	no	-	-	None
Walk-in Campground and Group Area					
1	Parking Lots	yes	77	-	Parking along roadside, shared with amphitheater
2	Comfort Station Building	2	-	1,200 s.f.	Shared by group and walk-in camping site users
3	Pedestrian Circulation and Plazas	none	-	-	None
4	Camp Sites	65 sites + 3 group	-	na	Regulations: maximum 8 persons, 2 vehicles and 2 tents per site; groups: maximum 15 persons, 4 vehicles and 2 tents per site
5	Site Furnishings	yes	-	-	Grill at each site and some picnic benches
6	Site Landscape and Irrigation	yes	-	-	Native plants, no irrigation
7	Site Lighting	no	-	-	No lighting is provided
8	Site Signage	no	-	-	Sites are not labeled
Drive-in Tent Campground (Loop 'A')					
1	Comfort Station Buildings	2	2	900 s.f.	Central location for entire loop use
2	Camp Spurs (asphalt)	55 sites	55	300 s.f.	Regulations: 8 person, 2 vehicle and 2 tents (or 1-RV and 1-tent) per site
3	Site Furnishings	yes	-	-	Grills, picnic tables, and some fire rings
4	Site Landscape and Irrigation	yes	-	-	Native plants, no irrigation
5	Site Signage	yes	-	-	Sites are individually labeled with paint on asphalt, drive rows are labeled with sign on post (ex. Sites 1-5)
6	Fee Station	1	none	100 s.f. +/-	1 building for all camping registration
7	Trash and Recycling Areas	yes	-	-	Near entrance to campground
8	RV Dump Station	1	-	-	1 dump station for gray water and sewage near easternmost comfort station
Drive-in Tent Campground (Loop 'B')					
1	Comfort Station Buildings	2	2	900 s.f.	Central location for entire loop use
2	Camp Spurs (asphalt)	58 sites	58	500 s.f.	Regulations: 8 person, 2 vehicle and 2 tents (or 1-RV and 1-tent) per site
3	Site Furnishings	yes	-	-	Grills, picnic tables, and some fire rings at each site
4	Site Landscape and Irrigation	yes	-	-	Native plants, no irrigation
5	Site Signage	yes	-	-	Sites are individually labeled with paint on asphalt, drive rows are labeled with sign on post (ex. Sites 1-5)
6	Trash and Recycling Areas	yes	-	-	Near comfort stations

1.0

2.0

3.0

4.0

5.0

6.0

3.1.5 Existing Facilities, continued

Program Area		Description	Vehicle Parking Quantity	Approximate Area (s.f.)	Notes
Drive-in Tent Campground (Loop 'C')					
1	Comfort Station Buildings	1	2	900 s.f.	Central location for entire loop use
2	Camp Spurs (asphalt)	56 sites	56	350 s.f.	Regulations: 8 person, 2 vehicles and 2 tents (or 1-RV and 1-tent) per site
3	Site Furnishings	yes	-	-	Grills, picnic tables, and some fire rings at each site
4	Site Landscape and Irrigation	yes	-	-	Native plants, no irrigation
5	Site Signage	yes	-	-	Sites are individually labeled with paint on asphalt, drive rows are labeled with sign on post (ex. sites 1-5)
6	Trash and Recycling Areas	yes	-	-	Near comfort stations
7	Trails	1	-	-	Coastal Prairie Trail at west end of Loop 'C'
RV Campground Area (Loop 'T')					
1	Comfort Station Buildings	2	2	900 s.f.	Central location for entire loop use
2	Camp Spurs (asphalt RV sites)	66 sites	66	1,200 s.f.	Regulations: 8 person, 1 RV and 1 tent (or 2 tents) per site
3	Site Furnishings	yes	-	-	Grills, picnic tables, and some fire rings at each site
4	Site Landscape and Irrigation	no	-	-	Native plants, no irrigation
5	Site Lighting	no	-	-	
6	Site Signage	yes	-	-	Sites are individually labeled with paint on asphalt, drive rows are labeled with sign on post (ex. sites 1-5)
7	Trash and Recycling Areas	yes	-	-	Near comfort stations
8	RV Dump Station	1	-	-	1 dump station for gray water and sewage near eastern most comfort station
Eco-Pond Area					
1	Parking Lot	yes	25	-	Asphalt along side of roadway
2	Pedestrian Circulation and Trails	yes	-	-	Natural surface trail around Eco-Pond
3	Site Furnishings	no	-	-	None
4	Site Landscape and Irrigation	no	-	-	None
5	Site Lighting	no	-	-	None
6	Site Signage	no	-	-	None
Maintenance Area					
1	Parking	yes	na	-	No designated or striped parking, open pavement space is used
2	Existing NPS Warehouse Buildings	2	na	6,865 s.f.	2 renovated buildings and plans for 2 new small buildings
3	Concession Warehouse Buildings	1	na	1,200 s.f.	1 partial small building, and 1 to be demolished soon
4	Site Lighting	yes	-	-	Limited site lighting
5	Fuel Storage	old	-	-	Tanks were historically located in the maintenance yard
6	Canoe and Kayak Rentals Storage	yes	-	-	Storage and repairs
7	Boat Storage	yes	-	-	Large concrete structure over north end of basin for wet storage, dry storage unknown
8	Service Area	yes	-	-	Trash and recycling
NPS Employee Housing					
1	Housing Buildings	21 units	42	-	3 quadplex; 3 duplex and 3 single houses
2	Common Recreation Building	1	-	2,000 s.f.	Screened in recreation and gathering building (shared), park on grass
3	Trailer Spurs	8 trailer spurs			

3.1.5 Existing Facilities, continued

Program Area		Description	Vehicle Parking Quantity	Approximate Area (s.f.)	Notes
Concession Employee Housing					
1	Parking Lots	none	-	-	Parking at each unit only
2	Housing Buildings	27 dorm rooms	27	7,380 s.f.	Semi-private dorm rooms with minimal amenities; additional concessions housing was destroyed in 2005
3	Trailer Spurs	16 trailer spurs			
Day Use Areas					
1	Parking Lots	shared	na	-	Limited - shared with walk-in camping area
2	Site Furnishings	yes	-	-	(2) grills and picnic tables
Overall Site Area					
1	Main Roads	asphalt	-	-	Asphalt roads with no curb and gutter
2	Parking Areas	asphalt	-	-	Asphalt parking areas, some with asphalt curbing, no real stormwater conveyance
3	Bicycle Trails	none	-	-	None
4	Pedestrian Trails	Guy Bradley Trail	-	-	Located between visitor center and walk-in campground area
Site Infrastructure					
1	Site Lighting	some	-	-	Parking lot lighting
2	Stormwater Management	none	-	-	No real conveyance or treatment
3	Potable Water	yes	-	-	On-site treatment facility
4	Sanitary Sewer	yes	-	-	On-site treatment facility
5	Electric Service	yes	-	-	Via underground lines from Miami-Dade, Florida Power and Light
6	Telecom	yes	-	-	Via antenna and wireless services
7	Fire Suppression	yes	-	-	Existing hydrants, new buildings will be sprinkled

3.2 Building Analysis

Building Name, Description, Condition	Opportunities	Constraints
Mission 66 Service Station		
<ul style="list-style-type: none">• Historic Mission 66 Building - Contributing. Originally served as fuel service station at Flamingo.• Slab on grade construction.• Structurally sound but deteriorated building at Flamingo district entry.• Abandoned and unutilized.• Deteriorated and worn finishes and building assemblies.	<ul style="list-style-type: none">• Historic and cultural resource available for restoration, rehabilitation, re-use and interpretation. Representative example of Flamingo Mission 66 aesthetic.• Existing building area available for programmed uses; accessible by existing park roads and served by existing utilities and services.• Provides an opportunity to populate and improve the Park entry and exit visitor experience.• Example of passive sustainable strategies (daylighting, shading). Additional sustainable features may include energy efficiency, solar power generation, water collection and conservation.	<ul style="list-style-type: none">• Balance must be achieved to preserve the historic character of the building with modern program needs, code requirements and sustainability initiatives.• Deteriorated finishes and building assemblies require rehabilitation.• Insect and vulture populations must be mitigated.• Isolated building location limits access options. Thoughtful access to proposed functions is required to ensure minimal traffic impact.• Space is limited to existing footprint thereby limiting programming opportunities.
Mission 66 Visitor Center		
<ul style="list-style-type: none">• Historic Mission 66 Building - Contributing. Originally built as the visitor center and Concessioner Restaurant. Survived the 2005 hurricanes.• Elevated slab construction.• Structurally sound but deteriorated building within Flamingo district. Interior of structure was impacted by 2005 hurricanes.• Current area is underutilized. Park rangers occupy north wing. South wing (former restaurant and gift shop) is unutilized with significantly deteriorated finishes.	<ul style="list-style-type: none">• Historic and cultural resource available for restoration, rehabilitation, re-use and interpretation. Representative example of Flamingo Mission 66 aesthetic.• Highly visible and iconic building showcases park history and allows for superior interpretation opportunities and unparalleled views of Florida Bay. Showcase location for restoration efforts in the Flamingo District.• Existing building area available for programmed uses; accessible by existing park roads and parking and served by existing utilities and services. Existing exterior space is shaded, open to breezes and accessible.• Centralized location is primary wayfinding landmark.• Example of passive sustainable strategies (daylighting and views, shading, orientation, durability). Additional sustainable features may include solar power generation, water efficiency, energy efficiency and indoor air quality.	<ul style="list-style-type: none">• Balance must be achieved to preserve the historic character of the building with modern program needs, code requirements and sustainability initiatives.• Building shell requires structural stabilization, concrete and finish rehabilitation, and envelope improvements and restoration of exterior aluminum railings.• Code compliance and accessibility improvements are required throughout.• Overgrown historic vegetation distracts from appearance and hinders maintenance, safety and public use at exterior spaces. Care is required in the restoration of this vegetation.• Space is limited to existing footprint thereby limiting programming opportunities.
Mission 66 Marina Building		
<ul style="list-style-type: none">• Historic Mission 66 Building - Non-Contributing due to modifications. Originally built as the marina store. Survived the 2005 hurricanes.• Slab on grade construction• Continues to function as the marina store and is the only district location for retail, minimal food service (prepared and packaged foods), supplies and public restrooms/showers.• All marina operations are based from this building (gas service, boat rental and service, boat tour ticketing).	<ul style="list-style-type: none">• Functionally relevant building in good condition.• Existing building area available for programmed uses; accessible by existing park roads and parking and served by existing utilities and services.• Example of passive sustainable strategies (daylighting, shading, durability).	<ul style="list-style-type: none">• Site constraints create congestion due to overlap of vehicular, pedestrian and service traffic.• Best management practices and sustainable strategies must be employed in all proposed construction near the water's edge.• Space is limited by existing footprint and by location on constrained land area thereby limiting programming opportunities.
Mission 66 Fish Cleaning and Restroom Building		
<ul style="list-style-type: none">• Historic Mission 66 Structure - Contributing. Originally built for and in continuous use for intended purpose.• Slab on grade construction.• Accessibility and sanitary modifications have been implemented.	<ul style="list-style-type: none">• Functionally relevant historic structure in good condition. Representative example of Flamingo Mission 66 aesthetic.• Passive sustainable strategies in place (daylight, passive ventilation and durability). Additional sustainable features may include solar power generation, water efficiency.	<ul style="list-style-type: none">• Balance must be achieved to preserve the historic character of the building with modern program needs, code requirements and sustainability initiatives.
Mission 66 Lodge and Cottages Site (buildings demolished 2008-2009)		
<ul style="list-style-type: none">• Former historic Mission 66 Development including multi-building lodge, pool and cottages.• Slab on grade construction.• Buildings were catastrophically damaged by 2005 hurricanes Katrina and Wilma and were subsequently demolished.	<ul style="list-style-type: none">• Previously developed area which is cleared and available to accommodate re-development to programmed functions.• Opportunity to reduce overall development footprint by streamlining and consolidating future development programs.• Centralized and visible location for implementation and highlighting of sustainable building process and strategies.	<ul style="list-style-type: none">• Adjacency to the iconic Mission 66 historic visitor center area requires sensitivity in design and screening to ensure the prominence of the historic structure.• Building location, orientation and configuration must respond to Flamingo's unique environmental conditions, climate change challenges, and National Park Service standards for sustainable building solutions.• Best management practices must be employed in all proposed construction near the water's edge.
Campground Fee Station		
<ul style="list-style-type: none">• Recently constructed building for fee collection. Functions seasonally.• Slab on raised earthen berm construction.	<ul style="list-style-type: none">• Existing structure in good condition for continued use.• Employs materials consistent with the Park goals of new architectural treatment of buildings (concrete block and metal roofing).	<ul style="list-style-type: none">• Location is centralized to serve existing camping loops.• Additional camping areas (eco-tents) may require alternate access or alternate location to better manage the camping activities.

Building Name, Description, Condition	Opportunities	Constraints
Comfort Stations		
<ul style="list-style-type: none">Existing buildings throughout campgrounds with toilets, showers and dishwashing facilities. Cold water only (solar water heat is under current contract).Slab on grade construction.	<ul style="list-style-type: none">Functionally relevant existing buildings in good condition for continued use.Some of the buildings employ materials consistent with the Park goals for architectural treatment of buildings. Remaining buildings are easily adapted with maintenance level upgrades (roofs, doors, fixtures).Passive sustainable strategies in place (daylight, ventilation, opportunity to incorporate and highlight sustainable features including solar power generation, water collection and water efficiency).	<ul style="list-style-type: none">Facilities are adequate for current camping occupancy rates. Additional development will require additional facilities.
Mission 66 Boat Shelter		
<ul style="list-style-type: none">Historic Mission 66 Shade Structure - Contributing. Adjacent (non-historic) boat hoist is present but abandoned.	<ul style="list-style-type: none">Functionally relevant historic and cultural resource available for rehabilitation, re-use and interpretation. Representative example of Flamingo Mission 66 aesthetic.Passive sustainability in place (shading, durability).	<ul style="list-style-type: none">Balance must be achieved to preserve the historic character of the structure with modern operational needs, code requirements and sustainability initiatives.
Mission 66 Boat Shop		
<ul style="list-style-type: none">Historic Mission 66 Building - Contributing. Originally built as repair and maintenance facility. Currently functions as emergency vehicle storage.Slab on grade construction.Structurally sound deteriorated building. Under current contract for demolition.	<ul style="list-style-type: none">Existing building area could be available for programmed uses; accessible by existing park roads and served by existing utilities and services.Scheduled demolition creates the area for efficient redevelopment on previously developed land with existing utilities and services.New developments allow for implementation and highlighting of sustainable building process and strategies. Additional sustainable opportunities include stormwater management, energy efficiency, passive ventilation, daylighting, water collection and efficiency and solar power generation.	<ul style="list-style-type: none">Best management practices and sustainable strategies must be employed in all construction near the water's edge.
NPS New Office and Emergency Vehicle Storage Facilities		
<ul style="list-style-type: none">Two new warehouse and office buildings under current contract.Slab on raised earthen berm construction.	<ul style="list-style-type: none">New durable structures to accommodate NPS functions.	<ul style="list-style-type: none">Planned to meet current needs. Fixed footprint limits.
NPS Maintenance Warehouses		
<ul style="list-style-type: none">Two existing warehouses (recently upgraded and renovated for NPS use).Slab on grade construction.	<ul style="list-style-type: none">Recently renovated warehouses in good condition for re-use.Passive sustainable strategies in place (ventilation, durable). Opportunity to incorporate additional sustainable features including solar power generation and water collection and efficiency, sustainable site strategies, durable materials.	<ul style="list-style-type: none">Space is limited to existing footprint thereby limiting programming opportunities.Best management practices and sustainable strategies must be employed in all construction near the water's edge.
Miscellaneous Maintenance Buildings		
<ul style="list-style-type: none">Miscellaneous maintenance buildings within Maintenance Yard.Slab on grade construction.	<ul style="list-style-type: none">Existing buildings can maintain temporary functions.	<ul style="list-style-type: none">Locations and sizes limit the program that can be accommodated.
NPS Mission 66 Duplex Buildings 416, 439 and 440		
<ul style="list-style-type: none">Historic Mission 66 Quad-plex Housing Units - Contributing. Continuously operating as staff housing. Survived 2005 Hurricanes.Elevated slab construction.	<ul style="list-style-type: none">Functionally relevant historic structures in good condition. Representative example of Flamingo Mission 66 aesthetic.Example of passive sustainable strategies (daylighting, shading, durability). Maintenance replacements can implement additional energy and water efficiency measures as well as envelope improvements.	<ul style="list-style-type: none">Balance must be achieved to preserve the historic character of the building with modern code requirements and sustainability initiatives.

Building Name, Description, Condition	Opportunities	Constraints
Miscellaneous Housing		
<ul style="list-style-type: none">Existing housing units. NPS and concessioner staff housing.Elevated slab construction.Several structures were catastrophically damaged by hurricanes Wilma and Katrina in 2005. Buildings were subsequently demolished.	<ul style="list-style-type: none">Functionally relevant structures in good condition.Previously developed area is cleared and able to accommodate re-development.Passive sustainable strategies are in place (orientation, durable materials, impervious surfaces, reflective roofing). Additional sustainable strategies can be integrated through maintenance activities (water conservation, reflected surfaces, envelope improvement, and energy efficient equipment).Additional sustainable strategies can be integrated in new and redeveloped housing units including water conservation, reflective surfaces, envelope efficiency, energy efficiency, durable materials.	Existing developed footprint must not expand. Best management practices and sustainable strategies must be employed in all proposed construction near the water's edge.
NPS New Housing		
<ul style="list-style-type: none">Two new duplex units elevated concrete structures (completed in 2009).Elevated slab construction.	<ul style="list-style-type: none">Example of contemporary housing and construction techniques are a good reference for future construction in the Flamingo area.Example of sustainable strategies which can be employed as part of design and construction at new and redeveloped housing.Structures designed to respond to modern codes by elevating above minimum flood level and designed to withstand Zone VE (150 mph) hurricane winds.	
NPS Common Structure ("Chickee")		
<ul style="list-style-type: none">Screened building for staff leisure use.Recently renovated and in good condition for re-use.Slab on grade construction.	<ul style="list-style-type: none">Functionally relevant and in good condition for continued use.	
Concessioner Dormitory Buildings		
<ul style="list-style-type: none">Existing private and semi-private rooms for concessioner staff. Cyclical maintenance ongoing.Elevated slab construction.	<ul style="list-style-type: none">Functionally relevant and in good condition for continued use.Existing building area available for programmed uses; accessible by existing park roads and served by existing utilities and services.Passive sustainable strategies are in place (existing buildings, durable materials, shared living quarters, ventilation). Additional sustainable strategies can be incorporated through maintenance activities or building renovation (reflective roof surfaces, improved building envelope, energy efficient equipment, water conservation).	<ul style="list-style-type: none">Existing footprint limits program which can be accommodated.Current configuration with shared baths requires renovation to private baths to meet current industry standards for employee dorms.Best management practices and sustainable strategies must be employed in all proposed construction near the water's edge.

4.0 flamingo master plan and design program



Mangrove Beach

The Development Program outlines the vision for a “New Flamingo”, where nature and park amenities coalesce to deliver a visitor experience that molds one’s view of the Everglades.

In the years following the 2005 hurricanes, which demonstrably changed the features and the services present within the Flamingo district, the National Park Service teamed with Everglades friends and stakeholders to embrace a unique opportunity to preserve, restore and improve the beloved Flamingo gateway to the Florida Bay and Wilderness Waterway. The result of this initial effort was a Commercial Services Plan, which determined “necessary and appropriate commercial services for the Flamingo area in accordance with all applicable laws and policies, while providing a viable long term business opportunity for the concessioner(s)” who will ultimately operate the facilities. (Flamingo Commercial Service Plan, November 2007, Introduction).

In developing the Master Plan, the design team reviewed existing documents, visited the project site as a part of several master plan workshops, and organized and led design workshops collecting site information from the on-site NPS staff. Various existing documents produced by others were reviewed to understand and analyze the site, and include the following:

- “Everglades National Park, Flamingo Commercial Services Plan/Environmental Assessment (CSP/EA Draft), November 2007.” This Environmental Assessment described in detail the purpose of the project, regulatory requirements, park and area history, information and analysis of existing development, current park management and operations, visitor experience objectives, interpretation objectives, environmental impacts and mitigation. The Environmental Assessment set forth a series of site planning alternatives for consideration. The Environmental Assessment alternatives were described in detail and encompassed a full range of potential development scenarios: Alternative A – No Action; Alternative B – Flamingo Rebuilt; and Alternative C – Flamingo Redesigned.
- “Flamingo Commercial Services Plan, Finding of No Significant Impact, July 2008.” Resulting from the mandated Commercial Services Plan/Environmental Assessment process, a Finding of No Significant Impact (FONSI) was developed and approved. The FONSI set forth the selected development Alternative D – The Selected alternative. This selected alternative along with the requirements of the Commercial Services Plan/Environmental Assessment and the FONSI was the foundation for the development of this Master Plan.
- “Technical Assistance Panel for Everglades National Park, Flamingo Commercial Services Plan, Urban Land Institute, August 2008.” A technical assistance panel was convened on August 4-5, 2008 to consider implementation options for the approved Commercial Services Plan. That document set forth general planning and design guidelines that were considered as a part of this Master Plan.
- “National Park Service Cultural Landscape Inventory, Flamingo Mission 66 Developed Area, Everglades National Park, 75% Draft, September 2009.” This draft report documents the development chronology and physical history of the Flamingo Developed Area, a significant Mission 66 developed area.

The following Master Plan and Design Program reflects the critical features of the selected alternative (Alternative D), including the overall vision for the redevelopment of the Flamingo Developed Area. The selected alternative is described in the Finding of No Significant Impact (FONSI) and is illustrated within the FONSI as a land use bubble diagram shown on the following pages. The FONSI provides National Environmental Policy Act compliance for the project, and is the ultimate guiding authority for development of the Master Plan.

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Preliminary campsite concept

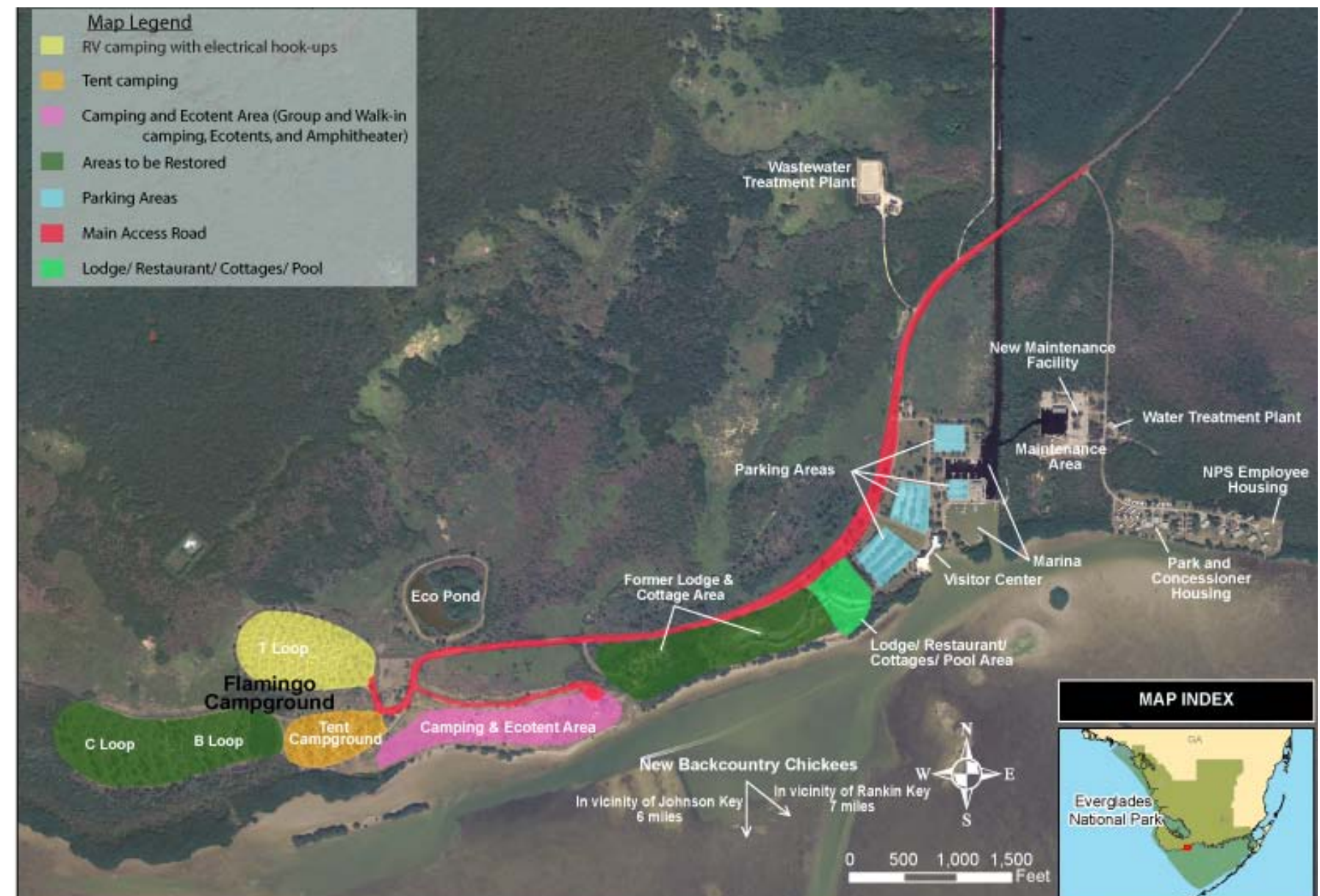
Campsites with a view of Florida Bay are a highly desired amenity within the Flamingo District. High canopy shade trees, native grasses, and selective mowing provide an improved visitor experience at Flamingo.

The master planning process consolidates, organizes, and analyzes research, historic circumstances, environmental studies, site visits, interviews, and regulations. Additionally, the process illustrates the implementation of the stated project goals and resolves normal conflict between site conditions and desired features.

The Design Program outlines and quantifies proposed features and the Master Plan illustrates the implementation of these features. This “New Flamingo” is an eco-friendly destination with a variety of lodging experiences and visitor services. Paramount to the FONSI selected alternative is the consolidation of related uses, reduction of the development footprint, incorporation of well-integrated pedestrian, bicycle, and shuttle pathways, and the restoration of

50 acres to natural conditions. The Master Plan exemplifies the sustainable vision of the National Park Service and is intended to guide planning, design, construction, restoration, and use of Flamingo for the next 50 years.

The Master Plan and Design Program illustrate an intensive redevelopment of the Flamingo district. The implementation of proposed features and amenities may be developed in a series of phases to allow the park to sequentially fund and absorb new development, proposed services, and increased visitation. Section 5.0 - Cost Estimate (p. 113) includes illustrations and cost break-outs for six proposed phases.



Alternative D (Selected Plan) from Commercial Services Plan FONSI

4.1 FONSI Selected Alternative (Alternative D)



4.2 Development Program

Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Overall Site and Utilities										
1	Roadways and Vehicular Circulation	Utilize existing roadways and provide roadway improvements to accommodate new development and improve circulation. Accommodate vehicles, boat trailers, bikes, pedestrians and shuttles.			o	o				
2	Pathways and Pedestrian Circulation	Provide safe and enjoyable pedestrian connections throughout Flamingo to accommodate new development and to improve circulation. Provide accessible connections to existing and planned Flamingo services and amenities. Provide pedestrian crossings at main circulation routes.	29		o	o				
3	Pathways and Bicycle Circulation	Provide safe and enjoyable bicycle connections throughout Flamingo and to existing and proposed services and amenities. Reconfigure one lane of outgoing main park road as bicycle lane. Widen park paths which are intended to accommodate both bicycles and pedestrians.	16,17		o					
4	Pedestrian Trails	Improve and complete circulation paths and hiking trails as appropriate for recreation and nature hikes. Rebuild of Guy Bradley Trail under current contract.			o	o				
5	Tram (Circulator Shuttle) Stops	Demarcate and shade shuttle stop locations at existing and planned Flamingo services and amenities with minimal roadway improvements.	29		o					
6	Flamingo Bike System	Concessioner to provide bicycle sharing system throughout the Flamingo District. Provide bike racks at existing and proposed services and amenities. Provide bicycle maintenance and storage at concessioner warehouse.			o					
7	Site Wayfinding Signage	Provide new wayfinding signage throughout Flamingo.			o					
8	Site Lighting	Provide minimal lighting throughout Flamingo for safety at roadways and pedestrian pathways. All fixtures must be dark sky compliant.			o					
9	Interpretive Signage	Interpretive program to be determined.			o					
10	Stormwater Management	Implement best management practices (BMP) where practical. Supplement existing stormwater conveyance with bio-swales for improved infiltration. Implement runoff water quality measures at all basins and shorelines.			o	o				
11	Potable Water	Extend existing service to new facilities. Supplement existing system by utilizing greywater and rain harvest systems where practical for non-potable uses.	31			o				
12	Sanitary Sewer	Extend existing service to new facilities. Relocate existing lines at proposed developments. Supplement existing system by utilizing greywater systems where practical.				o				
13	Electric Service	Extend existing service to new facilities. Relocate existing lines at proposed developments. Supplement existing system by utilizing solar power generation where practical.	31,42			o				
14	Greywater System	Incorporate greywater systems at new buildings to supplement existing potable water and sanitary sewer systems.		14	o					
15	Rainwater Collection System	Incorporate rainwater harvesting systems at new buildings to supplement existing potable water and sanitary sewer treatment systems.		14	o					
16	Telecom/Cable TV/Wi-Fi	Extend existing service to new facilities. Currently provided via microwave and satellite. Upgrades recommended including fee based Wi-Fi.			o	o				
17	Fire Suppression	All new and renovated buildings to be fire sprinkled. Confirm hydrant locations at proposed new construction.			o	o				
18	Restoration Area - Former Lodge and Cottages	Restore 22 acres to natural condition at former lodge and cottage locations.	2,14			o				
19	Restoration Area - Camping Loops B & C	Restore 28 acres to natural condition at former campground loops B & C; Existing comfort station (or slab) to remain for possible future re-use as star-gazing platform.	2,14			o				
20	Backcountry Camping Chickees	(2) New backcountry chickees. Construction complete 2009.			o		2			
Site Sub-totals							2	0	0	0
Legend										

FONSI - Program elements identified in the Flamingo Commercial Services Plan Finding of No Significant Impact (FONSI) July 2008.
CSP - Program element identified in the Flamingo Commercial Service Plan Environmental Assessment, November 2007.
NEW - Program element identified and proposed in Master Plan.
EXIST - Existing program element identified as remaining; maintenance planned.



Flamingos in Everglades National Park



Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Flamingo District Entry + Service Station										
1	Entry Signage	Provide entry signage to demarcate Flamingo District entrance.			o					
2	Roadways and Vehicular Circulation	Maintain existing historic roadway patterns. Modify site paving to accommodate turning radii for trailers and trucks. Accommodate access requirements for modern use of historic service station.								
3	Mission 66 Service Station	Existing historic building to remain. Preserve and restore exterior. Rehabilitate interior to accommodate administrative functions of planned vehicle fuel service operation.	4	2-5		o	1	400		
4	Service Station Parking	Provide minimal overflow parking.							0	4
5	Site Landscape	Provide dense landscape buffer along east edge of marina parking lot to screen view of fuel service operations from historic area. Maintain and/or recreate historic landscape patterns.			o					
6	Site Furnishings	Provide benches, trash receptacles, recycle bins and ash urns throughout area.			o					
7	Pedestrian Circulation	Provide pedestrian pathways throughout site. Provide accessible connections to Flamingo Marina and Visitor Center as well as to planned pedestrian circulation throughout Flamingo.			o					
Entry Area Sub-totals							1	400	0	4
Legend										

FONSI - Program elements identified in the Flamingo Commercial Services Plan Finding of No Significant Impact (FONSI) July 2008.
CSP - Program element identified in the Flamingo Commercial Service Plan Environmental Assessment, November 2007.
NEW - Program element identified and proposed in Master Plan.
EXIST - Existing program element identified as remaining; maintenance planned.

Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Marina Area										
1	Roadways and Vehicular Circulation	Maintain historic roadway patterns. Adjust roadways for efficient and safe circulation; modify site paving to accommodate turning radii for trailers and trucks. Improve boat prepping, launching and cleaning.			o	o				
2	Historic Flamingo Parking Lots	Maintain overall historic parking lots. Reconfigure parking spaces to separate car and boat trailer parking.	16		o	o				
3	Existing Marina Parking Lot	Provide trailer parking only. Maximize boat trailer parking opportunities and increase utility in layout of spaces.	16			o			156	0
4	New Marina Parking Lots	Provide additional and accessible car parking spaces near marina.			o				0	45
5	Visitor Center Parking Lot	See Visitor Center program.								
6	Marina Peninsula	Demolish and clear Marina peninsula including all buildings, paving and fuel service; protect historic coral rock walls at existing marina building for reuse.				o				
7	Marina Building	New one story raised Marina Store and Snack-Bar/Mini-lounge. Utilize space under building to accommodate boat rentals and storage, houseboat service, public restrooms and fee showers. Provide raised outdoor space for viewing, interpretation and dining. See Section 4.10 for additional program information.	4; 14	2-5	o		1	9,020		
8	Fuel Storage and Pumps	Relocate existing vehicle fuel service to historic service station location. (2) tanks and (4) pumps (unleaded and diesel) to remain for waterborne boat service.	4; 16; 18	2-5		o				
9	Pedestrian Circulation and Plazas	Improve and provide pedestrian circulation throughout marina area. Provide designated pedestrian access between parking and site amenities. Provide connections to planned pedestrian circulation throughout Flamingo.			o	o				
10	Pedestrian Access to Water Plug	Provide and protect visitor access on existing water plug for viewing and interpretation.			o					
11	Pavilions	(2) New on-grade open-air shade structures for gathering, waiting and interpretation. Integrate historic coral rock walls from marina building (to be demolished).			o		2	1,800		
12	Houseboats	(6) Houseboats to be run by concessioner. (4) Person capacity per boat.			o					
13	Site Furnishings	Provide picnic tables, benches, trash receptacles, recycle bins and ash urns throughout marina.			o					
14	Site Landscape	Maintain and restore historic landscape patterns. Implement best management practices and run-off water quality improvements near water's edge. Provide high canopy shade trees and maintained turf areas for visitor use and comfort.			o	o				
15	Site Signage	Provide new wayfinding signage throughout Flamingo. Provide significant wayfinding signage to each visitor service and amenity.			o	o				
16	Canoe and Kayak Rentals	Provide dockside rental service and temporary storage under new marina building. Main boat storage in maintenance area.			o					
17	Boat Ramps (2)	Existing ramps to remain; improve drives for staging, prepping and launching.				o				
18	Canoe and Kayak Launches (2)	Existing launches to remain.				o				
19	Boat Transfer Service	New high quality trailer and vehicle to move boats between marina basins.	18; 30		o					
20	Marina and Docks	Bulkhead replacement at all marina basins under current contract.				o				

Legend

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Marina concept

The Marina visitor experience is compromised by the mix of activities taking place in a small area. Visitors will gain visual and experiential access to marine environments when the marina area is redeveloped for the pedestrian.

Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
21	Mission 66 Fish Cleaning + Restroom Building	Existing historic structure to remain; function unchanged, maintenance planned.	13			o	1	1,750		
22	Emergency Heli-Pad	Existing open area to remain.				o				
23	Interpretive Wayside Exhibits	Interpretive program to be determined.			o					
Marina Area Sub-totals							4	12,570	76	45
Legend										

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Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Visitor Center Area										
1	Roadways and Vehicular Circulation	Adjust roadways for improved wayfinding; accommodate improved pedestrian access.	4		o	o				
2	Visitor Center Parking Lot	Lot to accommodate parking for visitor center, lodge overflow, restaurant, pool and marina visitors. Provide vehicle parking only (no trailers) with several spaces for oversized vehicles (small RV type).	16			o			11 (small RV)	167
3	Mission 66 Visitor Center	Existing historic building to remain. Historic exterior and siting to be protected and restored. Rehabilitate interior of building to accommodate interpretive center: interpretive staff; visitor protection staff; daytime concessioner information, reservations, lodging check-in; and public restrooms. See Section 4.10 for additional program information.				o	1	17,630		
4	Public Common Area	Renovate and improve open-air understory space for public gathering and interpretation.	28			o		600		
5	Pedestrian Circulation and Plazas	Improve and provide pedestrian circulation throughout visitor center area. Provide designated pedestrian access between parking and site amenities. Provide connections to planned pedestrian circulation throughout Flamingo.			o	o				
6	Site Furnishings	Provide picnic tables, benches, trash receptacles, recycle bins and ash urn throughout area.			o					
7	Site Landscape	Preserve and restore historic landscape patterns. Clear overgrowth around building. Restore and replant beds.			o	o				
8	Site Signage	Provide new wayfinding signage throughout Flamingo. Provide significant wayfinding signage to each visitor service and amenity.								
9	Building Signage	Provide wayfinding signage at building. Emphasize visitor entry to interpretive center and public restrooms.			o	o				
10	Interpretive Exhibits	Interpretive program to be determined.			o					
Visitor Center Area Sub-totals							1	18,230	0	181
Legend										

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Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Lodge and Cottages										
1	Roadways and Vehicular Circulation	Utilize location of existing curb cut and entry drive into proposed cottage area from main park road. Minimize vehicular connections to historic visitor center parking lot (maximum one new curb cut). Provide new roadway circulation to new buildings.			o					
2	Lodge	(2) new two-story raised guest lodge buildings. (30) guest rooms plus management, maintenance and guest amenity spaces. Two separate buildings for partial closure during low season. See Section 4.10 for additional program information.	27		o		2	20,000		
3	Lodge Parking	Provide (1) car parking space per lodge room for lodge guests. Provide (6) boat trailer spaces.			o				6	30
4	Restaurant	New one-story raised restaurant building (80 person capacity). Provide public lounge area and after hours check-in for lodge guests. Adjacent to lodge and pool buildings. See Section 4.10 for additional program information.	14		o		1	4,200		
5	Restaurant Parking	Utilize existing visitor center parking lot.			o					
6	Swimming Pool	New outdoor swimming pool on raised earthen berm. Fully screened for year round use with enclosed mechanical and guest amenity spaces. Adjacent to lodge and restaurant buildings.	29		o		1	3,400		
7	Cottages	(12) new one-story raised duplex buildings. (24) units total. (12) @ (1) bedroom (4 person capacity) and (12) @ (2) bedrooms (6 person capacity). See Section 4.10 for additional program information.	27		o		12	19,770		
8	Cottages Parking	Provide (2) car parking spaces per unit. Provide (12) boat trailer spaces.			o				12	48
9	Pedestrian Circulation	Provide accessible pedestrian connections amongst cottages, lodge and restaurant. Provide connections to planned pedestrian circulation throughout Flamingo.			o					
10	Site Furnishings	Provide new picnic tables, benches, trash receptacles, recycle bins and ash urns throughout the area.			o					
11	Site Landscape	Provide dense landscape screening along west site edge, incorporate and preserve existing historic landscape pattern. Provide high canopy shade trees and low native grasses to delineate and shade site areas.			o					
12	Site Signage	Provide new wayfinding signage throughout Flamingo.			o					
13	Interpretive Wayside Exhibits	Interpretive program to be determined.			o					
Lodge and Cottages Area Sub-totals							16	47,370	18	78
Campground Fee Station Area										
1	Roadways and Vehicular Circulation	Reconfigure existing roadways to accommodate and access new fee station location.				o				
2	Parking Lots	Provide minimal overflow parking.			o					5
3	Campground Fee Building	Relocate existing fee station building (including slab) to new raised earthen berm foundation.	27		o		1	400		
4	Site Landscape	Provide shade trees and low vegetation at parking island.			o					
5	Site Signage	Provide new wayfinding signage throughout Flamingo.			o					
Fee Station Area Sub-totals							1	400	0	5
Legend										

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Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Group and Walk In Camping Area + Amphitheatre										
1	Roadways and Vehicular Circulation	Utilize existing roadways to access new parking areas.				o				
2	Group Camping Camp Sites	(3) Group camping sites (15 person capacity) each with dedicated common building.	27		o					
3	Group Camping Site Furnishings	Provide new fire pit, (3) picnic tables; trash and recycling receptacles at each group site.			o					
4	Group Camping Common Structures	(1) Open air building per each of (3) group sites for group activities, eating and gathering. No utilities are planned at common structures.			o	o	3	900		
5	Group Camping Comfort Station	(1) Existing comfort station to be renovated and enlarged to increase capacity. Toilets, showers, lavatories and dishwashing. Provide solar water heat.			o	o	1	1,960		
6	Group Camping Parking	Provide parking for (4) car spaces per group site plus overflow car parking for amphitheatre users. Overflow boat trailer parking along main park road (shared with walk-in camping sites).	16		o				0	40
7	Walk-In Camping Camp Sites	(60) Sites (8 person capacity).	27		o	o				
8	Walk-In Camping Site Furnishings	Provide each campsite with new fire pit, new spur marker and new picnic table.								
9	Walk-In Camping Common Structures	(4) Small open air structures for group activities, eating and gathering. No utilities are planned at common structures.	15		o		4	1,200		
10	Walk-In Camping Comfort Stations	(2) Existing buildings to remain; renovate. (1) new building to increase capacity and improve access distance from camp sites. Toilets, lavatories, showers and dishwashing. Solar water heat upgrade under current contract.			o	o	3	2,800		
11	Walk-In Camping Parking	(1.5) +/- Car spaces per site. Overflow boat-trailer parking along main park road.	16		o	o			10	92
12	Day Use Picnic Areas	(4) Shoreline picnic areas with fire ring and picnic tables. No utilities, no structures. Additional picnic locations recommended.	15		o					
13	Pedestrian Circulation and Plazas	Provide pedestrian circulation throughout camping areas and to amphitheatre. Provide accessible pathway between minimum (6) campsites and minimum (1) common building. Provide accessible pathway between (1) group site and group common building. Provide connections to planned pedestrian circulation throughout Flamingo.			o					
14	Site Landscape	Provide high canopy shade trees, low shrubs and low native grasses to delineate and shade campsites.			o					
15	Site Signage	Provide new wayfinding signage throughout Flamingo.								
16	Interpretive Wayside Exhibits	Interpretive program to be determined.			o					
17	Amphitheatre	Rebuilt in 2009 with pressure treated wood seating on crushed stone fill. No additional renovations planned. (120) Person capacity. Provide accessible path to entry.	17	2-5		o				
18	Amphitheatre Parking	Parking accommodated in group camping parking area.			o					
Group and Walk In Camping Area Sub-totals							11	6,860	10	126
Legend										

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Eco-tents cater to campers who desire a natural experience that doesn't require bringing all of their own gear. Eco-tents are a simple overnight accommodation that exemplifies sustainability.

Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Eco-Tent Area										
1	Roadways and Vehicular Circulation	Utilize existing roadways to access new parking areas. Provide small service vehicle access throughout area.				o				
2	Parking Lots	Provide (2) new parking areas for eco-tent users. Assume (1.25) cars per unit and (0.5) boat trailers per campsite. (10) Boat trailers in parking lot, (10) along main park road (shared with walk-in sites).			o				20	52
3	Eco-Tent Platforms	(40) New campsites with concrete pads on raised earthen berms. No utilities are planned at eco-tent campsites.	27		o		40	7,200		
4	Eco-Tent Structures	(40) New temporary, demountable tent structures and support structures, with lockable furnishings and amenities (180 s.f. each). Off-season storage to be provided at maintenance area. Explore opportunities for generating solar power for lights and fans.	27		o					
5	Common Eco-Tent Buildings	(2) New on-grade common buildings. Each building to provide open air gathering space, cooking (fire pit), restrooms, hot water showers, dishwashing, mechanical and maintenance storage area.	15		o		2	4,000		
6	Storage	Convenience maintenance storage area to be provided in common building (approximately 150 s.f.). Main storage area in concessioner maintenance buildings.			o					
7	Pedestrian Circulation and Plazas	Provide pedestrian pathways throughout campsites. Provide accessible pathway between minimum (4) eco-tent campsites and (1) common building. Provide connections to planned pedestrian circulation throughout Flamingo.			o					
8	Site Furnishings	Provide each campsite with new fire pit, new spur marker and new picnic table.			o					
9	Site Landscape	Provide high canopy shade trees and low native grasses to delineate and shade campsites.			o					
10	Site Signage	Provide new wayfinding signage throughout Flamingo.			o					
11	Interpretive Wayside Exhibits	Interpretive program to be determined.			o					
Eco-Tent Area Sub-totals							42	11,200	20	50
Legend										

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Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Drive-In Camping Area - Loops A & T										
1	Roadways and Vehicular Circulation	Existing drives, spurs and parking to remain as-is. Overflow parking in walk-in camping parking areas or in visitor center parking lot. Large vehicles to overflow to marina parking lot.	16			o				
2	Comfort Station Buildings	(2) Existing on-grade comfort station buildings to remain in each camping loop. Renovate. Solar water heat upgrade under current contract.				o	4	2,580		
3	Common Buildings	No common building present or planned for this camping area.	15							
4	Loop A: Drive-in Camp Spurs (asphalt car parking sites)	(58) Asphalt paved spurs existing. Revised spur dimensions recommended during scheduled maintenance.	27			o				
5	Loop T: RV Spurs (asphalt RV sites)	(40) Asphalt paved spurs existing. Electrical hook up at each site under current contract. Revised spur dimensions recommended during scheduled maintenance.				o				
6	Site Furnishings	Provide each campsite with new fire pit, new spur marker and new picnic table.			o					
7	Trash and Recycling Areas	Existing to remain. Provide new dumpster screen enclosure.			o	o				
8	Pedestrian Circulation and Plazas	Provide accessible campground trail through loops to connect campsites to comfort stations. Provide connections to planned pedestrian circulation throughout Flamingo.			o					
9	Coastal Prairie Trailhead	Parking and pedestrian access to Coastal Prairie Trail and potential star gazing site.			o					11
10	Site Landscape	Existing landscaping to remain; maintain. Provide additional high canopy shade trees throughout Loop 'A' campsites.			o	o				
11	Site Signage	Provide new wayfinding signage throughout Flamingo.			o					
12	Trash and Recycling Areas	Existing to remain. Provide new dumpster screen enclosure.			o	o				
13	RV Dump Stations	Existing to remain.				o				
14	Interpretive Wayside Exhibits	Interpretive program to be determined.			o					
Drive-In Camping Area Sub-totals							4	2,580	0	11
Legend										

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Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Eco-Pond Area										
1	Roadways and Vehicular Circulation	Pave and delineate parking at current parking location. Include accessible spaces and pathways.	16		o					22
2	Comfort Station Building	No comfort station planned.								
3	Overlook Platform	New accessible, elevated, shaded platform structure for viewing and interpretation.			o		1	175		
4	Pedestrian Circulation and Plazas	Provide accessible pathway from parking to viewing structure. Maintain pedestrian connection to nature paths around pond. Provide connections to planned pedestrian circulation throughout Flamingo.			o					
5	Site Furnishings	Provide benches, trash and recycling receptacles.			o					
6	Site Landscape	Maintain and improve existing entry landscape. Provide shade trees and low vegetation at parking island. Eco-Pond vegetation to restore to natural condition over time.			o	o				
7	Site Signage	Provide new wayfinding signage throughout Flamingo.			o					
8	Interpretive Wayside Exhibits	Interpretive program to be determined.			o					
Eco-Pond Area Sub-totals							1	175	0	20
Maintenance Area										
1	Roadways and Vehicular Circulation	Configure area with roadways and service areas to accommodate additional proposed development.			o	o				
2	Parking Lots	Configure area for staff cars, NPS and concessioner service vehicles, boats and boat trailers.			o	o			35	35
3	Historic Boat Shelter	Existing Mission 66 concrete shade structure to remain. Obsolete hoist (non-historic) is abandoned in place.				o	1			
4	Existing NPS Warehouse Buildings	(4) Existing renovated and new (under current contract) buildings to remain. No renovations proposed.				o	4	7,400		
5	Concessioner Warehouse & Office Building (1st Floor)	1st floor of new 2-story building proposed for storage of vehicles, supplies, canoes, kayaks and bicycles and off-season storage of eco-tent core structures and tents. Building to be slab on raised earthen berm.			o		1	3,700		
6	Concessioner Warehouse & Office Building (2nd Floor)	2nd floor of new 2-story building proposed for approximately 10 offices plus auxiliary staff and support spaces. Building to be constructed of modular concrete.			o			3,700		
7	Concessioner Housekeeping Buildings	New single story building for laundry and linen service and storage. Building to be slab on raised earthen berm.			o		1	2,000		
8	Concessioner Storage	Existing on-grade building to be utilized for off-season storage of eco-tent furniture.				o	1	1,040		
9	Concessioner Fleet Maintenance and Storage Facility	New building for maintenance and storage of concessions boats, shuttles, bicycles and vehicles. Building to be slab on raised earthen berm.			o		1	4,000		
10	Pedestrian Circulation	Provide appropriate pathways through proposed development. Improve pathway across plug for employee access.			o	o				
11	Site Landscape	Maintain existing; provide additional shading throughout parking areas. Implement best management practices and water quality improvements near water's edge.			o	o				
12	Site Signage	Provide new wayfinding signage throughout Flamingo.			o					
Legend										
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Program Area		Description	FONSI (Page)	CSP (Page)	NEW	EXIST	Qty of Structures	Total SF	Parking Trailers	Parking Cars
Maintenance Area, continued										
13	Boat Ramps	No ramp existing or planned.								
14	Boat Hoist & Transfer Service	New hoist to be installed for boat launching and removal.			o					
15	Marina and Docks	Existing to remain. Additional docks to be determined with concessioner contract.				o				
Maintenance Area Sub-totals							9	21,840	30	35
NPS and Concessioner Housing Area										
1	Roadways and Vehicular Circulation	Utilize existing roadways to access new parking areas. Configure additional roadways to accommodate proposed development.			o	o				
2	NPS Housing Units	(3) Existing Mission 66 quad-plex buildings to remain. (1) Existing duplex to remain. (3) Existing houses to remain. (2) Recently constructed duplexes to remain. (21) Units total. Existing integral parking areas to remain.	18	2-6	o	o	9	19,100		42
3	NPS Trailer Spurs	(4) Existing spurs to remain. (4) Proposed trailer spurs. (8) Trailer spurs total. Parking areas integral to spurs.		2-6	o	o				
4	NPS Common Recreation Structure	Existing recently renovated structure to remain; maintain.				o	1	1,200		
5	Concessioner Housing	(2) Existing raised dormitory buildings. (27) Dorm units to remain. Renovate to create private restroom for each rooms. Existing parking to remain.				o	2	9,600		27
6	Concessioner Dorm Housing	New raised two-story dormitory building. (46) Dormitory units @ 200 s.f. net plus porches, circulation and building services.		2-6,7	o		1	11,500		
7	Concessioner Apartment Housing	New raised two-story apartment building. (7) 2BR/1 bath units @ 750 s.f. net plus porches, circulation and building services.		2-6,7	o		1	6,000		
8	Parking Lots - Concessioner	Provide parking for proposed additional housing units. (1) space per (5) dorms units + (1) space per each apartment unit. Total (17) spaces proposed + (2) ADA.			o	o				17 + (2) ADA
9	Concessioner Trailer Spurs	(37) Proposed trailer spurs (existing, re-aligned and new). Parking areas integral to spurs.		2-6,7	o	o				37
10	Food Service and Common Area	New raised one-story building. Employee dining hall, food service and staff common areas.			o		1	3,400		
11	Concessioner Common Pavilion	New covered screened pavilion for staff gatherings. Adjacent to food service building.			o		1	500		
12	Pedestrian Circulation and Plazas	Provide accessible pathways through proposed development. Improve pathway across plug for employee access.			o					
13	Site Furnishings	Provide picnic tables, fire pits, trash and recycling receptacles throughout new development.			o					
14	Site Landscape	Maintain existing. Provide additional high canopy shade trees and low native grasses to delineate building areas, site parking and staff recreation areas.			o	o				
15	Recreation Area	No new areas planned. Preserve existing open area for staff use.			o					
Housing Area Sub-totals							16	51,300	0	124
Development Program Totals							107	172,525	154	674
Legend										

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4.3 Overall Master Plan



1.0
2.0
3.0
4.0
5.0
6.0

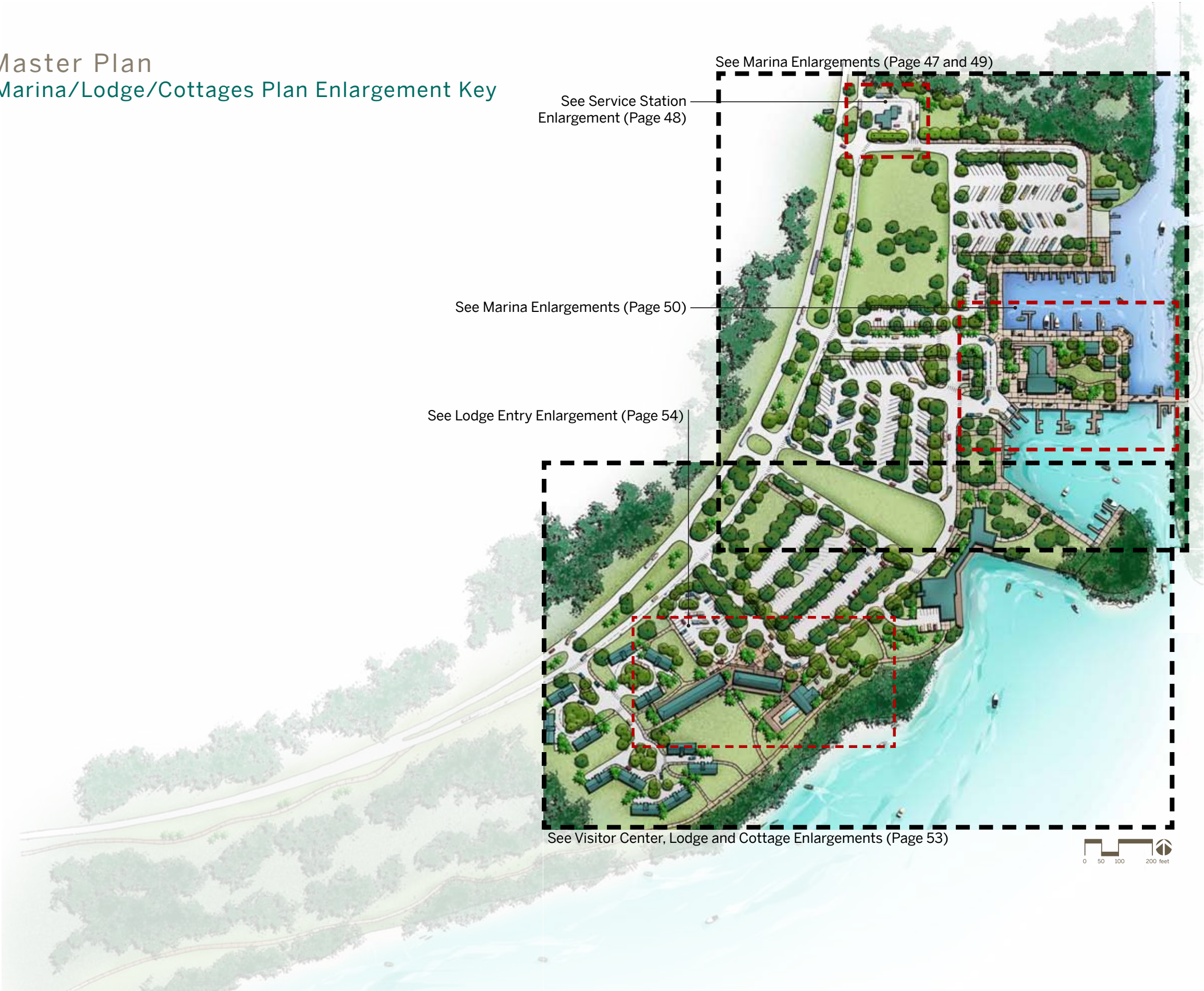
4.4 Land Use Master Plan



- RV Campground
- Walk-In Tent Campground
- Marina
- Day Use
- Staff Housing Area
- Tent Campground
- Visitor Center
- Lodging
- Parking
- Maintenance/Admin.



4.5 Master Plan
4.5.1 Marina/Lodge/Cottages Plan Enlargement Key



4.5.2 Camping Areas Plan Enlargement Key



4.5.3 Maintenance and Staff Housing Area Plan
Enlargement Key










4.6 Area Master Plans

4.6.1 Marina and Entry Area

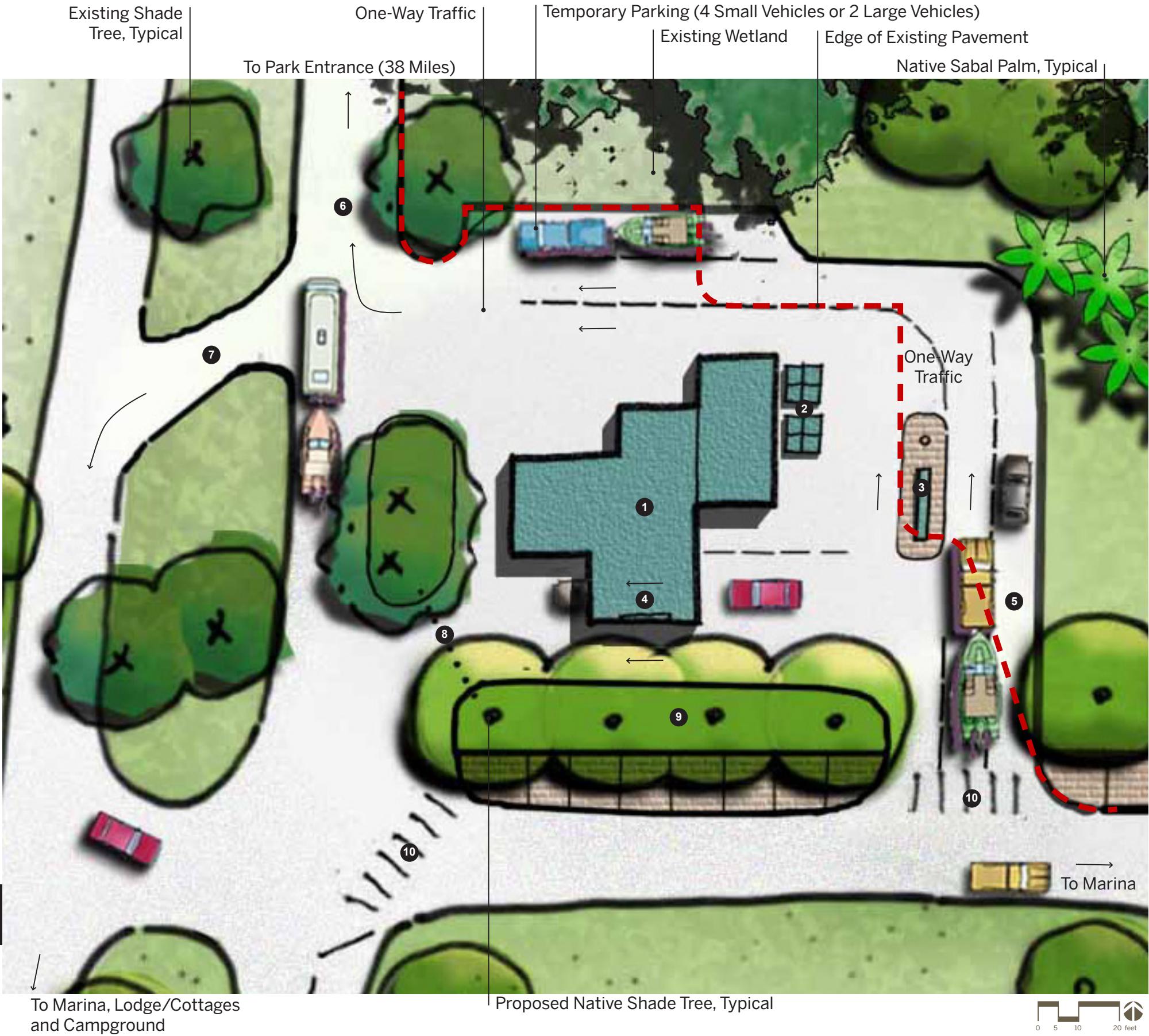
- Entry monument and signage, vehicular service station and landscaping are to be located at the main park road entry to Flamingo.
- The historic Mission 66 Service Station is to be rehabilitated and used as the hub for vehicular fueling. Landscape screening is to block the view of this area from historic Flamingo.
- Separate parking lots are required for boat trailers and individual vehicles to limit conflicts. Parking is separated from the main road by a large grassy, multi-use space.
- Queuing areas are adjacent to, yet separated from, vehicular lanes to maintain efficient vehicular flow. Both inbound and outbound queuing areas are provided.
- Retain existing Whitewater Bay/Backcountry and Florida Bay boat ramps.
- Parking for boat trailers is available in parking lots adjacent to both the Whitewater Bay/Backcountry and Florida Bay boat ramps. Boat trailer parking includes pull-through and head-in parking spaces.
- The historic Mission 66 Service Station site is reorganized: historic rehabilitated structures are utilized; circulation is improved; and new fueling pumps are installed.
- Safe, accessible pedestrian circulation includes continuous sidewalks and crosswalks connecting the main road and parking areas with the marina, fish cleaning station, and day-use pavilions.
- Rededicate one vehicular lane of the outbound main park road as a multi-use bicycle/pedestrian trail.
- Additional plantings screen new construction, provide shade, and replace missing trees in the historic pattern at historic parking lots.
- Existing boat docks are retained in both the Whitewater Bay/Backcountry and Florida Bay marinas.
- Existing historic Mission 66 fish cleaning and restroom building to remain.

- 1 Service Station (Historic Mission 66)
 - Existing On-Grade Building
 - 2 Pumps
- 2 New Fueling Station
 - 2 Pumps and Enclosed Fuel Storage Tank
- 3 Queuing Lane and Thru-Lane
- 4 Marina Boat Trailer Parking
 - 77 Pull-Thru and Head-In Spaces - 12'x50' Stalls
- 5 Porous Pavement
 - Along 15' Bulkhead Setback
 - Benches
- 6 Existing Fish Cleaning Station and Restrooms
 - Existing On-Grade Building
- 7 Marina Vehicle Parking
 - 45 Vehicle Spaces Total - 10'x20' Stalls
 - 4 Accessible Stalls
- 8 Queuing Lanes (2) and Thru Lanes
- 9 Accessible Parking Spaces (5)
- 10 Queuing Lanes and Thru-Lane
- 11 New Marina Building
 - Elevated Building
 - Restrooms
 - Showers
 - Canoe Storage and Rental
 - Snack Bar/Mini-Lounge
 - Office
 - Store
 - Houseboat Rentals
- 12 Day-Use Pavilion (2)
 - New On-Grade Building
 - At Site of Demolished Store - Reuse Historic Stone Walls
- 13 Boat Ramp (Existing)
- 14 Whitewater Bay/Backcountry Marina (Existing)
- 15 Florida Bay Marina (Existing)
- 16 Out-Bound Boat-Prep Lane (1) and Thru-Lanes
- 17 Marina Boat Trailer Parking
 - 79 Spaces - 12'x50' Stalls
- 18 Service Access
 - Store Service
 - Fuel Tanks Service
 - Trash Service
- 19 Pedestrian Crossing Typical
- 20 Enclosed Fuel Storage Tank and Dumpster

- 21 Multi-Use Bike/Pedestrian Trail
 - Convert One Outbound Road Lane to Two-Way Trail (Typical along Main Roadway)
- 22 Marina Fuel Pumps
- 23 Buttonwood Canal Plug and Interpretive Area
- 24 Florida Bay Floating Dock - Canoe/Kayak Rental
- 25 Whitewater Bay/Backcountry Floating Dock - Canoe/Kayak Rental
- 26 Canoe/Kayak Floating Dock
- A Concessioner Rental Houseboats
- B Concessioner Excursion Boats
- C Concessioner Rental Boats

L E G E N D	
	Existing Shade Tree
	Existing Vegetation
	Proposed Native Sabal Palm Tree
	Proposed Native Shade Tree
	Existing Mowed Turf
	Native Tall Grass (Non-Mowed)
	Concrete Pedestrian Walk/Trail











4.6.1.1 Service Station

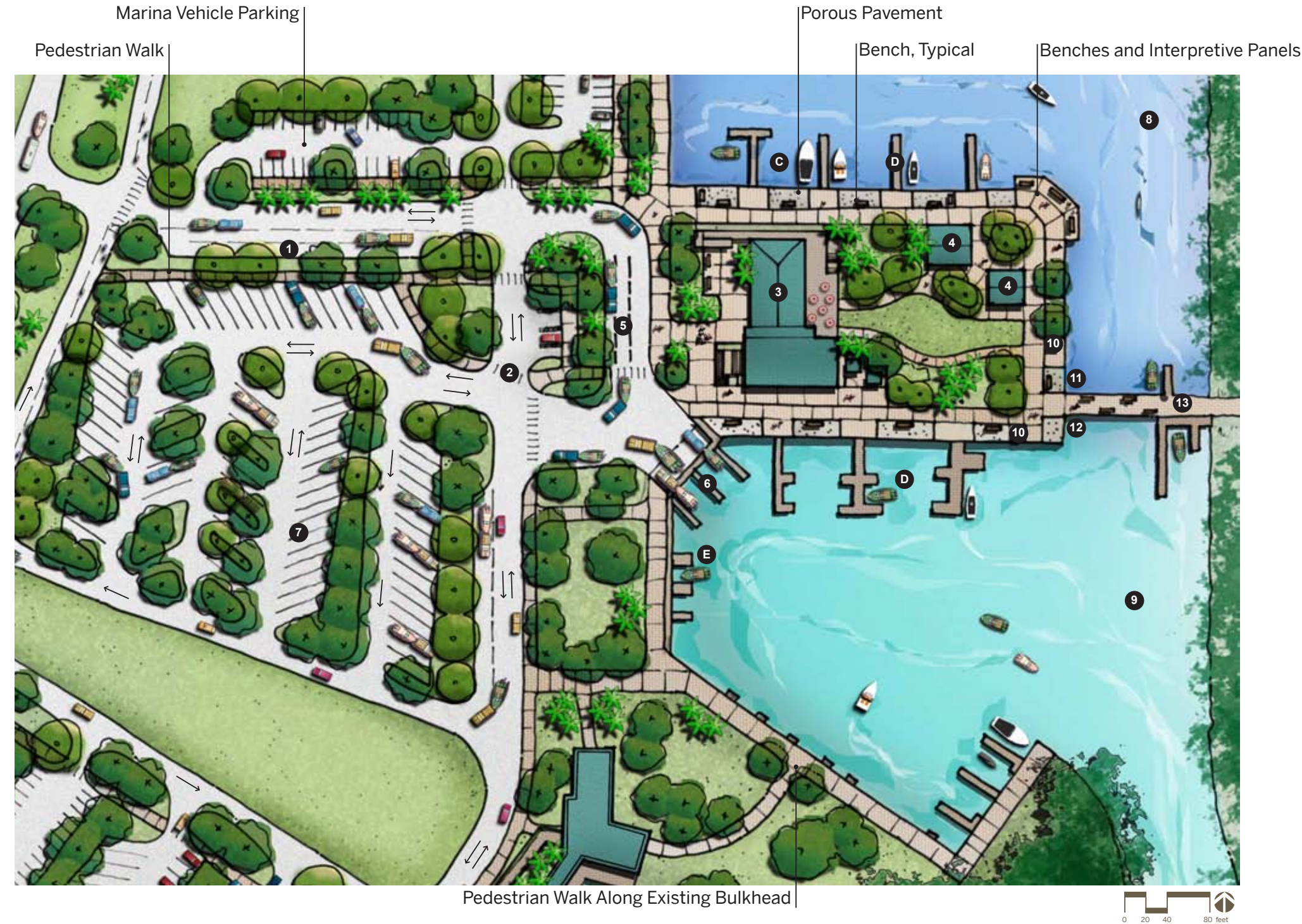
- 1 Service Station (Historic Mission 66)
 - Existing On-Grade Building
- 2 Enclosed Fuel Storage
- 3 Fuel Pump - Accommodates Large Vehicles
- 4 Fuel Pump - Small Vehicles Only
- 5 Thru-Lane
- 6 Flamingo Exit
- 7 Median Curb Cut for Flamingo Re-Entry
- 8 Bollards
- 9 Extend Existing Landscape Island/Buffer
- 10 Pedestrian Crossing Typical

4.6.2 Marina

- 1 Queuing Lanes (2) and Thru-Lanes
- 2 Pedestrian Crossing Typical
- 3 New Marina Building
 - Elevated Building
 - Restrooms
 - Showers
 - Canoe Storage and Rental
 - Snack Bar/Mini-Lounge
 - Office
 - Store
 - Houseboat Rentals
- 4 Day-Use Pavilion (2)
 - New On-Grade Building
 - At Site of Demolished Store - Reuse Historic Stone Walls
- 5 Queuing and Thru-Lane
- 6 Boat Ramp (Existing)
- 7 Marina Boat Trailer Parking
 - 79 Spaces - 12'x50' Stalls
- 8 Whitewater Bay/Backcountry Marina (Existing)
- 9 Florida Bay Marina (Existing)
- 10 Marina Fuel Pumps
- 11 Whitewater Bay/Backcountry Floating Dock - Canoe/Kayak Rental
- 12 Florida Bay Floating Dock - Canoe/Kayak Rental
- 13 Buttonwood Canal Plug
- C Concessioner Rental Boats
- D Concessioner Excursion Boats
- E Canoe/Kayak Floating Dock

LEGEND








-  Existing Shade Tree
-  Existing Vegetation
-  Proposed Native Sabal Palm Tree
-  Proposed Native Shade Tree
-  Existing Mowed Turf
-  Native Tall Grass (Non-Mowed)
-  Concrete Pedestrian Walk/Trail



4.6.3 Marina Building

- The new elevated marina building provides a large deck with view of the multi-use landscaped plaza, Florida and Whitewater bays, and day-use areas.
- A large plaza in front of the marina building allows for efficient pedestrian circulation and a space for families to gather.
- Two new day-use pavilions utilize historic stone walls from the demolished former marina store and provide shaded sitting areas.
- Wide pedestrian sidewalks connect the parking areas to amenities within the marina, and allow service vehicle access to the new building.
- Bench seating around the perimeter of the marina basins provides excellent views of wildlife and water activities.
- Porous paving around the perimeter of marina basins reduces runoff water quantity and improves runoff quality.
- A queuing area is located along the drive in front of the new marina building.
- Service access for the marina store is located next to the store and utilizes the boat ramp paved area for large vehicle access.

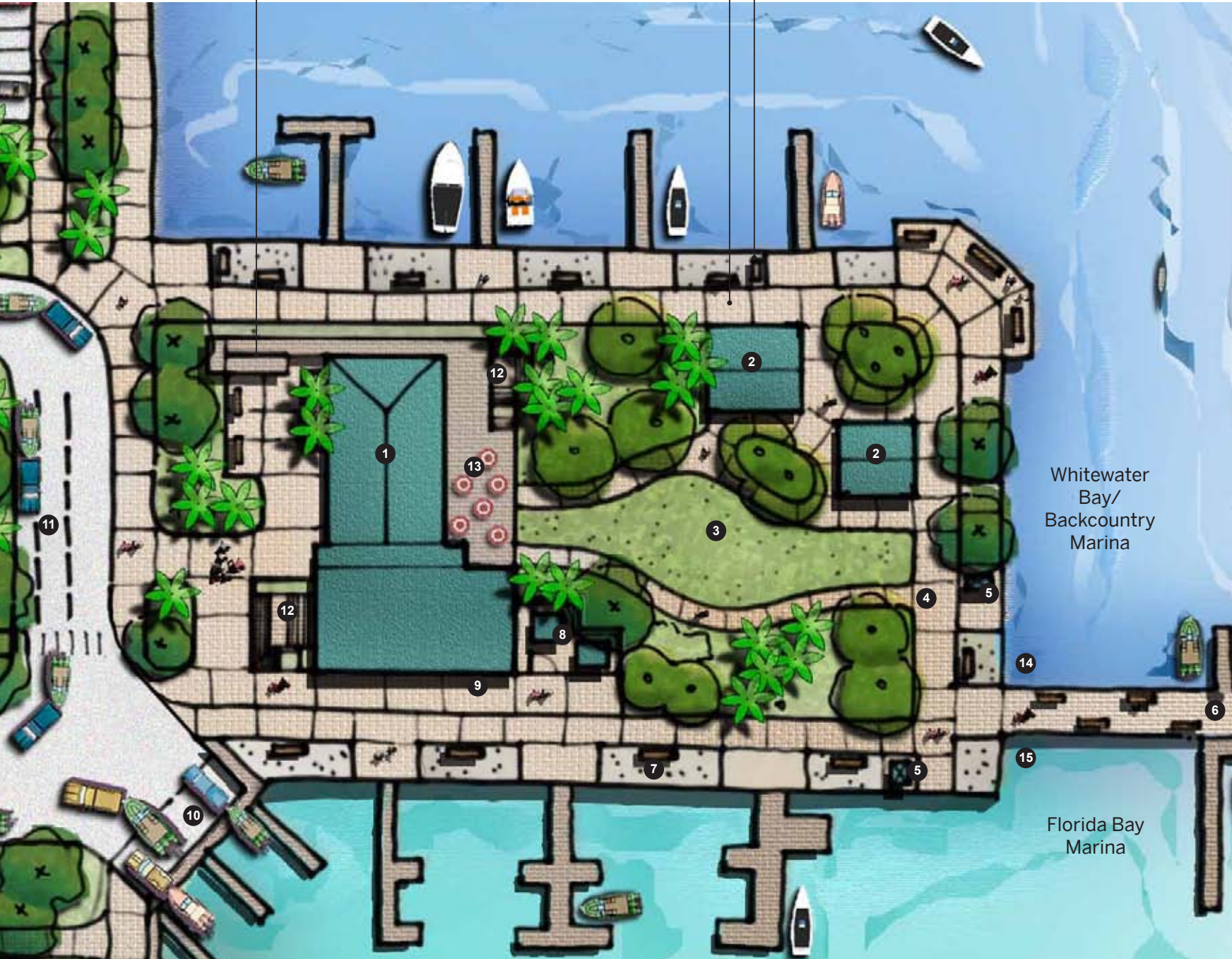
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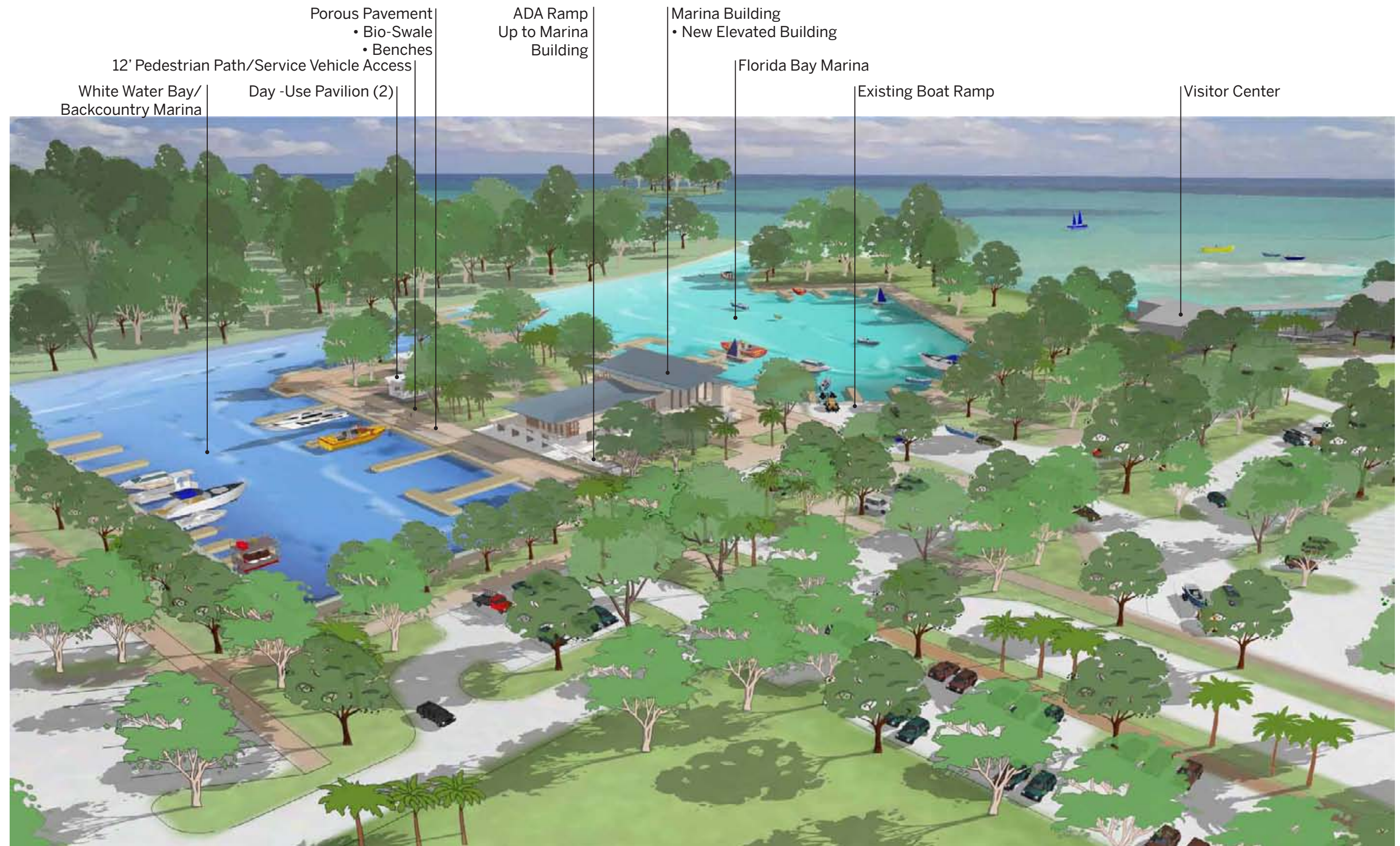
-  Existing Shade Tree
-  Existing Vegetation
-  Proposed Native Sabal Palm Tree
-  Proposed Native Shade Tree
-  Existing Mowed Turf
-  Native Tall Grass (Non-Mowed)
-  Concrete Pedestrian Walk/Trail

- 1** Marina Building
 - New Elevated Building
- 2** Day-Use Pavilion (2)
 - New On-Grade Structure
 - At Site of Demolished Store - Reuse Historic Stone Walls
- 3** Informal Mowed Turf Pedestrian Space
- 4** 12' Pedestrian Path/Vehicle Access
- 5** Marina Fuel Pumps
 - Gasoline and Diesel
- 6** Buttonwood Canal Plug
 - Trail Access to Housing Area
 - Public Access
 - Interpretation
- 7** Porous Pavement
 - Bio-Swale
 - Benches
- 8** Enclosed Storage Area
 - Gasoline and Diesel Tanks
 - Dumpster
- 9** Service Access
 - Store Service
 - Fuel Tanks Service
 - Trash Service
- 10** Existing Boat Ramp
- 11** Boat Queuing Lanes
- 12** Stairs to Marina Building
- 13** Marina Deck
- 14** Whitewater Bay/Backcountry Floating Dock - Canoe/Kayak Rental
- 15** Florida Bay Floating Dock - Canoe/Kayak Rental

Ramp Up to Marina Building

12' Pedestrian Path/Service Vehicle Access
Bench, Typical





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4.6.4 Lodge, Cottages and Visitor Center


- The rehabilitated Mission 66 Visitor Center is the first stop and main hub for visitor information, orientation, limited interpretation, and check-in for overnight accommodations.
- Existing historic Mission 66 Visitor Center and visitor center parking lot are retained, and one parking bay is rehabilitated to accommodate large vehicle parking. The underutilized staff parking lot at the visitor center is retained and used by park staff.
- Pedestrian sidewalks connect the main park road and parking lots to the marina, visitor center, lodge, restaurant, pool and cottages. Paved trails connect to the bayside pedestrian/bike trail.
- Service access is provided to the visitor center on south side of the building and is screened from adjacent uses by a screen wall and dense planting.
- New elevated lodge, restaurant and pool are located at the south edge of the historic parking lot.
- A large plaza located in front of the lodge accommodates passenger and luggage drop-off area and provides a large gathering space for groups.
- The lodge buildings are connected by broad decks that allow for circulation and views to the bay.
- The restaurant service area is northeast of the restaurant and pool and is screened from adjacent uses by planting. The service area is accessed via a new curbcut from the historic parking lot west of the visitor center.
- Twelve new elevated cottages are located west of the new lodge buildings. The duplex cottages have parking beneath them. One-half of the units have adjacent boat trailer parking spots.
- Vehicle access to the cottages is from the main park road.
- Paved trails connect the cottages with the lodge buildings, visitor center, and bayside pedestrian/bike trail.
- Additional planting screens new construction, provides shade, and replaces missing trees in the parking lots.
- Shade trees and palms provide shade and separation between the cottages.

- 1 Existing Elevated Historic Mission 66 Visitor Center
 - Interior Renovation
 - Operations Area for NPS Interpretive and Visitor Protection Staff
 - Information Desk
 - Concessions Check-In/Information Desk
 - Interpretive Exhibits
 - Staff Conference Room
 - Staff Fitness/Training Area
 - Public Restrooms
 - Backcountry Permitting
- 2 Visitor Center Parking (Existing)
 - 70 Car Spaces - 10'x20'
- 3 Visitor Center/Lodge/Restaurant Parking
 - 100 Car Spaces - 10'x20'
 - 11 Large Vehicle Spaces 12'x50'
 - Existing Parking Area
- 4 Lodge Parking (New)
 - 30 Total Car Spaces - 10'x20'
 - 2 Accessible Spaces
 - 6 Large Vehicle Spaces - 12'x50'
- 5 Restaurant/Pool
 - See Architectural Program (p102)
 - New Elevated Building
- 6 Lodge Buildings
 - See Architectural Program (p96)
 - New Elevated Building
- 7 Screened Service Access Area
- 8 Cottage Buildings
 - See Architectural Program (p98)
 - 12 Buildings (24 Units Total)
 - 4 Parking Stalls Per Cottage Under Buildings - 48 total
 - 12 Boat Trailer Parking Spaces
- 9 Pedestrian/Bike Trail
 - 10' Width
 - Paved Accessible Surface
- 10 Lodge/Plaza Drop-Off Area
- 11 Landscape Buffers and Screen Walls to Help Screen New Development From Visitor Center
- 12 Existing Flagpole
- 13 Multi-Use Bike/Pedestrian Trail
 - Convert One Outbound Road Lane to Two-Way Trail (Typical along Main Roadway)
- 14 Cottage Boat Trailer Parking


LEGEND




Existing Shade Tree




Existing Vegetation




Proposed Native Sabal Palm Tree




Proposed Native Shade Tree



Existing Mowed Turf



Native Tall Grass (Non-Mowed)



Concrete Pedestrian Walk/Trail



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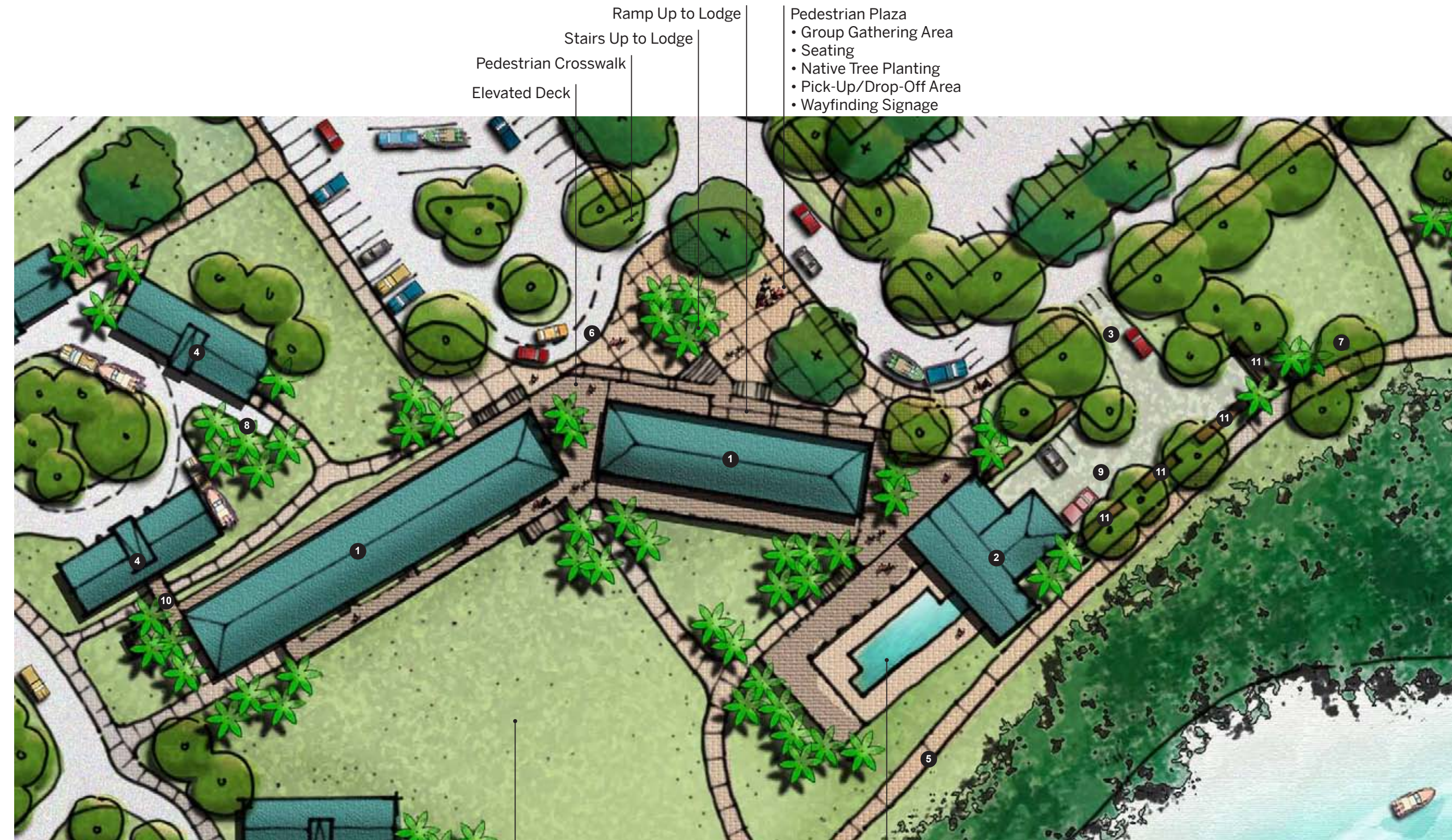
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- 1 Lodge Buildings
 - See Architectural Plans (p96)
 - New Elevated Buildings
- 2 Restaurant and Pool
 - See Architectural Plans (p102)
 - New Elevated Buildings
- 3 Screened Service Access Area

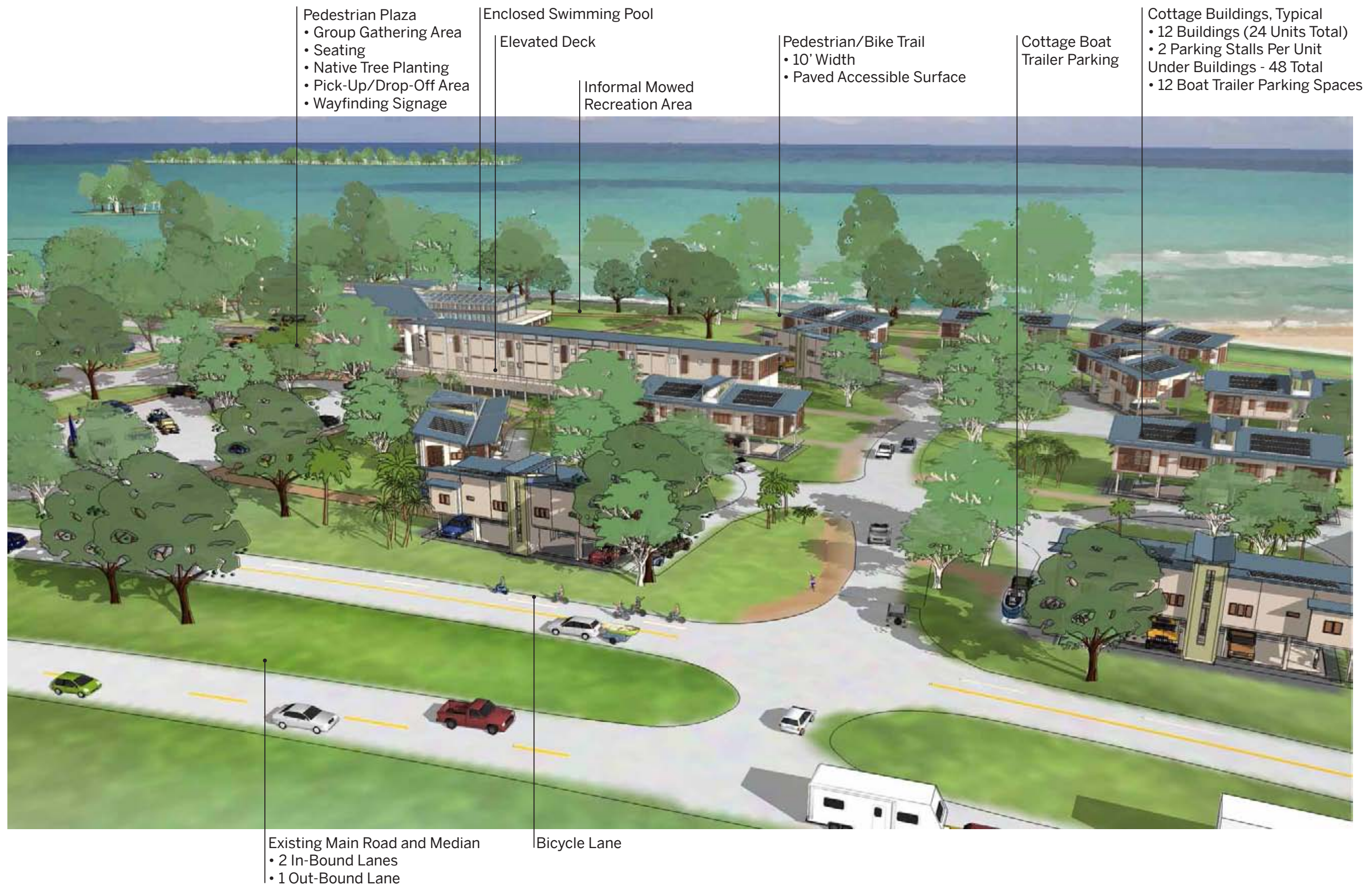
- 4 Cottage Buildings (p98)
 - 12 Buildings (24 Units Total)
 - 4 Parking Stalls Per Cottage Under Buildings - 48 total
 - 12 Boat Trailer Parking Spaces
- 5 Pedestrian/Bike Trail
 - 10' Width
 - Paved Accessible Surface

- 6 Lodge/Plaza Drop-Off Area
- 7 Landscape Buffers and Screen Walls to Help Screen New Development From Visitor Center
- 8 Cottage Boat Trailer Parking
- 9 Restaurant and Pool Service Area

- 10 Accessible Elevated Deck to Cottage
- 11 Wall Structure to Screen Service Area

LEGEND

- Existing Shade Tree
- Existing Vegetation
- Proposed Native Sabal Palm Tree
- Proposed Native Shade Tree
- Existing Mowed Turf
- Native Tall Grass (Non-Mowed)
- Concrete Pedestrian Walk/Trail



Swimming Pool Shown Inside Screened Enclosure

Pedestrian/Bike Trail
• 10' Width
• Paved Accessible Surface

Informal Mowed
Recreation Area

Elevated Deck

Pedestrian Plaza

- Group Gathering Area
- Seating
- Native Tree Planting
- Pick-Up/Drop-Off Area
- Wayfinding Signage

Cottage Buildings, Typical

- 12 Buildings (24 Units Total)
- 2 Parking Stalls Per Unit
- Under Buildings - 48 Total
- 12 Boat Trailer Parking Spaces

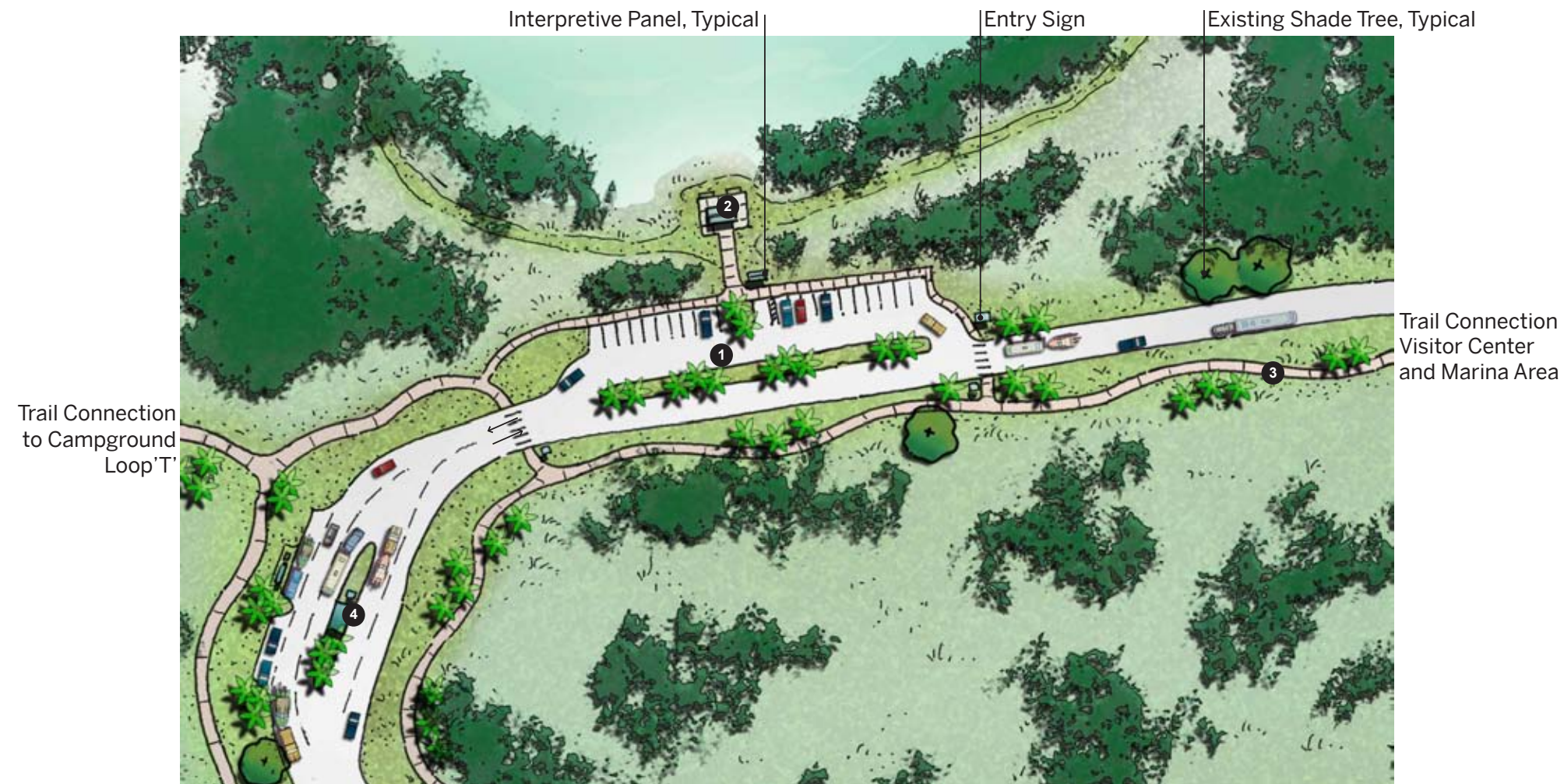
Cottage Boat
Trailer Parking



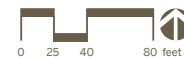
Ramp Up to Lodge

Stairs Up to Lodge

Pedestrian Crosswalk



- 1 Eco-Pond Parking
 - 20 Car Parking Stalls- 10'x20'
 - 2 ADA Spaces
- 2 Overlook Shelter
 - Interpretive Signage
 - Wildlife Viewing
- 3 Pedestrian/Bike Trail
 - 10' Width
 - Paved Accessible Surface
- 4 Elevated Campground Fee Station
 - See Enlarged Plan (p58)



4.6.5 Eco-Pond

- Parking is separate from the main park road to provide safe visitor access to the eco-pond.
- Detached, meandering pedestrian/bike paths allow for safe access to the eco-pond and connect to the campgrounds.
- Near the parking lot is an elevated (raised with fill 2-3 feet), small interpretive overlook with educational information and benches facing the pond.
- An informal mowed turf trail encircles the pond and connects to the interpretive overlook.

LEGEND

- Existing Shade Tree
- Existing Vegetation
- Proposed Native Sabal Palm Tree
- Proposed Native Shade Tree
- Existing Mowed Turf
- Native Tall Grass (Non-Mowed)
- Concrete Pedestrian Walk/Trail

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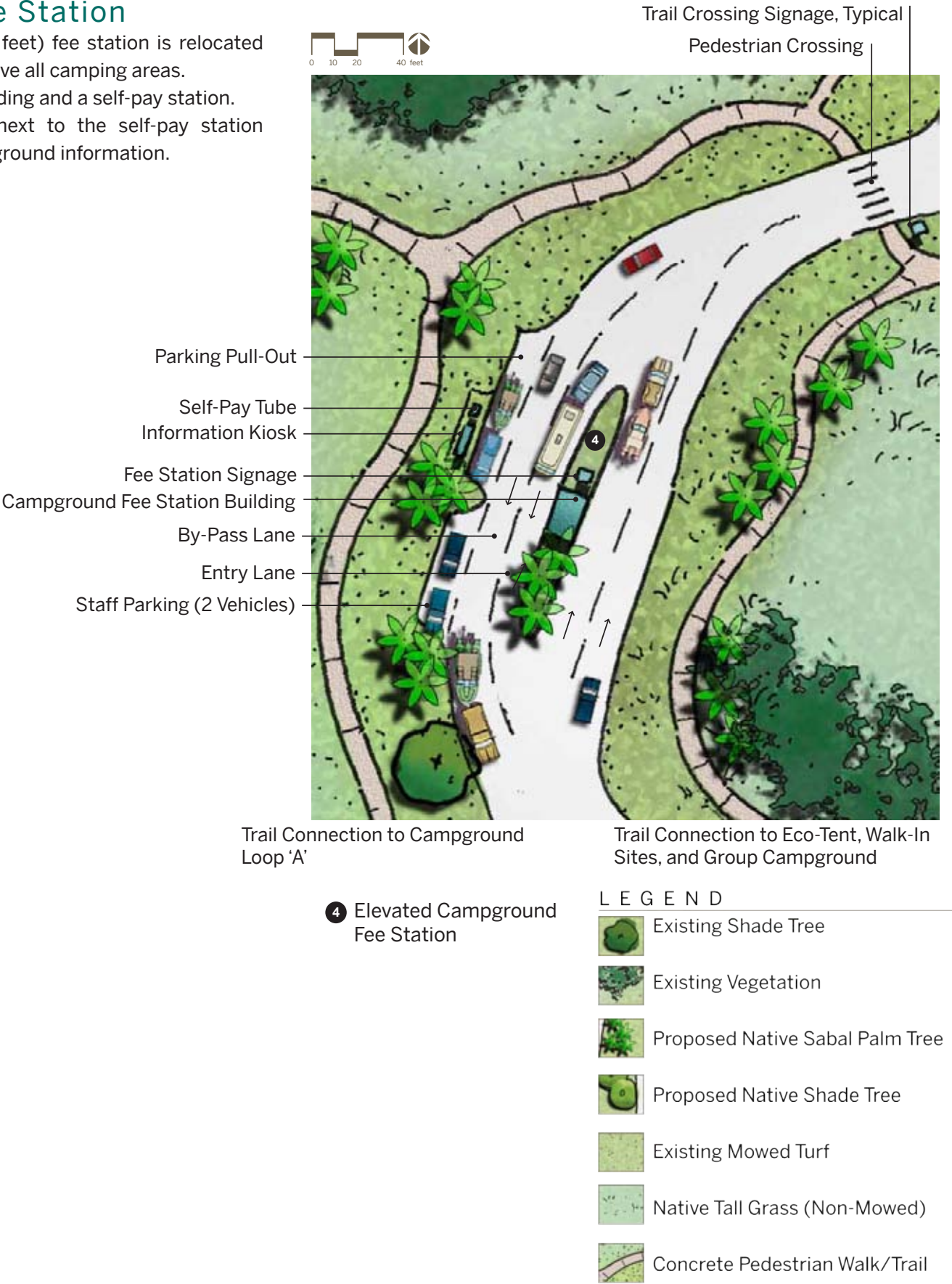
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4.6.6 Campground Fee Station

- An elevated (raised with fill 2-3 feet) fee station is relocated southwest of the eco-pond to serve all camping areas.
- The fee station has a staffed building and a self-pay station.
- An information kiosk located next to the self-pay station provides general Park and campground information.










4.6.7 Eco-Tents

- The eco-tent area is located adjacent to the walk-in campground, south of the campground fee station and east of Campground Loop 'A'.
- East eco-tent parking area accommodates boat-trailers, while the west eco-tent parking area is for vehicles only.
- Two new elevated (raised with fill 2-3 feet) comfort stations are constructed adjacent to each parking lot and provide restrooms and hot showers for campers.
- Paved trails permit access by small service carts and connections between eco-tents and comfort stations.
- Shade trees, palm trees, mowed and native grasses and shrubs are planted within the eco-tent areas to provide shade and privacy between tent sites.
- Based on project phasing strategy described in this plan, there may be a need to consider a paddle launch site along the eco-tent area shoreline to provide a quality launch area in proximity to this new use proposed for phase 1 and 2 implementation. This feature may be similar to item #14 on page 63, including the need for a separate NEPA document to implement.

- 1 Campground Fee Station
 - New Elevated (raised with fill 2-3 feet) Building
 - See Enlarged Plan (p58)
- 2 East Eco-Tent Parking with Drop-Off
 - 20 Vehicles 10'x20'
 - 10 Large Vehicle Spaces - 12'x50' Stalls
 - 4 Accessible Spaces
- 3 West Eco-Tent Parking with Drop-Off
 - 24 Vehicles 10'x20'
 - 4 Accessible Spaces
- 4 Comfort Stations
 - Restroom
 - Showers
 - Common Space
 - New Elevated (raised with fill 2-3 feet) Building
- 5 Eco-Tent
 - 40 Units
 - Orientation for Bay Views
 - New Elevated (raised with fill 2-3 feet) Structures
 - Grill and Picnic Table
 - See Enlarged Plan (p60)
- 6 Trail/Service Access
 - Paved Accessible Surface
 - 8' Width
- 7 Pedestrian/Bike Trail
 - Paved Accessible Surface
 - 10' Width
- 8 Existing Comfort Station

LEGEND

-  Existing Shade Tree
-  Existing Vegetation
-  Proposed Native Sabal Palm Tree
-  Proposed Native Shade Tree
-  Existing Mowed Turf
-  Native Tall Grass (Non-Mowed)
-  Concrete Pedestrian Walk/Trail














4.6.8 Walk-In Tent Sites and Group Camping

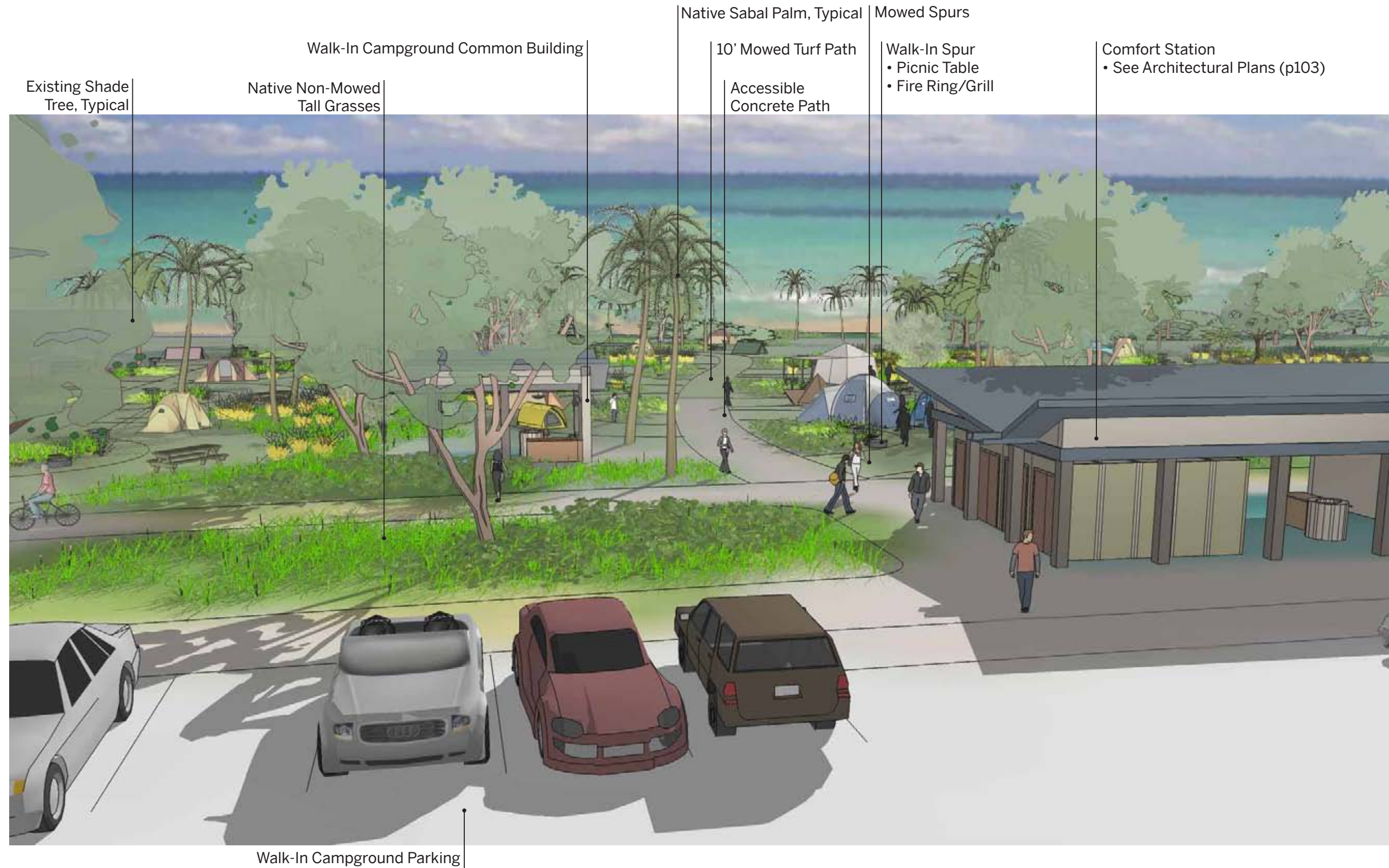
- Parking areas separate large vehicles (boat trailers) from individual vehicles to minimize conflicts.
- An expanded comfort station building on the east side is flanked by three new elevated (raised with fill 2-3 feet) group common structures and camping pods. Group common structures provide common space for cooking and dining for the group tent clusters.
- Walk-in tent sites are provided in four loops south of the primary parking lot. Each camping loop accommodates accessible walk-in tent sites.
- Informal mowed turf paths connect walk-in tent sites to comfort stations and parking lots.
- Two new elevated (raised with fill 2-3 feet) comfort stations are located adjacent to the main parking area to provide restroom and shower facilities for the walk-in tent sites.
- A paved trail connects tent areas to the existing amphitheater on the east side of the group camp area.
- Shade trees, palm trees, mowed and native grasses and shrubs are planted within the camping areas to provide shade and privacy between tent sites.

L E G E N D	
	Existing Shade Tree
	Existing Vegetation
	Proposed Native Sabal Palm Tree
	Proposed Native Shade Tree
	Existing Mowed Turf
	Native Tall Grass (Non-Mowed)
	Concrete Pedestrian Walk/Trail



- | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Walk-In Tent Campground Parking</p> <ul style="list-style-type: none"> • 84 Car Spaces - 10'x20' • 8 Accessible Spaces <p>2 Large Vehicle Parallel Parking</p> <ul style="list-style-type: none"> • 20 - 12'x50' Spaces <p>3 Group and Amphitheater Parking</p> <ul style="list-style-type: none"> • 28 Car Spaces - 10'x20' • 2 Accessible Spaces <p>4 Existing Amphitheater Site</p> | <p>5 Picnic Sites</p> <ul style="list-style-type: none"> • Picnic Table <p>6 Existing Comfort Station</p> <ul style="list-style-type: none"> • Existing Structures • Showers • Restroom <p>7 Existing Comfort Station (Group Area)</p> <ul style="list-style-type: none"> • Existing Structures • Building Addition to Expand Shower • Restrooms | <p>8 Comfort Stations</p> <ul style="list-style-type: none"> • New Elevated Structures (raised with fill 2-3 feet) • Restrooms • Showers <p>9 Walk-In Tent Site, Typ.</p> <ul style="list-style-type: none"> • See Enlarged Plan • Mowed Turf Area • Picnic Table • Grill/Fire Ring • Tent Area • 60 Sites | <p>10 Common Buildings (4)</p> <ul style="list-style-type: none"> • New Elevated Structures (raised with fill 2-3 feet) <p>11 Trail/Service Access</p> <ul style="list-style-type: none"> • Mowed Turf Trail • 10' Width <p>12 Group Camping Common Structures (3)</p> <ul style="list-style-type: none"> • Cluster Gathering Space • Cooking/Dining • Picnic Tables | <p>13 Group Camp Cluster (3)</p> <ul style="list-style-type: none"> • Accommodates 15 People Per Cluster • Mowed Turf Area • Fire Ring/Grill • Tent Area <p>14 Walk-In Paddle Launch</p> <ul style="list-style-type: none"> • Requires Separate NEPA Documentation <p>15 Accessible Walk-In Site (4)</p> |
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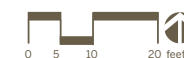
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

- ③ Group and Amphitheater Parking
 - 28 Car Spaces - 10'x20'
 - 2 Accessible Spaces
- ④ Existing Amphitheater Site
- ⑤ Picnic Sites
 - Picnic Table
- ⑦ Existing Comfort Station (Group Area)
 - Existing Structures
 - Building Addition to Expand Shower
 - Restrooms
- ⑫ Group Camping
 - Common Structures (3)
 - Cluster Gathering Space
 - Cooking/Dining
 - Picnic Tables
- ⑬ Group Camp Cluster (3)
 - Accommodates 15 People Per Cluster
 - Mowed Turf Area
 - Fire Ring/Grill
 - Tent Area
- ⑭ Walk-In Paddle Launch
 - Requires Separate NEPA Documentation

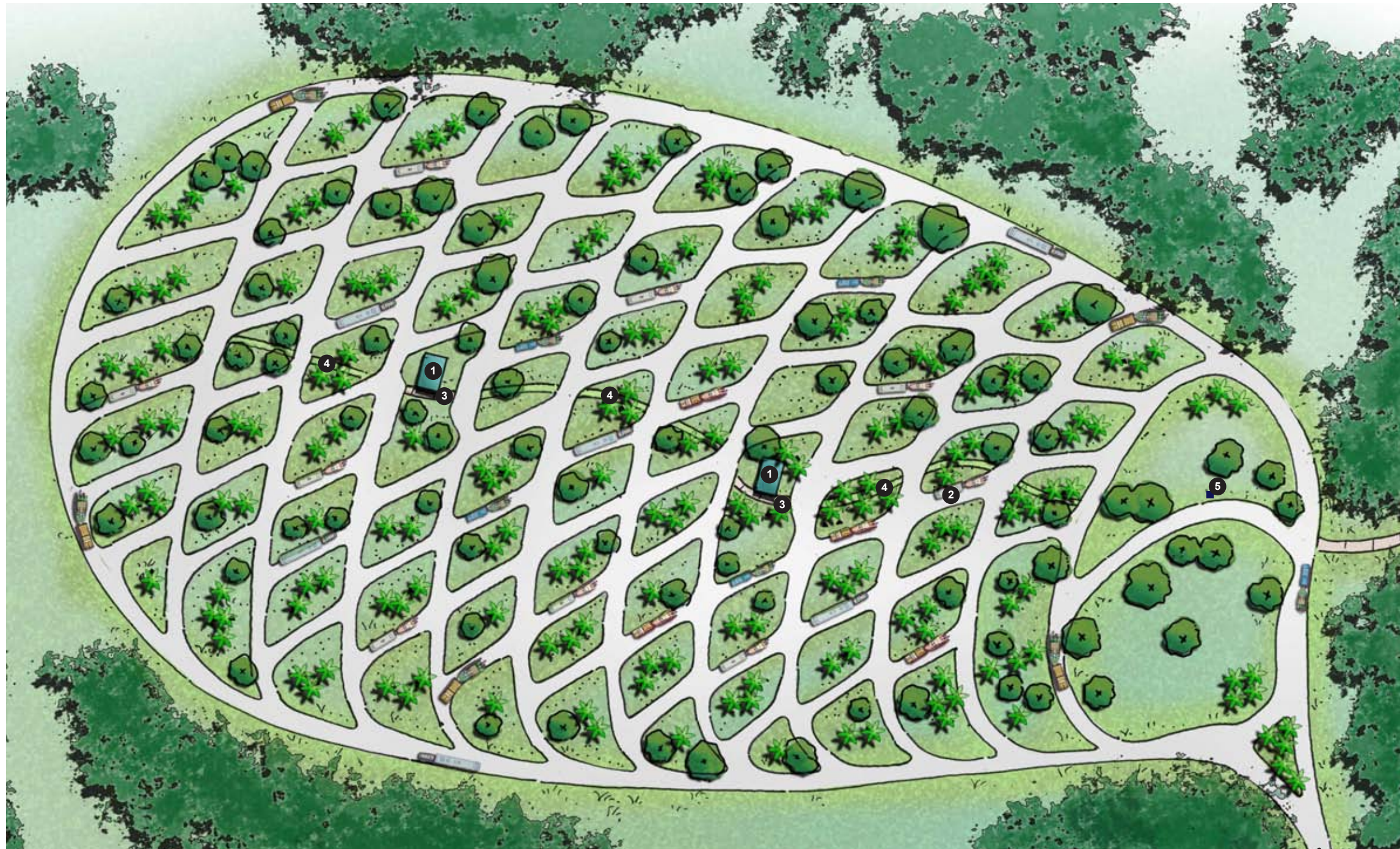




4.6.9 RV Camping Loop ‘T’

- The existing RV Camping Loop ‘T’ is maintained and improved.
- The existing road and camp spur location are fully utilized.
- Camp spurs should be increased in width and length to accommodate larger RV vehicles.
- Two existing on-grade comfort stations are located within the camping loop.
- The comfort stations have restrooms, showers and dish washing facilities.
- A paved pedestrian/bike path connects the camping loop with the campground fee station and eco-pond to the east.
- An internal mowed turf trail allows campers direct access to the comfort station. A portion of this trail is paved for wheelchair access to the comfort stations.

L E G E N D	
	Existing Shade Tree
	Existing Vegetation
	Proposed Native Sabal Palm Tree
	Proposed Native Shade Tree
	Existing Mowed Turf
	Native Tall Grass (Non-Mowed)
	Concrete Pedestrian Walk/Trail



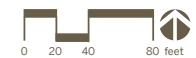
- 1** Comfort Station
- Existing On-Grade Building
 - Restrooms
 - Showers
 - Dishwashing

- 2** RV Spur, Typical
- Vehicle/Small RV Parking
 - Tent Pad Site
 - Picnic Table
 - Fire Ring/Grill
 - Existing Electric Hook-Ups

- 3** Accessible Campground Trail
- 4** Mowed Turf Trail
- 5** RV Dump Station for Grey Water and Sewage

To Campground Fee Station, Eco-Tents,
Walk-In Sites, Loop A, Group Camping

Trail to Campground
Fee Station, Eco-Pond
Parking



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

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4.6.10 Tent Camping Loop ‘A’

- The existing Camping Loop ‘A’ is maintained and improved.
- Two existing on-grade comfort stations are located within the camping loop.
- The existing road and camp spur location are fully utilized.
- Camp spurs should be increased in width and length to accommodate larger vehicles.
- The comfort stations contain restrooms, showers and dish washing facilities.
- West of the camping loop, a small parking lot is constructed that leads to the Coastal Prairie Trail via the former campground Loops B and C (restored to natural conditions) and a potential star-gazing site. New trees are planted within the camping loop and adjacent to the east comfort station to provide shade and privacy.
- Additional trees are planted within the camping loop to provide shade and separation between sites.

An internal mowed turf trail allows campers direct access to the comfort station. A portion of this trail is paved for wheelchair access to the comfort stations.

L E G E N D	
	Existing Shade Tree
	Existing Vegetation
	Proposed Native Sabal Palm Tree
	Proposed Native Shade Tree
	Existing Mowed Turf
	Native Tall Grass (Non-Mowed)
	Concrete Pedestrian Walk/Trail



- 1** Campground Comfort Station
- Existing On-Grade Building
 - Restrooms
 - Showers

- 2** Eco-Tent Comfort Stations
- Restroom
 - Showers
 - Common Space
 - New Elevated Structure

- 3** Coastal Prairie Trail Trailhead/Parking

- 4** Connection to Coastal Prairie Trail and Potential Star-Gazing Site (Mowed Turf Trail)

- 5** Camp Spur, Typical
- Vehicle/Small RV Parking
 - Tent Pad Site
 - Picnic Table
 - Fire Ring/Grill
 - No Utility Hook-Ups

- 6** Accessible Campground Trail
- 7** RV Dump Station for Grey Water and Sewage










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4.6.11 Maintenance Area

- The maintenance area is enclosed by a gated security fence; and the yard is separated into concessioner and NPS areas.
- The historic concrete boat shelter in the concessioner yard is retained.
- New warehouse/office, housekeeping/storage, and boat/shuttle maintenance buildings are located in the concessioner yard.
- Existing buildings in the NPS yard include maintenance, storage, office and emergency vehicle storage.
- Existing boat docks are retained.
- New boat hoist is to be located in the southeastern corner of the basin.

- 1 Water Treatment Facility (Existing)
- 2 Concessioner Yard Access with Security Gate
- 3 NPS Maintenance Yard Access with Security Gate
- 4 NPS Marina Shop and Potential Expansion
- 5 NPS Offices
- 6 NPS Emergency Vehicle Building (New)
- 7 NPS Warehouse (Existing)
- 8 Concessioner Warehouse and Office (New)
- 9 Concessioner Housekeeping and Storage (New)
- 10 Concessioner Storage (Existing)
- 11 Concessioner Boat/Shuttle Maintenance/Yellow Bicycle Fleet
- 12 Asphalt Paved Yard Area
- 13 Existing Historic Mission 66 Covered Boat Shelter
- 14 New Boat Dock
- 15 New Boat Hoist

L E G E N D








	Existing Shade Tree
	Existing Vegetation
	Proposed Native Sabal Palm Tree
	Proposed Native Shade Tree
	Existing Mowed Turf
	Native Tall Grass (Non-Mowed)
	Concrete Pedestrian Walk/Trail

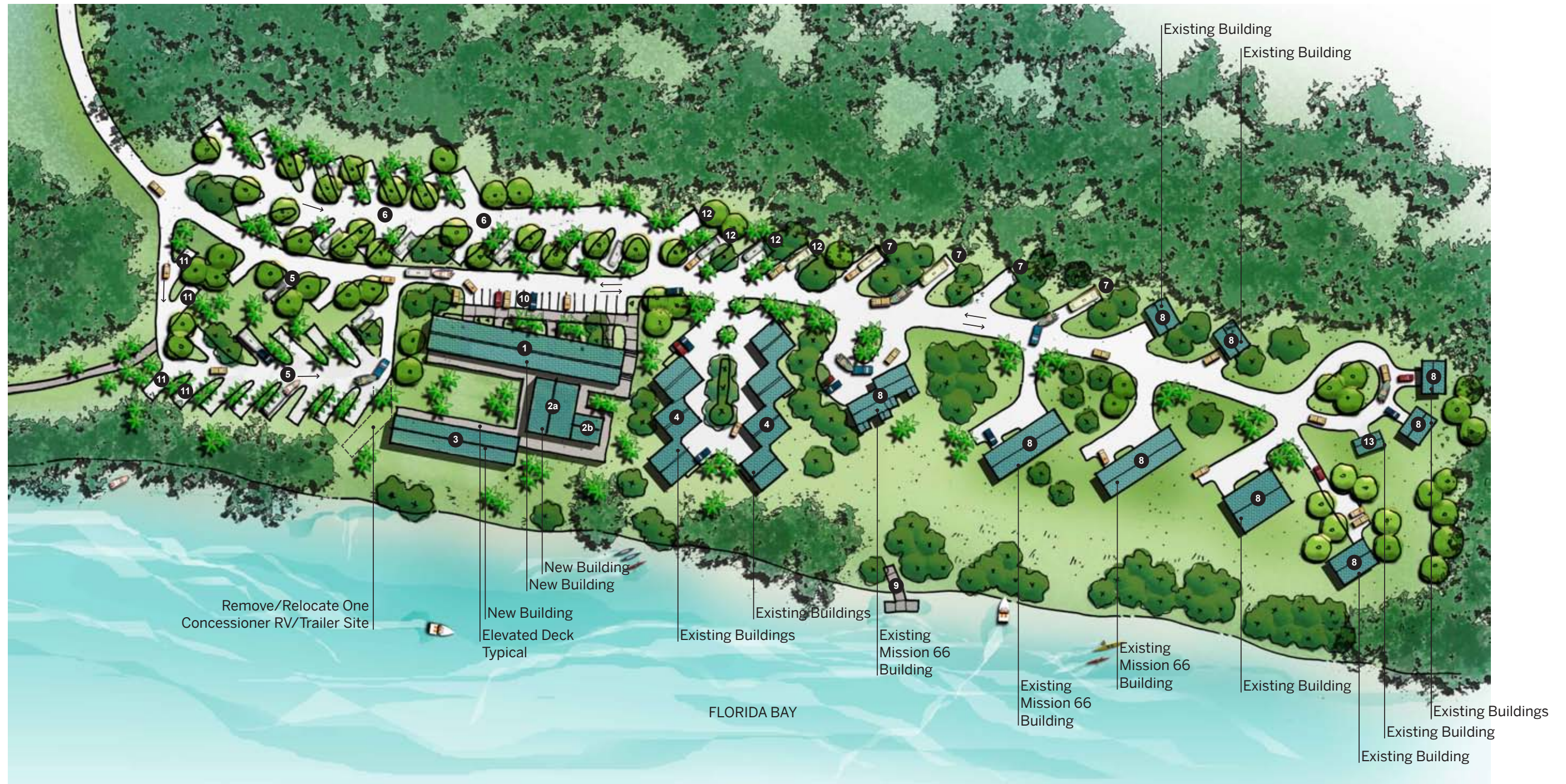


4.6.12 Staff Housing Area

- Two new elevated housing buildings (dormitories and apartments) and dining hall create a new concessioner staff housing area.
- Concessioner staff parking is located in front of the new concessioner housing buildings.
- Existing concessioner housing and NPS housing are retained.
- Existing concessioner and NPS trailer sites are retained.
- Four new NPS trailer sites are added adjacent to the existing trailer sites.
- Two new concessioner trailer spurs are located along the new trailer spur loop north of the main housing area road.
- New trees are planted in the RV sites to provide shade and separation between sites.

LEGEND

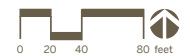
-  Existing Shade Tree
-  Existing Vegetation
-  Proposed Native Sabal Palm Tree
-  Proposed Native Shade Tree
-  Existing Mowed Turf
-  Native Tall Grass (Non-Mowed)
-  Concrete Pedestrian Walk/Trail



- 1 Concessioner Dorm Housing (New Elevated on Pilings)
- 2a Concessioner Dining Hall/Common Space (New Elevated on Pilings)
- 2b Concessioner Common Pavilion (New Elevated on Pilings)
- 3 Concessioner Apartments (New Elevated on Pilings)
- 4 Concessioner Housing (Existing)

- 5 Concessioner RV/Trailer Housing Sites (11 New)
• 4 Existing to Remain
- 6 Concessioner RV/Trailer Housing Sites (18 New/Realigned)
- 7 NPS Trailer Housing Sites (4 Existing)
- 8 NPS Housing (9 Existing)

- 9 Existing Fishing Dock
- 10 Parking Area
• 17 Total Vehicle Spaces - 10'x20'
• 2 ADA
- 11 New Concessioner Trailer/RV Sites (4)
- 12 New NPS Trailer/RV Sites (4)
- 13 Existing NPS Common Building



4.7 Circulation Plans

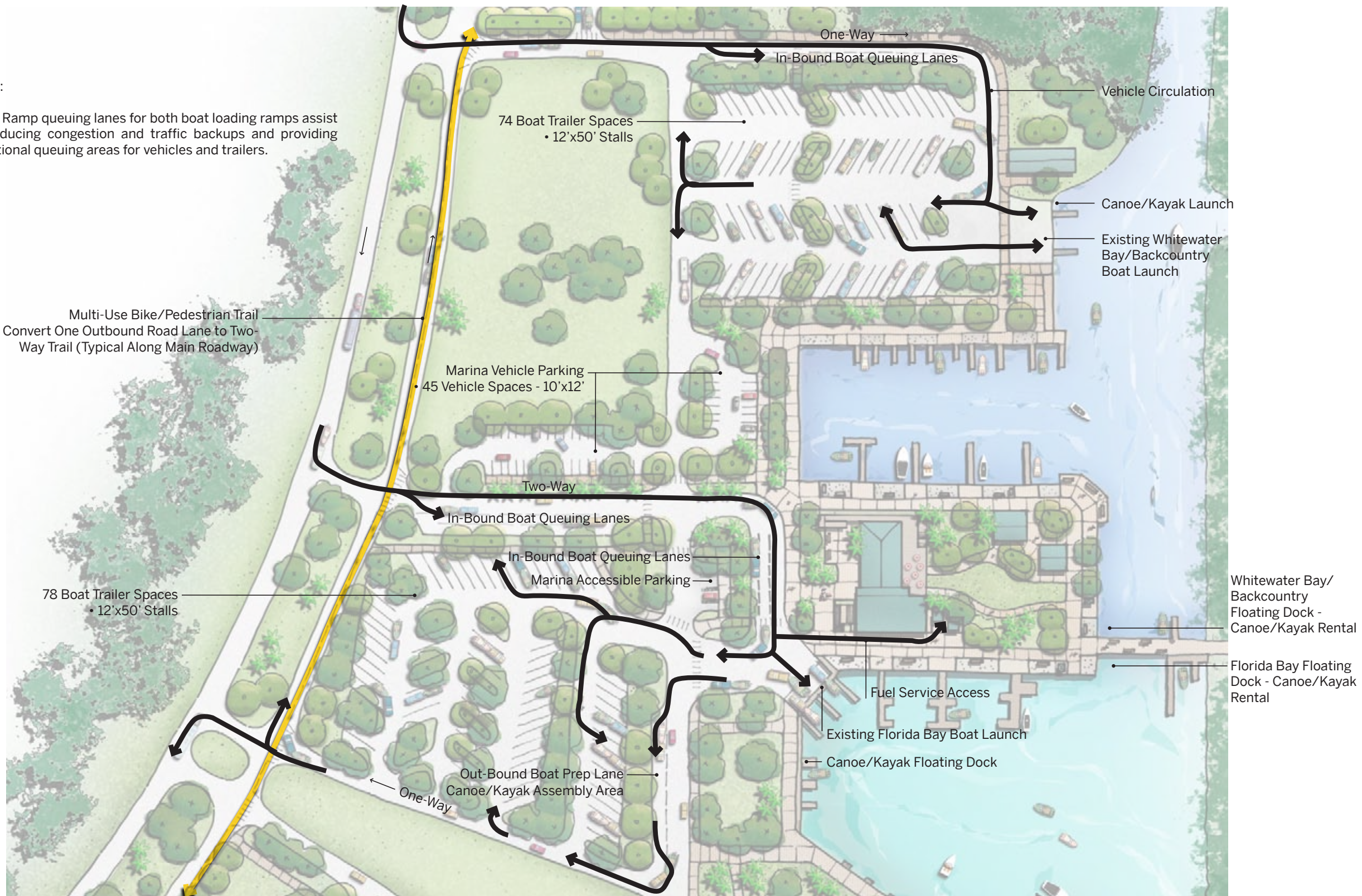
4.7.1 Marina Circulation Plan

- Vehicular circulation to the existing Whitewater Bay/ Backcountry marina and existing Florida Bay marina are separated to minimize conflicts.
- Ingress and egress into the marina parking lots is one-way to minimize conflicts.
- Queuing is set off from drive aisles to provide areas for boat preparation.

Note:

Boat Ramp queuing lanes for both boat loading ramps assist in reducing congestion and traffic backups and providing additional queuing areas for vehicles and trailers.

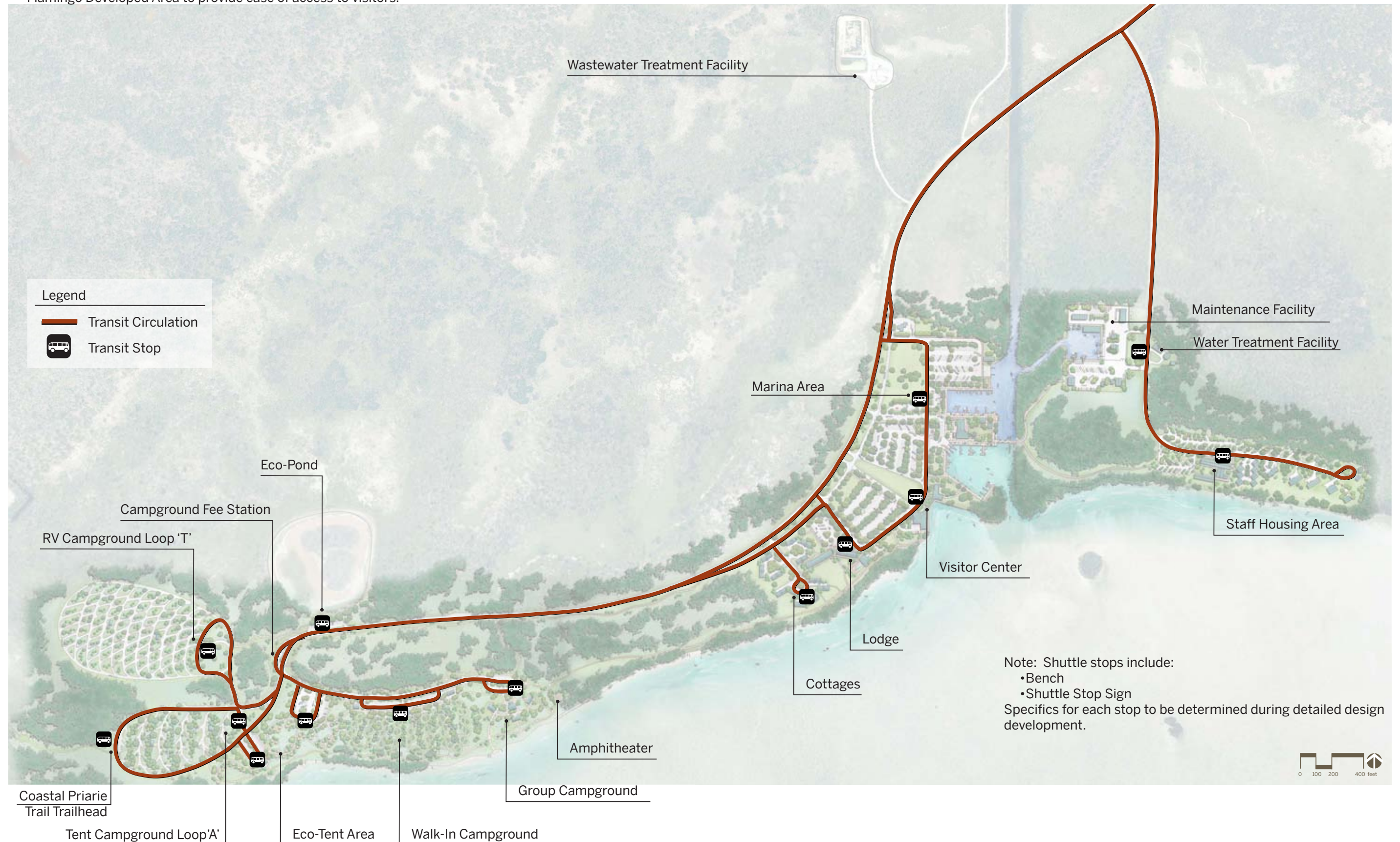
- Multi-Use Bike/Pedestrian Trail
- Convert One Outbound Road Lane to Two-Way Trail (Typical Along Main Roadway)



Not to Scale

4.7.2 Shuttle Circulation Plan

- Shuttle stops are located at all major locations within the Flamingo Developed Area to provide ease of access to visitors.

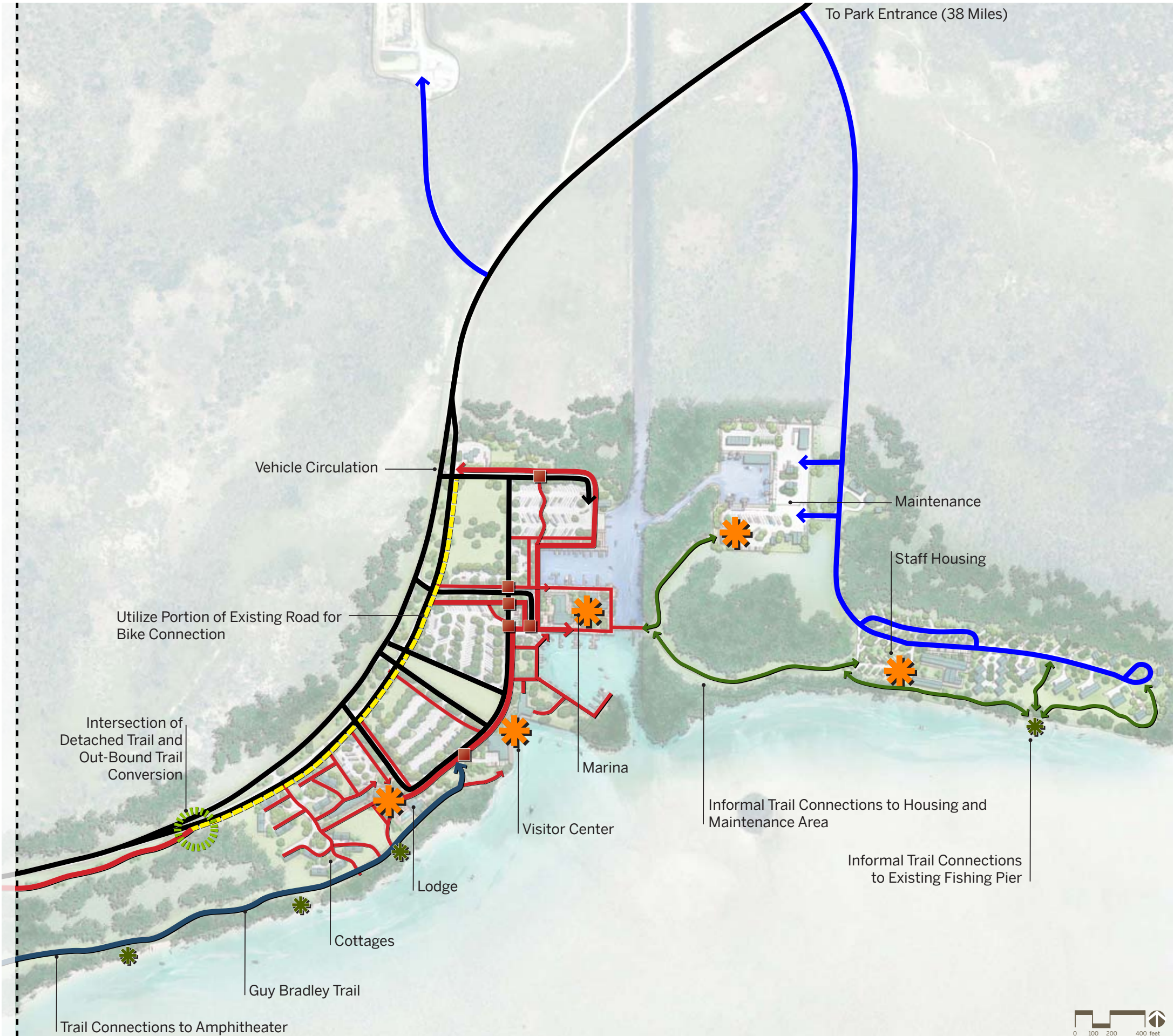


4.7.3 Pedestrian, Bicycle, and Vehicle Circulation Plan

- Separate circulation systems are provided for pedestrians, bicycles, and vehicles to minimize conflicts.
- The circulation system connects to all major locations within the Flamingo Developed Area.
- Walks are detached from vehicle paths to minimize conflicts and to make pedestrians more comfortable.
- Existing sidewalks are utilized where feasible.

Legend

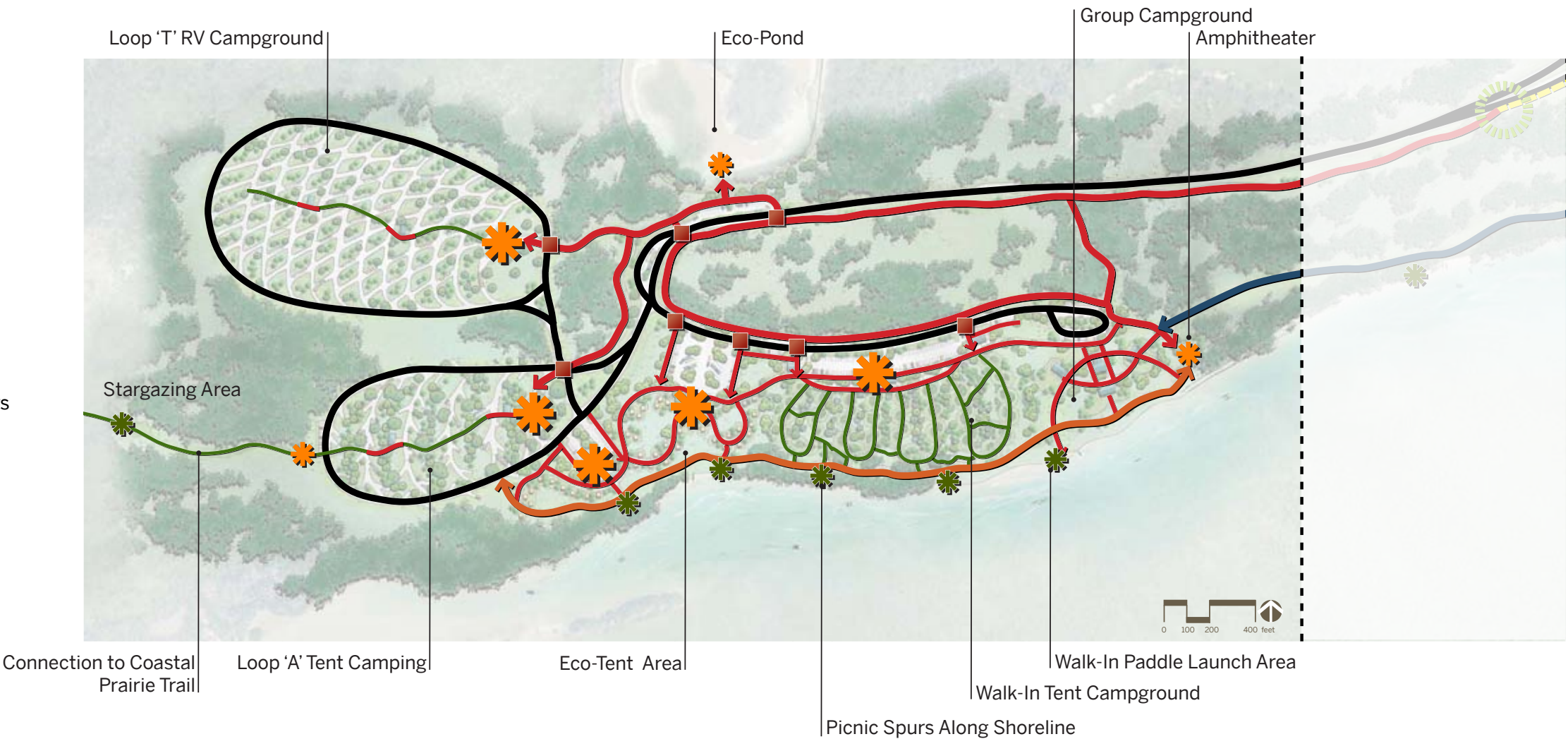
- Vehicle Circulation
- Administrative Use Only
- Major Detached Trail
- Minor Detached Trail/Sidewalk
- Guy Bradley Trail
- Multi-Use Shoreline Trail
- Multi-Use Bike/Pedestrian Trail
 - Convert One Outbound Lane to Two-Way Trail
- Mowed Trails/Walks
- Pedestrian Crossing
- Trail/Road Connections to Primary Activity Centers
- Trail Connections to Secondary Activity Centers



4.7.3 Pedestrian, Bicycle, and Vehicle Circulation Plan, continued

Legend

- Vehicle Circulation
- Administrative Use Only
- Major Detached Trail
- Minor Detached Trail/Sidewalk
- Guy Bradley Trail
- Multi-Use Shoreline Trail
- Multi-Use Bike/Pedestrian Trail
• Convert One Outbound Lane to Two-Way Trail
- Mowed Trails/Walks
- Pedestrian Crossing
- Trail/Road Connections to Primary Activity Centers
- Trail Connections to Secondary Activity Centers



4.8 Design Character Guidelines

Design Character Guidelines - Architectural

CHARACTER INFLUENCE: MISSION 66

The significance of the Mission 66 history permeates site and building aesthetics. Any work that is undertaken in this district must be critically sensitive to the historic character of the site and buildings.

The character of Flamingo is consistent with mid-century modern architecture of the 1950s and 1960s featuring sturdy, unobtrusive buildings that featured advanced construction techniques, inexpensive contemporary materials and simplified design vocabulary. “Most buildings are concrete and cinder block, built for function and to withstand environmental conditions. However, the buildings, lawns, and palm trees, set against the backdrop of the lush and exotic Everglades environment convey a special sense of place to the visitor” (Commercial Services Plan, 3-95, Section 106 summary).

New buildings must be compatible with the Flamingo Mission 66 vocabulary with complementary features that evoke without replicating existing character. Designs for new buildings should consider the following characteristics:

- Expression of long, horizontal planes
- Low horizontal massing
- Exterior freestanding vertical circulation elements
- Single sloped, low-pitched roof planes
- Flat roofs
- Concrete and/or stucco exterior finishes
- Concrete block
- Stone veneer
- Aluminum accents and railings
- Exposed structural systems
- Textured accent materials
- Exterior windows walls and unorthodox fenestration
- Interior window walls and light sharing
- Exterior/interior spatial integration

CHARACTER INFLUENCE: CONTEXTUAL HISTORY

Predating the Flamingo’s Mission 66 development was a nearby historic fishing village from which indigenous concepts and details are relevant. Additionally, Flamingo’s locale and climate invite the incorporation of design character that is reflective of a south Florida vernacular. Relevant features include:

- Passive solar orientation: Siting buildings for maximum control of sun exposure
- Passive wind ventilation: Organizing windows, porches and openings to capture and capitalize on prevailing winds
- Elevated first floor level: Raising floors for comprehensive shade and ventilation of interior and exterior spaces
- Integration of interior and exterior primary living spaces
- Protection of openings:
 - Protect openings from solar heat gain with shading devices
 - Protect openings from storm winds and storm surges with shutters
 - Protect openings from insects with screening, vestibules or passive breezes
- Simplicity in finish and detail
- Expression of structure and functional detail



Focus on interior/exterior interaction and views



Protected exterior living space



Contemporary expression of modern features



Existing and appropriate materials

1.0

2.0

3.0

4.0

5.0

6.0

81

CHARACTER INFLUENCE: ENVIRONMENTAL CONTEXT

Flamingo is located in a harsh and precarious environment. Future design character is guided by Flamingo's unique environmental influences:

- Elevated first floor level: Raising floors for protection from floods and/or storm surges
- Materials: Substantial, water-resistant and durable non-water sensitive materials
- Materials: Reinforced concrete and aluminum structural systems (anti-corrosive)
- Protection of openings: Protect openings from storm winds and surges with operable shutters
- Simplicity in finish and detail for reduced maintenance

CHARACTER INFLUENCE: SUSTAINABILITY

The National Park Service is committed to incorporating sustainability into current and future designs for park buildings. Character-defining sustainable strategies that are to be implemented where practical throughout Flamingo's buildings include:

- Passively managing solar resources by orienting buildings to maximize northern daylight, minimize western façade exposure and maximize solar power generation on south façade exposures.
- Passively managing wind resources by aligning openings to channel coastal breezes.
- Integrating storm protection by utilizing high strength non-corrosive structural systems (i.e. concrete), incorporating protective shutters at openings, and protecting ground level spaces with flood doors and water resistant finishes.
- Integrating overhangs, shading devices, shutters and reflective surfaces to control effects of the intense summer sun.
- Incorporating versatility and flexibility into building spaces.
- Capitalize on passive ventilation by connecting and incorporating exterior spaces as primary living/working spaces.
- Share uses to minimize footprint requirements.
- Using durable, local and responsibly manufactured building materials including, durable structures and finishes that can withstand coastal storms and saltwater corrosion (i.e. ,concrete, stucco, aluminum, coral rock and recycled plastic timber).

- Expressing sustainable technologies for interpretation and education:
 - Exposed solar collection systems incorporating advanced photo-voltaic technologies.

Exposed water catchment tanks and conveying systems to illustrate the conservation and reuse of rainwater.

Design Character Guidelines - Signs, Site Furnishings, and Materials

SIGNS

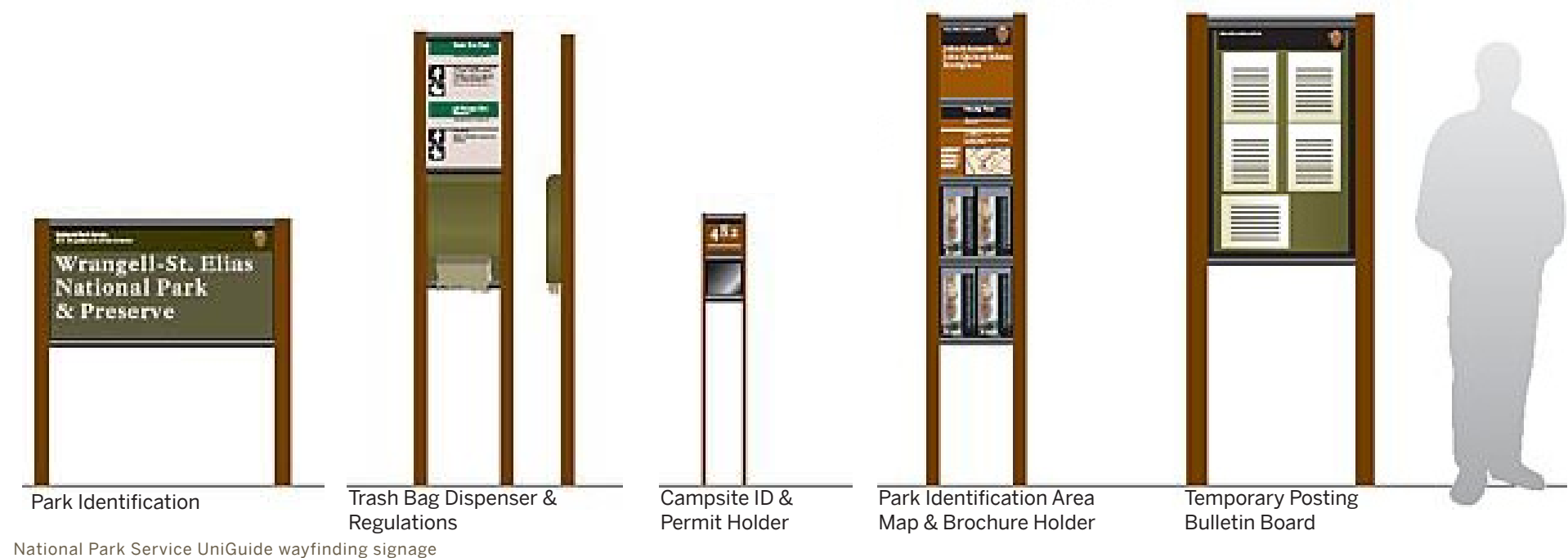
Sign design for Flamingo should follow the National Park Service UniGuide Standards: Volume I, Park and Facility Identity Signs, and Volume II, Roadway Signs; Visitor Information Sign System, VIS and Wayside Hardware Specification Manual; and the Director's Order #52C: Park Signs.

NPS sign program management should result in signs that:

- Offer clear, concise, and consistent communications to park visitors while not detracting from natural and historic settings.
- Maximize the public's convenience and safety and reduce the National Park Service's liability exposure by ensuring compliance with pertinent federal regulations and principles of sound engineering and communication.
- Build upon, but not be bound by, NPS design traditions.
- Strengthen the public identity and perception of the NPS as

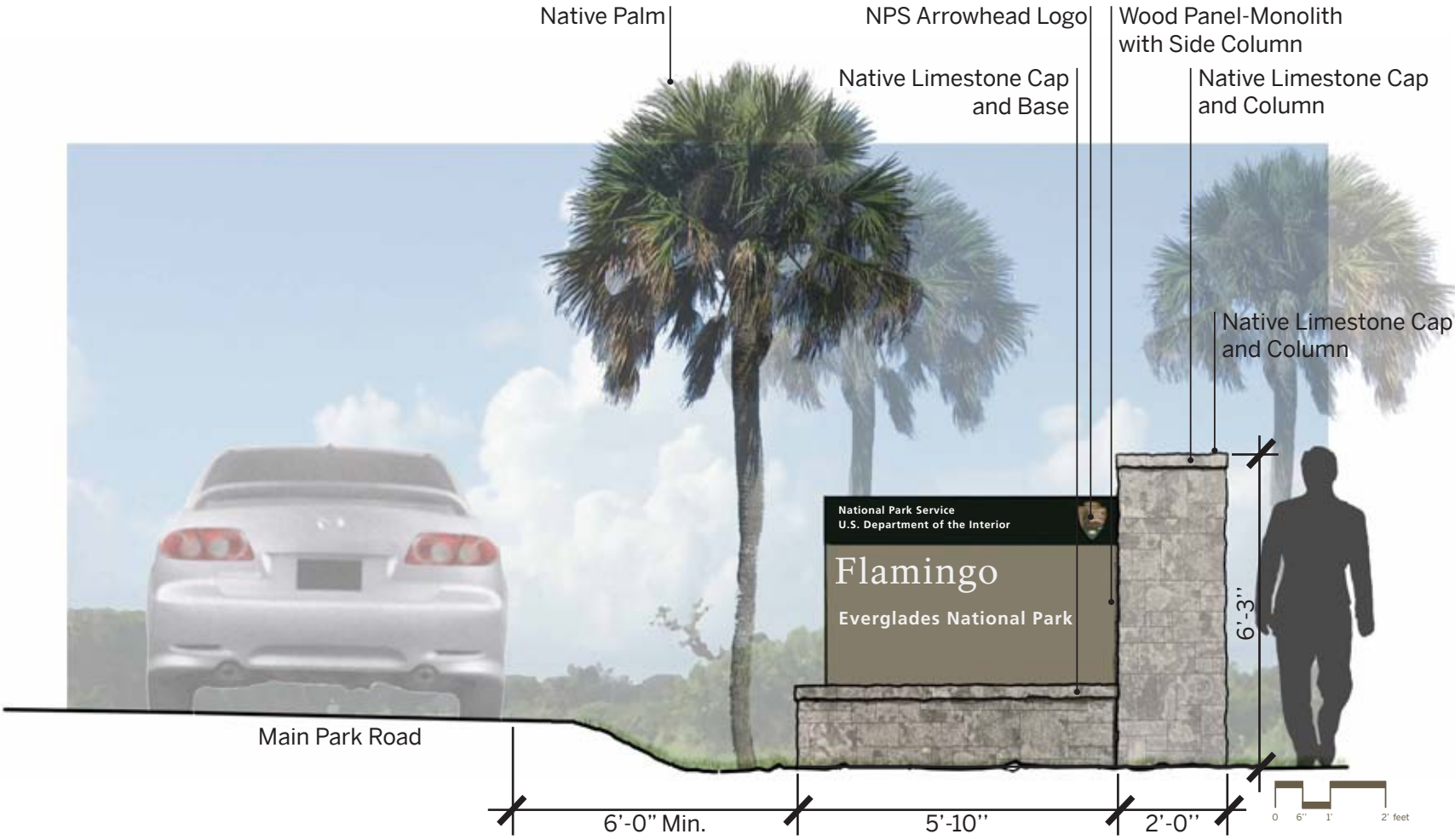
one organization by reflecting current NPS graphic design standards.

- Allow changes as park communication needs and other circumstances change.
- Are easy to acquire, maintain, and replace, and are reasonably priced.
- Comply with NPS's commitment to rely more on standardized design.
- Signage for the Flamingo Developed Area should follow the guidance listed below:
 - Sign base and column materials should use native limestone to match the pattern, texture and overall appearance of the limestone used on site historically, such as on the service station, to fit with the Mission 66 character.
 - Other sign materials are to follow the UniGuide specifications.
 - Wayfinding signage design is to follow the UniGuide specifications.
 - Monument signage, which is located at entry, will follow UniGuide Standards. It is suggested to use native limestone for the sign base and vertical elements.
 - Area identification signs are to follow UniGuide Standards. It is suggested to use native limestone for the sign base and vertical elements.
 - Roadway signs are to follow the UniGuide Standards.

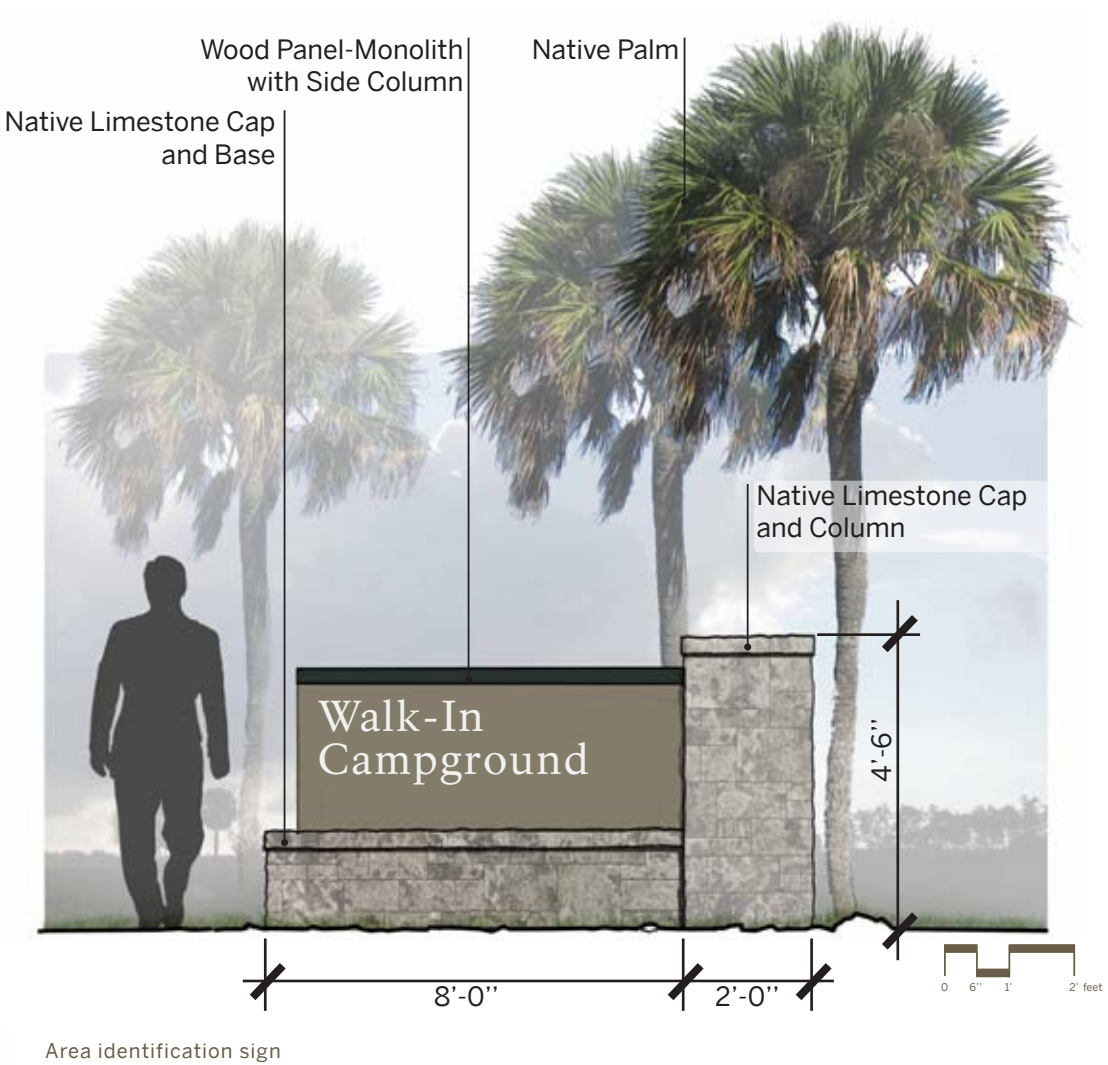


It is estimated that approximately 75 percent of all Park signs will fall into the Visitor Information (VIS) category. VIS signs are designed to present information in a consistent, attractive, convenient, and flexible format. Such information may involve pedestrian or bicycle and (low-speed) motorist guidance, regulations, resource protection, instructions and general information, fee information, safety warnings, maps, and interpretation. VIS signs may also be used to identify Park areas, features, or facilities when more monumental identification signs are not required.¹

¹ "Visitor Information Sign System." VIS and Wayside Hardware Specification Manual. NPS 2008.



Monument sign



1.0

2.0

3.0

4.0

5.0

6.0

SITE FURNISHINGS AND MATERIALS

- Site furnishings are to be durable to heavy use.
- Site furnishing materials are concrete or aluminum to withstand salt exposure.
- Site furnishings will be of a standard design to make replacement or additional pieces more easily facilitated.
- Furnishings should not detract from the historic Mission 66 character of Flamingo.
- Paving and walls are to be constructed of durable and native materials.
- The design of walls should fit in with Mission 66 character and have a contemporary feel.



Typical bench



Typical bench



Existing grill



Recycling bins



Coralina paver



Coral stone



Typical grill/fire ring



Typical grill/fire ring



Typical trash container



Oolitic cut boulders



Coral landscaping with native planting



Existing picnic table



Saddleback bike rack



Typical dumpster



Limestone



Coral rock wall



Coral rock wall



Limestone boulder

Design Character Guidelines - Native and Tropical Plantings

Trees and Palms

- Primarily native trees and palms will be planted. Exceptions to using native vegetation would be considering plantings identified in the Mission 66 Historic Structures Report for the Flamingo Visitor Center area that are currently missing.
- Trees and palms will be utilized to provide shade, privacy and to highlight important features.



Seagrape



Lancewood



Black ironwood



Everglades Velvetseed



Paradise Tree



Paurotis palm



Wingleaf Soapberry



Spanish Stopper



Green buttonwood



Thatch palm



Sabal palm



Satin leaf



White Stopper

Design Character Guidelines - Native and Tropical Plantings, continued Trees and Palms



Pigeon Plum



Gumbo Limbo



Inkwood



Cinnamon Bark



Jamaica Dogwood



Seagrape



Sabal Palm



Mahogany



Coffee Colubrina



Mastic



Marlberry

Design Character Guidelines - Native and Tropical Plantings

Shrubs and Groundcovers

- Shrubs and groundcovers shall be primarily native species.
- Shrub and groundcover plantings shall be used for screening and to accent key locations.



Spider lily



Ebony Blackbead



Saw palmetto



Cocoplum



Limber Caper



Wild Coffee



Jamaica caper



Fakahatchee grass



Dwarf Fakahatchee grass



Spartina



Railroad vine

1.0

2.0

3.0

4.0

5.0

6.0

4.9 Technologies and Standards Appropriate to the Flamingo Area

Site Technologies and Standards FEDERAL MANDATES AND GUIDELINES FOR WATER, ENERGY & CARBON REDUCTION Energy

Energy Policy Act of 2005

- The Energy Policy Act of 2005 set energy reduction goals for existing federal facilities by 20 percent, which was to be accomplished by the Fiscal Year 2015. This policy was superseded by Energy Independence and Security Act (EISA) of 2007.

Executive Order 13423

- Executive Order 13423 requires the reduction of energy use by 3 percent per year between Fiscal Years 2008 and 2015), and a 30 percent total reduction by 2015 from 2003 energy use levels.
- Secure 50 percent of renewable energy from new sources. This is required for buildings built in 1999 or later.

Energy Independence and Security Act of 2007

The purpose of the EISA is “to move the United State toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.”²

- Section 431: Reduction of energy use (relative to the 2005 level) by 3% per year between Fiscal Years 2008 and 2015, with a total reduction of 30% from 2003 energy use levels by 2015.
- Section 432: Directs that federal energy managers perform comprehensive water and energy evaluations at each facility at least every four years, and implement measures within two years.
- Section 433: New and renovated federal buildings must reduce fossil fuel use by 55% (from 2003 levels) in 2010, by 80% by

² Pelosi, Nancy (2007-01-12). “House Speaker’s Description of Legislation.” Speaker of the House. United States House of Representatives.

2020, and be carbon-neutral by the year 2030.

- Section 434: Utilize the most efficient energy design, systems, and equipment for major replacements, such as heating and cooling systems
- Section 523: New and renovated buildings must meet 30% of hot water demand through solar hot water systems by the year 2015.

Water

Energy Policy Acts of 1992 & 2005

These acts set national efficiency standards and specifications for residential and commercial water utilizing fixtures and appliances. The implementation of low-flow fixtures and appliances will assist with reducing the Flamingo energy demand and carbon footprint by reducing the overall water demand.

Executive Order 13514 (2009)

This order requires that all existing federal facilities reduce their potable water consumption intensity, from a baseline of Fiscal Year 2007, by 2 percent per year by 2020, for an overall reduction of 26 percent. This order also requires a reduction in industrial, agricultural and irrigation water consumption of 2% per year between 2010 and 2020, for a 20% total reduction. To ensure these reductions are achieved, prior to the design phase of redevelopment, a detailed analysis of the historical water consumption and intensity at Flamingo will need to be conducted in order to determine the necessary actions.

Carbon

Executive Order 13514

- Specific goals for the reduction of greenhouse gases must be established for 2020 using baseline data from 2008.
- Federal agencies must increase the use of renewable energy sources and implement renewable energy generation on site.
- Achieve a reduction in fossil fuel use by:
 - Utilizing low carbon emitting vehicles
 - Optimizing the use and number of fleet vehicles
 - Reducing the use of petroleum products (from a 2005 baseline) by 2 percent annually through 2020.

OTHER FEDERAL MANDATES AND GUIDELINES

Executive Order 11988

This executive order is intended to protect wetlands. The existing and proposed developments within Flamingo are contained within areas that were historically filled; no additional use of fill or other adverse impacts to wetlands are proposed. The restoration and creation of wetlands and other native habitats will be included as part of the redevelopment plan.

Executive Order 11990

This executive order oversees floodplain management, with the intent of reducing or eliminating development within floodplain areas. However, the development at Flamingo is unique and since the entire area is within the floodplain, meeting this requirement is not possible. To reduce the impact on the floodplain and the surrounding natural environment, no additional filling of the floodplain or impacts to native areas are proposed.

Clean Water Act

The objective of this national standard is “to restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” The act supports the establishment and enforcement of water quality standards. (Draft Commercial Services Plan 2007) Water-sensitive urban design, the implementation of low impact development strategies that utilize best management practices, maintaining pre-development runoff rates and limiting the pollutant discharge will contribute significantly to maintain water quality.

LEED

The construction of new buildings within federal facilities are required to meet the United States Green Building Council’s (USGBC) Leadership In Energy and Environmental Design (LEED) Silver rating for New Construction.

FLORIDA REGULATIONS AND OTHER OVERARCHING STANDARDS

Outstanding Florida Waters

In accordance with the Clean Water Act, Florida has designated all waters of the Everglades National Park as Outstanding Florida Waters (OFW). This was conveyed via Section 403.061(27) of the Florida Statutes, which grants the Florida Department of Environmental Protection (FDEP) the power to establish these waters as OFWs and as worthy of protection.

National Park Service –Director’s Orders (DO) (Sustainability Related)

- DO #12: Conservation Planning per National Environmental Protection Act and National Park Service Organic Act
- DO #77-1: Natural Resource Protection – implementation of Executive Order 11990
- DO #77-2: Natural Resource Protection – implementation of Executive Order 11988

Site Sustainability Strategies

Some overlap with building systems may exist since the site and building systems are integrated and each affects the other.

ENERGY REDUCTION

The use of renewable energy can greatly reduce the overall carbon footprint of Flamingo, in addition to lowering operation and maintenance costs, and in some cases, capital costs. There can also be an improved lifecycle cost and an increase in savings through extending the life of costly mechanical systems.

Some strategies to reduce energy and meet the federal mandates include:

- Use of solar arrays
- Use of wind generation turbines
- Use of site lighting fixture-mounted solar photovoltaic panels and/or micro wind turbines
- Use of high efficiency water and wastewater treatment systems
- Use of solar water heating
- Appropriate use of interior and exterior site lighting to prevent overlighting and light spillage
- Use of light sensors or timers
- Use of water treatment system work exchangers to lower pumping demand
- Continued training of key personnel to operate and maintain systems utilizing new technologies
- Implementation of green procurement policy
- Continued auditing of system to verify efficiencies and reduce waste

WATER REDUCTION

The use of water conservation techniques and devices not only conserves water, but also the energy used to treat and pump the water, which can contribute to a reduction in the overall carbon footprint of Flamingo. In addition, the conservation of water can lower capital costs, operation and maintenance costs, and improve the lifecycle cost and savings by extending the life of costly mechanical systems.

Some strategies to reduce water consumption and meet the federal mandates include:

- Use of low flow water fixtures (as described in the sustainable building section below)
- Use of native, low water plant materials (Xeriscaping)
- No permanent irrigation
- Harvesting and reuse of rooftop rainwater for toilet flushing
- Harvesting and reuse of air conditioning condensate for toilet flushing
- Harvesting and reuse of greywater for toilet flushing or irrigation
- Maintaining adequate water distribution system chlorination and pressure (reduces system flushing)
- Sub-metering for all facilities to track water use and detect leaks
- Use of efficient HVAC systems that require little or no water use
- Continued training of key personnel to operate and maintain systems utilizing new technologies
- Implementation of green procurement policy
- Continued auditing of system to verify efficiencies and reduce waste

WATER QUALITY

Water Sensitive Urban Design / Low Impact Development: The use of Water Sensitive Urban Design (WSUD) strategies, Low Impact Development (LID) devices, and Stormwater Best Management Practices (BMPs) can reduce the Total Maximum Daily Pollutant Loading (TDMLs) and increase the quality of stormwater flowing into adjacent surface waters and infiltrating into the groundwater.

Relevant stormwater BMPs and LID devices are:

- Porous Pavement: the use of porous pavement can assist with reducing the stormwater runoff and the transportation of pollutants into the marina basins and Florida Bay. The applicability and feasibility of this device will require a detailed analysis of the soils and specific performance requirements,

whether to reduce pollutants or to meet LEED.

- Bio-Retention Ponds: the use of created wetlands and small ponds close to pollutant sources to capture and treat stormwater runoff from small storm events and first flush of larger events.
- Infiltration trenches and pits: these devices direct stormwater runoff from specific sources into sub-surface infiltration chambers which provide a level of pre-treatment and can reduce the runoff volume.
- Other BMP devices that may be applied to the site as part of the WSUD/LID development:
 - Detention Basin
 - Filter Strips/ Bioswales
 - Dry Swales
 - Sedimentation Basin
 - Oil & Grit Separator
 - Green Roof
 - Dry Well
- Land Application of Treated Sewage Effluent (TSE): since the sanitary waste is treated to a very high level, the disposal of this effluent water can be done through various means, including site-wide land application or irrigation. Although the need for irrigation may be minimal or even non-existent, the use of the TSE for irrigation is an accepted and sustainable way to dispose of this water. This may become more relevant and important as the redevelopment of Flamingo is completed and the volume of sanitary wastewater increases, especially if this volume exceeds the capacity of the current effluent evaporation and percolation ponds.

CARBON REDUCTION

Relevant strategies to reduce carbon footprint are:

- Reducing vehicle miles traveled (VMTs) by fleet vehicles
- Reducing or eliminating use of fossil fuels in fleet vehicles
- Use of alternative means of transportation for visitors, including walking and bicycling
- Use of mass transit for employees to reduce VMTs
- Reducing potable water demand
- Reducing energy demand
- Increased use of renewable energy sources
- Increased use of water reuse
- Increased use of plant materials with high carbon sequestration rates

Architectural Technologies and Standards

BUILDING CODES AND REQUIRED CONSTRUCTION STANDARDS

- Design to the Florida Building Code 2007 Edition, adopted March 2009, Hurricane Zone VE, 150 mph wind loads (or currently enforced Florida Building Code).
- Design to flood insurance floor elevations of minimum 15 feet above Mean Sea Level (or currently enforced mandates).
- Track current climatic change projections for Mean Sea Level rise over 50 years and increased storm intensity levels (in 2008 the median projection was for a 14 to 16 inch rise in sea level in South Florida). Revise design requirements to accommodate projected climatic conditions.
- Apply the Secretary of the Interior's Standards for the Treatment of Historic Structures for planned work in and around historic structures.
- Incorporate the requirements of the National Park Service Sustainability Checklist in all design and documentation.
- Employ applicable accessibility guidelines, including American's with Disabilities Act, Section 504, UFAS and ADAAG.

RECOMMENDED CONSTRUCTION STANDARDS

Raised Building Elevations

- Raise building floor elevations to protect people, systems and water sensitive construction from storm impacts
- Elevate all building systems and typically occupied floor elevations above flood level or protect with dry flood-proofing enclosures below flood level (minimum 15 feet above sea level).
- Elevate utilitarian structures, support facilities, maintenance buildings and other miscellaneous structures on filled pads above storm surge level (estimated 10 feet above sea level)
- Incorporate non-water sensitive materials for areas below flood level

Structural Systems

- Utilize structural slab-on-raised-structural-fill or slab-on-piling foundations for maintenance structures located at or above general Flamingo fill elevation
- Utilize surge protection buffers at slab type foundations and at on-grade facilities
- At foundation systems without structural pilings, provide structural fill to oolite strata and extend fill 5 feet horizontally around perimeter of slab
- Where structural slab foundation systems are not practical, utilize precast concrete foundation pilings to elevate building

structures above flood elevations to meet state of Florida and Monroe County building codes.

- Extend pilings approximately 5 feet into limestone strata. Total piling length to be determined by geotechnical analysis at project site
- Evaluate reclaimed fill material (from proposed restoration areas) for reuse as structural or backfill
- At slab foundations, utilize concrete masonry unit wall structure with aluminum pre-manufactured truss framed roof systems
- At raised slab buildings, utilize structural modular concrete and pre-cast building systems to minimize on-site construction requirements
- Utilize aluminum components for exposed structural framing to avoid corrosion
- Utilize structural steel only when fully encased and protected from corrosion
- Avoid wood framing
- Avoid exposed steel framing

Materials and Finishes

- Complement historic finishes and materials consistent with the Secretary of the Interior's Standards for the Treatment of Historic Structures
- Standard exterior materials include sealed or painted concrete and masonry finishes or 3-coat stucco system over concrete or masonry construction
- Exterior accent materials include aluminum or cementitious panels and locally relevant materials (i.e. cochina stone)
- Utilize mill finish aluminum at exterior exposed metal (structural or decorative)
- Utilize aluminum framed windows with high performance glazing
- Utilize aluminum screening for windows and exterior enclosures
- Incorporate manual hurricane shutters at all window and screened openings
- Incorporate motorized hurricane shutters where manual operation is impractical
- Utilize perforated recycled boardwalk decking for occupied exterior spaces and walkways
- Utilize light colored prefinished aluminum metal roofing at sloped roofs, incorporate applied photovoltaic systems where practical
- Utilize light colored membrane roofing at flat roofs. Incorporate embedded photovoltaic systems where practical

Conveyance Systems

- Provide accessible entry and egress at all buildings and

structures

- Where possible, utilize ramping and transitional graded areas to achieve vertical circulation (in lieu of lifts or elevators) to minimize maintenance
- Where necessary, utilize and protect lifts and/or elevators
- Utilize traction type elevators to ensure that equipment is above flood level.
- Fully enclose and protect elevator doors and shafts
- Utilize ramps or grade transitions to ensure elevator entry is elevated a minimum of 5 feet above Mean Sea Level
- Utilize wheel chair lifts at interior applications only

Mechanical Systems

- Locate all equipment above flood level (condensers, air handlers, motors, pumps, etc.)
- Specify premium efficiency mechanical systems at each individual building
- Incorporate geo-thermal and geo-exchange sources for cooling and heating where possible. Consider site impact of loop wells on historic context
- Where possible, eliminate all exterior equipment. Protect necessary exterior equipment from water surges and from damage by windborne debris
- Where possible, protect and damper all exterior wall penetrations

Plumbing Systems

- Reduce demand, reclaim and reuse potable water wherever possible
- Utilize ultra low flow fixtures and faucets
- Utilize waterless urinals
- Provide rainwater and greywater collection and reuse systems at all new buildings that have an applicable water load
- Size collection systems should be sized to meet the applicable load of the building
- Locate all pumps and equipment above flood level
- Utilize solar water heat at all Flamingo buildings

Electrical Systems

- Incorporate photovoltaic power generation throughout Flamingo
 - Engineer photovoltaic systems to return generated power to the overall grid
 - Locate all electrical equipment above flood level
 - Utilize high efficiency lighting and controls to reduce energy demand

Architectural Sustainability Strategies

The Master Plan exemplifies the sustainable vision of the National Park Service and is intended to guide planning, design, construction, restoration, and use of Flamingo for the next 50 years. All buildings designed within the district must employ a unique set of sustainable principles suited to Flamingo's specific environment. Flamingo's climate is seasonally harsh, which dictates a sustainable building approach reliant on practical, fundamental and integrated design approaches and durable, low maintenance technologies.

Flamingo's historic developments provide living examples of fundamental design approaches appropriate to this climate. Existing buildings illustrate passive orientation for wind and sun as well as use of local and durable materials. Designs for Flamingo's redevelopment must balance contemporary innovations and technologies with the demonstrated successes of these sound design principals.

The influences of Flamingo's harsh climate, historic context, remote location, and National Park status determine the strategies and technologies on which to focus future designs.

GENERAL REQUIREMENTS

- Utilize the National Park Service Sustainability Checklist to identify and test appropriateness of sustainable opportunities for each project proposed in Flamingo.
- Utilize the US Green Building Council standards for guiding sustainability. Design projects to achieve LEED Silver Certification.
- Establish maintenance and management protocols to ensure implementation of high performance building characteristics.
- Showcase sustainable features as an integral part of the visitor experience.

FUNDAMENTAL CONSIDERATIONS

- Limit proposed development boundaries to currently or previously developed areas.
- Consolidate uses to reduce Flamingo's overall development footprint.
- Implement practical passive systems for the region.
- Implement residential-scale strategies and systems to minimize costs, simplify maintenance, accommodate phased development, and facilitate meaningful interpretation.
- Implement environmentally conscientious maintenance and operation of facilities.
- Ensure that employees are well-trained to operate and maintain the new systems.

SPECIFIC CONSIDERATION: CONSERVE AND CREATE POTABLE WATER

Flamingo's remote location requires on-site water treatment. Producing potable water is energy intensive and results in significant operating and maintenance costs. Conserving water and providing alternate sources for non-potable uses offsets system requirements, saves water, and reduces operating costs.

- Utilize ultra low flow and waterless plumbing fixtures.
- Consider auto on/off and auto flush fixtures to control overuse.
- Utilize hot water sensing showerheads to avoid initial water waste during heat up.
- Offset potable water demands and water treatment quantities by collecting greywater to flush toilets.
- Offset potable water demands by collecting rain water to flush toilets or water plants when required.
- Collect condensate from air conditioning systems to supplement building water requirements in the summer.
- Selectively implement condensate, rainwater, and greywater collection respectively, and only until building needs are met. Install tanks and enclosures sized to handle building requirements.



Technology and Standards, Character Qualities

- Horizontal planes punctuated by vertical masses
- Elevated building and exposed structure
- Pre-fabricated modular building components
- Exposed exterior vertical circulation
- Low sloped roofs
- Punched openings
- Deep overhangs and shading protection with shutters for sun control and hurricane protection
- Precast concrete, aluminum, coral rock and regional/local materials



Flamingo Lodge

1.0

2.0

3.0

4.0

5.0

6.0

SPECIFIC CONSIDERATION: CONSERVE AND CREATE ELECTRICITY

The redevelopment and continued operation of Flamingo as a lively visitor destination will maintain and likely increase energy demands. While Flamingo is served by Florida Power & Light utility, Flamingo is the beneficiary of abundant solar resources for the production of local, renewable and clean energy.

Based on current conditions, electricity that is generated at Flamingo is most beneficial if it is returned to the electrical grid, providing a clean, supplemental source to utility company production.

- Proposed development is to occur in phases, yet photo-voltaic arrays can be sized based on the building area (roof or wall) or site area available to them. By feeding the grid rather than batteries, excess power production can benefit the overall park rather than feed and discharge from a localized battery. This takes advantage of an existing shared system without creating an independent power plant.
- Flamingo's use is seasonal and Flamingo's summers are intensely hot, resulting in inconsistent electrical demands. Sizing systems to meet demands becomes problematic, making shared resources more appealing.
- Flamingo's coastal eco-system can foster a corrosive environment for battery based storage and transfer systems. Maintenance and replacement costs for these systems may exceed their overall value in this climate.
- Typical arrangements with utility companies benefit consumers who provide clean power to the grid (currently the rate paid for clean power units is double the rate charged for power units). The net gain to Flamingo is substantial without the maintenance of expensive equipment.

Power requirements at Flamingo are substantial, including powering potable water and wastewater treatment plants, site lighting, building power (lighting, air conditioning, refrigeration, user power), campsites, and housing locations. These power requirements will likely increase with the proposed redevelopment of Flamingo, but can be substantially offset by practical, sustainable strategies. There are great opportunities to reduce Flamingo's operating expenses and dependence on remote utilities by reducing electrical demand and generating power on site.

- Utilize passive design strategies to reduce building cooling loads:
 - Orient linear buildings with long axis east to west to reduce exposure to hot afternoon sun and to capture northern daylight and coastal breezes.

- Locate operable openings on opposing north and south faces to ensure cross ventilation from coastal breezes.
 - Utilize overhangs and shading devices to protect southern facing openings from Flamingo's intense direct sun and associated solar heat gain.
 - Incorporate constructed or natural shading devices to protect east, west and south building faces from direct sunlight.
 - Maximize north facing openings for daylighting interior spaces.
- Enhance building envelope performance to reduce building cooling loads:
 - Maximize insulation about the entire building envelope and seal all penetrations to contain conditioned air inside building.
 - Use highly reflective wall and roofing materials to reflect intense direct sunlight.
 - Incorporate high performance glazing and engineered overhangs to limit solar heat gain inside buildings.
 - Locate equipment in conditioned spaces for optimized performance.
 - Incorporate vestibules or air locks to minimize heat transfer and to control insects.
- Employ energy efficient systems
 - Consider ground source, geo-exchange systems with water source heat pumps to reduce electrical demands associated with extreme air temperatures in the summer.
 - Appropriately size mechanical equipment for high performing building envelopes.
 - Consider energy recovery systems at air-conditioned spaces to capture and reuse energy from already conditioned air. This energy recovery reduces electrical demands associated with extreme air temperatures in the summer.
 - Incorporate zoned spaces, advanced controls, and variable speed motors for customized mechanical system efficiencies.
 - Utilize EnergyStar and/or FEMP rated appliances and equipment.
 - Design lighting to complement planned daylighting.
 - Consider high efficiency lighting technologies such as high output fluorescent and LED combined with dimming controls.
 - Incorporate daylight harvesting systems.
 - Incorporate advanced lighting controls and dimming for multi-use spaces.
 - Utilize solar water heating.

"Sustainable design balances human needs (rather than human wants) with the carrying capacity of the natural and cultural environments. It minimizes environmental impacts, it minimizes importation of goods and energy as well as the generation of waste. The ideal situation would be that if development was necessary, it would be constructed from natural sustainable materials collected on-site, generate its own energy from renewable sources such as solar or wind, and manage its own waste."

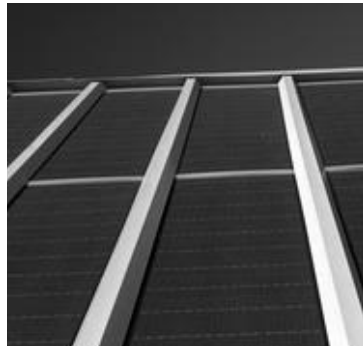
U.S. National Park Service:
Guiding Principles of Sustainability



Climate Responsive Design



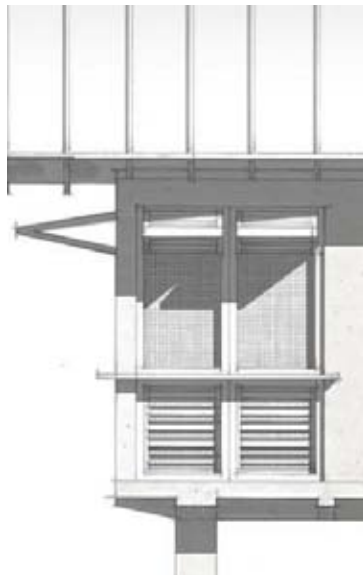
Passive Design Diagram



Integrated Solar Collectors



Local Materials: Coral Rock



Overhangs and Shading Devices ideal for Southern Exposures



Greywater Collection and Treatment System

- Consider building management programs to ensure continued building performance.
- Research and employ current advanced technologies. Consider technologies which create symbiotic combinations (i.e. capture geo-exchange heat output to heat water), consider remote control building management systems for consistent performance; carefully select equipment based on seasonal use criterion.
- Generate solar power.
 - Generate clean electricity from the abundant renewable solar resource in Flamingo to supplement utility company provided power.
 - Incorporate photovoltaic systems at all new building roofs. Wherever possible, utilize systems that are integral to roofing materials and are resistant to corrosion.
 - Orient building roofs for optimum solar power generation. Primary roof surface should face generally southward (30 degree tolerance) and should follow a slope between 25-40 degrees.
 - Design roofs to structurally support selected photovoltaic array systems.
 - Incorporate photovoltaic technologies that are integral to building materials.
 - Carefully consider local climate concerns (saltwater, hurricane force winds/debris, extended periods of rain) at each proposed application to confirm appropriate selection.
 - Ensure that adequate building area is provided to accommodate required inverters and metering equipment.
 - Employ solar water heat for all buildings requiring hot water.
 - Research and employ current advanced technologies. Consider technologies such as compact solar power generator/storage modules for use at eco-tents to limit utility infrastructure, photovoltaic films within wall or roof materials for protection from hurricane winds and debris, solar collector panels within road beds to improve sustainability of current asphalt surfacing.

SPECIFIC CONSIDERATION: RESPONSIBLY UTILIZE MATERIALS

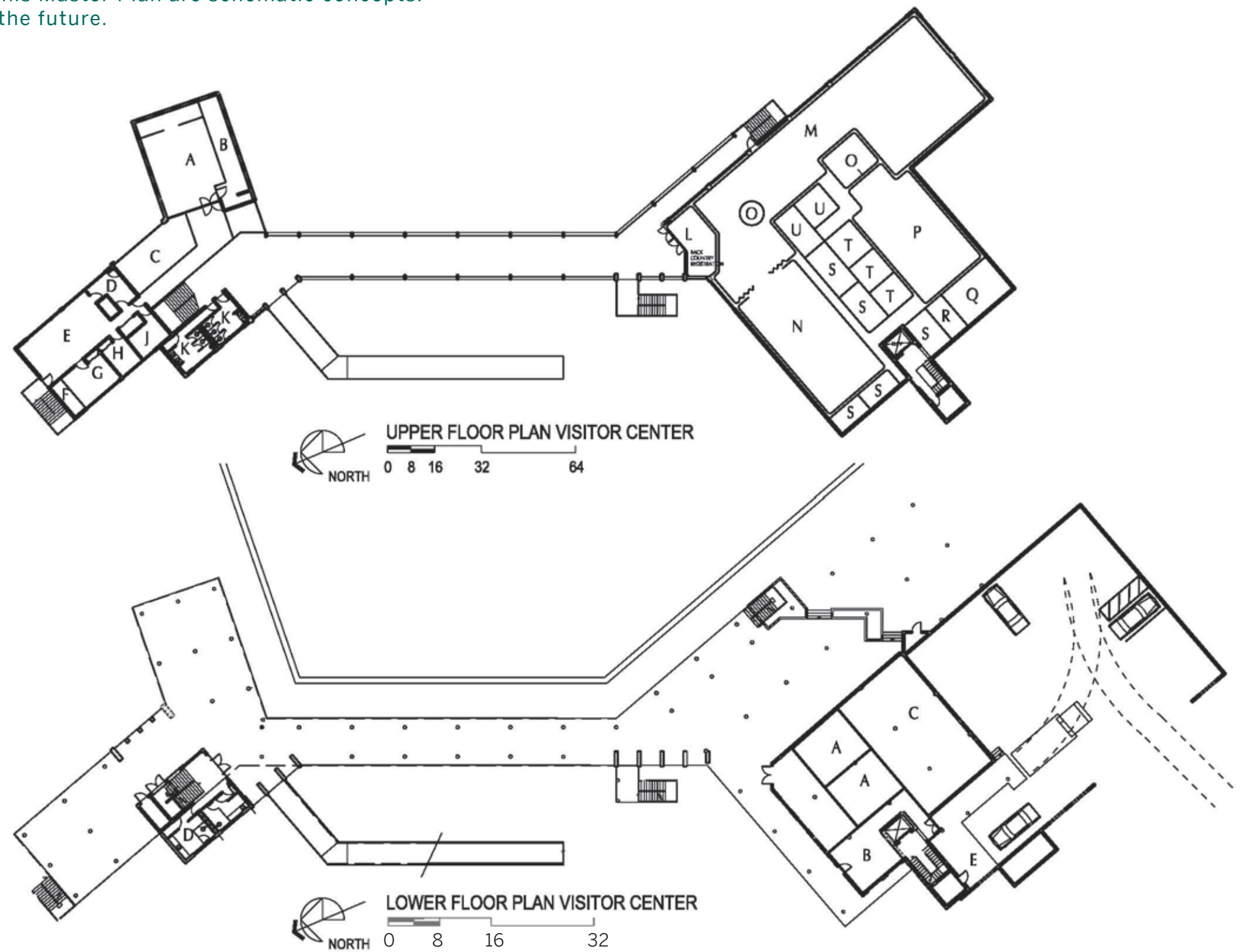
- Reduce, Reuse, Recycle wherever possible.
- Implement a recycling program for visitor use.
- Retain and reuse existing buildings.
- Reduce new building footprints by consolidating uses and accommodating shared uses.
- Incorporate shaded, breezy exterior spaces in lieu of enclosed interior spaces.
- Recycle existing fill from restoration areas, where appropriate, for use in new fill areas.
- Require construction waste management practices. Reduce construction waste and recycle all reusable debris.
- Prioritize products based on durability and ease of maintenance.
 - Preferentially procure materials that are manufactured or harvested locally.
 - Preferentially procure materials with significant recycled content.
 - Preferentially procure materials with rapidly renewable material content.
 - Preferentially procure materials that have low emissions of volatile organic compounds.
 - Preferentially procure materials that bear labels of industry approval for sustainable production or content (i.e., Green Guard furniture, Green Seal cleaning products or Green Label Plus Carpets).

"The Federal Government is committed to designing, locating, constructing, maintaining, and operating its facilities in an energy efficient and sustainable manner that strives to achieve a balance that will realize high standards of living, wider sharing of life's amenities, maximum attainable reuse and recycling of depletable resources, in an economically viable manner, consistent with Department and agency missions."

Federal Leadership in High Performance and Sustainable Buildings' Memorandum of Understanding

4.10 Architectural Plans and Schematic Design

General Note: All architectural plans in this Master Plan are schematic concepts.
More detailed plans will be developed in the future.



Proposed lodge shown relative to historic Visitor Center (VC shown on opposite page)

Flamingo Visitor Center

The visitor center at Flamingo was built in 1957 and remains iconic in its expression of the character of Flamingo’s Mission 66 history. This Master Plan preserves and rehabilitates the visitor center area, re-establishing its prominence and historic integrity.

The visitor center is to be the first stop and main hub for visitor information, orientation, limited interpretation, and check-in for overnight accommodations. The renovated visitor center building will accommodate Flamingo district’s interpretive center, including offices and support space for Flamingo district interpreters. Sharing the building are law enforcement and resource protection staff.

Plans for the visitor center must preserve historic materials and the quality of historic public spaces, ensuring the integrity of Flamingo’s Mission 66 history. Restoration of the building’s exterior components and attributes will significantly beautify and revitalize this unique landmark.

Rehabilitated interior spaces will capitalize on the quantity and quality of the natural light and openness of the spaces. The revitalized visitor center area will elicit memorable visitor experiences of this historic gem. Exterior spaces at the visitor center offer opportunities for visitors to enjoy the restored natural environment and to participate in orientation or interpretive activities. Lower level public restrooms complete the program.

Originally designed to take advantage of daylight, views and breezes, the visitor center illustrates sound sustainable planning. Utilizing high efficiency equipment and fixtures, improving insulation levels and studying the efficiency of window glass will result in reductions of energy and water consumption in the renovated building. Solar power collectors may be possible on the visitor center roof, but designs must respect the historic character of the building.

Visitor Center Program			
Upper Level Spaces		Quantity	Total SF
A	Fitness and Training	1	825
B	Storage	3	380
C	Conference Room	1	380
D	Ranger Office	1	110
E	Ranger Work Area	8	450
F	Evidence and Weapons Room	1	60
G	Breakroom	1	195
H	EMS	1	135
I	NOT USED		
J	Locker Room	1	115
K	Restrooms w/Showers	2	355
Sub Total Ranger Area			3,005
L	Vestibule with After Hours Permits	1	175
M	Interpretive Center	1	3,475
N	Theatre + Multi-Purpose Space	1	1,270
O	Information Desk - Interpretive Staff final location t.b.d.	1	150
O	Information Desk - Concessioner Staff final location t.b.d.	1	150
P	InterpreterWork Areas	10	1,060
Q	Work Area and Kitchen	1	280
R	Archives - Interpretive objects	1	100
S	Storage - Interpretive objects	5	600
T	Interpreter Offices	3	380
U	Restrooms	2	250
Sub Total Interpretive Area			7,890
Misc. Circulation & Bldg Services			2,130
Upper Level Sub-total			13,025
Ground Level Spaces			
A	Public Restrooms	2	725
B	Elevator Vestibule	1	800
C	Outdoor Furniture Storage	1	1,350
D	General Storage	1	360
E	Loading Dock	1	n/a
Misc. Circulation & Bldg Services			1,370
Ground Level Sub-total			4,605
VISITOR CENTER BUILDING Total SF			17,630

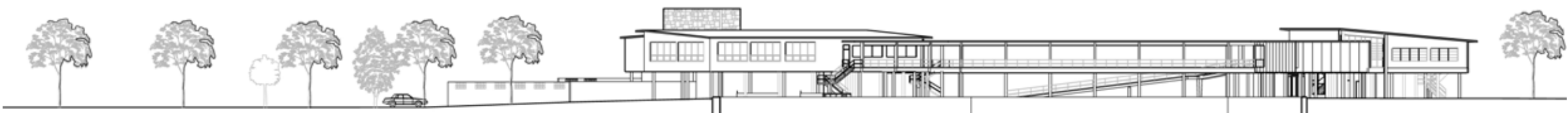
Concept drawings will be developed in more detail in future phases of work. Storage and equipment areas are to be sized adequately for sustainable equipment specific to each project.



Postcard Image - Historic Flamingo Visitor Center

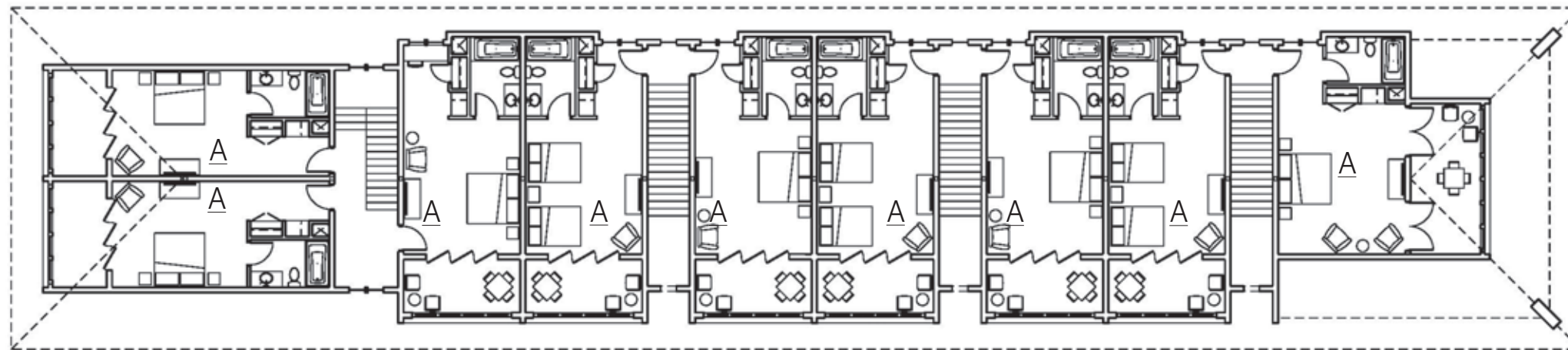


Visitor Center today

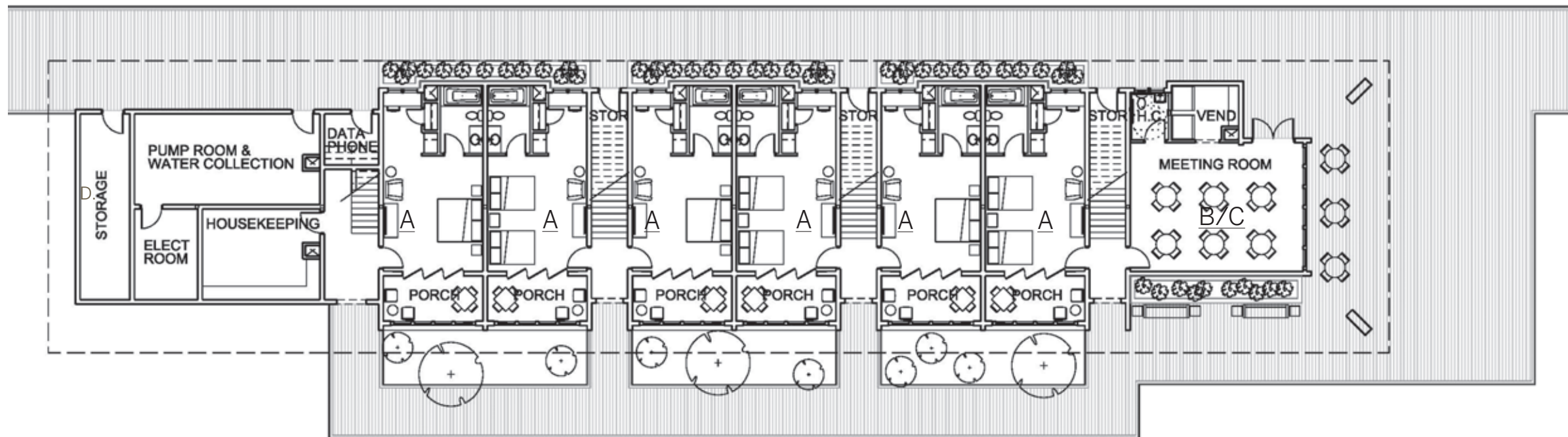


Historic Visitor Center shown relative to proposed lodge (lodge shown on opposite page)

Flamingo Lodge



LODGE - TYPICAL UPPER LEVEL CONCEPT



LODGE - TYPICAL MAIN LEVEL CONCEPT



Flamingo Lodge

Flamingo Lodge Program			
First Upper Level Spaces		Quantity	Total SF
A	Guest Rooms	30	13,500
B	Common Day Space	1	500
C	Admin and Meeting Area	1	500
D	Housekeeping + Storage + Mech	2	2,000
	Misc. Circulation & Bldg Services		3,500
FLAMINGO LODGE BUILDING Total SF			20,000

Concept drawings will be developed in more detail in future phases of work. Storage and equipment areas are to be sized adequately for sustainable equipment specific to each project.



Lodge/Restaurant Area

The proposed Flamingo Lodge provides a hotel-like atmosphere near the Florida Bay waterfront within walking distance of Flamingo’s main activity centers (visitor center, marina, restaurant and pool). Guest parking and drop-off plaza provide convenience and access to ramp or stair entry to building. Connected walkway to restaurant and pool allow easy access to shared amenities and elevator access. The lodge is to have 30 guest rooms with 1-2 beds per room, balconies and bay views. Additional visitor amenity spaces include meeting rooms and sitting rooms.

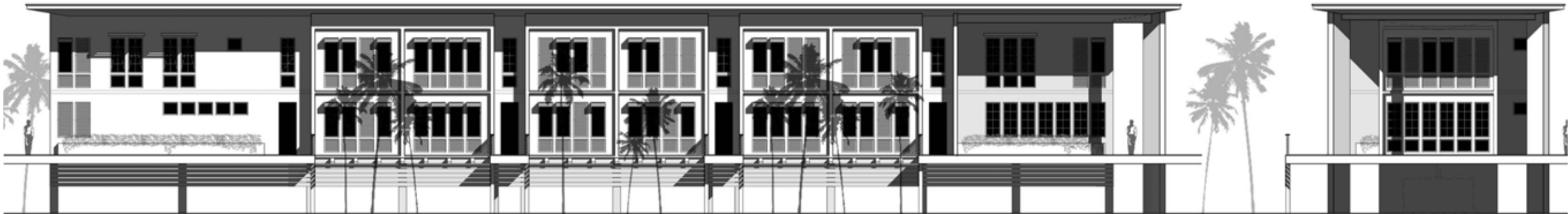
After hours administrative assistance for lodge guests is to be provided in the restaurant building. Maintenance and housekeeping space and limited administrative space complete the program. The lodge design concept includes two separate buildings to allow for seasonal closure of a portion of the rooms.

The lodge is designed to complement the more prominent Mission 66 visitor center. Vegetative screening will be used to reduce visibility of the lodge from the visitor center and beyond. The proposed raised first floor, pre-manufactured concrete construction, and public exterior spaces evoke the character of the visitor center, provide enjoyable visitor experiences, and protect building systems and finishes from threat of flooding.

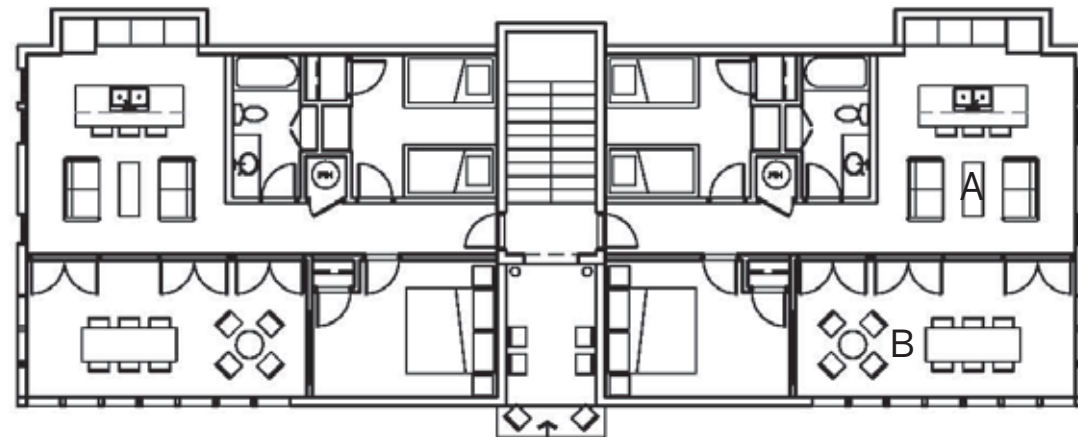
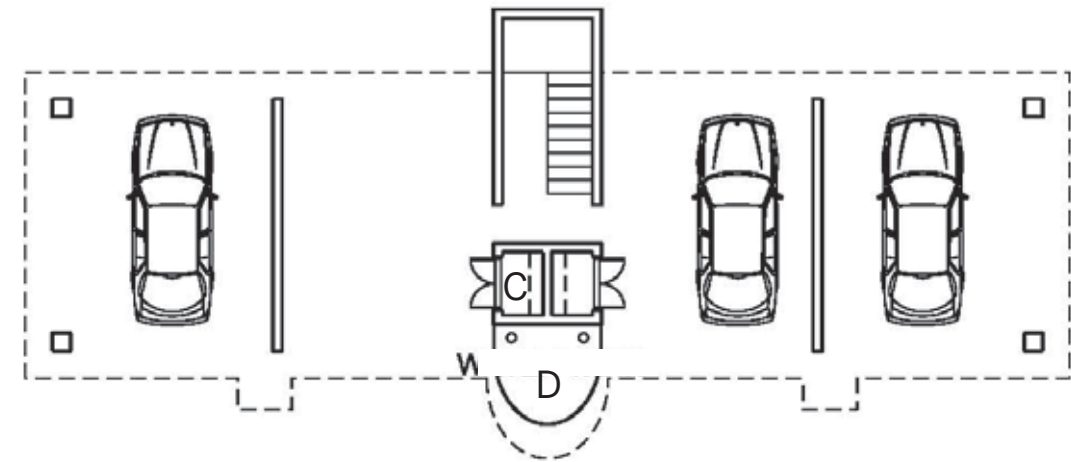
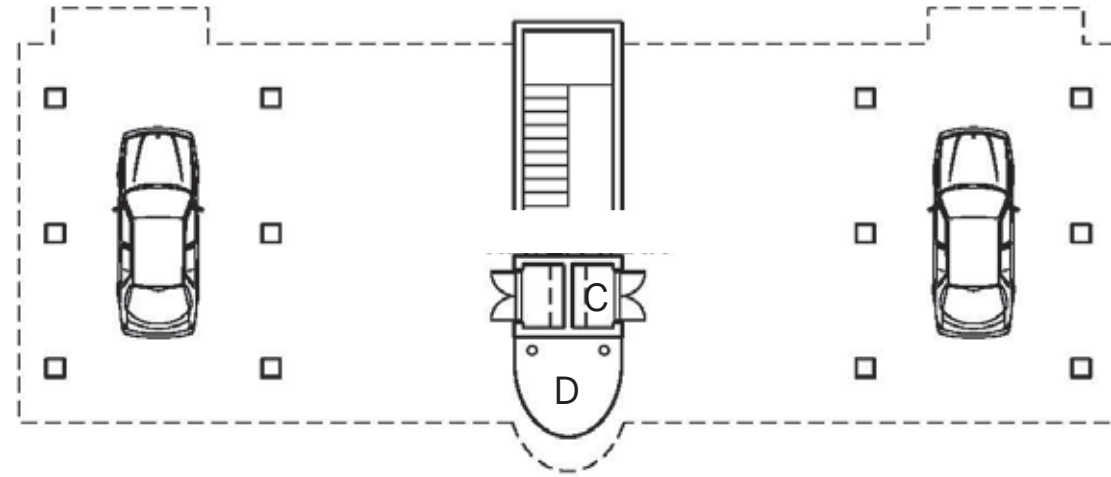
The lodge buildings are oriented for passive ventilation, controlled solar exposure and bay views. Shade features and exterior shaded spaces provide comfort and extend opportunities for passive ventilation. The lodge roof can readily host solar power collectors and solar water heat. Rainwater and/or greywater collection and reuse will require ground level protected tanks. High performance envelope and high efficiency equipment and fixtures will reduce the energy and water demands of the building.



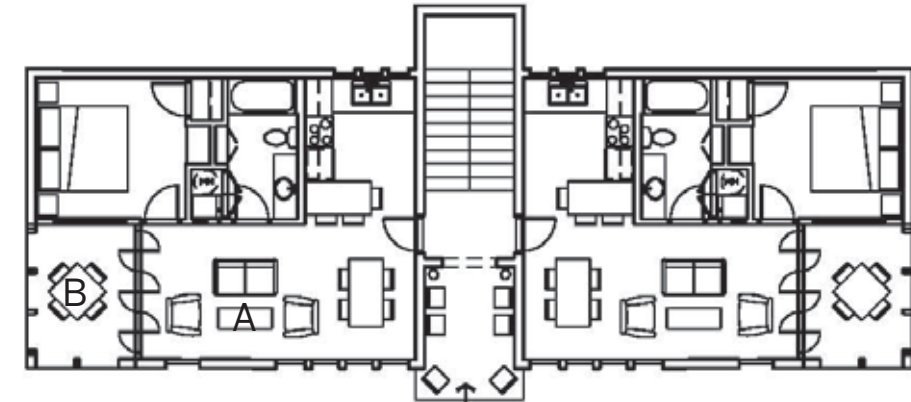
Lodge Entry



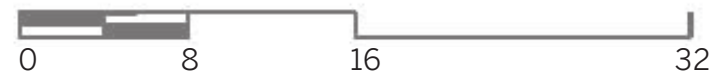
Flamingo Cottages



TWO BEDROOM COTTAGE
700 S.F. UNITS



ONE BEDROOM COTTAGE
500 S.F. UNITS



Flamingo Cottages

Unique among Flamingo's amenities, the former cottages operated year-round, occupied by tourists, boaters, fishermen and researchers. The original Flamingo Cottages suffered catastrophic hurricane damage in 2005 and have since been demolished.

Flamingo's Master Plan proposes replacement cottages adjacent to the new lodge complex. Proposed duplex cottages offer visitors a semi-private, air-conditioned overnight accommodation option. The cottages are small scale structures placed within the landscape. Cottage visitors experience a uniquely intimate experience of Everglades ecosystems.

Proposed are 24 units in 12 duplex buildings. Both one bedroom and two bedroom units are planned. All units are accessible by car, bicycle, and foot. Accessible entry to one or more cottages is achieved by connecting raised walkways to the lodge. Boat trailer parking is available to a portion of the units to fully support year-round use. Bay views and more isolated locations allow a portion of the units to accommodate visitor desires for privacy and/or more remote natural settings.

Cottages provide an ideal opportunity to demonstrate sustainable strategies at a residential scale. Each cottage incorporates a sustainability module at its core, which can house the equipment and storage associated with solar power, solar water heat, and water harvesting systems. Ideally, visitors leave informed and inspired about sustainable strategies that are accessible in their own homes and lives.

Flamingo Cottages Program				
One Bedroom Cottage Units		Each	Quantity	Total SF
A	Living Space (1 BR)	500	12	6,000
B	Porch	85	12	1,020
C	Storage	15	12	180
D	Sustainability Module	125	6	750
	Misc. Circulation & Bldg Services			390
One Bedroom Cottage Units Sub-Total				8,340
Two Bedroom Cottage Units				
A	Living Space	700	12	8,400
B	Porch	150	12	1,800
C	Storage	15	12	180
D	Sustainability Module	125	6	750
	Misc. Circulation & Bldg Services			300
Two Bedroom Cottage Units Sub-Total				11,430
COTTAGES Total SF				19,770

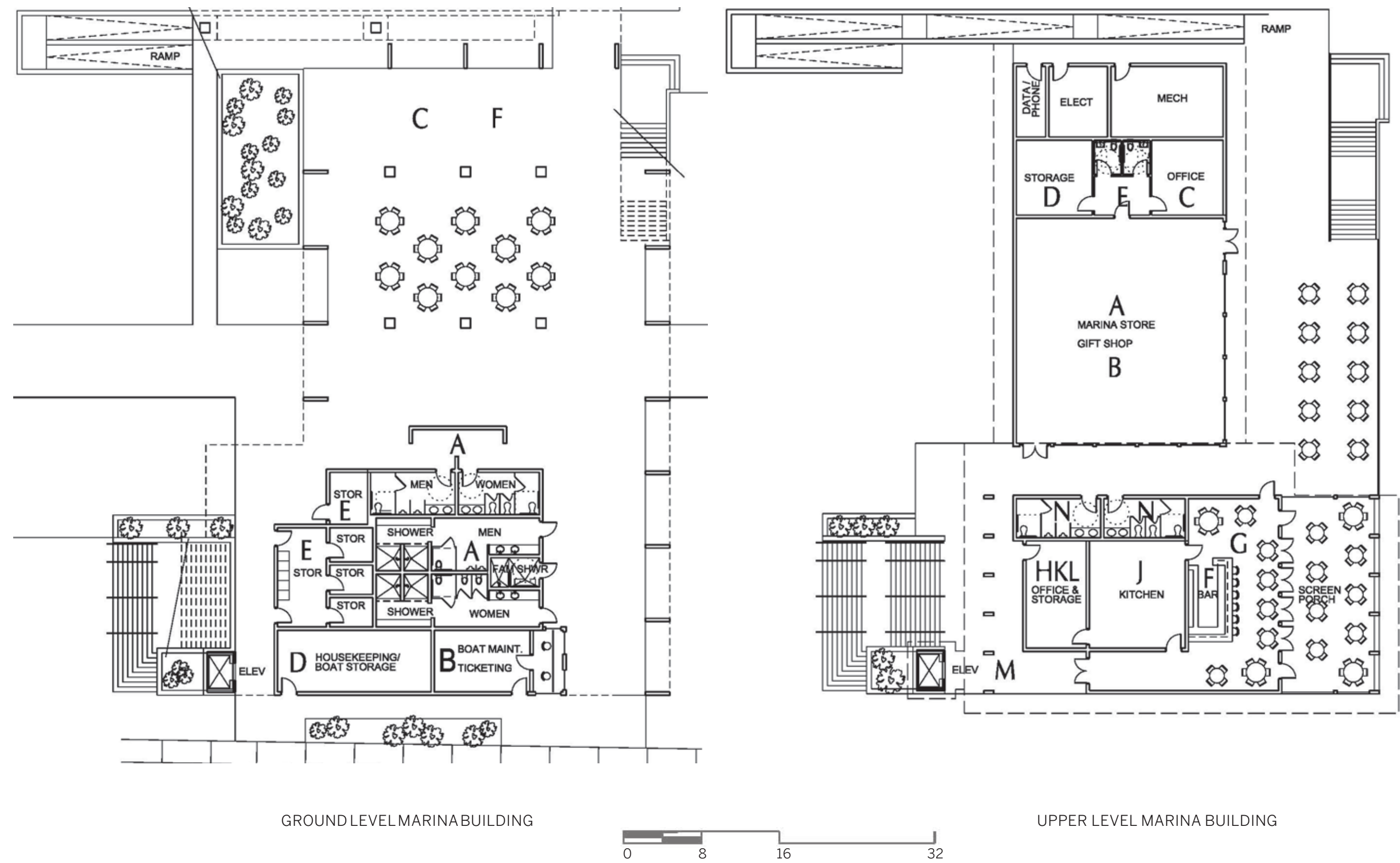
Concept drawings will be developed in more detail in future phases of work. Storage and equipment areas are to be sized adequately for sustainable equipment specific to each project.



Cottage Complex



Flamingo Marina Building



Flamingo Marina Building

The marina peninsula is the hub for Flamingo's waterborne activities. The marina is rich with interpretive material and prized by visitors for excellent views of diverse ecosystems. Crocodile and manatee are frequent visitors to marina basins. From here, visitors embark on boating, fishing, touring, and sight-seeing activities.

The current marina experience is compromised by the congestion of servicing multiple activities from a very small area. This Master Plan proposes redeveloping the peninsula, enlarging pedestrian areas, and redistributing parking and fuel service elsewhere in the Flamingo area.

The proposed new marina building is located inland on the peninsula, preserving views and water access for Flamingo's visitors. The building is one raised story and houses food service, retail, and tourist/boat reservations services. Wrapped by an elevated deck, the building offers excellent views and convenient queuing opportunities. Under the raised building are shaded seating areas, public restrooms, fee showers, and boat rental operation areas.

This raised building is oriented to capture views and breezes and provide significant shaded areas for interpretation, seating and visitor use. The marina building roof can accommodate solar power collectors and solar water heat systems. Rainwater and/or greywater collection and reuse will require ground level protected tanks. High performance envelope, high efficiency equipment, and fixtures will reduce the energy and water demands of the building.



Marina Area



Marina Building Concept

Marina Building Program			
Upper Level Spaces		Quantity	Total SF
A	Retail Sales	1	1,800
B	Gift Shop	1	600
C	Office	1	240
D	Storage	1	880
E	Staff Restrooms	2	450
Sub Total Marina Store			3,970
F	Bar + Mini-Lounge	1	250
G	Table Seating	1	550
H	Office	1	120
I	Not Used		
J	Support Kitchen	1	450
K	Dry and Cold Storage	1	300
L	Storage	1	200
Sub Total Food Service			1,870
M	Public Entrance	1	150
N	Public Restrooms	2	450
	Misc. Circulation & Bldg Services		530
Upper Level Sub-total			6,970
Ground Level Spaces			
A	Public Restrooms and Showers	4	900
B	Boat Maintenance Area	1	200
C	Houseboat Rental Area	1	
D	Housekeeping Storage	1	400
E	Storage	5	300
F	Canoe and Kayak Rentals Area		
	Misc. Circulation & Bldg Services		250
Ground Level Sub-total			2,050
MARINA BUILDING Total SF			9,020

Concept drawings will be developed in more detail in future phases of work. Storage and equipment areas are to be sized adequately for sustainable equipment specific to each project.



Flamingo Restaurant & Pool

Enhancing the public amenities at Flamingo is the proposed restaurant building & swimming pool adjacent to the lodge complex. All Flamingo visitors can take advantage of the 80 patron capacity full-service restaurant and lounge. Adjacent interior and exterior dining areas allow for year round use and offer varied dining experiences. A small retail area also serves as after hours check in for lodge guests.

The restaurant/pool building is accessible by bicycle or foot along the visitor center parking lot and along the Guy Bradley Trail. Connecting walkways to the lodge and cottages make the building convenient to overnight guests for dining, swimming and after hours check-in/check-out. Elevator and ramp access is available from the plaza area.

The swimming pool, within a screened enclosure, allows for year-round use and enjoyment. Alternative water treatments are to be considered upon specific design. Saltwater and ultra violet light systems may be considered in lieu of chlorine chemicals.

The restaurant building roof can accommodate solar power generation, solar water heat and rainwater collection. Public areas must be oriented for breezes and views.



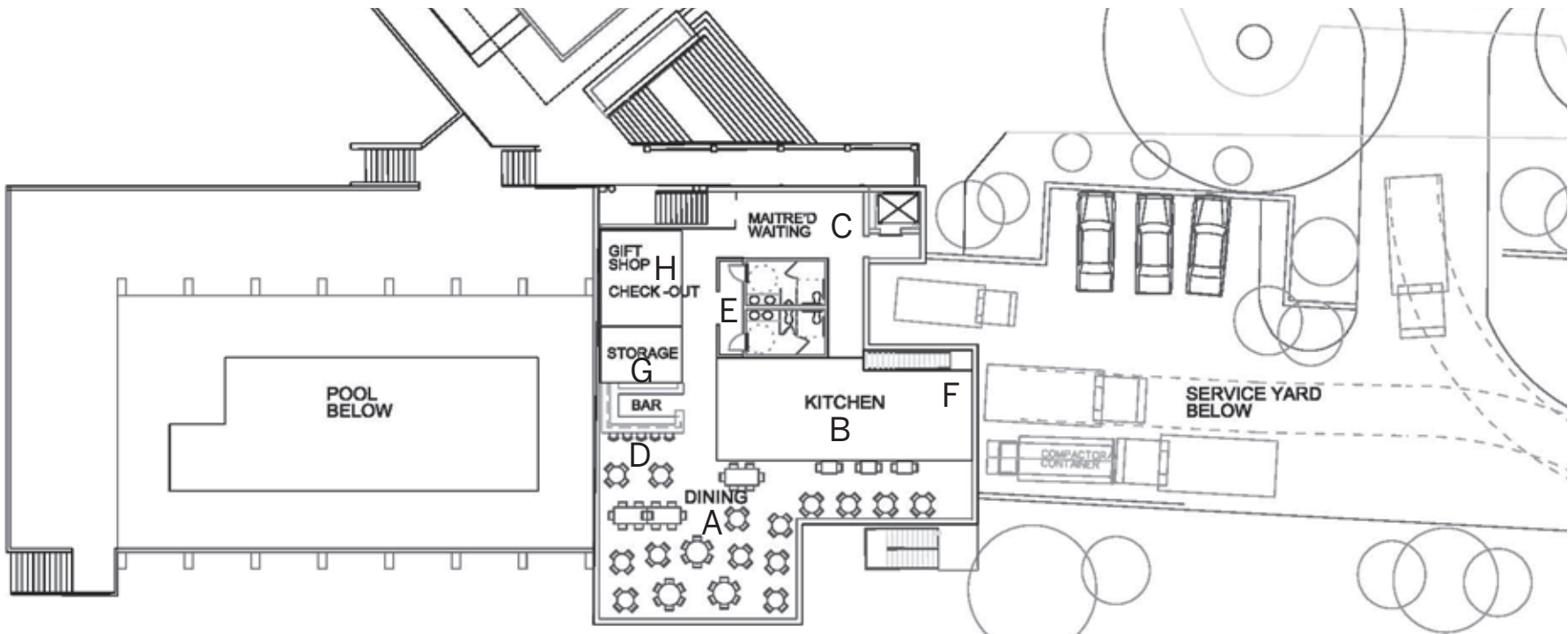
Restaurant & Pool Complex

Restaurant/Pool Building Program			
Upper Level Spaces		Quantity	Total SF
A	Dining	1	1,400
B	Kitchen	1	750
C	Maitre'd/Waiting	1	250
D	Lounge	1	250
E	Public Restrooms	2	250
F	Office	1	100
G	Storage	1	300
H	Gift Shop and After Hours Check In	1	200
Misc. Circulation & Bldg Services			700
Upper Level Sub-total			4,200
Ground Level Spaces			
A	Pool + Deck	1	1,875
B	Equipment	1	300
C	Gathering Space	1	600
D	Public Restrooms	2	250
Misc. Circulation & Bldg Services			375
Ground Level Sub-total			3,400
RESTAURANT + POOL BUILDING Total SF			7,600

Concept drawings will be developed in more detail in future phases of work. Storage and equipment areas are to be sized adequately for sustainable equipment specific to each project.



Restaurant/Lodge Entry



Restaurant and Swimming Pool Concept Plan

Eco Tent Area Program			
Upper Level Spaces		Quantity	Total SF
A	Eco Tent Foundations	40	7,200
B	Eco Tent Structures	40	
C	Common Building/Comfort Station	2	1,800
D	Storage	2	50
ECO TENT AREA Total SF			9,050

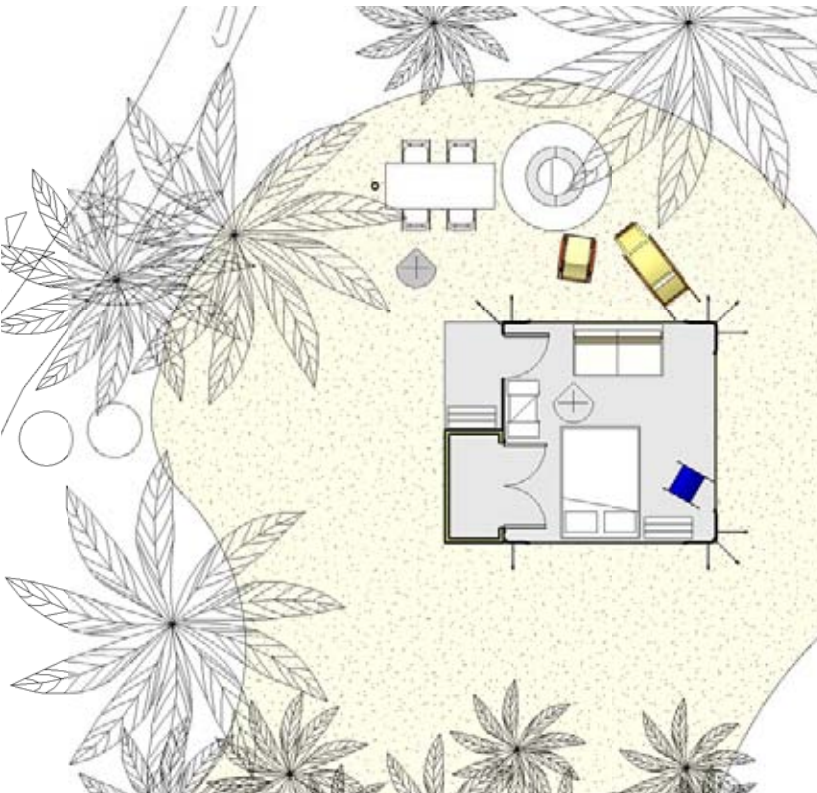
Concept drawings will be developed in more detail in future phases of work. Storage and equipment areas are to be sized adequately for sustainable equipment specific to each project.



Eco Tent Area



Eco Tent Common Structure Concept



Eco Tent Site Concept



Eco Tent Concept

Eco-Tents and Common Buildings

Eco-tents are a proposed addition to the options for overnight accommodations previously provided at Flamingo. Eco-tents cater to campers who desire a natural experience that doesn't require bringing all of their own gear. Eco-tents are a simple overnight accommodation that exemplifies sustainability.

The eco-tent area is arranged around two separate parking areas and common buildings for flexibility in occupancy. Common buildings provide restrooms, hot showers, dishwashing, cooking and gathering areas for eco-tent guests.

Each tent location is intended to have a minimal permanent footprint and minimal infrastructure. No utilities will be present at individual campsites. Tent sites have a concrete pad foundation on raised earthen berms. Seasonally demountable storage units and canvas tents will be installed and furnished. The furnished tent provides a genuine outdoor camping option for visitors of all camping experience levels.

Common buildings provide all water and power resources for the area and are to incorporate solar water heat, photovoltaic systems, water reclamation and passive ventilation. Compact solar power units may run minimal lighting, fans or plug loads.

4.11 Utility Infrastructure Analysis and Master Plan

Potable Water System

Existing Conditions

The domestic water used on site is supplied from local deep wells and treated at an on-site Reverse Osmosis (RO) plant for potable use. The water treatment plant was built approximately 11 years ago and was upgraded to an RO plant approximately 4 years ago. There were some issues with contaminants in the previous water source that have been addressed with the new deep wells and RO plant. Currently the RO plant is not operating at full capacity, with only 6 of the 8 membrane cylinders functioning. The designed output of the system at full capacity was 160k gallons/day; however, the actual output is closer to 68k gallons per day. It is expected that when all cylinders are operational, the output will be around 80k gallons per day. The brine discharge from the RO process is currently pumped to a rapid infiltration bed.

The domestic, potable and fire suppression water systems are all combined in a single distribution system. Many of the facilities on site are metered, and numerous valves appear to allow much of the system to be segregated. Some portions of the water system have been shut down due to leaks. The repair of these leaks is currently underway. In addition, many of the existing water fixtures at the comfort stations and visitor center are in the process of being replaced with low or no water use fixtures.

Recommendations for Future Use

The existing RO water treatment plant supply at full capacity is expected to be adequate to serve the proposed development as identified within the Master Plan. As the system ages and requires additional maintenance or replacement, it is recommended that the feasibility of alternative treatment systems be evaluated. An example of one such system is the Electro-Dialysis Reversal (EDR) system, which is substantially more efficient than RO and is growing in popularity. This system produces much less wastewater (brine) than the standard RO system. Other alternatives that may improve the efficiency of the water treatment system include the use of work exchangers, larger diameter filter elements, and additional pre-treatment. These measures can increase the efficiency, lower the operating cost, and increase the life span of the system, while reducing the overall carbon footprint.

The existing water supply system will be used whenever possible with minimal modifications and impacts to accommodate the proposed development. Some existing water lines will need to be relocated to accommodate new facilities, especially in the lodge and cottage area. There will also be a need for additional valves,



Reverse Osmosis plant with chlorination and other chemical treatment

backflow preventers, and meters to provide optimal management and control of the system in addition to serving the proposed uses. It is also important, considering the frequency of flooding, to maintain pressure in the system and have back flow preventers for all service taps (including irrigation) to prevent contamination in the event of a line break. The water lines within the area of the former lodge and the camping Loops B & C will need to be removed, including any services, in order for those areas to be restored to a natural state.

Some options for considerations for water reuse and sustainability are rooftop rainwater capture and grey water capture for reuse as toilet flushing and irrigation. The use of underground holding tanks or cisterns can collect the water from rooftops to be used on demand. Greywater (water from sinks, showers and clothes washing) can be collected separately in each facility as appropriate, pre-treated, and used for toilet flushing or irrigation, reducing the demand for potable water as much as 25 percent.

Fire Suppression System

Existing Conditions

The fire suppression system contains a large storage tank (approximately 500,000 gallons) and booster pumps located at the water treatment plant. Fire hydrants are located around the site, including the housing area, maintenance area, marina area and around the visitor center. Some of the water mains feeding these hydrants have been shut down due to leaks. The repair of these leaks is currently underway.

In addition to the proposed water demand estimate included in this report, the actual system sizing will require capacity to provide fire flow for all facilities in addition to any additional contingency and safety factors the NPS may require. If these additional flows and factors require an upgrade to the water treatment plant capacity, this upgrade should include sustainability and efficiency improvements as mentioned in the water treatment section above.

Recommendations for Future Use

All new permanent buildings will have internal sprinklers per the National Building Code. Some portions of the existing water system will require relocation within the area of the proposed lodge and cottages to serve the new facilities. Improvements to the system (as indicated in the water system recommendations above) will be required and will affect the combined water and fire system. Additional cross connection of the water loop may be required to maintain a high volume of flow to the new facilities and reduce sedimentation and maintenance of the system. A new maintenance program will also be required for the overall water system.

Irrigation Water System

Existing Conditions

Some irrigation heads were observed around the Mission 66 visitor center; however, no irrigation is currently in use nor currently planned within the Flamingo area. Water for the previous irrigation system was supplied from the potable water system. The efficiency and management of the system when it was operational is unknown.

Recommendations for Future Use

Even though an irrigation system is not currently planned as part of the master planning process, the use of an irrigation system for new plantings is highly recommended, even if on a temporary basis. These plantings could be irrigated via drip line and other high efficiency irrigation components. Should permanent irrigation be installed, a site-wide central control system or other weather-based control system would also be recommended, along with a strict management plan to ensure the highest efficiency for all irrigation water use. These control systems along with efficient irrigation management methods are likely to save more than 30 percent of irrigation water.

Irrigation water can be provided by sources other than potable water. The capture of storm water from roofs and grey water reuse may also be a viable for some common buildings where enough storm and grey water is captured or generated and the reuse of this water is justified. Some examples are the lodge building and visitor center.



Water storage tank



Water supply booster pumps

Sanitary Sewer System

Existing Conditions

Wastewater is currently collected and treated on site and discharged to effluent percolation/evaporation ponds located immediately adjacent to and northwest of the wastewater treatment plant. The old effluent pond, or eco-pond, located approximately 500 feet northeast of the existing campgrounds, just north of the west end of the Flamingo Lodge Highway, is no longer used for this purpose and is being naturally restored to a wetland state. There is a possibility that the eco-pond may be used again for treated effluent discharge.

As part of the collection system, and because of the flat site with a high groundwater table, there are a series of 17 lift stations across the site pumping water to the wastewater treatment plant.

The existing wastewater treatment facility was designed for approximately 90,000 gallons/day; however, this demand is not currently seen, even during peak season. As a result, the plant is not operating efficiently, requiring additional maintenance. Plans are currently underway to modify the plant, which will allow the system to fluctuate between 20,000 gal/day and 70,000 gal/day as the seasonal use varies, in order to keep the system operations as efficient as possible.

Since the Everglades area has been designated as an Outstanding Florida Water, the quality of the discharge water from the plant is even higher than state requirements. This additional level of treatment removes nutrients contained within the effluent discharge that do not naturally occur in the Everglades environment.

Recommendations for Future Use

The existing sanitary collection system and lift stations will be used whenever possible with minimal modifications and impacts to accommodate the proposed master plan development. The existing sanitary facilities within the lodge and cottage area will need to be relocated to accommodate new buildings, and any sanitary facilities within the areas to be restored will need to be removed prior to restoration.

Any new full service restaurant facilities will require grease traps with access to cleanouts for maintenance. The dumpsters serving full service restaurants should also be located adjacent to storm water inlets to capture and treat any grease and food residue runoff from the dumpster pad rather than allowing this water to flow directly into the basins and Florida Bay.



Wastewater Treatment Plant

Electric Power System

Existing Conditions

Florida Power & Light provides the power to Flamingo facilities. The power is brought to the site via underground lines from the Miami Dade area, where the closest sub-station is located. Provided plans show (8) buried 25kv cables serving the site. Electricity is extremely important for the water treatment plant. Since power outages are common, a 50kW backup diesel generator was installed at the water plant to power some miscellaneous equipment and lighting at the plant in addition to pumps that maintain system pressure; however, the generator is not used to run all of the water treatment plant systems.

Recommendations for Future Use

No major power improvements are planned; all major systems, such as water, wastewater, and other public facilities, should have backup generators to ensure minimal loss of services when power is out. Alternative sources of energy are recommended for electrical generation and for water heating, where applicable. Roof mounted photovoltaic panels can be used to supplement the electric power provided to lower the overall electric cost for the Park Service. The use of solar water heating is also a viable option for use on comfort stations, marina, lodge, cottages and many other buildings on site that will use hot water. This system provides another solution to lower overall energy demand for the Flamingo area. Another source of renewable energy is available in the way of ground source heating and cooling. This is the use of a heat exchange system and the constant groundwater temperature to provide both water heating and area space conditioning. This source is consistent and has a short simple payback period.

Communications

Existing Conditions

Phone service is provided via antenna. Buried telephone lines currently serve the maintenance facility, the concessioner and employee housing, the marina facilities, the visitor center and restaurant. Phone service will be provided to the new cottages and lodge, with wireless phone coverage provided. Cable television is provided by satellite. A large antenna is located adjacent to the water treatment facility and serves multiple users including the Coast Guard, the Park Service, and many other federal agencies. This antenna is scheduled to be upgraded or replaced in the near future.

Recommendations for Future Use

Communication services to the following facilities will need to be maintained, improved or added including landline phone, cell phone, cable TV, and high-speed internet. Wireless internet should be evaluated for feasibility in providing service to the entire site in addition to the lodge and other public gathering areas.

Natural Gas / Liquid Petroleum Gas

Existing Conditions

There is no use of natural gas, historically or currently. There was an aboveground propane tank located at the Mission 66 gas station near the Flamingo area entrance to fill RV and camper propane tanks; however, the tank and appurtenances were removed and mitigated many years ago.



Petroleum fuel storage tanks at marina

There is currently a series of (4) 2,000 gallon above ground liquid petroleum fuel storage tanks located in the marina area adjacent to the marina retail store; three of which hold gasoline, and the fourth holds diesel fuel. There are (3) pumping stations, one located on a fueling slab for automobiles and the other two located on the seawall of the marina for boat fueling.

Recommendations for Future Use

Two of the fuel tanks will remain at the marina area to continue to serve the existing pumps for boat fueling. The relocation of the other two fuel tanks and fuel pumps to the old gas station area for a new vehicle fueling station is recommended. The two relocated tanks and the remaining two tanks will be screened from public view.

Storm Water Management

Existing Conditions

The Flamingo area receives an average of 48.5 inches of rainfall per year. This relatively high volume of precipitation frequently causes flooding during the larger storm events.

The entire Flamingo area is located within the 100-year floodplain as indicated on the FEMA FIRM map for Monroe County as revised on Feb. 18, 2005 (map # 12087C0675K). The topography of the site is very flat with the majority of the site being between 3 and 5 feet above sea level, and the highest point at approximately 7 to 8 feet. Since all new development will be within this floodplain, an elevation of 15 feet will be required for FF elevation for all new permanent structures. The existing comfort stations and common buildings are primarily CMU walls on slab on grade and do not contain the type of finishes or furniture that would be damaged by flood waters.

There are no stormwater retention or detention facilities on site. All rainwater from impervious surfaces including roads and parking lots sheet flow into non-developed natural marsh areas or directly into the basins and to Florida Bay with a minimal level of treatment. There is minimal structured conveyance of stormwater on site with approximately four to six grated inlet structures with culverts in grassed areas adjacent to the visitor center and marina parking lots. Some of these culverts, which drain directly into the marina basins and Florida Bay, will be plugged as part of the seawall improvements currently under construction.

The coastline of Florida Bay along the campground area and near the amphitheater has experienced severe erosion during past hurricanes and other large storm events. Some attempts to curb this erosion have been implemented with little noticeable improvement.

Recommendations for Future Use

As with any developed site, the two main issues regarding stormwater management is quality and quantity. The quality should be addressed with appropriate designs, including Low Impact Development (LID) strategies for the smaller storm events or the “first flush” of the larger storm events. This water should be captured and treated wherever possible to prevent pollutants from entering the natural environment and surface waters. The quantity is generally addressed on a larger scale with larger conveyance and treatment swales and ponds for the 100-year design storm event. A detailed evaluation of the required stormwater quality and flood storage and routing should be completed during the design phase of the development.

The proposed development, as shown in the Master Plan, will generate stormwater runoff from the additional impervious services. This runoff increases the potential for transportation of pollutants and nutrients into the marina basins and into Florida Bay. To address this, all paved surfaces which may contain grease, oil and fuel from vehicles, and other sediment and pollutants will be either directed into a stormwater collection system and treatment pond or allowed to sheet flow into a created wetland, grass swale or other means of providing conveyance and treatment prior to entering the natural waterways or Florida Bay. Parking areas, in particular, will need to be regraded in a manner to encourage stormwater runoff to enter a swale or created wetland for pre-treatment prior to entering the natural waterways. This can also be accomplished by installing shallow trench drains to intercept this water, which directs it via a short pipe, to a pond or swale for treatment to minimize regrading. The use of porous pedestrian pavement is also recommended at some locations to provide additional infiltration and limit the runoff and transportation of pollutants into the adjacent surface waters.

In addition to capturing and/or treating the stormwater from all paved impervious surfaces, the rainwater may be captured from rooftops for reuse as irrigation, toilet flushing and or other domestic non-potable uses. This water will be relatively clean and, depending on the anticipated use, will require only limited, if any, pre-treatment. By collecting and reusing this water, the stormwater treatment volume will be reduced by the volume captured and reused.

Shoreline protection should be considered to address on-going shoreline erosion and protection of the proposed facility improvements at Flamingo. Shoreline protection is not part of this master plan effort, however, and would require analysis of alternatives (e.g., use of geotextiles) as well as consideration of any associated ecological impacts.

A Stormwater Best Management Practices (BMPs) program is also recommended. BMPs incorporate a wide range of stormwater programs, technologies, and processes that can control or prevent damage from runoff as well as reduce potential pollution from site runoff.

Summary

The overall utility infrastructure is in good shape and will only require minimal improvements to serve the new and renovated facilities in the Flamingo area. With new federal mandates, executive orders, and other requirements to reduce overall water and energy use, many sustainable concepts and systems are being evaluated and recommended for use as part of the Master Plan upgrades to the site. As with many types of solar dependant and sustainable systems, a backup or primary system may also be required to ensure a high level of service to meet hot water needs, electricity demand, etc. For this reason, these systems are recommended as a supplemental system to lower the demand and cost of energy in Flamingo.

As the mechanical systems age and require major repair and replacement, an evaluation of new technology and more efficient or green systems is recommended, such as the use of an EDR water treatment system which has a similar water cost to that of an RO system, but is far more efficient and may reduce energy consumption.

Flamingo Proposed Utility Demand Summary

Land Use	# of Units	Total Building s.f.	Potable Water Demand (gal/day)	Wastewater Demand (gal/day)	Potential Rainwater Capture Available (gal/day)	Potential Greywater Reuse Available (gal/day)	Electric Power Demand (kW)
Housing	201	85,970	25,680	20,544	125	7,190	1,662.0
Restaurant	4	17,120	7,200	5,760	25	2,016	85.6
Day Use / Public Buildings	25	22,065	14,600	11,680	32	4,088	127.825
Retail	2	18,030	2,400	1,920	26	672	90.2
Camping	202	7,600	3,318	2,654	11	929	482.0
Storage & Back of House	8	22,440	4,958	3,966	32	1,388	112.2
Sub-total	442	173,225	58,156	46,525	251	16,284	2,559.8
10% Contingency			5,816	4,652			256.0
TOTAL	442	173,225	63,972	51,177	251	16,284	2,815.8

Notes and Assumptions

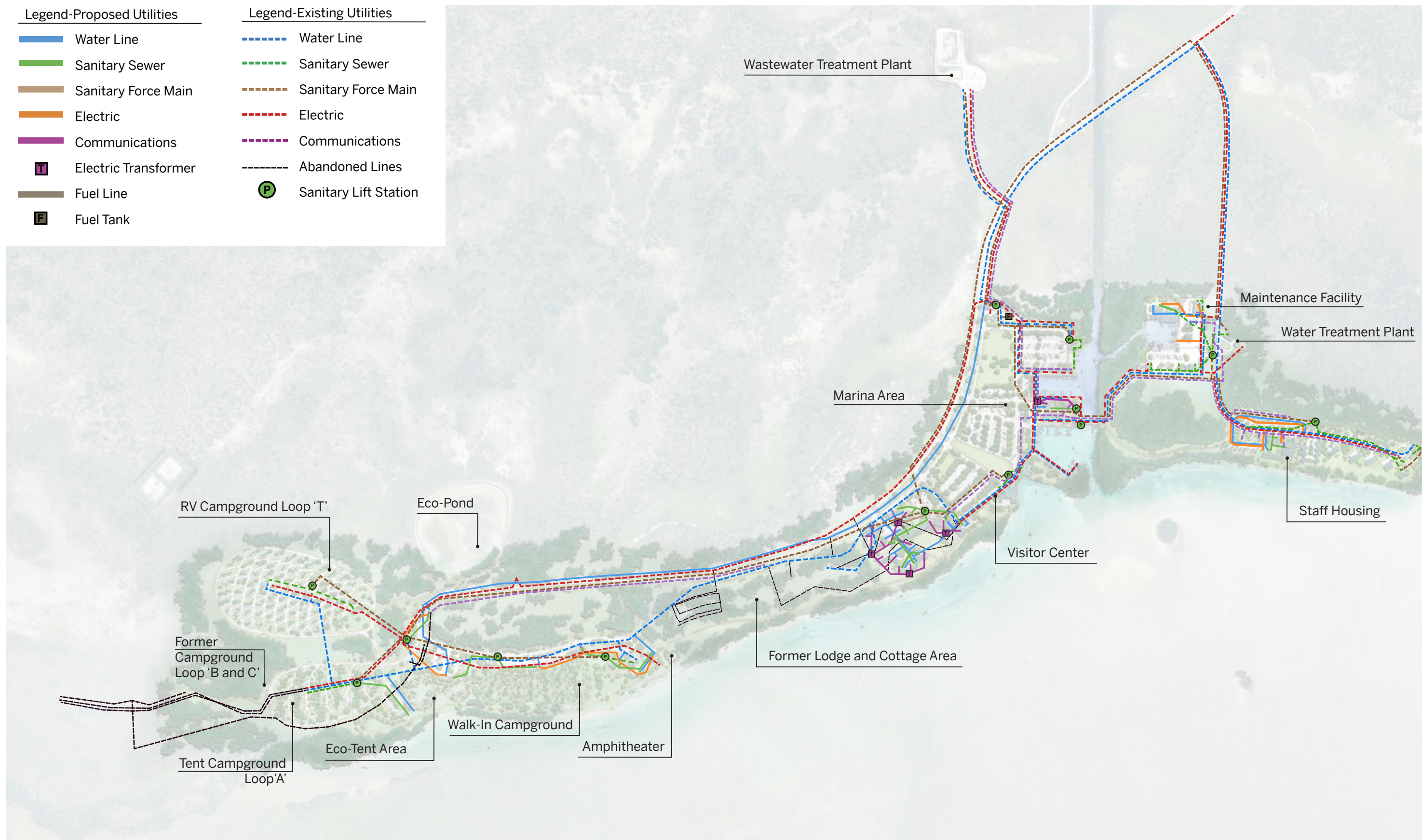
- 1. Approximately 80% of potable water is returned as wastewater.
- 2. Approximately 35% of interior wastewater may be captured as greywater (Amy Vickers 2001.)
- 3. Existing NPS housing s.f. is estimated.
- 4. Rainwater capture is based on a daily average from a 48.5" per year average.
- 5. The energy demand est. does not include the water or wastewater treatment plants.
- 6. The energy demand does not include site lighting.
- 7. The energy demand does not include energy for any communication systems.
- 8. Water demand does not include fire suppression water (or safety factors), only potable water use.

Legend-Proposed Utilities

- Water Line
- Sanitary Sewer
- Sanitary Force Main
- Electric
- Communications
- T Electric Transformer
- Fuel Line
- F Fuel Tank

Legend-Existing Utilities

- - - Water Line
- - - Sanitary Sewer
- - - Sanitary Force Main
- - - Electric
- - - Communications
- - - Abandoned Lines
- P Sanitary Lift Station



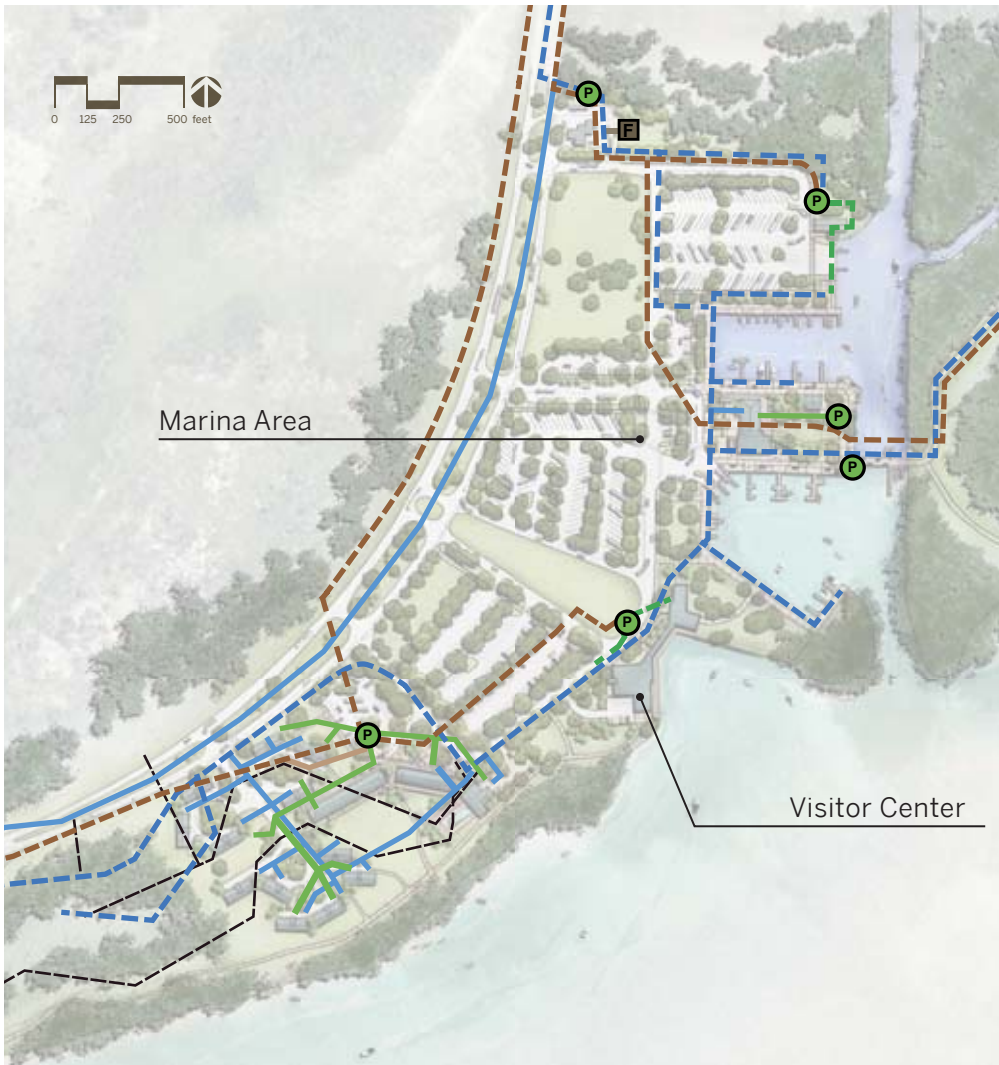
Flamingo Proposed Utility Demand Table (by Use)

Land Use	# of Units	Total Building s.f.	# of Users	Potable Water Demand (gal/day)	Wastewater Demand (gal/day)	Potential Rainwater capture Available (gal/day)	Potential Greywater Reuse Available (gal/day)	Electric Power Demand (kW)
Housing								
Lodge Building	30	20,000	120	7,200	5,760	29	2,016	240.0
Cottages	24	19,770	120	7,200	5,760	29	2,016	288.0
NPS Staff Housing	21	19,100	32	1,920	1,536	28	538	126.0
Concessioner Staff Housing	80	27,100	87	5,220	4,176	39	1,462	640.0
Trailer Spurs	46	0	69	4,140	3,312	0	1,159	368.0
Sub-totals	201	85,970	428	25,680	20,544	125	7,190	1,662.0
Restaurant								
Marina Retail & Restaurant	1	9,020	26	1,600	1,280	13	448	45.1
Lodge Restaurant	1	4,200	80	2,400	1,920	6	672	21.0
Concession Dining Hall	1	3,400	80	2,400	1,920	5	672	17.0
Common Building / Lounge	1	500	144	800	640	1	224	2.5
Sub-totals	4	17,120	330	7,200	5,760	25	2,016	85.6
Day Use / Public Buildings								
Comfort Stations	10	11,340	-	12,720	10,176	16	3,562	56.7
Common Buildings	9	3,600	-	480	384	5	134	18.0
Lodge Pool	1	3,400	50	600	480	5	168	34.0
Fish Cleaning & Restroom	1	1,750	-	800	640	3	224	8.8
Amphitheatre	1	0	-	0	0	0	0	0.5
Eco-Pond	1	175	-	0	0	0	0	0.9
Marina Shelters	2	1,800	-	0	0	3	0	9.0
Sub-totals	25	22,065	50	14,600	11,680	32	4,088	127.8
Retail								
Mission 66 Service Station	1	400	-	800	640	1	224	2.0
Mission 66 Visitor Center	1	17,630	-	1,600	1,280	26	448	88.2
Sub-totals	2	18,030	0	2,400	1,920	26	672	90.2
Camping								
Camping Area (fee building)	1	400	2	118	94	1	33	2.0
Group Camping	3	0	45	0	0	0	0	0.0
Walk-in Camping	60	0	480	0	0	0	0	0.0
Eco-tent Camping	40	7,200	160	0	0	10	0	0.0
Drive-in Camping (Loop 'A')	58	0	232	0	0	0	0	0.0
RV Camping (Loop 'T')	40	0	320	3,200	2,560	0	896	480.0
Sub-totals	202	7,600	1,239	3,318	2,654	11	929	482.0
Storage & Back of House								
Visitor Center Storage	1	600	0	0	0	0	0	3.0
Warehouse Buildings	4	11,100	12	420	336	16	118	55.5
Boat, Bike, etc. Storage	1	4,000	4	240	192	6	67	20.0
Housekeeping / Laundry	1	3,040	4	3,000	2,400	4	840	15.2
Concession Office Building	1	3,700	22	1,298	1,038	5	363	18.5
Sub-totals	8	22,440	42	4,958	3,966	32	1,388	112.2
Program Sub-total	442	173,225	2,089	58,156	46,525	251	16,284	2,559.8
10% Contingency				5816	4652			256.0
TOTAL	442	173,225	2,089	63,972	51,177	251	16,284	2,815.8



- Legend-Existing Utilities**
- Water Line
 - Sanitary Sewer
 - Sanitary Force Main
 - Electric
 - Communications
 - Abandoned Lines
 - Sanitary Lift Station
- Legend-Proposed Utilities**
- Water Line
 - Sanitary Sewer
 - Sanitary Force Main
 - Electric
 - Communications
 - Electric Transformer
 - Fuel Line
 - Fuel Tank

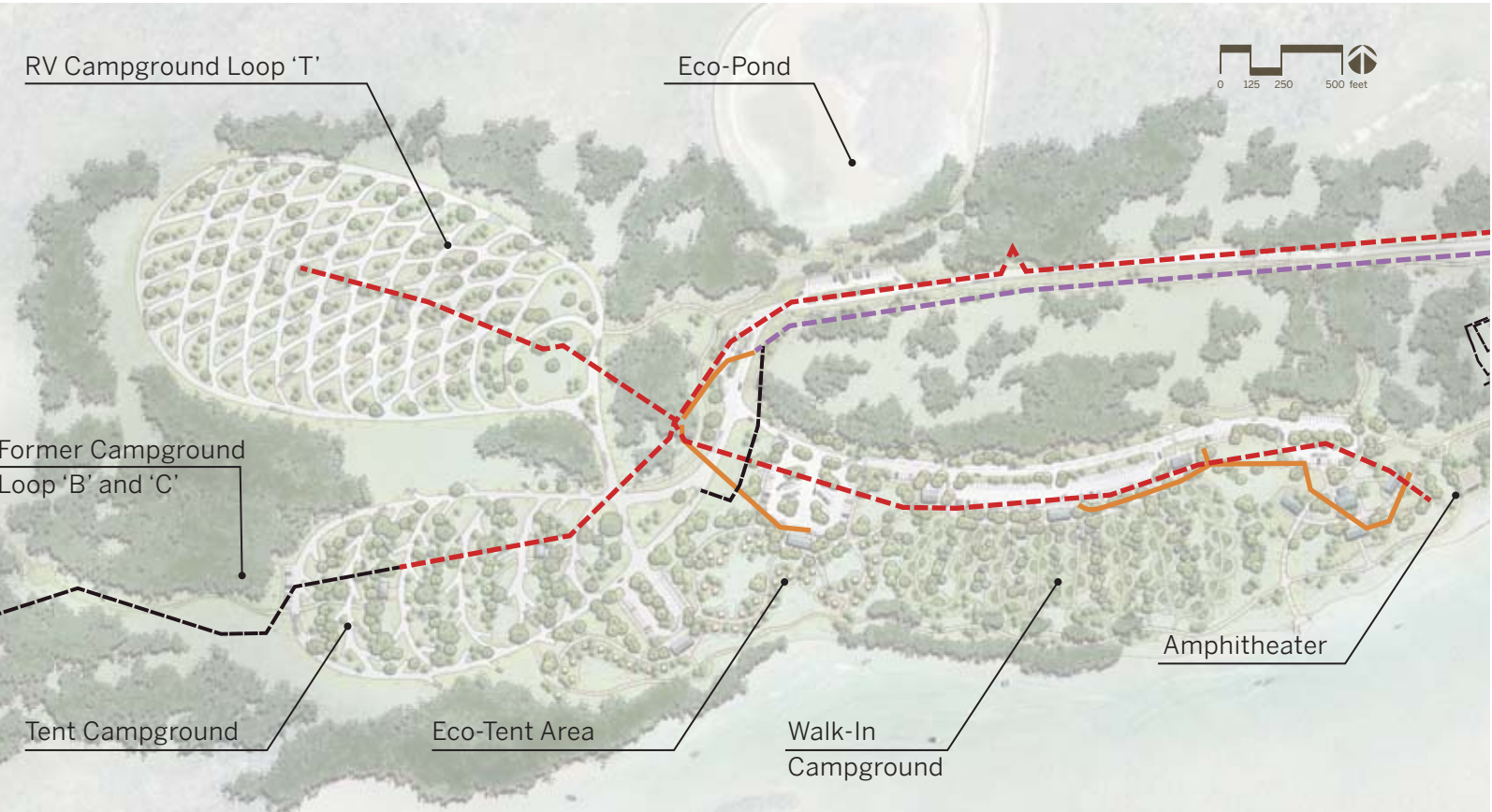
Existing and Proposed Dry Utilities - Marina, Visitor Center, Lodge, & Cottages



Existing and Proposed Wet Utilities - Marina, Visitor Center, Lodge, & Cottages

Flamingo Proposed Utility Demand Summary (Marina, Visitor Center, Lodge and Cottages)

Land Use	# of Units	Building s.f.	# of Users	Potable Water Demand (gal/day)	Wastewater Demand (gal/day)	Potential Rainwater capture Available (gal/day)	Potential Greywater Reuse Available (gal/day)	Electric Power Demand (kW)
Lodge Building	30	20,000	120	7,200	5,760	29	2,016	240.0
Cottages	24	19,770	120	7,200	5,760	29	2,016	288.0
Marina Retail & Restaurant	1	9,020	26	1,600	1,280	13	448	45.1
Lodge Restaurant	1	4,200	80	2,400	1,920	6	672	21.0
Lodge Pool	1	3,400	50	600	480	5	168	34
Fish Cleaning & Restroom	1	1,750	-	800	640	3	224	8.8
Amphitheatre	1	0	-	0	0	0	0	0.5
Eco-Pond	1	175	-	0	0	0	0	0.9
Marina Shelters	2	1,800	-	0	0	3	0	9.0
Mission 66 Service Station	1	400	-	800	640	1	224	2.0
Mission 66 Visitor Center	1	17,630	-	1,600	1,280	26	448	88.2
Visitor Center Storage	1	600	0	0	0	0	0	3.0
Sub-total	65	78,745	396	22,200	17,760	114	6,216	740.4
10% Contingency				2,220	1,776			74.0
TOTAL	65	78,745	396	24,420	19,536	114	6,216	814.4



Existing and Proposed Dry Utilities - Camping Areas

Flamingo Utility Demand Summary (Camping Areas)

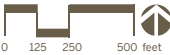
Land Use	# of Units	Building s.f.	# of Users	Potable Water Demand (gal/day)	Waste-water Demand (gal/day)	Potential Rainwater capture Available (gal/day)	Potential Greywater Reuse Available (gal/day)	Electric Power Demand (kW)
Comfort Stations	10	11,340	-	12,720	10,176	16	3,562	56.7
Common Buildings	9	3,600	-	480	384	5	134	18.0
Camping Area (fee building)	1	400	2	118	94	1	33	2.0
Group Camping	3	0	45	0	0	0	0	0.0
Walk-in Camping	60	0	480	0	0	0	0	0.0
Eco-tent Camping	40	7,200	160	0	0	10	0	0.0
Drive-in Camping (Loop 'A')	58	0	232	0	0	0	0	0.0
RV Camping (Loop 'T')	40	0	320	3,200	2,560	0	896	480.0
Sub-totals	221	22,540	1,239	16,518	13,214	33	4,625	556.7
10% Contingency				1,652	1,321			55.7
TOTAL	221	22,540	1,239	18,170	14,536	33	4,625	612.4



Existing and Proposed Wet Utilities - Camping Areas



Existing and Proposed Dry Utilities - Maintenance and Staff Housing Areas



Existing and Proposed Wet Utilities - Maintenance and Staff Housing Areas

Flamingo Utility Demand Summary (Maintenance and Staff Housing Areas)

Land Use	# of Units	Building s.f.	# of Users	Potable Water Demand (gal/day)	Waste-water Demand (gal/day)	Potential Rainwater capture Available (gal/day)	Potential Greywater Reuse Available (gal/day)	Electric Power Demand (kW)
Housing								
Lodge Building	30	20,000	120	7,200	5,760	29	2,016	240.0
Cottages	24	19,770	120	7,200	5,760	29	2,016	288.0
NPS Staff Housing	21	19,100	32	1,920	1,536	28	538	126.0
Concessioner Staff Housing	80	27,100	87	5,220	4,176	39	1,462	640.0
Trailer Spurs	46	0	69	4,140	3,312	0	1,159	368.0
Sub-totals	201	85,970	428	25,680	20,544	125	7,190	1,662
Maintenance Area								
Visitor Center Storage	1	600	0	0	0	0	0	3.0
Warehouse Buildings	4	11,100	12	420	336	16	118	55.5
Boat, Bike, etc. Storage	1	4,000	4	240	192	6	67	20.0
Housekeeping / Laundry	1	3,040	4	3,000	2,400	4	840	15.2
Concession Office Building	1	3,700	22	1,298	1,038	5	363	18.5
Sub-totals	8	22,440	42	4,958	3,966	32	1,388	112
SUB-TOTAL	209	108,410	470	30,638	24,510	156	8,579	1,774
10% Contingency				3,064	2,451			177.4
TOTAL	209	108,410	470	33,702	26,961	156	8,579	1,951.6

5.0 cost estimate



Roseate Spoonbill

5.1 Basis of Cost Estimate

The following Class C Construction Cost Estimate is organized in a unit cost format for the facilities and project elements shown in the Master Plan and Design Program. The Master Plan and Design Program represents an early phase in the planning and design process; many assumptions have been made in the estimating process and are noted on the estimates. The estimates should be used for budgeting purposes only. As the project advances through future planning and design phases, more detailed Class B and A Construction Cost Estimates should be developed.

General assumptions used for this estimate include:

- All costs are given in 2009 construction dollars, with an inflation factor included as a part of the contingencies reflecting estimated inflation for Phase 1 development starting in 2010. Per the NPS, construction is planned to begin in late 2010.
- The estimated costs and quantities are order of magnitude estimates, and are based on the conceptual plans and design elements shown in the master Plan and Design Program.
- Costs given assume that all improvements will be made under contract with a qualified contractor. No adjustments have been made for volunteer labor or donated materials.
- The estimate has been developed to reflect the Master Plan development phases as shown in this document. We have assumed that the phases are planned for each year beginning in 2010 and ending in 2015. The inflation factor that is applied is 4 percent per year and is compounded yearly for each phase.
- Historical Cost Data. Costs for similar South Florida projects were evaluated for comparison to historical cost data.
- Taxes: Sales tax is included in the unit costs on materials. No sales tax is applied in the markups.
- Building Estimate Supporting Information. The building costs shown in the following Class C Construction Cost Estimate have been developed from a detailed estimate based on the Pre-Design Building Area Program, which is a separate document from this Master Plan report.
- Building: FF&E & FSE pricing is included as lump sums.¹ OS&E is included in base unit costs.² Interpretive exhibits are included in FF&E lump sum for the visitor center. All site work beyond 5-foot perimeter of building is included within sitework estimates.

1 FF&E: Furniture Fixtures and Equipment include: loose furniture, (generally Owner provided fixtures and equipment) and soft goods such as bedding, towels and miscellaneous accessories. This includes retail display and interpretive exhibits.
FSE: Food Service Equipment include: kitchen and bar equipment, storage shelving and walk-in freezers and coolers.

2 OS&E: Operational Systems and Equipment include Telecom, Audio Visual, Servers/Computers, Building Management Systems.

Cost Estimate mark-ups and contingencies included in this estimate:

- **Location Factor.** A mark-up factor for the project location, which indicates the cost of commercial construction for the project location, and the regional market economics, as compared to the national average. The published source is “2009 RS Means Building Construction Cost Data”; the location used is Miami, Florida.
- **Remoteness Factor.** A mark-up factor for the remote location of the project in relation to the nearest location with a “Published Location Factor.” The nearest “Published Location Factor” is Homestead, Florida. It is 49 miles between Homestead and Flamingo along a two-lane road with an average speed of 45 mph. This distance and access will have an effect on the cost of material and labor above the Published Location Factor; as agreed to by the NPS, a 10 percent contingency factor is applied.
- **Federal Wage Rate Factor.** A mark-up factor that accounts for state and federal regulations requiring that the Contractor must pay staff appropriate county Davis-Bacon wage rates. We have assumed the Davis-Bacon wage rates will generally exceed prevailing wage rates that are reflected in the Published Location Factors. Therefore, an adjustment to these factors to reflect the government wage rate requirements has been included. The location factor pertains and impacts only the labor costs on a project and therefore should be applied to the labor portion of the estimate. We have assumed that 50 percent of total base costs are considered as labor. Based on a recommendation from the NPS, 6 percent Federal Wage Rate Factor is applied.
- **Design Contingency.** The master plan contingency is a percentage of the total estimated cost of construction. The estimate has been prepared utilizing the Master Plan and Design Program shown in this document, including assumptions. Since it is very early in the design process, many assumptions have been made and there are still many unknowns in a project of this magnitude. This contingency is included to cover the assumptions and design refinements as the project planning and design progresses. As agreed to by the Design Team and the NPS, a 25 percent contingency factor is applied.
- **Standard General Conditions.** These are the Contractor to the Government associated with the cost items defined in the Division 1 specifications for a project. The costs associated with temporary utilities, field offices, fencing, field engineering, operation and maintenance manuals, etc. are all included as standard general conditions. Also included in the General Conditions percentage should be the cost of construction

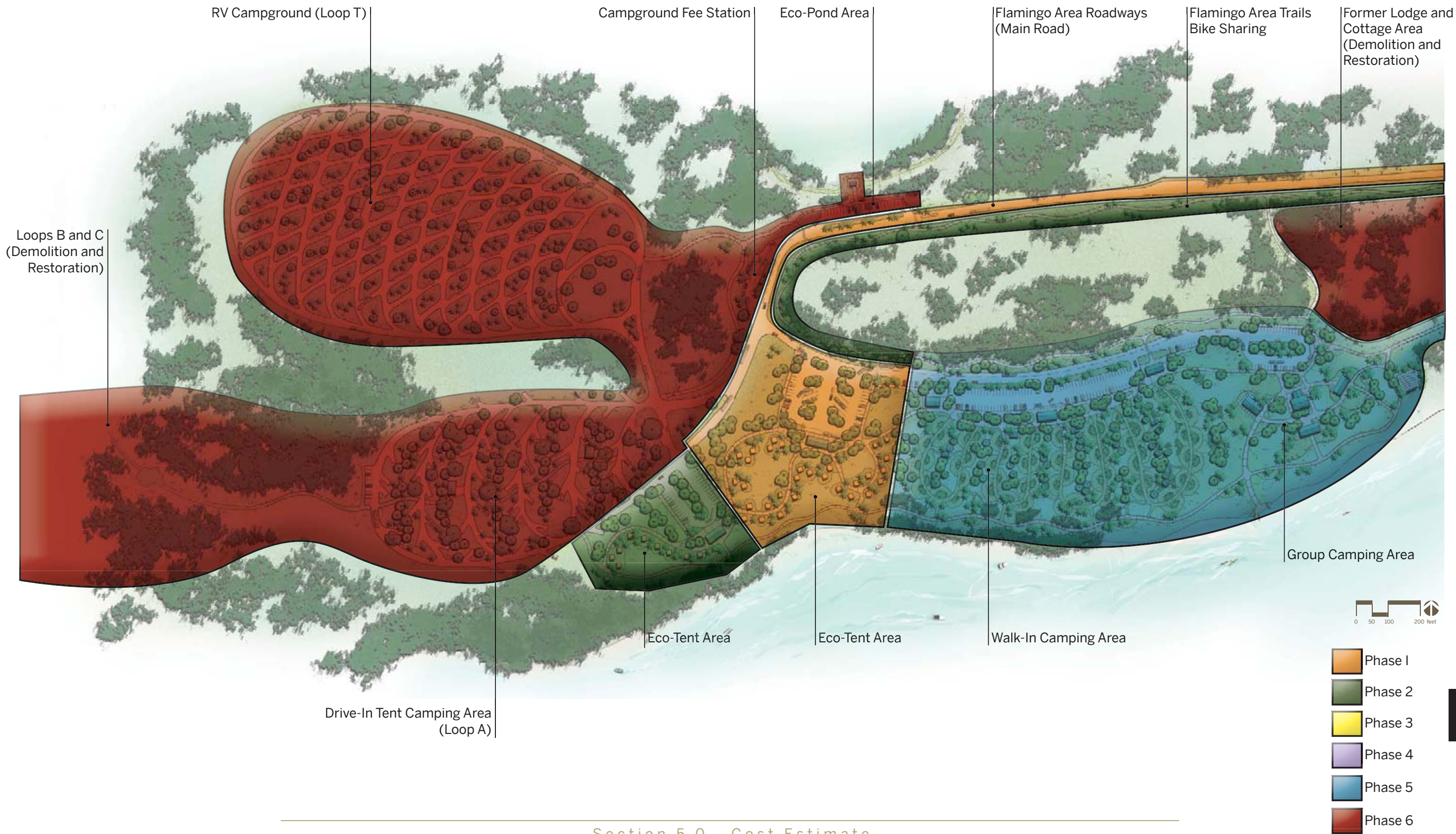
permits, bonds, and insurance. As agreed to by the Design Team and the NPS, a 10 percent contingency factor is applied.

- **Government General Conditions.** Not included in Standard General Conditions is the cost of doing work for the United States Government and the National Park Service. Many of these government costs are attributable to increased administrative requirements and quality requirements along with sensitivity to the NPS mission of protecting the cultural and natural resources while allowing the public access and enjoyment thereof. As agreed to by the Design Team and the NPS, a 5 percent contingency factor is applied.
- **Historic Preservation Factor.** Many of the structures within Flamingo are historic. It is part of the National Park Service’s mission to preserve and maintain the integrity of the original architectural construction and historical fabric of these structures. This often creates additional access, control and protection processes and complications during construction. Material costs are often increased significantly because of care to select compatible materials. A Historic Cost factor of 15 percent is included in building unit costs (remodel 5 percent over conventional construction cost; preservation 15 percent over conventional construction).
- **Overhead.** Overhead is the cost that a contractor has for staying in business. A general contractor has expenses not directly related to the construction of a project, but vital to the contractor’s business operations. These include fixed overhead (Federal and State Unemployment costs, Social Security Tax, Builder’s Risk Insurance and Public Liability Costs) and variable overhead (Worker’s Compensation Insurance, Main Office Overhead, etc.). As agreed to by the Design Team and the NPS, a 12 percent contingency factor is applied.
- **Profit.** Profit depends on the size of job and a contractor’s annual billing. Contractors generally take more profit on a smaller job. Also, consideration should be given to the fact that the installing contractor(s) (sub-contractors) will also charge profit on a project. As agreed to by the Design Team and the NPS, an 8 percent contingency factor is applied.
- **Contracting Method Adjustment.** The National Park Service seldom awards construction contracts based on the lowest price proposal of full and open competitive bid solicitations. The contracting methods most often employed by the NPS add additional cost to construction projects as compared to a competitive price proposal solicitation, because these methods limit competition. The primary procurement method is competitive negotiation where award is based on negotiating a price with the best technically-qualified contractor. The NPS also awards many contracts through the Small Business

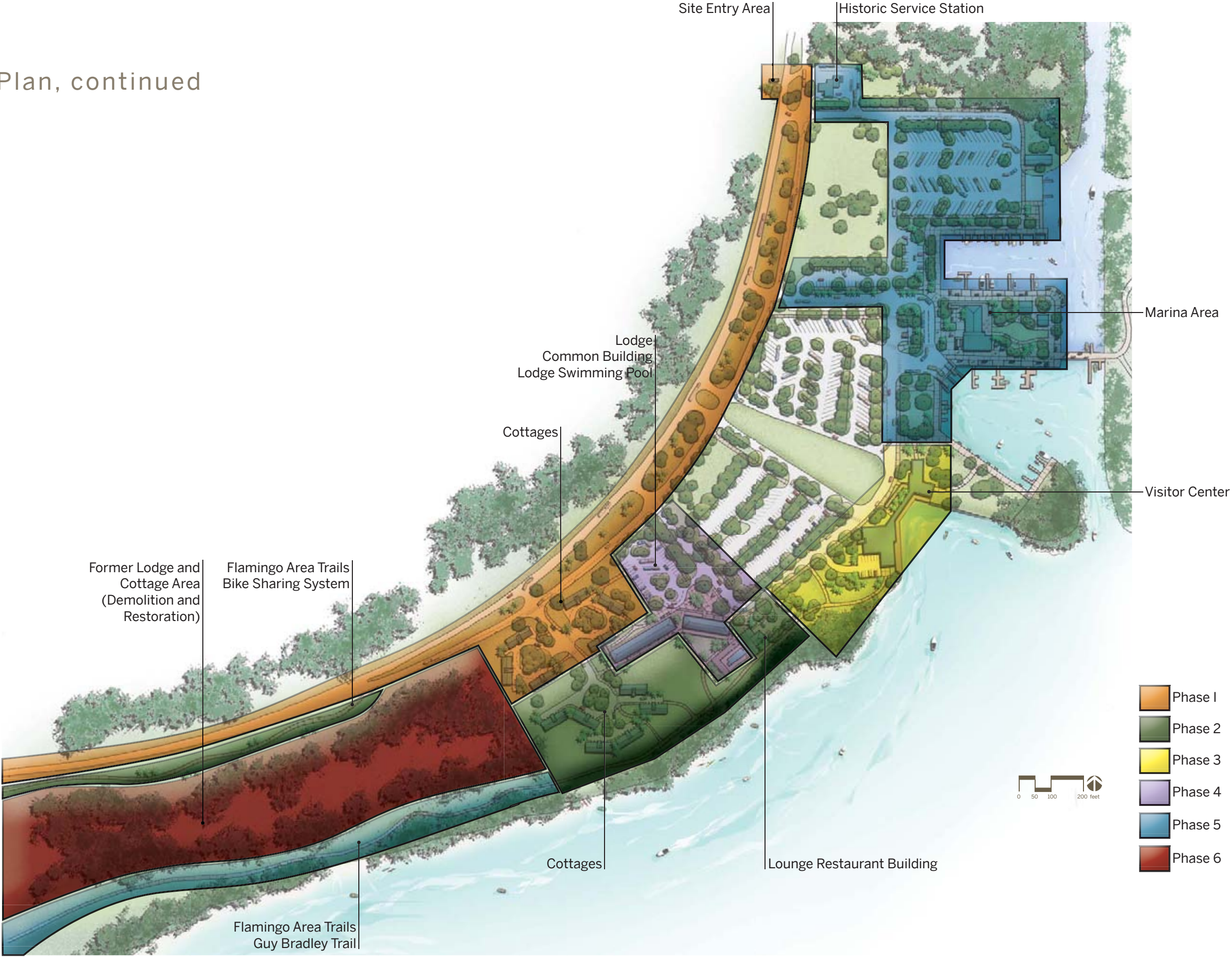
Administration’s 8-A program. Depending on the procurement method chosen, cost can be affected as much as 15 percent. As agreed to by the Design Team and the NPS a 15 percent contingency factor is applied as construction contract may be a sole source procurement.

- **Inflation Escalation.** The unit prices within the estimate are priced using current 2009 costs. As agreed to by the NPS, a 4 percent escalation factor (based on one-year historical inflation) is applied, with planned Phase 1 construction starting in 2010. Additional phases are assumed to be completed yearly with the last phase being implemented in 2015. The inflation factor that is applied is 4 percent per year and is compounded yearly for each phase.

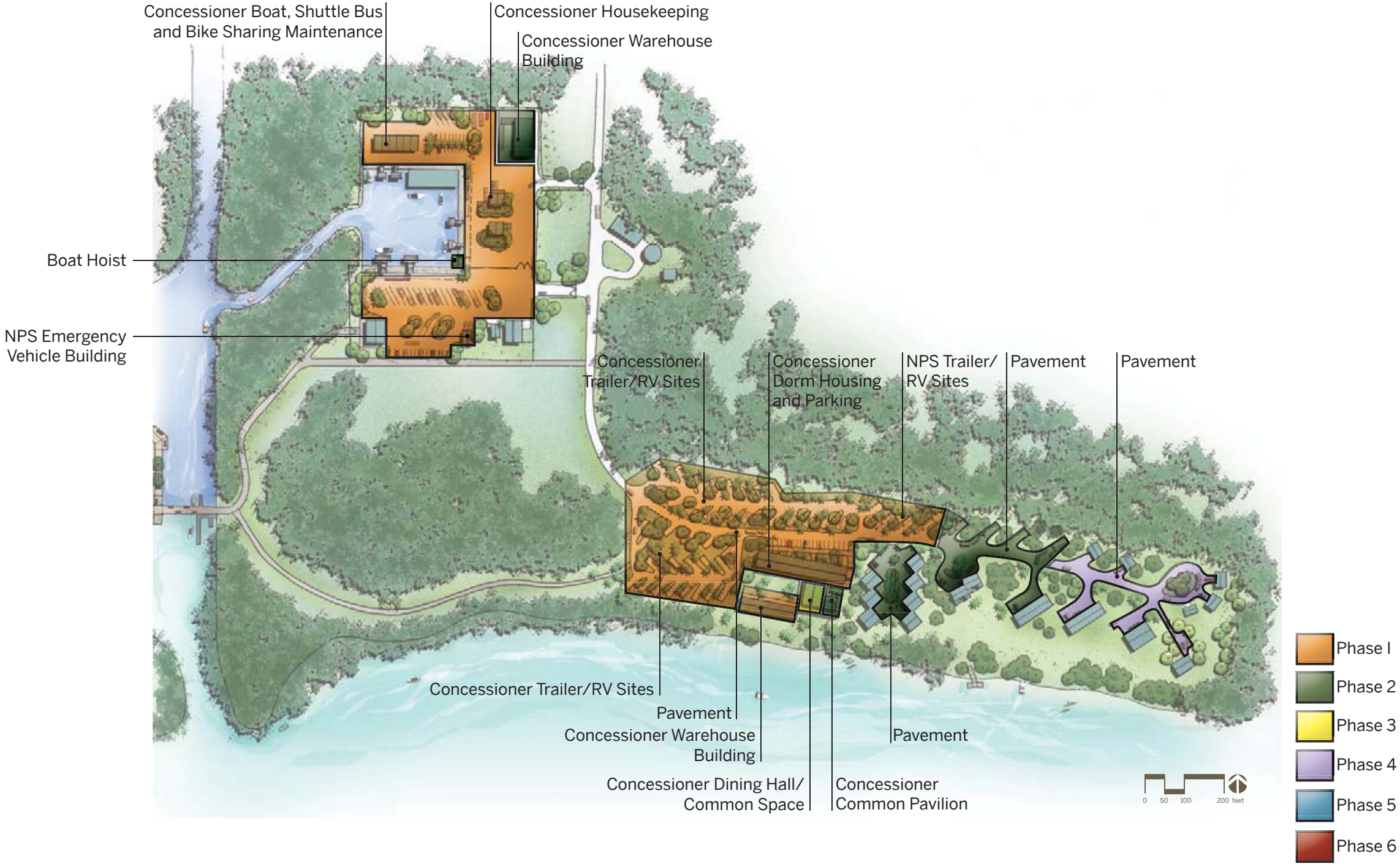
5.2 Phasing Plan



5.2 Phasing Plan, continued



5.2 Phasing Plan, continued



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		CONSTRUCTION PHASE						
AREA		TOTAL COST PHASE 1	TOTAL COST PHASE 2	TOTAL COST PHASE 3	TOTAL COST PHASE 4	TOTAL COST PHASE 5	TOTAL COST PHASE 6	TOTAL COST ALL PHASES
Site Entry Area		\$49,490						\$49,490
Historic Service Station						\$427,108		\$427,108
Marina Area						\$3,489,040		\$3,489,040
Visitor Center				\$3,356,009				\$3,356,009
Lodge and Cottages Site		\$2,224,187	\$3,099,228		\$4,623,095			\$9,946,510
Group Camping Area						\$987,986		\$987,986
Walk-In Camping Area						\$1,565,915		\$1,565,915
Eco-Tent Area		\$921,031	\$901,986					\$1,823,017
Drive-In Tent Camping Area (Loop A)							\$822,182	\$822,182
Recreational Vehicle (RV) Campground (Loop T)							\$1,156,547	\$1,156,547
Campgrounds Fee Station							\$240,502	\$240,502
Eco-Pond Area							\$291,161	\$291,161
Maintenance Area		\$1,865,820	\$759,650	\$406,700				\$3,032,170
Staff Housing Area		\$2,918,364	\$409,014		\$2,627,014			\$5,954,392
Flamingo Area Roadways (Main Roads)		\$1,063,996	\$439,500					\$1,503,496
Site Wide Improvements (Infrastructure)		\$516,200	\$315,000					\$831,200
Flamingo Area Trails (Guy Bradley and Bike Sharing System)			\$313,395			\$293,280		\$606,675
Loops B + C (Demolition and Restoration)							\$526,563	\$526,563
Former Lodge Area (Demolition and Restoration)							\$532,500	\$532,500
Subtotal of Direct Construction Cost		\$9,559,100	\$6,237,800	\$3,762,700	\$7,250,100	\$6,763,300	\$3,569,500	\$37,142,500
Location Factor	9%	\$860,300	\$561,400	\$338,600	\$652,500	\$608,700	\$321,300	\$3,342,800
Remoteness Factor (49 miles)	10%	\$955,900	\$623,800	\$376,300	\$725,000	\$676,300	\$357,000	\$3,714,300
Federal Wage Rate Factor	6%	\$286,776	\$187,134	\$112,884	\$217,506	\$202,902	\$107,088	\$1,114,278
Design Contingency	25%	\$2,389,800	\$1,559,500	\$940,700	\$1,812,500	\$1,690,800	\$892,400	\$9,285,600
Total Direct Construction Cost		\$14,051,900	\$9,169,600	\$5,531,200	\$10,657,600	\$9,942,000	\$5,247,300	\$54,599,500
Standard General Conditions	10%	\$955,900	\$623,800	\$376,300	\$725,000	\$676,300	\$357,000	\$3,714,300
Government General Conditions	5%	\$478,000	\$311,900	\$188,100	\$362,500	\$338,200	\$178,500	\$1,857,100
Historic Preservation Factor	0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Net Construction Cost		\$15,485,800	\$10,105,300	\$6,095,600	\$11,745,100	\$10,956,500	\$5,782,800	\$60,170,900
Overhead	12%	\$1,147,100	\$748,500	\$451,500	\$870,000	\$811,600	\$428,300	\$4,457,100
Profit	8%	\$764,700	\$499,000	\$301,000	\$580,000	\$541,100	\$285,600	\$2,971,400
Estimated Net Construction Cost		\$17,397,600	\$11,352,800	\$6,848,100	\$13,195,100	\$12,309,200	\$6,496,700	\$67,599,400
Contracting Method Adjustment (Small Business)	15%	\$1,433,900	\$935,700	\$564,400	\$1,087,500	\$1,014,500	\$535,400	\$5,571,400
Inflation Factor (Compounded Yearly to 2015)	4%	\$382,400	\$499,000	\$451,500	\$1,160,000	\$1,352,700	\$856,700	\$4,702,300
Total Estimated Net Cost of Construction		\$19,213,900	\$12,787,500	\$7,864,000	\$15,442,600	\$14,676,400	\$7,888,800	\$77,873,100

Site Entry Area					
Development Phase 1					
			PHASE 1		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Road work traffic control
CATEGORY SUBTOTAL				\$5,000	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	0.10	\$250	All disturbed areas
Rock Removal	Allow	\$500.00	1	\$500	
CATEGORY SUBTOTAL				\$750	
Site Excavation and Grading					
Excavation and Backfill	CY	\$8.00	30	\$240	Assume on site balance
Finish and Fine Grading	SF	\$0.20	1,000	\$200	Disturbed areas
CATEGORY SUBTOTAL				\$440	
Exterior Signs and Posts					
Main Entrance Sign Wall	Allow	\$25,000.00	1	\$25,000	Limestone veneer wall
Main Entrance Sign Graphics	EA	\$2,500.00	1	\$2,500	Reference NPS <i>Uni</i> Guide Standards
CATEGORY SUBTOTAL				\$27,500	
Landscaping					
Landscape Boulders	TON	\$175.00	10	\$1,750	Feature boulders - 10 ton
Tree Planting	EA	\$500.00	10	\$5,000	Small ornamental trees
Shrub Planting	EA	\$30.00	50	\$1,500	Ornamental shrubs
Stone Mulch	CY	\$30.00	10	\$300	Crushed stone mulch
Planting Bed Border	LF	\$10.00	100	\$1,000	Flush concrete border
Native grasses Seeding	SF	\$0.25	1,000	\$250	Disturbed areas
CATEGORY SUBTOTAL				\$9,800	
Lighting					
Sign Lighting	Allow	\$5,000	1	\$5,000	Service line from service station
Lighting Electrical Distribution	Allow	\$1,000	1	\$1,000	
CATEGORY SUBTOTAL				\$6,000	
Subtotal of Direct Construction Costs			\$49,490		
Location Factor	9%		\$4,500		
Remoteness Factor (49 miles)	10%		\$4,900		
Federal Wage Rate Factor	6%		\$1,482		
Design Contingency	25%		\$12,400		
Total Direct Construction Cost			\$72,772		
Standard General Conditions	10%		\$4,900		
Government General Conditions	5%		\$2,500		
Historic Preservation Factor			\$0		
Subtotal Net Construction Cost			\$80,172		
Overhead	12%		\$5,900		
Profit	8%		\$4,000		
Estimated Net Construction Cost			\$90,072		
Contracting Method Adjustment (Small Business)	15%		\$7,400		
Inflation (One year to 2010)	4%		\$2,000		
Total Estimated Net Cost of Construction			\$99,000		

Historic Service Station					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Misc. Demolition	Allow	\$2,500.00	1	\$2,500	Removal of misc. items allowance
Construction Traffic Control	Allow	\$2,500.00	1	\$2,500	Construction traffic control
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	1,200	\$3,600	Existing site paving
CATEGORY SUBTOTAL				\$8,600	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	All disturbed areas
Tree/Shrub Removal	Allow	\$1,000.00	1	\$1,000	
Rock Removal	Allow	\$500.00	1	\$500	
CATEGORY SUBTOTAL				\$4,000	
Site Excavation and Grading					
Rough Grading	CY	\$4.00	1,300	\$5,200	Balanced areas
Finish and Fine Grading	SF	\$0.20	35,000	\$7,000	Disturbed areas
CATEGORY SUBTOTAL				\$12,200	
Roads and Parking					
Asphalt Base Course	TON	\$40.00	484	\$19,360	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	320	\$43,200	Assumes 4" depth
Pavement Marking	LS	\$2,500.00	1	\$2,500	
Concrete Curbs	LF	\$12.00	679	\$8,148	Fuel pump island curbs + flush curbs
CATEGORY SUBTOTAL				\$73,208	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	2,800	\$14,000	Salt finish integral color concrete
CATEGORY SUBTOTAL				\$14,000	
Site Furnishings					
8' Benches	EA	\$1,000.00	2	\$2,000	
8' Picnic table	EA	\$1,200.00	1	\$1,200	
32 Gal. Trash Containers	EA	\$750.00	1	\$750	
32 Gal. Recycling Containers	EA	\$750.00	1	\$750	
Fencing Enclosure	LF	\$25.00	84	\$2,100	Tank enclosure
Bollards	EA	\$750.00	15	\$11,250	Concrete at edge of road/pedestrian area
CATEGORY SUBTOTAL				\$18,050	
Exterior Signs					
Regulatory	EA	\$750.00	2	\$1,500	Road regulatory signs
Wayfinding	EA	\$750.00	2	\$1,500	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	3	\$4,500	Building mounted site map and information
Area Identification Sign	EA	\$1,000.00	1	\$1,000	Service station site sign
CATEGORY SUBTOTAL				\$8,500	
Landscaping					
Tree Planting	EA	\$500.00	5	\$2,500	Shade trees
Ornamental Tree Planting	EA	\$400.00	5	\$2,000	Small ornamental trees
Shrub Planting	EA	\$30.00	50	\$1,500	Ornamental shrubs
Stone Mulch	CY	\$30.00	10	\$300	Crushed stone mulch
Planting Bed Border	LF	\$10.00	400	\$4,000	Flush concrete border
Native grasses Seeding	SF	\$0.25	13,000	\$3,250	Disturbed areas
CATEGORY SUBTOTAL				\$13,550	

Historic Service Station					
Development Phase 5					
			PHASE 5		NOTES
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	Allowance for bioswales, ponds, etc.
CATEGORY SUBTOTAL				\$10,000	
Utilities					
Fuel Storage Above Grade Tank	EA	\$7,500	2	\$15,000	Relocate two fuel storage tank from marina
Fuel Distribution Piping and Controls	Allow	\$15,000	1	\$15,000	
Fuel Pumps	EA	\$10,000	3	\$30,000	
New Above Grade Tank	EA	\$50,000	1	\$50,000	New tank
Renovate existing water and sewer	LS	\$2,500	1	\$2,500	Refurbish existing water and sewer lines
CATEGORY SUBTOTAL				\$112,500	
Site Electrical and Lighting					
Street Lighting	Each	\$3,500	2	\$7,000	Dark sky compatible pole mounted lighting
Electrical Transformer	Allow	\$10,000	1	\$10,000	
Site Electrical Distribution	Allow	\$5,000	1	\$5,000	Conduit and distribution wiring
CATEGORY SUBTOTAL				\$22,000	
Architecture					
Restore Existing Mission 66 Station Building	SF	\$85.00	1,300	\$110,500	
FF&E Allowance	LS	\$20,000.00	1	\$20,000	
CATEGORY SUBTOTAL				\$130,500	
Subtotal of Direct Construction Costs				\$427,108	
Location Factor	9%			\$38,400	
Remoteness Factor (49 miles)	10%			\$42,700	
Federal Wage Rate Factor	6%			\$12,816	
Design Contingency	25%			\$106,800	
Total Direct Construction Cost				\$627,824	
Standard General Conditions	10%			\$42,700	
Government General Conditions	5%			\$21,400	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$691,924	
Overhead	12%			\$51,300	
Profit	8%			\$34,200	
Estimated Net Construction Cost				\$777,424	
Contracting Method Adjustment (Small Business)	15%			\$64,100	
Inflation (4% per year to 2014)	20%			\$85,400	
Total Estimated Net Cost of Construction				\$927,000	

Marina Area					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	Salvage and store misc. items allowance
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Traffic control signs and barriers
Fuel Tank Salvage	Allow	\$5,000.00	1	\$5,000	Fuel tanks - relocate one to gas station
Marina Building Demolition and Removal	Allow	\$10,000.00	1	\$10,000	Remove marina building
Fuel Building Demolition and Removal	Allow	\$2,500.00	1	\$2,500	Remove gas station kiosk
Remove Existing Utilities	Allow	\$5,000.00	1	\$5,000	Remove old water, sewer, elec. & comm. lines
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	29,522	\$88,566	Reuse for base course
Remove, Crush and Stockpile Existing Concrete	SY	\$4.50	10,681	\$48,065	Stockpile for base course reuse
CATEGORY SUBTOTAL				\$181,631	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	Site landscape areas
Tree Removal	Allow	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$2,500.00	1	\$2,500	Allowance for rock excavation
CATEGORY SUBTOTAL				\$7,500	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	1,100	\$4,400	Assume on site balance
Finish and Fine Grading	SF	\$0.10	28,418	\$2,842	Disturbed areas
CATEGORY SUBTOTAL				\$7,242	
Roads and Parking					
Asphalt Base Course	TON	\$40.00	2,221	\$88,840	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	1,480	\$199,800	Assumes 4" depth. new paved areas
Asphalt Overlay Paving	TON	\$135.00	3,328	\$449,280	Assumes 2" depth. existing paved areas
Pavement Marking	LS	\$2,500.00	1	\$2,500	
Concrete Curbs	LF	\$12.00	7,200	\$86,400	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	128	\$32,000	Accessible parking space
Accessible Ramp	EA	\$1,500.00	2	\$3,000	Concrete ramp
CATEGORY SUBTOTAL				\$861,820	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	42,245	\$211,225	Salt finish integral color concrete 4" depth
					Salt finish integral color concrete 6" depth
Concrete Walkways Vehicle Access	SF	\$7.50	28,820	\$216,150	Service area
Plaza Paving	SF	\$10.00	1,552	\$15,520	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$442,895	
Site Furnishings					
8' Benches	EA	\$1,000.00	20	\$20,000	
8' Picnic Tables	EA	\$1,200.00	10	\$12,000	
32 Gal. Trash Containers	EA	\$750.00	6	\$4,500	
32 Gal. Recycling Containers	EA	\$750.00	6	\$4,500	
Bike Racks	EA	\$500.00	12	\$6,000	
					Concrete at edge of road/pedestrian/service area
Bollards	EA	\$750.00	30	\$22,500	
CATEGORY SUBTOTAL				\$69,500	

Marina Area					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Exterior Signs and Posts					
Regulatory	EA	\$750.00	2	\$1,500	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	3	\$4,500	Building standard mounted site map and information
Area Identification Sign	EA	\$1,000.00	3	\$3,000	Marina area site sign
Wayfinding	EA	\$750.00	12	\$9,000	Site and road wayfinding
CATEGORY SUBTOTAL				\$18,000	
Landscaping					
Tree Planting	EA	\$500.00	42	\$21,000	Shade trees
Ornamental Tree Planting	EA	\$400.00	22	\$8,800	Small ornamental trees
Shrub Planting	EA	\$30.00	1,161	\$34,830	Ornamental shrubs
Stone Mulch	CY	\$30.00	1,550	\$46,500	Crushed stone landscape mulch 6" depth
Planting Bed Border	LF	\$10.00	2,400	\$24,000	Flush concrete border
Native Grasses Seeding	SF	\$0.25	86,809	\$21,702	Disturbed areas restoration
					Crushed stone pedestrian areas 8" depth at bulkheads
Stone Paving	SF	\$3.00	5,290	\$15,870	
CATEGORY SUBTOTAL				\$172,702	
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Utilities					
2" Water Service Line	LF	\$40	140	\$5,600	Rework lift station piping to abandon existing line and use new lines
2" Valves and Appurtenances	LS	\$1,500	1	\$1,500	
2" Meter	EA	\$2,000	1	\$2,000	
3/4" Service Lines	LF	\$25	100	\$2,500	
3/4" Valves and Appurtenances	LS	\$500	2	\$1,000	
6" Sanitary Drain Piping	LF	\$30	200	\$6,000	
4" Cleanouts	EA	\$500	2	\$1,000	Relocate one fuel storage tank from marina Use existing Use existing pumps Use existing
Connection to Existing Lift Station	LS	\$5,000	1	\$5,000	
Fire Hydrants	EA	\$5,000	2	\$10,000	
Fuel Storage Above Grade Tank	EA	\$10,000	1	\$10,000	
Fuel Distribution Piping and Controls	Allow	\$10,000	1	\$10,000	
Fuel Pumps	EA	\$5,000	2	\$10,000	
Relocate Existing Electric Transformer	LS	\$10,000	1	\$10,000	
Electric Secondary Run to Marina Building	LS	\$5,000	1	\$5,000	
Communications Service and Pedestal	LS	\$2,500	1	\$2,500	
CATEGORY SUBTOTAL				\$82,100	
Site Electrical and Lighting					
Electrical Transformer	Allow	\$10,000	1	\$10,000	Dark sky compatible pole mounted lighting Dark sky compatible pole mounted lighting
Electric Distribution Lines and Conduit	Allow	\$15,000	1	\$15,000	
Street Lighting	Each	\$3,500	18	\$63,000	
Pedestrian Area Lighting	Each	\$2,500	20	\$50,000	
CATEGORY SUBTOTAL				\$138,000	

Marina Area						
Development Phase 5						
			PHASE 5			
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES	
Architecture						
Marina Retail and Restaurant						
Demolish Existing Building	SF	\$4.00	3,600	\$14,400		
Marina Store, Gift Shop & Public Spaces	SF	\$125.00	5,220	\$652,500		
Snack Bar & Mini-Lounge Building	SF	\$135.00	1,750	\$236,250		
Outside Deck	SF	\$25.00	1,000	\$25,000	2000 SF at half value	
Shower/Restroom Building	SF	\$150.00	700	\$105,000		
Lower Level Ancillary Spaces	SF	\$115.00	1,350	\$155,250		
FF&E and FS&E Allowance	LS	\$55,000.00	1	\$55,000		
Pavilion	SF	\$60.00	1,800	\$108,000	Two structures and kiosk	
Fish Cleaning Building (Renovate)	SF	\$75.00	1,750	\$131,250	Renovating existing	
Fish Cleaning Building FF&E	LS	\$5,000.00	1	\$5,000	Renovating existing	
CATEGORY SUBTOTAL			\$1,487,650			
Subtotal of Direct Construction Costs			\$3,489,040			
Location Factor	9%		\$314,000			
Remoteness Factor (49 miles)	10%		\$348,900			
Federal Wage Rate Factor	6%		\$104,670			
Design Contingency	25%		\$872,300			
Total Direct Construction Cost			\$5,128,910			
Standard General Conditions	10%		\$348,900			
Government General Conditions	5%		\$174,500			
Historic Preservation Factor			\$0			
Subtotal Net Construction Cost			\$5,652,310			
Overhead	12%		\$418,700			
Profit	8%		\$279,100			
Estimated Net Construction Cost			\$6,350,110			
Contracting Method Adjustment (Small Business)	15%		\$523,400			
Inflation (4% per year to 2014)	20%		\$697,800			
Total Estimated Net Cost of Construction				\$7,571,000		

Visitor Center					
Development Phase 3					
			PHASE 3		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	Salvage and store misc. items allowance
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Traffic control signs and barriers
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	14,088	\$42,264	
CATEGORY SUBTOTAL				\$64,764	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	Site landscape areas
Tree Removal	Allow	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$1,000.00	1	\$1,000	Allowance for rock excavation
CATEGORY SUBTOTAL				\$6,000	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	100	\$400	Assume on site balance
Finish and Fine Grading	SF	\$0.20	2,700	\$540	Disturbed areas
CATEGORY SUBTOTAL				\$940	
Roads and Parking					
Asphalt Overlay Paving	TON	\$135.00	1,588	\$214,380	Assumes 2" depth existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	
Concrete Curbs	LF	\$12.00	5,650	\$67,800	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	175	\$43,750	Accessible parking space
Accessible Ramp	EA	\$1,500.00	16	\$24,000	Concrete ramp
CATEGORY SUBTOTAL				\$354,930	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	6,845	\$34,225	Salt finish integral color concrete 4" depth
Plaza Paving	SF	\$10.00	500	\$5,000	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$39,225	
Site Furnishings					
8' Benches	EA	\$1,000.00	15	\$15,000	
8' Picnic Tables	EA	\$1,200.00	21	\$25,200	
32 Gal. Trash Containers	EA	\$750.00	8	\$6,000	
32 Gal. Recycling Containers	EA	\$750.00	8	\$6,000	
Bike Racks	EA	\$500.00	12	\$6,000	
Flagpole Rehabilitation	EA	\$2,500.00	1	\$2,500	Rehab existing flagpole
CATEGORY SUBTOTAL				\$60,700	
Exterior Signs and Posts					
Regulatory	EA	\$750.00	2	\$1,500	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	3	\$4,500	Building/standard mounted site map and information
Area Identification Sign	EA	\$1,000.00	1	\$1,000	Visitor center site sign
Wayfinding	EA	\$750.00	6	\$4,500	Site and road wayfinding
Interpretive Signage/Exhibits	EA	\$5,000.00	8	\$40,000	New post or rail mounted panels
CATEGORY SUBTOTAL				\$51,500	

Visitor Center					
Development Phase 3					
			PHASE 3		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Landscaping					
Tree Planting	EA	\$500.00	5	\$2,500	Shade trees
Ornamental Tree Planting	EA	\$400.00	10	\$4,000	Small ornamental trees
Shrub Planting	EA	\$30.00	50	\$1,500	Ornamental shrubs
Stone Mulch	CY	\$30.00	67	\$2,010	Crushed stone landscape mulch 6" depth
Planting Bed Border	LF	\$10.00	400	\$4,000	Flush concrete border
Native grasses Seeding	SF	\$0.25	29,360	\$7,340	Disturbed areas restoration
Stone Paving	SF	\$3.00	500	\$1,500	Crushed stone pedestrian areas 8" depth
CATEGORY SUBTOTAL				\$22,850	
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls
Best Management Practices	ALLOW	\$7,500.00	1	\$7,500	Allowance for Bioswales, ponds, etc.
Misc Culverts and Drainage	ALLOW	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Utilities					
Renovate Existing Water and Sewer Lines	LS	\$10,000	1	\$10,000	Refurbish existing water and sewer lines
2" Water Line	LF	\$40	0	\$0	Assume existing utility services are adequate
2" Valves and Appurtenances	LS	\$2,000	0	\$0	Assume existing utility services are adequate
3/4" Service Lines	LF	\$25	0	\$0	Assume existing utility services are adequate
3/4" Valves and Appurtenances	LS	\$2,000	0	\$0	Assume existing utility services are adequate
6" Sanitary Drain Piping	LF	\$30	0	\$0	Assume existing utility services are adequate
6" Clean Out	LS	\$500	0	\$0	Assume existing utility services are adequate
Fire Hydrants	EA	\$5,000	0	\$0	Most utility work in MEP systems at building
CATEGORY SUBTOTAL				\$10,000	
Lighting					
Electrical Transformer	Allow	\$10,000	1	\$10,000	
Electric Distribution Lines and Conduit	Allow	\$7,500	1	\$7,500	
Street Lighting	Each	\$3,500	12	\$42,000	Dark sky compatible pole mounted lighting
Pedestrian Area Lighting	Each	\$2,500	8	\$20,000	Dark sky compatible pole mounted lighting
CATEGORY SUBTOTAL				\$79,500	
Architecture					
Mission 66 Visitor Center Rehabilitation					
Renovate/Preserve Visitor Center (demo incl)	SF	\$120.00	17,630	\$2,115,600	
FF&E and FS&E Allowance	LS	\$30,000.00	1	\$30,000	
Interior Interpretive Exhibits	Allow	\$500,000.00	1	\$500,000	
CATEGORY SUBTOTAL				\$2,645,600	
Subtotal of Direct Construction Costs				\$3,356,009	

Visitor Center				
Development Phase 3				
		PHASE 3		NOTES
ITEM	UNIT	UNIT COST	QTY. TOTAL COST	
Location Factor	9%		\$302,000	
Remoteness Factor (49 miles)	10%		\$335,600	
Federal Wage Rate Factor	6%		\$100,680	
Design Contingency	25%		\$839,000	
Total Direct Construction Cost			\$4,933,289	
Standard General Conditions	10%		\$335,600	
Government General Conditions	5%		\$167,800	
Historic Preservation Factor			\$0	
Subtotal Net Construction Cost			\$5,436,689	
Overhead	12%		\$402,700	
Profit	8%		\$268,500	
Estimated Net Construction Cost			\$6,107,889	
Contracting Method Adjustment (Small Business)	15%		\$503,400	
Inflation (4% per year to 2012)	12%		\$402,700	
Total Estimated Net Cost of Construction			\$7,014,000	

Lodge and Cottages Site									
Development Phases 1, 2 & 4									
			PHASE 1		PHASE 2		PHASE 4		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control									
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	1	\$10,000	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	1	\$7,500	1	\$7,500	Salvage and store misc. items allowance
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	Traffic control signs and barriers
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	5,520	\$16,560	0	\$0	0	\$0	
Remove, Crush and Stockpile Existing Concrete	SY	\$4.50	2,333	\$10,499	0	\$0	0	\$0	
CATEGORY SUBTOTAL				\$49,559	\$22,500		\$22,500		
Clearing and Grubbing									
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	1	\$2,500	1	\$2,500	Site landscape areas
Tree Transplanting	Allow	\$25,000.00	1	\$25,000	1	\$25,000	1	\$25,000	Transplant existing sable palms
Tree Removal	Allow	\$2,500.00	1	\$2,500	1	\$2,500	1	\$2,500	
Rock Removal	Allow	\$2,500.00	1	\$2,500	1	\$2,500	1	\$2,500	Allowance for rock excavation
CATEGORY SUBTOTAL				\$32,500	\$32,500		\$32,500		
Site Excavation and Grading									
Excavation and Backfill	CY	\$4.00	1,100	\$4,400	1,100	\$4,400	1,500	\$6,000	Assume on site balance
Finish and Fine Grading	SF	\$0.20	87,750	\$17,550	87,750	\$17,550	175,500	\$35,100	Disturbed areas
CATEGORY SUBTOTAL				\$21,950	\$21,950		\$41,100		
Roads and Parking									
Asphalt Base Course	TON	\$40.00	931	\$37,240	931	\$37,240	1,077	\$43,080	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	615	\$83,025	615	\$83,025	710	\$95,850	Assumes 4" depth new paved areas
Asphalt Overlay Paving	TON	\$135.00	0	\$0	0	\$0	0	\$0	Assumes 2" depth existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	
Concrete Curbs	LF	\$12.00	2,540	\$30,480	2,540	\$30,480	1,506	\$18,072	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	2	\$500	2	\$500	4	\$1,000	Accessible parking space
Accessible Ramp	EA	\$1,500.00	2	\$3,000	2	\$3,000	2	\$3,000	Concrete ramp
CATEGORY SUBTOTAL				\$159,245	\$159,245		\$166,002		
Pathways/Walkways									
Concrete Walkways	SF	\$5.00	10,766	\$53,830	10,766	\$53,830	10,766	\$53,830	Salt finish integral color concrete 4" depth
Concrete Walkways Vehicle Access	SF	\$7.50	2,962	\$22,215	2,962	\$22,215	2,962	\$22,215	Salt finish integral color concrete 6" depth at service areas
Sidewalk	SF	\$5.00	3,733	\$18,665	3,733	\$18,665	3,733	\$18,665	8' wide walkways (salt finish)
Plaza Paving	SF	\$10.00	500	\$5,000	500	\$5,000	500	\$5,000	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$99,710	\$99,710		\$99,710		
Site Furnishings									
8' Benches	EA	\$1,000.00	5	\$5,000	5	\$5,000	5	\$5,000	
8' Picnic Tables	EA	\$1,200.00	4	\$4,800	4	\$4,800	4	\$4,800	
32 Gal. Trash Containers	EA	\$750.00	2	\$1,500	2	\$1,500	2	\$1,500	
32 Gal. Recycling Containers	EA	\$750.00	2	\$1,500	2	\$1,500	2	\$1,500	
Bike Racks	EA	\$500.00	3	\$1,500	3	\$1,500	6	\$3,000	
CATEGORY SUBTOTAL				\$14,300	\$14,300		\$15,800		
Exterior Signs and Posts									
Regulatory	EA	\$750.00	4	\$3,000	4	\$3,000	2	\$1,500	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	1	\$1,500	1	\$1,500	1	\$1,500	Building/standard mounted site map and information
Area Identification Sign	EA	\$1,000.00	1	\$1,000	1	\$1,000	1	\$1,000	Lodge and cottages site sign
Wayfinding	EA	\$750.00	8	\$6,000	2	\$1,500	2	\$1,500	Site and road wayfinding
Interpretive Signage/Exhibits	EA	\$5,000.00	3	\$15,000	2	\$10,000	3	\$15,000	New post or rail mounted panels
CATEGORY SUBTOTAL				\$26,500	\$17,000		\$20,500		

Lodge and Cottages Site									
Development Phases 1, 2 & 4									
			PHASE 1		PHASE 2		PHASE 4		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Landscaping									
Tree Planting	EA	\$500.00	15	\$7,500	15	\$7,500	25	\$12,500	Shade trees
Ornamental Tree Planting	EA	\$400.00	31	\$12,400	30	\$12,000	35	\$14,000	Small ornamental trees
Shrub Planting	EA	\$30.00	200	\$6,000	200	\$6,000	100	\$3,000	Ornamental shrubs
Stone Mulch	CY	\$30.00	100	\$3,000	100	\$3,000	136	\$4,080	Crushed stone landscape mulch 6" depth
Planting Bed Border	LF	\$10.00	200	\$2,000	200	\$2,000	200	\$2,000	Flush concrete border
Native Grasses Seeding	SF	\$0.25	35,612	\$8,903	35,612	\$8,903	35,612	\$8,903	Disturbed areas restoration
Stone Paving	SF	\$3.00	200	\$600	200	\$600	500	\$1,500	Crushed stone pedestrian areas 8" depth
CATEGORY SUBTOTAL				\$40,403		\$40,003		\$45,983	
Drainage Improvements									
Erosion Control	LS	\$2,500.00	1	\$2,500	1	\$2,500	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	1	\$7,500	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	1	\$10,000	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000		\$20,000		\$20,000	
Utilities									
2" Service Lines	LF	\$40	500	\$20,000	500	\$20,000	300	\$12,000	
2" Meters and Backflow Preventers	EA	\$2,000	2	\$4,000	2	\$4,000	2	\$4,000	
8" Sanitary Drain Piping	LF	\$40	400	\$16,000	400	\$16,000	400	\$16,000	
San. Manholes	EA	\$3,000	4	\$12,000	4	\$12,000	2	\$6,000	
6" Sanitary Services	LF	\$30	400	\$12,000	400	\$12,000	200	\$6,000	
New Sanitary Pump Station	LS	\$15,000	1	\$15,000	0	\$0	0	\$0	
Fire Hydrants	EA	\$5,000	1	\$5,000	1	\$5,000	2	\$10,000	
Electric Transformer	EA	\$10,000	2	\$20,000	1	\$10,000	1	\$10,000	
Electric Secondary Lines from Exist. Transformer	LS	\$25,000	1	\$25,000	1	\$25,000	1	\$25,000	
Electric Junction Box	EA	\$5,000	1	\$5,000	1	\$5,000	1	\$5,000	
Communications Services to All Buildings	LS	\$20,000	1	\$20,000	1	\$20,000	1	\$20,000	
CATEGORY SUBTOTAL				\$154,000		\$129,000		\$114,000	
Lighting									
Electric Distribution Lines and Conduit	Allow	\$20,000	1	\$20,000	1	\$20,000	1	\$20,000	
Street Lighting	Each	\$3,500	3	\$10,500	3	\$10,500	4	\$14,000	
Pedestrian Area Lighting	Each	\$2,500	4	\$10,000	4	\$10,000	4	\$10,000	Dark sky compatible pole mounted lighting
CATEGORY SUBTOTAL				\$40,500		\$40,500		\$44,000	
Architecture									
Lodge Building New	SF	\$180.00	0	\$0	0	\$0	20,000	\$3,600,000	
Lodge Building FF&E	LS	\$85,000.00	0	\$0	0	\$0	1	\$85,000	
Swimming Pool & Common Building	SF	\$90.00	0	\$0	0	\$0	3,400	\$306,000	
Swimming Pool & Common Building FF&E	LS	\$10,000.00	0	\$0	0	\$0	1	\$10,000	
Lounge Restaurant Building	SF	\$185.00	0	\$0	4,200	\$777,000	0	\$0	
Lounge Restaurant Building FF&E	LS	\$160,000.00	0	\$0	1	\$160,000	0	\$0	
Cottage Building (1 bedroom units)	SF	\$152.00	4,170	\$633,840	4,170	\$633,840	0	\$0	6 buildings total; 3 buildings per phase
Cottage Building FF&E (1 bedroom units)	LS	\$10,000.00	3	\$30,000	3	\$30,000	0	\$0	
Cottage Building (2 bedroom units)	SF	\$152.00	5,715	\$868,680	5,715	\$868,680	0	\$0	6 buildings total; 3 buildings per phase
Cottage Building FF&E (2 bedroom units)	LS	\$11,000.00	3	\$33,000	3	\$33,000	0	\$0	
CATEGORY SUBTOTAL				\$1,565,520		\$2,502,520		\$4,001,000	
Subtotal of Direct Construction Costs				\$2,224,187		\$3,099,228		\$4,623,095	

Lodge and Cottages Site								
Development Phases 1, 2 & 4								
			PHASE 1		PHASE 2		PHASE 4	
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST
NOTES								
Location Factor	9%			\$200,200		\$278,900		\$416,100
Remoteness Factor (49 miles)	10%			\$222,400		\$309,900		\$462,300
Federal Wage Rate Factor	6%			\$66,726		\$92,976		\$138,690
Design Contingency	25%			\$556,000		\$774,800		\$1,155,800
Total Direct Construction Cost				\$3,269,513		\$4,555,804		\$6,795,985
Standard General Conditions	10%			\$222,400		\$309,900		\$462,300
Government General Conditions	5%			\$111,200		\$155,000		\$231,200
Historic Preservation Factor				\$0		\$0		\$0
Subtotal Net Construction Cost				\$3,603,113		\$5,020,704		\$7,489,485
Overhead	12%			\$266,900		\$371,900		\$554,800
Profit	8%			\$177,900		\$247,900		\$369,800
Estimated Net Construction Cost				\$4,047,913		\$5,640,504		\$8,414,085
Contracting Method Adjustment (Small Business)	15%			\$333,600		\$464,900		\$693,500
Inflation (Coumpounded Yearly to 2013)	4%			\$89,000		\$247,900		\$739,700
Total Estimated Net Cost of Construction				\$4,471,000		\$6,353,000		\$9,847,000

Group Camping Area					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Construction traffic control
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	1,617	\$4,851	Existing road and parking area
CATEGORY SUBTOTAL				\$9,851	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	All construction areas
Tree Removal	EA	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$15,000	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	2,942	\$11,768	Assume on site balance
Finish and Fine Grading	SF	\$0.20	158,880	\$31,776	Disturbed areas
CATEGORY SUBTOTAL				\$43,544	
Roads and Parking					
Asphalt Base Course	TON	\$40.00	1,092	\$43,680	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	719	\$97,065	Assumes 4" depth. new paved areas
Asphalt Overlay Paving	TON	\$135.00	182	\$24,570	Assumes 2" depth. existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	
Concrete Curbs	LF	\$12.00	1,920	\$23,040	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	39	\$9,750	Each parking space
Accessible Ramp	EA	\$1,500.00	2	\$3,000	Concrete ramp
CATEGORY SUBTOTAL				\$206,105	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	36,876	\$184,380	Salt finish integral color concrete 4" depth
Concrete Walkways Vehicle Access	SF	\$7.50	1,600	\$12,000	Salt finish integral color concrete 6" depth at service areas
Plaza Paving	SF	\$10.00	500	\$5,000	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$201,380	
Camp Sites					
Campsite Marker	EA	\$500.00	3	\$1,500	Marker post with site identification
CATEGORY SUBTOTAL				\$1,500	
Site Furnishings					
Seat Wall	FSF	\$50.00	120	\$6,000	Concrete at edge of road/pedestrian/service area
8' Picnic Tables	EA	\$1,200.00	13	\$15,600	
BBQ Grills	EA	\$450.00	5	\$2,250	
Fire Rings	EA	\$450.00	5	\$2,250	
32 Gal. Trash Containers	EA	\$750.00	3	\$2,250	
32 Gal. Recycling Containers	EA	\$750.00	3	\$2,250	
Dumpster Enclosure	EA	\$5,000.00	1	\$5,000	
Bollards	EA	\$750.00	5	\$3,750	
CATEGORY SUBTOTAL				\$39,350	

Group Camping Area					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Exterior Signs and Posts					
Regulatory	EA	\$750.00	6	\$4,500	Road directional signs Building standard mounted site map and information
Informational/Interpretive Panels	EA	\$1,500.00	3	\$4,500	
Area Identification Sign	EA	\$1,000.00	1	\$1,000	Site and road wayfinding
Wayfinding	EA	\$750.00	8	\$6,000	
Informational/Interpretive Kiosk	EA	\$7,500.00	1	\$7,500	
CATEGORY SUBTOTAL				\$23,500	
Landscaping					
Tree Planting	EA	\$500.00	45	\$22,500	Shade trees
Ornamental Tree Planting	EA	\$400.00	30	\$12,000	Small ornamental trees
Shrub Planting	EA	\$30.00	200	\$6,000	Ornamental shrubs
Stone Mulch	CY	\$30.00	215	\$6,450	Crushed stone mulch
Native Turf	SF	\$0.50	25,500	\$12,750	Mown turf
Native Grasses Seeding	SF	\$0.25	76,224	\$19,056	Disturbed areas
CATEGORY SUBTOTAL				\$78,756	
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls
Best Management Practices	ALLOW	\$7,500.00	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc. Culverts and Drainage	ALLOW	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Utilities					
4" Water Line	LF	\$50	0	\$0	
4" Valves and Appurtenances	EA	\$1,500	0	\$0	
2" Water Service	LF	\$25	0	\$0	
2" Valves and Appurtenances	LS	\$2,000	0	\$0	
2" Meters and Back Flow	EA	\$2,000	0	\$0	
3/4" Service Lines	LF	\$25	400	\$10,000	
3/4" Valves and Appurtenances	LS	\$2,000	2	\$4,000	
8" Sanitary Drain Piping	LF	\$40	500	\$20,000	
Sanitary Manholes	EA	\$3,000	2	\$6,000	
6" Sanitary Services	LF	\$30	30	\$900	
4" Sanitary Cleanouts	EA	\$500	3	\$1,500	
Fire Hydrants	EA	\$5,000	1	\$5,000	
Electric Secondary Runs from Exist. Transformer	LS	\$10,000	1	\$10,000	
CATEGORY SUBTOTAL				\$57,400	
Lighting					
Electrical Transformer	Allow	\$10,000	1	\$10,000	Dark sky compatible pole mounted lighting Dark sky compatible pole mounted lighting
Electric Distribution Lines and Conduit	Allow	\$7,500	1	\$7,500	
Street Lighting	Each	\$3,500	4	\$14,000	
Pedestrian Area Lighting	Each	\$2,500	8	\$20,000	
CATEGORY SUBTOTAL				\$51,500	
Architecture					
Comfort Station (Renovate)	LS	\$192,600.00	1	\$192,600	Includes additional shower module
Comfort Station FF&E (Renovate)	LS	\$1,000.00	1	\$1,000	
Group Camping Common Building	LS	\$15,000.00	3	\$45,000	
Group Camping Common Building FF&E	LS	\$500.00	3	\$1,500	
CATEGORY SUBTOTAL				\$240,100	
Subtotal of Direct Construction Costs				\$987,986	

Group Camping Area					
Development Phase 5					
			PHASE 5		NOTES
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	
Location Factor	9%			\$88,900	
Remoteness Factor (49 miles)	10%			\$98,800	
Federal Wage Rate Factor	6%			\$29,640	
Design Contingency	25%			\$247,000	
Total Direct Construction Cost				\$1,452,326	
Standard General Conditions	10%			\$98,800	
Government General Conditions	5%			\$49,400	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$1,600,526	
Overhead	12%			\$118,600	
Profit	8%			\$79,000	
Estimated Net Construction Cost				\$1,798,126	
Contracting Method Adjustment (Small Business)	15%			\$148,200	
Inflation (4% per year to 2014)	20%			\$197,600	
Total Estimated Net Cost of Construction				\$2,144,000	

Walk-In Camping Area					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Construction traffic control
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	1,617	\$4,851	Existing road and parking area
CATEGORY SUBTOTAL				\$9,851	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	All construction areas
Tree Removal	EA	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$15,000	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	7,500	\$30,000	Assume on site balance
Finish and Fine Grading	SF	\$0.20	405,269	\$81,054	Disturbed areas
CATEGORY SUBTOTAL				\$111,054	
Roads and Parking					
Asphalt Base Course	TON	\$40.00	1,314	\$52,560	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	875	\$118,125	Assumes 4" depth new paved areas
Asphalt Overlay Paving	TON	\$135.00	182	\$24,570	Assumes 2" depth existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	
Concrete Curbs	LF	\$12.00	2,660	\$31,920	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	87	\$21,750	Accessible parking space
Accessible Ramp	EA	\$1,500.00	2	\$3,000	Concrete ramp
CATEGORY SUBTOTAL				\$256,925	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	39,877	\$199,385	Salt finish integral color concrete 4" depth
Concrete Walkways Vehicle Access	SF	\$7.50	6,000	\$45,000	Salt finish integral color concrete 6" depth at service areas
Plaza Paving	SF	\$10.00	1,500	\$15,000	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$259,385	
Camp Sites					
Campsite Marker	EA	\$500.00	60	\$30,000	Marker post with site identification
CATEGORY SUBTOTAL				\$30,000	
Site Furnishings					
8' Picnic Tables	EA	\$1,200.00	63	\$75,600	Concrete at edge of road/pedestrian/service area
BBQ Grills	EA	\$450.00	66	\$29,700	
Fire Rings	EA	\$450.00	66	\$29,700	
32 Gal. Trash Containers	EA	\$750.00	20	\$15,000	
32 Gal. Recycling Containers	EA	\$750.00	20	\$15,000	
Dumpster Enclosure	EA	\$5,000.00	1	\$5,000	
Bollards	EA	\$750.00	10	\$7,500	
CATEGORY SUBTOTAL				\$177,500	

Walk-In Camping Area					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Exterior Signs and Posts					
Regulatory	EA	\$750.00	8	\$6,000	Road directional signs Building standard mounted site map and information
Informational/Interpretive Panels	EA	\$1,500.00	3	\$4,500	
Area Identification Sign	EA	\$1,000.00	1	\$1,000	Site and road wayfinding
Wayfinding	EA	\$750.00	12	\$9,000	
Informational/Interpretive Kiosk	EA	\$7,500.00	1	\$7,500	
CATEGORY SUBTOTAL				\$28,000	
Landscaping					
Tree Planting	EA	\$500.00	25	\$12,500	Shade trees
Ornamental Tree Planting	EA	\$400.00	75	\$30,000	Small ornamental trees
Shrub Planting	EA	\$30.00	300	\$9,000	Ornamental shrubs
Stone Mulch	CY	\$30.00	250	\$7,500	Crushed stone mulch
Native Turf	SF	\$0.50	173,100	\$86,550	Mown turf
Native Grasses Seeding	SF	\$0.25	112,200	\$28,050	Disturbed areas
CATEGORY SUBTOTAL				\$173,600	
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc. Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Utilities					
4" Water Line	LF	\$50	0	\$0	
4" Valves and Appurtenances	EA	\$1,500	0	\$0	
2" Service Lines	LF	\$40	100	\$4,000	
2" Valves and Appurtenances	LS	\$2,000	1	\$2,000	
8" Sanitary Drain Piping	LF	\$40	350	\$14,000	
Sanitary Manholes	EA	\$3,000	1	\$3,000	
6" Sanitary Services	LF	\$30	20	\$600	
4" Sanitary Cleanouts	EA	\$500	1	\$500	
Fire Hydrants	EA	\$5,000	1	\$5,000	
Electric Secondary Runs from Exist. Transformer	LS	\$5,000	1	\$5,000	
CATEGORY SUBTOTAL				\$34,100	
Lighting					
Electrical Transformer	Allow	\$10,000	1	\$10,000	Dark sky compatible pole mounted lighting
Electric Distribution Lines and Conduit	Allow	\$7,500	1	\$7,500	
Street Lighting	Each	\$3,500	4	\$14,000	Dark sky compatible pole mounted lighting
Pedestrian Area Lighting	Each	\$2,500	16	\$40,000	
CATEGORY SUBTOTAL				\$71,500	
Architecture					
Comfort Station (Renovate)	SF	\$85.00	1,500	\$127,500	2 buildings total
Comfort Station FF&E (Renovate)	LS	\$1,000.00	1	\$1,000	
Comfort Station (New)	SF	\$145.00	1,300	\$188,500	
Comfort Station FF&E (New)	LS	\$1,000.00	2	\$2,000	4 large buildings or 8 small buildings
Common Building	SF	\$50.00	1,200	\$60,000	
CATEGORY SUBTOTAL				\$379,000	
Subtotal of Direct Construction Costs				\$1,565,915	

Walk-In Camping Area					
Development Phase 5					
			PHASE 5		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Location Factor	9%			\$140,900	
Remoteness Factor (49 miles)	10%			\$156,600	
Federal Wage Rate Factor	6%			\$46,980	
Design Contingency	25%			\$391,500	
Total Direct Construction Cost				\$2,301,895	
Standard General Conditions	10%			\$156,600	
Government General Conditions	5%			\$78,300	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$2,536,795	
Overhead	12%			\$187,900	
Profit	8%			\$125,300	
Estimated Net Construction Cost				\$2,849,995	
Contracting Method Adjustment (Small Business)	15%			\$234,900	
Inflation (4% per year to 2014)	20%			\$313,200	
Total Estimated Net Cost of Construction				\$3,398,000	

Eco-Tent Area								
Development Phases 1 & 2								
			PHASE 1		PHASE 2			
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES	
Demolition & Traffic Control								
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	1	\$5,000	Construction traffic control Existing road and parking area	
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	1,617	\$4,851	0	\$0		
CATEGORY SUBTOTAL				\$9,851		\$5,000		
Clearing and Grubbing								
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	1	\$2,500	All construction areas	
Tree Removal	EA	\$2,500.00	1	\$2,500	1	\$2,500		
Rock Removal	Allow	\$10,000.00	1	\$10,000	1	\$10,000		
CATEGORY SUBTOTAL				\$15,000		\$15,000		
Site Excavation and Grading								
Excavation and Backfill	CY	\$4.00	3,000	\$12,000	3,120	\$12,480	Assume on site balance	
Finish and Fine Grading	SF	\$0.20	165,225	\$33,045	165,225	\$33,045	Disturbed areas	
CATEGORY SUBTOTAL				\$45,045		\$45,525		
Roads and Parking								
Asphalt Base Course	TON	\$40.00	1,150	\$46,000	1,150	\$46,000	Assumes 6" depth recycled asphalt Assumes 4" depth new paved areas Assumes 2" depth existing paved areas	
Asphalt Paving	TON	\$135.00	755	\$101,925	760	\$102,600		
Asphalt Overlay Paving	TON	\$135.00	90	\$12,150	92	\$12,420		
Pavement Marking	LS	\$5,000.00	1	\$5,000	1	\$5,000	Flush curb at paving edge Accessible parking space Concrete ramp	
Concrete Curbs	LF	\$12.00	1,230	\$14,760	1,203	\$14,436		
Concrete Wheel Stop	EA	\$250.00	25	\$6,250	25	\$6,250		
Accessible Ramp	EA	\$1,500.00	4	\$6,000	4	\$6,000		
CATEGORY SUBTOTAL				\$192,085		\$192,706		
Pathways/Walkways								
Concrete Walkways	SF	\$5.00	21,500	\$107,500	21,071	\$105,355	Salt finish integral color concrete 4" depth Salt finish integral color concrete 6" depth at service areas Concrete pedestrian pavers	
Concrete Walkways Vehicle Access	SF	\$7.50	1,600	\$12,000	1,600	\$12,000		
Plaza Paving	SF	\$10.00	750	\$7,500	750	\$7,500		
CATEGORY SUBTOTAL				\$127,000		\$124,855		
Camp Sites								
Campsite Marker	EA	\$500.00	20	\$10,000	20	\$10,000	Marker post with site identification	
CATEGORY SUBTOTAL				\$10,000		\$10,000		
Site Furnishings								
8' Benches	EA	\$1,000.00	20	\$20,000	20	\$20,000	Concrete at edge of road/pedestrian/service area	
8' Picnic Tables	EA	\$1,200.00	21	\$25,200	21	\$25,200		
BBQ Grills	EA	\$450.00	22	\$9,900	22	\$9,900		
Fire Rings	EA	\$450.00	22	\$9,900	22	\$9,900		
32 Gal. Trash Containers	EA	\$750.00	5	\$3,750	5	\$3,750		
32 Gal. Recycling Containers	EA	\$750.00	5	\$3,750	5	\$3,750		
Dumpster Enclosure	EA	\$5,000.00	1	\$5,000	1	\$5,000		
Bollards	EA	\$750.00	5	\$3,750	5	\$3,750		
CATEGORY SUBTOTAL				\$81,250		\$81,250		

Eco-Tent Area							
Development Phases 1 & 2							
			PHASE 1		PHASE 2		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Exterior Signs and Posts							
Regulatory	EA	\$750.00	4	\$3,000	4	\$3,000	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	3	\$4,500	3	\$4,500	Building standard mounted site map and information
Area Identification Sign	EA	\$1,000.00	1	\$1,000	1	\$1,000	
Wayfinding	EA	\$750.00	8	\$6,000	8	\$6,000	Site and road wayfinding
Informational/Interpretive Kiosk	EA	\$7,500.00	1	\$7,500	1	\$7,500	
CATEGORY SUBTOTAL				\$22,000		\$22,000	
Landscaping							
Tree Planting	EA	\$500.00	22	\$11,000	20	\$10,000	Shade trees
Ornamental Tree Planting	EA	\$400.00	35	\$14,000	35	\$14,000	Small ornamental trees
Shrub Planting	EA	\$30.00	120	\$3,600	120	\$3,600	Ornamental shrubs
Stone Mulch	CY	\$30.00	195	\$5,850	190	\$5,700	Crushed stone mulch
Native Turf	SF	\$0.50	25,000	\$12,500	23,000	\$11,500	Mown turf
Native Grasses Seeding	SF	\$0.25	30,400	\$7,600	26,400	\$6,600	Disturbed areas
CATEGORY SUBTOTAL				\$54,550		\$51,400	
Drainage Improvements							
Erosion Control	LS	\$2,500.00	1	\$2,500	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc Culverts and drainage	Allow	\$10,000.00	1	\$10,000	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000		\$20,000	
Utilities							
2" Service Lines	LF	\$40	250	\$10,000	250	\$10,000	
2" Valves and Appurtenances	LS	\$2,000	1	\$2,000	1	\$2,000	
8" Sanitary Drain Piping	LF	\$40	400	\$16,000	400	\$16,000	
Sanitary Manholes	EA	\$3,000	2	\$6,000	2	\$6,000	
6" Sanitary Services	LF	\$30	100	\$3,000	100	\$3,000	
4" Sanitary Clean Outs	EA	\$500	1	\$500	1	\$500	
Fire Hydrants	EA	\$5,000	1	\$5,000	1	\$5,000	
Electric Secondary Runs from Exist. Transformer	LS	\$20,000	1	\$20,000	1	\$20,000	
CATEGORY SUBTOTAL				\$62,500		\$62,500	
Lighting							
Electrical Transformer	Allow	\$10,000	1	\$10,000	0	\$0	
Electric Distribution Lines and Conduit	Allow	\$7,500	1	\$7,500	1	\$7,500	
Street Lighting	Each	\$3,500	2	\$7,000	2	\$7,000	Dark sky compatible pole mounted lighting
Pedestrian Area Lighting	Each	\$2,500	6	\$15,000	6	\$15,000	Dark sky compatible pole mounted lighting
CATEGORY SUBTOTAL				\$39,500		\$29,500	
Architecture							
Common Eco-Tent Building	SF	\$135.00	1,250	\$168,750	1,250	\$168,750	SF covers 2 new buildings
Common Eco-Tent Building FFE	LS	\$1,500.00	1	\$1,500	1	\$1,500	
Eco-Tent Structure	SF	\$20.00	3,600	\$72,000	3,600	\$72,000	SF covers 40 units
CATEGORY SUBTOTAL				\$242,250		\$242,250	
Subtotal of Direct Construction Costs				\$921,031		\$901,986	

Eco-Tent Area						
Development Phases 1 & 2						
			PHASE 1		PHASE 2	
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST
Location Factor	9%			\$82,900		\$81,200
Remoteness Factor (49 miles)	10%			\$92,100		\$90,200
Federal Wage Rate Factor	6%			\$27,630		\$27,060
Design Contingency	25%			\$230,300		\$225,500
Total Direct Construction Cost				\$1,353,961		\$1,325,946
Standard General Conditions	10%			\$92,100		\$90,200
Government General Conditions	5%			\$46,100		\$45,100
Historic Preservation Factor				\$0		\$0
Subtotal Net Construction Cost				\$1,492,161		\$1,461,246
Overhead	12%			\$110,500		\$108,200
Profit	8%			\$73,700		\$72,200
Estimated Net Construction Cost				\$1,676,361		\$1,641,646
Contracting Method Adjustment (Small Business)	15%			\$138,200		\$135,300
Inflation (Compounded Yearly to 2011)	4%			\$36,800		\$72,200
Total Estimated Net Cost of Construction				\$1,851,000		\$1,849,000

Eco-Pond Area					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Construction traffic control
CATEGORY SUBTOTAL				\$5,000	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	All construction areas
Tree Removal	EA	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$15,000	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	1,640	\$6,560	Assume on site balance
Finish and Fine Grading	SF	\$0.20	88,632	\$17,726	Disturbed areas
CATEGORY SUBTOTAL				\$24,286	
Roads and Parking					
Asphalt Base Course	TON	\$40.00	511	\$20,440	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	340	\$45,900	Assumes 4" depth new paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	
Concrete Curbs	LF	\$12.00	690	\$8,280	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	25	\$6,250	Accessible parking space
Accessible Ramp	EA	\$1,500.00	2	\$3,000	Concrete ramp
CATEGORY SUBTOTAL				\$88,870	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	3,471	\$17,355	Salt finish integral color concrete 4" depth
Plaza Paving	SF	\$10.00	500	\$5,000	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$22,355	
Site Furnishings					
8' Benches	EA	\$1,000.00	8	\$8,000	
32 Gal. Trash Containers	EA	\$750.00	4	\$3,000	
32 Gal. Recycling Containers	EA	\$750.00	4	\$3,000	
CATEGORY SUBTOTAL				\$14,000	
Exterior Signs and Posts					
Regulatory	EA	\$750.00	4	\$3,000	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	2	\$3,000	Building standard mounted site map and information
Area Identification Sign	EA	\$1,000.00	1	\$1,000	
Wayfinding	EA	\$750.00	8	\$6,000	Site and road wayfinding
Informational/Interpretive Kiosk	EA	\$7,500.00	1	\$7,500	
CATEGORY SUBTOTAL				\$20,500	
Landscaping					
Tree Planting	EA	\$500.00	10	\$5,000	Shade trees
Ornamental Tree Planting	EA	\$400.00	10	\$4,000	Small ornamental trees
Shrub Planting	EA	\$30.00	100	\$3,000	Ornamental shrubs
Stone Mulch	CY	\$30.00	130	\$3,900	Crushed stone mulch
Planting Bed Border	LF	\$10.00	250	\$2,500	Flush concrete border
Native Turf	SF	\$0.50	25,000	\$12,500	Mown turf pathway
Native Grasses Seeding	SF	\$0.25	21,000	\$5,250	Disturbed areas
CATEGORY SUBTOTAL				\$36,150	

Eco-Pond Area					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls Allowance for bioswales, ponds, etc.
Best Management Practices	ALLOW	\$7,500.00	1	\$7,500	
Misc. Culverts and Drainage	ALLOW	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Lighting					
Electrical Transformer	Allow	\$10,000	1	\$10,000	Dark sky compatible pole mounted lighting Dark sky compatible pole mounted lighting
Electric Distribution Lines and Conduit	Allow	\$7,500	1	\$7,500	
Street Lighting	Each	\$3,500	2	\$7,000	
Pedestrian Area Lighting	Each	\$2,500	4	\$10,000	
CATEGORY SUBTOTAL				\$34,500	
Architecture					
Pavilion	LS	\$10,500.00	1	\$10,500	
CATEGORY SUBTOTAL				\$10,500	
Subtotal of Direct Construction Costs				\$291,161	
Location Factor	9%			\$26,200	
Remoteness Factor (49 miles)	10%			\$29,100	
Federal Wage Rate Factor	6%			\$8,736	
Design Contingency	25%			\$72,800	
Total Direct Construction Cost				\$427,997	
Standard General Conditions	10%			\$29,100	
Government General Conditions	5%			\$14,600	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$471,697	
Overhead	12%			\$34,900	
Profit	8%			\$23,300	
Estimated Net Construction Cost				\$529,897	
Contracting Method Adjustment (Small Business)	15%			\$43,700	
Inflation (4% per year to 2015)	24%			\$69,900	
Total Estimated Net Cost of Construction				\$643,000	

Drive-In Tent Camping Area (Loop A)					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Construction traffic control
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	11,600	\$34,800	Existing road and parking area
CATEGORY SUBTOTAL				\$39,800	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	All construction areas
Tree Removal	EA	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$15,000	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	1,283	\$5,132	Assume on site balance
Finish and Fine Grading	SF	\$0.20	105,000	\$21,000	Disturbed areas
CATEGORY SUBTOTAL				\$26,132	
Roads and Parking					
Asphalt Base Course	TON	\$40.00	327	\$13,080	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	215	\$29,025	Assumes 4" depth. new paved areas
Asphalt Overlay Paving	TON	\$135.00	1,307	\$176,445	Assumes 2" depth. existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	Accessible parking space
Concrete Wheel Stop	EA	\$250.00	58	\$14,500	
CATEGORY SUBTOTAL				\$238,050	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	7,800	\$39,000	Salt finish integral color concrete 4" depth
Plaza Paving	SF	\$10.00	500	\$5,000	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$44,000	
Camp Sites					
Campsite Marker	EA	\$500.00	58	\$29,000	Marker post with site identification
CATEGORY SUBTOTAL				\$29,000	
Site Furnishings					
8' Picnic Tables	EA	\$1,200.00	58	\$69,600	Concrete at edge of road/pedestrian/service area
BBQ Grills	EA	\$450.00	58	\$26,100	
Dumpster Enclosure	EA	\$5,000.00	1	\$5,000	
Bollards	EA	\$750.00	20	\$15,000	
CATEGORY SUBTOTAL				\$115,700	
Exterior Signs and Posts					
Regulatory	EA	\$750.00	8	\$6,000	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	2	\$3,000	Building standard mounted site map and information
Area Identification Sign	EA	\$1,000.00	1	\$1,000	
Wayfinding	EA	\$750.00	16	\$12,000	
Informational/Interpretive Kiosk	EA	\$7,500.00	2	\$15,000	
CATEGORY SUBTOTAL				\$37,000	

Drive-In Tent Camping Area (Loop A)					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Landscaping					
Tree Planting	EA	\$500.00	80	\$40,000	Shade trees
Ornamental Tree Planting	EA	\$400.00	36	\$14,400	Small ornamental trees
Shrub Planting	EA	\$30.00	120	\$3,600	Ornamental shrubs
Stone Mulch	CY	\$30.00	100	\$3,000	Crushed stone mulch
Native Grasses Seeding	SF	\$0.25	23,200	\$5,800	Disturbed areas
CATEGORY SUBTOTAL				\$66,800	
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc. Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Lighting and Site Electrical					
Electrical Transformer	Allow	\$10,000	1	\$10,000	
Electric Distribution Lines and Conduit	Allow	\$7,500	1	\$7,500	
Street Lighting	Each	\$3,500	4	\$14,000	Dark sky compatible pole mounted lighting
Pedestrian Area Lighting	Each	\$2,500	12	\$30,000	Dark sky compatible pole mounted lighting
CATEGORY SUBTOTAL				\$61,500	
Architecture					
Comfort Station Renovation	SF	\$85.00	1,520	\$129,200	2 buildings total
CATEGORY SUBTOTAL				\$129,200	
Subtotal of Direct Construction Costs				\$822,182	
Location Factor	9%			\$74,000	
Remoteness Factor (49 miles)	10%			\$82,200	
Federal Wage Rate Factor	6%			\$24,666	
Design Contingency	25%			\$205,500	
Total Direct Construction Cost				\$1,208,548	
Standard General Conditions	10%			\$82,200	
Government General Conditions	5%			\$41,100	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$1,331,848	
Overhead	12%			\$98,700	
Profit	8%			\$65,800	
Estimated Net Construction Cost				\$1,496,348	
Contracting Method Adjustment (Small Business)	15%			\$123,300	
Inflation (4% per year to 2015)	24%			\$197,300	
Total Estimated Net Cost of Construction				\$1,817,000	

Recreational Vehicle (RV) Campground (Loop T)					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Construction traffic control
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	30,610	\$91,830	Existing road and parking area
CATEGORY SUBTOTAL				\$96,830	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	All construction areas
Tree Removal	EA	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$15,000	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	400	\$1,600	Assume on site balance
Finish and Fine Grading	SF	\$0.20	11,000	\$2,200	Disturbed areas
CATEGORY SUBTOTAL				\$3,800	
Roads and Parking					
Asphalt Overlay Paving	TON	\$135.00	3,320	\$448,200	Assumes 2" depth existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	
Concrete Wheel Stop	EA	\$250.00	59	\$14,750	Accessible parking space
Accessible Ramp	EA	\$1,500.00	14	\$21,000	Concrete ramp for trail
CATEGORY SUBTOTAL				\$488,950	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	10,000	\$50,000	Salt finish integral color concrete 4" depth
Plaza Paving	SF	\$10.00	500	\$5,000	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$55,000	
Camp Sites					
Campsite Marker	EA	\$500.00	59	\$29,500	Marker post with site identification
CATEGORY SUBTOTAL				\$29,500	
Site Furnishings					
8' Picnic Tables	EA	\$1,200.00	59	\$70,800	Concrete at edge of road/pedestrian/service area
BBQ Grills	EA	\$450.00	59	\$26,550	
Dumpster Enclosure	EA	\$5,000.00	1	\$5,000	
Bollards	EA	\$750.00	2	\$1,500	
CATEGORY SUBTOTAL				\$103,850	
Exterior Signs and Posts					
Regulatory	EA	\$750.00	8	\$6,000	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	2	\$3,000	Building/standard mounted site map and information
Area Identification Sign	EA	\$1,000.00	1	\$1,000	
Wayfinding	EA	\$750.00	16	\$12,000	
Informational/Interpretive Kiosk	EA	\$7,500.00	2	\$15,000	
CATEGORY SUBTOTAL				\$37,000	

Recreational Vehicle (RV) Campground (Loop T)					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Landscaping					
Tree Planting	EA	\$500.00	100	\$50,000	Shade trees
Ornamental Tree Planting	EA	\$400.00	20	\$8,000	Small ornamental trees
Shrub Planting	EA	\$30.00	120	\$3,600	Ornamental shrubs
Native Grasses Seeding	SF	\$0.25	243,668	\$60,917	Disturbed areas
CATEGORY SUBTOTAL				\$122,517	
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc Culverts and drainage	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Lighting and Site Electrical					
Electrical Transformer	Allow	\$10,000	1	\$10,000	
Electric Distribution Lines and Conduit	Allow	\$50,000	1	\$50,000	
Street Lighting	Each	\$3,500	4	\$14,000	Dark sky compatible pole mounted lighting
Pedestrian Area Lighting	Each	\$2,500	8	\$20,000	Dark sky compatible pole mounted lighting
CATEGORY SUBTOTAL				\$94,000	
Architecture					
Comfort Station Renovation	SF	\$85.00	1,060	\$90,100	2 buildings total
CATEGORY SUBTOTAL				\$90,100	
Subtotal of Direct Construction Costs				\$1,156,547	
Location Factor		9%		\$104,100	
Remoteness Factor (49 miles)		10%		\$115,700	
Federal Wage Rate Factor		6%		\$34,698	
Design Contingency		25%		\$289,100	
Total Direct Construction Cost				\$1,700,145	
Standard General Conditions		10%		\$115,700	
Government General Conditions		5%		\$57,800	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$1,873,645	
Overhead		12%		\$138,800	
Profit		8%		\$92,500	
Estimated Net Construction Cost				\$2,104,945	
Contracting Method Adjustment (Small Business)		15%		\$173,500	
Inflation (4% per year to 2015)		24%		\$277,600	
Total Estimated Net Cost of Construction				\$2,556,000	

Campgrounds Fee Station					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	Salvage and store misc. items allowance
CATEGORY SUBTOTAL				\$17,500	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	All construction areas
Tree Removal	EA	\$2,500.00	1	\$2,500	
Rock Removal	Allow	\$1,000.00	1	\$1,000	
CATEGORY SUBTOTAL				\$6,000	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	550	\$2,200	Assume on site balance
Finish and Fine Grading	SF	\$0.20	25,560	\$5,112	Disturbed areas
CATEGORY SUBTOTAL				\$7,312	
Roads and Parking					
Asphalt Base Course	TON	\$40.00	413	\$16,520	Assumes 6" depth recycled asphalt
Asphalt Paving	TON	\$135.00	273	\$36,855	Assumes 4" depth new paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	
Concrete Curbs	LF	\$12.00	870	\$10,440	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	0	\$0	Accessible parking space
CATEGORY SUBTOTAL				\$68,815	
Pathways/Walkways					
Concrete Walkways	SF	\$5.00	340	\$1,700	Salt finish integral color concrete 4" depth
CATEGORY SUBTOTAL				\$1,700	
Site Furnishings					
32 Gal. Trash Containers	EA	\$750.00	2	\$1,500	Concrete at edge of road/pedestrian/service area
32 Gal. Recycling Containers	EA	\$750.00	2	\$1,500	
Bollards	EA	\$750.00	4	\$3,000	
CATEGORY SUBTOTAL				\$6,000	
Exterior Signs and Posts					
Regulatory	EA	\$750.00	8	\$6,000	Road directional signs
Fee Tube	EA	\$1,500.00	1	\$1,500	After hours check-in
Area Identification Sign	EA	\$1,000.00	1	\$1,000	
Wayfinding	EA	\$750.00	0	\$0	
Informational/Interpretive Kiosk	EA	\$7,500.00	1	\$7,500	
CATEGORY SUBTOTAL				\$16,000	
Landscaping					
Tree Planting	EA	\$500.00	8	\$4,000	Shade trees
Ornamental Tree Planting	EA	\$400.00	3	\$1,200	Small ornamental trees
Shrub Planting	EA	\$30.00	50	\$1,500	Ornamental shrubs
Stone Mulch	CY	\$30.00	100	\$3,000	Crushed stone mulch
Planting Bed Border	LF	\$10.00	300	\$3,000	Flush concrete border
Native Grasses Seeding	SF	\$0.25	4,500	\$1,125	Disturbed areas
CATEGORY SUBTOTAL				\$13,825	

Campgrounds Fee Station					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Drainage Improvements					
Erosion Control	LS	\$2,500.00	1	\$2,500	Construction controls Allowance for bioswales, ponds, etc.
Best Management Practices	Allow	\$7,500.00	1	\$7,500	
Misc. Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000	
Utilities					
3/4" Service Lines	LF	\$25	50	\$1,250	
3/4" Valves and Appurtenances	LS	\$2,000	1	\$2,000	
8" Sanitary Drain Piping	LF	\$30	200	\$6,000	
48" Sanitary Manholes	LS	\$3,000	1	\$3,000	
6" Sanitary Service	LF	\$30	20	\$600	
4" Sanitary Cleanout	EA	\$500	1	\$500	
Fire Hydrants	EA	\$5,000	1	\$5,000	
Electrical Secondary Service	EA	\$5,000	1	\$5,000	
Communications Service	EA	\$1,500	1	\$1,500	
CATEGORY SUBTOTAL				\$24,850	
Lighting + Site Electrical					
Electrical Transformer	Allow	\$10,000	1	\$10,000	Dark sky compatible pole mounted lighting Dark sky compatible pole mounted lighting
Electric Distribution Lines and Conduit	Allow	\$7,500	1	\$7,500	
Pedestrian Area Lighting	Each	\$2,500	2	\$5,000	
Pedestrian Bollard Lighting	Each	\$1,500	8	\$12,000	
CATEGORY SUBTOTAL				\$34,500	
Architecture					
Fee Station	SF	\$60.00	400	\$24,000	Relocating and reinstalling
CATEGORY SUBTOTAL				\$24,000	
Subtotal of Direct Construction Costs				\$240,502	
Location Factor	9%			\$21,600	
Remoteness Factor (49 miles)	10%			\$24,100	
Federal Wage Rate Factor	6%			\$7,218	
Design Contingency	25%			\$60,100	
Total Direct Construction Cost				\$353,520	
Standard General Conditions	10%			\$24,100	
Government General Conditions	5%			\$12,000	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$389,620	
Overhead	12%			\$28,900	
Profit	8%			\$19,200	
Estimated Net Construction Cost				\$437,720	
Contracting Method Adjustment (Small Business)	15%			\$36,100	
Inflation (4% per year to 2015)	24%			\$57,700	
Total Estimated Net Cost of Construction				\$532,000	

Maintenance Area									
Development Phases 1, 2 & 3									
			PHASE 1		PHASE 2		PHASE 3		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control									
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	0	\$0	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	0	\$0	1	\$7,500	Salvage and store misc. items allowance
Remove Existing Utilities	Allow	\$10,000.00	1	\$10,000	0	\$0	2	\$20,000	Remove old water, sewer, elec. & comm. lines
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	Traffic control signs and barriers
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	5,890	\$17,670	0	\$0	11,780	\$35,340	
Remove, Crush and Stockpile Existing Concrete	SY	\$4.50	550	\$2,475	0	\$0	1,080	\$4,860	
CATEGORY SUBTOTAL				\$52,645	\$5,000		\$82,700		
Clearing and Grubbing									
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	0	\$0	1	\$2,500	Site landscape areas
Tree Transplanting	Allow	\$10,000.00	1	\$10,000	0	\$0	1	\$10,000	Transplant existing sabel palms
Tree Removal	Allow	\$2,500.00	1	\$2,500	0	\$0	1	\$2,500	
Rock Removal	Allow	\$2,500.00	1	\$2,500	0	\$0	1	\$2,500	Allowance for rock excavation
CATEGORY SUBTOTAL				\$17,500	\$0		\$17,500		
Site Excavation and Grading									
Excavation and Backfill	CY	\$4.00	900	\$3,600	200	\$800	1,600	\$6,400	Assume on site balance
Finish and Fine Grading	SF	\$0.20	90,000	\$18,000	6,000	\$1,200	180,000	\$36,000	Disturbed areas
CATEGORY SUBTOTAL				\$21,600	\$2,000		\$42,400		
Roads and Parking									
Asphalt Overlay Paving	TON	\$135.00	1,000	\$135,000	500	\$67,500	1,000	\$135,000	Assumes 2" depth existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	
Concrete Curbs	LF	\$12.00	1,500	\$18,000	100	\$1,200	200	\$2,400	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	20	\$5,000	5	\$1,250	5	\$1,250	Accessible parking space
Accessible Ramp	EA	\$1,500.00	2	\$3,000	0	\$0	2	\$3,000	Concrete ramp
CATEGORY SUBTOTAL				\$166,000	\$74,950		\$146,650		
Pathways/Walkways									
Concrete Walkways	SF	\$5.00	3,000	\$15,000	1,500	\$7,500	3,500	\$17,500	Salt finish integral color concrete 4" depth
Concrete Walkways Vehicle Access	SF	\$7.50	10,890	\$81,675	0	\$0	0	\$0	Salt finish integral color concrete 6" depth at service areas
Plaza Paving	SF	\$10.00	150	\$1,500	0	\$0	350	\$3,500	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$98,175	\$7,500		\$21,000		
Site Furnishings									
Maintenance Boat Hoist - Boat Transfer Vehicle and Trailer	LS	\$125,000.00	0	\$0	1	\$125,000	0	\$0	
8' Benches	EA	\$1,000.00	1	\$1,000	0	\$0	3	\$3,000	
8' Picnic Tables	EA	\$1,200.00	1	\$1,200	0	\$0	3	\$3,600	
BBQ Grills	EA	\$450.00	1	\$450	0	\$0	3	\$1,350	
32 Gal. Trash Containers	EA	\$750.00	2	\$1,500	1	\$750	0	\$0	
32 Gal. Recycling Containers	EA	\$750.00	2	\$1,500	1	\$750	0	\$0	
CATEGORY SUBTOTAL				\$5,650	\$126,500		\$7,950		
Exterior Signs and Posts									
Regulatory	EA	\$750.00	2	\$1,500	1	\$750	1	\$750	Road directional signs
Informational/Interpretive Panels	EA	\$1,500.00	0	\$0	0	\$0	0	\$0	
Area Identification Sign	EA	\$1,000.00	1	\$1,000	0	\$0	1	\$1,000	
Wayfinding	EA	\$750.00	3	\$2,250	0	\$0	1	\$750	Site and road wayfinding
CATEGORY SUBTOTAL				\$4,750	\$750		\$2,500		

Maintenance Area									
Development Phases 1, 2 & 3									
			PHASE 1		PHASE 2		PHASE 3		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Landscaping									
Tree Planting	EA	\$500.00	3	\$1,500	0	\$0	5	\$2,500	Shade trees
Ornamental Tree Planting	EA	\$400.00	1	\$400	0	\$0	3	\$1,200	Small ornamental trees
Shrub Planting	EA	\$30.00	20	\$600	0	\$0	30	\$900	Ornamental shrubs
Stone Mulch	CY	\$30.00	30	\$900	0	\$0	80	\$2,400	Crushed stone landscape mulch 6" depth
Planting Bed Border	LF	\$10.00	200	\$2,000	0	\$0	100	\$1,000	Flush concrete border
Native Grasses Seeding	SF	\$0.25	10,000	\$2,500	3,000	\$750	20,000	\$5,000	Disturbed areas restoration
Stone Paving	SF	\$3.00	800	\$2,400	200	\$600		\$0	Crushed stone pedestrian areas 8" depth
CATEGORY SUBTOTAL				\$10,300		\$1,350		\$13,000	
Drainage Improvements									
Erosion Control	LS	\$2,500.00	1	\$2,500	1	\$2,500	0	\$0	Construction controls
Best Management Practices	ALLOW	\$7,500.00	1	\$7,500	1	\$7,500	0	\$0	Allowance for bioswales, ponds, etc.
Misc. Culverts and Drainage	ALLOW	\$10,000.00	1	\$10,000	1	\$10,000	0	\$0	
CATEGORY SUBTOTAL				\$20,000		\$20,000		\$0	
Utilities									
2" Water Line Service	LF	\$40	325	\$13,000	25	\$1,000	0	\$0	
2" Valves and Appurtenances	LS	\$2,000	5	\$10,000	1	\$2,000	0	\$0	
6" Sanitary Drain Piping	LF	\$30	200	\$6,000	20	\$600	0	\$0	
4" Sanitary Cleanouts	EA	\$500	4	\$2,000	4	\$2,000	0	\$0	
Fire Hydrants	EA	\$5,000	1	\$5,000	0	\$0	1	\$5,000	
Electric Secondary Supply to New Buildings	LS	\$10,000	1	\$10,000	1	\$10,000	0	\$0	
Communications Supply to New Buildings	LS	\$5,000	1	\$5,000	1	\$5,000	0	\$0	
CATEGORY SUBTOTAL				\$51,000		\$20,600		\$5,000	
Lighting									
Electrical Transformer	Allow	\$10,000	1	\$10,000	0	\$0	0	\$0	
Electric Distribution Lines and Conduit	Allow	\$20,000	1	\$20,000	1	\$20,000	1	\$20,000	
Street Lighting	Each	\$3,500	4	\$14,000	0	\$0	8	\$28,000	Dark sky compatible pole mounted lighting
Pedestrian Area Lighting	Each	\$2,500	4	\$10,000	0	\$0	8	\$20,000	Dark sky compatible pole mounted lighting
CATEGORY SUBTOTAL				\$54,000		\$20,000		\$68,000	
Architecture									
Existing Warehouse Building Demolition	SF	\$4.00	6,300	\$25,200	0	\$0	0	\$0	
Concessioner Housekeeping Building	SF	\$165.00	2,000	\$330,000	0	\$0	0	\$0	
Concessioner Boat, Shuttle Bus & Yellow Bike Storage and Maintenance	SF	\$115.00	4,000	\$460,000	0	\$0	0	\$0	
Concessioner Common Building	SF	\$60.00	300	\$18,000	0	\$0	0	\$0	
Concessioner Office Building	SF	\$140.00	1,850	\$259,000	1,850	\$259,000	0	\$0	
Concessioner Warehouse Building	SF	\$120.00	1,850	\$222,000	1,850	\$222,000	0	\$0	
Concession Buildings FF&E	LS	\$45,000.00	1	\$45,000	0	\$0	0	\$0	
NPS Emergency Vehicle Building	LS	\$5,000.00	1	\$5,000	0	\$0	0	\$0	
CATEGORY SUBTOTAL				\$1,364,200		\$481,000		\$0	
Subtotal of Direct Construction Costs				\$1,865,820		\$759,650		\$406,700	

Maintenance Area									
Development Phases 1, 2 & 3									
			PHASE 1		PHASE 2		PHASE 3		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Location Factor	9%			\$167,900		\$68,400		\$36,600	
Remoteness Factor (49 miles)	10%			\$186,600		\$76,000		\$40,700	
Federal Wage Rate Factor	6%			\$55,974		\$22,788		\$12,204	
Design Contingency	25%			\$466,500		\$189,900		\$101,700	
Total Direct Construction Cost				\$2,742,794		\$1,116,738		\$597,904	
Standard General Conditions	10%			\$186,600		\$76,000		\$40,700	
Government General Conditions	5%			\$93,300		\$38,000		\$20,300	
Historic Preservation Factor				\$0		\$0		\$0	
Subtotal Net Construction Cost				\$3,022,694		\$1,230,738		\$658,904	
Overhead	12%			\$223,900		\$91,200		\$48,800	
Profit	8%			\$149,300		\$60,800		\$32,500	
Estimated Net Construction Cost				\$3,395,894		\$1,382,738		\$740,204	
Contracting Method Adjustment (Small Business)	15%			\$279,900		\$113,900		\$61,000	
Inflation (Compounded Yearly to 2012)	4%			\$74,600		\$60,800		\$48,800	
Total Estimated Net Cost of Construction				\$3,750,000		\$1,557,000		\$850,000	

Staff Housing Area									
Development Phases 1, 2 & 4									
			PHASE 1		PHASE 2		PHASE 4		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control									
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	1	\$10,000	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	1	\$7,500	1	\$7,500	Salvage and store misc. items allowance
Remove Existing Utilities	Allow	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	Remove old water, sewer, electric & communication lines
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	Traffic control signs and barriers
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	3,676	\$11,028	3,676	\$11,028	3,676	\$11,028	
Remove, Crush and Stockpile Existing Concrete	SY	\$4.50	383	\$1,724	383	\$1,724	383	\$1,724	
CATEGORY SUBTOTAL				\$40,252	\$40,252		\$40,252		
Clearing and Grubbing									
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	1	\$2,500	1	\$2,500	Site landscape areas
Tree Transplanting	Allow	\$10,000.00	1	\$10,000	1	\$10,000	1	\$10,000	Transplant existing sabel palms
Tree Removal	Allow	\$2,500.00	0	\$0	1	\$2,500	1	\$2,500	
Rock Removal	Allow	\$2,500.00	1	\$2,500	1	\$2,500	1	\$2,500	Allowance for rock excavation
CATEGORY SUBTOTAL				\$15,000	\$17,500		\$17,500		
Site Excavation and Grading									
Excavation and Backfill	CY	\$4.00	100	\$400	900	\$3,600	900	\$3,600	Assume on site balance
Finish and Fine Grading	SF	\$0.20	50,000	\$10,000	50,000	\$10,000	50,000	\$10,000	Disturbed areas
CATEGORY SUBTOTAL				\$10,400	\$13,600		\$13,600		
Roads and Parking									
NPS RV Site Paving	EA	\$10,000.00	4	\$40,000	0	\$0	0	\$0	Concrete spur parking
Concessioner RV Site Paving	EA	\$10,000.00	38	\$380,000	0	\$0	0	\$0	Concrete spur parking
Asphalt Overlay Paving	TON	\$135.00	374	\$50,490	374	\$50,490	374	\$50,490	Assumes 2" depth existing paved areas
Pavement Marking	LS	\$5,000.00	1	\$5,000	1	\$5,000	1	\$5,000	
Concrete Curbs	LF	\$12.00	2,270	\$27,240	2,270	\$27,240	2,270	\$27,240	Flush curb at paving edge
Concrete Wheel Stop	EA	\$250.00	10	\$2,500	10	\$2,500	10	\$2,500	Each parking space
Accessible Ramp	EA	\$1,500.00	2	\$3,000	2	\$3,000	2	\$3,000	Concrete ramp
CATEGORY SUBTOTAL				\$508,230	\$88,230		\$88,230		
Pathways/Walkways									
Concrete Walkways	SF	\$5.00	850	\$4,250	850	\$4,250	850	\$4,250	Salt finish integral color concrete 4" depth
Concrete Walkways Vehicle Access	SF	\$7.50	700	\$5,250	700	\$5,250	700	\$5,250	Salt finish integral color concrete 6" depth at service areas
Plaza Paving	SF	\$10.00	500	\$5,000	750	\$7,500	750	\$7,500	Concrete pedestrian pavers
CATEGORY SUBTOTAL				\$14,500	\$17,000		\$17,000		
Site Furnishings									
8' Benches	EA	\$1,000.00	2	\$2,000	3	\$3,000	3	\$3,000	
8' Picnic Tables	EA	\$1,200.00	4	\$4,800	4	\$4,800	4	\$4,800	
BBQ Grills	EA	\$450.00	2	\$900	3	\$1,350	3	\$1,350	
32 Gal. Trash Containers	EA	\$750.00	2	\$1,500	2	\$1,500	2	\$1,500	
32 Gal. Recycling Containers	EA	\$750.00	2	\$1,500	2	\$1,500	2	\$1,500	
Dumpster Enclosure	EA	\$2,500.00	1	\$2,500	1	\$2,500	0	\$0	
CATEGORY SUBTOTAL				\$13,200	\$14,650		\$12,150		

Staff Housing Area										
Development Phases 1, 2 & 4										
			PHASE 1		PHASE 2		PHASE 4			
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES	
Exterior Signs and Posts										
Regulatory	EA	\$750.00	2	\$1,500	2	\$1,500	2	\$1,500	Road directional signs Building/standard mounted site map and information	
Informational/Interpretive Panels	EA	\$1,500.00	1	\$1,500	1	\$1,500	1	\$1,500		
Area Identification Sign	EA	\$1,000.00	0	\$0	1	\$1,000	1	\$1,000		
Wayfinding	EA	\$750.00	4	\$3,000	4	\$3,000	4	\$3,000	Road and site wayfinding	
Park Signs	EA	\$5,000.00	0	\$0	3	\$15,000	3	\$15,000	New post or rail mounted panels	
CATEGORY SUBTOTAL				\$6,000		\$22,000		\$22,000		
Landscaping										
Tree Planting	EA	\$500.00	10	\$5,000	10	\$5,000	15	\$7,500	Shade trees	
Ornamental Tree Planting	EA	\$400.00	10	\$4,000	20	\$8,000	20	\$8,000	Small ornamental trees	
Shrub Planting	EA	\$30.00	100	\$3,000	200	\$6,000	200	\$6,000	Ornamental shrubs	
Stone Mulch	CY	\$30.00	50	\$1,500	150	\$4,500	150	\$4,500	Crushed stone landscape mulch 6" depth	
Planting Bed Border	LF	\$10.00	200	\$2,000	400	\$4,000	400	\$4,000	Flush concrete border	
Native Grasses Seeding	SF	\$0.25	42,130	\$10,533	42,130	\$10,533	42,130	\$10,533	Disturbed areas restoration	
CATEGORY SUBTOTAL				\$26,033		\$38,033		\$40,533		
Drainage Improvements										
Erosion Control	LS	\$2,500.00	1	\$2,500	1	\$2,500	1	\$2,500	Construction controls	
Best Management Practices	Allow	\$7,500.00	1	\$7,500	1	\$7,500	1	\$7,500	Allowance for bioswales, ponds, etc.	
Misc. Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	1	\$10,000	1	\$10,000		
CATEGORY SUBTOTAL				\$20,000		\$20,000		\$20,000		
Utilities										
2" Water Line Services	LF	\$25	50	\$1,250	50	\$1,250	50	\$1,250	Concrete spur parking Concrete spur parking	
2" Valves and Appurtenances	LS	\$2,000	1	\$2,000	1	\$2,000	1	\$2,000		
3/4" Service Lines	LF	\$20	100	\$2,000	100	\$2,000	100	\$2,000		
3/4" Valves and Appurtenances	LS	\$1,500	1	\$1,500	1	\$1,500	1	\$1,500		
8" Sanitary Drain Piping	LF	\$30	100	\$3,000	100	\$3,000	100	\$3,000		
4" Sanitary Clean Outs	EA	\$500	2	\$1,000	2	\$1,000	2	\$1,000		
Fire Hydrants	EA	\$5,000	1	\$5,000	0	\$0	1	\$5,000		
NPS RV Site Utility Hook-ups	EA	\$12,500.00	4	\$50,000	0	\$0	0	\$0		
Concessioner RV Site Utility Hook-ups	EA	\$12,500.00	38	\$475,000	0	\$0	0	\$0		
Electrical Service to New Buildings	LS	\$10,000	0	\$0	1	\$10,000	1	\$10,000		
Communications to New Buildings	LS	\$5,000	0	\$0	1	\$5,000	1	\$5,000		
CATEGORY SUBTOTAL				\$540,750		\$25,750		\$30,750		
Lighting										
Electrical Transformer	Allow	\$10,000	1	\$10,000	0	\$0	0	\$0		Dark sky compatible pole mounted lighting Dark sky compatible pole mounted lighting
Electric Distribution Lines and Conduit	Allow	\$20,000	1	\$20,000	1	\$20,000	1	\$20,000		
Street Lighting	Each	\$3,500	3	\$10,500	2	\$7,000	2	\$7,000		
Pedestrian Area Lighting	Each	\$2,500	3	\$7,500	2	\$5,000	2	\$5,000		
CATEGORY SUBTOTAL				\$48,000		\$32,000		\$32,000		

Staff Housing Area									
Development Phases 1, 2 & 4									
			PHASE 1		PHASE 2		PHASE 4		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Architecture									
Concessioner Dorm Housing (Renovate)	SF	\$85.00	9,600	\$816,000	0	\$0	0	\$0	27 units total
Concessioner Dorm Housing FF&E (Renovate)	LS	\$30,000.00	1	\$30,000	0	\$0	0	\$0	
Concessioner New Apartment Housing	SF	\$130.00	6,000	\$780,000	0	\$0	0	\$0	7 units total
Concessioner New Apartment Housing FF&E	LS	\$50,000.00	1	\$50,000	0	\$0	0	\$0	
Concessioner New Dorm Housing	SF	\$130.00	0	\$0	0	\$0	11,500	\$1,495,000	46 units total
Concessioner New Dorm Housing FF&E	LS	\$60,000.00	0	\$0	0	\$0	1	\$60,000	
Concessioner Common Pavilion	SF	\$60.00		\$0	500	\$30,000		\$0	2 buildings total
Concessioner Common Pavilion FF&E	LS	\$8,000.00		\$0	1	\$8,000		\$0	
Food Service Dining Hall and Common Building	SF	\$170.00	0	\$0	0	\$0	3,400	\$578,000	
Food Service Dining Hall FF&E and FS&E	LS	\$160,000.00	0	\$0	0	\$0	1	\$160,000	
Pavilions	LS	\$21,000.00	0	\$0	2	\$42,000	0	\$0	
CATEGORY SUBTOTAL				\$1,676,000		\$80,000		\$2,293,000	
Subtotal of Direct Construction Costs				\$2,918,364		\$409,014		\$2,627,014	
Location Factor	9%			\$262,700		\$36,800		\$236,400	
Remoteness Factor (49 miles)	10%			\$291,800		\$40,900		\$262,700	
Federal Wage Rate Factor	6%			\$87,552		\$12,270		\$78,810	
Design Contingency	25%			\$729,600		\$102,300		\$656,800	
Total Direct Construction Cost				\$4,290,016		\$601,284		\$3,861,724	
Standard General Conditions	10%			\$291,800		\$40,900		\$262,700	
Government General Conditions	5%			\$145,900		\$20,500		\$131,400	
Historic Preservation Factor				\$0		\$0		\$0	
Subtotal Net Construction Cost				\$4,727,716		\$662,684		\$4,255,824	
Overhead	12%			\$350,200		\$49,100		\$315,200	
Profit	8%			\$233,500		\$32,700		\$210,200	
Estimated Net Construction Cost				\$5,311,416		\$744,484		\$4,781,224	
Contracting Method Adjustment (Small Business)	15%			\$437,800		\$61,400		\$394,100	
Inflation (Compounded Yearly to 2013)	4%			\$116,700		\$32,700		\$420,300	
Total Estimated Net Cost of Construction				\$5,866,000		\$839,000		\$5,596,000	

Flamingo Area Roadways (Main Roads)							
Development Phases 1 & 2							
			PHASE 1		PHASE 2		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control							
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	1	\$7,500	Salvage and store misc items allowance
Construction Traffic Control	Allow	\$10,000.00	1	\$10,000	1	\$10,000	Traffic control signs and barriers
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	39,133	\$117,399	0	\$0	
CATEGORY SUBTOTAL				\$144,899		\$27,500	
Clearing and Grubbing							
Misc. Clear and Grubbing	AC	\$2,500.00	2	\$5,000	0	\$0	Site landscape areas
Tree Removal	Allow	\$2,500.00	1	\$2,500	0	\$0	
Rock Removal	Allow	\$2,500.00	1	\$2,500	0	\$0	Allowance for rock excavation
CATEGORY SUBTOTAL				\$10,000		\$0	
Site Excavation and Grading							
Excavation and Backfill	CY	\$4.00	4,300	\$17,200	0	\$0	Assume on site balance
Finish and Fine Grading	SF	\$0.20	176,000	\$35,200	0	\$0	Disturbed areas
CATEGORY SUBTOTAL				\$52,400		\$0	
Roads and Parking							
Asphalt Overlay Paving	TON	\$135.00	4,411	\$595,485	0	\$0	Assumes 2" depth existing paved areas
Pavement Marking	LS	\$10,000.00	1	\$10,000	0	\$0	
CATEGORY SUBTOTAL				\$605,485		\$0	
Road Trail Conversion							
Road/Trail Barriers & Signage	Allow	\$75,000.00	0	\$0	1	\$75,000	Traffic bollards and signage
New Detached Trail	SF	\$5.00	0	\$0	60,000	\$300,000	Assumes 12' wide trail
Pavement Marking	LS	\$10,000.00	0	\$0	1	\$10,000	
CATEGORY SUBTOTAL				\$0		\$385,000	
Exterior Signs and Posts							
Regulatory	EA	\$750.00	20	\$15,000	4	\$3,000	Road directional signs
Wayfinding	EA	\$750.00	18	\$13,500	2	\$1,500	
CATEGORY SUBTOTAL				\$28,500		\$4,500	
Landscaping							
Tree Planting	EA	\$500.00	120	\$60,000	0	\$0	Shade trees
Ornamental Tree Planting	EA	\$400.00	35	\$14,000	0	\$0	Small ornamental trees
Shrub Planting	EA	\$30.00	430	\$12,900	0	\$0	Ornamental shrubs
Native Grasses Seeding	SF	\$0.25	231,248	\$57,812	10,000	\$2,500	Disturbed areas restoration
CATEGORY SUBTOTAL				\$144,712		\$2,500	
Drainage Improvements							
Erosion Control	LS	\$2,500.00	1	\$2,500	1	\$2,500	Construction controls
Best Management Practices	Allow	\$7,500.00	1	\$7,500	1	\$7,500	Allowance for bioswales, ponds, etc.
Misc. Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	1	\$10,000	
CATEGORY SUBTOTAL				\$20,000		\$20,000	
Lighting							
Electrical Transformer	Allow	\$10,000	1	\$10,000	0	\$0	Dark sky compatible pole mounted lighting
Electric Distribution Lines and Conduit	Allow	\$20,000	1	\$20,000	0	\$0	
Street Lighting	Each	\$3,500	8	\$28,000	0	\$0	
CATEGORY SUBTOTAL				\$58,000		\$0	
Subtotal of Direct Construction Costs				\$1,063,996		\$439,500	

Flamingo Area Roadways (Main Roads)						
Development Phases 1 & 2						
			PHASE 1		PHASE 2	
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST
NOTES						
Location Factor	9%			\$95,800		\$39,600
Remoteness Factor (49 miles)	10%			\$106,400		\$44,000
Federal Wage Rate Factor	6%			\$31,920		\$13,188
Design Contingency	25%			\$266,000		\$109,900
Total Direct Construction Cost				\$1,564,116		\$646,188
Standard General Conditions	10%			\$106,400		\$44,000
Government General Conditions	5%			\$53,200		\$22,000
Historic Preservation Factor				\$0		\$0
Subtotal Net Construction Cost				\$1,723,716		\$712,188
Overhead	12%			\$127,700		\$52,700
Profit	8%			\$85,100		\$35,200
Estimated Net Construction Cost				\$1,936,516		\$800,088
Contracting Method Adjustment (Small Business)	15%			\$159,600		\$65,900
Inflation (Compounded Yearly to 2011)	4%			\$42,600		\$35,200
Total Estimated Net Cost of Construction				\$2,139,000		\$901,000

Site Wide Improvements (Infrastructure)									
Development Phases 1 & 2									
			PHASE 1		PHASE 2				
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES		
Demolition & Traffic Control									
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	1	\$10,000	Removal of misc. items allowance		
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	1	\$7,500	Salvage and store misc. items allowance		
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	0	\$0	Traffic control signs and barriers		
CATEGORY SUBTOTAL				\$22,500		\$17,500			
Drainage Improvements									
Erosion Control	LS	\$30,000.00	1	\$30,000	1	\$30,000	Construction controls		
Best Management Practices	Allow	\$7,500.00	1	\$7,500	1	\$7,500	Allowance for bioswales, ponds, etc.		
Misc. Culverts and Drainage	Allow	\$20,000.00	1	\$20,000	1	\$20,000			
Shoreline Protection (Rip Rap)	Allow	\$120,000.00	0	\$0	2	\$240,000	Import native rock for 4,000 lf of shoreline		
CATEGORY SUBTOTAL				\$57,500		\$297,500			
Utilities									
8" Water Main Loop	LF	\$ 60.00	7,270	\$436,200	0	\$0	To provide more pressure, volume and clean water		
Central Irrigation Controller	LS	\$ 15,000.00	0	\$0	0	\$0	For efficient use of irrigation water and ease of management		
Weather Station	LS	\$ 15,000.00	0	\$0	0	\$0	For accurate ET data for efficient irrigation system		
CATEGORY SUBTOTAL				\$436,200		\$0			
Subtotal of Direct Construction Costs				\$516,200		\$315,000			
Location Factor	9%			\$46,500		\$28,400			
Remoteness Factor (49 miles)	10%			\$51,600		\$31,500			
Federal Wage Rate Factor	6%			\$15,486		\$9,450			
Design Contingency	25%			\$129,100		\$78,800			
Total Direct Construction Cost				\$758,886		\$463,150			
Standard General Conditions	10%			\$51,600		\$31,500			
Government General Conditions	5%			\$25,800		\$15,800			
Historic Preservation Factor				\$0		\$0			
Subtotal Net Construction Cost				\$836,286		\$510,450			
Overhead	12%			\$61,900		\$37,800			
Profit	8%			\$41,300		\$25,200			
Estimated Net Construction Cost				\$939,486		\$573,450			
Contracting Method Adjustment (Small Business)	15%			\$77,400		\$47,300			
Inflation (Compounded Yearly to 2011)	4%			\$20,600		\$25,200			
Total Estimated Net Cost of Construction					\$1,037,000	\$646,000			

Flamingo Area Trails (Guy Bradley and Bike Sharing System)									
Development Phases 2 & 5									
			PHASE 2		PHASE 5				
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	QTY.	TOTAL COST	NOTES		
Demolition & Traffic Control									
Misc. Demolition and Remove	Allow	\$5,000.00	1	\$5,000	1	\$5,000	Removal of misc. items allowance		
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	1	\$5,000	Traffic control signs and barriers		
CATEGORY SUBTOTAL				\$10,000		\$10,000			
Clearing and Grubbing									
Misc. Clear and Grubbing	AC	\$2,500.00	1	\$2,500	1	\$2,500	Site landscape areas		
Tree Removal	Allow	\$2,500.00	1	\$2,500	1	\$2,500			
Rock Removal	Allow	\$2,500.00	1	\$2,500	1	\$2,500	Allowance for rock excavation		
CATEGORY SUBTOTAL				\$7,500		\$7,500			
Site Excavation and Grading									
Finish and Fine Grading	SF	\$0.10	50,000	\$5,000	50,000	\$5,000	Disturbed areas		
CATEGORY SUBTOTAL				\$5,000		\$5,000			
Trails									
Asphalt Base Course	TON	\$40.00	1,910	\$76,400	1,910	\$76,400	Assumes 6" depth recycled asphalt		
Asphalt Paving (Yellow Bike Trail)	TON	\$135.00	0	\$0	1,188	\$160,380	Assumes 4" depth. 12' wide x 4,000 LF		
Asphalt Paving (Shoreline Pedestrian Bike Trail)	TON	\$135.00	1,337	\$180,495	0	\$0	Assumes 4" depth. 12' wide x 4,500 LF		
CATEGORY SUBTOTAL				\$256,895		\$236,780			
Exterior Signs and Posts									
Regulatory	EA	\$750.00	7	\$5,250	7	\$5,250			
Wayfinding	EA	\$750.00	5	\$3,750	5	\$3,750			
CATEGORY SUBTOTAL				\$9,000		\$9,000			
Landscaping									
Native Grasses Seeding	SF	\$0.25	50,000	\$12,500	50,000	\$12,500	Disturbed areas restoration		
CATEGORY SUBTOTAL				\$12,500		\$12,500			
Drainage Improvements									
Erosion Control	LS	\$2,500.00	1	\$2,500	1	\$2,500	Construction controls		
Misc. Culverts and Drainage	Allow	\$10,000.00	1	\$10,000	1	\$10,000			
CATEGORY SUBTOTAL				\$12,500		\$12,500			
Subtotal of Direct Construction Costs				\$313,395		\$293,280			
Location Factor	9%			\$28,200		\$26,400			
Remoteness Factor (49 miles)	10%			\$31,300		\$29,300			
Federal Wage Rate Factor	6%			\$9,402		\$8,796			
Design Contingency	25%			\$78,300		\$73,300			
Total Direct Construction Cost				\$460,597		\$431,076			
Standard General Conditions	10%			\$31,300		\$29,300			
Government General Conditions	5%			\$15,700		\$14,700			
Historic Preservation Factor				\$0		\$0			
Subtotal Net Construction Cost				\$507,597		\$475,076			
Overhead	12%			\$37,600		\$35,200			
Profit	8%			\$25,100		\$23,500			
Estimated Net Construction Cost				\$570,297		\$533,776			
Contracting Method Adjustment (Small Business)	15%			\$47,000		\$44,000			
Inflation (Compounded Yearly to 2014)	4%			\$25,100		\$58,700			
Total Estimated Net Cost of Construction				\$642,000		\$636,000			

Loops B + C (Demolition and Restoration)					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	Removal of misc. items allowance
Misc. Demolition and Salvage	Allow	\$7,500.00	1	\$7,500	Salvage and store misc. items allowance
Remove Existing Utilities	Allow	\$10,000.00	1	\$10,000	Remove old water, sewer, electric & communication lines
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	Traffic control signs and barriers
Rotomill and Stockpile Existing Asphalt	SY	\$3.00	23,960	\$71,880	
CATEGORY SUBTOTAL				\$104,380	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	3	\$7,500	Restoration
Tree Removal	LS	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$17,500	
Site Excavation and Grading					
Excavation and Backfill	CY	\$4.00	3,675	\$14,700	Assume on site balance
Finish and Fine Grading	SF	\$0.20	430,623	\$86,125	Disturbed areas
CATEGORY SUBTOTAL				\$100,825	
Landscaping					
Native Grasses Seeding	SF	\$0.25	1,195,434	\$298,859	Disturbed areas
CATEGORY SUBTOTAL				\$298,859	
Drainage Improvements					
Erosion Control	LS	\$5,000.00	1	\$5,000	Construction controls
CATEGORY SUBTOTAL				\$5,000	
Subtotal of Direct Construction Costs				\$526,563	
Location Factor	9%			\$47,400	
Remoteness Factor (49 miles)	10%			\$52,700	
Federal Wage Rate Factor	6%			\$15,798	
Design Contingency	25%			\$131,600	
Total Direct Construction Cost				\$774,061	
Standard General Conditions	10%			\$52,700	
Government General Conditions	5%			\$26,300	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$853,061	
Overhead	12%			\$63,200	
Profit	8%			\$42,100	
Estimated Net Construction Cost				\$958,361	
Contracting Method Adjustment (Small Business)	15%			\$79,000	
Inflation (4% per year to 2015)	24%			\$126,400	
Total Estimated Net Cost of Construction				\$1,164,000	

Former Lodge Area (Demolition and Restoration)					
Development Phase 6					
			PHASE 6		
ITEM	UNIT	UNIT COST	QTY.	TOTAL COST	NOTES
Demolition & Traffic Control					
Misc. Demolition and Remove	Allow	\$10,000.00	1	\$10,000	Removal of misc. items allowance Remove old water, sewer, electric & communication lines Traffic control signs and barriers
Remove Existing Utilities	Allow	\$15,000.00	1	\$15,000	
Construction Traffic Control	Allow	\$5,000.00	1	\$5,000	
CATEGORY SUBTOTAL				\$30,000	
Clearing and Grubbing					
Misc. Clear and Grubbing	AC	\$2,500.00	22	\$55,000	All construction areas
Tree Removal	LS	\$5,000.00	1	\$5,000	
Rock Removal	Allow	\$10,000.00	1	\$10,000	
CATEGORY SUBTOTAL				\$70,000	
Site Excavation and Grading					
Finish and Fine Grading	SF	\$0.20	950,000	\$190,000	Disturbed areas
CATEGORY SUBTOTAL				\$190,000	
Landscaping					
Native Grasses Seeding	SF	\$0.25	950,000	\$237,500	Disturbed areas
CATEGORY SUBTOTAL				\$237,500	
Drainage Improvements					
Erosion Control	LS	\$5,000.00	1	\$5,000	Construction controls
CATEGORY SUBTOTAL				\$5,000	
Subtotal of Direct Construction Costs			\$532,500		
Location Factor	9%			\$47,900	
Remoteness Factor (49 miles)	10%			\$53,300	
Federal Wage Rate Factor	6%			\$15,978	
Design Contingency	25%			\$133,100	
Total Direct Construction Cost				\$782,778	
Standard General Conditions	10%			\$53,300	
Government General Conditions	5%			\$26,600	
Historic Preservation Factor				\$0	
Subtotal Net Construction Cost				\$862,678	
Overhead	12%			\$63,900	
Profit	8%			\$42,600	
Estimated Net Construction Cost				\$969,178	
Contracting Method Adjustment (Small Business)	15%			\$79,900	
Inflation (4% per year to 2015)	24%			\$127,800	
Total Estimated Net Cost of Construction				\$1,177,000	

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Everglades habitat

6.0 appendices

6.1 Acknowledgements

Many, many individuals and organizations have brought their knowledge and interest to this project. We appreciate all of their assistance.

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6.2 Everglades Master Plan Primary Reference Documents

Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Cambridge, UK: Cambridge University Press.

National Research Council, National Academy of Sciences. 2008. Progress Toward Restoring the Everglades, the Second Biennial Review, 2008. Committee on Independent Scientific Review of Everglades Restoration Progress, National Academies Press, Washington, DC. ISBN: 0-309-12575-8.

Flamingo Commercial Services Plan/Environmental Assessment, November 2007

Finding of No Significant Impact (FONSI), Flamingo Commercial Services Plan/EA, July, 2008

DRAFT Cultural Landscapes Inventory, Flamingo Mission 66 Developed Area, Everglades National Park, 75 % draft, September 2009

DRAFT Long-Range Interpretive Plan, Everglades National Park

Team Draft, May 2009

Urban Land Institute - Technical Assistance Panel, August 4-5, 2008

Flamingo Visitor Center - Condition Assessment, August 22, 2007

National Park Service, Guiding Principles of Sustainability, National Park Service, Project Sustainability Checklist