AMELIA ISLAND STATE PARK

GEORGE CRADY BRIDGE FISHING PIER STATE PARK

Park Chapter

ATLANTIC COAST REGION

PARK FEATURES
- Park Boundary
- Structures
- Paved Park Roads
- Stabilized Park Roads
- Unstabilized Park Roads

To Fernandina Beach

Atlantic Ocean

A1A

SALT MARSH

MESIC FLATWOODS

GEORGE CRADY BRIDGE FISHING PIER STATE PARK

Ranger Station

EQUESTRIAN CONCESSION AREA

Equestrian Trail

DITCH

COASTAL INTERDUNAL SWALE

HAMMOCK

Stables

Bait & Tackle Shop

FISHING ACCESS

Parking Lots

PEDESTRIAN

Sidewalk

BORROW AREA

MARITIME

DITCH

COASTAL INTERDUNAL SWALE

To Talbot Islands/ Jacksonville

BEACH DRIVING ROUTE

COASTAL STRAND

DUNES

DITCH

INTERDUNAL

SWALE

COASTAL STRAND

BEACH DRIVING ROUTE

DUNES

COASTAL

DUNES

DUNES

GRASSLAND

DUNES

PARK BOUNDARY

Nassau Sound

OPEN BEACH

BEACH DRIVING ROUTE

OPEN BEACH

OPEN WATER

N
W E
S

AMELIA ISLAND STATE PARK

NASSAU COUNTY, FLORIDA

0 350 700 Feet

BLACK HAMMOCK ISLAND

NASSAU COUNTY
DUVAL COUNTY

Nassau Sound

Intracoastal Waterway

Bait & Tackle Concessions Building

Bait Shop Parking

Amelia Island/ George Crady Bridge Parking

AMELIA ISLAND STATE PARK

AMELIA ISLAND

Gate

PARK BOUNDARY

COASTAL STRAND

SALT MARSH

COASTAL STRAND

COASTAL GRASSLAND

A1A

CLOSED TO ENTRY

PARK BOUNDARY

SAWPIT ISLAND

Sawpit Creek

Gate

Big Talbot Island Parking

BIG TALBOT ISLAND STATE PARK

BIG TALBOT ISLAND

GEORGE CRADY BRIDGE FISHING PIER STATE PARK

DUVAL/NASSAU COUNTY, FLORIDA

0 500 1,000 Feet

INTRODUCTION

LOCATION AND ACQUISITION HISTORY

Amelia Island State Park

Amelia Island State Park is located in Nassau County (see Vicinity Map). Access to the park is from State Road A1A, also known as Heckscher Drive. The Vicinity Map also reflects significant land and water resources existing near the park.

Amelia Island State Park was initially acquired on July 15, 1983, under the Save Our Coast program. Currently, the park comprises 235.68 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on Nov. 19, 1984, the Trustees leased (Lease o. 3377) the property to the Division of Recreation and Parks (DRP) under a 50-year lease. The current lease will expire on Nov. 18, 2034.

Amelia Island State Park is designated single-use to provide public outdoor recreation and conservation. There are no legislative or executive directives that constrain the use of this property (see Appendix). A legal description of the park property can be made available upon request to the Florida Department of Environmental Protection (DEP).

George Crady Bridge Fishing Pier State Park

George Crady Bridge Fishing Pier State Park is located in Nassau County and Duval County (see Vicinity Map). Access to the park is through Amelia Island State Park via State Road A1A, also known as Heckscher Drive. The Vicinity Map reflects other significant land and water resources existing near the park.

George Crady Bridge Fishing Pier State Park was initially acquired on July 21, 2003, from the Florida Department of Transportation. Currently, the park comprises 110.5 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on Sept. 14, 2007, the Trustees leased (Lease No. 4562) the property to DRP under a 50-year lease. The current lease will expire on Sept. 13, 2057.

George Crady Bridge Fishing Pier State Park is designated single-use to provide public outdoor recreation and conservation. There are no legislative or executive directives that constrain the use of this property (see Appendix). A legal description of the park property can be made available upon request to DEP.

SECONDARY AND INCOMPATIBLE USES

In accordance with 253.034(5) F.S., the potential of both parks to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of DRP's statutory responsibilities and resource values. This analysis considered the parks' natural and cultural resources, management needs, aesthetic values, visitation, and visitor experiences. It was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation.

DRP has determined that uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those management activities specifically identified in this plan) would not be consistent with the management purposes of the parks.

In accordance with 253.034(5) F.S., the potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the parks. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding. Generating revenue from consumptive uses or from activities that are not expressly related to resource management and conservation is not under consideration.

PURPOSE AND SIGNIFICANCE OF THE PARK

Park Purpose

The purpose of Amelia Island State Park is to preserve examples of natural areas along the state's northern-most barrier island, proving both habitat for coastal species and natural resource-based recreational opportunities for beachgoers, anglers and nature enthusiasts.

George Crady Bridge Fishing Pier State Park was established to provide equal access for fishing in the deep waters of Nassau Sound.

Amelia Island State Park Significance

- Amelia Island's protected natural communities provide a haven for over 30 threatened species, including various shorebirds, sea turtles and monarch butterflies.

- Shell middens preserved in the park reveal archaeological clues to understanding the culture of northeast Florida's indigenous people and their broader associations with social and trade networks that existed in the southeast prior to European contact.

- The park protects much of the northern shoreline of Nassau Sound, preserving the dynamic habitat and aesthetic beauty of the Nassau River's interface with the Atlantic Ocean.

Central Park Theme

Nesting shorebirds and coastal wildlife find refuge on the beaches and sparkling shoreline of Amelia Island State Park.

George Crady Bridge Fishing Pier State Park Significance

- The pier provides access to one of the most productive and diverse fishing areas in northeast Florida and has historically supported local subsistence fishing.

- Views across the Nassau Sound from the bridge offer a perspective on the surrounding landscape and how the barrier islands are dynamically shaped.

Central Park Theme

A landmark for local anglers, George Crady Bridge Fishing Pier State Park offers breathtaking views across Nassau Sound while casting a line.

Amelia Island State Park and George Crady Bridge Fishing Pier State Park are classified as state recreation areas in DRP's unit classification system. In the management of a state recreation area, major emphasis is placed on maximizing the recreational potential of the unit. However, preservation of the park's natural and cultural resources remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the park's recreational potential, the development of appropriate park facilities is undertaken with the goal to provide facilities that are accessible, convenient and safe, to support public recreational use or appreciation of the park's natural, aesthetic and educational attributes.

OTHER DESIGNATIONS

Neither of the units are within an Area of Critical State Concern as defined in section 380.05. Currently they are not under study for such designation. The parks are components of the Florida Greenways and Trails System, administered by DRP's Office of Greenways and Trails.

Portions of Amelia Island were designated as a Colonial Nesting Bird Site in 1981 and then as a Critical Wildlife Area in 1982 by the Florida Fish and Wildlife Conservation Commission (FWC). Amelia Island contains sites along the Great Florida Birding Trail designated by FWC. Waters offshore Amelia Island are designated Critical Habitat Area for the Northern Right Whale by the U.S. Fish & Wildlife Service (USFWS).

All waters within the parks have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. Surface waters in these parks are also classified as Class II waters (shellfish propagation and harvesting area) or Class III waters (suitable for fish consumption and recreation) by DEP. The parks are adjacent to the Nassau River-St. Johns River Marshes Aquatic Preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

PARK ACCOMPLISHMENTS

Amelia Island State Park

- Completed 100% of goals for invasive plant treatment (0.36 acres) in 2018 and 12% (0.034 acres) in 2019.
- Reduced human disturbance of marine turtle nesting by prohibiting beach driving at night (April 2018).
- Assisted in management of the Amelia Island Critical Wildlife Area, to include working with FWC and Audubon Florida to post and monitor shorebird nesting areas.

- Coordinated with the U.S. Army Corps of Engineers to conduct beach nourishment activities in the fall of 2018 and 2022.
- Expanded educational signage pertaining to coastal habitat protection to improve interpretation of important shorebird nesting areas.

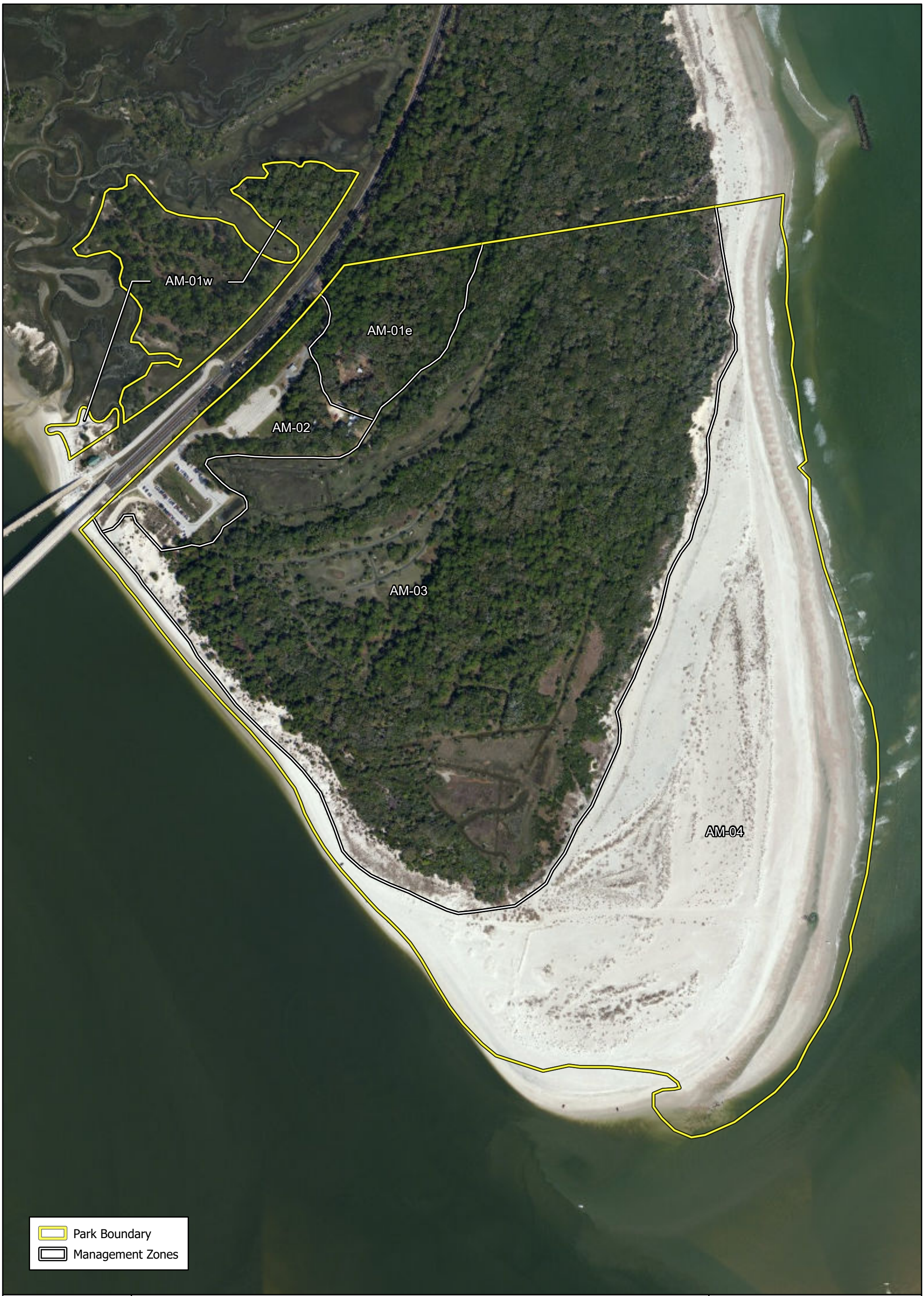
George Crady Bridge Fishing Pier State Park

- Established monitoring program for diamondback terrapins on Sawpit Island in partnership with the North Florida Land Trust. Currently partnering with the Turtle Survival Alliance, North American Freshwater Turtle Research Group.
- Assessed the safety status of the bridge through FDOT inspection reports.
- Contracted design and engineering for living shoreline restoration on Sawpit Island.
- Partnered with FWC to monitor imperiled nesting shorebirds.
- Completed 100% of goal for invasive plant treatment.

RESOURCE MANAGEMENT COMPONENT

Amelia Island State Park Management Zones		
Management Zones	**Acreage**	**Managed with Prescribed Fire**
AM-01e	8.62	N
AM-01w	14.24	N
AM-02	11.08	N
AM-03	111.67	N
AM-04	90.07	N

George Crady Bridge Fishing Pier State Park Management Zones		
Management Zones	**Acreage**	**Managed with Prescribed Fire**
GC-1	88.39	N
GC-2	3.98	N
GC-3	0.94	N
GC-4	15	N
GC-5	2.18	N



AMELIA ISLAND STATE PARK
Management Zones

N

0 400 800 Feet

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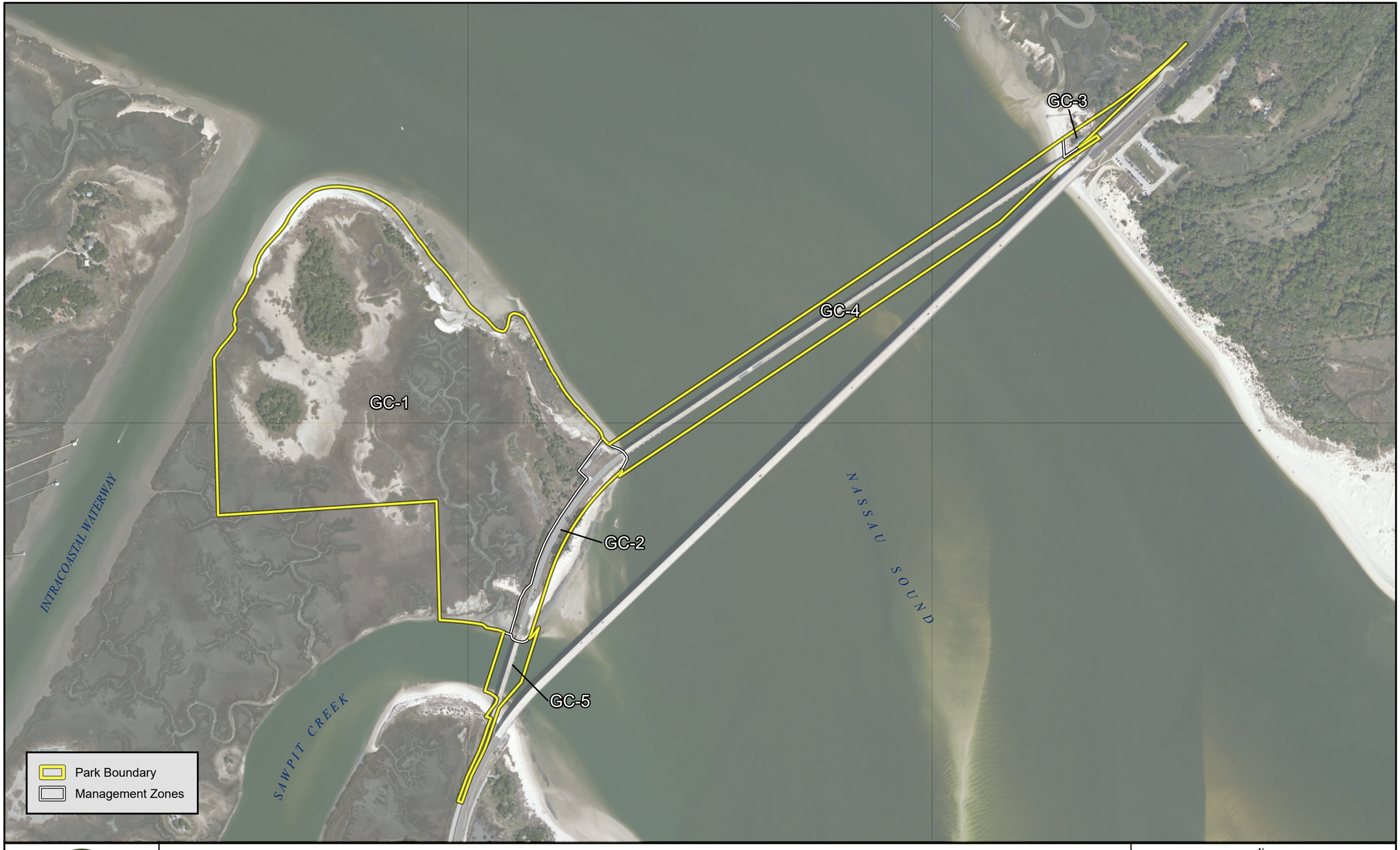

GEORGE CRADY BRIDGE FISHING PIER STATE PARK
Management Zones

N

0 500 Feet 1,000

Sources: ESRI; Florida Department of Environmental Protection
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TOPOGRAPHY

Amelia and the Talbot Islands are in the coastal lowlands physiographic zone, specifically in the Atlantic Coastal Lowlands, Atlantic Coastal Ridge, Lagoons and Barrier Island Chain (Puri and Vernon 1959). The islands are at the southern end of a long string of barrier islands that extends from the Santee River in South Carolina to the St. John's River in Florida. These are "Sea Islands", formed through submergence of the mainland and the subsequent accumulation of younger unconsolidated sediments along the barrier beach (Godfrey 1976). Sea Islands characteristically are short, curved barrier islands, separated from each other by river entrances or sounds and from the mainland by well-developed marshes or estuaries (Raichle et al. 1997).

As with all barrier islands, Amelia and the Talbot Islands consist of parallel dune ridges and swales covered with predictable coastal vegetation. Ponds and marshes have developed in many of the swales that lie among the dune ridges. These features comprise the primary topographical relief of the islands. The elevations of the primary dunes on Amelia Island typically range from 12 to 20 feet; however the primary dunes in the southern portion of the island may exceed 35 feet in elevation. Secondary dunes on Amelia Island reach elevations of 65 feet. Topographic elevations on Big Talbot Island range from sea level at the beach to 20 feet at "The Bluffs" on the northeastern side of the island, and 20 feet at "Half Moon Bluff" on the central-eastern side. The highest elevations on Little Talbot Island reach 40 feet in the sand dunes at the north end of the island. The maximum elevation on Long Island is 30 feet at the north end.

The natural topography of Amelia and the Talbot Islands has been altered significantly over time by the construction of a major roadway and associated drainage features, construction of several mosquito control ditches, and perhaps most notably by coastal erosion. The Florida Department of Transportation (DOT) altered the topography of the islands during construction of A1A, the state road that bisects the islands.

Construction activities included excavation of roadside swales and associated drainage ditches, raising of some sections of roadbed, and creation of soil abutments for bridges across tidal creeks.

In addition to the construction of State Road A1A, construction of mosquito control ditches has also altered the natural topography and surface drainage of the islands. Between 1953 and 1960, ditches were constructed throughout the area in an effort to eradicate mosquito larvae which developed in the low, wet swale areas between the dunes. These ditches connected the swales and drained to adjacent estuarine tidal marsh areas. The leveling of dunes to fill low areas and the piling of spoil from the ditches combined to alter natural elevations throughout the dune systems. During ditch construction, heavy machinery damaged plant life adjacent to and along the routes of the ditches. Impacts to natural communities along the routes of the ditches are still evident throughout the parks.

Perhaps the most dramatic topographic changes apparent on Talbot Islands State Parks are the result of coastal erosion and accretion. The shoreline from mid-Georgia south to Little Talbot Island, Florida has changed significantly in position and volume over the past 150 years, primarily as a result of the building of jetties at the mouths of the St. Marys River and St. Johns River in the late 1800s. While the jetties themselves were localized, they caused significant changes in sand erosion and accretion on islands both to the south and the north. Ongoing regional beach renourishment projects, which place additional sand in littoral drift and shoreline armoring, complicate the already dynamic erosion and accretion patterns of the barrier islands.

An ongoing beach erosion problem exists along much of Amelia Island's Atlantic shoreline. This erosion has threatened private and public upland development and has caused DEP to classify several sections of the park as "severe" and "critical" erosion sites. The southernmost 20,000 feet of Amelia Island, which includes the park, have been erosional over the entire period of record with the most significant erosion occurring immediately after jetty construction. Over the period 1857 - 1924, the island's southern tip receded approximately 2,200 ft. (Raichle et al. 1997).

Until 1985, Nassau Sound to the north of Big Talbot Island was one of the last two unaltered, natural inlets on the eastern coast of Florida. Subsequent sediment removal from the western side of the Nassau Sound Bridge between Amelia Island and Sawpit Island at the junction of the Amelia and Nassau Rivers has changed that situation. According to the U. S. Army Corps of Engineers, the south end of Amelia Island served as the original deposition site for the sediments. Trucks subsequently hauled the dredged materials to the middle shoreline of Amelia Island to correct beach erosion problems. This beach nourishment appears to have placed tons of sand in littoral drift. Substantial changes in the shoals offshore of Big Talbot Island have occurred since that project began. The northward movement of Nassau Sound and the southward migration of Bird Island have resulted in the fusion of the southernmost Bird Island with Little Talbot Island, as predicted by Raichle (1993).

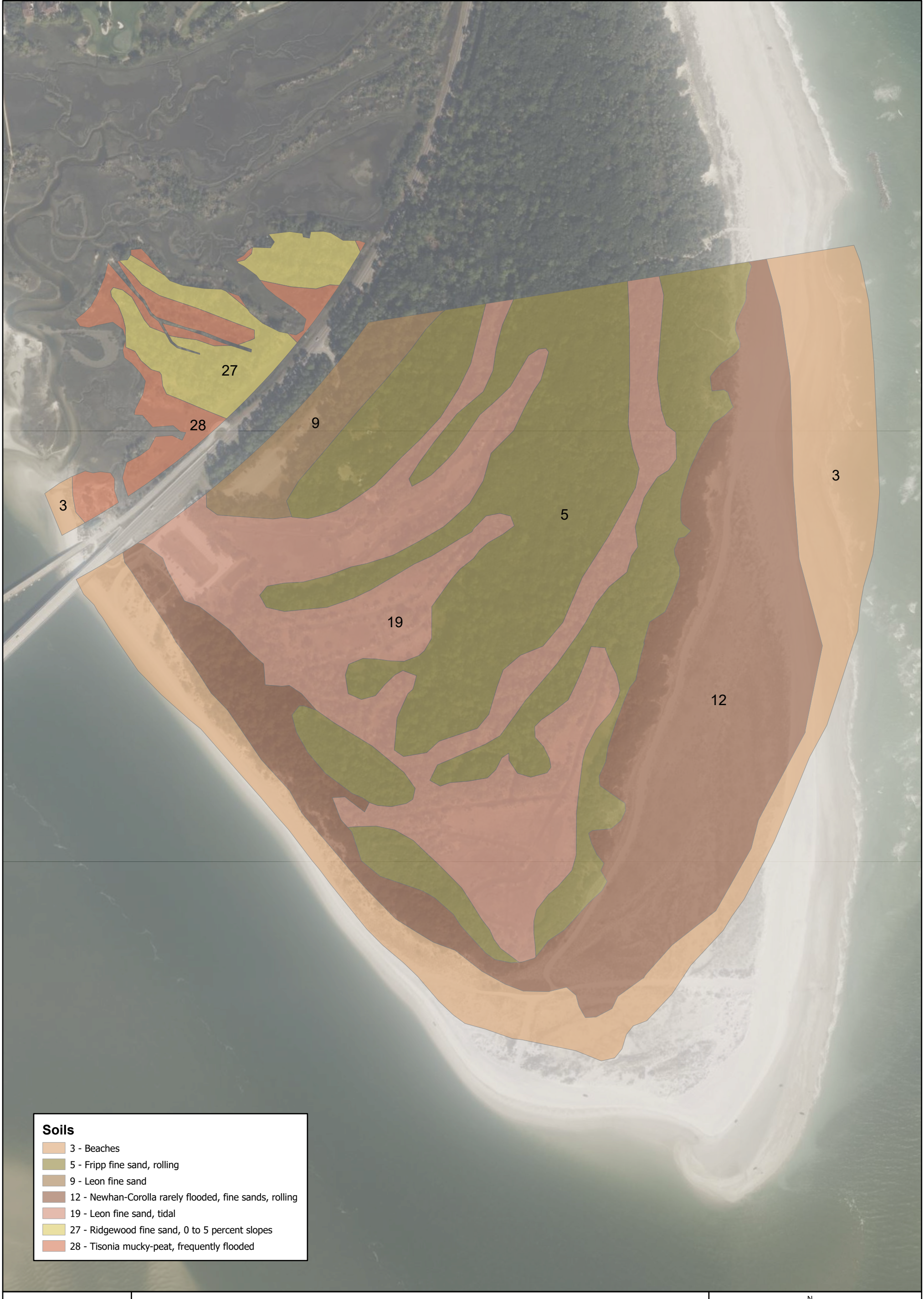
In 1994, because existing upland development was threatened by erosion, local interests arranged a 2.6 million cubic yard beach fill along 18,000 feet of the southern Amelia Island shoreline. This project extended the mean high water line as much as 350 feet seaward of the pre-project location. In response to significant erosional stresses at the southern end of the renourishment area, a temporary, terminal groin field was constructed in 1995 to limit losses of fill material to Nassau Sound. This groin field directly impacted the northern portion of the park where two of the groins were located. Subsequent beach renourishment along the southern part of Amelia Island was conducted in 1997; some of the beach fill material was deposited past the groin field well into the park. The temporary groinfield eventually failed, and in 2004, a permanent terminal groin structure and offshore breakwaters were constructed at the south tip of Amelia Island.

SOILS

Five soil types occur within Amelia Island State Park (see Soils Map). While some of the soil types are common to Amelia and the Talbot Islands, they may be named and numerically coded differently by their respective county soil surveys. See Appendix for a complete listing and detailed descriptions of the soils identified in each park. Sandy, well-drained soils occur along the beaches and in the rolling upland ridges. Poorly drained, mucky, organic, sulfur-smelling, lowland soils occur in the estuarine marshes. The soils inland of the beaches tend to be distributed in elongated, well drained, rolling dune ridges or in more poorly drained swales paralleling the ridges (Watts 1991).

Newhan-Corolla soils, which are excessively drained to somewhat poorly drained, occur on the narrow dune-like ridges that rise impressively from the beaches at Amelia Island State Park. Fingers of Fripp fine sand, an excessively drained soil, and the poorly drained Leon fine sand, the only spodosol (soil with a hardpan) in the park, add to the diversity of soils in this area.

Soil erosion within Amelia and the Talbot Islands is associated with either erosion of the coastal margins of the islands or destabilization of older dune ridges within the interiors of the islands.



AMELIA ISLAND STATE PARK
Soils

N

0 400 800 Feet

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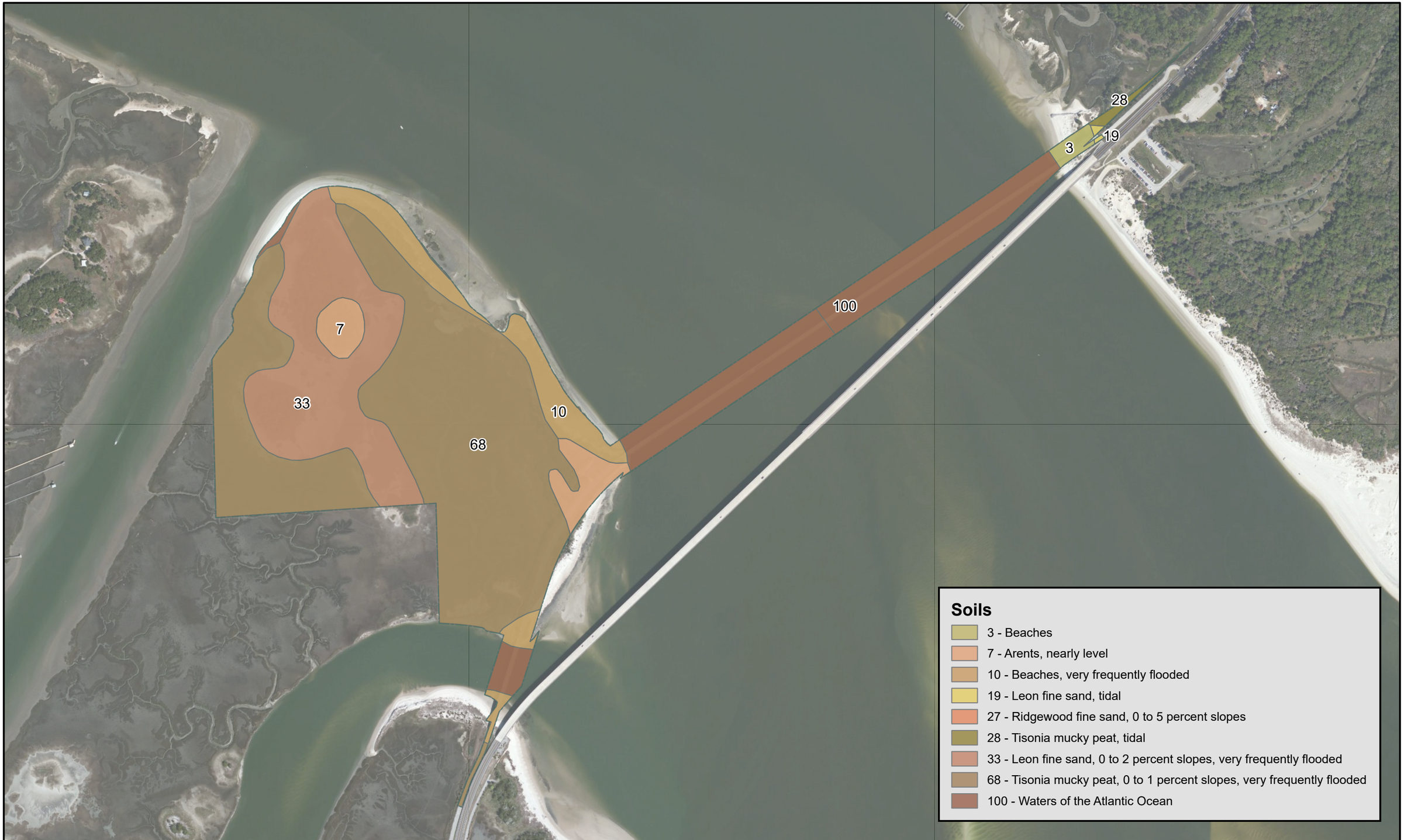


GEORGE CRADY BRIDGE FISHING PIER STATE PARK
Soils

N

0 500 Feet 1,000

Sources: ESRI; Florida Department of Environmental Protection
This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

HYDROLOGY

Amelia Island State Park is located at the southern end of the Sea Island Coastal Region, a chain of coastal barrier islands that extends between the Santee River in South Carolina and the St. Johns River in Florida as detailed under the *Regional Hydrology* section of this plan (Mathews et al., 1980; Foyle et al., 2004; Andersen et al., 2005). More specifically, the park occurs at the mouth of the Nassau River (i.e., Nassau Sound), a large estuary basin that drains to the Atlantic Ocean.

The park is bordered by the Atlantic Ocean to the east, Nassau Sound and Big Talbot Island to the south, Nassau River to the west and the Amelia River to the northwest. The Nassau and Amelia rivers are tidal waterbodies and are important drivers of sediment transport in the region (Browder and Hobensach 2003). The downstream reaches of the Nassau River reverse flow twice daily with the ocean tides (Coffin and Hampson 1992). These watersheds and the Atlantic Ocean have strongly influenced geologic processes in the dynamic formation of the Talbot and Amelia islands (Raichle 1993; Adamus et al. 1997, Anderson et al. 2005).

A portion of the adjacent upstream waters and coastal salt marsh areas from the park are part of the Nassau Valley State Reserve and Nassau River St. Johns River Marshes Aquatic Preserve (FDNR 1986; Map Direct 2023). One ambiguous issue associated with the aquatic preserve management plan is that since its last update in 1986, most waters adjacent to Amelia Island State Park were never designated as Aquatic Preserves (AP) or Outstanding Florida Waters (OFW), and thus it is unclear as to what state protections or regulations these waters are afforded (Map Direct 2023).

Nonetheless, all waters within the park boundary are designated as OFW, including more than 40 acres of tidal creek/salt marsh north of State Road A1A. Amelia Island State Park contains very few freshwater wetlands, but those represented include coastal interdunal swales.

The main hydrological issues that influence the park's water resources are 1) regional groundwater depletion and saltwater intrusion, 2) increased estuarine water quality degradation, and 3) erosion and sedimentation along the shoreline of Nassau Sound and Atlantic beach (further discussed in *Regional Hydrology* section).

Water Quantity

There are three fresh groundwater reserves within the coastal barrier island region of Nassau and Duval counties, including the surficial, intermediate and Floridan aquifers (Brown 1984; Toth 1990; NPS 1996; Anderson et al., 2005). As their name implies, Florida's coastal barrier islands like Amelia are isolated from the mainland and thus by their very nature have limited surface water and groundwater availability (Tarbox and Hutchings 2003; Dix 2021).

The surficial aquifer in this region is located at or near the land surface and is recommended only for limited utility purposes because of various contamination levels, potentially high salt intrusion, and limited yields (Frazee and McClaughtery 1979). The surficial is approximately 150 feet in depth and has been described as sometimes having an upper and lower zone (intermediate aquifer) when low permeable material is present that can act as a semi-confining layer (Frazee and McClaughtery 1979; Anderson et al., 2005).

Groundwater below Amelia Island State Park apparently has an intermediate aquifer that is actively being measured for a variety of parameters, including salinity, as part of a set of three on-site groundwater monitoring wells (upper, intermediate, and surficial) (SJRWMD 2023). However, throughout the Amelia barrier island, the surficial can be unconfined with no intermediate aquifer, highly susceptible to septic tank contamination and saltwater intrusion, and is of extremely limited supply because of quantity and quality issues (Frazee and McClaughtery 1979). Underlying the surficial is a nearly 300 feet thick confining layer called the Hawthorn formation that separates it from the Upper Floridan aquifer, the most important source of freshwater in the region and most of Florida (Toth 1990).

The groundwater aquifers beneath the park and barrier island are primarily recharged by local rainfall but are significantly influenced by short/long-term trends in groundwater consumption including public supply and industry (SJRWMD 2017). Regional groundwater withdrawals, specifically at major pumping centers like Jacksonville and Fernandina Beach have historically resulted in significant impacts, cones of depression and saltwater intrusions into freshwater aquifers (Brown 1984; Peck et al., 2005; SJRWMD & SRWMD 2015; SJRWMD 2017). Surficial wells located in Amelia Island State Park (SJRWMD well No. N-0306) demonstrate that the coastal freshwater aquifers are high in chlorides that have resulted from salt intrusion (Anderson et al., 2005; SJRWMD 2023).

Coastal Nassau and Duval counties, including Amelia Island, fall within an area of critical concern for lateral salt intrusion of the Floridan aquifer, a significant water quality threat to the freshwater reserves of northeast Florida (Frazee and McClaughtery 1979; Spechler 2001; SJRWMD 2017). As detailed in the *Regional Hydrology* section, given the significant water supply issues and unacceptable groundwater and surface water impacts within the St. Johns River Water Management District (SJRWMD) and Suwannee River Water Management District (SRWMD), Amelia Island is now part of a Water Resource Caution Area (SJRWMD 2017).

Water Quality

Water scientists have sampled groundwater levels and quality in coastal areas of northeast Florida since at least the 1930s (Frazee and McClaugherty, 1979; Brown 1984; Spechler 2001; Peck et al. 2005). Surface water quality continues to be monitored throughout the northeast region waterbodies by numerous entities, including DEP, the SJRWMD, the National Park Service and the U.S. Environmental Protetion Agency (EPA) (Hynds and Starkey 2019; Allen et al., 2022; DEP 2023; EPA 2023a). The Amelia River has over 100 stations that are also being monitored as part of EPA Clean Waters Act Section 303 (d) impaired waters rule (EPA 2023a).

The overall trend for surface water quality for estuarine waterbodies throughout the northeast region has generally been in a significant decline with increased salinity and eutrophic conditions through time (Williams and Kimbell 2013). In the two most recent National Park Service (NPS) water quality assessments for the Nassau River, some sampled parameters were stable with no trends, however during both periods water clarity was in poor condition and nutrient pollutant levels (i.e., phosphorus) were rising (Hynds and Starkey 2019; Allen et al., 2022). In the Amelia River, measured levels of ammonia and oxygen are often high and are closely associated with the discharge of industrial wastewater (Livingston 1996; EPA 2023b; EPA 2023c). Unfortunately, there is little specific data for surface water quality within the boundaries of Amelia Island State Park, primarily due to the lack of freshwater resources.

One additional water quality consideration that is important to consider is the onsite horse stables and equestrian activities at the park. The horse stable paddocks are just upslope and adjacent to one of the park's freshwater wetland communities referred to as coastal interdunal swale. A series of three separate swale wetlands at the park were altered via mosquito control ditching. The alteration of the park's swales will be discussed below and in the *Natural Communities* section.

As the horse trail exits the stable area, it immediately crosses through the most northwesterly interdunal swale system (i.e., two ditches), travels within a canopy of maritime hammock and then bisects up and over an elevated primary dune onto a large sandy beach along the shoreline of the Atlantic Ocean/Nassau Sound. The topographic alteration created by repeated use of the trail by horses can act as a conduit for the movement of water and nutrients during high tides or rainfall events.

The location of the horse stable pens within the park also creates a potential impact to onsite water quality. Improper storage or disposal of horse manure generated by the stable operation could potentially contaminate the nearby freshwater wetlands. Because of the small size of the park and the sensitivity of the interdunal swale wetlands, care should be taken to properly contain and dispose of these potential contaminants.

Hydroperiod alterations and coastal erosion/sedimentation

Within the region from mid-Georgia south to Little Talbot Island, Florida, the coastal shoreline has changed significantly in position and volume over the past 150 years, primarily due to U. S. Army Corps of Engineers (USACE) construction and maintenance of artificial jetties at the mouths of the St. Marys River and St. Johns River beginning in 1883 (McLemore et al. 1981). Jetty hardening can function as a complete littoral barrier to the natural alongshore sediment transport (Howard and Olsen 2004).

Of specific interest to Amelia Island State Park and George Crady Bridge Fishing Pier, the hydraulic and sediment dynamics of the Nassau Sound Inlet drive changes to the adjacent barrier islands (Dean and O'Brien 1987). These changes include southward accretion at Amelia Island State Park and northward accretion at Little Talbot Island State Park (Raichle 1993). A series of sediment shoals within Nassau Sound known as the Bird Islands also vary in size and location depending on natural sand migration within the inlet (Raichle 1993).

Until 1985, Nassau Sound was one of the last two remaining natural inlets on the east coast of Florida that had not yet been altered by humans. The USACE first began sediment moving activities in Nassau Sound after 1985. Specifically, those initial sediment dredge activities occurred on the west side of the sound near the bridge between Amelia and Sawpit islands and at the junction of the Amelia and Nassau rivers. Dredge material from that initial work was stored at the end of Amelia Island and subsequently used to stabilize heavily eroded sections of eastern Amelia Island outside the park boundary. The main channel of the Amelia River was also historically dredged to accommodate the Intracoastal Waterway.

In 2004, a beach groin/renourishment project (i.e., artificial breakwater construction and sand pumping) helped to dramatically widen the park's shoreline depth/profile and further stabilize the shoreline from significant historic erosion. More information on the shoreline processes can be found in the *Regional* section.

Amelia Island State Park has an extensive network of mosquito control ditches that have considerably altered the interdunal swale wetlands of the park as mentioned above and under the *Regional*

Hydrology section. These ditches were excavated from the early 1950s to late 1960s as part of misguided pest management policies to drain wetlands and eradicate mosquito larvae that developed in freshwater wetlands. Within the park east of State Road A1A are a series of three artificially connected interdunal swale freshwater wetlands that were historically separated by a unique set of concentric arc-shaped maritime hammock-dominated dune ridges. (See "Coastal Interdunal Swale" under the *Natural Communities* section for more information). Before mosquito ditch construction, the two northernmost swale wetlands maintained a small connection on their southwest corner, and due to proximity with the sound, closely interacted with the adjacent tidal creek. The southernmost swale, however, remained disjunct. Following the construction of approximately 2.1 miles of mosquito ditches (i.e. canals/spoil piles), freshwater from the interdunal wetlands drains into the Nassau Sound, and saline estuarine water flows in during tidal changes.

This artificial ditching has played a significant negative hydrological role in several ways, including channelization of standing water that once spread out laterally within the entire freshwater wetland, and the introduction of highly saline surface water that alters the composition of wetland vegetation. Additionally, ditch elevations in some swales are nearly 15 feet below the surface, and therefore likely have direct interface with the surficial groundwater.

Soon after the year 2000, park improvements were made to the main drive and visitor parking that helped to partially restore interdunal freshwater wetlands through the installation of a series of stormwater retention ponds. The basic utility of a set of two ponds was to capture surface water runoff contaminants, allow excess freshwater to drain through the natural tidal creek, and preclude brackish tidal waters from flowing into the interdunal swale system using a culvert back-flow restriction baffle. Since the installation of stormwater ponds and the back-flow baffle, freshwater vegetation in the interdunal swales has re-established.

In 1997, a roadway was created just outside Amelia Island State Park's north boundary east of State Road A1A. This alteration can be easily visualized on digital elevation model LIDAR map. This road bisects the maritime hammock ecosystem as well as the primary beach dune that parallels the Atlantic shoreline.

The historic road breach, as well as previous erosion at Amelia Island's southernmost tip, periodically allowed saline Atlantic waters to inundate the interdunal wetlands behind the primary dunes during very high tides and intense storms. This saltwater intrusion most certainly acted to modify the park's freshwater interdunal wetlands chemistry, albeit perhaps temporarily. Beyond protection of the park's beaches and shoreline, the added benefit of the nourishment projects that have occurred in the 21st century has been the prevention of Atlantic Ocean overwash into the park's interdunal swale wetlands.

Objective A: Conduct an assessment of the hydrological restoration needs in the park.

- Action 1 - Assess the hydrological impact of mosquito and drainage ditches and other impoundments to determine potential restoration measures.
- Action 2 - Continue to cooperate with state and federal agencies and researchers regarding hydrological research and monitoring programs within the park, particularly related to freshwater wetlands, groundwater levels, and surface water quality of its associated estuarine water bodies.
- Action 3 - Continue to monitor, review and comment on proposed land use/zoning changes within lands bordering the park.

- Action 4 - Assess and evaluate hydrological impacts of disrupted natural sheetflow to coastal interdunal swale wetlands.
- Action 5 - Seek guidance and assess coastal littoral processes on Amelia Island to understand patterns of erosion and accretion.

The most significant hydrological features influencing Amelia Island State Park include the Atlantic Ocean, Nassau River and Sound, and coastal interdunal swales. Control of erosion and sedimentation associated with or within these hydrologic features, as well as preservation of surface water and groundwater quality, will remain top priorities.

Since the 1940s, regional overconsumption of groundwater has exacerbated the level of saltwater intrusion and created a significant cone of depression near Amelia Island. The effects of this significant groundwater depletion on the freshwater wetlands of the park are largely unknown. For water managers to be able to protect water quality and potentially restore groundwater to its historic levels, they will need to track the extent of the drawdown. Additionally, regulatory agencies have determined that the surface waters surrounding these parks are impaired because of high levels of several harmful contaminants including ammonia, phosphorus and mercury. Shellfish harvesting in water bodies throughout the Nassau River basin is currently "unclassified." Although these water quantity and quality issues are complex, genuine improvements are still achievable. To facilitate that process, DRP will continue its tradition of close cooperation with state and federal agencies and independent researchers engaged in hydrological research and monitoring in the park and encourage and facilitate additional research in those areas.

DRP will rely upon agencies such as the SJRWMD, U.S. Geological Survey, National Park Service and DEP to stay apprised of any declines in surface water quality or any suspected groundwater contamination in the region. Additional cooperative efforts may include facilitating the review and approval of research permits and providing researchers with assistance in the field, including orientation to park resources. Recommendations derived from these monitoring and research activities will be essential to the decision-making process during management planning. One activity worthy of DRP support is continued groundwater monitoring of all wells and water bodies under the park's jurisdiction.

DRP will continue to monitor land-use or zoning changes within lands bordering the park. Major ground disturbances on neighboring properties or inadequate treatment of runoff into local streams could ultimately cause significant degradation of park resources. When appropriate, DRP will provide comments to other agencies regarding proposed changes in land use or zoning that may affect the park.

DRP will also continue to monitor Environmental Resource Permits and large Consumptive Use Permits or any mining operations requests in the St. Marys and Nassau river basins for significant changes that may adversely affect park resources to provide timely and constructive comments that promote protection of the water resources in and adjacent to the park. DRP will continue to work closely with the SJRWMD to ensure that Consumptive Use Permits for the region are responsibly issued and that current groundwater levels are protected and consciously restored to historic conditions.

Objective B: Restore hydrological conditions to approximately 25 acres.

- Action 1 - Conduct an assessment and determine feasibility of mosquito ditch removal or installation of ditch blocks.

- Action 2 - Conduct an assessment and evaluate the feasibility of implementing interdunal swale wetlands restoration.

The development of State Road A1A, historic roadway and mosquito ditches, and over half a century of significant groundwater demand in the region, has played a cumulative effect to impact several acres of previously functioning interdunal swale wetlands at Amelia Island and Talbot Island state parks. Mosquito ditches and roadways have bisected a variety of upland (e.g., maritime hammock) and wetland (e.g., interdunal swales) natural communities at these parks. Visible impacts of these anthropogenic changes at a minimum include fragmentation and an interruption of natural surface water sheetflow within freshwater wetlands. The following hydrological restoration actions are recommended for the park.

DRP will evaluate the condition of all interdunal swale wetlands at these parks by mapping, reconnaissance, and determining their current ecological status. DRP will determine if it is possible to restore these wetland communities, specifically those that are bisected by historic mosquito ditches or any that may contribute stormwater to the estuary. If staff determines that restoration is possible, restoration alternatives such as ditch blocks may be developed and implemented. Park staff will comply with best management practices to maintain the existing water quality on site and will take appropriate action to prevent soil erosion or other impacts to water resources.

DRP will evaluate other alterations in the park that may have negatively affected natural hydrology. For example, if ditches are transporting potential contaminants into adjacent waterbodies, DRP will determine best management options for remediation and restoration.

Coastal/Beach Management

In an effort to restore and maintain the natural communities and habitats of the parks, the following special management objectives for coastal systems are recommended. DRP staff need to be engaged in the planning, design and implementation of coastal projects to ensure that park resources and recreational use are adequately considered and protected.

Objective C: Continue to assist federal, state and local agencies with active monitoring of erosion and accretion cycles and assessment of beach and shoreline conditions following natural disasters.

- Action 1 - Continue to cooperate with federal, state and local agencies and researchers regarding monitoring and assessment of beach erosion within the parks, particularly related to St. Marys Inlet, Amelia Island, Bird Island and Nassau Sound.

The St. Marys Inlet has three active federal navigation projects, namely access between the Atlantic Ocean into Fernandina Harbor (Florida), Kings Bay Naval Submarine Base (Georgia), and the Atlantic Intracoastal Waterway (Raichle et al 1997). Over a century of extensive inlet stabilization and shoreline hardening has caused severe impacts to littoral longshore transport along much of Amelia Island's Atlantic shoreline. A complete history of erosion at Amelia and the region is found in the *Regional* section.

Objective D: Continue to partner with federal, state and local agencies to fund, design, permit, improve and maintain coastal and beach management programs consistent with the DRP mission.

- Action 1 - Continue stakeholder engagement with federal, state and local agencies and researchers in planning and implementation of coastal projects that impact the parks.
- Action 2 - Continue to review, comment and establish effective protocols for monitoring imperiled species potentially affected by St. Marys Inlet dredge operations and beach nourishment projects.

Amelia Island has undergone significant shoreline changes over the past 100 years because of shoreline armoring and other large-scale coastal navigation projects (See *Regional* section). Federal maintenance dredging of the St. Marys Entrance Channel occurs annually in order to ensure the U.S. Navy has the required navigational depth to access the Kings Bay Naval Submarine Base. Beach quality sand removed during the course of dredging is placed onto down drift beaches at the northern end of Amelia Island, while non-beach quality sand is placed in spoil piles or deposited offshore.

The 1997 St. Marys Entrance Inlet Management Plan became an integral restoration guidance document for all active management actions occurring on northern Amelia Island (Raichle et al 1997). Maintenance dredging in St. Marys Inlet has generally occurred on an annual basis with a sediment bypassing objective between 554,000 and 797,000 cubic yards per year (DEP 2008). Amelia Island State Park, the city of Fernandina Beach, Fort Clinch State Park and the Atlantic shoreline all benefit from these management activities.

USACE typically requests DEP authorization to move dredged sand from St. Marys Inlet. To accomplish this operation, DRP and USACE develop a Use Agreement (UA) that details specific conditions associated with the sand-moving operations (USACE 2011). One of the more important constraints discussed during these operations concerns minimizing impacts to federal and state imperiled species.

Amelia Island State Park has been a state designated marine turtle Index Nesting Beach since 1989. The park is also a significant shorebird nesting, migration and over-wintering location for least terns, Wilson's plovers and piping plovers, and is monitored year-round for these and other imperiled species. If inlet dredging, sand bypassing or nourishment operations are planned to overlap with marine turtle or shorebird nesting seasons, USACE and DRP are required to develop and implement a plan to mitigate the potential impacts, including monitoring protocols. For this reason, when DRP is approached for these types of operations on park lands, partners are always encouraged to conduct construction activities outside of the marine turtle and shorebird nesting seasons.

NATURAL COMMUNITIES

Beach Dune

Beach dunes are typically wind-deposited and are sparsely to densely vegetated with salt-tolerant pioneer species. Though adapted to a harsh environment, dune plants are very vulnerable to human disturbance. The beach dune is usually a very dynamic community due to the unstable nature of active dune fields. Once pioneer vegetation stabilizes a beach dune community, succession to more enduring communities may occur, particularly in areas with long-term shoreline accretion.

The beach dune community at Amelia Island State Park is highly variable, which is partly a function of the amount of exposure to prevailing winds and waves. The southern end and southwest coastline of Amelia Island are relatively sheltered from the effects of the Atlantic Ocean. These low energy areas typically have five-foot-high dunes covered with sea oats (*Uniola paniculata*), saltgrass (*Distichlis*

spicata), railroad vine (*Ipomoea pes-caprae* ssp. *Brasiliensis*) and beach morning glory (*Ipomoea imperati*).

Behind the primary dunes near the southern end of the island and along Nassau Sound, sheltered clumps of tough bumelia (*Sideroxylon tenax*), red cedar (*Juniperus virginiana*) and red bay (*Persea borbonia*) have become established. Dredge spoil that was dumped near the tip of Amelia Island in the 1980s has been colonized by typical dune plants and is now barely distinguishable from undisturbed natural areas in the park.

In contrast to the southern end of Amelia Island, the northeast corner of the park along the Atlantic shoreline is dominated by higher dunes that rise abruptly from the beach. These large, well-developed dunes shelter adjacent maritime hammock from the relatively high energy wave action of the Atlantic Ocean. Disturbance of these large dunes can negatively affect the mature maritime hammock which is located on the leeward side of the dunes. The shoreline in this area of the park is generally receding, which causes destabilization of the large dunes. Once destabilized, these dunes migrate westward with the prevailing wind and begin to overrun the maritime hammock.

The beach dune community on Amelia has been affected by foot traffic. The horse stable visitor services provider located on Amelia Island usually routes horseback tours along the unconsolidated sands of the Atlantic beach. During periods of high water, however, or when the beach is closed due to the presence of nesting least terns (*Sterna antillarum*), the horses are routed through the beach dunes landward of the primary dune system along Nassau Sound. Although the horse path may cause localized destabilization of the dunes, it is in a relatively sheltered location and levels of impact have been tolerable to date.

Due to historical and recent disruptions in littoral drift along the chain of sea islands south of Georgia, the Atlantic and Nassau Sound shorelines in the park have experienced severe erosion in certain portions and significant sand deposition in others. Jetty construction at the St. Marys and St. Johns river inlets to the north and south of Nassau Sound, and installation of a temporary groin field at the north end of Amelia Island State Park, had dramatic impacts on the beach dunes in this area. The installation of a terminal groin at the southern tip of Amelia Island and the subsequent beach nourishments have established new ridges of beach dunes within a large area of coastal grassland.

The beach dune community is in fair to excellent condition. While most of the disturbances in this dynamic community are of natural origins, the erosional forces that drive these disturbances are often accelerated by anthropogenic forces outside the park boundary such as the St. Marys jetties.

Management of beach dunes usually centers on protection from human disturbance since the adjacent beaches are typically the focal point of recreational activities in coastal parks. Interpretive signs are generally effective in advising park visitors of the need to stay off the beach dunes. Periodic surveys for invasive plant infestations are also important in catching new infestations early. Hand collection of sea oat seeds may be permitted under certain circumstances.

DRP will also continue to coordinate with the U.S. Army Corps of Engineers and other federal and state agencies on the management of Nassau Sound and Fort George Inlet since these inlets influence the shoreline of Amelia Island and the George Crady Bridge Fishing Pier. DRP will also monitor beach nourishment activities that affect the parks.

Coastal Grassland

Coastal grasslands occur on Amelia Island and Sawpit Island, typically appearing on the more recently deposited sediments on the leeward side of beach dunes. A large area of coastal grasslands formed on the sands deposited after the construction of the terminal groin on Amelia Island. These sediments were quickly colonized by pioneer vegetation and subsequently occupied by numerous gopher tortoises as the coastal grassland developed. The coastal grasslands are generally in good condition in Amelia Island State Park and Sawpit Island in George Crady Bridge Fishing Pier State Park.

Coastal grasslands are an inherently dynamic environment maintained by periodic saltwater overwash and intermittent blowouts and wind erosion. The vegetation is adapted to colonize recent disturbances. Minimizing unnatural disturbances from vehicle, pedestrian and bicycle traffic is a primary management measure. Coastal grasslands should also be monitored for invasive plant species, including beach vitex (*Vitex rotundifolia*) which is an emerging invasive species in Florida coastal zones.

Coastal Strand

Coastal strand community typically forms a transition zone between younger beach dune and coastal grassland communities and older maritime hammocks. On Amelia Island, coastal strand occurs along Nassau Sound where shrub and hardwood species have become established on older beach dunes. On Sawpit Island, it occurs at the higher elevations above the coastal grassland and on spoil areas deposited during the dredging of the Intracoastal Waterway many decades ago.

Typically, coastal strand develops in relatively stable and sheltered areas within the coastal grassland or beach dune communities. Coastal strand is a shrub-dominated community usually maintained by wind-driven salt spray. Periodic fire may also be a factor in maintaining this community and preventing its succession to maritime hammock. Along the northeast coast of Florida in areas protected from salt spray, coastal strand may undergo succession to maritime hammock. The coastal strand community is in good to excellent condition.

Maritime Hammock

On Amelia Island State Park, the maritime hammock extends from State Road A1A east and south to the beach dune and coastal strand communities. Live oak (*Quercus virginiana*) dominates the tree canopy in undisturbed areas, and laurel oak (*Quercus laurifolia*) is found in disturbed areas. Redbay, southern magnolia (*Magnolia grandiflora*), American holly (*Ilex opaca*), hackberry (*Celtis laevigata*) and cabbage palm (*Sabal palmetto*) are common in the subcanopy, and remnant red cedars occur throughout the area. Within the hammock, the undulating dune topography incorporates high ridges and low interdunal troughs. The latter features are sheltered, moist habitats filled with wax myrtle (*Myrica cerifera*), grape (*Vitis* spp.), peppervine (*Ampelopsis arborea*) and occasionally cinnamon fern (*Osmunda cinnamomea*).

According to early surveyors' reports, timbering of live oaks was common in parts of Amelia Island (Washington and Willis (1831) as cited in McCormick and Squiers (1971)). It is likely that the oldest live oaks remaining in the park are less than 150 years old. The maritime hammock on Amelia Island occupies relatively steep, stabilized dunes, and appears to have been less affected by human occupation. These areas, however, are naturally more vulnerable to erosion from foot traffic. Roads may severely disturb maritime hammock, especially when the canopy is broken to the extent that salt-laden onshore winds can penetrate the vegetative cover (Bellis and Keough 1995). Researchers have found that footpaths and hiking trails have little effect on the vegetation of the maritime hammock as long as the canopy is kept intact, although there are impacts on wildlife, particularly reptiles and amphibians

(Gaddy and Kohlsaat 1987). Roads and trails within maritime hammock can alter drainage patterns when oriented perpendicular to the parallel dunes (Gaddy and Kohlsaat 1987).

Receding shorelines along the Atlantic coasts of Amelia Island State Park are impacting several areas of maritime hammock. Erosion in these areas can cause large oaks to topple onto the beaches. As trees along the immediate shoreline die or fall onto the beach, increasing the exposure of vegetation further inland to the influences of wind and salt spray, the ecological succession that typically operates on accreting barrier islands is effectively reversed.

The maritime hammocks of the coastal barrier islands are important habitat for wildlife of all kinds, but they additionally serve as important refugia for migrating songbirds. Loss of maritime hammock to development along the Atlantic coast has reduced this once continuous forest to isolated patches. Preservation of these remaining patches is a top priority. The maritime hammocks in Amelia Island are in good to excellent condition.

Management of maritime hammocks primarily focuses on preventing disturbances. While erosional processes in coastal areas can be difficult to control, other disturbances such as roads and canopy clearing can be minimized. Routine monitoring for invasive plants is also a priority management measure.

Mesic Flatwoods

An area of mesic flatwoods lies to the northwest of the maritime hammock in the southern portion of Amelia Island State Park. In contrast to the rolling topography of the maritime hammock to the southeast, the mesic flatwoods are relatively flat. Dominated by loblolly pines (*Pinus taeda*) and slash pines (*Pinus elliottii*) with an understory of hardwoods and saw palmetto (*Serenoa repens*), this area of mesic flatwoods has suffered from fire exclusion and is considered to be in fair condition. Due to the proximity to State Road A1A, salt marsh and residential areas, prescribed fires would be difficult to manage in Amelia Island State Park. Alternatives for fuels management, including mowing of understory vegetation, may be considered as a proxy for prescribed fires in these limited areas of mesic flatwoods. Routine monitoring for invasive plants is also a priority management measure.

Coastal Interdunal Swale

Coastal interdunal swales occur on the south end of Amelia Islands between relict dune ridges dominated by maritime hammock. This community type was drastically altered by mosquito ditching, lowering the local water table and potentially increasing soil salinity. The ditches were designed to drain the freshwater coastal interdunal swales and allow the intrusion of saltwater tidal flows to discourage the breeding of certain mosquito species and to introduce predatory fish. Most of these freshwater swales were ditched prior to 1960 and are in poor to fair condition. Shrubby vegetation gradually becomes established within swales over time. Periodic inundation with saltwater during storm surges associated with extreme high tides or tropical cyclones often resets succession and causes woody vegetation to die back.

Routine monitoring for invasive plants species will continue in the coastal interdunal swales. Swales should also be protected from foot traffic. Although there is potential for restoration of the swales by filling the ditches with the adjacent spoil piles, the ditches currently support aquatic vegetation. Restoration would require appropriate design and permitting.

Salt Marsh

Small areas of salt marsh occur west of State Road A1A adjacent to the mesic flatwoods. Needlerush, saltmarsh cordgrass, sea-oxeye daisy and saltwort typically dominate the salt marsh community. A series of ditches cuts through the adjacent salt marsh. Some are believed to be old dragline ditches maintained to promote drainage (Reimold et al. 1973). An extensive area of salt marsh occurs on Sawpit Island. Some spoil was placed in the salt marsh during dredging events, but in general the salt marsh is in good condition.

The salt marsh community probably contains the highest diversity of animal species of all the natural communities in the region. Invertebrates are abundant and include mud snails, salt marsh periwinkles, ribbed mussels, blue crabs, fiddler crabs, shrimp and polychaete worms. Many wading birds such as herons and egrets frequent the tidal marshes year-round. Seasonal visitors include the wood stork (*Mycteria americana*) and white ibis (*Eudocimus albus*). Many varieties of ducks also stop over during migration.

Unfortunately, many of these species are sensitive to disturbance from human intrusion. Foot traffic within the marshes can lead to increased disturbance of wildlife as well as some habitat damage and erosion along the unauthorized foot paths. The use of motorized vessels, particularly personal watercraft, within the narrower tidal creeks has also caused an increase in wildlife disturbance and has accelerated erosion within the salt marsh. Pedestrian access to the salt marsh within the park should be limited to prevent damage to the salt marsh vegetation. Landings of boats and paddle craft should also be discouraged to protect the parks' shorelines. With the closure of portions of the George Crady Bridge, pedestrian access to Sawpit Island is closed, reducing potential disturbance impacts to the salt marsh and adjacent communities.

Estuarine Composite Substrate

Estuarine composite substrate is actually a broad community designation encompassing a number of mineral- and faunal-based estuarine communities that exist in a given area, but in quantities too small to delineate separately. The estuarine composite substrate identified at Sawpit Island and Amelia Island includes communities such as estuarine mollusk reef and estuarine unconsolidated substrate. Individually mapping these intermingled subtidal and intertidal natural communities is very difficult, so together they receive a classification as estuarine composite substrate. Protection of the estuarine communities from outside impacts and contamination is the primary management action.

Marine Unconsolidated Substrate.

This natural community is the beach that rims the seaward edge of Amelia Island State Park. On Amelia Island, the white sand beach forms a fringe of variable width around the south tip of the island. This natural community has been affected more than any other by the drastic changes in littoral drift processes along this coastline. Recent receding and accretion patterns are discussed in the *Topography* section.

Wildlife species that frequent the Amelia Island and Sawpit Island beaches include various species of raptors, terns, gulls and shorebirds, several of which nest on the higher portions of the beaches. Most of these species use the beaches as resting and feeding areas, and many do not tolerate disturbance. Included among these species are some that are listed as threatened or endangered and others that have declined markedly in North America over the past several decades. The beaches on Amelia Island also provide nesting sites for marine turtles, primarily the Atlantic loggerhead (*Caretta caretta caretta*).

Beach renourishment activities, including pipelines on the beach and direct placement of dredge spoil, can have direct impacts on nesting female turtles, nests and hatchlings.

Ghost crabs frequent the upper areas of the beaches, while coquina clams and hausteriid amphipods live within the intertidal sands. Numerous marine mollusks occur within the subtidal zone of the beaches, along with many species of marine fish.

By their very nature, marine unconsolidated substrates are very resilient and can recover from severe disturbances. Nourished areas quickly take on the characteristics of a natural beach, assuming that the proper type of spoil was used for nourishment. However, the imperiled species that use these habitats are not nearly so resilient. Protection of shorebirds from human and canine disturbances is a priority management measure for the shorelines at Amelia and Sawpit islands. Strategically placed signage, temporary closure of limited areas, and diplomatic enforcement of park rules are usually sufficient to protect shorebirds. Renourishment activities that involve laying pipelines within the park or placement of sand within the park should be restricted to the fall and winter months to avoid impacting marine turtle and shorebird nesting areas. After nourishment activities, the park is responsible for monitoring the condition of the beach to prevent escarpments or sand compaction from affecting subsequent nesting by marine turtles.

Artificial Pond

A stormwater retention pond was constructed around 1999 on Amelia Island adjacent to the parking lot.

Canal/Ditch

The coastal interdunal swales at the southern end of Amelia Island were ditched in the 1950s. Tidal waters flow in the ditches and salt marsh cordgrass (*Spartina alterniflora*), black needlerush (*Juncus roemerianus*) and other plants typical of salt marshes can be found far inland within these ditches. These wetlands, now brackish, were probably freshwater swales prior to the mosquito ditching. The ditching introduced daily tidal influences to nearly the entire length of these swales and also likely lowered the water table in the vicinity.

Aerial photos from 1943 (prior to the construction of State Road A1A) and 1953 (prior to the mosquito ditching) show a system distinctly different from the estuarine tidal marshes found to the west. It appears that there was a relatively narrow connection between these swales and an adjacent tidal creek near the present location of the George Crady Bridge Fishing Pier. A culvert now passes under State Road A1A where the tidal creek once flowed.

Saltwater influences in the mid to upper reaches of the swales were likely limited to periods of extremely high tide or to storm events. Soils evidence also suggests that these wetlands were at one time freshwater marshes which followed an arcuate dune pattern typical of the southern ends of barrier islands. The soils are not the sulfihemist soils of the adjacent saline marshes. Rather they are wet haploquods (see Soils Map). Over time, the spoil from the excavated ditches has served as a substrate for grasses such as muhly grass and broomsedge and for other common herbs such as camphor weed and sandspur. The spoil piles have naturalized in some areas and are now vegetated by scrubby oaks, slash pines, and, in some areas, cedar and wax myrtle. Restoration of these swales would add significantly to the biodiversity in the park and would restore a relatively rare natural community type, coastal interdunal swale, which is listed as a G3,S2 natural community by the Florida Natural Areas Inventory (FNAI). Restoration of these swales by filling or blocking the ditches is complicated since they extend north of the park boundary onto private lands.

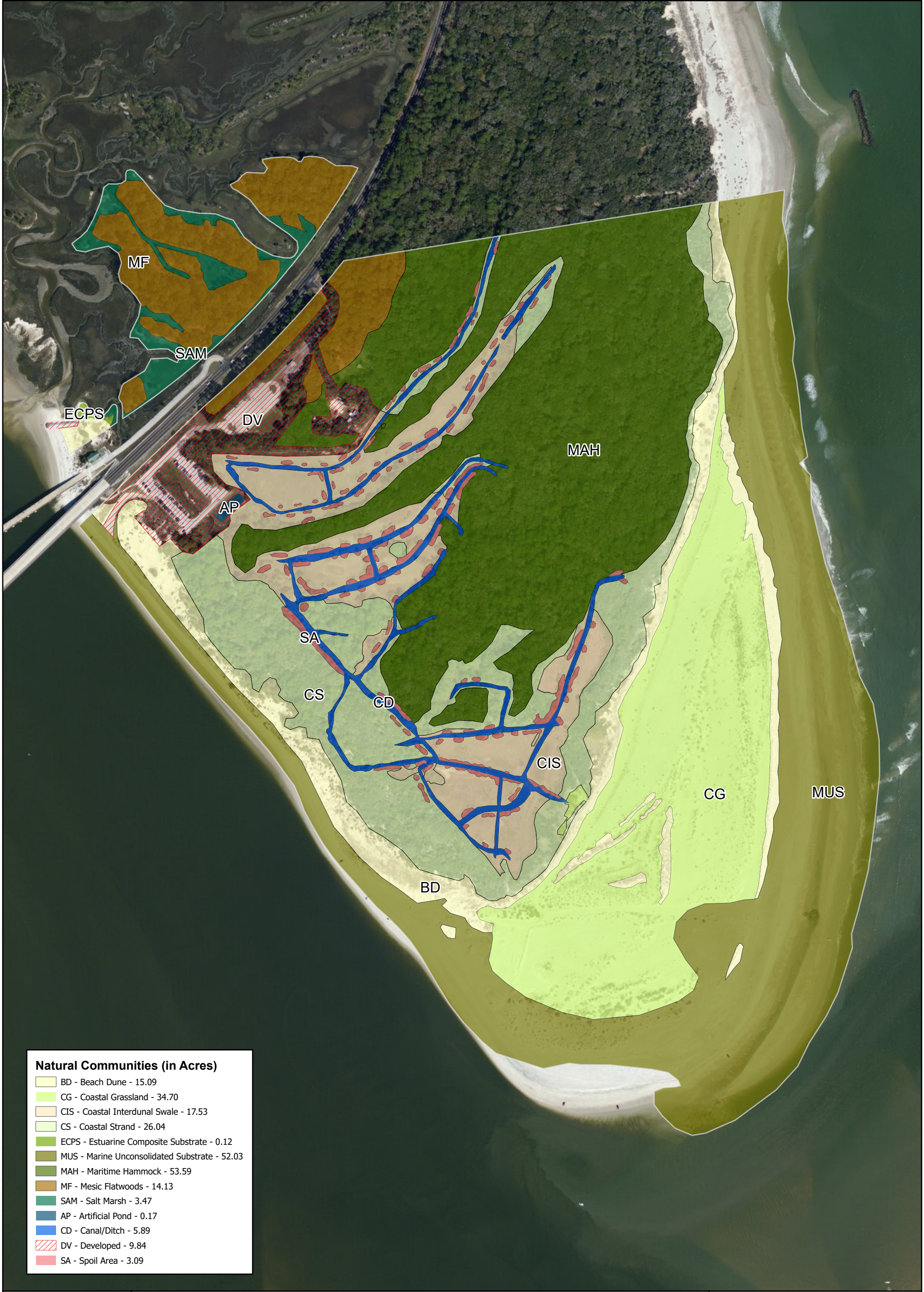
Developed

Developed areas consist of natural communities that have been replaced or nearly replaced by structures or permanently cleared areas. Developed areas include the large paved parking lots, the horse stable area, Seahorse Stables, and the parking area, entrance booth, bathhouse and visitor services provider adjacent to the George Crady Bridge Fishing Pier. Priority invasive plant species (Florida Invasive Species Council Category I and II species) will be removed from all developed areas.

Spoil Area

Limited areas with the park are mapped as spoil areas, primarily the spoil associated with the mosquito ditching on Amelia Island. Shoreline areas on Amelia Island that have been renourished in the past with dredge spoil are classified as marine unconsolidated substrate, beach dune and coastal grassland where appropriate, and not included as spoil areas.

Large areas of spoil from channel dredging in the mid-1900s were disposed of on Sawpit Island. These spoil islands have been colonized by native vegetation and are mapped as coastal strand in most cases.



Natural Communities (in Acres)

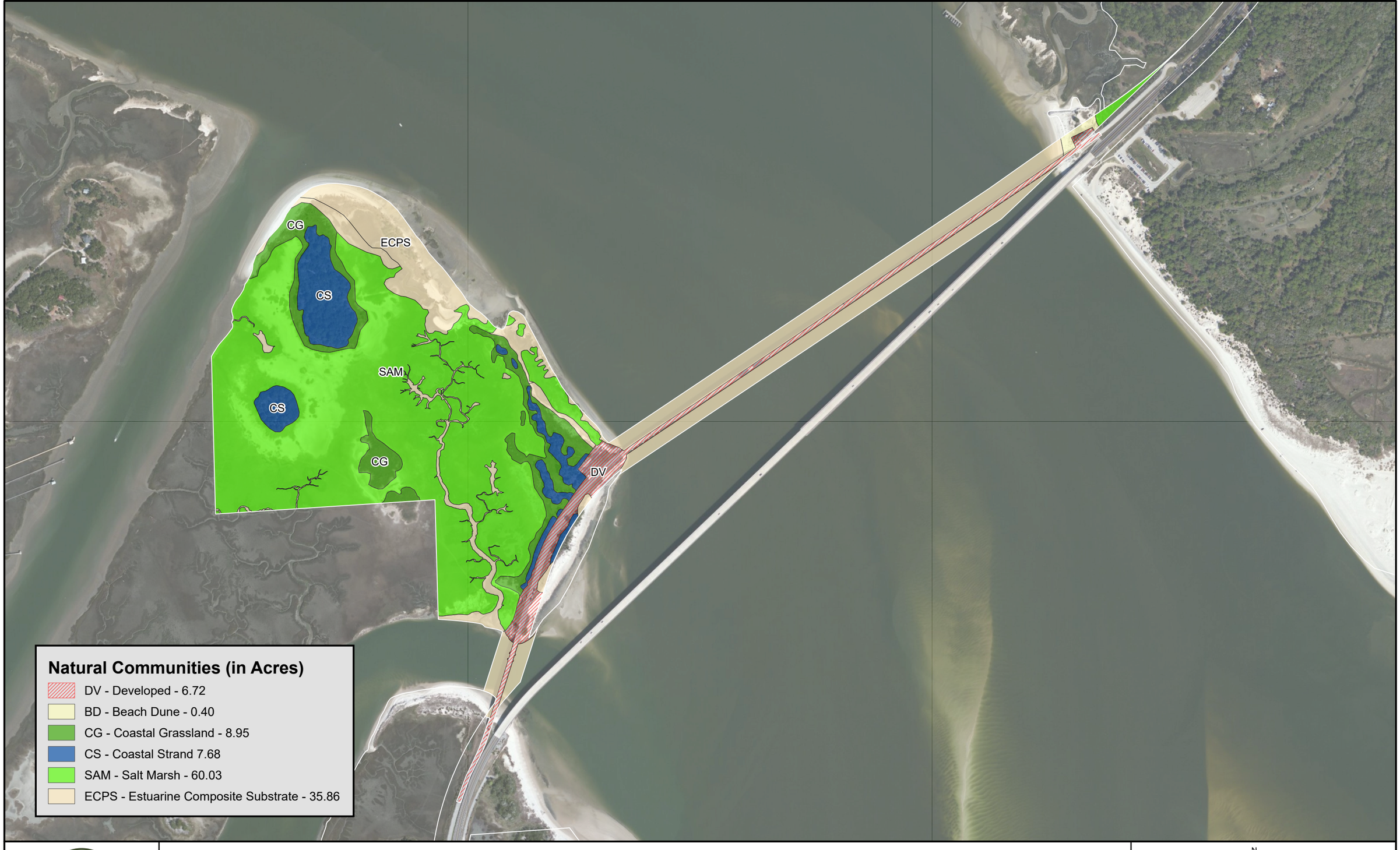
- BD - Beach Dune - 15.09
- CG - Coastal Grassland - 34.70
- CIS - Coastal Interdunal Swale - 17.53
- CS - Coastal Strand - 26.04
- ECPS - Estuarine Composite Substrate - 0.12
- MUS - Marine Unconsolidated Substrate - 52.03
- MAH - Maritime Hammock - 53.59
- MF - Mesic Flatwoods - 14.13
- SAM - Salt Marsh - 3.47
- AP - Artificial Pond - 0.17
- CD - Canal/Ditch - 5.89
- DV - Developed - 9.84
- SA - Spoil Area - 3.09

AMELIA ISLAND STATE PARK
Natural Communities

N

0 400 800 Feet

This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.



GEORGE CRADY BRIDGE FISHING PIER STATE PARK
Natural Communities

N

0 500 Feet 1,000

Sources: ESRI; Florida Department of Environmental Protection
This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

IMPERILED SPECIES

Many imperiled species have been identified on or adjacent to Amelia Island and George Crady Bridge Fishing Pier state parks. Although the impetus of natural systems management as practiced by DRP is management of natural communities and not individual species, certain species are of particular concern and importance, and merit special management attention. Within both parks, these species include marine turtle species and a number of imperiled shorebird species.

The marine turtle species that occur in the near shore areas include the loggerhead (*Caretta caretta*), green (*Chelonia mydas*), Kemp's ridley (*Lepidochelys kempi*), leatherback (*Dermochelys coriacea*) and hawksbill (*Eretmochelys imbricata*). The vast majority of marine turtle nests in the parks are loggerheads.

Amelia Island State Park participates in the Marine Turtle Index Nesting Beach Survey and provides daily logs of the nesting activity of marine turtles to the FWC Fish and Wildlife Research Institute (FWRI) from May 1 through Aug. 31. The parks also provide a yearly nesting summary to FWC through the coordinator for the DRP marine turtle program. The FWRI issues a permit for all marine turtle activities conducted by the parks. The permit allows staff to conduct nesting surveys, conduct stranding and salvage activities, relocate nests and maintain and display preserved specimens. The parks try to avoid relocating nests unless there is no alternative. Protective caging of nests is permitted and used where nest predation is an issue. In most cases, staff members only disturb the nests when truly necessary. The Marine Turtle Conservation Handbook (FWC 2016) provides direction for all marine turtle activities in the parks.

In addition to monitoring and protecting marine turtle nests, the parks must take measures to prevent disruptions to marine turtle nesting cycles. Any future development at the parks must implement proper lighting fixtures which do not deter marine turtle nesting or cause hatchling disorientation. Operation and maintenance of existing lighting, particularly along the George Crady Bridge Fishing Pier, should continue to employ appropriate lighting. Information on appropriate lighting for areas near beaches can be found in Witherington and Martin (1996).

Diamondback terrapins occur in the marshes and tidal creeks of Nassau Sound. This species is declining and is considered a species of greatest conservation need by FWC. Population studies of this species in the area date back to the mid-1990s (Butler 2000; Butler et al 2004). Park staff currently monitor terrapins in cooperation with the Turtle Survival Alliance "Team Terrapin" volunteer project.

Several imperiled shorebird species use the coastal habitats within both parks for feeding and resting sites, but least terns and Wilson's plovers use these areas for nesting as well. Most nesting activity has traditionally centered on the south end of Amelia Island. Least terns are colonial nesters, while Wilson's plovers are solitary nesters that prefer open areas of beach. While these preferred nesting sites provide proximity to food and afford excellent line of sight, they leave the birds highly vulnerable to predation, storms and human disturbance.

Amelia Island and the Nassau Inlet are also important feeding areas for the federally threatened red knot (*Calidris canutus rufa*) during migration, and over-wintering habitat for piping plover *(Charadrius melodus*). A significant number of imperiled wading bird species use the marshes and beaches of Amelia Island State Park and George Crady Bridge Fishing Pier State Park for resting and feeding habitat. These species also tend to be vulnerable to human disturbance.

In 2002, park staff and volunteers began formal implementation of shorebird and seabird surveys on Amelia Island to document the breeding success or failure of nesting colonies. Currently all nesting data are entered into the Florida Shorebird Database that is maintained by FWC. During the pre-nesting season, park staff posts boundaries around the areas where the colonial least terns traditionally congregate and display their pre-nesting behavior. Nesting success of least tern colonies on Amelia Island has been relatively low in some years due to overwash during extreme high tides and disturbance from human visitors and their pets. The accelerated rate of erosion on the southern tip of Amelia Island State Park resulted in the loss of the traditional least tern colony site there. Installation of a terminal groin in 2004 followed by beach renourishment dramatically increased the available high beach nesting areas on Amelia Island State Park, resulting in increased nesting of least terns and Wilson's plovers. These shoreline and sand management projects, amid growing pressure from increased visitation within the parks, necessitated the development of a formal shorebird management plan in 2006 (DEP 2006). This document, a permit requirement for the shoreline armoring on Amelia Island, provided a long-term strategy for maintaining viable shorebird habitat within the parks.

FWC re-established the southern end of Amelia Island as a Critical Wildlife Area (CWA) in 2001. The CWA now includes the park beaches as well as beaches well north of the park and offshore waters adjacent to the park. Beach driving is currently regulated on the southern end of Amelia Island year-round to protect nesting shorebirds and marine turtles.

The exclusion of humans and their pets from least tern colonies during the pre-nesting and nesting seasons is essential for successful nesting. Solitary nesters like the American oystercatcher and Wilson's plover are also vulnerable to disturbance during pre-nesting. Disturbances during the pre-nesting period are more likely to cause least terns to abandon an area than disturbances that occur after egg laying or hatching (H. Smith personal communication). Staff will continue to follow the guidelines and recommendations provided in the DRP resource management standard, "Shorebird and Seabird Management," for the protection and management of least terns and other imperiled shorebird, seabird, and wading bird species. Staff will adopt setback distances for protection of colonial breeding birds as recommended in "Shorebird and Seabird Management" and in Rogers and Smith (1995).

Despite the posting of signs prohibiting entry into the colonies, human intrusion during the nesting season commonly occurs as evidenced by footprints and tire tracks in the sand. Park management prohibits domestic dogs and cats on the park beaches and dunes in order to protect nesting and resting shorebirds and marine turtles. Dogs are perhaps the most destructive and disturbing influence possible on ground-nesting colonial birds. Staff will coordinate enforcement of regulations with the FWC Division of Law Enforcement and will continue to work with partners in FWC, Audubon and other members of the Timucuan Shorebird Partnership to protect shorebirds and seabirds. One option that has been successful on Amelia Island is the closing of portions of the park beaches to visitor access during the pre-nesting and nesting seasons, rather than just posting the colony boundaries.

Other imperiled shorebird and wading bird species also utilize the parks for resting and feeding activities. There is a high potential for wildlife disturbance where these species interact with humans, particularly in the wetland marshes and beach areas of the parks. These species would benefit from an active environmental education program aimed at informing park visitors about the impacts of disturbance on wildlife. Repeated disturbances by park visitors (and their pets) walking along the shoreline can, over time, be detrimental to imperiled species such as the black skimmer, least tern, Caspian tern (*Sterna caspia*), royal tern and sandwich tern (H. Smith personal communication). Smith

suggests that tangential approaches to bird colonies or flocks of resting shorebirds may be less disturbing than direct approaches. Park and district staff will continue to work on educating the public about successful coexistence with colonial nesting species and will continue to participate in the regional Timucuan Shorebird Partnership.

Worthington's marsh wren (*Cistothorus palustris griseus*), an FWC Species of Special Concern, breeds in the salt marshes of the region. FNAI staff have conducted surveys and documented Worthington's marsh wren and Macgillivray's seaside sparrow (*Ammospiza maritimus macgillivraii*) within the park salt marshes (NeSmith and Jue 2003). FWC (Schwarzer 2013) proposed further surveys of Worthington's marsh wren in the region and conducted surveys in 2014-15 followed by nest monitoring in 2015-17. Both species tend to prefer taller spartina stands further from upland edges (Schwarzer et al 2018).

The painted bunting (*Passerina ciris*), a species that nests in the area, has been declining in the southeastern United States over the past several decades according to Breeding Bird Survey data (Sauer et al. 2012; Delany et al 2013). Scientists now consider the eastern population of painted bunting at risk due to a number of factors, including loss of optimum breeding habitat and fragmentation of habitat in general (Sykes and Holzman 2005). Coastal strand, and to a slightly lesser extent maritime hammock, are the most important breeding habitats for painted buntings in the southeastern United States (Meyers 2011). In recognition of the vulnerability of the species, extra precautions should be taken when planning and implementing development in the park, and when planning and siting visitor use activities.

Gopher tortoises are particularly abundant in certain coastal areas of Amelia Island State Park. Park visitors may encounter tortoises or their burrows along roads and trails or in other open spaces.

The waters offshore of Amelia Island are winter calving grounds for the endangered northern right whale (*Eubalaena glacialis*) from Dec. 1 through March 31. The National Marine Fisheries Service has designated the south Georgia and north Florida regions as Critical Habitat for the northern right whale. The boundaries of this area extend from the shoreline to 15 miles offshore (Raichle et al 1997).

The West Indian manatee has also been documented in the estuarine areas around Nassau Sound. A growing concern in the salt marshes and tidal creeks is the disturbance of imperiled bird species and the threatened West Indian manatee by motorized vessels and personal watercraft or jet skis. The noise and wave action generated by boat engines can have serious impacts on the feeding and breeding success of certain wildlife species in these areas. Motorized watercraft are also a serious threat to the West Indian manatee.

Imperiled species protection should include continuation of monitoring programs such as roadkill surveys that can be accomplished as part of routine patrols by park staff. Data from these surveys can indicate the presence of otherwise unrecorded species or areas of particular concentrations of wildlife requiring special protection measures.

Protection of imperiled plant species means protecting suitable habitat from disturbance. A population of the state threatened shell-mound prickly pear, *Opuntia stricta*, occurs in the park. Recently the invasive pest of the cactus, *Cactoblastis cactorum*, was also found in the park. Because of the arrival of this pest, the park should monitor populations of *Opuntia stricta* for *Cactoblastis cactorum* and remove the egg sticks of this exotic moth as needed.

The table below contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank.

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**		**Management Actions**			**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
PLANTS						
Shell-mound pricklypear *Opuntia stricta*			T		8,9	Tier 2
Moundlily yucca *Yucca gloriosa*			E		9,10	Tier 1
REPTILES						
American alligator *Alligator mississippiensis*	FT(S/A)	FT(S/A)		G5,S4	4,13	Tier 1
Loggerhead sea turtle *Caretta caretta*	FT	T		G3,S3	2,8,10,13	Tier 3
Green sea turtle *Chelonia mydas*	FT	T		G3,S2S3	2,8,10,13	Tier 3
Leatherback sea turtle *Dermochelys coriacea*	FE	E		G2,S2	2,8,10,13	Tier 3
Gopher tortoise *Gopherus polyphemus*	ST			G3,S3	8,10,12, 13	Tier 1
BIRDS						

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**			**Management Actions**		**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Macgillivray's Seaside Sparrow *Ammospiza maritimus macgillivraii*				G4T3, S2	4	Tier 3
Rufa Red Knot *Calidris canutus rufa*	FT	T		G4T2,S2N	4,8,9,10, 13	Tier 3
Piping Plover *Charadrius melodus*	FT	T		G3,S2	8,9,10, 13	Tier 3
Wilson's Plover *Charadrius wilsonia*				G5,S2	8,9,10, 13	Tier 3
Worthington's Marsh Wren *Cistothorus palustris griseus*	ST			G5T3, S2	4	Tier 3
Little blue heron *Egretta caerulea*	ST			G5,S4	4	Tier 2
Reddish egret *Egretta rufescens*	ST			G4,S2	4	Tier 2
Tricolor heron *Egretta tricolor*	ST			G5,S4	4	Tier 2
Merlin *Falco columbarius*				G5,S2		Tier 2

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**		**Management Actions**			**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Peregrine falcon *Falco peregrinus*				G4,S2		Tier 2
Magnificent frigatebird *Fregata magnificens*				G5,S1		Tier 2
Gull-billed Tern *Gelochelidon nilotica*				G5,S2	8,9,10,13	Tier 2
American oystercatcher *Haematopus palliatus*	ST			G5,S2	8,9,10,13	Tier 2
Caspian tern *Hydroprogne caspia*				G5,S2	10,13	Tier 2
Wood stork *Mycteria americana*	FT	T		G4,S2	4	Tier 2
Painted Bunting *Passerina ciris ciris*				G5T3Q, S1S2	10	Tier 2
Roseate Spoonbill *Platalea ajaja*	ST			G5,S2	4	Tier 2
Black skimmer *Rynchops niger*	ST			G5,S3	8,9,10,13	Tier 2
Least tern *Sternula antillarum*	ST			G4,S3	8,9,10, 11,13	Tier 3
Sandwich tern *Thalasseus sandvicensis*				G5,S2	10,13	Tier 2

Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**	**Management Actions**				**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
MAMMALS						
North Atlantic right whale *Eubalaena glacialis*	FE	E		G1,S1	10	Tier 1
West Indian manatee *Trichechus manatus*	FT	T		G2G3T2, S2S3	13	Tier 1

Management Actions:
1. Prescribed Fire
2. Exotic Plant Removal
3. Population Translocation/Augmentation/Restocking
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from visitor impacts (establish buffers)/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education

Monitoring Level:
Tier 1: Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e., not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.
Tier 2: Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.
Tier 3: Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.
Tier 4: Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.
Tier 5: Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species. [If referenced in table, provide discussion in narrative]

Objective A: Update baseline imperiled species occurrence list.

- Action 1 - Update imperiled species list as necessary to add or remove species in compliance with current FWC or USFWS listing status and update any accepted nomenclature changes.

Objective B: Continue existing monitoring protocols for 10 imperiled animal species.

- Action 1 - Continue to implement existing monitoring protocols, for two marine turtle species, as well as piping plover, red knot, Wilson's plover, least tern, black skimmer, American oystercatcher, Worthington's marsh wren and MacGillivray's seaside sparrow.
- Action 2 - Review and revise protocols as necessary to remain consistent with FWC and USFWS standards.

Imperiled species management at Amelia Island and George Crady Bridge Fishing Pier state parks focuses primarily on shorebirds and other coastal bird species as well as marine turtle species that nest within the parks. DRP coordinates all monitoring of imperiled species at the parks with FWC and submits monitoring data to FWC as required.

Marine turtle nesting is monitored in strict accordance with the FWC Marine Turtle Conservation Handbook (FWC 2016). Amelia Island State Park is part of the Index Nest Beach Survey program. Amelia Island State Park is also surveyed as part of the Statewide Nesting Beach Survey in accordance with DRP's Marine Turtle Permit. The parks use a digital survey application developed by DRP and adopted by FWC using GPS data collectors in the field that allow direct digital data entry of the marine turtle nesting data.

Shorebird surveys are conducted in accordance with the DRP's Resource Management Standard, "Shorebird and Seabird Management." Surveys are conducted both during the nesting season and during the winter and migratory seasons. Data for nesting shorebirds are submitted to FWC via the online Florida Shorebird Database. The primary focus of surveys is on imperiled shorebird and seabird species that nest on the beaches and in the dunes. However, over-wintering and migratory imperiled species such as the piping plover and red knot are monitored as well. Winter Shorebird Survey data are also submitted to FWC. The parks' survey efforts are supplemented by dedicated volunteers who provide valuable assistance in monitoring imperiled shorebird and seabird species in the park. Volunteers routinely monitor shorebird flocks for banded birds, particularly piping plovers and red knots, and report that information to the USFWS and international researchers working with these migratory species.

FWC has developed a detailed species action plan for Worthington's marsh wren (FWC 2013) and conducted surveys in the region in 2014-17. The research focused on habitat identification and population surveys, as well as nest success, and included surveys for MacGillivray's seaside sparrow (Schwarzer 2013, Schwarzer et al 2018). The parks will work with FWC in the future if additional surveys for Worthington's marsh wren and MacGillivray's seaside sparrow are conducted in the region.

Objective C: Continue monitoring of diamondback terrapin nesting in cooperation with the Turtle Survival Alliance.

- Action 1 - Continue monitoring of diamondback terrapins.
- Action 2 - Monitor predation and disturbance of diamondback terrapins and mitigate as needed.

INVASIVE SPECIES

Amelia Island and George Crady Bridge Fishing Pier state parks have few invasive species. Several mimosas (*Albizia julibrissin*) have occurred in the ruderal areas of Sawpit Island just north of Big Talbot Island, and the area should be periodically checked when access is again possible. An invasive species of lantana (*Lantana camara*) may be present at Amelia Island. Since the endangered native lantana (*Lantana depressa*) occurs along the north Atlantic coast, staff removing *Lantana camara* should be aware of the differences between these two species and be very cautious about removing any lantana specimens that are not flowering. Golden Bamboo (*Phyllostachys aurea*) and skunk vine (*Peaderia foetida*) have both been recorded at Amelia Island and are high priorities for control as they can both spread aggressively.

Amelia Island State Park Invasive Plants Inventory			
Species Name Scientific Name - Common Name	FLEPPC Category	Distribution	Zone ID
Lantana camara - Lantana	I	Single Plant or Clump	AM-02
Paederia foetida - Skunk vine	I	Scattered Plants or Clumps	AM-02
Phyllostachys aurea - Golden bamboo	II	Single Plant or Clump	AM-02
Sphagneticola trilobata - Wedelia	II	Single Plant or Clump	AM-02

The Asian ambrosia beetle (*Xyleborus glabratus)* has caused high rates of mortality to mature red bay trees in maritime hammocks by spreading laurel wilt disease. The park should continue to discourage transportation of firewood from infected areas or from allowing visitors to bring firewood into the park.

The nine-banded armadillo (*Dasypus novemcinctus*) occurs throughout the parks. Staff should monitor the abundance of armadillos and take steps to remove them when they become a problem. Invasive animal removal reports indicate that feral cats (*Felis domesticus*) and Norway rats (*Rattus norvegicus*) also occur within the parks. Staff members remove these animals when encountered, in accordance with DRP procedural guidelines.

Objective A: Annually treat 23 gross acres equaling 0.24 infested acres of invasive plant species.

- Action 1 - Annually develop invasive plant management work plan.
- Action 2 - Implement annual work plan by treating 23 gross acres equaling 0.24 infested acres annually. Treatment should focus on annual treatment of golden bamboo and skunkvine.

Objective B: Implement control measures on one nuisance species.

- Action 1 - Remove feral cats as needed.

CULTURAL RESOURCES

The Florida Master Site File (FMSF), maintained by the Division of Historical Resources, reveals four recorded archaeological sites within Amelia Island State Park and George Crady Bridge Fishing Pier State Park, two historic bridge structures and two linear resources at the parks.

Human activities affected these areas well before European contact, about 1516-30. The island's exposure to the Atlantic Ocean and its seasonal extremes probably dictated occasional or seasonal human use and settlement, rather than long term and persistent village occupations.

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	**Culture/Period**	**Description**	**Significance**	**Condition**	**Treatment**
DU08097 Sawpit Creek	St. Johns, 700 B.C.-A.D. 1500	Archaeological Site	NE	F	P
DU13945 ALACHUA OVERPASS	1948	Historic Bridge	NE	F	RH
DU21449 A1A	Modern, 1950-present	Linear Resource	NR	G	RH
NA00730 NASSAU BRIDGE	Pre-historic American, 1821-present	Archaeological Site	NE	G	P
NA00794 Alachua Overpass	1948	Historic Bridge	NE	F	RH
NA01091 Entrance Redeposit	Pre-historic Orange St. Johns, 700 B.C.-A.D. 1500	Archaeological Site	NE	G	P

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	**Culture/Period**	**Description**	**Significance**	**Condition**	**Treatment**
NA01092 Beach Road Redeposit	Pre-historic Orange St. Johns, 700 B.C.-A.D. 1500	Archaeological Site	NE	G	P
NA01248 Highway A1A	American, 1900 to present	Linear Resource	NR	GNA	RH

Objective A: Assess and evaluate three of eight recorded cultural resources in the park.

- Action 1 - Complete three assessments/evaluations of archaeological sites.

  Historic Structures Reports (HSRs) for historic buildings and cultural landscapes are not applicable for this planning cycle. Prioritize stabilization, restoration and rehabilitation projects.

Currently, only archaeological sites within Amelia Island State Park should be assessed because the southern end of the George Crady Bridge is closed for safety reasons.

Safety assessments of the segments of the historic bridge are managed by the DOT at this time. The other two cultural resources in these parks are active segments of State Road A1A and are assessed by DOT.

Objective B: Compile reliable documentation for all recorded historical and archaeological resources.

- Action 1 - Ensure all known sites are recorded or updated in the Florida Master Site File.

As erosion continues to impact these parks, additional resources may be discovered. These will be recorded with the FMSF if found.

Objective C: Bring three of eight recorded cultural resources into good condition.

- Action 1 - Continue to implement regular monitoring programs for three cultural sites.
- Action 2 - Implement a cyclical maintenance program as needed.

LAND USE COMPONENT

VISITATION

Providing miles of shoreline along the Atlantic Ocean and Nassau Sound, Amelia Island State Park and George Crady Bridge Fishing Pier State Park welcome visitors with panoramic coastal views and multiple recreational opportunities. Both parks also provide essential habitat for a variety of coastal and marine species, offering ample wildlife viewing opportunities. Amelia Island's connection to the George Crady Bridge provides access to the deep waters of Nassau Sound, a favored spot among local anglers.

Located at the southern tip of Amelia Island, the units are bordered by the Nassau River–St. John's River Marshes Aquatic Preserve. Other nearby conservation lands include Fort Clinch State Park at the northern tip of Amelia Island and the Talbot Islands group of state parks located to the south in adjacent Duval County. Collectively, these state park units preserve some of the last remaining undeveloped natural areas along the sea islands of northeast Florida for visitors' enjoyment.

Since the George Crady Bridge is structurally condemned and heavily visited, numerous alternative solutions to preserve this fishing experience are being considered. A pier structure that reaches out into the necessary depths of Nassau Sound is recommended to replace the existing George Crady Bridge.

Trends

The close association between Amelia Island State Park and the George Crady Bridge Fishing Pier drives these parks to experience similar visitation. Most of the visitation for these neighboring parks is concentrated around the mid-summer and early fall. These warmer months attract visitors to drive on and enjoy the beach at Amelia Island or walk over to the George Crady Bridge and fish during the transitional seasons.

EXISTING FACILITIES AND INFRASTRUCTURE

Amelia Island State Park

All visitor and support facilities in the park are located on the southeast side of A1A. Infrastructure consists of a small unutilized ranger station, a paved park road and two large parking areas that collectively accommodate 175 vehicles. A portable restroom is located at the southwest edge of the southern parking area, at the inland end of a short pedestrian path to the beach. The parking areas are separated by an area of low-lying natural community, linked only by a 300-foot segment of park road. A short walkway beneath the State Road A1A bridge connects the southern parking area to the George Crady Bridge Fishing Pier. Via a designated sand road extending southwest from the southern parking area, visitors are given access to drive and park personal vehicles along the beach. Some segments of the beach are seasonally restricted due to shorebird nesting. Four-wheel drive is necessary as the road is unstabilized road, such that all driving and parking along the beach occurs on natural sand.

Approximately 175 feet to the southeast of the vehicular access path is a parallel natural access footpath for beach access. Three interpretive panels are displayed along the beach access path and near the shore to educate visitors about the significant role of the park in habitat protection for threatened shorebirds. Volunteer shorebird stewards are also stationed at nesting areas during peak visitation to monitor for impacts and conduct educational outreach regarding threatened and migratory species.

Guided horseback rides, facilitated by a concessionaire, take visitors along a 0.4-mile trail that winds through the maritime hammock and along the Atlantic beach. Infrastructure of the concessionaire area consists of a small unimproved parking area, interpretive signs, one restroom, and an equestrian stable.

The park maintenance shop and pumphouse are located between A1A and the park road near the northern parking area and ranger station.

George Crady Bridge Fishing Pier State Park

The northern end of the park is accessible via a pathway under State Road A1A from Amelia Island State Park. Residence Court holds eight parking spaces for the tackle shop and pier but is currently closed to the public. The On the Line Bait and Tackle Shop provides restrooms, bait, bicycle racks and picnic tables.

The Sawpit Creek Boat Ramp area on Big Talbot Island provides access to the southern end of the bridge. This area provides a 15-space paved parking area and access to Sawpit Creek.

Facilities Inventory

Amelia Island State Park

Equestrian Entrance	
Parking Area (12 spaces)	1
Interpretive Signage	4
Restroom	1
Equestrian Trail (Mileage)	0.40
Entrance	
Parking Areas (175 spaces)	2
Entrance Station	1
Beach Use Area	
Access Path (Feet)	260
Access Ramp	1

George Crady Bridge Fishing Pier State Park

Northern End	
On the Line Bait & Tackle Concessionaire	1
Paved Parking Area (8 spaces)	1
Southern End	
Paved Parking Area (15 spaces)	1

CONCEPTUAL LAND USE PLAN

Detailed Conceptual Land Use Plan Objectives

Amelia Island State Park

Below are detailed descriptions of land planning proposals and considerations, organized according to use areas or other types of specific sites within the park.

Entrance and Park Road

Objective: Enhance visitor safety

Action Items:

- *Create stabilized access path.*
- *Install directional signage.*

Two large parking areas are separated by a swath of coastal swale. Visitors who park in the upper parking area near the entrance station must walk along the park road to access the beach. A stabilized footpath should be created along the edge of the road to provide a safe pathway for pedestrians. This pathway should extend approximately 200 feet from the northern parking area to the southern area along the existing tree line. Signage should be installed along the pathway to orient and direct visitors to the designated beach access and the point of access to the fishing pier.

Parking Area

Objective: Provide for a small permanent restroom

The only permanent restroom for the park is in the Bait and Tackle Shop, located at the adjacent George Crady Bridge Fishing Pier. To access the restroom from the parking areas or from the Amelia Island beach, visitors must follow a path that crosses under State Road A1A. Construction of a small permanent restroom is proposed in the northeastern corner of the southern parking area where multiple parking spaces are delineated for vehicles with boat trailers. This location is within reasonable proximity to both the pedestrian and vehicular beach access points and would avoid new construction in natural or otherwise undeveloped areas. Such a permanent facility would improve quality of experience and increase restroom capacity for this heavily visited park. Although neither Amelia Island nor George Crady Bridge offer a boat ramp, if boat trailer parking is needed, alternative spaces exist in the southern parking area.

Equestrian Stables

Objective: Improve equestrian entrance and access road

Action Items:

- *Provide wayfinding signage.*
- *Stabilize parking lot and access road.*

The equestrian entrance and parking area require improvements. Adequate wayfinding and other informational signage are needed to direct visitors to the riding stables. Parking improvements should include the installation of parking curbs. Any ground stabilization measures should consider the use of

pervious material. If concessionaire services are no longer required or deemed appropriate, alternate uses for the current location should consider primitive camping.

Beach Access

Objective: Improve beach access
Action Items:

- *Provide a boardwalk or mobility mats.*
- *Provide sensitive habitat interpretation.*

Unintended trails have been gradually created by errant foot traffic from the lower parking area to the Nassau Sound shoreline. Either a boardwalk or designated trail with mobility mat should be installed to provide visitors safe and low impact access through the sensitive dune area.

Portions of Amelia Island State Park are designated as Colonial Nesting Bird Sites and Critical Wildlife Areas. This information, along with the need to seasonally restrict access to these specific segments of beach, should be interpreted to visitors as they access the Nassau Sound shoreline. An interpretive element should be strategically provided at the beginning of the designated pedestrian beach access path near the lower parking area.

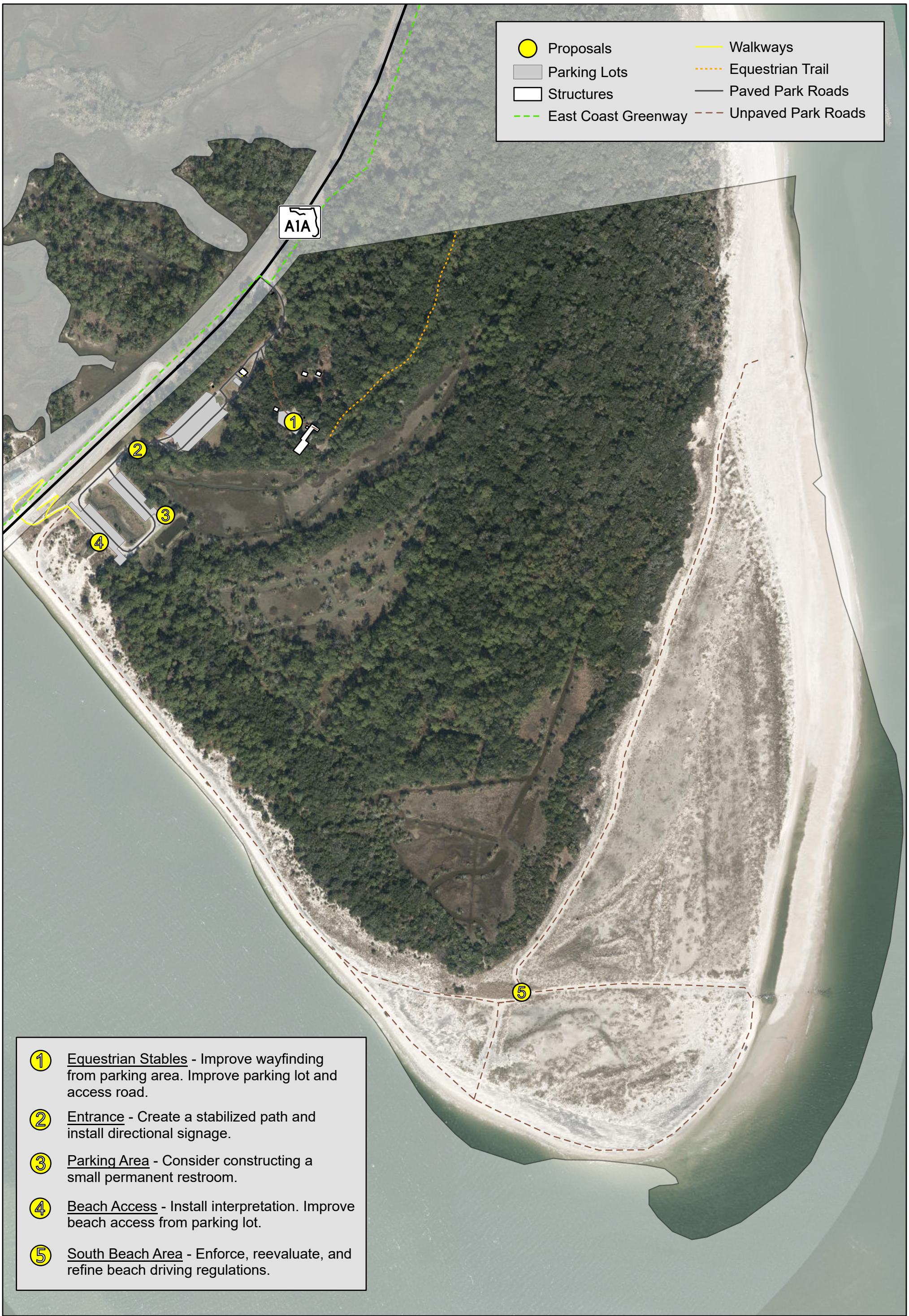
South Beach Area

Objective: Refine and enforce beach driving regulations as necessary
Action Items:

- *Evaluate and reconsider beach driving access points, corridors and perpetuity as necessary to ensure resource management protection and visitor safety.*

All forms of beach driving, including ATVs and UTVs, pose danger to pairing shorebirds, eggs and chicks. Shorebird and sea turtle monitors should adhere to established beach driving protocols in the course of daily operations to avoid incidental impacts to coastal wildlife. In addition, posted and restricted areas will require daily monitoring throughout the nesting season to ensure visitor compliance. To protect nesting species, based on data from routine site monitoring, the DRP will continue to seasonally close appropriate segments of beach to public driving.

Currently, the adjacent Nassau County-managed segment of public beach can only be accessed by vehicle through the park. DRP will continue to coordinate with Nassau County to refine and enforce beach driving regulations to ensure effective management of imperiled species and maintain public safety. This may include the realignment or relocation of beach driving access points and corridors or the need to revisit the viability and sustainability of beach driving within the park dependent on the dynamics of the coastal environment and use trends. (For additional details, see the *Imperiled Species* section.)



1. Equestrian Stables - Improve wayfinding from parking area. Improve parking lot and access road.
2. Entrance - Create a stabilized path and install directional signage.
3. Parking Area - Consider constructing a small permanent restroom.
4. Beach Access - Install interpretation. Improve beach access from parking lot.
5. South Beach Area - Enforce, reevaluate, and refine beach driving regulations.

Amelia Island State Park

Conceptual Land Use Plan

0 500 1,000 Feet

N

George Crady Bridge Fishing Pier State Park

Below are detailed descriptions of land planning proposals and considerations, organized according to use areas or other types of specific sites within the park.

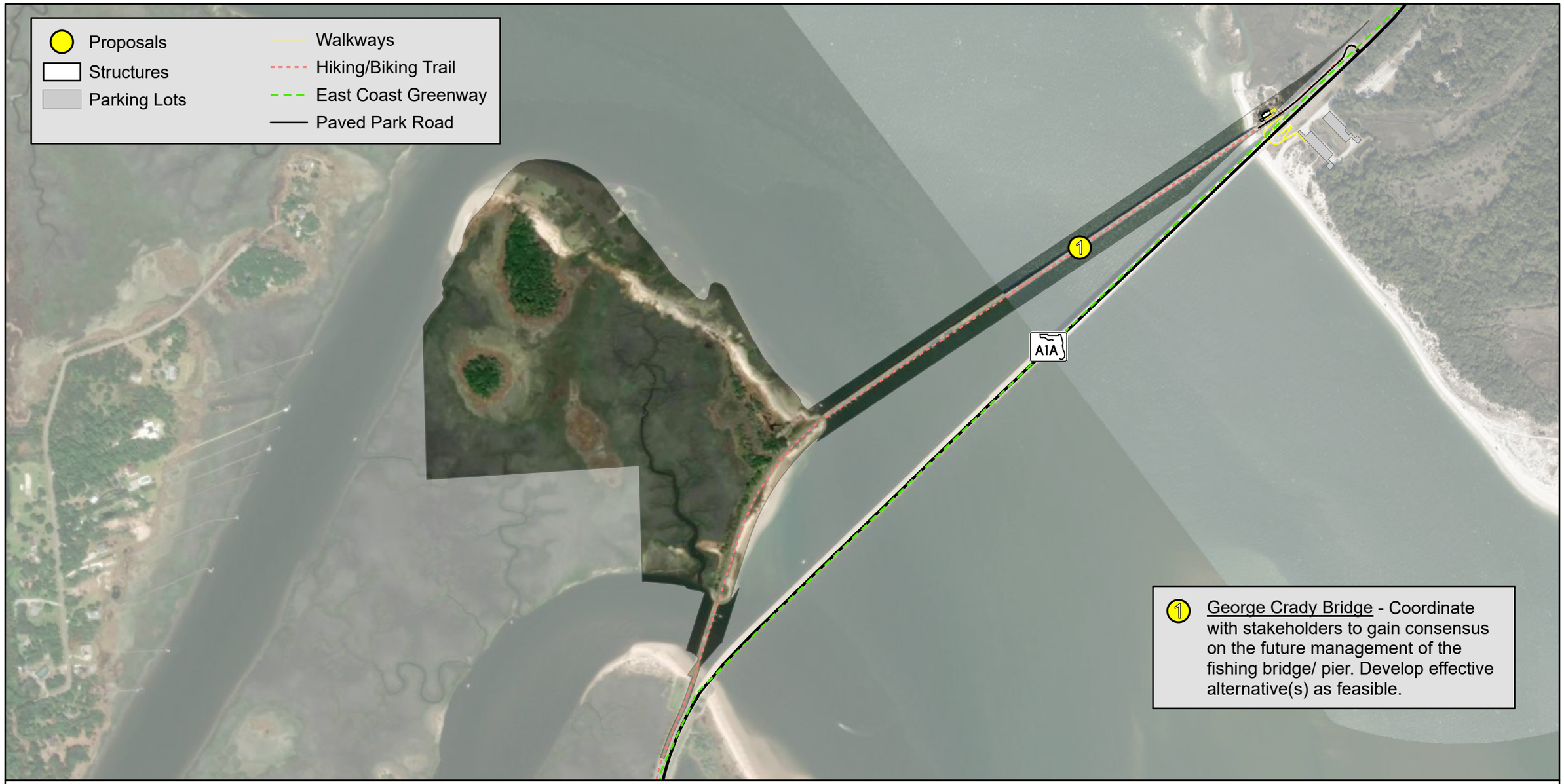
George Crady Bridge

Objective: Coordinate with stakeholders to gain consensus on the future management of the fishing bridge/pier

Action Items:

- *Develop effective alternative(s) as feasible.*

Nearly the entirety of this unit consists of a decommissioned Florida Department of Transportation bridge. Segments of this bridge have been closed to pedestrian traffic (fishing) due to structural deterioration, and remaining segments have a similar finite service period for current use. With structural surveys indicating the improbability of repairs to extend the life of the structure, considerations should be made for the design of one or multiple new piers that could potentially replicate the current user experience. Recognizing the shoreline dynamics, tidal stressors and adjacency to shipping lanes, the specific site selection and structural design of any new piers will entail complex engineering. Designs for any replacement pier should consider several environmental and recreational factors. Bathymetry under the fishing platforms should be assessed to ensure access to waters that are well suited for fishing. Access points should account for proximity to existing designated parking, ensuring relative convenience for anglers carrying gear. Where structural anchors and walkways are installed, alterations to the natural shoreline should be minimal. Designs should maximize the surface area (i.e., platform space) that is best suited for fishing while minimizing the approach (i.e., walking distance from entry point to casting sites). For the purposes of visitor experience and safety, ample space for the avoidance of crowding on such potential piers should also be a priority in design.



George Crady Bridge Fishing Pier State Park

Conceptual Land Use Plan

0 750 1,500 Feet

N

OPTIMUM BOUNDARY

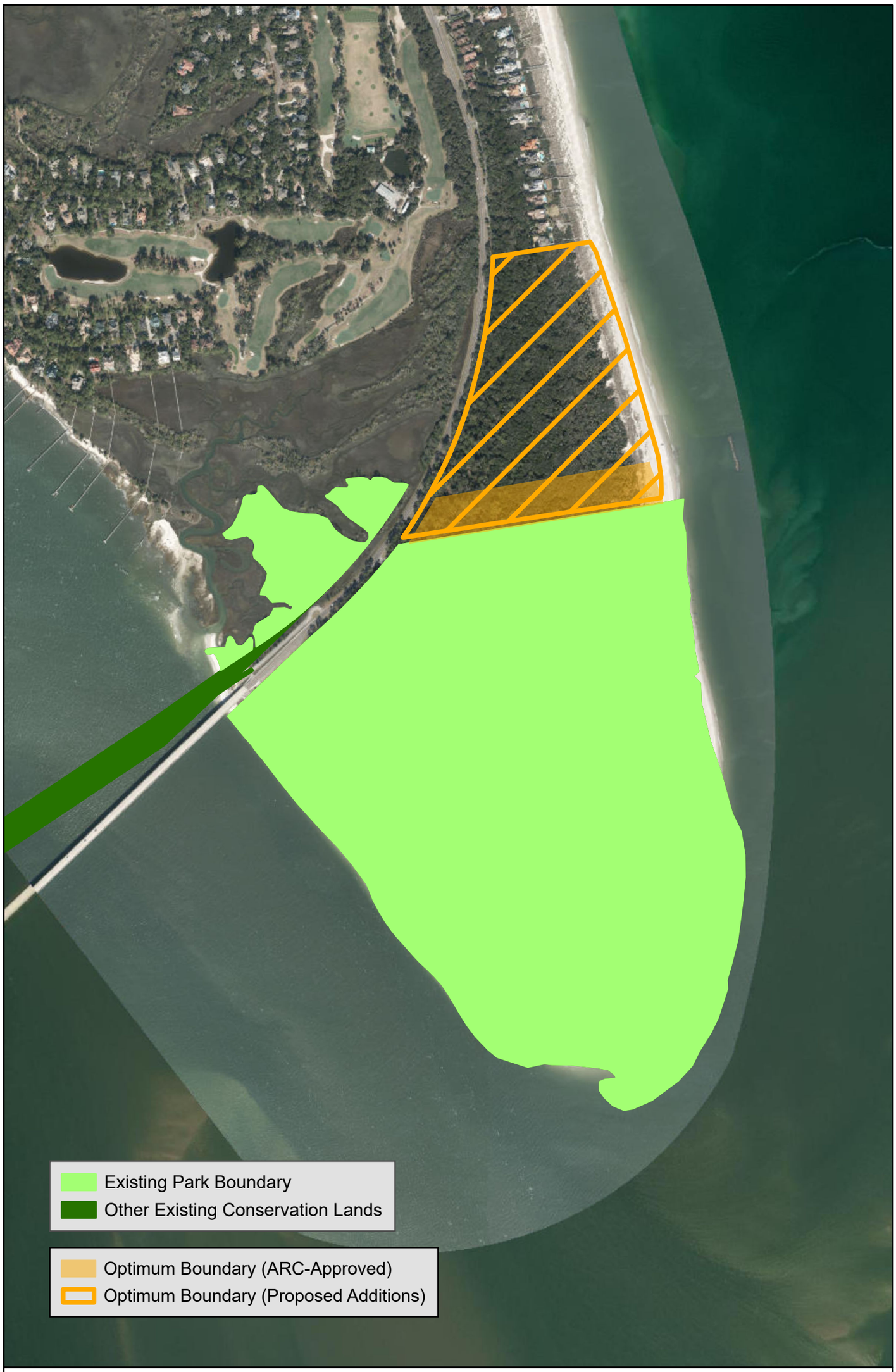
Amelia Island State Park

The park is a part of the chain of conservation lands along the coast of Northeast Florida. The Timucuan Preserve protects undisturbed salt marshes and associated wildlife habitats, and DRP protects another 8,000 acres of state park lands in the general vicinity. The collection of parks and preserves in northeast Florida, one of the largest urban park systems in the nation, includes some of the last unspoiled natural communities and significant cultural sites on the Atlantic Coast.

The approximately 50-acre undeveloped parcel adjacent to the north park boundary is of strategic conservation and recreation value. This area largely consists of high-quality maritime hammock and beach dune that would expand protection of imperiled coastal habitats and provide for additional recreational opportunities.

George Crady Bridge Fishing Pier State Park

There are no optimum boundary parcels associated with this unit. The boundary of this unit is narrow and linear, adhering primarily to the bridge and road corridor. It is framed on its northwest side by a portion of Amelia Island State Park and on its southeast side by State Road A1A and DOT right-of-way with the main portion of Amelia Island State Park. Given this boundary configuration, no additional lands are pertinent to the enhancement of recreation or conservation needs.



Amelia Island State Park

Optimum Boundary

0 500 1,000 Feet

N