# TOWN OF SULLIVAN'S ISLAND LOCAL COMPREHENSIVE BEACH MANAGEMENT PLAN

2017 Update

Town Council Adoption
November, 2017

**Contents**

## Section 1: Introduction

The South Carolina Beachfront Management Act is intended to protect both life and property, preserve unique ecological habitats, and maintain the beach for future use by all citizens of the state. The Act addresses preservation of a dry sand beach, public access opportunities, measures for renourishment on eroding beaches, and the protection of natural vegetation within the beach and dune system. The Act directs the South Carolina Department of Health and Environmental Control's Office of Ocean and Coastal Resources Management (SCDHEC-OCRM) to implement the forty-year retreat policy by designating a baseline and setback line (Section 4.1.2) and regulating development on all oceanfront property seaward of the setback line. It also establishes a long-range State comprehensive plan for management of the beach and dune resources. One of the most important provisions of the Act requires local beachfront counties and municipalities to develop and adopt local comprehensive beach management plans which refine the State's beach management strategy to address local conditions and issues. The Act requires that these local plans be long-range, comprehensive, and consistent with the Beachfront Management Act.

In accordance with the Beachfront Management Act, local comprehensive beach management plans are required, at a minimum, to include the following ten elements:

1. an inventory of beach profile data and historic erosion rate data for each standard erosion zone and inlet erosion zone under the local jurisdiction;
2. an inventory of public beach accesses along with a plan for enhancing public access and parking;
3. an inventory of all structures located in the area seaward of the setback line;
4. an inventory of turtle nesting and important habitats of the beach/dune system and a protection and restoration plan if necessary;
5. a conventional zoning and land use plan consistent with the purposes of the Act for the area seaward of the setback line;
6. an analysis of beach erosion control alternatives, including renourishment of the beach under the local government's jurisdiction;
7. a drainage plan for the area seaward of the setback zone;
8. a post disaster plan including plans for cleanup, maintaining essential services, protecting public health, emergency building ordinances, and the establishment of priorities, all of which must be consistent with the Act;
9. a detailed strategy for achieving the goals of this chapter by the end of the forty-year retreat period. Consideration must be given to relocating buildings, removal of erosion control structures, and relocation of utilities; and

10. a detailed strategy for achieving the goals of preservation of existing public access and the enhancement of public access to assure full enjoyment of the beach by all residents and visitors.

## 1.1 Purpose

In accordance with the Beachfront Management Act, the Town of Sullivan's Island (henceforth Town or Sullivan's Island) has prepared this local comprehensive beach management plan in coordination with the SCDHEC-OCRM. This plan represents considerable effort, inventory, and deliberation on the part of the Town, and establishes a strategy for the management of the Town beach for the sustainable enjoyment by residents and visitors.

Sullivan's Island has written and adopted this plan with three objectives:

- Preserve the beauty and accessibility of the beach on Sullivan's Island.
- To help Sullivan's Island direct and control future growth, and serve as an essential tool in all of its forthcoming planning activities.
- Enable the Town to qualify for its share of future beach renourishment funding.

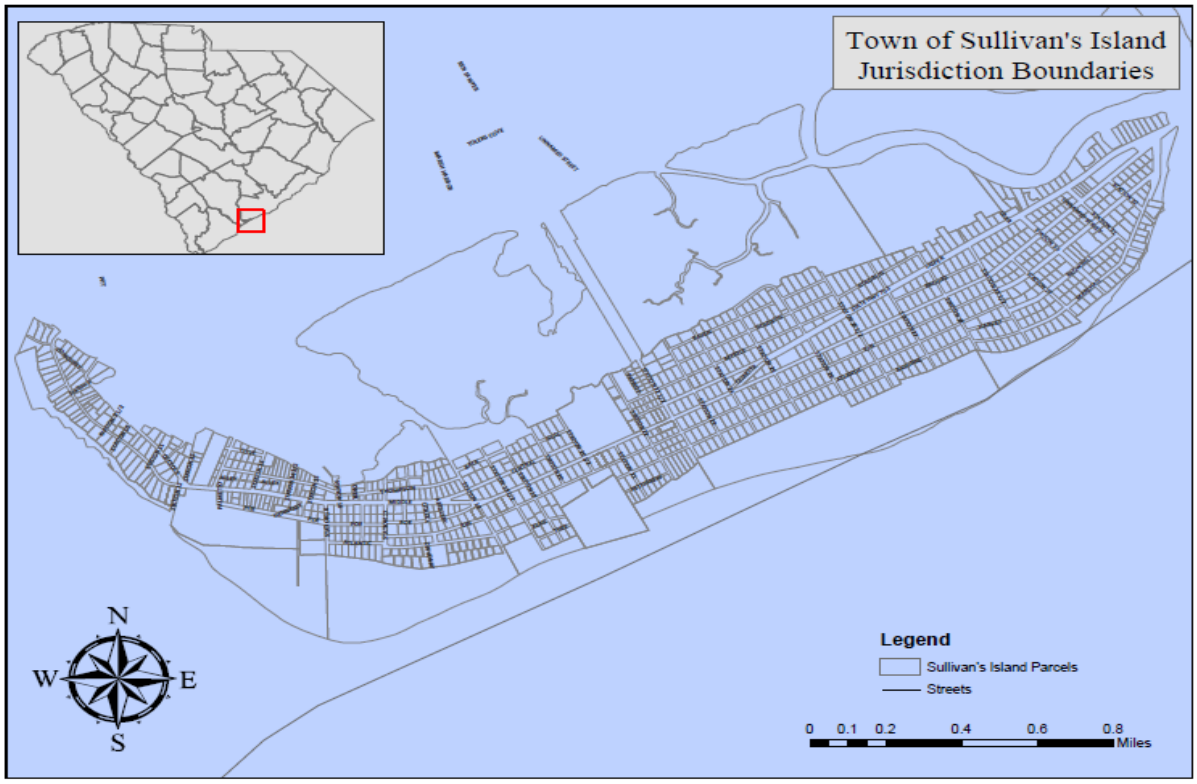
## 1.2 History of Plan Approvals and Revisions

With the South Carolina Beachfront Management Act becoming law in July 1988, South Carolina municipalities were enacted to develop local comprehensive beach management plans. As such, Sullivan's Island initiated drafting its Local Comprehensive Beach Management Plan in 1990. A plan prepared by Applied Technology and Management, Inc. was submitted to the South Carolina Coastal Council (SCCC) in 1992. The Town then adopted its first Local Comprehensive Beach Management Plan later that year. The plan remained unchanged until this updated plan in 2017.

## 1.3 Overview and History

Located in Charleston County, South Carolina, Sullivan's Island is a barrier island bounded on the north by Breach Inlet and Isle of Palms, and on the west by the Charleston Harbor entrance (Map 1).

Map 1. Sullivan's Island Jurisdiction Boundaries




The Town operates under a council-administrator form of government and is governed by a seven-member Council, including a voting Mayor. According to the 2015 American Community Survey (ACS), there are approximately 1,900 residents in roughly 990 dwellings island-wide. The beach on Sullivan's Island is approximately 3.8 miles long and the majority of the ocean front is accretional.

Since the adoption of its local comprehensive beach management plan in 1992, Sullivan's Island has utilized several approaches for beach management. These include:

- Town Codes
  - ✓ Building Codes
  - ✓ Zoning Restrictions
  - ✓ Flood Prevention Ordinance
- Erosion control devices
- Protection and restoration of sand dunes
- Stormwater management
- Post-disaster management

All portions of Sullivan's Island, extending from the mean low water mark to the landward boundaries of the RC-1 (beach/ocean side) and RC-2 (marsh side) zoning districts, are retained and preserved by the Town in trust as recreation and conservation areas for the purpose of protecting the island's beaches. These conservation zoning districts are established not only to enhance the health, safety, and welfare for the Town's residents, but also to buffer developed residential properties from floodwaters, sea-level rise and erosion caused by storm events.

## 1.4 Current Beach Management Issues

The Town is particularly interested in the management and preservation of its beachfront areas. As any beach carries with it specific concerns, the subsequent sections of the plan will broadly describe those physical and policy issues affecting the Town's beach.

The Town's beach is different from most in the region in that it is largely accretional. The areas along the majority of the beach either show long term accretion or measurements with no erosion. However, along the Breach Inlet shoreline, between Station 28 ½ and Station 32, the beach has shown vulnerability to erosion. Likewise, due to the potential changing nature of erosion and accretion trends, the Town would like to prepare this plan with the possibility of more erosion occurring on Sullivan's Island.

As stated previously, the Atlantic Ocean-side beach is zoned RC-1 (recreation conservation) to eliminate beachfront development along this accreted land and conserve the natural and beneficial characteristics of this unique maritime area. Likewise, the entire island has maintained predominantly low-density residential development through zoning in order to maintain its single-family residential character. Other issues have been addressed by the Town, by creating regulations on island commerce, altering vegetation, building seaward structures (piers and decks), and dog licensing and management (Section 7.5).

# Section 2: Inventory of Existing Conditions

Sullivan's Island is a 3.8-mile-long barrier island located on the eastern coast of South Carolina. As a barrier island, it maintains a unique orientation, with its southern shoreline facing the Atlantic Ocean and its south-western shoreline facing the Charleston Harbor. The Island is separated from mainland Mt. Pleasant by open water and the Intracoastal Waterway to its northern boundaries. Access to the Island is provided by U.S. 703, which is better known as Ben Sawyer Boulevard, and to the east by way of Jasper Boulevard, the primary connection to the Isle of Palms and the Isle of Palms Connector. All other local residential roads on Sullivan's Island connect to these main thoroughfares and serve as Island residents' primary emergency evacuation routes, and access to surrounding businesses and recreational areas.

While historically known as the beach retreat for downtown Charlestonians, Sullivan's Island has quickly become known for its unique year-round residential character, sprawling historic districts and its undeveloped beaches. This is a characteristic that is unusual among most inhabited islands on the eastern seaboard.

Barrier islands are constantly changing geographical features, which can be washed over by heavy storms. On Sullivan's Island, the sand is constantly shifting from the northeastern side towards the southwestern side of the island, which results in an accreting effect along its Atlantic facing shoreline.

The Town utilizes several regulatory mechanisms to ensure the protection of the beach and dune system. The following sections will explain land use regulation on Sullivan's Island, describe the uses and benefits of the beach, provide an inventory of beachfront structures and beach access points, and describe the Island's natural and ecological habitats.

## 2.1 General Characteristics of the Beach

Sullivan's Island is geologically young, having formed within the past 5,000 years. Despite sea-level rise of nearly 1 ft. during the past century, Sullivan's Island has accumulated sand and grown seaward along most of its shoreline. The underlying process responsible for Sullivan's Island's accretion is sediment bypassing from Isle of Palms across Breach Inlet. More sand reaches Sullivan's Island along its east end than leaves at the west end, due in part, to the groins extending seaward from the Charleston Harbor. This sand accretion effect leads to the formation of new dune ridges before prior dunes can gain significant elevation. Vegetation in this area is naturally adapted to poor soils, salt spray, and occasional flooding which is followed over time by a succession of land stabilization and other pioneering plant species. This dune development has ultimately given way to a maritime forest. A diverse set of grass, shrub, and forest communities coexist within the accreted land and interior areas of Sullivan's Island, providing ecological niches attractive to a wide range of animal species.

Coastal beaches and dune land make up the shoreline of Sullivan's Island, which are nearly-level, fine sand beaches that are flooded twice daily by tidal currents. The beach tends to be relatively wide and flat, and are backed by one or more low dune ridges along most of the island's length. The dunes formed by the wind are mounded areas of dry, loose, very pale brown to yellow sand. The sand is dry and there is sparse protective ground cover, leading to wind erosion of the dunes. The shoreline adjacent to Breach Inlet tends to be narrower and steeper due to the effects of channel migration and inlet shoal bypassing. Over 600 feet of accretion has taken place in this area since 1921. The loss of sand is a constant problem on the eastern end of Sullivan's Island while the western end continues to accrete (Map 2). Because of their instability, coastal beaches and dune lands are generally poorly suited for most kinds of development.

Map 2. Sullivan's Island General Characteristics


### 2.1.1. General Land Use Patterns

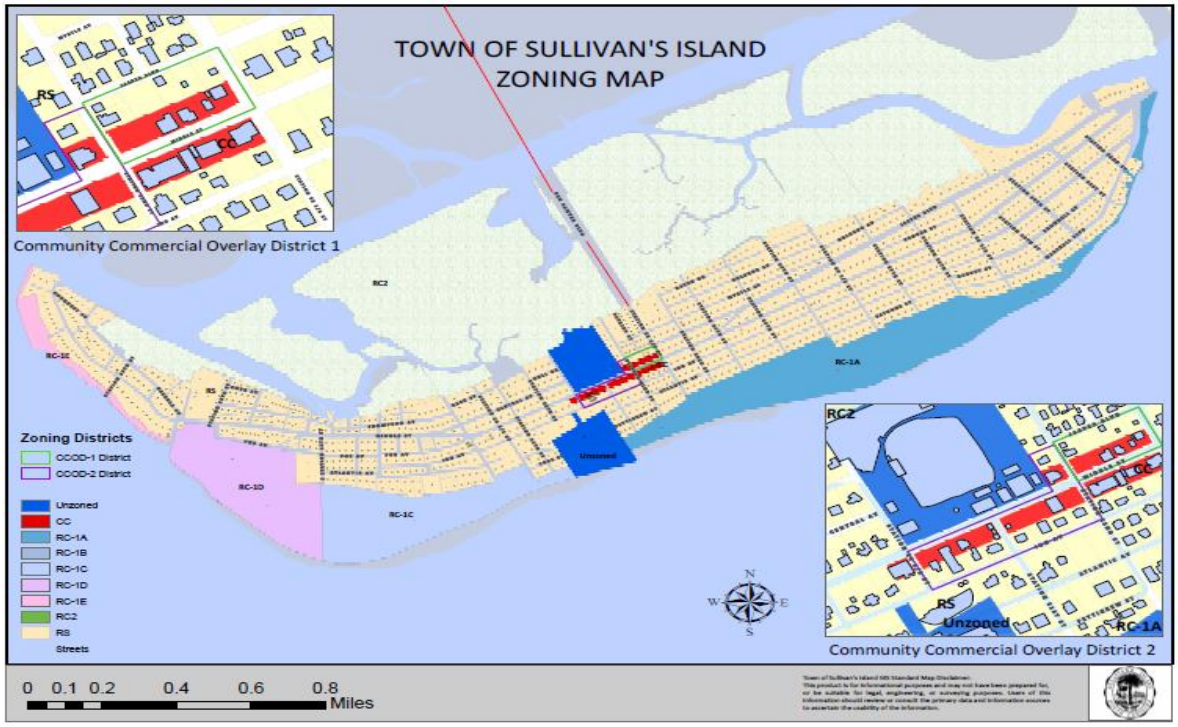
Most of the property on Sullivan's Island has been developed (Map 3). However, redevelopment efforts and major changes, pronounced by periodic natural disasters, have made the land use element of this plan an important guide for the next decade (Map 4). The importance of the informality of the Town's development has long been recognized by residents, as well as Town officials. The Island's historical construction type of small cottages and bungalows have, over the years, yielded to larger and more expansive homes. The Island exhibits a park-like appearance of expansive views and openness with an informal streetscape with only a few roads with curbs and sidewalks. Some homes have maintained this subtle landscape that utilizes native vegetation and wildflowers. In the past, Sullivan's Island's landscape has been characterized by large expanses of spring and summer wildflowers on both public and private land. This feature adds substantially to Sullivan's Island's special sense of place and informality.

The Island is primarily residential in character, and therefore focuses many of its annual special events and activities to perpetuate a family-oriented atmosphere. To this end, Town Council has been careful to established zoning and land use regulations to protected itself from short-term (vacation) rental use, development of hotels and bed and breakfasts. Moreover, the small commercial district is closely regulated to ensure the residential atmosphere of the Island is not diminished. The commercial area is centrally located near the Ben Sawyer Bridge entrance to the Island (Map 5). The beaches have been zoned RC-1 as a Recreation and Conservation area, which allows for no development with the exception of beach walk-overs.

Map 3. General Land Use (Current)

Map 4. General Land Use (Future)


Map 5. Commercial Overlay-District



The majority of housing types on Sullivan's Island is the single-family detached home (1,001 homes), which comprises 88.5% of the housing stock. There are very few multifamily (with 10 or more apartments), or single-family attached (townhomes, etc.) as these housing types retain nonconforming (grandfathered) status.

In order to maintain its single family residential character, the Town closely monitors land uses by way of zoning regulations. The Island's land uses are divided into eleven land use categories. Table 1 indicates the percentage of acreage in each land use.

Table 1. Land Use by Percent

| | |
|---|---|
| Single Family Residential | 21.4% |
| Multi-family Residential | 0.6% |
| Commercial | 0.3% |
| Institutional | 5.0% |
| Deed Restricted Property | 11.4% |
| Church | 0.4% |
| Cemetery | 0.1% |
| Utilities | 0.3% |
| Vacant | 1.6% |
| Conservation | 27.4% |
| Conservation/Recreation | 31.4% |

*Source: Town of Sullivan's Island and Charleston County Geographical Information System (2008)*

1. Residential: Residential land uses are defined as locations intended for occupants to live together as a single house-keeping unit. Single-family residential property is defined as one residentially zoned parcel with no more than one dwelling unit. The Island is predominately residential in nature with one single family dwelling on each single family zoned lot.

   However, other residential arrangements exist:

   - Residential – Multi-Family: Multi-family residential land use is defined as more than one dwelling unit located in the same building or structure as a non-conforming use.
   - Residential – Special Exception: Residential use in which a designated historic structure may be used as an accessory dwelling to the larger principal dwelling as a special exception.
   - Residential -Conditional Use: Residential use in which two or more dwellings occupy a single lot as a non-conforming use.

2. Commercial: Commercial property is land designated for office, retail or service businesses in the defined Community Commercial District (CCD). These uses continue to be restricted mainly to the business district located on Middle Street between Station 20 ½ and Station 22 ½. Designated properties in a defined area along Jasper Boulevard and Middle Street between the blocks of Station 22 ½ and 2019 Middle that have special zoning and development requirements overlaying the existing Town zoning and development requirements for residential and commercial properties.

3. Institutional/Government: Institutional/Government property covers a broad range of governmental and public uses.

4. Town of Sullivan's Island Deed Restricted Property: This property is owned by the Town of Sullivan's Island and is subject to a conservation easement.
5. Church: Land that is used for religious activities, including the sanctuary and parish hall.
6. Cemetery: There are two properties on Sullivan's Island used as cemeteries. These cemeteries are described in the Cultural Resources Element of the Comprehensive Plan.
7. Utility: Property that is classified as a utility constitutes a property with infrastructure uses. These uses include power substations and water and wastewater facilities.
8. Conservation: Town marsh areas that cannot be improved and should be maintained in their natural state.
9. Conservation/Recreation: Recognizes limited use of land for passive recreational purposes (i.e. docks where otherwise permitted by applicable laws and regulations), but otherwise envisions long-term preservation of the land without commercial activity or subdivision, with minimal impact on the view corridor.

## RESIDENTIAL DISTRICT

The predominant land use on Sullivan's Island is residential. Most houses are single-family dwellings, and despite its image as a vacation destination, the Island maintains a year-round population of residents in their primary dwellings. In order to preserve the residential character of the Island, in the Residential District (RS), uses are limited to the following:

- One single-family detached dwelling (other than manufactured homes such as trailers and mobile homes or industrialized facilities) per lot.
- Publicly-owned facility or land.
- Non-commercial horticulture or agriculture, but not including the keeping of poultry or animals other than for family use or as ordinary pets.
- Various home office occupations
- Accessory uses such as garages or tool sheds are allowed as a conditional use.
- Churches, private kindergartens, public utility substations are allowed only as a special exception in the Residential District.
- Vacation rentals and rental of rooms are prohibited island-wide

There is a great deal of history on Sullivan's Island. As a result, a few buildings remain in the residential district that were constructed as part of the U.S. military complex. Many of the military era structures that were utilized as barracks, machine shops, warehouses, churches or fortifications, have now been adaptively reused and converted into housing. A crowning goal of Town government has been ensuring in the protection of the historic homes, military structures and archeological resources of the Island.

The 2004 review of the Sullivan's Island zoning ordinance established historic preservation overlay districts to protect properties that have been determined to be architecturally, archeologically, culturally, and historically significant to the Town. It is the Town's desire that, by encouraging a general harmony of style, form, proportion, and material between buildings of historic design and those of contemporary design, the Town's historic buildings and historic area will continue to be a distinctive aspect of Sullivan's Island and will serve as visible reminders of its significant historical and cultural heritage.

## COMMERCIAL DISTRICT

Commercial land uses in the Town are limited to a small 3-block area along Middle Street. The Community Commercial (CC) District has been developed for commercial business and office uses primarily catering to local Island residents. However, in recent years the commercial district has become well known regionally for its excellent restaurants. The existent zoning regulations that apply within the district are designed to encourage the formation and continuance of a compatible and economically healthy environment for commercial and professional office uses that benefit from being located in close proximity to one another. It is also the intent to provide opportunities for mixed and residential uses at carefully devised locations within the CC-District. Allowed uses range from retail or businesses involving the sale of merchandise to businesses involving the rendering of a personal services. Also allowed are government offices and business professional uses. Development of vacant and underutilized lots, as well as redevelopment of existing commercial structures, has the potential to change the character of the Commercial District.

Zoning and subdivision regulations also have the potential to affect the character of the commercial district. Some street-to-street lots are split-zoned commercial on the half of the lot facing Middle Street, and zoned residential on the opposite side. The Zoning Ordinance allows these lots to have a commercial use on one half, and a residential use on the other. In essence, these two halves are treated as separate lots for land use purposes and must be developed under different zoning standards.

The Town retained the services of a consultant to review the CC-district in 2012 resulting in the creation of the Island's Commercial Overlay districts. This section of the Zoning Ordinance addressed all issues regarding land use, utilities, traffic, parking and development standards.

Community Commercial Overlay District (CCOD):

Beginning in 2007 the Planning Commission, with the support of Town Council, began the process of developing a plan for the future of the Community Commercial District (CC-District). With substantial input from the public and the assistance of professional zoning consultants, a master plan was developed to address land use and development within the CC-District.

This two-year process resulted in a recommendation allow the alteration of certain zoning restrictions applicable to existing split zoned lots within the Community Commercial area, which ultimately created two Community Commercial Overlay Districts (CCOD 1 and 2).

There are a number of benefits found in establishing an overlay district, namely that it: (1) recognizes the unique nature of particular areas in the Community Commercial District, (2) allows the Town to be very specific with regard to construction, design and other criteria, while maintaining the underlying zoning of the properties, and (3) clearly differentiates these areas from the balance of the Island with regard to subdivision and development.

### 2.1.2 Beach Uses

Sullivan's Island has approximately 3.8 miles of beachfront, which is used for a variety of traditional and recreational activities. The beach is used for sunbathing, swimming, surfing, fishing, sailing, boating, beach fires (only with permit), and enjoying the Island's natural vistas. The western section of the island, starting at Station 13, does not allow swimming.

Dogs are allowed on the beach, but as time and leash restrictions permit. Section 7.6 establishes Sullivan's Island's beach dog rules.

Public Beach access points have been marked with signs and are numbered on the street and beach side to assist residents and visitors in finding beach accesses and to aid in emergency response (Figure 1).

Figure 1. Sullivan's Island beach access sign.


The Town routinely monitors weather and surf conditions, and receives notifications of dangerous coastal conditions from the National Weather Service. Warnings are posted on Comcast Channel 2. Sullivan's Island Fire and Rescue department has at their disposal 4 jet skis, 2 boats (18' and 20' Edgewater center consoles), a 2007 Ford F-150 4-wheel drive pickup, a 2014 Polaris 4 door ATV with

medical slide in rear Box for stretchers and medic. The Department has recently received a 32' Armstrong built Sea Cat boat (obtained by FEMA Ports Security Grant) and two Ford F-250s.

During the summer season, the Police Department implements a beach patrol program where personnel patrol the beach for unsafe conditions and ordinance violations. Information is disseminated to visitors when additional officers are present.

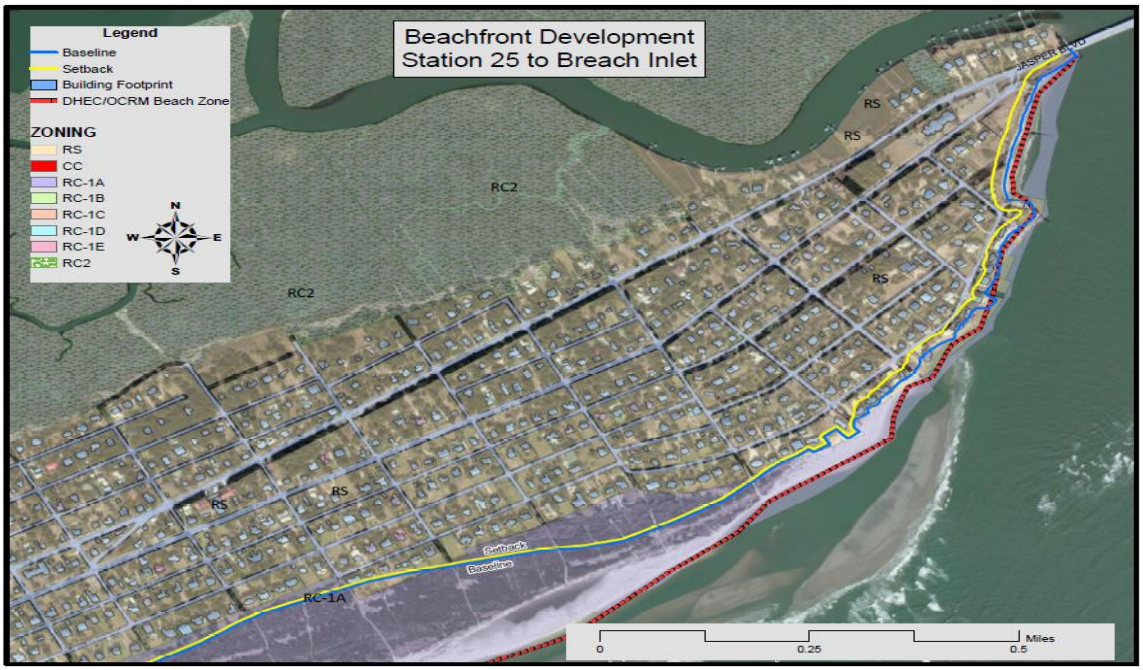
## 2.2 Benefits and Values of the Beach

Sullivan's Island is a family-oriented community, which is primarily residential with a limited commercial base. Like most beach towns, the Sullivan's Island and its residents are greatly enhanced by its proximity to the beachfront. The primary importance of the beach is its aesthetic and natural seascapes provided to the Town's residents and visitors. The peaceful and serene vistas are a wonderful attraction and are enjoyed by all. The desire to live near these natural resources has created relatively high property values, which creates a considerable tax base.

## 2.3 Beachfront Developments and Zoning

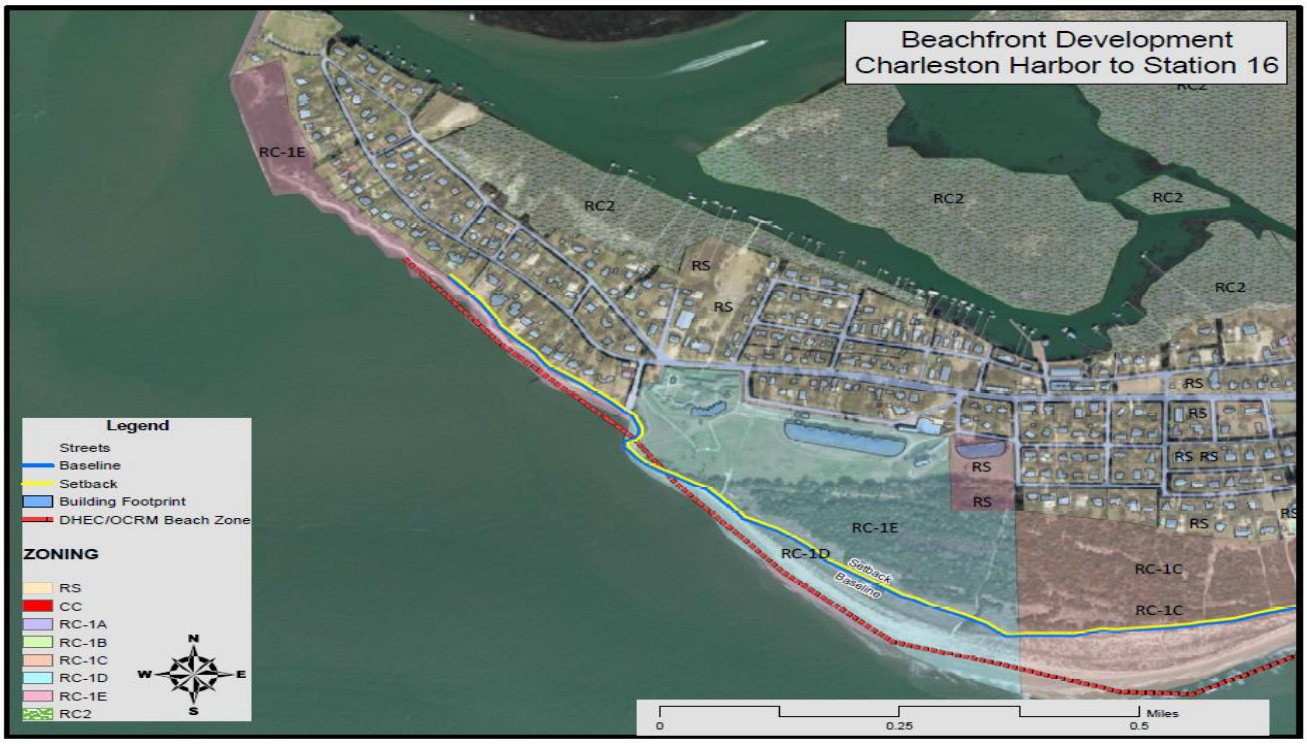
Sullivan's Island is comprised primarily of single family homes, however, there are multiple attractions for the general public: businesses, local government buildings, a school (Sullivan's Island Elementary), several public parks, and the recognized national monument of Fort Moultrie. The closest oceanfront development on the island falls under the RS zoning district, which is zoned exclusively for single-family homes. All oceanfront areas seaward of the RS district fall under the Recreation and Conservation district (RC-1 and RC-2). With the exception of a few habitable structures in the RS district, the DHEC-OCRM setback line lies completely within the RC-1 zoning district. The RC-1 district has a division of five sections (1-5) (Maps 6-8). The general purpose of the RC-1 district is to preserve the beach and accreted land, by preventing future beachfront development. Sullivan's Island has no major development projects located adjacent to the active beach.

Map 6. Beachfront Development




Map 7. Beachfront Development


Map 8. Beachfront Development




### 2.3.1 Beachfront Structural Inventory

The Beachfront Management Act requires all communities to include an inventory of all structures located seaward of the DHEC-OCRM setback line as part of this plan. 73 structures within the Town are located seaward of the DHEC-OCRM jurisdictional setback line. These include 23 walk-overs, 18 habitable structures, 11 groins, 3 seawalls, 16 rock revetments, 1 deck, 1 pool, and 0 bulkheads. Of the habitable structures, 5 are located seaward of the DHEC-OCRM baseline. Structures located seaward of the DHEC-OCRM baseline and setback line are itemized in the structure inventory Table 7 and presented in Maps 21-30 in Section 7.2.

Map 22 shows a section of beach from Station 18 to Station 28 ½, which falls under the RC-1A district. This section contains a portion of the Town Owned accreted land with 12 wood walk-over surfaces.

## 2.4 Natural Resources and Ecological Habitats

Sullivan's Island is characterized by a beach and dune ridge system, with an extensive tidal marsh along the northern side of the island. There is approximately 190 acres of accreted beachfront property on Sullivan's Island, which is surrounded by navigable waters.

A main concern in managing South Carolina's ocean beaches is the protection and conservation of coastal natural resources and ecological habitats. As a coastal barrier island, Sullivan's Island's beachfront exhibits a variety of natural resources due to the diversity of ecosystem types and habitats.

The interaction between shifting terrestrial sand dune and beach habitats, shallow coastal waters, and the open ocean result in a dynamic landscape that is utilized by various organisms.

As described by the U.S. Department of Interior-Coastal Barriers Study Group, Atlantic Coast barrier islands generally have five distinct ecosystems, the first three of which will be describe below: (1) coastal marine, (2) maritime, (3) estuarine, (4) freshwater (riverine, lacustrine, palustrine) and (5) upland on mainland. Distinct geological, biological and botanical features characterize each ecosystem type. Factors such as wind, salt, tides, currents and soil nutrients control their geographic position across the island.

1. Coastal marine ecosystem: The coastal marine ecosystem extends from the seaward side of the primary dune to 3 miles offshore. Due to the physical factors characterizing this harsh environment (winds, currents, salt, tides, etc.), this area supports few terrestrial plants. Suspended photosynthetic algae, which receives nutrients from both estuarine and riverine outputs, provides the majority of the primary production in this environment (USDOI 1988).
   Although this habitat provides a harsh environment for terrestrial vegetation, many faunal species are known to inhabit the area. Species of anadromous fish can be found using this ecosystem as transitional areas between life stages while catadromous fish may inhabit these areas for their entire life cycle. Sea turtles use this area for mating, nesting and, feeding. In addition, many shorebirds (such as terns, ducks, pelicans, gulls, and skimmers) exploit the area's food resources.

2. Maritime ecosystem: The accreted land area of Sullivan's Island occurs within this ecosystem, which is bound by the primary dune on the seaward side and extends to the mean high-tide mark on the bay side of the island. This ecosystem includes many habitat types and is characterized by floristic zonation due to salt spray and wind interaction. Thus, the more salt-tolerant species are found closer to the ocean in the dune and transition shrub habitat types, while the less salt-tolerant species tend to be found in the interior of the island in the maritime forest. This ecosystem type is generally divided into three distinct sections – dune community, transitional shrub zone, and maritime forest – with each section containing a range of vegetation communities (USDOI 1988).

   - The dune community is found from the primary dune to the transitional shrub zone. This area typically contains a variety of salt and wind tolerant species such as dune grasses and forbs, which account for the majority of primary productivity in this area. Avian species are the main fauna found here. Due to the harsh physical conditions a limited number of herpetofauna and mammalian species use these areas. However, where high levels of succulent forage and dense cover occur, species such as mice, moles, rats and rabbits can be found (US DOI 1988). Specific vegetation communities, documented by the study team at Sullivan's Island, occurring within the dune community are maritime dune grassland, maritime interdune wetland, and backdune grassland.

- The transitional shrub zone occurs between the dune community and the maritime forest. This zone is a distinct transitional zone, characterized by a relatively low flora species richness and extremely dense vegetation structure. Due to the vegetation structure in this community, a high number of avian, mammalian and herpetofauna species can be found. Specific vegetation communities documented at Sullivan's Island within the transitional shrub zone are maritime shrubland and manipulated maritime shrubland.

- The maritime forest occurs inland of the transitional shrub zone and extends across the barrier island to the transitional shrub zone which fronts the marsh. This zone's exact location is difficult to define, because its composition is largely dependent on the effects of salt spray both on the seaward side and marsh side (Warner 1976). This habitat is composed of larger, less salt-tolerant hardwood and coniferous species, and provides favored habitat for most terrestrial fauna. Specific vegetation communities documented at Sullivan's Island within the maritime forest are early successional maritime forest and hardwood depression.

3. Estuarine ecosystem: This ecosystem occurs between the upper reaches of saltwater influence on the bay side of the barrier island and the upper reaches of saltwater influence on the mainland. Estuarine areas are highly productive and include habitats such as oyster beds, tidal marshes, and mud flats. Prolific marsh vegetation and nutrient input from rivers provide a base for the detrital food web within this ecosystem. An abundance of nutrients and protection from the ocean by barrier islands make this ecosystem one of the most productive systems on the planet (Warner 1976). The estuarine ecosystem hosts a large number of fish species, aquatic invertebrate species, and avian and aquatic mammal species.

### Flora

The flora of barrier islands have adapted physiologically to thrive under the harsh conditions. For example, salt-tolerant plants possess small, waxy, flexible leaves to resist the damaging effects of salt spray and wind conditions. In addition, many grass species have the ability to produce asexually by means of rhizomes or root runners. Rhizomes also provide stability in the mobile, sandy soil environment (Harper 1985). Vegetation serves to stabilize and trap sand in oceanfront dunes, particularly where dunes are fronted by a dry sand beach. Open coast vegetation takes the general forms – dune builders, burial-tolerant stabilizers, and burial intolerant stabilizers (Hosier 1973, Woodhouse 1982, Ehrenfeld 1990). Dune builders grow vertically, rather than laterally, near the margins of vegetation. This growth form produces steep dune slopes. Burial-tolerant stabilizers grow in response to burial with growth occurring horizontally through an extensive network of rhizomes which stabilizes substrate (Harper 1985, Fahrig et al 1994). Burial-intolerant stabilizers are found farther inland, often colonizing dune swales. Being intolerant to burial, these compact growth forms effectively bind substrate (Stallin 2002).

On stable barrier islands (those that are neither accreting nor eroding), the foredune can grow very large because of a steady supply of windblown sand accumulating in one place. However, on rapidly

accreting barrier islands such as Sullivan's Island, new foredunes will form before prior dunes can grow to high elevations. The interior dunes become sheltered by seaward dunes and stabilize by vegetation which inhabits further vertical growth.

Soil fertility on barrier islands is low. To deal with this, some plants have developed symbiotic relationships with fungi and bacteria that manufacture necessary soil nutrients and assist plants with uptake of scarce nutrients (Godfrey 1976, Koske and Polson 1984). Maritime plants often have shallow root systems that allow the plant to efficiently capture scarce nutrients which enter the soil as leaf litter decays (Hillestad et al 1975).

### Succession

Succession is the process by which an ecological community changes over time. On barrier islands, succession is an integral ecological process by which early successional plant communities (such as dune systems) develop into a climax community (such as mature maritime forest). A climax community is one that has reached a steady state and is best adapted for the average conditions of the area. What makes barrier islands unique is their dynamic, unstable environments. Mainland environments are fixed spatially and have relatively stable conditions, which allow these ecosystems to grow and mature at rates that are easily identified and are fairly consistent. In contrast, coastlines are dynamic. Each stage of succession progressively stabilizes the soil, which prepares for the next successional stage (Fig 2.20, Bellis 1995). However, environmental extremes, such as those discussed herein slow or even stop vegetation community succession on barrier islands.

### Fauna

Barrier island ecology, with its diverse arrangement of vegetation cover, provides excellent habitat for numerous fauna. Both invertebrate and vertebrate species utilize Sullivan Island's abundance of diverse cover stands, which are arranged within the complex of wetland and upland habitats.

However, because of the limited size of most barrier islands and the natural barriers that impede immigration (marsh, open water, etc.), terrestrial fauna are usually limited in population size. In addition, finite food and freshwater resources limit recruitment compared to mainland populations, which contributes to low population sizes.

Natural habitats and resources are also recognized for their social and economic benefits. Protection of natural resources is identified in the City's Comprehensive Plan as essential to maintaining the high quality of life on Sullivan's Island. Residents indicate that the attributes of coastal ecosystems, including marshes, mature trees, marine waters, and sandy beaches influenced their decision to purchase property. In addition, the accessible ocean beach is a predominant factor in the local tourism and vacation rental economy.

## 2.4.1 Threatened and Endangered Species

The Endangered Species Act (ESA) was established in 1973 to provide for the conservation of plants and animals in threat of extinction as well as their habitats. As of 2008, there were 1,574 endangered species

listed and 351 threatened species. The listed species include birds, mammals, fish, reptiles, insects, crustaceans, and plants.

The ESA defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Though endangered and threatened species have different definitions, they are afforded the same protection under the ESA.

The ESA charges the US Fish and Wildlife Service (USFWS) with the task of maintaining a list of threatened and endangered species, with assistance from the US National Oceanic and Atmospheric Administration (NOAA) and the National Marine Fisheries Service (NMFS). The ESA requires any federal agency to consult with USFWS and NOAA to ensure that an action authorized, funded, or carried out by that agency is not likely to jeopardize the continued existence of a listed species or result in the destruction of the critical habitat for the species. Furthermore, Section 9 of the ESA prohibits unauthorized taking, possession, sale, and transport of listed species by any person. If a species recovers to the point that it no longer meets the requirements for threatened or endangered status, it may be de-listed.

Table 2 presents a list of animal and plant species that have state or federal legal protection and are either known to occur or which may occur on Sullivan's Island.

Further information regarding species found on Sullivan's Island is listed in Section 7.7.

Table 2. Animal and plant species having federal and state legal protection

| Common Name | Scientific Name | Federal Status | State Status |
|---|---|---|---|
| Bald Eagle | Haliaeetus leucocephalus | Protected | Endangered |
| Wood Stork | Mycteria americana | Endangered | Endangered |
| Kirtland's Warbler | Dendroica kirtlandii | Endangered | Not Listed |
| Least Tern | Sterna antillarum | Not Listed | Threatened |
| Wilson's Plover | Charadrius wilsonia | Not Listed | Threatened |
| Piping Plover | Charadrius melodus | Threatened | Threatened |
| Rafinesque's Big-eared Bat | Corynorhinus rafinesquii | Not Listed | Endangered |
| Kemp's Ridley Sea Turtle | Lepidochelys kempii | Endangered | Endangered |
| Leatherback Sea Turtle | Dermochelys coriacea | Endangered | Endangered |
| Loggerhead Sea Turtle | Caretta caretta | Threatened | Threatened |
| Green Sea Turtle | Chelonia mydas | Threatened | Threatened |

| | | | |
|---|---|---|---|
| Shortnose Sturgeon | Acipenser brevirostrum | Endangered | Endangered |

### 2.4.2 Turtle Nesting

Sullivan's Island is a nesting ground to a varying population of sea turtles each year. As nesting and stranding projects for loggerhead sea turtles are part of the South Carolina Department of Natural Resources Marine Turtle Conservation Program, the Town participates in the Turtle Team. This is a group of volunteers that monitors the critical habitat and nesting of loggerhead turtles on Isle of Palms and Sullivan's Island, and posts current nesting information on their website. Team members identify nest locations, mark and safeguard the nests, and relocate nests where required. Turtle nesting statistics for 2009 through 2015 are shown in Table 3. Map 9 also shows nesting from 2012 to 2015.

Table 3. Sea Turtle Nesting on Sullivan's Island 2009-2015

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|
| Number of Nests | 2 | 4 | 6 | 3 | 6 | 5 | 15 |
| In Situ | 0 | 3 | 1 | 1 | 2 | 3 | 5 |
| Nest Relocated | 2 | 1 | 5 | 2 | 4 | 2 | 10 |
| False Crawls | 1 | --- | 3 | 9 | 9 | 5 | 18 |
| Estimated Eggs | 155 | 335 | 730 | 408 | 642 | 252 | 1305 |
| Eggs Lost | 2 | 3 | 7 | 3 | 7 | 99 | 23 |
| Hatched Eggs | 113 | 201 | 657 | 377 | 602 | --- | 901 |
| Emerged Hatchlings | 108 | 190 | 616 | 350 | 576 | --- | 825 |

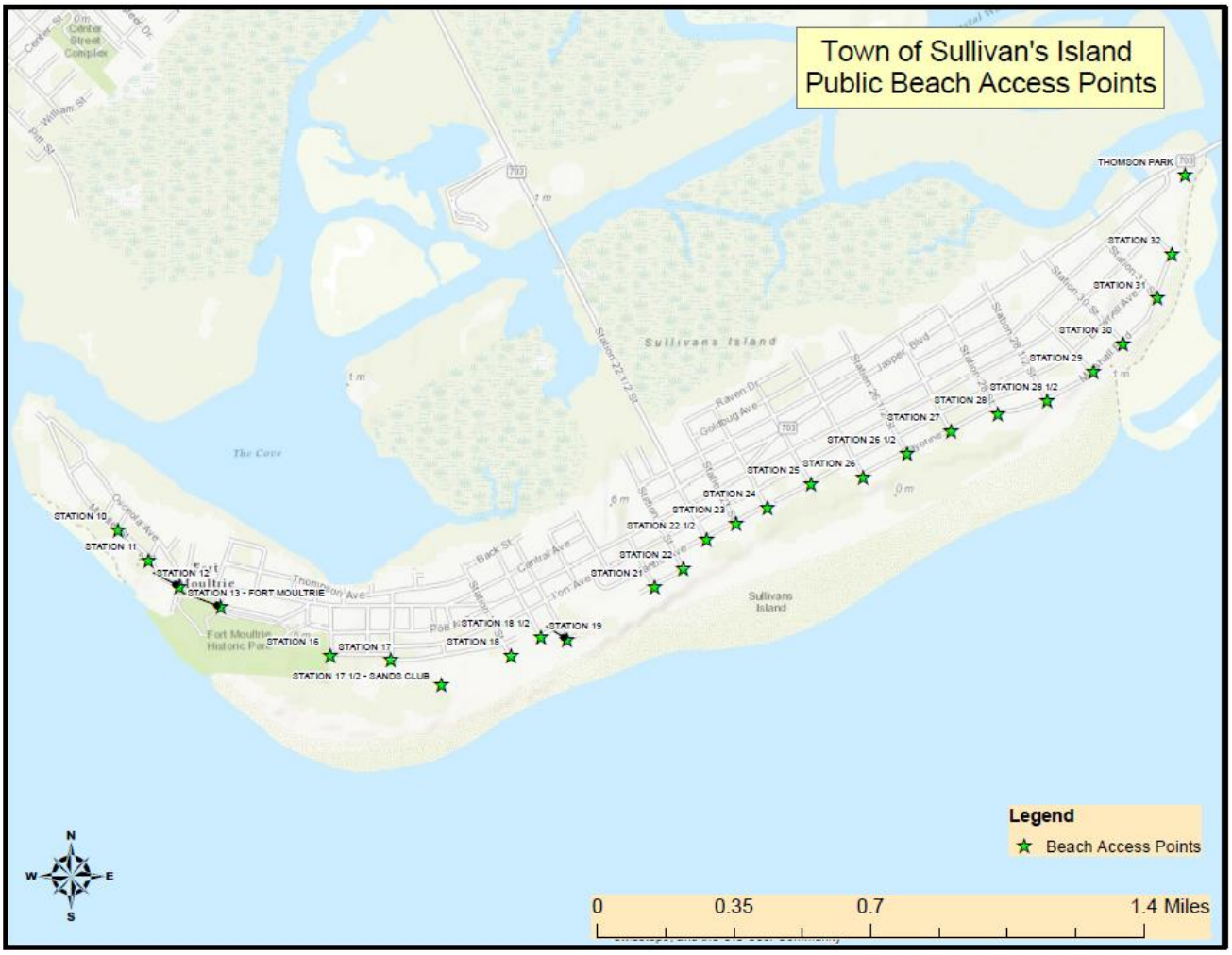
Map 9. Sea Turtle Nesting on Sullivan's Island 2012-2015


For further information regarding sea turtle nesting visit the Sea Turtle Nest Monitoring System website.

## 2.5 Existing Public Access and Map

Public access to beaches is a major priority of the Town. There are 26 public access points at street ends along the ocean shoreline. Four off-street parking areas provide approximately 145 public parking spaces; over 2000 other public parking spaces exist along road rights-of–way between Middle Street and beach access points (Map 10). The Town has signage denoting these public access points and can be viewed digitally through the DHEC Beach Access application https://gis.dhec.sc.gov/beachaccess/. The S.C. Beach Guide provides comprehensive list of all public beaches, available amenities and beach water quality information. Most Sullivan's Island beach access points have trash and recycling receptacles, as well as dog-waste disposal stations. The existing access and parking are sufficient to classify the entire shoreline as full and complete access (Section 7.3).

Map 10. Existing Beach Access

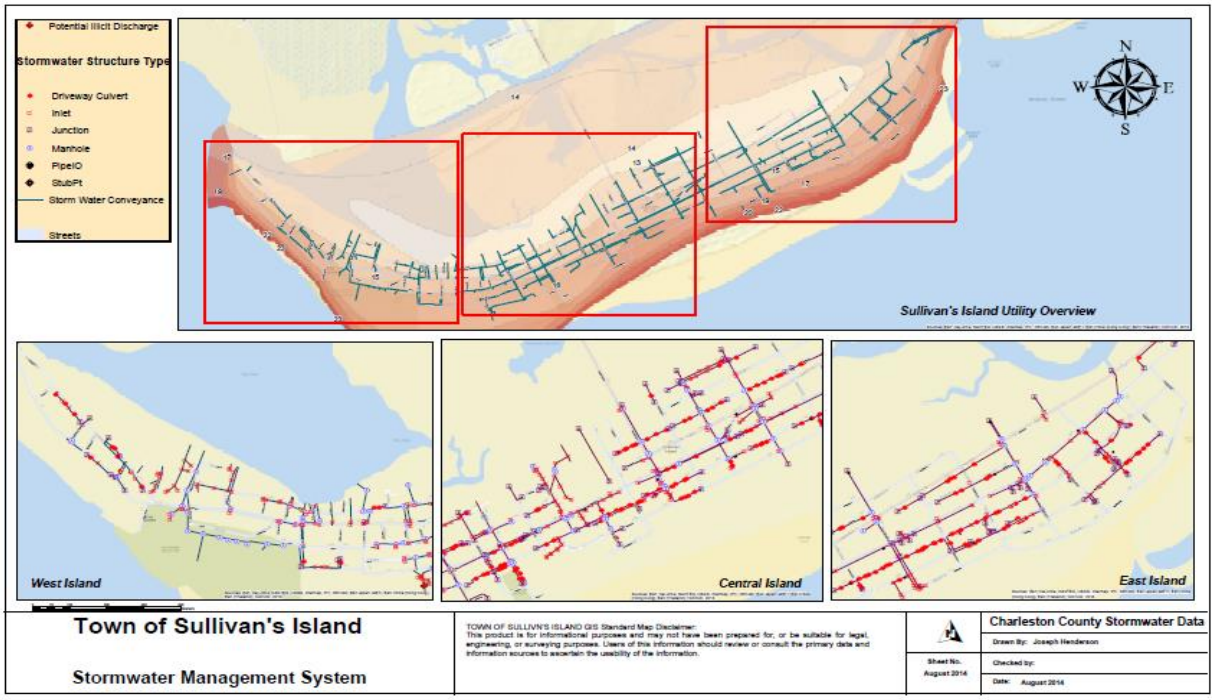


## Section 3: Beachfront Drainage Plan

Controlling stormwater and other discharges along the beachfront areas of Sullivan's Island is a priority of the Town. Uncontrolled, direct discharges to the beach can not only lead to erosion of dune and beach areas, but can also adversely affect water quality. The Town, as a matter of policy, has adopted a Stormwater Management Program (SWMP), which describe the components to be used by the Town to control stormwater discharges, address flooding, and meet water quality standards. For additional information regarding SWMP and the Town's drainage plan, please refer to Section 25 of the Town's ordnances (Section 7.5). Specifically, the Town's plan does not allow for any drainage toward the beachfront.

Chapter 25 (D) of the Town's Stormwater Management Ordinance, establishes an inter-governmental agreement with the Charleston County Stormwater Division for assistance with implementing, administrating and enforcing the Town's stormwater utility. Regulatory authority is delegated to county stormwater officials to provide effective, economical and efficient stormwater management. In the fall of 2016 the Town implemented Zoning Ordinance requirements for all developments to a professionally designed onsite stormwater management system. For further information regarding stormwater management visit the Town's website and the Charleston County Stormwater Management Program website.

Map 11. Stormwater Management Map



## Section 4: Beach Management and Authorities

There are several federal, state, and local agencies that retain some regulatory or management authority over the beaches on Sullivan's Island. Section 7.6 provides a more in-depth description of the functions of these agencies as they relate to beach management, as well as a link to their respective websites.

### Federal Agencies

1. The US Army Corps of Engineers (USACE)
2. The US Fish and Wildlife Service (USFWS)
3. The Federal Emergency Management Agency (FEMA)
4. The National Oceanic and Atmospheric Administration (NOAA)
5. The United States Coast Guard (USCG)
6. The United States Geological Survey (USGS)

### State Agencies

1. The Department of Health and Environmental Control (DHEC)
2. The South Carolina Department of Natural Resources (DNR)
3. The South Carolina Department of Transportation (DOT)
4. The South Carolina Emergency Management Division (EMD)

### Local Agencies

1. The Town of Sullivan's Island

## 4.1 State Authorities

In 1988, the State Beachfront Management Act was adopted by the General Assembly. This Act increased the state's authority to manage the coastal zone and beaches. The South Carolina Department of Health and Environmental Control (DHEC), Office of Ocean and Coastal Resource Management (OCRM) is responsible for the management of the state's beaches and coastal areas.

### 4.1.1 Overview of State Policies

The Beachfront Management Act includes several key legislative findings, including:

a. the importance of the beach and dune system in protecting life and property from storms, providing significant economic revenue through tourism, providing habitat for important plants and animals, and providing a healthy environment for recreation and improved quality of life of all citizens;
b. unwise development has been sited too close to and has jeopardized the stability of the beach/dune system;
c. the use of armoring in the form of hard erosion control devices such as seawalls, bulkheads, and rip-rap to protect erosion-threatened structures has not proven effective, has given a false sense of security, and in many instances, have increased the vulnerability of beachfront property to

damage from wind and waves while contributing to the deterioration and loss of the dry sand beach;

d. inlet and harbor management practices, including the construction of jetties which have not been designed to accommodate the longshore transport of sand, may deprive downdrift beach/dune systems of their natural sand supply;
e. it is in the State's best interest to protect and promote increased public access to beaches for visitors and South Carolina residents alike: and,
f. a coordinated state policy for post-storm management of the beach and dunes did not exist and that a comprehensive beach management plan was needed to prevent unwise development and minimize adverse impacts.

As previously described in Section 1, the Beachfront Management Act established eight state policies to guide the management of ocean beaches:

a. Protect, preserve, restore, and enhance the beach/dune system;
b. Create a comprehensive, long-range beach management plan and require local beach management plans for the protection, preservation, restoration, and enhancement of the beach/dune system, each promoting wise use of the state's beachfront to include a gradual retreat from the system over a forty-year period;
c. Severely restrict the use of hard erosion control devices and encourage the replacement of hard erosion control devices with soft technologies which will provide for the protection of the shoreline without long-term adverse effects;
d. Encourage the use of erosion-inhibiting techniques which do not adversely impact the long-term well-being of the beach/dune system;
e. Promote carefully planned nourishment as a means of beach preservation and restoration where economically feasible;
f. Preserve existing public access and promote the enhancement of public access for all citizens including the handicapped and encourage the purchase of lands adjacent to the Atlantic Ocean to enhance public access;
g. Involve local governments in long-range comprehensive planning and management of the beach/dune system in which they have a vested interest; and,
h. Establish procedures and guidelines for the emergency management of the beach/dune system following a significant storm event.

DHEC-OCRM is responsible for implementing these policies through a comprehensive management program that includes research and policy development, state and local planning, regulation and enforcement, restoration, and extension and education activities.

### 4.1.2 Beachfront Setback Area

The Beachfront Management Act requires DHEC-OCRM to establish and periodically review (once every seven to ten years) the position of the two lines of beachfront jurisdiction, the Baseline and the Setback Line (Map 12), as well as the average annual erosion rate for all oceanfront land that is developed or

potentially could be developed. The purpose of these jurisdictional lines is to implement § 48-39-280(A) of the statute, which reads as follows:

> *"A forty-year policy of retreat from the shoreline is established. The department must implement this policy and must utilize the best available scientific and historical data in the implementation. The department must establish a baseline which parallels the shoreline for each standard erosion zone and each inlet erosion zone."*

The Baseline is the more seaward line of jurisdiction and is typically located at the crest of the primary sand dune. The Setback Line is the landward line of jurisdiction and is established landward of the Baseline at a distance equal to 40 times the average annual erosion rate, as calculated from the best historical and scientific data, or at a minimum distance of 20 feet landward of the Baseline for stable or accretional beaches.

To establish the Baseline position, the shoreline must first be classified as an inlet zone or a standard zone. Areas that are close to inlets and have non-parallel offshore bathymetric contours and non-parallel historical shoreline positions are classified as inlet zones, while all other areas are classified as standard zones. Inlet zones are further classified as stabilized if jetties, groins, or seawalls are present, or as unstabilized. In unstabilized inlet zones, the Baseline is located at the most landward shoreline position at any time during the past 40 years, unless the best available data indicates the shoreline is unlikely to return to its former position. No other data such as: historical inlet migration; inlet stability; channel and ebb delta changes; sediment bypassing; or sediment budgets indicated other data should be considered for Seabrook Island. This Baseline position was established by reviewing historical aerial photographs and selecting the most landward shoreline position.

In stabilized inlet zones and standard zones, the Baseline is located at the crest of the primary oceanfront sand dune using beach survey data or dune field topographic data such as LiDAR or Light Detection and Ranging. If the shoreline is armored with a seawall or bulkhead and no sand dune exists, then a theoretical dune crest position is calculated from beach survey data.

For further information on the location of the State's beachfront jurisdictional lines, adopted erosion rates and beach classification zones, visit The South Carolina Beachfront Jurisdiction application.

### Setback Area Regulations (summary)

- No new construction is permitted in the setback area, with the exception of wooden walkways not more than six feet wide, wooden decks no larger than 144 square feet, public fishing piers, golf courses, normal landscaping, pools that were located landward of existing functioning erosion control structures, groins, or structures permitted by an OCRM special permit. An OCRM permit is required for all of the above actions except the construction of wooden walkways.
- Owners may replace habitable structures within the setback area that have been destroyed beyond repair by natural causes after notifying OCRM. The new structure must not exceed the original square footage and can be no further seaward than the original structure.

- No new erosion control devices are allowed in the setback area except to protect a public highway that existed prior to the enactment of the Beachfront Management Act.
- No new pools are allowed in the setback area, unless they are located as landward as possible of an existing, functional erosion control device. Pools that existed prior to 1988 may be repaired or replaced if destroyed beyond repair. The owner must certify that the new pool is located as landward as practical, is no larger than the original pool, and is constructed in such a manner that it cannot act as an erosion control device.

Map 12. Setback Area


## 4.2 Local Government and Authorities

The Town has jurisdiction of those lands within its boundaries and, as such, is responsible for planning, zoning, building regulations, code enforcement, floodplain management, police services, and fire and rescue. With regard to the beachfront and adjacent areas, the Town is responsible for the appropriate and sanctioned control of the beach. The following departments exert some control of the beach areas:

- Building
- Zoning
- Police
- Fire and Rescue

### 4.2.1 Town of Sullivan's Island Comprehensive Plan

The Town of Sullivan's Island Comprehensive Plan is intended to document the history of development on the island, to identify the community's infrastructure needs, and to articulate a vision for its future. The Plan is intended to help guide future decision-making in matters affecting the physical, social and economic growth, and development and redevelopment, of the community. It is critical that the Plan be viewed as a "living" document, which is part of a continuing planning process, updated and revised every five years, and rewritten every ten years according to South Carolina State statute. The Town's Plan was last adopted in 2008 and updated on May 8, 2013.

The plan includes nine elements, which provide detailed information that articulate the various goals for protecting and preserving the island's wetlands, sand dunes, wildlife and trees. Chapter 6 of the Natural Resources Element describes the following goals and implementation strategies to ensure that future development on the island compliments and enhances the environmental preservation values of the community:

1. In an effort to protect the dunes and the dune vegetation, best management practices should be employed.
2. The Town recognizes the need to protect the areas of the Island vulnerable to erosion that may jeopardize public infrastructure and private property.
3. Complete the Sullivan's Island Accreted Land Management Plan with the broadest possible community participation and input.
4. Encourage the use of native vegetation on public and private property.
5. Continue to protect the existing trees on the Island.
6. Continue to recognize that the marshes, beaches and waterways on and adjacent to the Island are critical habitats that require special protection.
7. The Town recognizes that Sullivan's Island is a major nesting and hatching site for migratory sea turtles and birds, and thus special protection efforts are required.

### 4.2.2. Town of Sullivan's Island Hazard Mitigation Plan

Sullivan's Island Hazard Mitigation Plan is coordinated through Charleston County. The Town adopted the most recent Hazard Mitigation Plan in November 2013. In the Town's resolution to adopt the plan, the Charleston Regional Hazard Mitigation Project Committee was recognized as the continual entity for review, maintenance, and reporting to Town Council in regards to the Hazard Mitigation Plan.

The Charleston County Hazard Mitigation Plan has been prepared to provide Charleston County municipalities with pro-active and preventative efforts that can be taken to lessen the impacts of the multitude of natural hazards. The plan covers Charleston County as a whole, but has specified sections devoted to individual municipalities. The document provides both summary and detailed explanations for the process of coordinating the Hazard Mitigation Plan, as well as specific methods to improve hazard control. The section devoted to Sullivan's Island can be found in Section 7.17 of the Charleston

County plan. For further information regarding hazard mitigation visit the Charleston County Hazard Mitigation Plan webpage.

### 4.2.3. Municipality's Disaster Preparedness and Evacuation Plan

Sullivan's Island has developed plans for disaster preparedness and evacuation in conjunction with Charleston County, South Carolina, and the federal government. The purpose of these plans is to establish guidelines, responsibilities, policies, and procedures for citizens in the event of a disaster or other emergency situation. The Town has in place mechanisms and communications to minimize any potential damage or injury of a disaster. The Town also has plans for recovery/restoration. For further information regarding disaster preparedness visit Sullivan's Island Emergency Preparedness webpage.

### 4.2.4. Beachfront Development Regulations

As South Carolina has provided authority to coastal municipalities to enact beach regulations, Sullivan's Island has adopted numerous ordinances that provide for the protection of the beach, the dune system, the accreted land, and the wildlife of the island. This section will provide a brief summary of those ordinances, as well as a discussion of how Sullivan's Island zoning requirements compare to DHEC-OCRM permit requirements in the setback area.

- Section 4: Beaches
  Section 4 of Sullivan's Island Town Code establishes several protective, restrictive, and regulatory measures as they relate to the beach itself. This section authenticates the conservation area, as well as the prohibition of subdivision of this area, and provides for its maintenance and preservation. Section 4 restricts the trimming, pruning, and removing of vegetation in the conservation area to certain approved degrees. Article II of Section 4 is devoted to picnics and outings. This establishes the requirement of certain notifications and/or permits. Likewise, Article IV of Section 4 establishes several miscellaneous restrictions, such as motorized vehicles and alcohol on the beach.
- Section 5: Buildings
  Section 5 of Sullivan's Island Town Code dictates the numerous building requirements on Sullivan's Island. While this section does not directly apply to the beach, it directly affects those structures near the beach, thus having influence on owner's ability to build in these areas. Specifically, it establishes requirement to limit impact on the beach such as stormwater management, etc.
- Section 21: Zoning Code
  Similar to Section 4, Section 21 Sullivan's Island Town Code establishes several protective, restrictive, and regulatory measures as they relate to the beach itself. Most importantly, Article V of Section 21 establishes the RC-1 and RC-2 Recreation and Conservation Area Districts. This article further institutes provisions for erosion control structures, trimming and pruning, maintenance. Section 21 also founds authoritative bodies for appeal, enforcement, and administration.
- Section 25: Stormwater Management

Section 25 of Sullivan's Island Town Code directs the matter of stormwater management on Sullivan's Island. As is pertains to the beach, it requires all stormwater to be directed away from the beach.

Sullivan's Island has established codes and ordinances that are compatible with DHEC-OCRM requirements. Under conceivable circumstances, the Town attempts to be completely in alignment with DHEC-OCRM's policy of retreat.

There are certain structures on the island which are not incompliance with the Beachfront Management Act. These structures were in existence before the establishment of the Beachfront Management Act, and are still restricted by the above ordinances for future improvements and/or modifications. These structures are listed and depicted in Section 7.1.

In the event of the landward movement of the setback line, the majority of the island will be unaffected as it pertains to compliance with the Beachfront Management Act. This is due to the large accreted land over the main face of the island, where structures are not permitted. However, structures along the tail ends of the island, where the beach is depleted or eroding, would be affected by the landward movement of the setback line. The same issues for current non-compatible structures exist for future non-compatible structure. Relocation is not feasible both due to the monetary demands and the development level of the island.

### 4.2.5. Regulations on Beach and Shoreline Protection

The Town has adopted development regulations, which complement the State's "retreat policy," specifically through the establishment of Recreation and Conservation Zoning Districts, identified in the Zoning Ordinance as the RC-1 and RC-2 Districts. The RC-1 Zoning District is bounded by the Atlantic Ocean and residentially owned properties to the northwest, while the RC-2 District is primarily defined as the marshland, and bounded by the Intercostal Waterway to the north, and private residential property to the southeast. The Town has endeavored to create a uniform thirty (30) feet setback standard from both the RC-1 and RC-2 District boundaries to create adequate buffer zones that will ensure passive treatment of stormwater run-off before entering waters surrounding Sullivan's Island. This thirty (30) feet setback also helps to ensure structures are protected from rising floodwater and erosion caused by storms, sea level rise, and other natural conditions.

### 4.2.6. Other Regulations on Beach Management

Sullivan's Island has in place multiple regulations to insure the proper maintenance, access and use of both marsh and ocean beaches. These provisions are encompassed in the ordinances listed in Section 4.2.4 and in this section. The Town's has given the enforcement authority of these regulations to the Police, Fire and Building Department.

- Chapter 3: Animals and Fowl

Chapter 3 of Sullivan's Island Town Code establishes policies for animals and fowl on the island. This section includes matter related to disturbance of wildlife on the island, as well as the permitting of dogs and the subsequent restrictions.

- Section 4: Beaches

  Chapter 4 of Sullivan's Island Town Code establishes several protective, restrictive, and regulatory measures related to front and back beaches. Article I creates the Island's two conservation zoning districts, as well as the prohibition of parcel subdivision of the Town owned protected land, which is established by Sections 4-4.3 as the RC-1 Zoning District. The Town's protected, or accreted land, was conveyed by the Lowcountry Open Land Trust in 1992 and identifies that various terms and conditions of using the property. Section 4-4.3 refers to the recorded deed restriction language which is codified in this section. This section addresses property conveyance, maintenance and preservation of vegetation and dunes, and requires constancy with the Town's Zoning Ordinance. Code Section 4-4 addresses the permitting process for trimming, pruning, and removing of vegetation in both Recreation Conservation Districts. Article IV establishes several miscellaneous restrictions, such as prohibitions of public vehicle access, alcohol on the beach, aircraft, and commercial activity. Section 4A dictates the permitting of watercraft.

- Chapter 14: Miscellaneous Offenses

  Chapter 21 Sullivan's Island Town Code establishes several miscellaneous offenses for Sullivan's Island. Specifically, Section 14-23 restricts the allowance of beach lighting.

- Chapter 21: Zoning Code

  Chapter 21 Sullivan's Island Town Code establishes zoning requirements for Sullivan's Island. Most importantly, Article V of Section 21 establishes the RC-1 and RC-2 Recreation and Conservation Area Districts. This article further institutes provisions for erosion control structures, trimming, pruning, and maintenance.

# Section 5: Erosion Control Management

This section of the Town of Sullivan's Island plan addresses the shoreline history, condition of the beach, long-term erosion rates, and various beach maintenance and shore protection projects implemented by the community and individual property owners.

## 5.1 Shoreline Change Analysis

The Beachfront Management Act, requires DHEC-OCRM to establish and periodically review the position of the two lines of beachfront jurisdiction, the baseline and the setback line, as well as the average annual erosion rate of all oceanfront land that is developed or potentially could be developed. Alongside these requirements, the Beachfront Management Act establishes three shoreline zones.

- Standard Erosion Zone - a segment of shoreline which is not directly influenced by an inlet or associated shoals.
- Unstablized Inlet Erosion Zone - a segment of shoreline along or adjacent to a tidal inlet which is directly influenced by an inlet and its associated shoals and which is not stabilized by jetties, terminal groins, or other structures.
- Stabilized Inlet Erosion Zone - a segment of shoreline along or adjacent to a tidal inlet which is directly influenced by the inlet and its associated shoals and which is stabilized by jetties, terminal groins, or other structures.

Sullivan's Island is classified by two shoreline zones, unstabilized inlet erosion zone and stabilized inlet erosion zone. The Island's stabilized inlet erosion zone starts at Station 9 and extends to Station 19 (approximately 1.5 miles). The unstabilized inlet erosion zone starts at Station 19 and extends to the Middle Street connector on the eastern tip of the Island (approximately 2.2 miles).

### 5.1.1 Beach Profiles

Representative beach profiles measured from fixed starting points provide the best means of quantifying short-term beach changes. These data allow changes in beach width (in feet) and beach volume (expressed in cubic yards per foot of shore length) to be assessed. Sullivan's Island has 11 permanent beach profile monuments, beginning with station 3010B at Station 16$^{th}$ Street and ending at station 3095B at Station 32$^{nd}$ Street, having been installed by DHEC-OCRM along the Island (Map 13). These monuments have been surveyed routinely from 1987 and the present and provide the best island wide basis for monitoring beach changes.

Charts 1-10 show the beach profile changes between 1997 and 2012 at stations 3010B, 3020B, 3050B, 3085B, and 3092B.

The "0" position on the x-axis of the profiles mark the location of the beach profile monuments whereas the vertical red line marks the location of the DHEC-OCRM baseline. The table and charts show the volumes of sand that were measured above the -5 ft. contour (NAVD88) and seaward of the DHEC-OCRM baseline for the years 1997, 1999, 2000, 2007, 2008, 2012.

It is important to note that the beach profile volume changes presented in this section are based on data from 1999 to 2012 whereas the shoreline change rates in Section 5.1.2 are based on historical shoreline positions from 1872 to 2012. The beach profiles show recent, annual changes whereas the long-term shoreline change rates show the annual erosion or accretion that has occurred in some cases going back to 1872. The Island's beach profiles can best be referenced through DHEC's *B.E.R.M Explorer GIS application*. For topographic and bathymetric data after 2014, please reference https://gis.dhec.sc.gov/bermexplorer/ .

Map 13. Sullivan's Island Monitoring Station

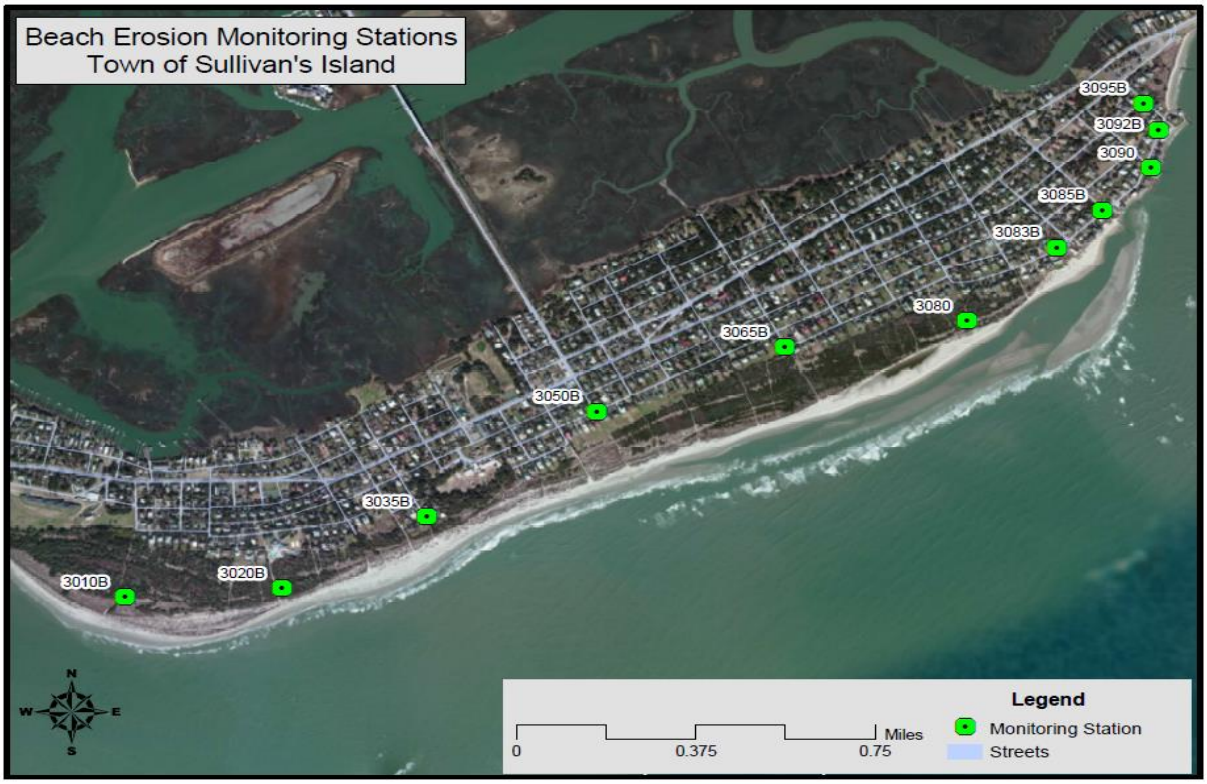



Chart 1. Profile Data for Benchmark 3010B

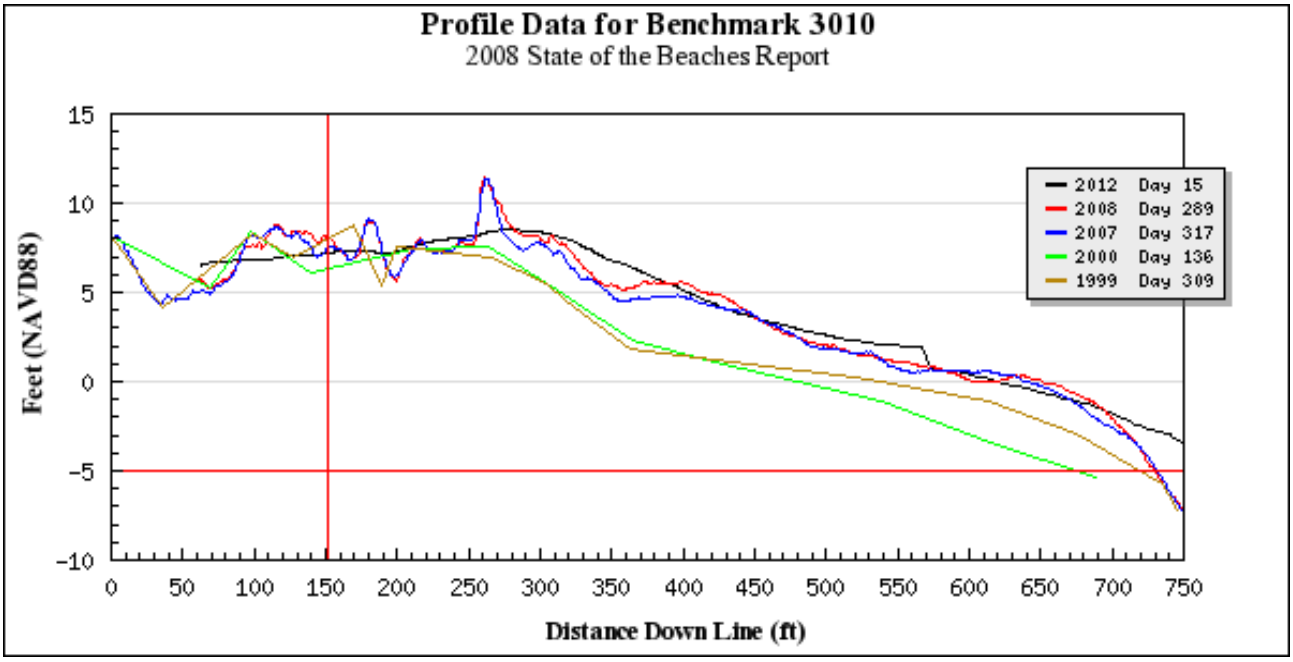
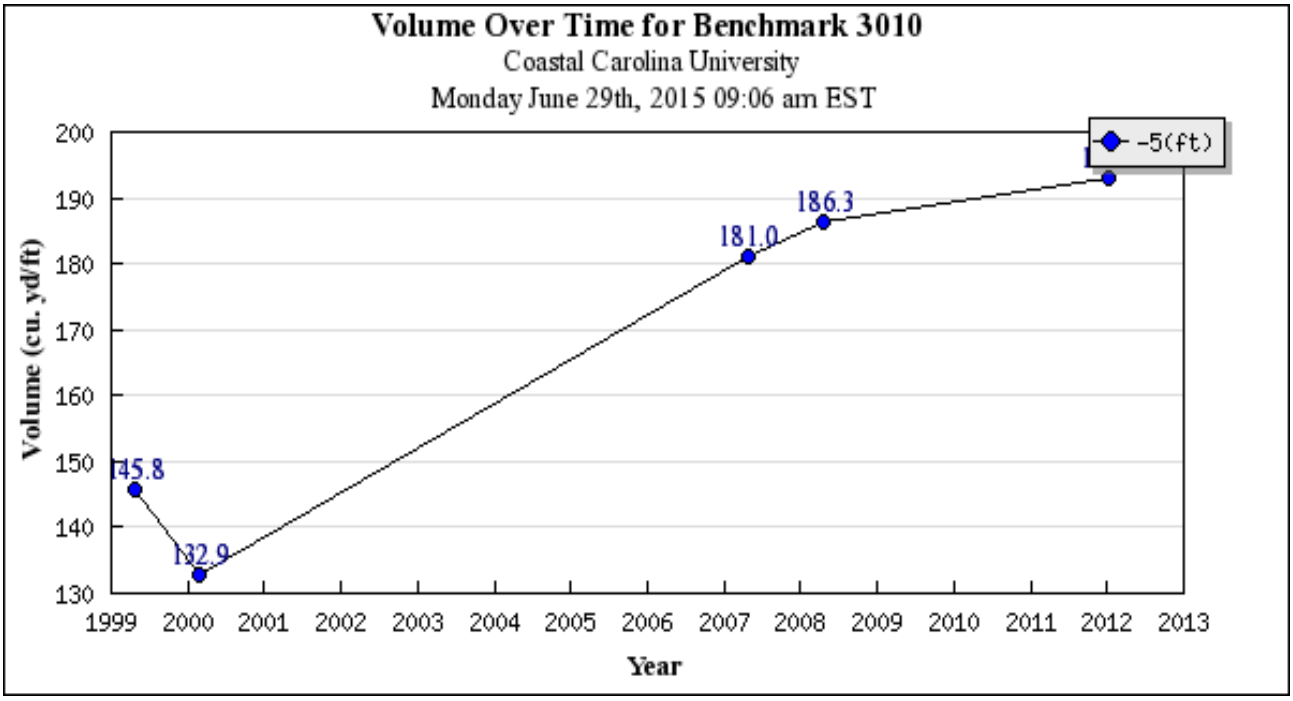


Chart 2. Volume over Time for Benchmark 3010B




Monument 3010B:

At monument 3010B, the average beach profile volume is 167.8 $yd^3$/ft, and the volume at this station has varied from 132.9 $yd^3$/ft to 193 $yd^3$/ft. From 1999 to 2012, this station gained about 47.2 $yd^3$/ft of sand.

Chart 3. Profile Data for Benchmark 3020B

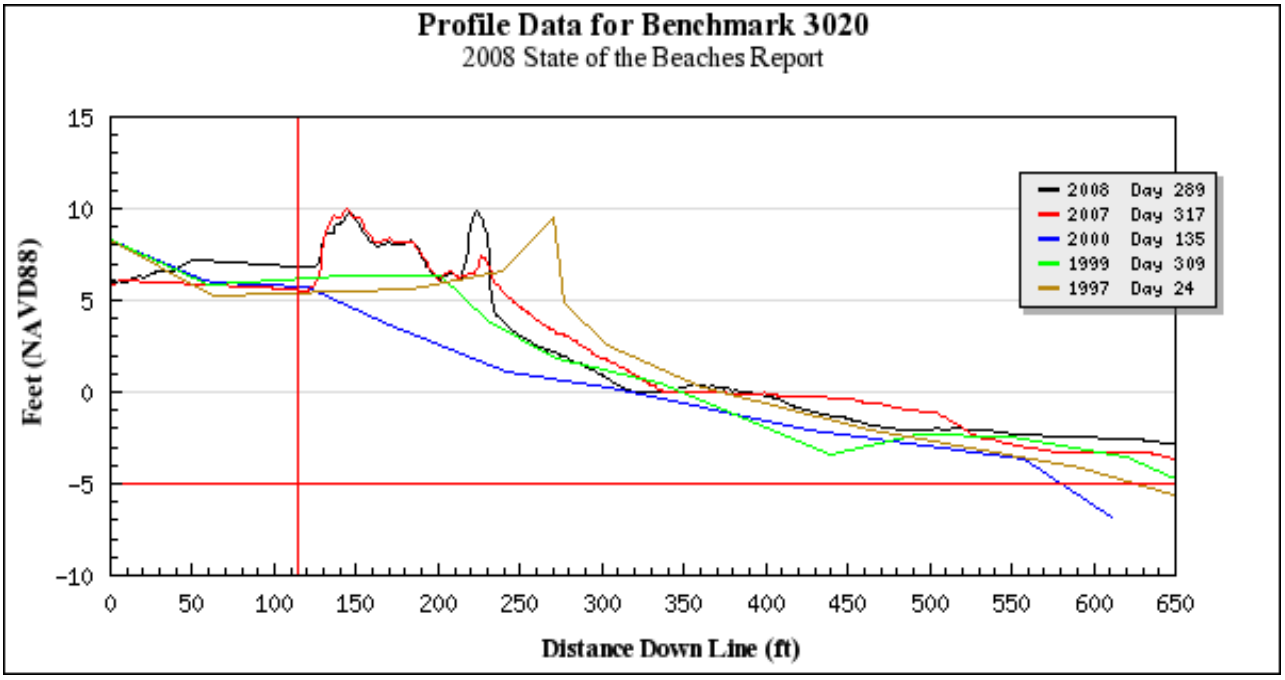
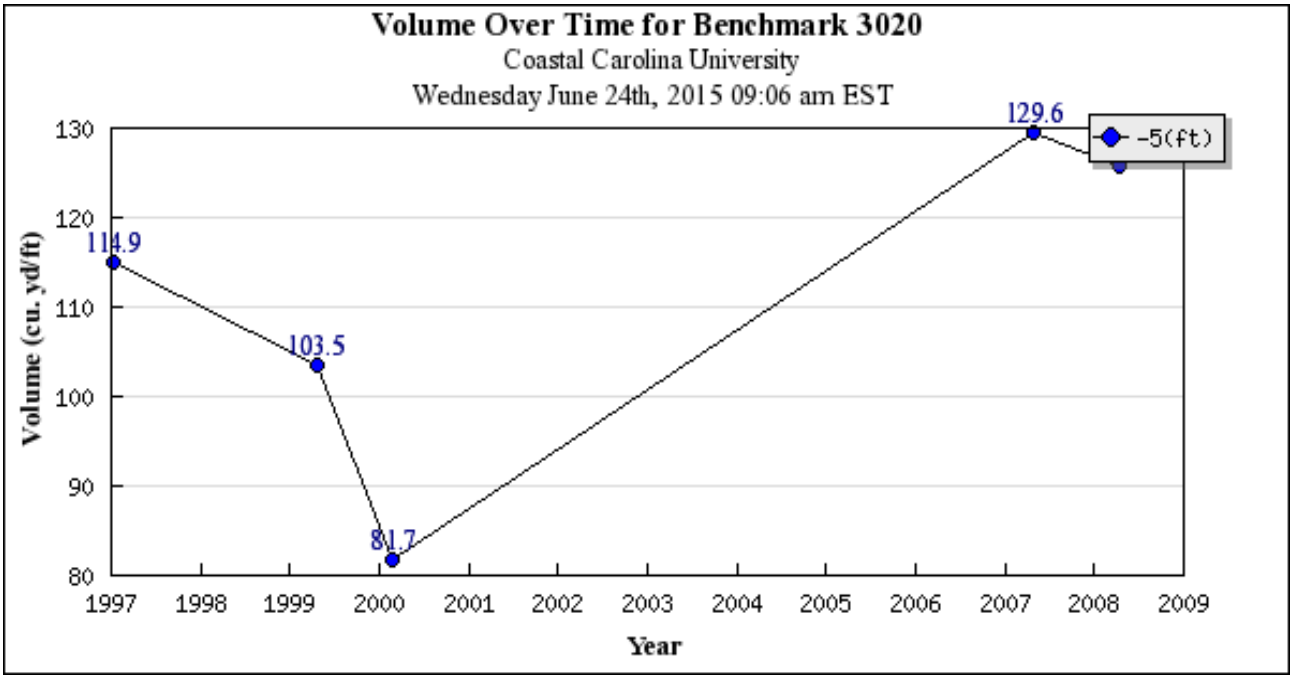



Chart 4. Volume over Time for Benchmark 3020B




Monument 3020B:

At monument 3020B, the average beach profile volume is 111.1 $yd^3/ft$, and the volume at this station has varied from 81.7 $yd^3/ft$ to 129.6 $yd^3/ft$. From 1997 to 2008, this station gained about 11.1 $yd^3/ft$ of sand.

Chart 5. Profile Data for Benchmark 3050B

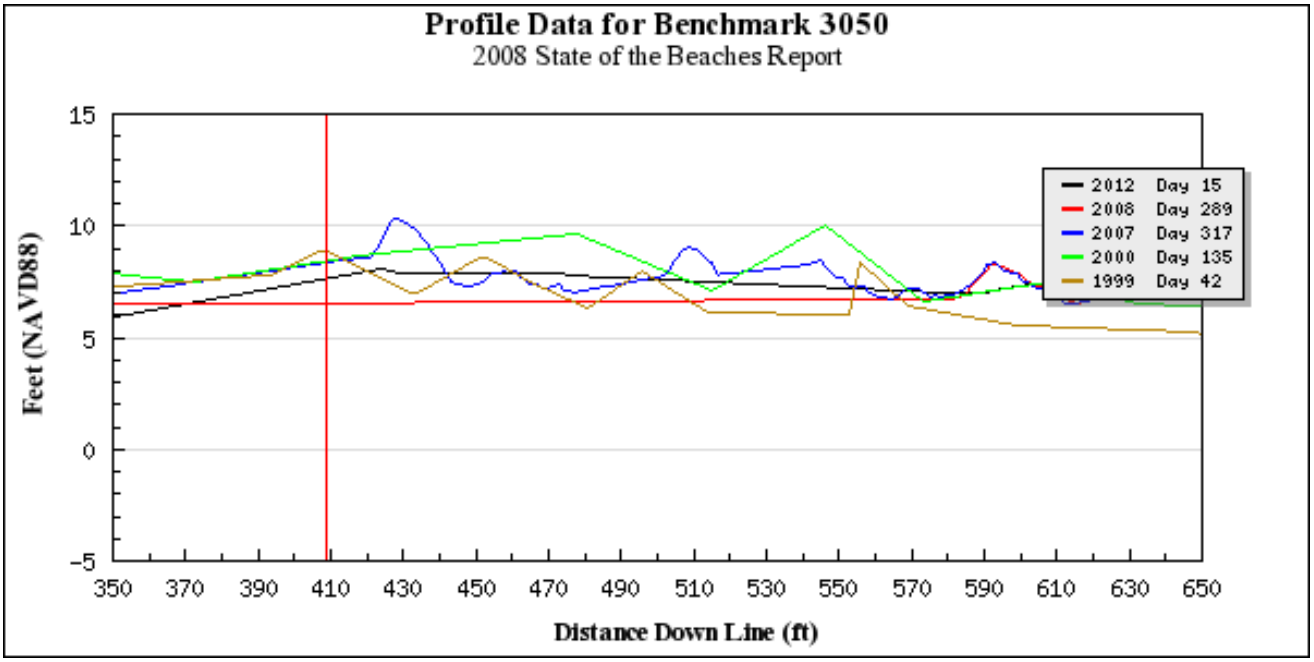
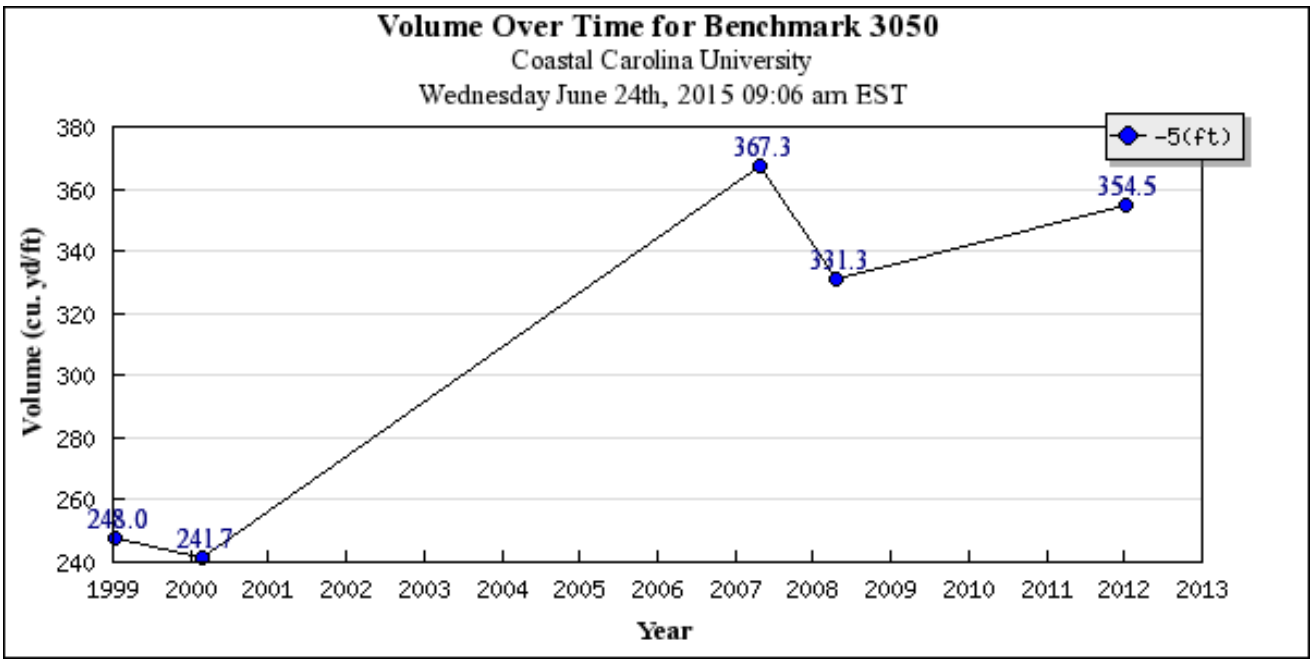



Chart 6. Profile Data for Benchmark 3050B



### Monument 30150B:

At monument 3050B, the average beach profile volume is 308.6 $yd^3/ft$, and the volume at this station has varied from 241.7 $yd^3/ft$ to 367.3 $yd^3/ft$. From 1999 to 2012, this station gained about 106.5 $yd^3/ft$ of sand.

Chart 7. Profile Data for Benchmark 3085B

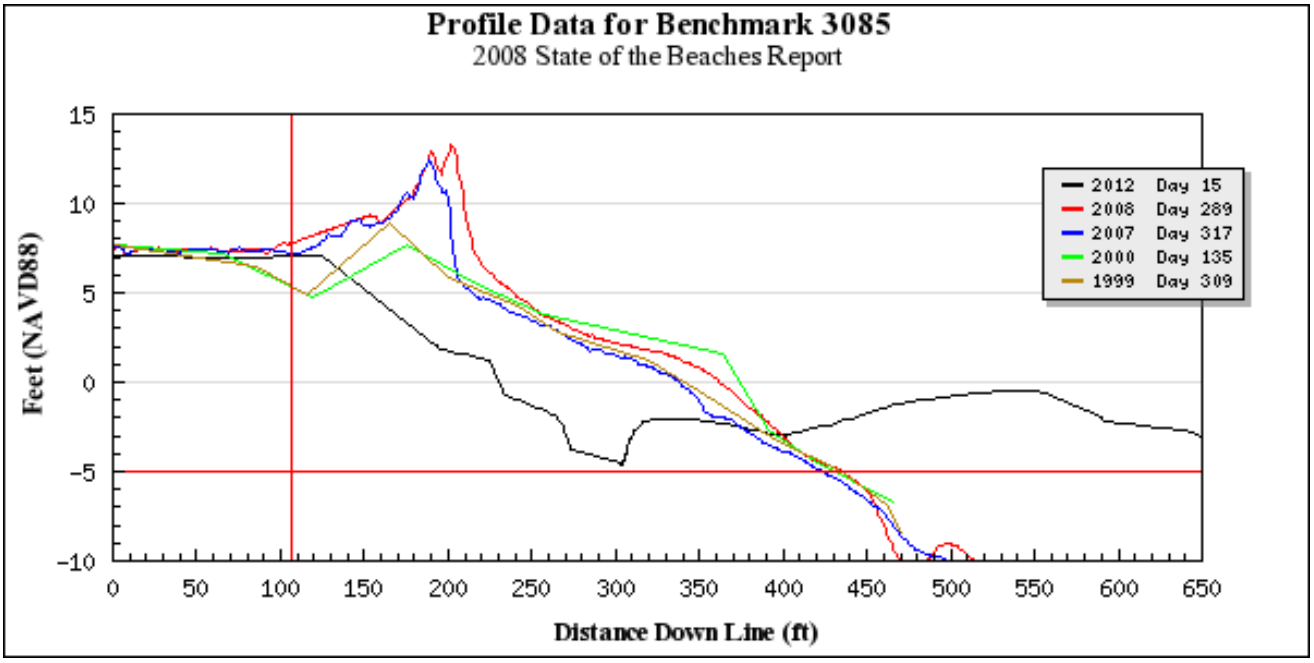
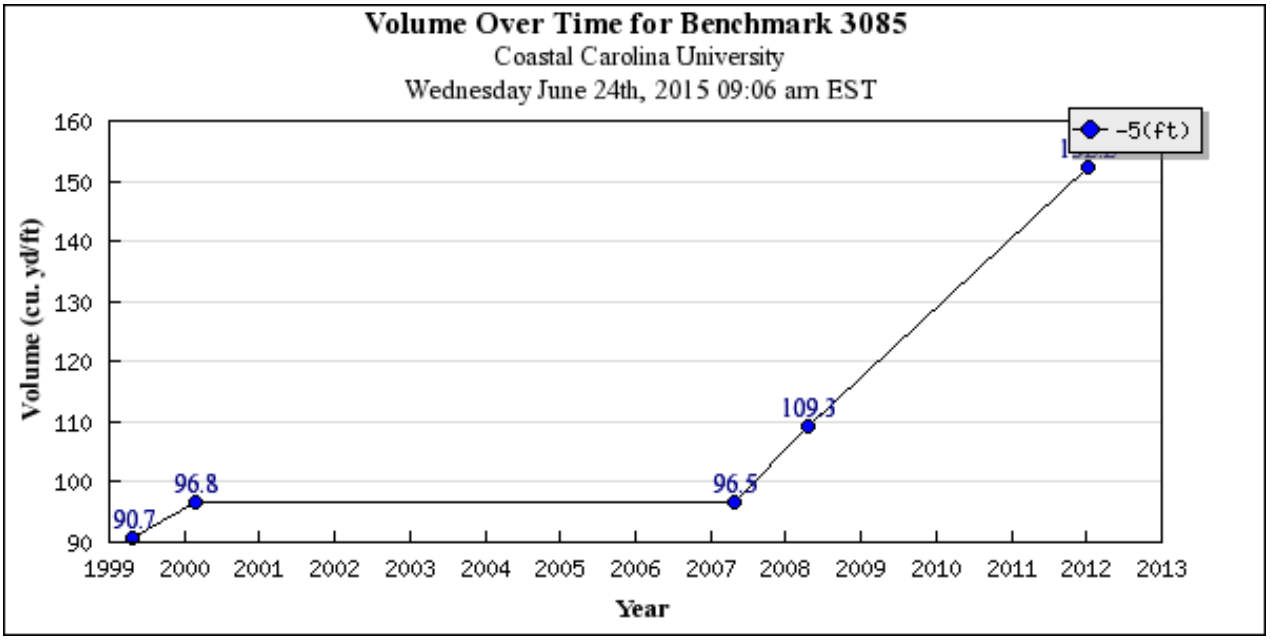


Chart 8. Profile Data for Benchmark 3085B




Monument 3085B:

At monument 3085B, the average beach profile volume is 109.1 $yd^3$/ft, and the volume at this station has varied from 90.7 $yd^3$/ft to 152.2 $yd^3$/ft. From 1999 to 2012, this station gained about 61.5 $yd^3$/ft of sand.

Chart 9. Profile Data for Benchmark 3092B

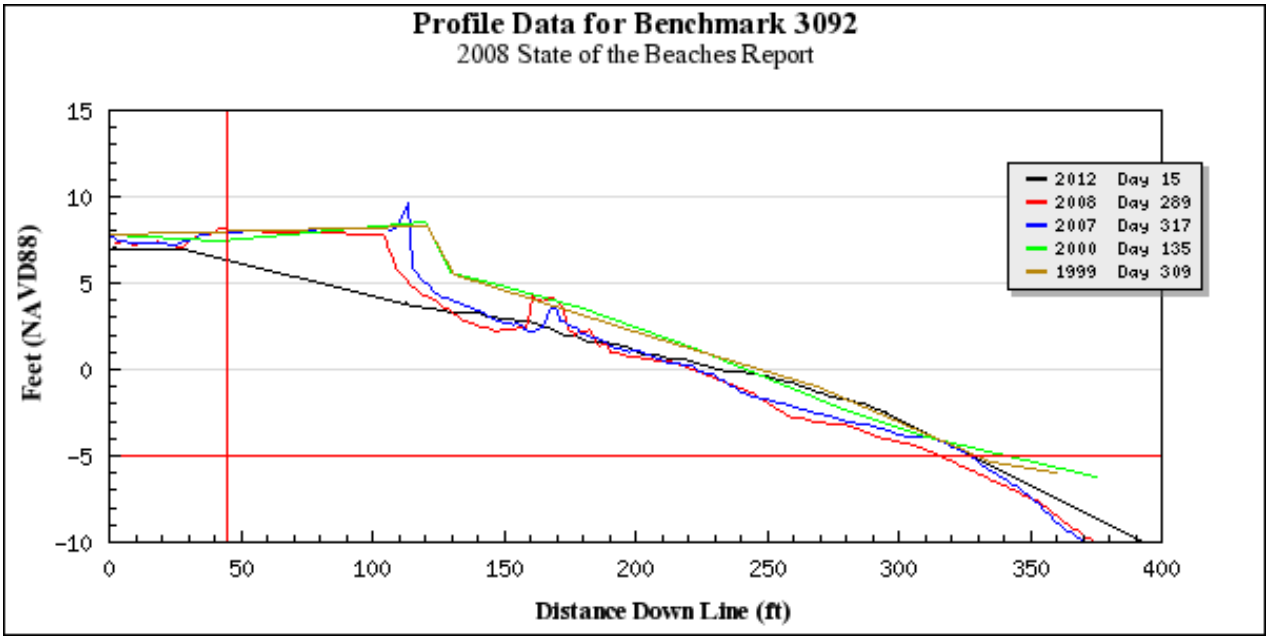
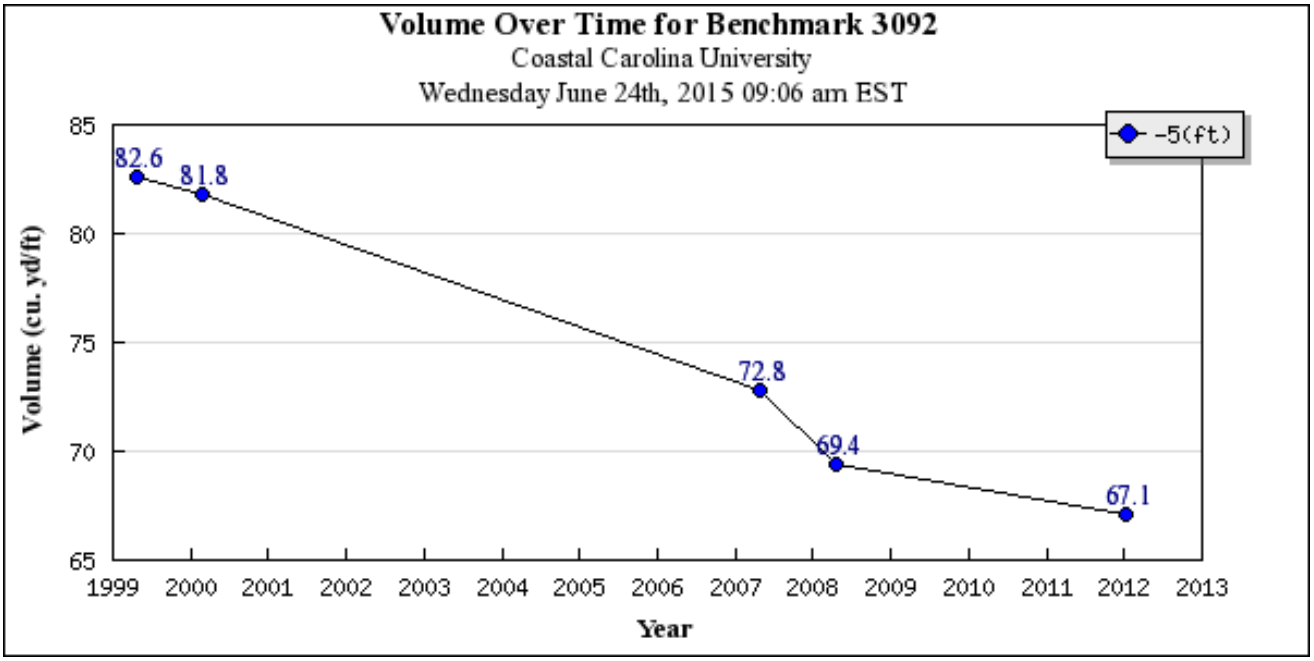


Chart 10. Profile Data for Benchmark 3092B




Monument 3092B:

At monument 3092B, the average beach profile volume is 74.7 $yd^3/ft$, and the volume at this station has varied from 82.6 $yd^3/ft$ to 67.1 $yd^3/ft$. From 1999 to 2012, this station lost about 15.5 $yd^3/ft$ of sand.

### 5.1.2 Long-Term Erosion Rates and Shoreline Change

Long-term erosion rates are calculated based on beach shoreline positions dating back to 1872 on Sullivan's Island. Based on an assessment methodology that was developed by the U.S. Geological Survey, the calculated long-term erosion rates for Sullivan's Island are shown in Table 4 and Map 14. The majority of Sullivan's Island is accretional. From the western tip, which is protected by a sea wall, to approximately Station 30, the island shows no long-term erosion. The Breach Inlet side of the island, starting at Station 30, is a concern for the Town. The current erosion rate for this section is -2. Depending upon future trends regarding this section of the island, the Town may need to consider beach erosion alternatives to protect its citizens and shoreline.

Table 4. Sullivan's Island Long-Term Erosion Rates

| Monument | Erosion Rate | Monument | Erosion Rate | Monument | Erosion Rate |
|---|---|---|---|---|---|
| 3010B | 0 | 3065B | 0 | 3090 | -2 |
| 3020B | 0 | 3080 | 0 | 3092B | -2 |

| | | | | | |
|---|---|---|---|---|---|
| **3035B** | 0 | 3083B | 0 | 3095B | -2 |
| **3050B** | 0 | 3085B | -2 | | |

There are two principal sources of historical shoreline change information: 1) historical maps and charts, and 2) historical and recent aerial photographs. Both are available for Sullivan's Island, and both have been used to assess shoreline change.

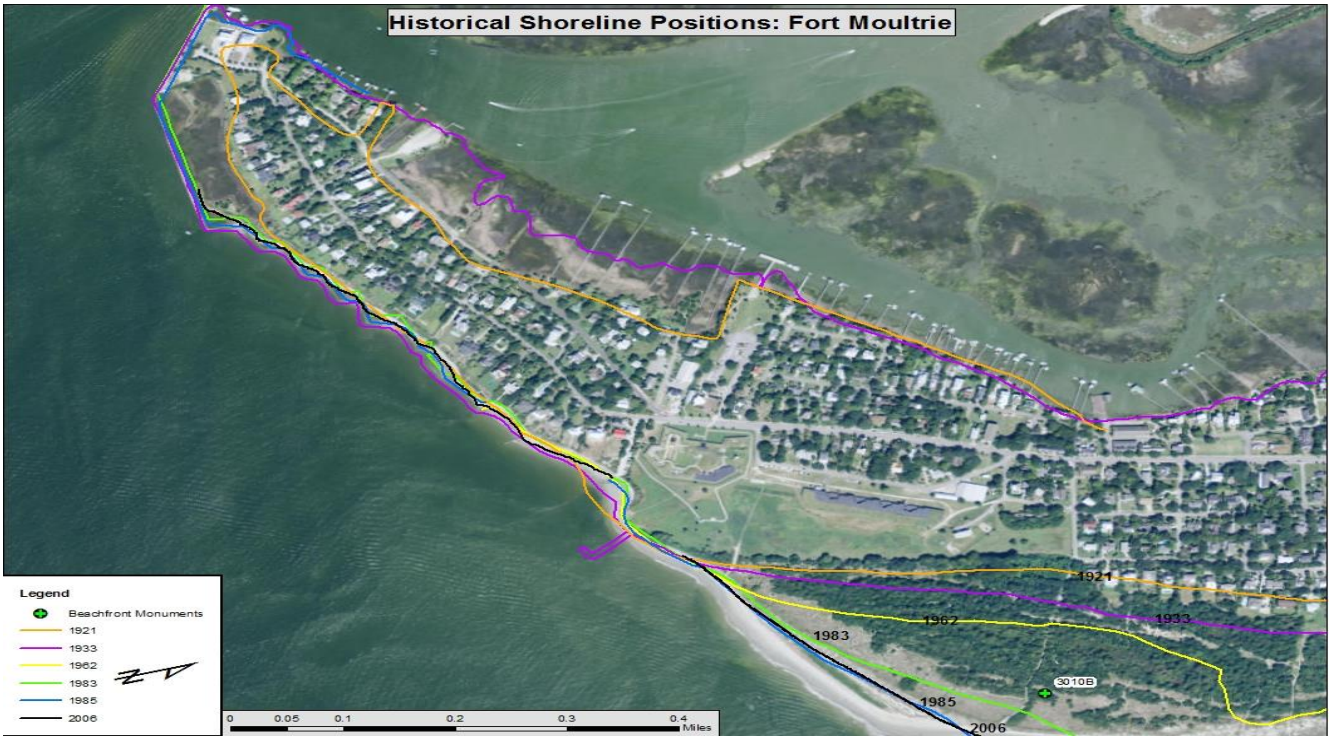
Map 14. Erosion Rates


The Position Maps 15-17, depict historical locations of what the shoreline was in the selected years.

Map 15. Shoreline Change Positions for Breach Inlet Side


Map 16. Shoreline Change Positions for Mid-Island

Map 17. Shoreline Change Positions for Fort Moultrie Side




## 5.2 Beach Alteration Inventory

Sullivan's Island currently utilizes seawalls, revetments, and groins. These structures are at varying degrees of condition. The island has 3 seawalls, 16 revetments, 11 groins, and 0 bulkheads. These structures are described in Table 5 and depicted in Map 18. The groins were originally constructed in the 1960s, with three being repaired in 1998.

Table 5. Beach Alteration Inventory

| Parcel Address | Parcel Number | Structure Inventory | Structure Length | Structure Condition |
|---|---|---|---|---|
| Jasper Blvd. | 529-12-00-116 | R | 21.91' | |
| Breach Inlet | 529-12-00-024 | G | | |
| 3209 Marshall Blvd. | 529-12-00-107 | R | 170.17' | |
| 3203 Marshall Blvd. | 529-12-00-106 | R | 185.55' | |
| 3203 Marshall Blvd. (2) | 529-12-00-106 | G | | |
| Station 32 | 529-12-00-116 | R | 34.96' | |
| 3113 Marshall Blvd. | 529-12-00-103 | R | 121.7' | |

| | | | | |
|---|---|---|---|---|
| 3109 Marshall Blvd. | 529-12-00-102 | R | 112.11' | |
| 3103 Marshall Blvd. | 529-12-00-101 | R | 110.27' | |
| Station 31 | ------ | R | 56.11' | |
| 3035 Marshall Blvd. | 529-12-00-076 | SW | 267.56' | |
| 3035 Marshall Blvd. (2) | 529-12-00-076 | R | 9.04' | |
| 3035 Marshall Blvd. (3) | 529-12-00-076 | G | | |
| 3029 Marshall Blvd. | 529-12-00-075 | R | 161.41' | |
| 3029 Marshall Blvd. (2) | 529-12-00-075 | G | | |
| 3025 Marshall Blvd. | 529-12-00-074 | SW | 116.12' | |
| 3025 Marshall Blvd. (2) | 529-12-00-074 | R | 25.84' | |
| 3019 Marshall Blvd. | 529-12-00-073 | G | | |
| 2923 Marshall Blvd. | 529-12-00-069 | G | | |
| Station 29 | 529-11-00-109 | G | | |
| 1214 Middle St. | 523-07-00-084 | R | 635.96' | |
| 1214 Middle St. (2) | 523-07-00-084 | G | | |
| 1117 Middle St. | 523-07-00-080 | SW | 111.53' | |
| 1121 Middle St. | 523-07-00-081 | G | | |
| 1105 Middle St. | 523-07-00-077 | R | | |
| 1105 Middle St. | 523-07-00-077 | G | | |
| 1101 Middle St. | 523-07-00-076 | R | | |
| 1019 Middle St. | 523-06-00-066 | G | | |
| 1009 Middle St. | 523-06-00-064 | R | | |
| 1001 Middle St. | 523-06-00-063 | R | | |

Map 18. Beach Alteration Structures


Map 19. Beach Alteration Structures

### 5.2.1 Beach Renourishment

South Carolina promotes the carefully planned nourishment as a means of both beach preservation and restoration where economically feasible. Beach renourishment and other "soft" solutions are the preferred alternatives to hard stabilization to combat beach erosion in South Carolina. The SC Beachfront Management Act defines beach nourishment as "the artificial establishment and periodic renourishment of a beach with sand that is compatible with the existing beach in a way so as to create a dry sand beach at all stages of the tide." A typical renourishment project consists of dredging beach compatible sand from an offshore site, pumping the sand onto the beach, and distributing it on the beach face.

Sullivan's Island has had one renourishment project to date, in 1998. The renourishment project was state funded, costing $230,000. The renourishment took place between Station 31st Street and Station 28 ½ Street. The borrow site was between Station 28 ½ Street and Station 26 ½ Street of Sullivan's Island. The 1998 project met with little success and thus has minimally shaped the Sullivan's Island shoreline.

For further information regarding beach renourishment visit the S.C. Beach Renourishment webpage.

### 5.2.2 Emergency Orders and Sandbags

The term "emergency" is defined by the SC Coastal Tidelands and Wetlands Act as "any unusual incident resulting from natural or unnatural causes which endanger the health, safety, or resources of the residents of the State, including damages or erosion to any beach or shore resulting from a hurricane, storm, or other such violent disturbance." DHEC-OCRM does not consider long-term, chronic erosion as an "emergency." Emergency situations before or after a storm event often prompt local governments to issue Emergency Orders, which allow property owners to construct temporary barriers against wave uprush through one or a combination of the following erosion mitigation techniques: sandbagging, sand scraping, or minor renourishment. Property owners being protected by sandbags are responsible for the maintenance of the bags to insure that they remain in place and in good repair, and they are also responsible for the complete removal of the bags. Sullivan's Island past Emergency Orders are summarized in Table 6.

Table 6. Emergency Orders for Sullivan's Island

| Date Issued | Location | Event | Mitigation Technique |
|---|---|---|---|
| October 1, 1994 | Breach Inlet & Pettigrew and Station 21. | High Tides (rain event) | Sandbagging and Minor Renourishment |
| September 7, 1995 | Breach Inlet & Pettigrew and Station 21. | High Tides | Sandbagging and Minor Renourishment |
| August 30, 1996 | Breach Inlet & Pettigrew and Station 21. | High Tides | Sandbagging and Minor Renourishment |

| | | | |
|---|---|---|---|
| November 27, 1996 | Breach Inlet & Pettigrew and Station 21. | High Tides | Sandbagging and Minor Renourishment |
| June 20, 1997 | Breach Inlet | High Tides | Sandbagging, Sand Scraping, and Minor Renourishment |
| September 11, 1997 | Breach Inlet | High Tides | Sandbagging, Sand Scraping, and Minor Renourishment |
| December 16, 1997 | Breach Inlet | High Tides | Sandbagging, Sand Scraping, and Minor Renourishment |
| August 24, 2001 | Breach Inlet | High Tides | Sandbagging, Sand Scraping, and Minor Renourishment |
| September 5, 2008 | 2917 and 3208 Marshall Boulevard | Hurricanes – Hannah, Ike, and Josephine | Sandbagging |
| June 18, 2012 | 3025 Marshall Boulevard | High Winds and Tides (assoc. w/ Tropical Storms. Alberto and Beryl) | Minor Renourishment |
| September 28, 2016 | Various locations island-wide | Hurricane storm surge | Sandbagging, Sand Scraping, and Minor Renourishment |

### 5.2.3 Previous Hurricane or Storm Events

Sullivan's Island is vulnerable to storm-surge flooding and wave damage because of its direct exposure to the open coast. Although severe hurricanes have not impacted the Charleston area for two decades, storm surge and waves still present the most probable natural hazard risk to the island. The severity of flooding and wave action on the majority of developed property is influenced by the morphology, vegetation, and sediments within the AL study area.

FEMA (2004) summarized the major storms that have impacted Charleston County. There are anecdotal reports dating back to the 1600s, but records become more reliable in the early 1800s. Damaging storms were known to occur in 1686, 1713, 1728, 1752, 1783, and 1787. During the 19th century, there were six more damaging storms. The 20th century also saw six damaging storms. The storms described in

Table 4.2 do not include numerous extratropical storms ("northeasters") or hurricanes which passed close by without making landfall along Charleston County.

Fortunately for Sullivan's Island, few storms have been "direct hits." The majority have entered well south or north of the island. However, Hurricane *Hugo* (21 September 1989) is the storm of record with landfall over the island. This produced water levels of 12–13 ft. NGVD'29 along the open coast and even higher levels along portions of Isle of Palms and Bull Bay to the north.

A complete review of storm histories is beyond the scope of the present document, however, the information below describes the more impactful storms to influence Sullivan's Island.

7 September 1804 – This severe hurricane moved inland between Savannah (GA) and Charleston (SC), causing significant damage on the coasts of Georgia and South Carolina. This storm is said to have caused more than 500 drowning deaths in South Carolina. The hurricane also caused major damage to the South Carolina economy. Historical notes contain no data on the height of the storm tides or strength of the winds.

27 August 1813 – This storm passed near Charleston, causing a large loss of lives and property. It rates a position close to the top of Charleston's meteorological list for its combination of severe winds, heights of flood tide, and general destruction.

27 September 1822 – This small, destructive hurricane passed inland between the cities of Georgetown and Charleston. It caused unprecedented tides at Georgetown and several hundred deaths in Charleston, the Town of Sullivan's Island, Georgetown, and North Island.

7 August 1854 – This major hurricane approached the United States from the south-southeast, driving the waters of the Atlantic Ocean into the bays and inlets, over some of the low-lying islands along the South Carolina coast. The storm commenced on Thursday (7 August) and did not end until Saturday night, causing severe suffering in the Town of Port Royal in Beaufort County.

25 August 1855 – This hurricane made landfall north of Savannah on a northeasterly course and passed to the west of Wilmington (NC). The storm is said to have damaged 90 percent of the houses in Charleston and severely damaged all of the South Carolina coast. As a result of this destructive storm, it was proposed that a weather reporting network be set up in the West Indies and Mexico.

27 August 1893 – This severe hurricane made landfall around the Georgia and lower South Carolina coasts. An estimate of more than 1,000 people lost their lives on the coastal islands and in the lowlands between the City of Tybee Island (GA) and Charleston (SCDPA 1973). The highest tide in this storm was estimated to have ranged from 17.0 ft. to 19.5 ft. MSL at Savannah Beach (GA) (USACE 1968). At Charleston, the tide was 8.9 ft. MSL. Extensive property damage was caused along the Georgia and South Carolina coasts.

23–30 August 1911 – The center of this hurricane crossed the coast between Savannah (GA) and Charleston (SC) on 28 August. This storm is considered in the same category as the storm of 1940 (described below). At Charleston, the barometer fell to 992 millibars (mb) (29.30 inches). The wind at

the weather bureau office reached 81 mph from the southeast (USDOC 1949). Seventeen lives were lost, and damage totaled about $1 million. The storm passed into the Piedmont section of South Carolina and then recurved to the northeast (USDOC 1971). At Charleston, the tide reached 7.5 ft. MSL, the third highest of Charleston County records.

11 August 1940 – This hurricane entered the coast from the southeast, between Savannah County (GA) and Beaufort County (SC) at about 4 p.m. on 11 August. Near Beaufort County, the tide is estimated to have reached 14.2 ft. MSL. Near the southern tip of Edisto Island, a high watermark indicated a tide of 13.6 ft. MSL on the open coast. About 175 cottages were destroyed on Edisto Island. On Folly Island, the maximum tide determined from a National Ocean Survey benchmark was 8.3 ft. MSL. The entire beachfront eroded an average of 75 ft. At Charleston, most of the damage was to buildings, wharves, and boats along the waterfront. Large areas of the low waterfront perimeter in the city were inundated, and many automobiles were damaged by the storm tide, which reached an elevation of 8 ft. MSL. Estimated damage to the city was $1 million. Sullivan's Island, the City of Isle of Palms, and Pawley's Island suffered minor damage. Overall, this hurricane was responsible for 34 deaths and caused damage estimated at $6.6 million (USACE 1957).

15 October 1954 – Hurricane *Hazel* crossed the coast just north of the City of Myrtle Beach (SC). This hurricane was one of the most destructive to strike the Carolinas in terms of property damage. Hurricane winds hit the Atlantic coast between Georgetown (SC) and Cape Lookout (NC). Storm tides devastated the immediate oceanfront along this stretch of coast. High tides of 16.6 ft. MSL were observed at Holden Beach Bridge and the Town of Calabash (NC). The lowest recorded barometric pressure of 938 mb (27.71 inches) was reported at Little River Inlet on the South Carolina-North Carolina border. Folly Island, Sullivan's Island, and Isle of Palms suffered light property damage and slight beach erosion. The City of Charleston experienced no serious damage. Total property damage was estimated at $34 million in North Carolina and at $27 million in South Carolina.

29 September 1959 – Hurricane *Gracie* moved inland on September 29. The center passed over the South Carolina coast at St. Helena about 10 miles east of the Beaufort. Damage of disaster proportions occurred in the coastal region from Beaufort to Charleston, and considerable additional damage occurred in the area of Waterboro. A barometric pressure of 950 mb (28.06 inches) was reported at Beaufort. The total damage inflicted by the storm was estimated at $14 million. High watermarks, which were reported near the Town of Edisto Beach (SC), ranged from 7.3 ft. to 11.9 ft. MSL.

25 August – 7 September 1979 – Hurricane *David* was the most intense storm of the century to affect the islands of the eastern Caribbean. However, the storm was not a major hurricane when it struck the United States just north of Palm Beach (FL) on 3 September and made a second landfall about 24 hours later near Savannah Beach (GA). In the United States, *David* was responsible for five deaths and about $300 million in damages.

12–25 September 1989 – Hurricane *Hugo* struck the Charleston (SC) area about midnight on 22 September, near high tide. As of 1990, *Hugo* was the most destructive hurricane (in dollar losses) to ever strike the continental U.S. coastline. High-water elevations (including wave setup and wave crest

contributions) were 12–13 ft. NGVD'29 at the open coast from the City of Folly Beach northward to the City of Myrtle Beach, with elevations up to 19 ft. NGVD'29 in bay areas in the vicinity of the maximum winds. Downtown Charleston experienced high-water elevations of ~10 ft. NGVD'29.

28 September- 10 October 2016 - Hurricane Matthew brought significant inundation from storm surge along Sullivan's Island beaches, rainfall-induced freshwater flooding, river flooding and hurricane-force wind gusts to portions of southeast GA and southeast SC. Although serious inland flooding resulted from the storm north and south of the low country, Charleston Metro Statistical Area was spared the brunt of the wind and flooding.

## 5.3 Discussions of Erosion Control Alternatives

Sullivan's Island has historically utilized several erosion control mechanisms. This includes hard methods, such as seawalls, revetments, and groins; and soft methods such as limited beach renourishment and zoning. As has been mentioned, the majority of the island is accretional, creating a substantial amount of beach and accreted land area. Much of this is attributable to the sedimentary dynamic of the island, whereby sand from Isle of Palms (and other areas) settles on Sullivan's Island shore. However, some can be credited to the erosion control structures on the island. There also exists a section on the eastern portion of the island, where erosion does occur. Along this section, described further in Section 5.3.1, the Town and private citizens have made use of minor beach renourishment. This section of the island (2867-3173 on Marshall Boulevard), continues to be an area of concentration for the Town. Solutions have been considered in Section 6.

### 5.3.1 Beach Renourishment

Beach renourishment is currently not a viable option for the Town, when funded by the Town. There are limited financial assistance programs or incentives for beach renourishment. However, if financial assistance was possible and comprehensive, the Town may seek renourishment funds.

Private property owners are allowed and do individually provide acute renourishment to their section of beach. This occurs along Marshall Boulevard from 2867 to 3173. These projects have been met with little long-term success. The Town provides no financial assistance with these private renourishment projects, but may act as a representative between the private property owner and state agencies.

# Section 6: Needs, Goals, and Implementation Strategies

## 6.1 Retreat Strategy

Sullivan's Island understands there is a state policy of retreat and has made great strides in implementing meaningful policy to meet its various goals and objectives. Recently, the SC Shoreline Change Advisory Committee's report, *Adapting to Shoreline Change*, acknowledged there is a widespread lack of understanding on the meaning of the state's policy of retreat. In an effort to clarify the state's policy goals, the report reiterates that "state and local governments should enact policies to

ensure that sufficient space is provided for the natural migration of the beach/dune system and so that the related risks to private and public resources are minimized."

In October of 2015, the Sullivan's Island Council and Planning Commission enacted a Zoning Ordinance change that incentivizes the state's concept of retreat from beachfront development by encouraging the removal of single-family homes from buildable Island properties. Approvable only by way of a land use special exception, the *conservation easement uses and structures* policy recognizes that all properties on Sullivan's Island are part of a dynamic and ever-changing barrier island environment, vulnerable to erosion and catastrophic flooding events and are predisposed to erosion, loss of critical dune vegetation and potential structural damage. It further recognizes a need to develop innovative methods to incentivize the protection of open space, preserve view-shed corridors, and reduce the intensity of residential land uses.

By creating the new ordinance, the Town has provided an incentive to preserve environmentally sensitive properties zoned for residential purposes. A property owner (grantor) now may now establish a permanent conservation easement on a beachfront parcel while still maintaining certain recreational uses and structures upon the property. These non-residential uses may include construction of a beach-side cabana, or other recreational use structure, with strict requirement that the owner agrees to retain and protect the natural or open-space values of the property. Specific development standards were created to ensure a low-scale structure is built while employing low impact development throughout the site.

This local achievement is completely unique to coastal South Carolina. Sullivan's Island is the first beachfront municipality or community ever to provide this type of incentive to actively retreat from the beachfront area.

### 6.1.1 Zoning Ordinance Setback Regulation

The intent of the Town's Zoning Ordinance is to ensure that all land development is compatible with the low-density residential character of the Island and encourages the preservation of its most important natural, architectural and cultural features. The Town has adopted development regulations, which complement the State's "retreat policy," specifically through the establishment of Recreation and Conservation Zoning Districts, identified in the Zoning Ordinance as the RC-1 and RC-2 Districts. The RC-1 Zoning District is bounded by the Atlantic Ocean and residentially owned properties to the northwest, while the RC-2 District is primarily defined as the marshland, and bounded by the Intercostal Waterway to the north, and private residential property to the southeast. The Town has endeavored to create a uniform thirty (30) foot setback standard from both the RC-1 and RC-2 District boundaries to create adequate buffer zones that will ensure passive treatment of stormwater run-off before entering waters surrounding Sullivan's Island. This thirty (30) foot setback also helps to ensure structures are protected from rising floodwater and erosion caused by storms, sea level rise, and other natural conditions.

The primary purpose of the RC-1 district is to enforce the retreat strategy, so as to protect life and property. This RC-1 zoning district is to be compatible with the intent of the South Carolina Beach Management Act, with full compliance with this act being required whenever applicable. No person or corporation shall initiate any development construction or reconstruction, in the area regulated by the RC-1 district.

The relocation of buildings, removal of erosion control structures, and relocation of utilities are currently not viable options for the Town. Relocation of buildings to nearby lots is not possible because most of the available land on Sullivan's Island is currently developed. Relocation anywhere else is cost prohibitive. Furthermore, there are relatively few financial assistance programs or incentives to relocate structures from beachfront lots to effectively mitigate damage from flooding.

However, as a member of the National Flood Insurance Program (NFIP) and participant in the Community Rating System (CRS), the Town has identified Repetitive Loss Properties (properties with two or more flood insurance claims totaling $5,000 or more in a consecutive 10- year period) as key target audiences. In 2015, the Town had over 24 Repetitive Loss properties. Since the flood of October 2015, the Town has been coordinating large-scale drainage improvements with SCDOT and Charleston County, which will help to mitigate the effects of localized flooding and damage to repetitive loss properties.

An eight-inch water main is located between Station 31 and Station 32 on the seaward side of Marshall Boulevard. Currently, these properties are connected to this treatment line and feed into the Town's water treatment facility. However, due to the ocean tide wash-up on these parcels and the potential for that wash-up to compromise the watch treatment facility, the Town has acknowledged the potential need to remove these properties from the treatment lines thus eliminating the threat, if wash-up continues to occur. There are no other utility lines that are subject to compromise the current estimates of the Town.

The Town allows non-conforming structures that are destroyed or damaged more than specified allowable limits to be rebuilt only in accordance with applicable provisions of the Town. This may result in reconstruction in a more landward location, either due to DHEC OCRM regulations or Town regulations.

Beach renourishment is currently not viable options for the Town, when funded by the Town. There are few financial assistance programs or incentives for beach renourishment, at least those that would cover the majority of the costs. However, private property owners are allowed and do individual renourishment of their section of beach. The Town provides no financial assistance with these private renourishment projects.

The majority of Sullivan's Island beach is accretional and is not currently threatened by beach erosion, specifically the central section. The Charleston Harbor end of the island is heavily armored by a rock sea wall, built for Fort Moultrie. This eliminates much of the concern of erosion on this section of the island. The Breach Inlet side of the island, however, has shown susceptibility to erosion. The Town acknowledges this, and has plans in place to address these concerns.

### 6.1.2 Deed Restricted Properties

Since 1991, the Town has actively upheld a locally administered "policy of retreat" by prohibiting any residential and commercial development of the 190 acres known as the accreted land. The acreage includes beach, dunes, fore dune grasslands, interdunal wetlands, shrublands and, early successional maritime forestand maritime hardwood depression. This property is protected by deed restrictions placed on the land through a 1991 agreement with the Lowcountry Open Land Trust that prohibits development on the property and further prohibits removal of any type of vegetation aside from invasive plant and tree species. This aggressive approach to environmental protection has led to a similar preservation strategy for other Town owned properties. The below map illustrates that over 18% of the Town's jurisdiction is protected by conservation easements, held in trust by the Lowcountry Open Land Trust or the East Cooper Land Trust.

Map 20. Deed Restricted Properties on Sullivan's Island

In a similar fashion, the Town is advocating similar deed restrictions involving conservation easements with private property owners. Essentially, the private property owner will form a contract with a conservation agency, thus limiting the buildability of the parcel for perpetuity. This is an excellent method to limit the capacity of beachfront properties, which is directly in-line with the policy of retreat. This is specifically useful in considering ways to protect the vulnerable section of the island on Marshall Boulevard as mentioned in Section 5.3.

### 6.1.3 Sullivan's Island Comprehensive Plan – Implementation Strategies

Section 4.2.1 previously identified seven goals of the Natural Resources Element of the *Comprehensive Plan*, which is intended to provide long-range planning guidance for preserving the Island's natural resources. The plan also lists multiple implementation strategies for promoting and providing for protection of the coastal beaches, dunes, and natural vegetation of the island; providing for the protection of saltwater creeks and marshes; minimizing the damage caused by flooding and tidal action; and allowing for creative land use strategies to encourage the retreat of beachfront development. The Town's Comprehensive Plan details the following goals and strategies as it relates to beachfront management:

1. **In an effort to protect the dunes and the dune vegetation, best management practices should be employed.**

   Implementation

   Identify existing public accesses needing constructed walkovers that include appropriate access and parking for handicapped visitors. Pursue funding through gifts and grants to construct and maintain beach accesses.

   Implementation

   Inventory and evaluate each beach access to determine ways to limit damage and mitigate environmental impacts.

   Implementation

   Town should install and maintain sufficient and appropriate signs at beach accesses to inform visitors of ordinances that protect natural dunes and beach resources.

   Implementation

   Continue to provide for adequate animal waste, refuse and recycling resources at beach access paths.

   Implementation

   Incorporate in the Town's Beachfront Management Plan a program to stabilize, maintain and enlarge the dunes. Enforce ordinances pertaining to walking or climbing on the dunes.

2. The Town recognizes the need to protect the areas of the Island vulnerable to erosion that may jeopardize public infrastructure and private property.

   Implementation

   Identify and pursue funding sources, including but not limited to public and private grants.

   Implementation

   Determine if "best practices" to control erosion are being utilized and, if not, seek to have best practices identified and implemented.

   Implementation

   Determine if current actions or conditions are exacerbating the erosion problem and, if so, seek methods to mitigate the erosion problem.

3. Complete the Sullivan's Island Accreted Land Management Plan with the broadest possible community participation and input.

   Implementation

   Implement the Town-approved recommendations of the 2008 Accreted Land Management Plan.

4. Encourage the use of native vegetation on public and private property.

   Implementation

   Maintain existing ordinances to maximize the opportunities for the use of native vegetation.

   Implementation

   Continue to set an example by planting native plants in public areas.

5. Continue to protect the existing trees on the Island.

   Implementation

   Review and update, as required, the existing tree protection ordinance.

6. Continue to recognize that the marshes, beaches and waterways on and adjacent to the Island are critical habitats that require special protection.

   Implementation

   Continue supporting efforts to protect these areas, not only for the wildlife habitat that exists there but also for the enjoyment and safety of the residents of the Town.

   Implementation

   Continue to participate in the ocean water quality monitoring program

Implementation

Continue partnership with Charleston County to ensure full compliance with NPDES Phase II requirements and take any other steps necessary for timely permitting of stormwater systems.

Implementation

Continue to encourage the use of permeable surfaces on private and public lands where hardstand is required.

7. **The Town recognizes that Sullivan's Island is a major nesting and hatching site for migratory sea turtles and birds, and thus special protection efforts are required.**

Implementation

The Town will continue to enforce existing ordinances that will support the protection of seasonal turtle nesting and seabird nesting areas.

Implementation

Encourage and support community participation to protect turtle and seabird habitats.

## 6.2 Strategy for Preserving and Enhancing Public Beach Access

Sullivan's Island enjoys an adequate condition of community beach access. There are currently 26 beach access points, 8 of which have walk-overs and/or improved surfaces the entire length of the access path and 4 of which have walk-overs and/or improved surfaces part of the length of the access path. There are 4 handicapped accessible paths and 10 access paths that can be used for emergencies by the police department and the fire and rescue department. The Town demonstrations a high priority to ensure beach access is available for the Town's residents and visitors.

As such, routine upkeep is done on the beach access paths, in the way of cutting to maintain those paths. Walk-overs are repaired or improved on an as needed basis. The Town has intentions of increasing the number of walk-overs for existing beach access points, specifically Station 18 ½, 23, 29, and behind Sullivan's Island Elementary. While the elementary school walk-over is not a truly public beach access point, the creation of this walk-over will decrease traffic along the other public beach access points. The Town does budget for these improvements through the maintenance budget, and other funding assistance (grants). There are no current plans by the town to increase the number of public beach access points, as current access points are numerous and span the length of the island.

# Section 7: Appendices

## 7.1 Structures Inventory

Table 7. Beachfront Structures Inventory

| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| Jasper Blvd. | Public | 529-12-00-116 | R | 60'-80' | Yes |
| Thompson Park | Public | 529-12-00-023 | M | 3" | No |
| Breach Inlet | Public | 529-12-00-024 | G | 110' | No |
| 3209 Marshall Blvd. | Private | 529-12-00-107 | HS, R | 73', 110' | Yes |
| 3204 Marshall Blvd. | Private | 529-12-00-108 | HS, P | 26', 16' | No |
| 3203 Marshall Blvd. | Private | 529-12-00-106 | HS, R, G | 13', 111', 132' | Yes |
| Station 32 | Public | 529-12-00-116 | R | 76' | Yes |
| 3123 Marshall Blvd. | Private | 529-12-00-105 | HS | 44' | No |
| 3117 Marshall Blvd. | Private | 529-12-00-104 | HS | 70' | No |
| 3113 Marshall Blvd. | Private | 529-12-00-103 | HS, R | 64', 95' | Yes |
| 3109 Marshall Blvd. | Private | 529-12-00-102 | HS, R | 60', 95' | Yes |
| 3103 Marshall Blvd. | Private | 529-12-00-101 | HS, R | 57', 80' | Yes |
| Station 31 | Public | ------- | R | 103' | Yes |

| | | | | | |
|---|---|---|---|---|---|
| 3035 Marshall Blvd. | Private | 529-12-00-076 | HS, SW, R, G | 51', 117', 118', 89' | Yes (2) |
| 3029 Marshall Blvd. | Private | 529-12-00-075 | HS, R, G | 108', 143', 140' | Yes |
| 3025 Marshall Blvd. | Private | 529-12-00-074 | HS, SW, R | 97', 118', 120' | Yes (2) |
| 3019 Marshall Blvd. | Private | 529-12-00-073 | HS, G | 67', 90' | No |
| 3009 Marshall Blvd. | Private | 529-12-00-071 | HS | 137' | No |
| 2923 Marshall Blvd. | Private | 529-12-00-069 | HS, G | 88', 100' | No |
| 2917 Marshall Blvd. | Private | 529-12-00-068 | HS | 88' | No |
| 2907 Marshall Blvd. | Private | 529-12-00-067 | HS | 61' | No |
| 2905 Marshall Blvd. | Private | 529-12-00-066 | HS | 68' | No |
| Station 29 | Public | 529-11-00-109 | G | 135' | No |
| 2873 Marshall Blvd. | Private | 529-11-00-081 | WO | 8' | No |
| 2863 Marshall Blvd. | Public | 529-11-00-079 | WO | 10' | No |
| 2601 Bayonne St. | Private | 529-10-00-085 | HS, WO | 12', 678' | No |
| Accreted Land | Public | 529-10-00-087 | WO (7) | 374', 550', 689', 700', 537', 107', 220' | No |
| Accreted Land | Public | 529-09-00-112 | WO (4) | 176', 113', 260', 341' | No |
| Accreted Land | Public | 523-12-00-077 | WO | 260' | No |

| | | | | | |
|---|---|---|---|---|---|
| 1214 Middle St. | Public | 523-07-00-084 | R, G | 10'-70', 55' | Yes |
| 1117 Middle St. | Private | 523-07-00-080 | SW | 10' | Yes |
| 1121 Middle St. | Private | 523-07-00-081 | G | 48' | No |
| 1111 Middle St. | Private | 523-07-00-079 | WO | 26' | No |
| 1109 Middle St. | Private | 523-07-00-078 | WO | 40' | No |
| 1105 Middle St. | Private | 523-07-00-077 | R, G, WO | 55', 80', 25' | Yes |
| 1101 Middle St. | Private | 523-07-00-076 | R, WO | 48', 19' | Yes |
| 1023 Middle St. | Private | 523-06-00-067 | WO | 38' | No |
| 1019 Middle St. | Private | 523-06-00-066 | G | 123' | No |
| 1013 Middle St. | Private | 523-06-00-065 | WO | 37' | No |
| 1009 Middle St. | Private | 523-06-00-064 | R, WO | 52', 15' | Yes |
| 1001 Middle St. | Private | 523-06-00-063 | R, WO, D | 70'-136', 19', 15' | Yes |
| HS = Habitable Structure<br>SW = Seawall<br>R = Revetment | | G = Groin<br>WO = Improved Walkover<br>D = Deck | | P = Pool<br>M = Monument | |

## Map 21. Beachfront Structures


| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 1023 Middle St. | Private | 523-06-00-067 | WO | 38' | No |
| 1019 Middle St. | Private | 523-06-00-066 | G | 123' | No |
| 1013 Middle St. | Private | 523-06-00-065 | WO | 37' | No |
| 1009 Middle St. | Private | 523-06-00-064 | R, WO | 52', 15' | Yes |
| 1001 Middle St. | Private | 523-06-00-063 | R, WO, D | 70'-136', 19', 15' | Yes |

Map 22. Beachfront Structures

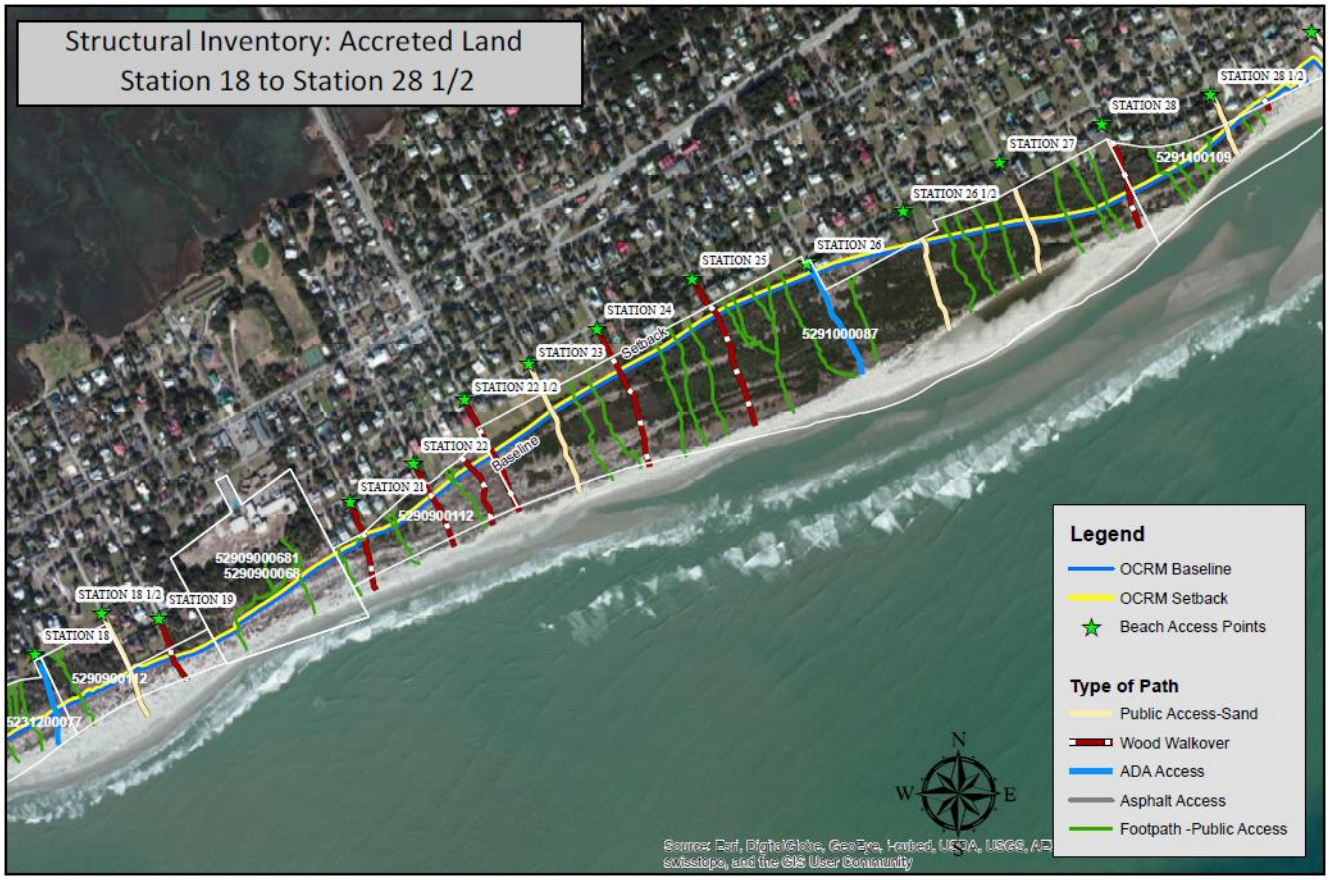

| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 1121 Middle St. | Private | 523-07-00-081 | G | 48' | No |
| 1117 Middle St. | Private | 523-07-00-080 | SW | 10' | Yes |
| 1111 Middle St. | Private | 523-07-00-079 | WO | 26' | No |
| 1109 Middle St. | Private | 523-07-00-078 | WO | 40' | No |
| 1105 Middle St. | Private | 523-07-00-077 | R, G, WO | 55', 80', 25' | Yes |
| 1101 Middle St. | Private | 523-07-00-076 | R, WO | 48', 19' | Yes |

Map 23. Beachfront Structures


| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 1214 Middle St. | Public | 523-07-00-084 | R, G | 10'-70', 55' | Yes |

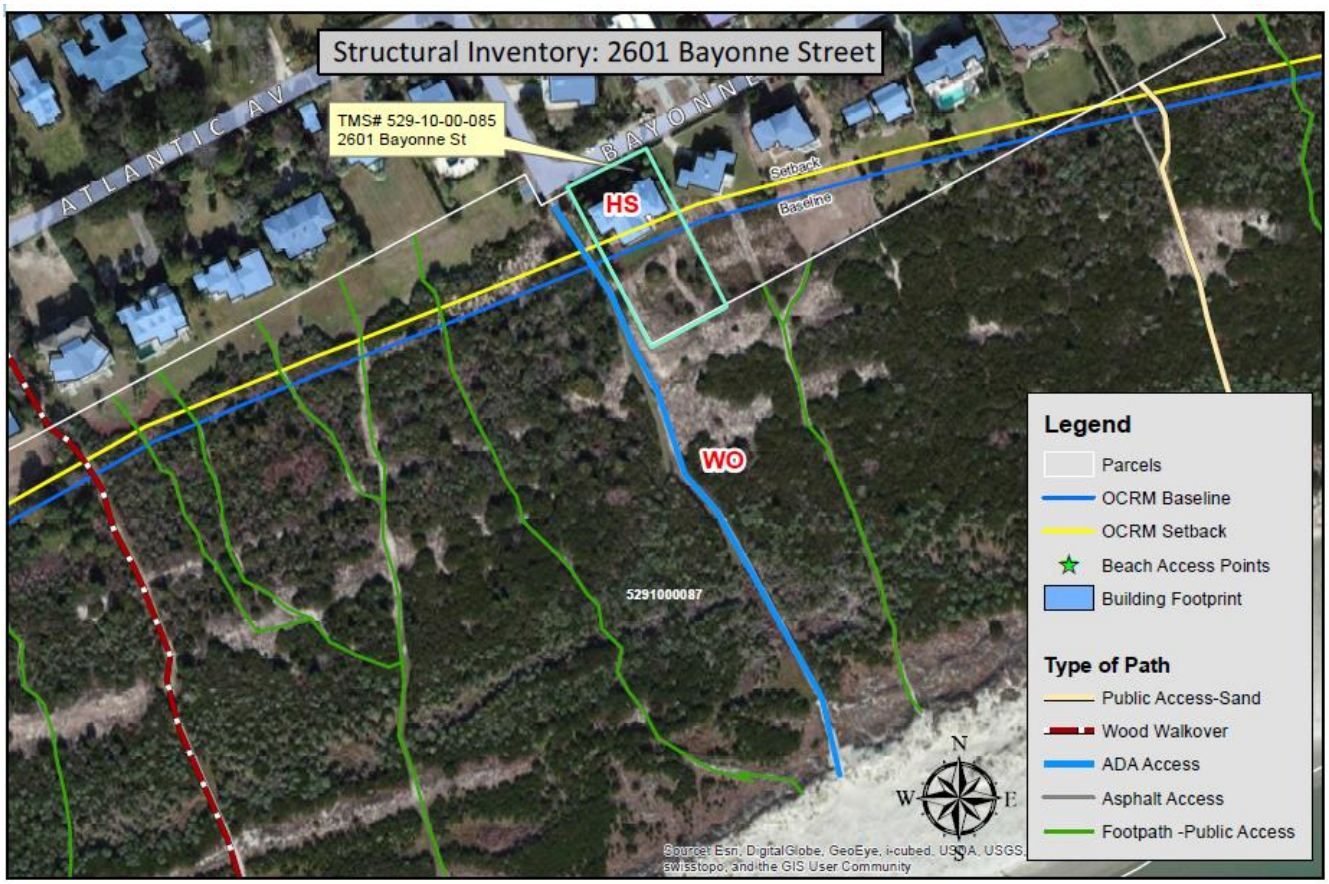
Feet
0 65130 260 390 520

## Map 24. Beachfront Structures




| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| Accreted Land | Public | 529-10-00-087 | WO (7) | 374', 550', 689', 700', 537', 107', 220' | No |
| Accreted Land | Public | 529-09-00-112 | WO (4) | 176', 113', 260', 341' | No |
| Accreted Land | Public | 523-12-00-077 | WO | 260' | No |

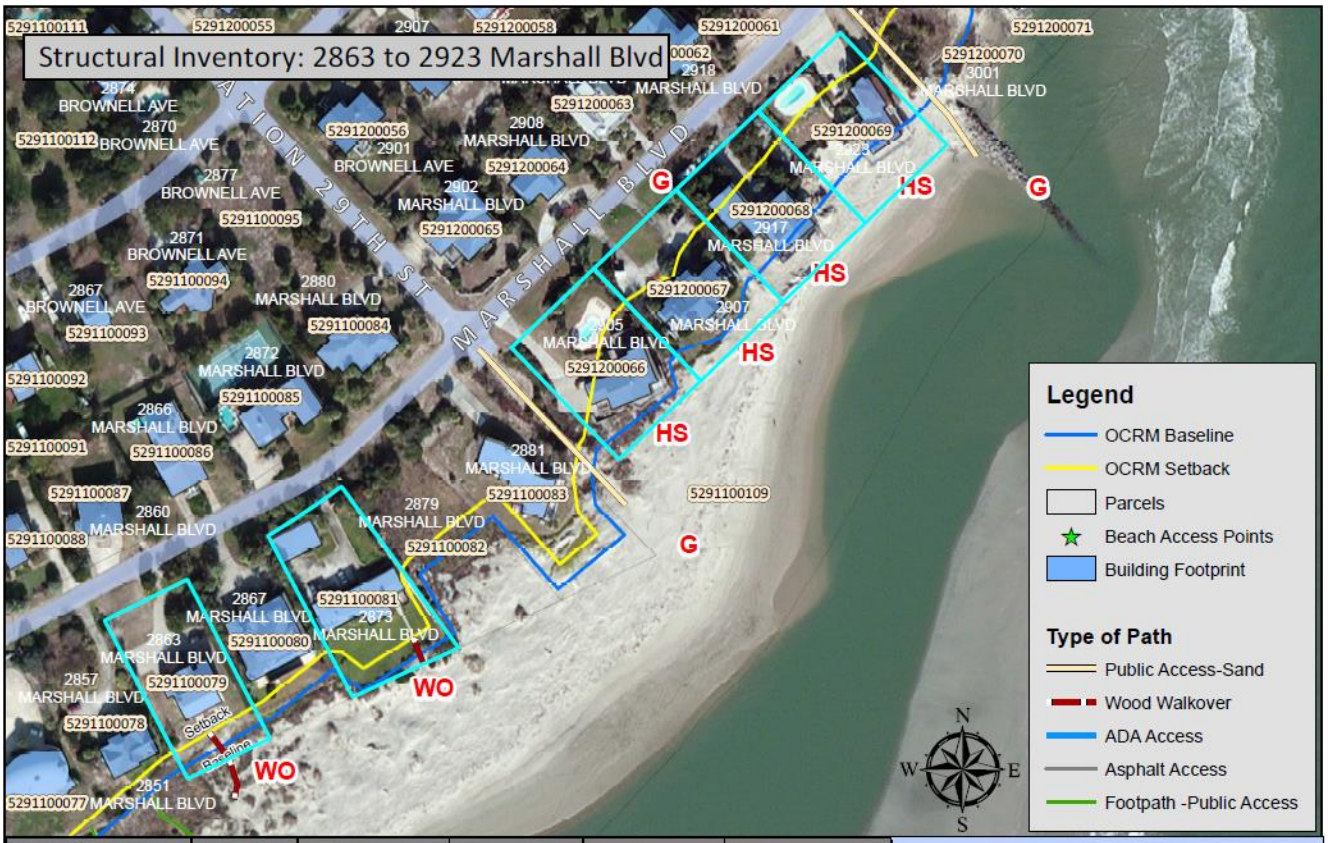
Map 25. Beachfront Structures




| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 2601 Bayonne St. | Private | 529-10-00-085 | HS, WO | 12', 678' | No |

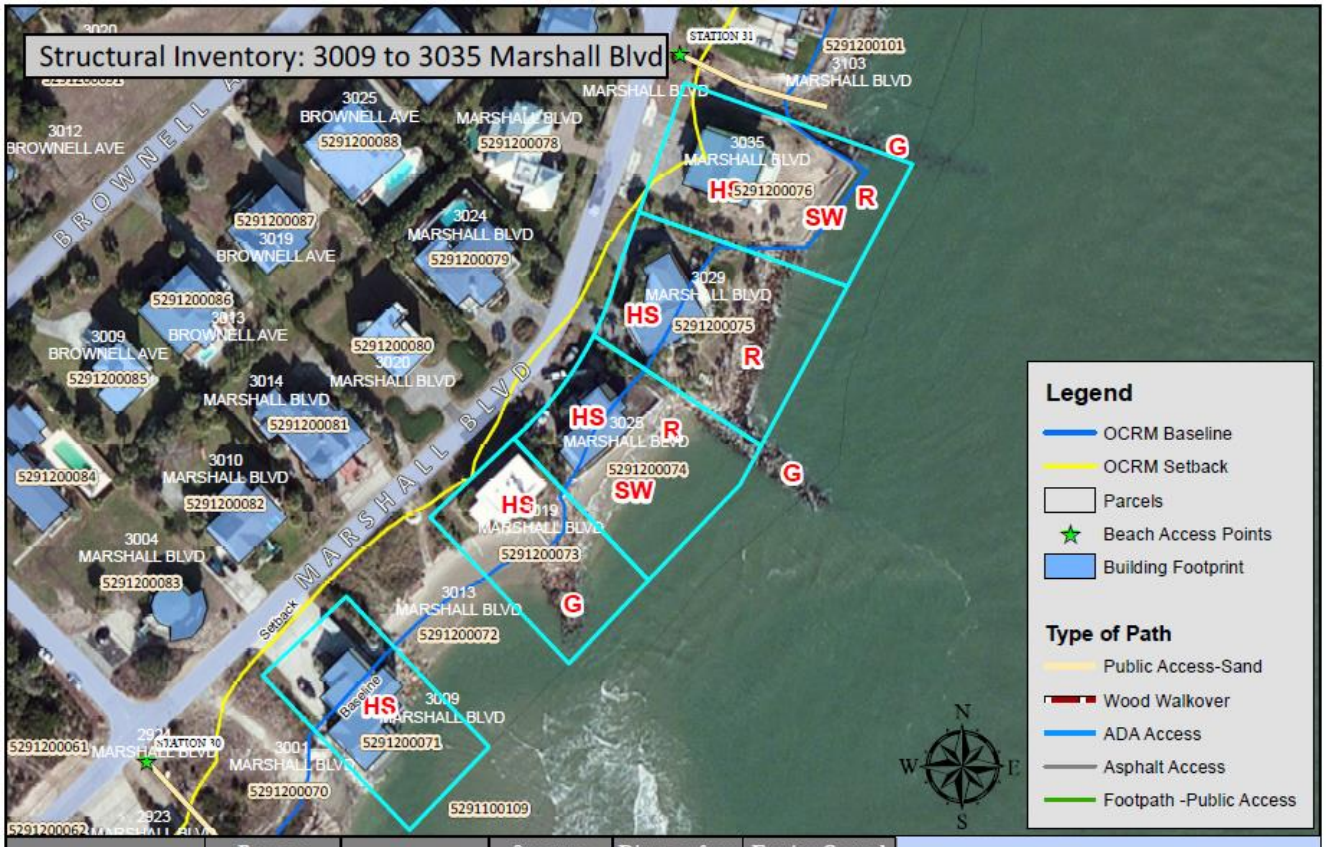
0 62.5 125 250 375 500 Feet

## Map 26. Beachfront Structures



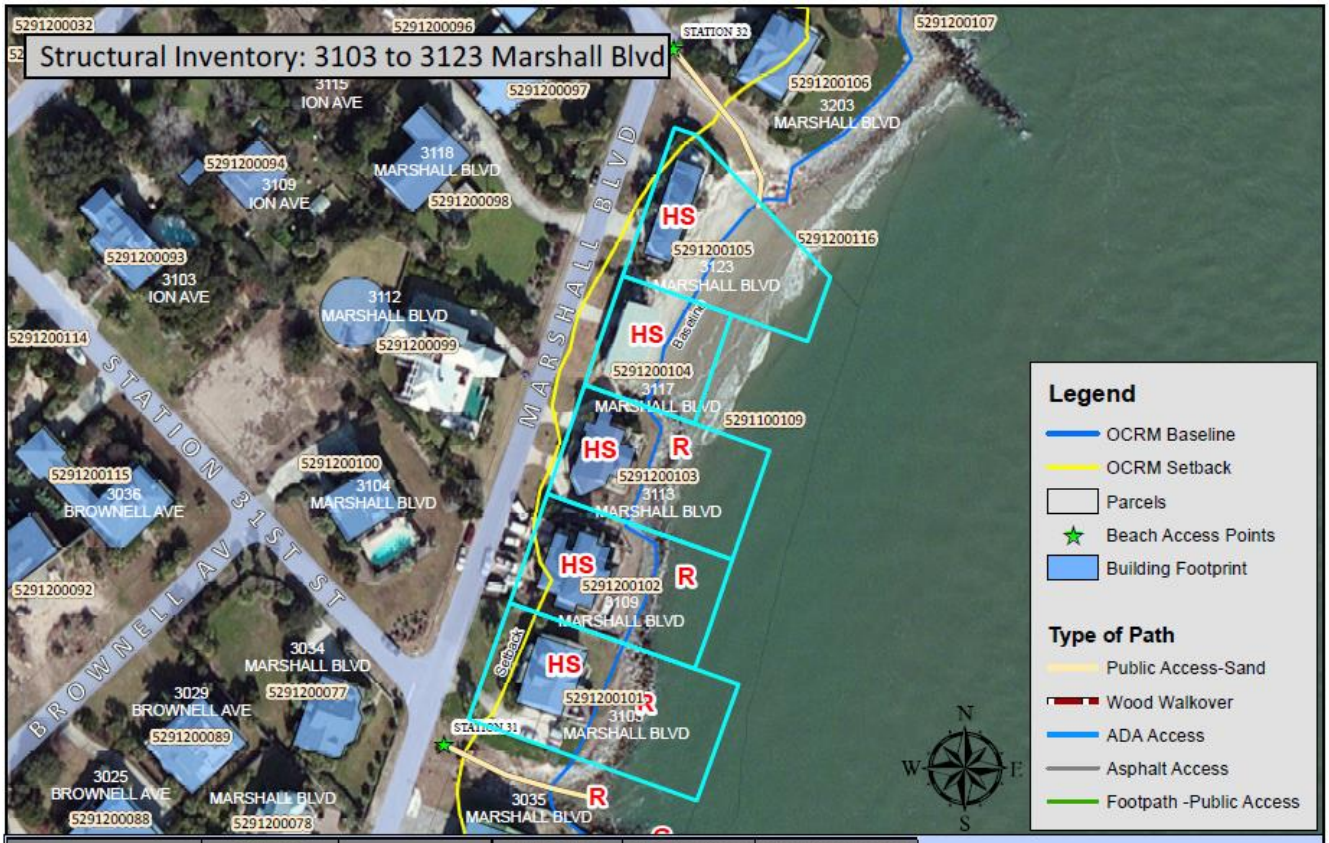

| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 2923 Marshall Blvd. | Private | 529-12-00-069 | HS, G | 88', 100' | No |
| 2917 Marshall Blvd. | Private | 529-12-00-068 | HS | 88' | No |
| 2907 Marshall Blvd. | Private | 529-12-00-067 | HS | 61' | No |
| 2905 Marshall Blvd. | Private | 529-12-00-066 | HS | 68' | No |
| Station 29 | Public | 529-11-00-109 | G | 135' | No |
| 2873 Marshall Blvd. | Private | 529-11-00-081 | WO | 8' | No |
| 2863 Marshall Blvd. | Public | 529-11-00-079 | WO | 10' | No |

Map 27. Beachfront Structures



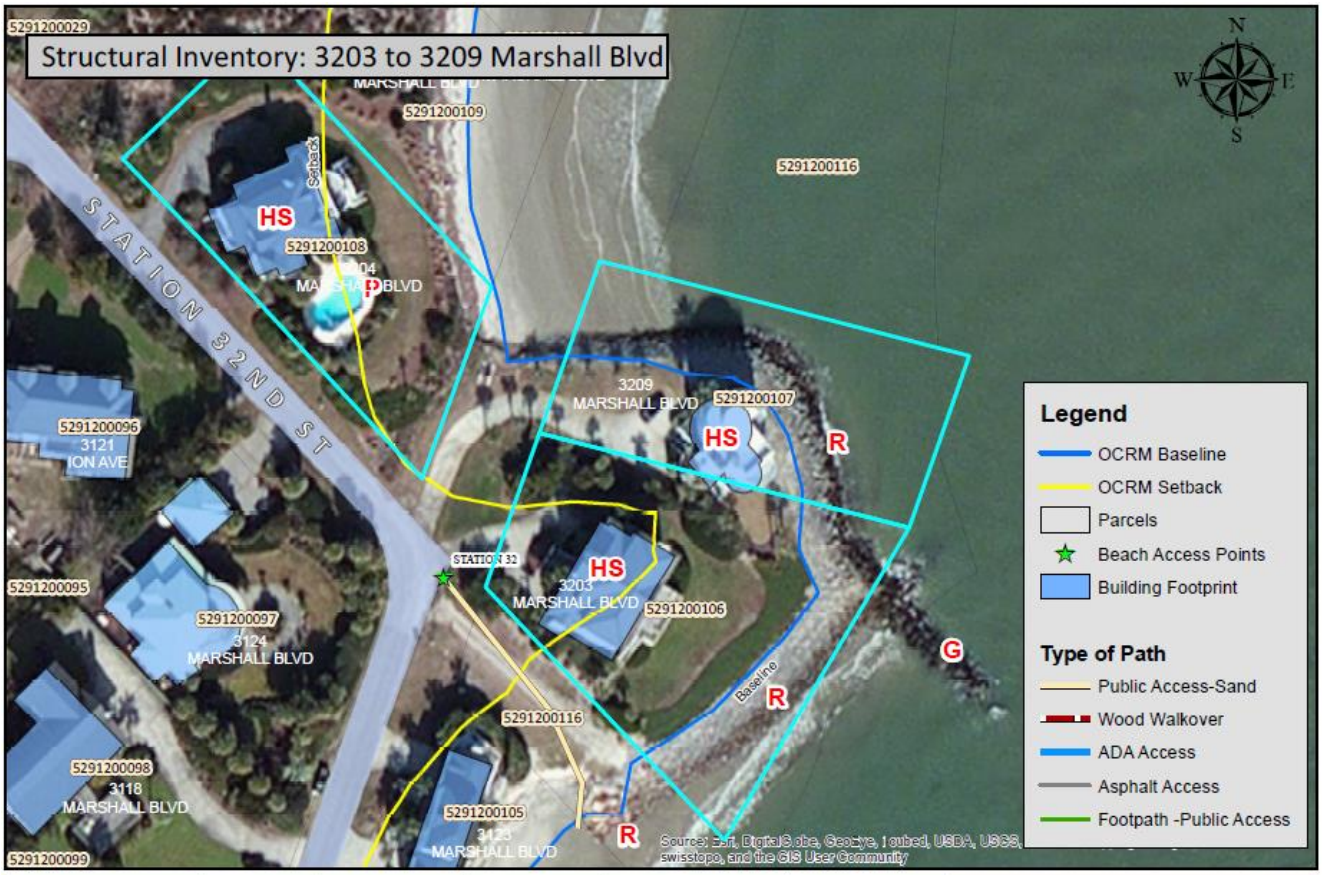

| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 3035 Marshall Blvd. | Private | 529-12-00-076 | HS, SW, R, G | 51', 117', 118', 89' | Yes (2) |
| 3029 Marshall Blvd. | Private | 529-12-00-075 | HS, R, G | 108', 143', 140' | Yes |
| 3025 Marshall Blvd. | Private | 529-12-00-074 | HS, SW, R | 97', 118', 120' | Yes (2) |
| 3019 Marshall Blvd. | Private | 529-12-00-073 | HS, G | 67', 90' | No |
| 3009 Marshall Blvd. | Private | 529-12-00-071 | HS | 137' | No |

Map 28. Beachfront Structures




| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 3123 Marshall Blvd. | Private | 529-12-00-105 | HS | 44′ | No |
| 3117 Marshall Blvd. | Private | 529-12-00-104 | HS | 70′ | No |
| 3113 Marshall Blvd. | Private | 529-12-00-103 | HS, R | 64′, 95′ | Yes |
| 3109 Marshall Blvd. | Private | 529-12-00-102 | HS, R | 60′, 95′ | Yes |
| 3103 Marshall Blvd. | Private | 529-12-00-101 | HS, R | 57′, 80′ | Yes |
| Station 31 | Public | | R | 110′ | Yes |

Map 29. Beachfront Structures




| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| 3209 Marshall Blvd. | Private | 529-12-00-107 | HS, R | 73', 110' | Yes |
| 3204 Marshall Blvd. | Private | 529-12-00-108 | HS, P | 26', 16' | No |
| 3203 Marshall Blvd. | Private | 529-12-00-106 | HS, R, G | 13', 111', 132' | Yes |
| Station 32 | Public | 529-12-00-116 | R | 76' | Yes |

Feet
0 15 30 60 90 120

Map 30. Beachfront Structures


| Parcel Address | Property Description | Parcel Number | Structure Inventory | Distance from Setback line | Erosion Control Structure |
|---|---|---|---|---|---|
| Jasper Blvd. | Public | 529-12-00-116 | R | 60'-80' | Yes |
| Breach Inlet | Public | 529-12-00-024 | G | 110' | No |
| Thomson Park | Public | 529-12-00-023 | Monument (M) | 3' | No |

## 7.2 Public Access Inventory Table

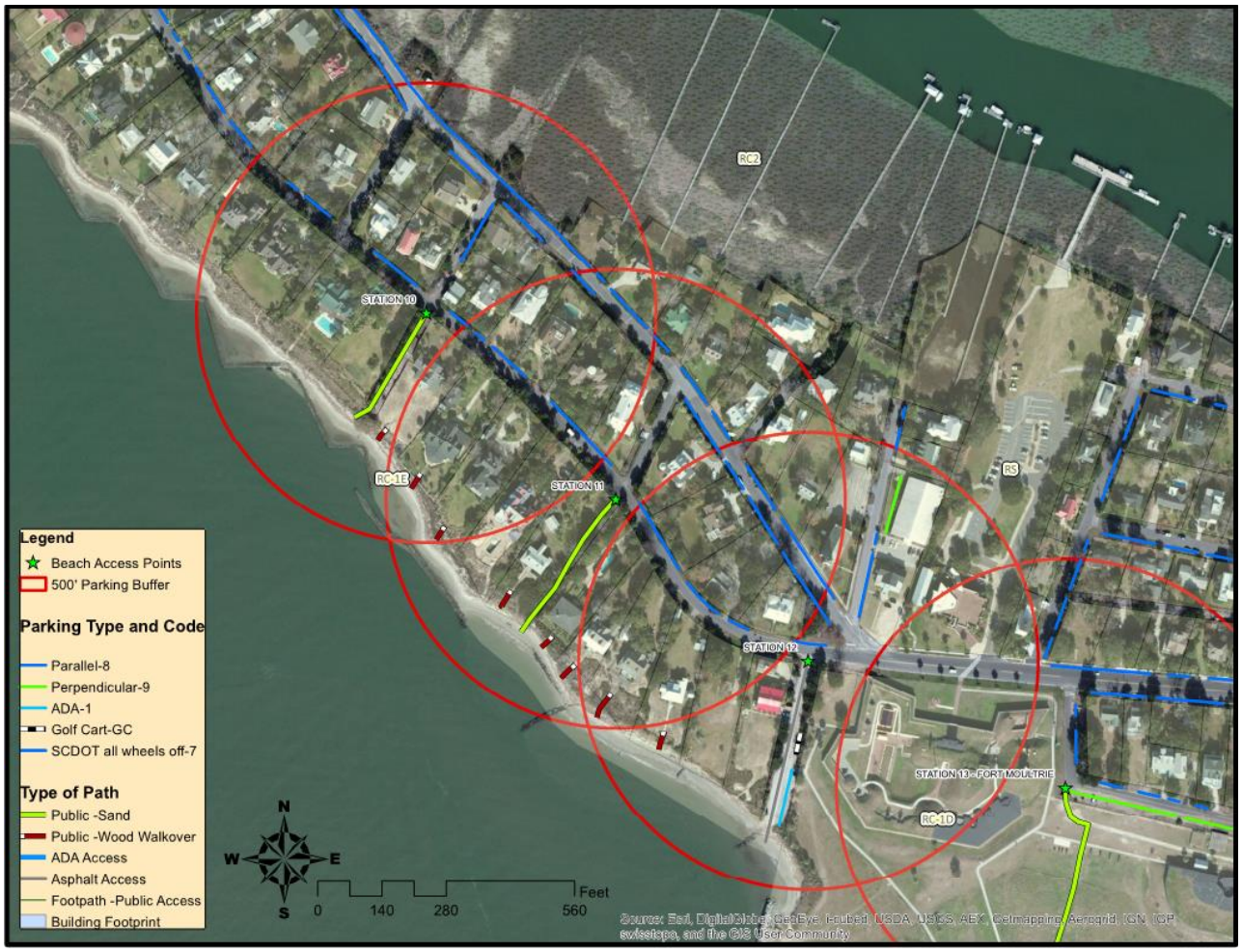
Table 8. Inventory of Public Beach Access Points

| Location | Parking | Trash/Recycling Receptacle | Walkover/ Improved Surface | Dog Waste Disposal | Emergency Access |
|---|---|---|---|---|---|
| Station 10 | 75+ | Yes | No | No | No |
| Station 11 | 35+ | Yes | No | Yes | No |
| Station 12 | 50+ | Yes | Asphalt | Yes | Yes |
| Station 13 - Fort Moultrie | 100+ | Yes | No | Yes | Yes |
| Station 16 | 35+ | Yes | No | Yes | Yes |
| Station 17 | 25+ | No | No | No | No |
| Sand Dunes | 25+ | Yes | No | Yes | Yes |
| Station 18* | 25+ | Yes | Wood Walkover | Yes | No |
| Station 18 ½ | 25+ | Yes | Wood Walkover | Yes | Yes |
| Station 19 | 10+ | Yes | Wood Walkover | Yes | No |
| Station 21* | 10+ | Yes | Wood Walkover | Yes | No |
| Station 22 | 10+ | Yes | Wood Walkover | Yes | Yes |
| Station 22 ½* | 25+ | Yes | Wood Walkover | Yes | No |
| Station 23 | 25+ | Yes | No | Yes | No |
| Station 24 | 25+ | Yes | Sand or grass, w/small wood walkover | Yes | No |
| Station 25 | 25+ | Yes | Sand or grass, w/small wood walkover | Yes | No |
| Station 26* | 10+ | Yes | Wood Walkover | Yes | No |
| Station 26 ½ | 25+ | Yes | Sand or grass, w/small wood walkover | Yes | No |
| Station 27 | 25+ | Yes | No | Yes | Yes |
| Station 28 | 25+ | Yes | Sand or grass, w/small wood walkover | Yes | No |

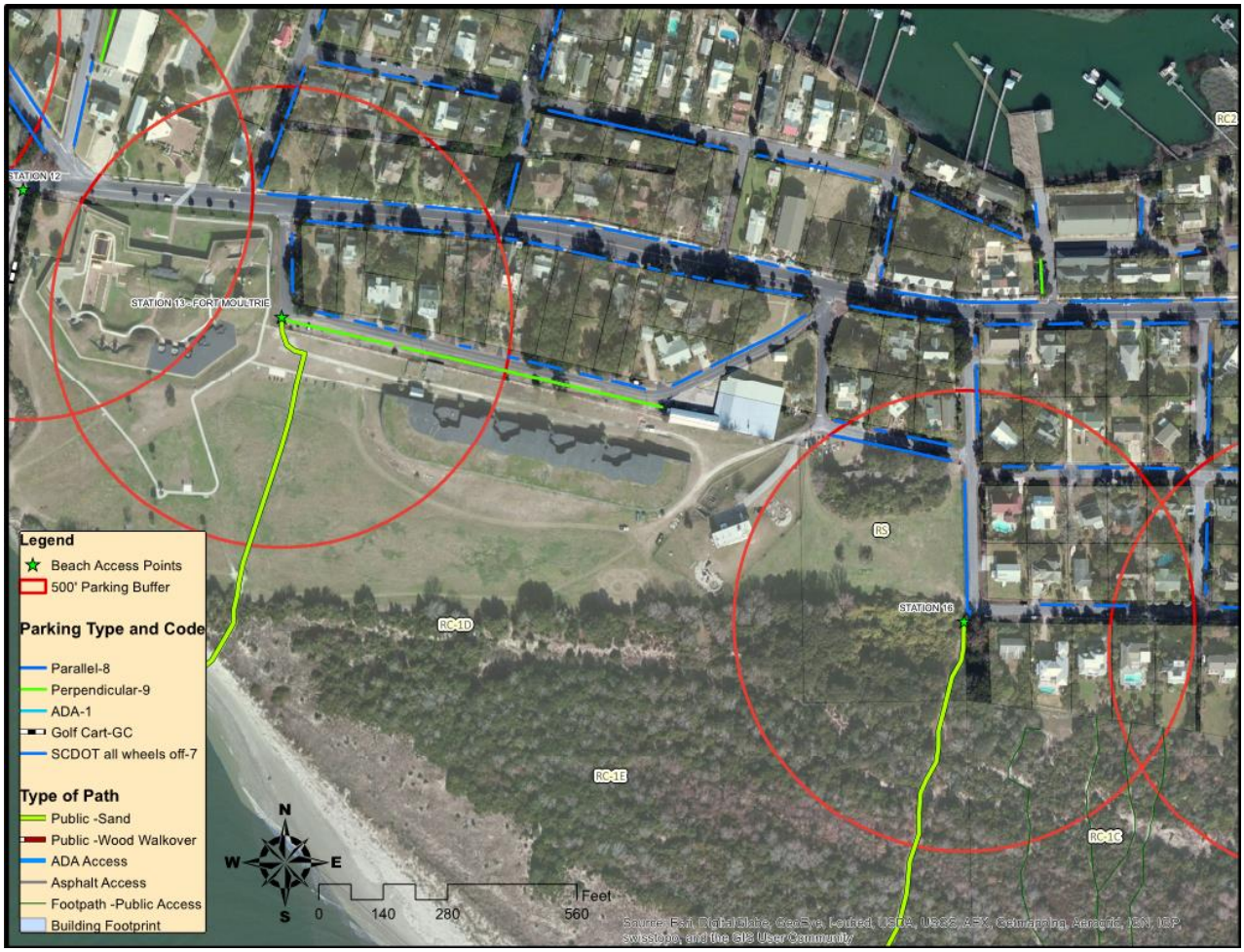
| | | | | | |
|---|---|---|---|---|---|
| Station 28 ½ | 25+ | Yes | No | Yes | Yes |
| Station 29 | 30+ | Yes | No | Yes | No |
| Station 30 | 30+ | Yes | No | Yes | Yes |
| Station 31 | 30+ | Yes | No | Yes | No |
| Station 32 | 25+ | Yes | No | Yes | No |
| Thompson Park | 25+ | Yes | No | Yes | Yes |

** Indicates the beach access point is handicap accessible.*

Map 31. Public Beach Access Points and Parking: Station 10 to Station 12



Map 32. Public Beach Access Points and Parking: Station 13 to Station 16

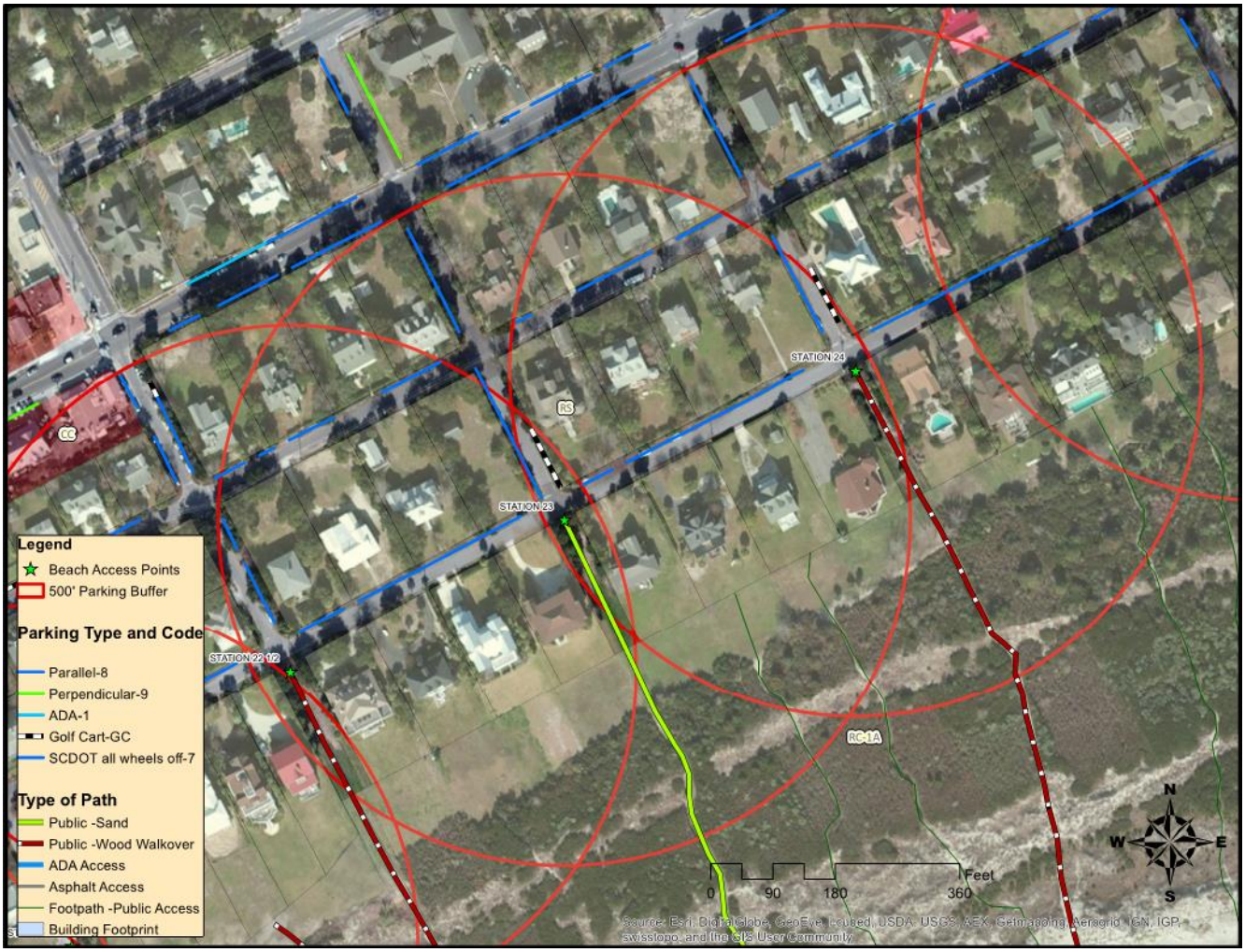


Map 33. Public Beach Access Points and Parking: Station 17 to Station 18

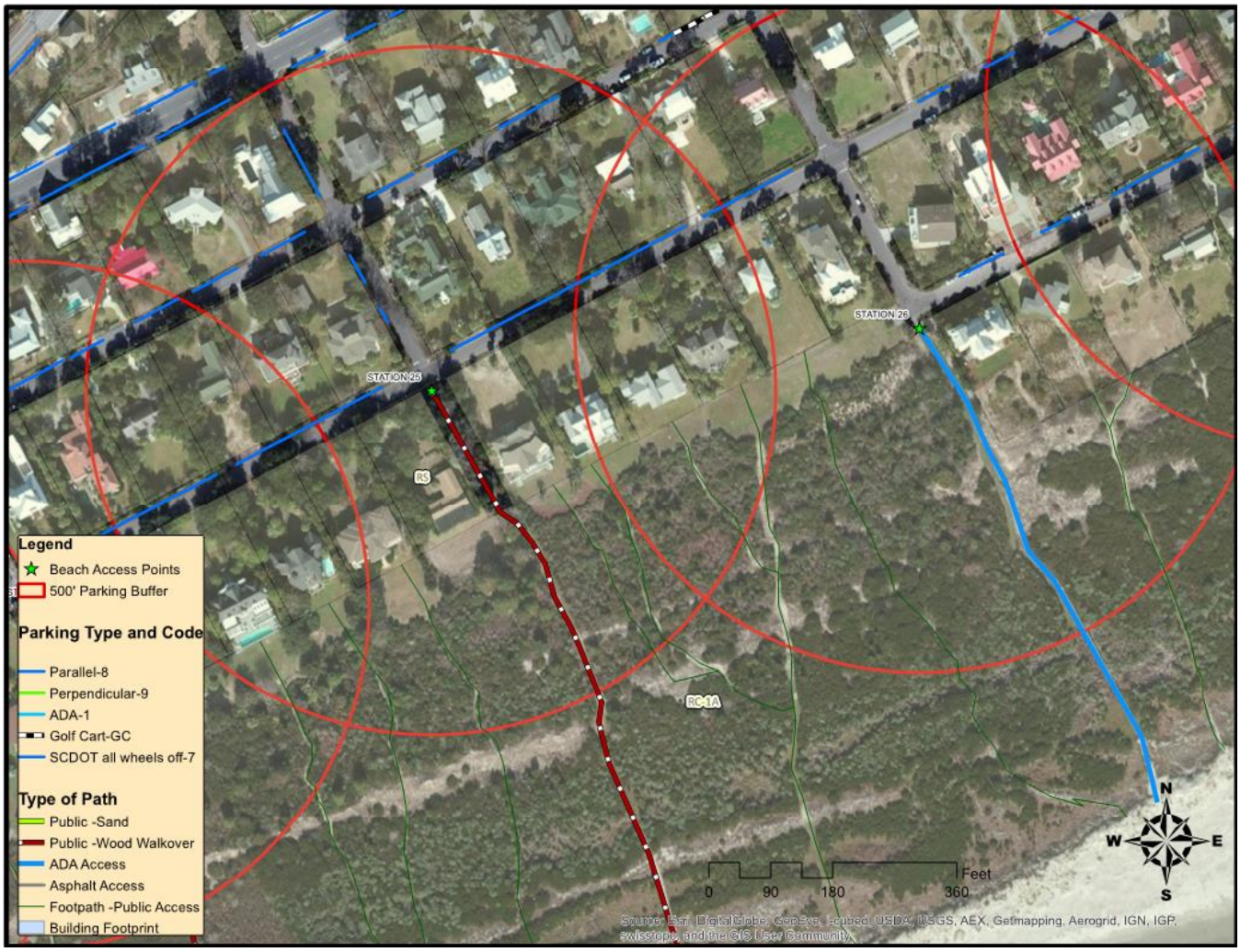
Map 34. Public Beach Access Points and Parking: Station 18 ½ to Station 19

Map 35. Public Beach Access Points and Parking: Station 21 and Station 22

Map 36. Public Beach Access Points and Parking: Station 23 and Station 24



Map 37. Public Beach Access Points and Parking: Station 25 and Station 26



Map 38. Public Beach Access Points and Parking: Station 26 ½ and Station 28

Map 39. Public Beach Access Points and Parking: Station 29 and Station 30

Map 40. Public Beach Access Points and Parking: Station 31 and Station 32

Map 41. Public Beach Access Points and Parking: Thompson Park


## 7.3 Plans and Prior Studies

- Accreted Land Management Plan (in draft form)
- Sullivan's Island Maritime Forest Conservation Study
- Sullivan's Island Comprehensive Plan 2008 (2013 Update)
- Sea-level and Climate Risk Management Workshop- 2014 Publication
- Green Infrastructure Plan- East Cooper Land Trust 2016

## 7.4 Copies of Local Laws and Ordinances

- Section 3: Animal and Fowl
  - Article I – In General
    - Bird Sanctuary
    - Equine and certain other animals prohibited
    - Wild Animals

- Article II - Dogs
- Section 4: Beaches
  - Article I – Conservation and Preservation
    - Sec. 4-2. Establishment of Conservation area.
    - Sec. 4-4 Restrictions on trimming, pruning, and removing vegetation.
  - Article II – Picnics and Outings
  - Article IV – Miscellaneous Restrictions
- Section 5: Buildings
  - Article III – Building Permits Generally
    - Section 5-10. Application.
  - Article IV – Flood Damage Prevention
- Section 14: Miscellaneous Offenses
    - Sec. 14-23. Beach Lighting
- Section 21: Zoning Code
  - Article V – RC-1 & RC-2 Recreation and Conservation Area Districts
    - Sec. 21-67. Findings and intent of RC Area Districts.
    - Sec. 21-68. General description of RC Area Districts.
    - Sec. 21-69. Erosion control structures in RC Area Districts.
    - Sec. 21-70. General provisions for RC-1 Area District.
    - Sec. 21-71. Trimming and pruning in the RC-1 District.
    - Sec. 21-72. Maintenance of footpaths in the RC-1 Area District.
    - Sec. 21-73. Tree Commission assistance with RC-1 Area District.
- Section 25: Stormwater Management

## 7.5 Federal and State Beach Management Authorities

### Federal Agencies

There are six federal agencies that directly affect Sullivan's Island beach management.

1. The US Army Corps of Engineers (USACE) is responsible for providing engineering services to the United States and plays a major role in permitting beach renourishment projects.
2. The US Fish and Wildlife Service (USFWS) is the federal agency responsible for the protection of federal fish and wildlife species and their habitats, specifically those that are imperiled, threatened, or endangered.
3. The Federal Emergency Management Agency (FEMA) is part of the Department of Homeland Security and is responsible for reducing the loss of life and property and protecting the United States from hazards, including natural disasters. They provide a wide variety of support functions that are key to disaster preparedness and response.
4. The National Oceanic and Atmospheric Administration (NOAA) is a federal agency housed within the Department of Commerce. The mission of the NOAA is to protect federal trust resources, provide mapping of navigation channels, monitor and forecast weather, monitor coastal

dynamics and conditions, and managing the nation's coast. The groups under this service combine to manage all of the staffs that monitor and manage our coastal resources. This includes the National Marine Fisheries Service (NMFS), which oversees NOAA's fisheries and sea turtles while they are in the water, and which designates Essential Fish Habitat under the Magnuson-Stevens Act of 1976 (Amended 2013).

5. The United States Coast Guard (USCG) is the federal agency responsible for protecting the nation's waterways and coastline as part of the Department of Homeland Security.
6. The United States Geological Survey (USGS) is a federal agency housed within the Department of the Interior. The mission of the USGS is to serve the nation by providing reliable scientific information to describe the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy and mineral resources; and enhance and protect our quality of life.

### State Agencies

There are four State agencies that are the most critical to the Sullivan's Island beach management process:

1. The Department of Health and Environmental Control (DHEC) is the state's health and environmental management agency and houses the Office of Ocean and Coastal Resource Management (OCRM). The DHEC-OCRM (formerly known as the South Carolina Coastal Council) is the State's coastal management agency. As such, this State department is Sullivan's Island's major interface for all beach management questions and support including this Comprehensive Beach Management Plan. This group plays a major role in reviewing and permitting the beach renourishment projects that are critical to the Town's beach management strategy.
2. The South Carolina Department of Natural Resources (DNR) is the principal advocate for and steward of the State's natural resources.
3. The South Carolina Department of Transportation (DOT) is responsible for planning, constructing and maintaining State roads and bridges, and providing mass transit services in the State.
4. The South Carolina Emergency Management Division (EMD) provides major disaster preparation, response, and recovery assistance. For Sullivan's Island a major disaster would include a hurricane, tsunami, tornado, wildfire or earthquake.

## 7.6 Dog Ordinance

1. Dog owner/keeper or other person with custody and control may allow his/her dog to run at large on the beach area and RC-1 from 5:00 AM to 10:00 AM May 1 through September 30 and from 5:00 AM to 12:00 Noon October 1 through April 30; this would not include walkways or access paths and owner/keeper or other person must have a leash in hand not to exceed 10 feet in length.
2. No dogs may be allowed on the beach area, RC-1, adjacent waters, beach paths or access points from 10:00 AM and 6:00 PM from May 1 through September 30.

3. Dog owner/keeper or other person with custody and control may allow his/her dog on the beach, beach paths, RC-1 and adjacent water if the dog is attached to a leash, which is in the owner's hands, and is never longer than 10 feet, from 6:00 PM to 5:00 AM from May 1 through September 30 and from 12:00 Noon to 5:00 AM from October 1 through April 30. Dogs on leash as described here are also permitted on the beach, beach paths, RC-1 and adjacent water when dogs are permitted to be off-leash in those locations.

For further information regarding dog and animal allow ability on Sullivan's Island visit Section 3 of the Town's Codes and Ordinances.

## 7.7 Wildlife

Sullivan's Island is home numerous species of plants and animals. Below several lists are provided, which capture most, but not all of the species possibly present on the island. Likewise, species on these lists may not necessarily be present on the island at any given time.

### 7.7.1 Mammals

The following is a compilation of mammals that are found in the coastal plain of South Carolina, and other barrier islands along the eastern coast (adapted from Johnson et al 1974; Burt and Grossenheider 1980; McKenzie and Barclay 1980; Bellis 1995; Whitaker et al 2004). Many of these species may occur at Sullivan's Island accreted land area, though it is unlikely that all of the following species occur at Sullivan's Island.

| Common Name | Scientific Name |
|---|---|
| Virginia opossum | Didelphis virginiana |
| Southern short-tailed shrew | Blarina carolinensis |
| Least shrew | Cryptotis parva |
| Eastern mole | Scalopus aquaticus |
| Eastern red bat | Lasiurus borealis |
| Northern yellow bat | Lasiurus intermedius |
| Seminole bat | Lasiurus seminolus |
| Eastern pipistrelle | Pipistrellus subflavus |
| Silver-haired bat | Lasionycteris noctivagans |
| Big brown bat | Eptesicus fuscus |
| Southern myotis | Myotis austroriparius |
| Eastern cottontail | Sylvilagus floridanus |
| Marsh rabbit | Sylvilagus palustris |

| | |
|---|---|
| Gray squirrel | Sciurus carolinensis |
| Southern flying squirrel | Glaucomys volans |
| Marsh rice rat | Oryzomys palustris |
| Cotton mouse | Peromyscus gossypinus |
| Hispid cotton rat | Sigmodon hispidus |
| Eastern woodrat | Neotoma floridana |
| Black rat | Rattus rattus |
| Norway rat | Rattus norvegicus |
| House mouse | Mus musculus |
| Gray fox | Urocyon cinereoargenteus |
| Domestic dog | Canis familiaris |
| Raccoon | Procyon lotor |
| Mink | Mustela vison |
| Bobcat | Lynx rufus |
| House Cat | Felis domesticus |
| White-tailed deer | Odocoileus virginianus |

### 7.7.2 Herps

The following is a compilation of herpetofauna (reptiles and amphibians) that are found in the coastal plain of South Carolina, and other barrier islands along the eastern coast (adapted from Johnson and Hillestad 1974; McKenzie and Barclay 1980; Bellis 1995; Whitaker et al. 2004; Behler and King 2002). Many of these species may occur at Sullivan's Island Accreted Area, though it is unlikely that all of the following species occur there.

| | Common Name | Scientific Name |
|---|---|---|
| **Amphibians** | | |
| Salamanders | Greater siren | Siren lacertina |
| | Eastern newt | Notophthalmus vinidescens |
| | Two-toed amphiuma | Amphiuma means |
| Frogs and Toads | Pig frog | Rana grylio |
| | Southern leopard frog | Rana sphenocephala |

| | | |
|---|---|---|
| | Eastern spadefoot | Scaphiopus holbrooki |
| | Eastern narrow-mouthed frog | Gastrophryne carolinensis |
| | Southern cricket frog | Acris gryllus |
| | Green treefrog | Hyla cinerea |
| | Pine woods treefrog | Hyla femoralis |
| | Squirrel treefrog | Hyla squirella |
| **Reptiles** | | |
| Crocodilian | American alligator | Alligator mississippiensis |
| Turtles | Diamondback terrapin | Malaclemys terrapin |
| | Spotted turtle | Clemmys guttata |
| | Eastern mud turtle | Kinosternon subrubrum |
| | Loggerhead sea turtle | Caretta caretta |
| | Green sea turtle | Chelonia mydas |
| | Kemp's ridley sea turtle | Lepidochelys kempii |
| | Leatherback sea turtle | Dermochelys coriacea |
| Lizards | Green anole | Anolis carolinensis |
| | Island glass lizard | Ophisaurus compressus |
| | Eastern glass lizard | Ophisaurus ventralis |
| | Six lined racerunner | Cnemidophorus sexlineatus |
| | Southeastern five-lined skink | Eumeces inexpectatus |
| | Broad-headed skink | Eumeces laticeps |
| | Ground skink | Scincella lateralis |
| Snakes | Scarlet snake | Cemophora coccinea |
| | Racer | Coluber constrictor |
| | Corn snake | Elaphe guttata |
| | Rat snake | Elaphe obsoleta |
| | Common kingsnake | Lampropeltis getula |
| | Rough green snake | Opheodrys aestivus |

| | | |
|---|---|---|
| | Common garter snake | Thamnophis sirtali |
| | Cottonmouth | Agkistrodon piscivorus |
| | Diamondback rattlesnake | Crotalus adamanteus |

### 7.7.3 Plants

| | Common Name | Scientific Name |
|---|---|---|
| **Maritime Foredune Grassland** | | |
| Shrub | Marsh-elder | *Iva frutescens* |
| Herbaceous | Sea-oats | *Uniola paniculata* |
| | Saltgrass | *Distchilis spicata* |
| | Camphorweed | *Heterotheca subaxillaris* |
| | Blackberry | *Rubus* sp. |
| | Sea side panicum | *Panicum amarum* |
| | Beach pea | *Strophostyles helvola* |
| | Fiddle-leaf morning-glory | *Ipomoea stolonifera* |
| | Dune sandbur | *Cenchrus tribuloides* |
| | Yucca | *Yucca* sp. |
| | Croton | *Croton glandulosus* |
| | Fire-wheel | *Gaillardia pulchella* |
| | Beach evening-primrose | *Onethera drummondii* |
| | Salt meadow saltgrass | *Spartina patens* |
| **Maritime Backdune Grassland** | | |
| Shrub | Earleaf green-brier | *Smilax auriculata* |
| | Saw green-brier | *Smilax bona-nox* |
| | Peppervine | *Ampelopsis arborea* |

| | | |
|---|---|---|
| Herbaceous | Peppervine | *Ampelopsis arborea* |
| | Devil-joint | *Opuntia pusilla* |
| | Sea-oats | *Uniola paniculata* |
| | Camphorweed | *Heterotheca subaxillaris* |
| | Blackberry | *Rubus* sp. |
| | Seaside panicum | *Panicum amarum* |
| | Beach pea | *Strophostyles helvola* |
| | Seaside pennywort | *Hydrocotyle bonariensis* |
| | Dunes evening-primrose | *Onethera humifusa* |
| | Fire-wheel | *Gaillardia pulchella* |
| | Rumex | *Rumex* sp. |
| | Bushy bluestem | *Andropogon glomeratus* |
| | Earleaf green-brier | *Smilax auriculata* |
| | Virginia creeper | *Parthenocissus quinquefolia* |
| | Dogfennel | *Eupatorium capillifolium* |
| | Spiderwort | *Tradescantia virginiana* |
| | Poison ivy | *Rhus radicans* |
| | Indian-fig | *Opuntia ficus-indica* |
| | Croton | *Croton punctatus* |

**Manipulated Maritime Backdune Grassland**

| | | |
|---|---|---|
| Shrub | Earleaf green-brier | *Smilax auriculata* |
| | Saw green-brier | *Smilax bona-nox* |
| | Peppervine | *Ampelopsis arborea* |
| | American wisteria | *Wisteria frutescens* |
| | Rattlebush | *Daubentonia punicea* |
| | Yucca | *Yucca* sp. |
| | Devil-joint | *Opuntia pusilla* |

| | | |
|---|---|---|
| Herbaceous | Blackberry | *Rubus sp.* |
| | Earleaf green-brier | *Smilax auriculata* |
| | Saw green-brier | *Smilax bona-nox* |
| | Camphorweed | *Heterotheca subaxillaris* |
| | Fire-wheel | *Gaillardia pulchella* |
| | Spiderwort | *Tradescantia virginiana* |
| | Sea-oats | *Uniola paniculata* |
| | Peppervine | *Ampelopsis arborea* |
| | Devil-joint | *Opuntia pusilla* |
| | Rough buttonweed | *Diodea teres* |
| | Eastern plantain | *Plantago lanceolata* |
| | Saltgrass | *Distichlis spicata* |
| | Croton | *Croton punctatus* |
| | Seaside panicum | *Panicum amururan* |
| | Beach evening-primrose | *Onethera drummondii* |
| Lawns and Pathways | | |
| Herbaceous | Frog-fruits | *Phyla nodiflora* |
| | Beach evening-primrose | *Onethera drummondii* |
| | Rabbit-tobacco | *Graphalium* sp. |
| | Crabgrass | *Digitaria* sp. |
| | Rough buttonweed | *Diodea teres* |
| | Toadflax | *Linaria canadensis* |
| | Common ragweed | *Ambrosia artemisifolia* |
| | Bahia grass | *Paspalum notatum* |
| | Seaside pennywort | *Hydrocotyle bonariensis* |
| | Hoary plantain | *Plantago virginica* |
| | Flatsedge | *Cyperus* sp. |
| | Aloe | *Aloe vera* |

| | | |
|---|---|---|
| | Rabbit-tobacco | *Graphalium* sp. |

### Maritime Interdunal Wetland

| | | |
|---|---|---|
| Shrub | Wax myrtle | *Morella cerifera* |
| | Groundsel tree | *Baccharis halmilifolia* |
| Herbaceous | Love grass | *Fimbristylis caroliniana* |
| | Frog-fruits | *Phyla nodiflora* |
| | Seaside pennywort | *Hydrocotyle bonariensis* |
| | Umbrella sedge | *Cyperus filicinus* |
| | Fingergrass | *Eustachys petraea* |
| | Common cattail | *Typha angustifolia* |
| | Saltmarsh bulrush | *Scirpus robustus* |
| | Saltgrass | *Distchlis spicata* |
| | Bushy bluestem | *Andropogon glomeratus* |
| | Arrow-leaf morning glory | *Ipomea saggittata* |
| | Aster | *Aster sp.* |
| | Soft rush | *Juncus effusus* |
| | Smartweed | *Polygonum* sp. |
| | Flatsedge | *Cyperus* sp. |

### Maritime Shrubland

| | | |
|---|---|---|
| Overstory | Wax myrtle | *Morella cerifera* |
| | Sugarberry | *Celtis laevigata* |
| | Chinese privet | *Ligustrum sinense (invasive)* |
| | Chinese tallow | *Sapium sebiferum (invasive)* |
| | Southern red cedar | *Juniperus silicicola* |
| | Carolina laurel cherry | *Prunus caroliniana* |

| | | |
|---|---|---|
| | Red bay | *Persea borbonia* |
| | Hercules club | *Aralia spinosa* |
| Shrub | Wax myrtle | *Morella cerifera* |
| | Virginia creeper | *Parthenocissus quinquefolia* |
| | Peppervine | *Ampelopsis arborea* |
| | Poison ivy | *Rhus radicans* |
| | Alabama supple-jack | *Berchemia scandens* |
| | Arrow-leaf morning glory | *Ipomea saggittata* |
| | Groundsel tree | *Baccharis halimifolia* |
| | Sugarberry | *Celtis laevigata* |
| | Rattlebush | *Daubentonia punicea* |
| | Chinese tallow | *Sapium sebiferum (invasive)* |
| | Southern red cedar | *Juniperus silicicola* |
| | Carolina laurel cherry | *Prunus caroliniana* |
| Herbaceous | Virginia creeper | *Parthenocissus quinquefolia* |
| | Blackberry | *Rubus sp.* |
| | Peppervine | *Ampelopsis arborea* |
| | Poison ivy | *Rhus radicans* |
| | Smartweed | *Polygonum sp.* |
| | Passion-flower | *Passiflora incarnata* |
| | Yucca | *Yucca sp.* |
| | Spiderwort | *Tradescantia virginiana* |
| | Seaside pennywort | *Hydrocotyle bonariensis* |
| | Saw green brier | *Smilax bona-nox* |
| | Fire-wheel | *Gaillardia pulchella* |
| | Beach evening-primrose | *Onethera drummondii* |
| | Common ragweed | *Ambrosia artemisifolia* |

### Manipulated Maritime Shrubland

| | | |
|---|---|---|
| Shrub | Groundsel tree | *Baccharis halmilifolia* |
| | Wax myrtle | *Morella cerifera* |
| | Chinese tallow | *Sapium sebiferum (invasive)* |
| | Dog fennel | *Eupatorium capillifolium* |
| | Seashore mallow | *Kostelezkya virginica* |
| | Alabama supple-jack | *Berchemia scandens* |
| | Peppervine | *Ampelopsis arborea* |
| | Virginia creeper | *Parthenocissus quinquefolia* |
| | Poison ivy | *Rhus radicans* |
| | Blackberry | *Rubus sp*. |
| | Rattlebush | *Daubentonia punicea* |
| | Saw green-brier | *Smilax bona-nox* |
| | Passion-flower | *Passiflora incarnata* |
| | Earleaf greenbrier | *Smilax auriculata* |
| | Devil-joint | *Opuntia pusilla* |
| Herbaceous | American beauty berry | *Callicarpa americana* |
| | Virginia creeper | *Parthenocissus quinquefolia* |
| | Peppervine | *Ampelopsis arborea* |
| | Wood-sage | *Teucrium canadense* |
| | Poison ivy | *Rhus radicans* |
| | Alabama supple-jack | *Berchemia scandens* |
| | Dye bedstraw | *Galium tinctorium* |
| | Wood-sorrell | *Oxalis* sp. |
| | Smartweed | *Polygonum* sp. |
| | Blackberry | *Rubus* sp. |
| | Wild potato-vine | *Ipoemea pandurata* |

| | | |
|---|---|---|
| | Hedge bindweed | *Calystegia sepium* |
| | Whitetop sedge | *Dichromena latifolia* |
| | Seashore mallow | *Kostelezkya virginica* |
| | Dogfennel | *Eupatorium capillifolium* |
| | Croton | *Croton punctatus* |
| | Camphorweed | *Heterotheca subaxillaris* |
| | Passion-flower | *Passiflora incarnata* |
| | Spiderwort | *Tradescantia virginiana* |

**Early Successional Maritime Forest**

| | | |
|---|---|---|
| Overstory | Sugarberry | *Celtis laevigata* |
| | Wax mytrle | *Morella cerifera* |
| | Carolina laurel cherry | *Prunus caroliniana* |
| | Herculeus club | *Aralia spinosa* |
| | Pecan | *Carya illinoensis* |
| | Southern red cedar | *Juniperus silicicola* |
| Shrub | Wax myrtle | *Morella cerifera* |
| | Yaupon holly | *Ilex vomitoria* |
| | Carolina laurel cherry | *Prunus caroliniana* |
| | Southern red cedar | *Juniperus silicicola* |
| | Virginia creeper | *Parthenocissus quinquefolia* |
| | Poison ivy | *Rhus radicans* |
| | Japanese honeysuckle | *Lonicera japonica* |
| | Saw greenbrier | *Smilax bona-nox* |
| | Peppervine | *Ampelopsis arborea* |
| | Blackberry | *Rubus* sp. |
| | Earleaf greenbrier | *Smilax auriculata* |
| | Chinese privet | *Ligustrum sinense (invasive)* |

| | | |
|---|---|---|
| | Carolina willow | *Salix caroliniana* |
| Herbaceous | *Peppervine* | *Ampelopsis arborea* |
| | Poison ivy | *Rhus radicans* |
| | Spiderwort | *Tradescantia virginiana* |
| | Seaside pennywort | *Hydrocotyle bonariensis* |
| | Dogfennel | *Eupatorium capillifolium* |
| | Groundsel tree | *Baccharis halimifolia* |
| | Creeping cucumber | *Melothria pendula* |
| | Smartweed | *Polygonum* sp. |
| | Fireweed | *Erechtites hieracifolia* |

Maritime Hardwood Depression

| | | |
|---|---|---|
| Overstory | Pecan | *Carya illinoensis* |
| | Sugarberry | *Celtis laevigata* |
| | Red mulberry | *Morus rubra* |
| | Wax myrtle | *Morella cerifera* |
| | Carolina willow | *Salix caroliniana* |
| | Chinese tallow | *Sapium sebiferum (invasive)* |
| | Live oak | *Quercus virginiana* |
| | Cabbage palmetto | *Sabal palmetto* |
| Shrub | Wax myrtle | *Morella cerifera* |
| | Yaupon holly | *Ilex vomitoria* |
| | Carolina laurel cherry | *Prunus caroliniana* |
| | Oak | *Quercus sp.* |
| | Pecan | *Carya illinoensis* |
| | Roundleaf green-brier | *Smilax rotundifolia* |
| | Saw green-brier | *Smilax bona-nox* |

| | | |
|---|---|---|
| | Sugarberry | *Celtis laevigata* |
| | Groundsel tree | *Baccharis halmifolia* |
| | Chinese tallow | *Sapium sebiferum (invasive)* |
| | Red mulberry | *Morus rubra* |
| | American beauty berry | *Callicarpa americana* |
| | Peppervine | *Ampelopsis arborea* |
| | Hedge bindweed | *Calystegia sepium* |
| | Southern red cedar | *Juniperus silicicola* |
| | Rattlebush | *Daubentonia punicea* |
| | Virginia creeper | *Parthenocissus quinquefolia* |
| | Dogfennel | *Eupatorium capillifolium* |
| | Chinese privet | *Ligustrum sinense (invasive)* |
| | American wisteria | *Wisteria frutescens* |
| | Seashore mallow | *Kostelezkya virginica* |
| Herbaceous | Sugarberry | *Celtis laevigata* |
| | Carolina laurel cherry | *Prunus caroliniana* |
| | Roundleaf green-brier | *Smilax rotundifolia* |
| | Virginia creeper | *Parthenocissus quinquefolia* |
| | Blackberry | *Rubus* sp. |
| | Poison ivy | *Rhus radicans* |
| | Spiderwort | *Tradescantia virginiana* |
| | Hedge bindweed | *Calystegia sepium* |
| | Seaside pennywort | *Hydrocotyle bonariensis* |
| | Fireweed | *Erechtites hieracifolia* |
| | Vetch | *Vicia* sp. |
| | Golden rod | *Solidago* sp. |
| | St. John's Wort | *Triadenum* sp. |

| | | |
|---|---|---|
| | Creeping cucumber | *Melothria pendula* |
| | Arrow-leaf morning-glory | *Ipomea sagittata* |
| | Japanese honeysuckle | *Lonicera japonica* |
| | Passion-flower | *Passiflora incarnata* |
| | Smartweed | *Polygonum* sp. |

### 7.7.4 Birds

| Beach | Manipulated Areas | Maritime Forest | Dune Grassland |
|---|---|---|---|
| Black Tern | American Redstart | American Redstart | Blue Jay |
| Brown Pelican | Barn Swallow | Barn Swallow | Blue-gray |
| Caspian Tern | Blue Jay | Blue Jay | Boat-tailed Grackle |
| Forster's Tern | Boat-tailed Grackle | Blue-gray Gnatcatcher | Bobolink |
| Great Black- Gull | Brown Thrasher | Boat-tailed Grackle | Chimney Swift |
| Green Heron | Brown-headed Cowbird | Brown Pelican | Common Grackle |
| Herring Gull | Carolina Wren | Brown Thrasher | Common Dove |
| House Sparrow | Chimney Swift | Brown-headed Cowbird | Common throat |
| Laughing Gull | Common Ground-Dove | Carolina Wren | Eurasian Dove |
| Least Tern | Common Yellow-throat | Chimney Swift | House Finch |
| Merlin | Copper's Hawk | Common Ground-Dove | Laughing Gull |
| Osprey | Eurasian Collared Dove | Common Yellow-throat | Mourning Dove |
| Purple Martin | European Starling | Crow spp. | Northern Cardinal |
| Red Knot | Gray Catbird | Double-crested Cormorant | Prairie Warble |
| Ring-billed Gull | Great-crested Flycatcher | Downy Woodpecker | Woodpecker |
| Royal Tern | House Finch | Eurasian Collared Dove | Royal Tern |
| Ruddy Turnstone | Laughing Gull | European Starling | Sanderling |
| Sandwich Tern | Northern Cardinal | Great-crested Flycatcher | |
| Sandpipe | Northern Mockingbird | Green Heron | |
| Willet | Northern Parula | House Finch | |
| Wilson's Plover | Painted Bunting | Laughing Gull | |

Rock Dove
Royal Tern
Yellow-billed Cuckoo
Merlin
Mourning Dove
Northern Cardinal
Northern Flicker
Northern Mockingbird
Orchard Oriole
Osprey
Painted Bunting
Prairie Warbler
Purple Martin