



SOILS DESCRIPTIONS

Southwest District

Charlotte Harbor Region

Terra Ceia Preserve State Park

Soil Type Descriptions

Terra Ceia Preserve State Park

Bradenton fine sand, limestone substratum - This is a nearly level, poorly drained soil on low-lying ridges and hammocks. Slopes are smooth and range from 0 to 2 percent. Typically, the surface layer is very dark gray fine sand 6 inches thick. The subsurface layer in the upper part is grayish brown fine sand 11 inches thick and the lower part is brown fine sand 2 inches thick. The subsoil is fine sandy loam to a depth of 47 inches. In the upper part it is grayish brown to a depth of 30 inches, and below that, it is mottled grayish brown, light brownish gray, and yellowish brown. Below the subsoil there is hard limestone that has fractures and solution holes. Many areas are used for citrus or urban development. Some areas are used for vegetables. The native vegetation consists of slash pine, laurel and live oak, cabbage palm, waxmyrtle, magnolia, bluestems, sawpalmetto, and various vines.

Canaveral fine sand, 0-5% slopes - This is a nearly level to gently sloping, moderately well drained to somewhat poorly drained soil on narrow to broad dunelike ridges on the larger islands and keys and in some places on the mainland. The most extensive areas are on Anna Maria and Longboat Keys, and they range from a few hundred yards to 2 miles in width. Typically, the surface layer is dark grayish brown fine sand about 6 inches thick. The underlying material to a depth of about 17 inches is yellowish brown fine sand. Below that, to a depth of 34 inches it is light yellowish brown fine sand and about 45 percent shell fragments. It is very pale brown sand and shell fragments to a depth of 65 inches or more. The natural vegetation consists of salt-tolerant grasses and scattered palmetto in areas near the Gulf of Mexico.

Chobee loamy fine sand - This is a nearly level, very poorly drained soil that is in small to large depressions, poorly defined drainageways, and on broad, low flats. Slopes are smooth to concave and range from 0 to 2 percent. Typically, the surface layer is black loamy fine sand about 8 inches thick. The subsoil is sandy clay loam 43 inches thick. In the upper part is very dark gray to a depth of 44 inches, and below that, it is dark gray. The substratum to a depth of 80 inches or more is calcareous gray loamy fine sand and fine sand. In some areas this soil is in improved pasture, vegetables, and citrus. The natural vegetation in swampy areas consists of red maple, water oak, and cabbage palm and an understory of ferns and water tolerant grasses. In areas of open marshes and depressions it consists of maidencane, pickerelweed, smartweed, and patches of Sawgrass.

Chobee Variant sandy clay loam - This is a nearly level, very poorly drained soil in shallow depressions. Slopes are concave and less than 2 percent. Typically, the surface layer is black to very dark gray sandy clay loam about 20 inches thick. The subsoil to a depth of 35 inches is sandy clay loam, and to a depth of 40 inches it is sandy loam. It is light gray and very high in carbonates. The substratum is light gray loamy sand to a depth of 70 inches and light gray and brownish yellow sand and common shell fragments to a depth of 80 inches or more. The natural vegetation consists of swamp oak, swamp maple, cypress, grasses, vines, and forbs. In some areas it consists of prairie growth of Sawgrass, pickerelweed, various weeds and grasses, and scattered swamp maple. Most areas are used for timber or as range. Some areas are used for truck crops.

Delray-EauGallie complex - This complex consists of soils in nearly level, broad grassy sloughs that have poorly defined stream channels in some places. Some areas are located around the larger ponds. The soils are in the western part of the county, generally at an elevation of less than 40 feet. The soils are so intermixed that they could not be mapped separately at the scale selected for mapping. Slopes are less than 2 percent. Delray soils make up about 45 percent of this complex, EauGallie soils make up 35

percent, and scattered areas of Anclothe, Felda, Floridana, and Wabasso soils make up 20 percent. Typically, Delray soils are at a slightly lower elevation than EauGallie soils. Typically, the surface layer of Delray soils is black fine sand about 15 inches thick. The subsurface layer is grayish brown and light brownish gray fine sand about 40 inches thick. The subsoil is grayish brown and greenish gray fine sandy loam and sandy clay loam to a depth of 80 inches or more. Typically, the surface layer of EauGallie soils is dark gray fine sand about 4 inches thick. The subsurface layer is light gray fine sand 9 inches thick. The subsoil in the upper part is dark reddish brown and dark brown fine sand. Below that, it is gray sand 5 inches thick. In the lower part it is gray fine sandy loam to a depth of 76 inches or more. The natural vegetation consists of scattered pine trees, clumps of sawpalmetto, gallberry, and a stand of grasses such as bluestem, lopsided indiagrass, maidencane, and pineland threeawn.

EauGallie fine sand - This is a nearly level, poorly drained soil in broad areas of flatwoods. Slopes are smooth and range from 0 to 2 percent. Typically, the surface layer is very dark gray fine sand 5 inches thick. The subsurface layer is grayish brown and light brownish gray fine sand to a depth of about 28 inches. The subsoil in the upper part is black fine sand that is coated with organic matter to a depth of 42 inches. In the lower part it is grayish brown sandy clay loam to a depth of 50 inches. The substratum is grayish brown fine sand, loamy fine sand, and fine sandy loam to a depth of 65 inches. The natural vegetation is slash pine, sawpalmetto, waxmyrtle, gallberry, and pineland threeawn in open forest and bluestem, panicum, and other grasses.

Floridana-Immokalee-Okeelanta association - This map unit consists of nearly level, very poorly drained Floridana soils, poorly drained Immokalee soils, and very poorly drained Okeelanta soils. It is about 35 percent Floridana soils, 30 percent Immokalee soils, 20 percent Okeelanta soils, and 15 percent minor soils. These soils are in small to large shallow grassy ponds mainly in the central and eastern parts of the country. Generally, Okeelanta soils are in the lowest places near the center of the ponds; Floridana soils are in an intermediate position; and Immokalee soils are along the edges of ponds. Slopes are less than 2 percent. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Most of the mapped areas are circular or oblong. Typically, the surface layer of Floridana soils is black and very dark gray fine sand about 19 inches thick. The subsurface layer is gray fine sand about 17 inches thick. The subsoil is dark gray sandy clay loam 17 inches thick. The substratum is light gray fine sand that extends to a depth of 80 inches or more. Typically, the surface layer of Immokalee soils is black fine sand about 5 inches thick. The subsurface layer is dark gray, gray, and light gray fine sand 29 inches thick. The subsoil is dark reddish brown and dark brown fine sand 9 inches thick. The substratum to a depth of 80 inches or more is grayish brown fine sand. Typically, Okeelanta soils in the uppermost 20 inches are black muck. Below that, to a depth of 54 inches or more, there is black and light brownish gray sand. The natural vegetation in the lowest places is Sawgrass, maidencane, willow, and, in places, a few cypress. In other areas, the vegetation is maidencane, St.-Johnswort, various bluestems, smooth cordgrass, and sedges.

Myakka fine sand, tidal - This is a nearly level, very poorly drained soil in high lying tidal marshes between the mangrove swamps and better drained upland soils. Slopes are smooth to concave and range from 0 to 2 percent. Typically, the surface layer is mixed very dark gray and light gray fine sand about 3 inches thick. The subsurface layer is fine sand 12 inches thick. In the upper 4 inches it is gray, and below that, it is mixed gray and very dark gray. The subsoil is black fine sand 22 inches thick. The substratum is dark grayish brown, brown, and pale brown fine sand to a depth of 75 inches or more. In most areas the native vegetation consists of sparse stands of pines, mangrove, needlerush, and Sawgrass. In some areas Brazilian pepper is common. In many areas there is no vegetation.

Okeelanta muck, tidal - This is very poorly drained organic soil in the tidal marsh, mainly along the Manatee and Braden Rivers. Slopes are less than 2 percent. Typically, the surface layer is black and dark reddish brown muck to a depth of 39 inches. Below the muck there is light brownish gray sand to a depth of 60 inches or more. The native vegetation consists dominantly of needlegrass rush, seashore saltgrass, marshhay cordgrass, big cordgrass and smooth cordgrass.

Wabasso fine sand - This is a nearly level, poorly drained soil in areas of broad flatwoods. Slopes are less than 2 percent. Typically, the surface layer is very dark gray fine sand about 7 inches thick. The subsurface layer is gray fine sand 14 inches thick. The subsoil is fine sand coated with organic material to a depth of about 28 inches. In the upper 4 inches it is black, and in the lower 3 inches it is dark reddish brown. The next layer, to a depth of 37 inches is brown fine sand. Below that, to a depth of 65 inches, there is grayish brown to gray loamy material. The substratum to a depth of 80 inches or more is sand and many shell fragments. The native vegetation consists of longleaf and slash pines, scattered cabbage palms, and an understory of sawpalmetto, inkberry, waxmyrtle, creeping bluestem, indiagrass, little bluestem, Florida paspalum, pineland threeawn, panicums, deertongue, grassleaf goldaster, huckleberry and running oak. Most areas are in native vegetation and are grazed. Areas with adequate water control are used for citrus, truck crops, and improved pasture.

Wulfert-Kesson association - This map unit consists of nearly level, very poorly drained Wulfert and Kesson soils. It is about 45 percent Wulfert soils, 35 percent Kesson soils, and 20 percent other soils. These soils occur in a regular and repeating pattern in mangrove swamps along the Gulf Coast and on coastal islands. Generally, Kesson soils are in the outer parts of areas of this complex near the water's edge, and Wulfert soils are in the inner parts. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they are mapped as one unit. Slopes are less than 1 percent. Typically, the surface layer of Wulfert soils is dark reddish brown and dark brown muck that extends to a depth of about 36 inches. Below that, there is gray fine sand to a depth of 60 inches or more. Typically, the surface layer of Kesson soils is black fine sand 6 inches thick. Below the surface layer there is pale brown, light gray and white fine sand to a depth of 80 inches or more. Shell fragments are few to common in these layers. The natural vegetation consists mostly of mangrove, but in some places it also consists of seashore saltgrass, batis, and oxeye daisy. Some places are bare.

thick. In the upper 5 inches it is black, and below that, it is dark gray. The subsurface layer is 24 inches thick. In the uppermost 13 inches it is grayish brown sand, and below that, it is light gray fine sand. The subsoil, to a depth of 51 inches, is black sand. The substratum to a depth of 80 inches or more is sand that has pockets of sandy loam. In the upper 6 inches it is dark grayish brown, in the next 9 inches it is grayish brown, and in the lower part it is olive. Included with this soil in mapping are small areas of Myakka, Ona, and Pomona soils. In most years, the water table is within a depth of 10 inches for 1 to 4 months out of the year and within a depth of 40 inches for 6 months or more out of the year. It is above the subsoil early in the summer rainy season and after periods of heavy rainfall in other seasons. The water table recedes to a depth of more than 40 inches in extended dry seasons. The available water capacity is low in the surface layer, very low in the subsurface layer, medium in the subsoil, and low in the substratum. Permeability is rapid in the surface and subsurface layers, very slow to slow in the subsoil, and moderate to rapid in the substratum. Natural fertility and organic matter content are low. Large areas are cleared and used for improved pasture. The native vegetation consists of South Florida slash pine and an understory of saw palmetto, wax myrtle, gallberry, huckleberry, fetterbush, lopsided indiagrass, creeping bluestem, chalky bluestem, Florida threeawn, and pineland threeawn.

Zolfo Fine Sand, 0-2% slopes - This is a somewhat poorly drained soil on low to high ridges and knolls in flatwoods. Typically, the surface layer is very dark gray fine sand about 7 inches thick. The subsurface layer is light brownish gray, pale brown, and light gray fine sand. The subsoil begins at a depth of 65 inches. In the upper 7 inches it is dark grayish brown fine sand, and below that, it is dark brown fine sand to a depth of 80 inches or more. Included with this soil in mapping are areas of Cassia, Duette, Orsino, Pomello, and Tavares soils. Also included are soils that are very similar to Zolfo soils except that the subsoil is less well developed. Permeability is very rapid in the surface and subsurface layers and moderate in the subsoil. In most years, if this soil is not drained, the high water table is at a depth of 24 to 40 inches for 2 to 6 months out of the year. In some years the water table is at a depth of 10 to 24 inches for periods of as much as 2 weeks. The water table is at a depth of 60 inches for more than 9 months of the year. The available water capacity is low to very low in the surface and subsurface and medium in the subsoil. Natural fertility is low and the content of organic matter is low to very low.

The native vegetation consists of slash and longleaf pines, laurel, bluejack, turkey, live and water oaks and an understory of, saw palmetto, pineland threeawn, broomsedge and chalky bluestems, and other perennial grasses.

Zolfo Fine Sand, 2-5% slopes - This is a somewhat poorly drained soil on slopes of ridges that border the larger streams and rivers. Typically, the surface layer is gray fine sand about 4 inches thick. The subsurface layer is light brownish gray, pale brown, light gray and white fine sand. The subsoil begins at a depth of 65 inches. In the upper 15 inches it is dark reddish brown fine sand, and below that, it is black fine sand to a depth of 80 inches or more. Included with this soil in mapping are areas of Cassia, Duette, Orsino, Pomello, and Tavares soils. Also included are soils that are very similar to Zolfo soils except that the subsoil is less well developed and areas of Zolfo soils on 5 to 8 percent slopes. Permeability is very rapid in the surface and subsurface layers and moderate in the subsoil. In most years, if this soil is not drained, the high water table is at a depth of 24 to 40 inches for 2 to 6 months out of the year. In some years the water table is at a depth of 10 to 24 inches for periods of as much as 2 weeks. The water table is at a depth of 60 inches for more than 9 months of the year. The available water capacity is low to very low in the surface and subsurface and medium in the subsoil. Natural fertility is low and the content of organic matter is low to very low. The native vegetation consists of slash and longleaf pines, laurel, bluejack, turkey, live and water oaks and an understory of, saw palmetto, pineland threeawn, broomsedge and chalky bluestems, and other perennial grasses.

Charlotte Harbor Preserve State Park

Canaveral, fine sand, 0-2% slope - This is a nearly level, moderately well drained soil and somewhat poorly drained soil on low ridges. The available water capacity is low. Natural fertility is low. Permeability is very rapid. Natural vegetation consists of cabbage palm, seagrape, wild coffee, and an understory of vines and weeds. Brazilian pepper, an invasive exotic, may also be present.

Hallendale fine sand, 0-2% slope - This is a nearly level, poorly drained soil on low, broad flatwood areas. The available water capacity is low. Natural fertility is low. Permeability is moderate or moderately rapid. Natural vegetation consists of saw palmetto, pineland threeawn, bluestem, panicums and south Florida slash pine.

Matlacha-urban land complex - This complex consists of nearly level Matlacha gravely fine sand and areas of urban land. The depth of the water table varies with the amount of fill material and the extent

of artificial drainage. Most of the natural vegetation has been removed. The existing vegetation consists of scattered slash pine and various weeds.

Hallendale fine sand, 0-2% slope, tidal - This is a nearly level, poorly drained soil on the outer edges of tidal flats. The water table fluctuates with the tide. This soil is subject to tidal flooding. The available water capacity is low. Natural fertility is low. Permeability is moderately rapid. Natural vegetation consists of seashore saltgrass, black mangrove, batis and sea daisy. When in good or excellent condition, the saltwater marsh is dominated by smooth cordgrass, seashore saltgrass, and other grasses and forbs. Burning management is required to maintain these sites in their most desirable condition.

EauGallie sand, <1% slope - This is a nearly level, poorly drained soil on flatwoods. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderately slow or moderate in the subsoil. Natural vegetation consists of saw palmetto, fetterbush, pineland threeawn and south Florida slash pine.

Pompano fine sand, 0-1% slope - This is a nearly level, poorly drained soil on sloughs. The available water capacity is very low. Natural fertility is low. Permeability is rapid. Natural vegetation consists of South Florida slash pine, chalky bluestem, pineland threeawn and runner oak.

Myakka fine sand, 0-2% slope - This is a nearly level, poorly drained soil on broad flatwood areas. The available water capacity is medium in the subsoil and very low in the surface and subsurface layers. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of saw palmetto, fetterbush, pineland threeawn and south Florida slash pine.

Felda fine sand, 0-2% slope - This is a nearly level, poorly drained soil on broad, nearly level sloughs. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate or moderately rapid in the subsoil. Natural vegetation consists of cabbage palm, pineland threeawn, south Florida slash pine, wax myrtle and maidencane.

Boca fine sand, 0-2% slope - This is a nearly level, poorly drained soil on flatwoods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural vegetation consists of saw palmetto, pineland threeawn, south Florida slash pine and wax myrtle.

Valkaria fine sand, 0-1% slope - This is a nearly level, very poorly drained soil on sloughs. The available water capacity is low. Natural fertility is low. Permeability is rapid. Natural vegetation consists of sparse saw palmetto, South Florida slash pine and maidencane. Melaleuca, and invasive exotic, may also be present.

Estero muck, 0-1% slope - This is a nearly level, very poorly drained soil on broad tidal marsh areas. The water table fluctuates with the tide and is subject to tidal flooding. Natural vegetation consists of seashore saltgrass, batis, oxeye daisies, black mangrove and scattered red mangrove. When in good or excellent condition, the saltwater marsh is dominated by various saltgrass, and numerous other grasses and forbs. Burning is required to maintain these sites in their most desirable condition.

Peckish mucky fine sand, 0-1% slope - This is a nearly level, very poorly drained soil on broad tidal swamp areas. This water level fluctuates with the tide and the soil is subject to tidal flooding. Natural vegetation consists of black mangrove, American mangrove and batis.

Daytona sand, 0-5% slope - This is a nearly level to gently sloping, moderately well drained soil on low ridges on the flatwoods. The available water capacity is very low, except in the subsoil where it is medium. Natural fertility is low. Permeability is very rapid in the surface layer and moderately rapid in the subsoil. The natural vegetation consists of oaks, saw palmetto, south Florida slash pine and gallberry.

Matlacha gravelly fine sand, limestone substratum, 0-2% slope - This is a nearly level, somewhat poorly drained soil that formed as a result of earthmoving operations in areas that are underlain by limestone bedrock. The available water capacity is low. Permeability is variable, but it is estimated to be moderately rapid-to-rapid in the fill material and rapid in the upper part of the underlying material. It is moderately slow in lower horizons. Natural fertility is estimated to be low. Most of the natural vegetation has been removed. The existing vegetation consists of South Florida slash pine, and various scattered weeds.

Terra Ceia muck, 0-1% slope - This is a nearly level, very poorly drained organic soil on freshwater marsh areas. Available water capacity is medium. Natural fertility is moderate. Permeability is rapid. Natural vegetation consists of sawgrass, sand cordgrass and waxmyrtle.

Wulfert muck, 0-1% slope - This is a nearly level, very poorly drained soil on broad tidal swamps. Areas are subject to tidal flooding and water table fluctuates with the tide. Natural vegetation consists of mangroves, needle rush, cordgrasses, and saltgrass. Burning is required to maintain these sites in their most desirable condition.

Kesson fine sand, 0-1% slope - This is a nearly level, very poorly drained soil in broad tidal swamps. Areas are subject to tidal flooding. The water table fluctuates with the tide. Natural fertility is low. Permeability is moderately rapid. This soil has a high salt and sulfur content. Natural vegetation consists of black mangrove, batis, oxeye daisy and American mangrove.

Pineda fine sand, 0-1% slope - This is a nearly level, poorly drained soil on sloughs. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the upper sandy part of the subsoil and slow, or very slow in the lower, loamy part of the subsoil. Natural vegetation consists of pineland threeawn, panicums, sedges, maidencane, wax myrtle, south Florida slash pine, and scattered clumps of saw palmetto.

Pompano fine sand, depression, <1% slope - This is a nearly level, poorly drained soil in depressions. The available water capacity is low. Natural fertility is low. Permeability is rapid. A large part of the acreage is in natural vegetation: St. Johnswort and wax myrtle.

Immokalee sand, 0-2% slope - This is a nearly level, poorly drained soil in flatwood areas. The available water capacity is medium in the subsoil and very low in the surface and subsurface layers. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of saw palmetto, fetterbush, pineland threeawn and south Florida slash pine.

Punta fine sand, 1-2% slope - This is a nearly level, poorly drained soil that occurs on slightly elevated landscapes on flatwoods. The available water capacity is low. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural vegetation consists of sawpalmetto, South Florida slash pine, pineland threeawn, waxmyrtle and some scrub oak.

Oldsmar sand, 0-2% slope - This is a nearly level, poorly drained soil on low, broad, flatwoods areas. The available water capacity is low in the surface layer and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil. Natural vegetation consists of sawpalmetto, South Florida slash pine, pineland threeawn and meadow beauty.

Malabar fine sand, 0-1% slope - This is a nearly level, poorly drained soil on sloughs. The available water capacity is low in the surface and subsurface layers and the upper part of the subsoil and medium in the lower part of the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the upper part of the subsoil and slow or very slow in the lower part of the subsoil. Natural vegetation consists of pineland threeawn, waxmyrtle, scattered sawpalmetto, maidencane, panicums and South Florida slash pine.

Wabasso sand, 0-2% slope - This is a nearly level, poorly drained soil on flatwoods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil. Natural vegetation consists of sawpalmetto, South Florida slash pine, pineland threeawn, cabbage palm and bluestem.

Satellite fine sand 0-2% slope - This is a nearly level, somewhat poorly drained soil on low knolls and ridges. Available water capacity is low. Natural fertility is low. Permeability is very rapid. Natural vegetation consists of Florida rosemary, sand live oak, saw palmetto, South Florida slash pine and pineland threeawn.

Isles fine sand, depressional, 0-1% slope - This is a nearly level, poorly drained soil in depressions. The available water capacity is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is low. Natural vegetation consists of cabbage palm, water oak and maidencane.

Anclote sand, depressional, <1% slope - This is a nearly level, poorly drained soil in isolated depressions. The available water capacity is medium in the surface layer and low in the substratum. Natural fertility is medium. Permeability is rapid. Natural vegetation consists of cypress, leatherleaf fern, waxmyrtle, pickerelweed and greenbrier.

Wabasso sand, limestone substratum, 0-2% slope - This is a nearly level, poorly drained soil on broad flatwoods. The available water capacity is low in the surface and subsurface layers and the upper part of the subsoil and medium in the lower part of the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the upper part of the subsoil and. It is slow in lower part of the subsoil. Natural vegetation consists of saw palmetto, south Florida slash pine, dwarf huckleberry, cabbage palm, gallberry, andw pineland threeawn.

Smyrna fine sand, 0-2% slope - This is a nearly level, poorly drained soil on flatwoods. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural

fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of saw palmetto, south Florida slash pine, wax myrtle, inkberry, dwarf huckleberry and pineland threeawn.

Copeland sandy loam, depressional, <1% slope - This is a nearly level, very poorly drained soil in depressions. The available water capacity is medium. Natural fertility is medium. Permeability is rapid in the surface layer and moderate in the subsoil. Natural vegetation consists of scattered cypress, wax myrtle, cabbage palm, fern, redroot and other water-tolerant plants.

Olsmar fine sand, limestone substratum, 0-2% slope - This is a nearly level, poorly drained soil in the flatwoods. Natural fertility is low; permeability is rapid in the surface and subsurface layers, moderately slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil. The natural vegetation consists of saw palmetto, South Florida slash pine, inkberry and pineland threeawn.

Myakka fine sand, depressional, <1% slope - This is a nearly level, poorly drained soil in depressions. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural vegetation consists of scattered cypress, St. Johnswort, sedges, maidencane, sand cordgrass and wax myrtle. Non-native vegetation includes melaleuca.

Isles muck, 0-1% slope - This is a nearly level, very poorly drained soil in tidal swamps. Areas are subject to tidal flooding and water table fluctuates with the tide. Natural vegetation consists of red and black mangrove, batis and sea purslane. When in good or excellent condition, the saltwater marsh is dominated by cordgrasses, saltgrass, and other grasses and forbs. Burning is required to maintain these sites in their most desirable condition.

Boca fine sand, tidal, <1% slope - This is a nearly level, poorly drained saline that is subject to tidal flooding. The available water capacity is low in the surface and subsurface layers and upper part of the subsoil and medium or high in the lower part of the subsoil. Natural fertility is low because of the excess sodium throughout the profile. Permeability is rapid in the surface and subsurface layers and the upper part of the subsoil and moderate in the lower part of the subsoil. Natural vegetation consists of buttonbush, sea daisy, seashore saltgrass, saltwort, scattered black and white mangrove and scattered cabbage palm. Brazilian pepper and invasive exotic species may also be scattered here.

Malabar fine sand, high, 0-2% slope - This is a nearly level, poorly drained soil in the flatwoods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the sandy part of the subsoil and moderately slow in the lower, loamy part of the subsoil. Natural vegetation consists of saw palmetto, cabbage palm, South Florida slash pine, wax myrtle and pineland threeawn.

Matlacha gravelly fine sand, 0-2% slope - This is a nearly level, somewhat poorly drained soil formed by filling and earthmoving operations. The available water capacity is variable, but it is estimated to be low. Permeability is variable within short distances, but it is estimated to be moderately rapid-to-rapid in the fill material and rapid in the underlying material. Natural fertility is estimated to be low. Most of the natural vegetation has been removed. The existing vegetation consists of South Florida Slash Pine and various scattered weeds.

Stump Pass Beach State Park

Canaveral Fine Sand - The soils of the Canaveral series are very rapidly permeable soils that formed in thick marine deposits of sand and shell fragments. These nearly level soils are on low ridges and in depressions along the Gulf Coast. They are associated with beaches. Canaveral Fine Sand is nearly level, moderately well drained and somewhat poorly drained soil on low ridges. Slopes are smooth to slightly convex and range from 0 to 2 percent. Typically, the surface layer is black and dark gray fine sand mixed with shell fragments and is about 15 inches thick. The underlying layers are light brownish gray and light gray fine sand mixed with shell fragments to a depth of 80 inches or more. The available water capacity is very low. Natural fertility is low. Permeability is very rapid. Natural vegetation includes seagrass, wild coffee and myrsine.

Kesson Fine Sand - Kesson Fine Sand is associated with Wulfert Muck. It is a nearly level, very poorly drained soil in tidal swamps. Areas are subject to tidal flooding. Slopes are smooth and range from 0 to 1 percent. Typically, the surface layer is about 6 inches of sand that contains shell fragments. The underlying layers are fine sand that contains shell fragments, and they extend to a depth of 80 inches or more. Natural vegetation consists of mangrove trees, pickle weed and oxeye daisy.

Beaches. Canaveral Fine Sand - The soils of the Canaveral series are very rapidly permeable soils that formed in thick marine deposits of sand and shell fragments. These nearly level soils are on low ridges and in depressions along the Gulf Coast. They are associated with beaches. Canaveral Fine Sand is nearly level, moderately well drained and somewhat poorly drained soil on low ridges. Slopes are smooth to slightly convex and range from 0 to 2 percent. Typically, the surface layer is black and dark gray fine sand mixed with shell fragments and is about 15 inches thick. The underlying layers are light brownish gray and light gray fine sand mixed with shell fragments to a depth of 80 inches or more. The available water capacity is very low. Natural fertility is low. Permeability is very rapid. Natural vegetation includes seagrass, wild coffee and myrsine.

Kesson Fine Sand - Kesson Fine Sand is associated with Wulfert Muck. It is a nearly level, very poorly drained soil in tidal swamps. Areas are subject to tidal flooding. Slopes are smooth and range from 0 to 1 percent. Typically, the surface layer is about 6 inches of sand that contains shell fragments. The underlying layers are fine sand that contains shell fragments, and they extend to a depth of 80 inches or more. Natural vegetation consists of mangrove trees, pickle weed and oxeye daisy.

Beaches - Beaches consist of narrow strips of nearly level, mixed sand and shell fragments along the Gulf of Mexico. These areas are covered with saltwater at daily high tides. Usually bare of vegetation, they are unstable and subject to being shifted by storms and longshore currents. Beaches are geographically with Canaveral soils. Beaches consist of narrow strips of nearly level, mixed sand and shell fragments along the Gulf of Mexico. These areas are covered with saltwater at daily high tides. Usually bare of vegetation, they are unstable and subject to being shifted by storms and longshore currents. Beaches are geographically with Canaveral soils.

Don Pedro Island State Park

Canaveral Fine Sand, 0-2% slopes - This soil is nearly level and is somewhat poorly drained. It is located on the deep, sandy ridges and flats on marine terraces. The mapped area is large and ranges approximately 11,520 acres. The slopes are linear and convex. Typically, this soil has a surface layer of

black fine sand about 7 inches thick. The underlying material is fine sand. The upper part is dark gray in color and extends to a depth of 15 inches. The next layer is light brownish gray and 80 inches deep. Included with this soil in mapping are some small areas of Captiva soil that makes up about 3 percent or less of the map unit. This soil has a water table at a depth of 12 to 36 inches. The available water capacity is very low. The permeability is very rapid.

Myakka Fine Sand, 0-2% slopes - This soil is nearly level and is poorly drained. It is on the broad flatwoods within the uplands of the county. The slopes of this soil are smooth to slightly concave. Typically, this soil has a surface layer of very dark gray fine sand about 3 inches thick. The subsurface layer is fine sand about 23 inches thick. The upper part, to a depth of 3 inches is gray. The lower part, to a depth of 23 inches, is light gray. The upper part of the subsoil to a depth of 27 inches is dark black and firm and the next 5 inches is dark reddish brown and friable. The lower part to a depth of 43 inches is mixed black and dark reddish brown. Included with this soil in mapping are small areas of EauGallie, Immokalee, Oldsmar, Smyrna and Wabasso soils. The included soils make up about 15 percent or less of the map unit. This soil has a high water table at a depth of 6-18 inches for 1 to 3 months and 10 to 40 inches below the surface for 2 to 6 months. It recedes to a depth of more than 40 inches during extended dry periods. The available water capacity is moderate. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil.

Beaches - This soil is nearly level and poorly drained. These areas consist of narrow strips of shell and sand fragments along the Gulf of Mexico. Slopes are convex and range from 0 to 3 percent. The depth to water table can vary from 0-72 inches.

Kesson Fine Sand, 0-1% slopes - This is a nearly level, very poorly drained soil on broad tidal swamps. Areas are subject to tidal flooding. Slopes are smooth. Typically, the surface layer is about 6 inches of sand that contains shell fragments. The underlying layers are fine sand that contains shell fragments, and they extend to a depth of 80 inches or more. The upper 4 inches is pale brown, the next 3 inches is light brownish gray, the next 25 inches is light gray with dark gray streaks and the lower 42 inches is white. Included with this soil in mapping are areas of Captiva and Wulfert soils and soils that have organic surface layers. Also included are soils that have loamy material throughout. Included soils make up about 10 to 15 percent of any mapped area. The water table fluctuates with the tide and ranges from 0-6 inches. The available water capacity is low. Permeability is moderately rapid or rapid.

Immokalee sand, 0-2% slopes - This is a nearly level, poorly drained soil in flatwoods areas. Slopes are smooth to convex. Immokalee soil makes up about 90 percent of this map unit. Minor components included with this soil when mapping are EauGallie, Myakka, Oldsmar, Smyrna and Wabasso. Typically, the surface layer is black sand about 4 inches thick. The subsurface layer is dark gray sand in the upper 5 inches and light gray sand in the lower 27 inches. The subsoil is sand to a depth of 69 inches. The upper 14 inches is black and firm, the next 5 inches is dark reddish brown, and the lower 14 inches is dark yellowish brown. The substratum is very pale brown sand to a depth of 80 inches or more. The soil in this map unit has a high water table within 6-18 inches of the surface for 1 to 3 months and 10 to 40 inches below the surface for 2 to 6 months. It recedes to a depth of more than 40 inches during extended dry periods. The available water capacity is low. Permeability is rapid in the surface and subsurface layers and moderate or moderately rapid in the subsoil.

Satellite fine sand, 0-2% slopes - This is a nearly level, somewhat poorly drained soil on low knolls and ridges. Slopes are smooth to convex. Typically, the surface layer is gray fine sand about 3 inches thick.

The substratum extends to a depth of 80 inches or more and is white and light gray fine sand. Included with this soil in mapping are small areas of Immokalee, Myakka, Daytona and Pompano soils. Included soils generally make up 10 percent or less of any mapped area. In most years, under natural conditions, this soil has a water table at a depth of 12 to 42 inches for 2 to 6 months and at a depth of 42 to 72 inches for 6 months or more. The available water capacity is very low. Permeability is very rapid.

St. Augustine sand, 0-2% slopes - This is a nearly level, somewhat poorly drained soil formed by fill and earthmoving operations. Most areas are former sloughs and depressions or other low areas that have been filled with sandy material. Slopes are smooth to slightly convex and range from 0 to 2 percent. There are no definite horizonation because the soil has been mixed during movement and reworking of the fill material. Typically, the upper 30 inches consists of mixed very dark grayish brown, very dark gray, dark gray and gray sand with a few lenses of silt loam and about 20 percent multicolored shell fragments less the 3 inches in diameter. Below this to a depth of 80 inches or more is undisturbed fine sand. The upper 10 inches is dark grayish brown with about 15 percent multicolored shell fragments. The lower 40 inches is light gray with about 30 percent multicolored shell fragments. Included with this soil in mapping are areas where the fill material is underlain by organic soils and other areas where the mixed fill material is less than 20 inches thick. Also included are areas that contain lenses or pockets of organic material throughout the fill. In addition, there are small-scattered areas with more than 35 percent shells or shell fragments within the fill. Several areas with some urban development or in related uses have been included. These areas typically make up less than 5 percent of the map unit. This soil has a water table that varies with the amount of fill material and artificial drainage within any mapped area. However, in most years, the water table is 24 to 36 inches below the surface of the fill material for 2 to 4 months. It is below a depth of 60 inches during extended dry periods. The available water capacity is low. Permeability is estimated to be rapid.

Gasparilla Island State Park

Canaveral fine sand - This is a nearly level, moderately well drained and somewhat poorly drained soil on low ridges. Slopes are smooth to slightly convex and range from 0 to 2 percent. Typically, the surface layer is black and dark gray fine sand mixed with shell fragments and is about 15 inches thick. The underlying layers are light brownish gray and light gray fine sand mixed with shell fragments to a depth of 80 inches or more. Included with this soil are small areas of Captiva and Kesson soils. Included soils generally make up less than 10 percent of any mapped areas. In most years, under natural conditions, this soil has a water table depth of 18 to 40 inches for 2 to 6 months. The water table recedes to a depth of more than 40 inches during February through July. The available water capacity is very low. Natural fertility is low. Permeability is very rapid. Natural vegetation consists of cabbage palm, seagrape, wild coffee, and an understory of vines and weeds.

Captiva fine sand - This is nearly level, poorly drained soil in sloughs. Slopes are smooth to concave and range from 0 to 1 percent. Typically, the surface layer is black fine sand about 6 inches thick. The underlying layers are fine sand mixed with shell fragments to a depth of 80 inches or more. The upper 9 inches is pale brown with light gray streaks, the next 11 inches is light gray with many pale brown mottles, the next 4 inches is light gray with about 30 percent multicolored shell fragments, and the lower 50 inches is light gray. Included with this soil in mapping are small areas of Canaveral and Kesson soils. Also included are scattered areas of Captiva fine sand that is ponded and soils that are similar to Captiva soils but have more than 35 percent multicolored shell fragments larger than 2 millimeters

between depths of 10 and 40 inches. Included soils make up about 5 to 10 percent of any mapped area. In most years, under natural conditions, this soil has a water table within a depth of 10 inches for 1 to 2 months. The water table is at a depth of 10 to 40 inches for 10 months during most years. In some years, the soils are covered by standing water for several days. The available water capacity is low. Permeability is very rapid. Natural vegetation consists of cabbage palm, Brazilian pepper, sand cordgrass, leatherleaf fern, and waxmyrtle.

Wulfert Muck - This is a nearly level, very poorly drained soil in broad tidal swamps. Slopes are smooth and range from 0 to 1 percent. Typically, the surface layer is muck that is dark reddish brown to a depth of 12 inches and dark brown to a depth of 36 inches. Beneath the muck is gray fine sand with light gray streaks and about 10 percent shell fragments. Included with this soil in mapping, and making up about 15 percent of the mapping unit, are small areas of Kesson soils and soils similar to Wulfert soils, but with limestone at a depth of 20 to 40 inches. The water table fluctuates with the tide. Areas are subject to tidal flooding. The available water capacity is high in the organic horizons and low in the horizons below. Natural fertility is medium. Permeability is rapid. Natural vegetation consists of American mangrove, black mangrove, and needlegrass.

Kesson fine sand - This is a nearly level, very poorly drained soil in broad tidal swamps. Areas are subject to tidal flooding. Slopes are smooth and range from 0 to 1 percent. Typically, the surface layer is about 6 inches of sand that contains shell fragments. The underlying layers are fine sand that contains shell fragments, and they extend to a depth of 80 inches or more. The upper 4 inches is pale brown, the next 3 inches is light brown, the next 25 inches is light gray with dark gray streaks, and the lower 42 inches is white. Included with this soil in mapping are areas of Captiva and Wulfert soils and soils that have organic surface layers. Also included are soils that have loamy material throughout. Included soils make up about 10 to 15 percent of any mapped area. The water table fluctuates with the tide. The available water capacity is low. Natural fertility is low. Permeability is moderately rapid or rapid. Natural vegetation consists of black mangrove, batis, oxeye daisy, and American mangrove.

St. Augustine sand - This is a nearly level, somewhat poorly drained soil that was formed by earthmoving operations. Most areas are former sloughs and depressions or other low areas that have been filled with sandy material. Slopes are smooth to slightly convex and range from 0 to 2 percent. This soil has no definite horizonation because of mixing during reworking of the fill material. Typically, the upper 30 inches consists of mixed very dark grayish brown, very dark gray, dark gray, and gray sand with a few lenses of silt loam; it is about 20 percent multicolored shell fragments less than 3 inches in diameter. Below this to a depth of 80 inches or more there is undisturbed fine sand. The upper 10 inches is dark grayish brown with about 15 percent multicolored shell fragments. The lower 40 inches is light gray with about 30 percent multicolored shell fragments. Included with this soil in mapping are areas where the fill material is underlain by organic soils and other areas where the fill material is less than 20 inches thick. Also included are areas that contain lenses or pockets of organic material throughout the fill. In addition, there are small scattered areas where the fill material is more than 35 percent shells or shell fragments. Several areas with some urban development have been included. The depth to the water table varies with the amount of fill material and the extent of artificial drainage. However, in most years, the water table is 24 to 36 inches below the surface of the fill material for 2-4 months. It is below a depth of 60 inches during extended dry periods. The available water capacity is low. Permeability is estimated to be rapid. Natural fertility is low. Most of the natural vegetation has been removed. The

present vegetation consists of cabbage palm and various scattered weeds. This soil is poorly suited to most plants unless topsoil is spread over the surface to make a suitable root zone. This soil has severe limitations for most urban and recreational uses. The sandy nature of the fill material, the high water table, and rapid permeability can cause pollution of ground water in areas with septic tank adsorption fields. This St. Augustine soil is in capability subclass VIIc.

Cayo Costa State Park

Canaveral fine sand - This is a nearly level, moderately well drained and somewhat poorly drained soil on low ridges. Slopes are smooth to slightly convex and range from 0 to 2 percent. Typically, the surface layer is black and dark gray fine sand mixed with shell fragments and is about 15 inches thick. The underlying layers are light brownish gray and light gray fine sand mixed with shell fragments to a depth of 80 inches or more. Included with this soil are small areas of Captiva and Kesson soils. Included soils generally make up less than 10 percent of any mapped areas. In most years, under natural conditions, this soil has a water table depth of 18 to 40 inches for 2 to 6 months. The water table recedes to a depth of more than 40 inches during February through July. The available water capacity is very low. Natural fertility is low. Permeability is very rapid. Natural vegetation consists of cabbage palm, seagrape, wild coffee, and an understory of vines and weeds.

Captiva fine sand - This is nearly level, poorly drained soil in sloughs. Slopes are smooth to concave and range from 0 to 1 percent. Typically, the surface layer is black fine sand about 6 inches thick. The underlying layers are fine sand mixed with shell fragments to a depth of 80 inches or more. The upper 9 inches is pale brown with light gray streaks, the next 11 inches is light gray with many pale brown mottles, the next 4 inches is light gray with about 30 percent multicolored shell fragments, and the lower 50 inches is light gray. Included with this soil in mapping are small areas of Canaveral and Kesson soils. Also included are scattered areas of Captiva fine sand that is ponded and soils that are similar to Captiva soils but have more than 35 percent multicolored shell fragments larger than 2 millimeters between depths of 10 and 40 inches. Included soils make up about 5 to 10 percent of any mapped area. In most years, under natural conditions, this soil has a water table within a depth of 10 inches for 1 to 2 months. The water table is at a depth of 10 to 40 inches for 10 months during most years. In some years, the soils are covered by standing water for several days. The available water capacity is low. Permeability is very rapid. Natural vegetation consists of cabbage palm, Brazilian pepper, sand cordgrass, leather fern, and wax myrtle.

Beaches - Beaches consist of narrow strips of nearly level, mixed sand and shell fragments along the Gulf of Mexico. These areas are covered with saltwater at daily high tides. The areas are subject to movement by the wind and tide and are bare of vegetation in most places. The only vegetation is salt-tolerant plants. Beaches are geographically associated with Canaveral soils. Beaches are used intensively for recreation during the entire year. Homes, condominiums, beach cottages and motels have been built on the fringes of beaches in many places.

Wulfert Muck - This is a nearly level, very poorly drained soil in broad tidal swamps. Slopes are smooth and range from 0 to 1 percent. Typically, the surface layer is muck that is dark reddish brown to a depth of 12 inches and dark brown to a depth of 36 inches. Beneath the muck is gray fine sand with light gray streaks and about 10 percent shell fragments. Included with this soil in mapping, and making up about 15 percent of the mapping unit, are small areas of Kesson soils and soils similar to Wulfert soils, but with

limestone at a depth of 20 to 40 inches. The water table fluctuates with the tide. Areas are subject to tidal flooding. The available water capacity is high in the organic horizons and low in the horizons below. Natural fertility is medium. Permeability is rapid. Natural vegetation consists of American mangrove, black mangrove, and needlegrass.

Kesson fine sand - This is a nearly level, very poorly drained soil in broad tidal swamps. Areas are subject to tidal flooding. Slopes are smooth and range from 0 to 1 percent. Typically, the surface layer is about 6 inches of sand that contains shell fragments. The underlying layers are fine sand that contains shell fragments, and they extend to a depth of 80 inches or more. The upper 4 inches is pale brown, the next 3 inches is light brown, the next 25 inches is light gray with dark gray streaks, and the lower 42 inches is white. Included with this soil in mapping are areas of Captiva and Wulfert soils and soils that have organic surface layers. Also included are soils that have loamy material throughout. Included soils make up about 10 to 15 percent of any mapped area. The water table fluctuates with the tide. The available water capacity is low. Natural fertility is low. Permeability is moderately rapid or rapid. Natural vegetation consists of black mangrove, batis, oxeeye daisy, and American mangrove.

St. Augustine sand - This is a nearly level, somewhat poorly drained soil that was formed by earthmoving operations. Most areas are former sloughs and depressions or other low areas that have been filled with sandy material. Slopes are smooth to slightly convex and range from 0 to 2 percent. This soil has no definite horizonation because of mixing during reworking of the fill material. Typically, the upper 30 inches consists of mixed very dark grayish brown, very dark gray, dark gray, and gray sand with a few lenses of silt loam; it is about 20 percent multicolored shell fragments less than 3 inches in diameter. Below this to a depth of 80 inches or more there is undisturbed fine sand. The upper 10 inches is dark grayish brown with about 15 percent multicolored shell fragments. The lower 40 inches is light gray with about 30 percent multicolored shell fragments. Included with this soil in mapping are areas where the fill material is underlain by organic soils and other areas where the fill material is less than 20 inches thick. Also included are areas that contain lenses or pockets of organic material throughout the fill. In addition, there are small scattered areas where the fill material is more than 35 percent shells or shell fragments. Several areas with some urban development have been included. The depth to the water table varies with the amount of fill material and the extent of artificial drainage. However, in most years, the water table is 24 to 36 inches below the surface of the fill material for 2-4 months. It is below a depth of 60 inches during extended dry periods. The available water capacity is low. Permeability is estimated to be rapid. Natural fertility is low. Most of the natural vegetation has been removed. The present vegetation consists of cabbage palm and various scattered weeds. This soil is poorly suited to most plants unless topsoil is spread over the surface to make a suitable root zone. This soil has severe limitations for most urban and recreational uses. The sandy nature of the fill material, the high water table, and rapid permeability can cause pollution of ground water in areas with septic tank adsorption fields. This St. Augustine soil is in capability subclass VIIc.