CITY OF savannah

DRAFT Version

Natural Floodplain Protection Plan

Savannah, GA

July 2015

FEMA

GEORGIA EMERGENCY MANAGEMENT HOMELAND SECURITY

amec foster wheeler

INTRODUCTION

Floodplains are areas adjacent to rivers, ponds, lakes, and oceans that are periodically flooded at different points in time. Floodplains are hydrologically important, environmentally sensitive, and ecologically productive areas that perform many natural functions. They contain both cultural and natural resources that are of great value to society. Flooding occurs naturally along every river and coastal areas. Flood waters can carry nutrient-rich sediments which contribute to a fertile environment for vegetation. Floodplains are beneficial for wildlife by creating a variety of habitats for fish and other animals. In addition, floodplains are important because of storage and conveyance, protection of water quality, and recharge of groundwater.

These natural processes influence human activities and are, in turn, affected by our activities. They represent important natural functions and beneficial resources and provide both opportunities and limitations for particular uses and activities. Traditionally, while much attention has been focused on the hazards associated with flooding and floodplains, less attention has been directed toward the natural and cultural resources of floodplains or to evaluation of the full social and economic returns from floodplain use. The natural and cultural values associated with floodplain resources can be categorized in a variety of ways. Floodplain values can be thought of in terms of environmental quality values such as fish and wildlife habitat and water quality. They can also be thought of in terms of socioeconomic values, which are more easily understood by some because these values provide either dollar savings (related to flood and storm damage protection, for example) or financial profit (related to increased production from floodplain use). A document initially prepared by the U.S. Water Resources Council in 1979 titled *A Unified National Program for Floodplain Management* divides riverine and coastal floodplain resources into three categories: 1) water resources, 2) living resources (habitat), and 3) cultural resources.

Humans have always been attracted to floodplains because of their many sustaining attributes. Human development and industrialization take a toll on the natural functions of the floodplains. Development in the floodplains causes decreases in water quality, loss of wildlife habitats, and an increase in severity and frequency of flood losses. In many cases, the communities responsible for decisions about growth, development, and flood protection do not understand the natural processes that take place in riverine and coastal areas and lack adequate tools to deal with the flooding issues they face. Floodplain management decisions often are made outside of the context of regional or watershed-level planning and without appreciation of the complexities of the water-based ecosystem.

Understanding the importance of maintaining the natural functions of floodplains can lead to better floodplain management approaches that will better protect the natural and beneficial functions of floodplains. The goal of this plan is to aid in the understanding of floodplain natural resources and functions and to examine strategies and tools to protect, preserve and/or restore these resources.

TABLE OF CONTENTS

Chapters

List of Tables

List of Figures

1 PURPOSE & BACKGROUND

The City of Savannah currently participates in the National Flood Insurance Program's (NFIP) Community Rating System (CRS), and qualifies for a Class 6 Rating. The CRS recognizes and encourages community floodplain management activities that exceed the minimum standards. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that (1) reduce flood losses, (2) facilitate accurate insurance ratings, and (3) promote the awareness of flood insurance. Through the City's participation in the NFIP and a Class 6 rating with the CRS, owners of properties in the City's Special Flood Hazard Area (SFHA) are entitled to a 20% discount on their flood insurance premiums. In addition, homeowners in non SFHA's receive a 10% discount on flood insurance premiums.

The CRS encourages communities to implement effective floodplain management activities, including those intended to improve natural floodplain functions. The current definition of "natural floodplain functions" in the CRS Glossary (Section 120) reads:

a. The functions associated with the natural or relatively undisturbed floodplain that moderate flooding, retain flood waters, reduce erosion and sedimentation, and mitigate the effects of waves and storm surges from storms; and

b. Other significant beneficial functions, which include maintenance of water quality, recharge of groundwater, and provision of fish and wildlife habitat.

The CRS is primarily concerned with reducing flood losses to insurable buildings and there are several reasons why protecting natural floodplain functions supports that goal, including studies showing that natural floodplain features can be more effective at controlling or attenuating flooding and can be less expensive over the long run than traditional human-made flood control structures. Therefore, there is a direct, supportive relationship between protecting natural floodplain functions and the CRS's goal of reducing flood losses to insurable buildings. Natural floodplain functions are not limited to locations in the mapped floodplain. Floodwaters come from the watershed and there are many watershed features and functions that affect flooding and water quality. The goal of this plan is to aid in the understanding of floodplain natural resources and functions and to examine strategies and tools to protect, preserve and/or restore these resources. **This plan covers the entire City of Savannah including the special flood hazard areas.**

Natural Floodplain Functions

Water Resources

Natural Flood and Erosion Control
-Provide flood storage and conveyance
-Reduce flood velocities
-Reduce peak flows
-Reduce sedimentation

Water Quality Maintenance
-Filter nutrients and impurities from runoff
-Process organic wastes
-Moderate temperature fluctuations

Groundwater Recharge
-Promote infiltration and aquifer recharge
-Reduce frequency and duration of low surface flows

Biological Resources

Biological Productivity
-Rich alluvial soils promote vegetative growth
-Maintain biodiversity
-Maintain integrity of ecosystems

Fish and Wildlife Habitats
-Provide breeding and feeding grounds
-Create and enhance waterfowl habitat
-Protect habitats for rare and endangered species

-A Unified National Program for Floodplain Management, 1994

2 NATURAL AND BENEFICIAL FLOODPLAIN RESOURCES AND FUNCTIONS

Undeveloped floodplain land provides many natural resources and functions of considerable economic, social, and environmental value. A fairly well accepted (but not necessarily comprehensive) list and descriptions follows. The resources and functions have been loosely grouped into two categories, and the categories have been labeled according to the primary recipient of the benefit or its relationship to a larger system. "Water resources" include those resources and functions of floodplains that are part of or provide a benefit to the hydrologic cycles on the earth's surface and sub-surface, including natural moderation of floods, water quality maintenance, and groundwater recharge. "Biologic resources" are floodplain resources and functions that benefit large and diverse populations of plants and animals.

Water Resources

Natural Flood Storage and Erosion Control

The characteristics of the floodplain and of flooding are essentially interdependent. Floods shape floodplain topography and soils and influence ecology. In turn, the physical characteristics of the floodplain shape flood flows. Floodplains provide a broad area to spread out and temporarily store stormwater from rain events. This reduces flood peaks and velocities and the potential for erosion. Flood storage is particularly important in urbanized areas where even small floods resulting from heavy rainstorms can cause severe flood damage. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Vegetation also reduces shoreline erosion. In coastal areas, beaches, bars, dunes, and wetlands act as natural barriers to dissipate waves and protect back-lying areas from flooding and erosion.

Water Quality Maintenance

Floodplains serve important functions in protecting water quality. Water that runs off quickly over the surface, as over a barren floodplain, is capable of carrying with it large amounts of sediment and debris to the main water body. Vegetated floodplains have important filtering capabilities for slowing and intercepting surface-water runoff from higher dry land before the runoff reaches open water. As the runoff water passes through, the floodplains retain excess nutrients and some pollutants, and reduce sediment that would clog waterways and affect fish and amphibian egg development. Another example of water quality maintenance is the beneficial shading effect of riparian (streambank) vegetation, which helps to avoid temperature stress on natural biota. Natural floodplain systems can further serve to reduce or avoid the environmental and economic costs associated with wastewater treatment and water quality maintenance.

Groundwater Recharge

In addition to improving water quality through filtering, some floodplains maintain stream flow during dry periods, and many replenish groundwater. The slowing of runoff across the floodplain allows additional time for the runoff to infiltrate and recharge available groundwater aquifers, when there is unused storage capacity. The slowing of runoff provides the additional benefit of natural purification of water as local runoff or overbank floodwater infiltrates through the floodplain alluvium. Natural purification comes from filtration, ion exchange, adsorption, absorption, and aerobic and anaerobic biological action.

Biological Resources

Biological Productivity

The nation's coastal and riverine floodplains support large and diverse populations of plants and animals. In addition, they provide habitat and critical sources of energy and nutrients for organisms in adjacent and downstream terrestrial and aquatic ecosystems. The wide variety of plants and animals supported directly or indirectly by floodplains constitutes an extremely valuable, renewable resource important to economic welfare, enjoyment, and physical well-being. The floodplain is biologically important because it is the place where land and water meet and the elements of both terrestrial and aquatic ecosystems mix. Riparian floodplain ecosystems are distinct associations of soil, flora and fauna occurring along a river, stream, or other body of water and depend for survival upon high water tables and occasional flooding.

Fish and Wildlife Habitats

Due to the abundance of water and vegetation, floodplains provide wetland, riparian and other habitat (including shelter and food sources) for large and diverse populations of fish and wildlife species. More than one-third of the United States' threatened and endangered species live only in wetlands, and nearly half use wetlands at some point in their lives. Many other animals and plants depend on wetlands for survival.

Estuarine and marine fish and shellfish, various birds, and certain mammals must have coastal wetlands to survive. Most commercial and game fish breed and raise their young in coastal marshes and estuaries. Menhaden, flounder, sea trout, spot, croaker, and striped bass are among the more familiar fish that depend on coastal wetlands. Shrimp, oysters, clams, and blue and Dungeness crabs likewise need these wetlands for food, shelter, and breeding grounds.

For many animals and plants, like wood ducks, muskrat, cattails, and swamp rose, inland wetlands are the only places they can live. Beaver may actually create their own wetlands. For others, such as striped bass, peregrine falcon, otter, black bear, raccoon, and deer, wetlands provide important food, water, or shelter. Many of the U.S. breeding bird populations-- including ducks, geese, woodpeckers, hawks, wading birds, and many song-birds-- feed, nest, and raise their young in wetlands. Migratory waterfowl use coastal and inland wetlands as resting, feeding, breeding, or nesting grounds for at least part of the year. Indeed, an international agreement to protect wetlands of international importance was developed because some species of migratory birds are completely dependent on certain wetlands and would become extinct if those wetlands were destroyed.

3 NATURAL RESOURCE INVENTORY

Under natural conditions, a flood causes little or no damage in floodplains. Nature ensures that floodplain flora and fauna can survive the more frequent inundations. This is the case with Savannah's local marshes. They are flooded daily during high tide and yet life exists without damaging the environment. Historic floodplain areas are canals, and green spaces such as the Henderson and Bacon Park Golf Course and Lake Mayer. Such areas reduce flood damage by allowing flood waters to spread over a large area. This reduces flood velocities and provides flood storage to reduce peak flows downstream. Natural and historic floodplains reduce wind and wave impacts and their vegetation stabilizes soils during flooding.

Chatham County and the City of Savannah have barrier islands such as Little Tybee, Ossabaw, Cabbage and Wassaw Islands. These islands serve as a natural protective barrier to forces from incoming storms such as wave attack, and serve to reduce tidal and wind energies. These islands serve as natural aquatic habitats, wetlands, marshes and estuaries.

Floodplains

The area adjacent to a channel is the floodplain, as shown in Figure 3.1. A floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood, but which do not experience a strong current. Floodplains are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. When this occurs, sediments (including rocks and debris) are deposited that gradually build up over time to create the floor of the floodplain. Floodplains generally contain unconsolidated sediments, often extending below the bed of the stream.

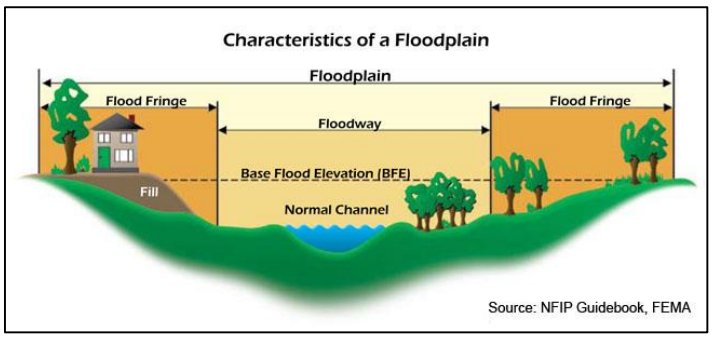


Figure 3.1 - Characteristics of a Floodplain

In its common usage, the floodplain most often refers to the area that is inundated by the 100-year flood, the flood that has a 1% chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). The 500-year flood is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the

floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

Figure 3.2 reflects the mapped flood insurance zones for the City of Savannah. The southern portion of the City is comprised of Zone VE and Zone AE SFHAs with small areas of Zone X (500-yr). The central and northern portions of the City are comprised primarily of Zone AE and Zone X (unshaded) with small areas of Zone A and Zone X (500-yr). A summary of acreage by flood zone is as follows: Zone VE (10,795 Acres); Zone AE (13,223 Acres); Zone AH (1.8 Acres); Zone A (1,441 Acres); Zone X 500-yr (2,612 Acres); and Zone X unshaded (24,915 Acres). Forty-eight percent of the City of Savannah's political area lies within a 100-year floodplain; an additional 5% lies of the political area lies within the 500-year floodplain.

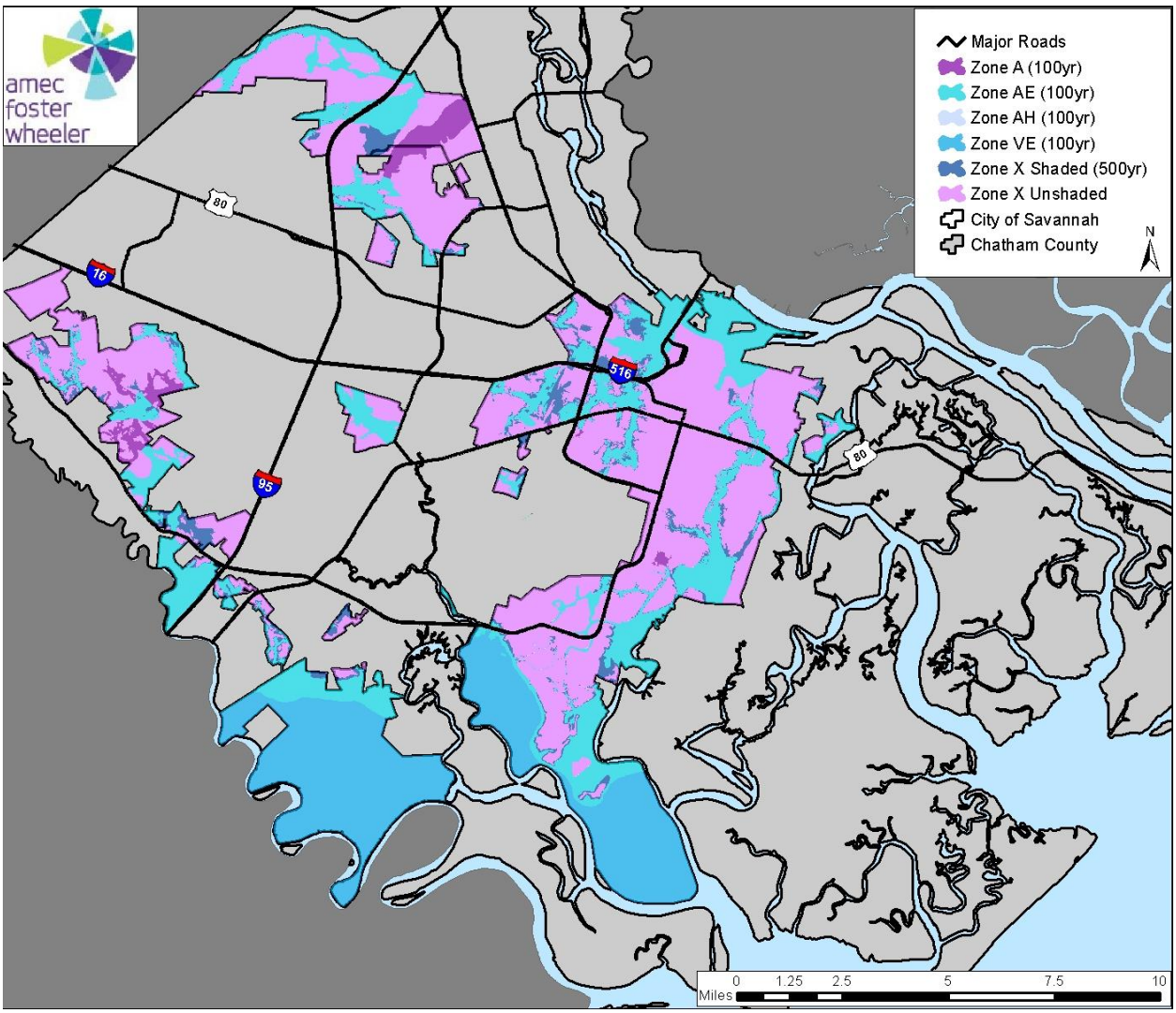


Figure 3.2 - City of Savannah 100-yr Floodplains

Wetlands

The benefits of wetlands are hard to overestimate. They provide critical habitat for many plant and animal species that could not survive in other habitats. They are also critical for water management as they absorb and store vast quantities of storm water, helping reduce floods and recharge aquifers. Not only do wetlands store water like sponges, they also filter and clean water as well, absorbing toxins and other pollutants. Wetlands are often found in floodplains and topographically depressed areas of a watershed.

Coastal Wetland

Source: OgeeCheeriverkeeper.org

The coast of Georgia comprises a vast array of wetlands ranging from freshwater non-tidal and tidal wetlands to estuarine wetlands, or saltmarshes. With approximately 100 linear miles of coastline, Georgia boasts approximately 348,000 acres of estuarine tidal marsh. These marshes are ecologically significant as habitat for aquatic organisms, including fish, shellfish, waterfowl, and other wildlife species. In addition to serving as habitat for specific organisms, saltmarshes also function as feeding grounds for terrestrial vertebrates, as a buffer to protect against coastal storm surge, and as a natural filtration system to improve water quality, transform nutrients and retain sediment. Table 3.1 and Figure 3.3 detail the types and acreage of wetlands that exist within the City of Savannah.

Table 3.1 - City of Savannah Wetland Acreage

Wetland Type	Acreage
Freshwater Forested/Shrub Wetland	7,747
Freshwater Emergent Wetland	855
Lake	250
Freshwater Pond	605
Estuarine and Marine Wetland	10,887
Riverine	43
Estuarine and Marine Deepwater	3,173

Source: USFWS National Wetlands Inventory, October 2014

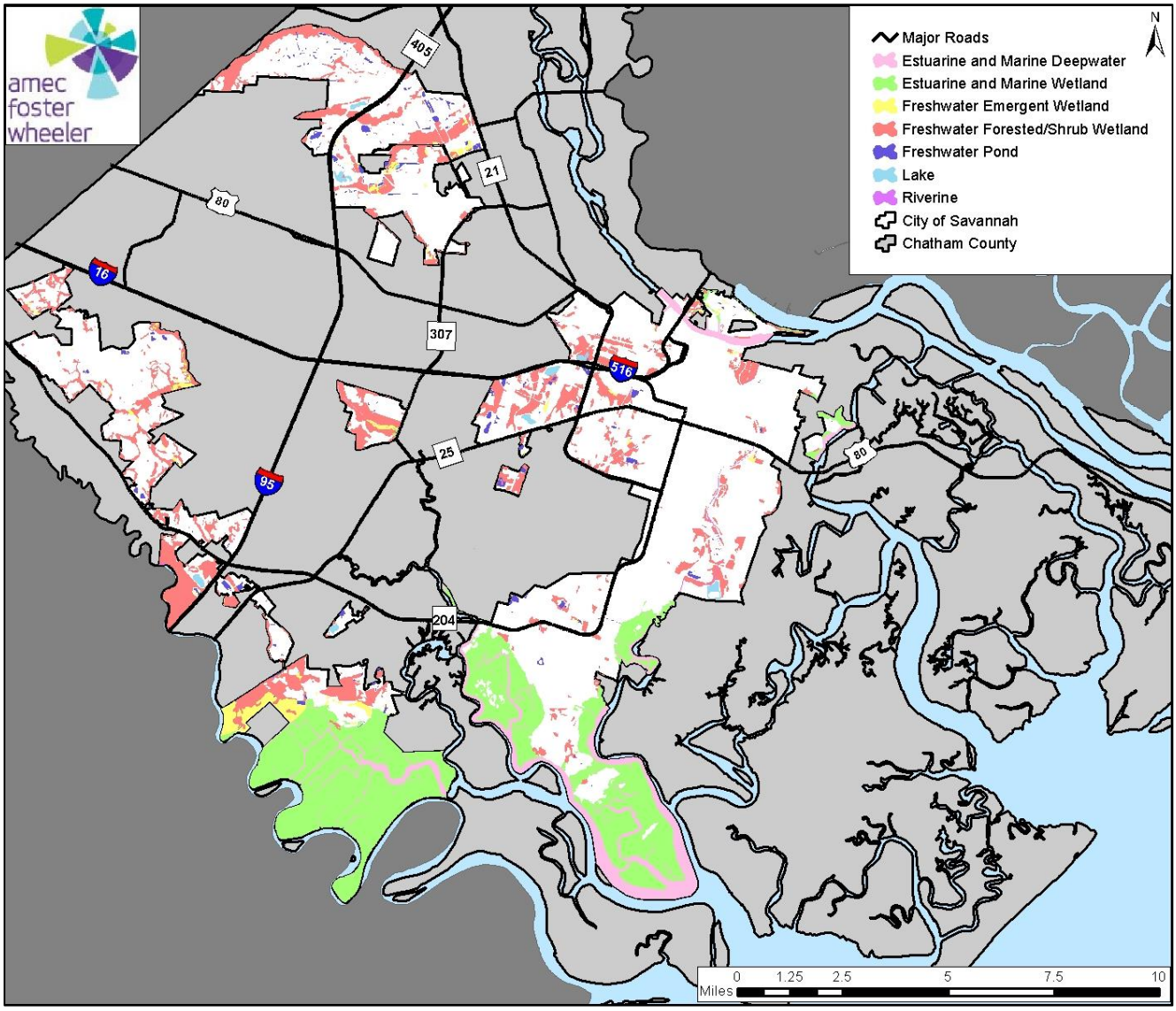


Figure 3.3 - City of Savannah Wetlands

Water Features

A stream can be defined as a body of concentrated flowing water in a natural low area or natural channel on the land surface. There are three stream types: ephemeral, intermittent, and perennial.

Ephemeral streams are features that only carry stormwater in direct response to precipitation. They may have a well-defined channel and they typically lack the biological, hydrological, and physical characteristics commonly associated with intermittent or continuous conveyances of water. These features are typically not regulated.

Intermittent streams have a well-defined channel that contains water for only part of the year (typically during winter and spring). The flow may be heavily supplemented by stormwater. When dry, they

typically lack the biological and hydrological characteristics commonly associated with continuous conveyances of water. These features are typically regulated by State and Federal agencies.

Perennial streams have a well-defined channel that contains water year round during a year with normal rainfall. Groundwater is the primary source of water, but they also carry stormwater. They exhibit the typical biological, hydrological, and physical characteristics commonly associated with the continuous conveyance of water. These features are regulated by State and Federal agencies.

Perennial and intermittent watercourses are typically identified through site inspection and US Geological Survey (USGS) maps. Perennial streams are those which are depicted on a USGS map with a solid blue line. Intermittent streams are those which are depicted on a USGS map with a dotted blue line. The USGS map for the City of Savannah is shown below in Figure 3.4.

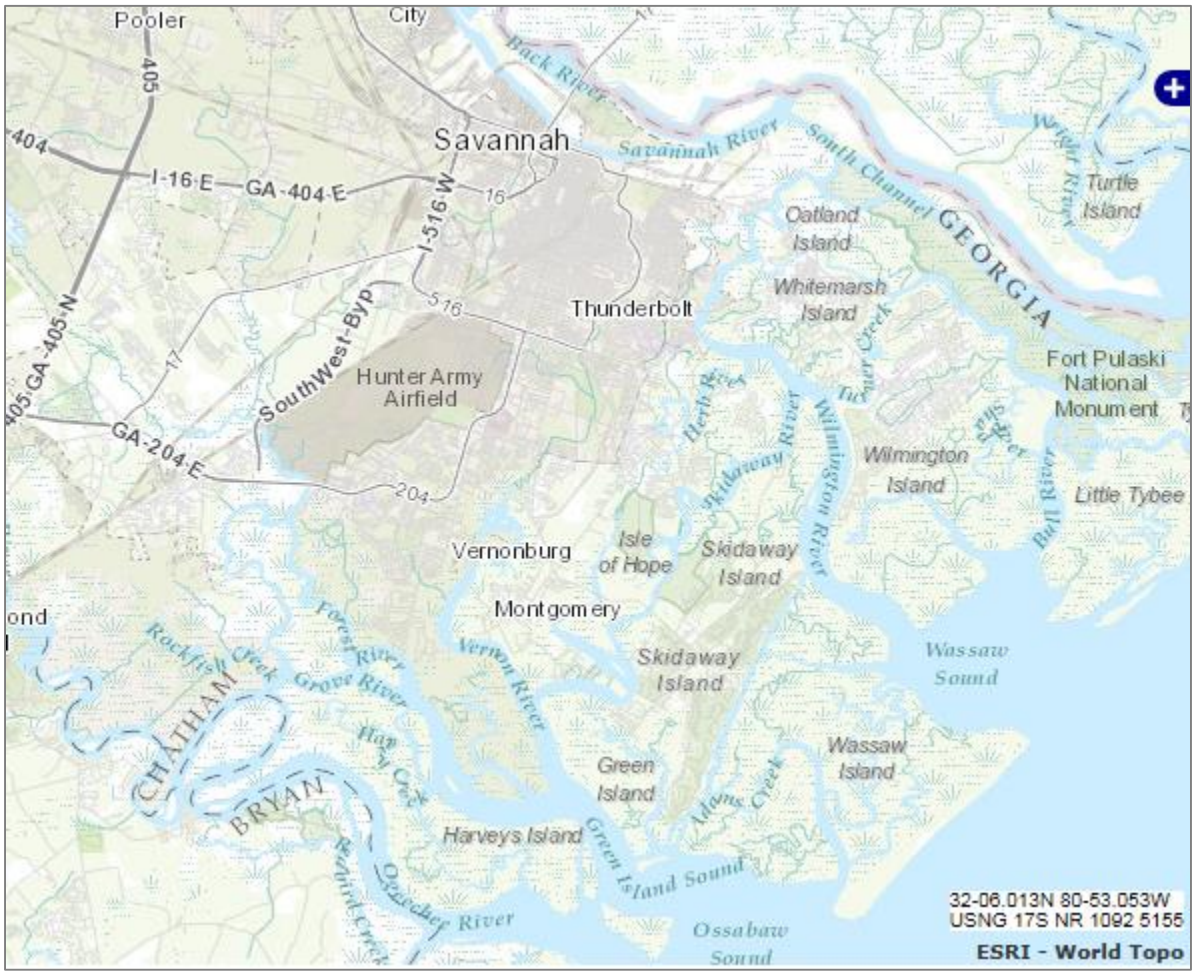


Figure 3.4 - USGS Topography Map

Parks

The City of Savannah operates and maintains a variety of park properties and recreational facilities. The majority of property (462.9 acres) in the recreation system is owned or co-owned by the City; the balance (40.7 acres) is owned by other entities but is used by the Parks and Recreations Services Department to provide recreation facilities and programs for Savannah residents.

There are 81 parks currently operated and maintained by Savannah's Parks and Recreation Services Department (see Table 3.2 and Figure 3.5). The parks are classified as follows: pocket parks (28), neighborhood parks (25) community parks (2), athletic complexes (3), special use areas (6) greenway/ linear parks (5), regional/large urban parks (1), indoor facilities (8) and school recreation areas (3).

Table 3.2 provides a summary of parks and associated facilities operated and maintained by the Parks and Recreation Services Department. All listed parks are owned by the City of Savannah, with the exception of those marked with an asterisk (*), which indicates the property is either leased to the City or owned by Chatham County, the Savannah-Chatham County Public School System, or the Housing Authority of Savannah.

Table 3.2 - Savannah Park and Facility Inventory

Park	Location	Acres	Facilities (includes number of each type)	Classification
38TH STREET PARK	712 E 38th St	0.3	Playground (1) Spray Pool (1) Picnic Area (2)	Pocket Park
ACL BOULEVARD*	4034 ACL Blvd	14	Ballfield (1) Picnic Area (2)	Neighborhood Park
ALPINE	109 Alpine Dr	1	Playground (1) Picnic Area (2)	Pocket Park
AVONDALE PARK	Texas/Ohio Ave	1.2	Playground (1) Ballfield (1) Picnic Areas (2) Spray Pool (1)	Neighborhood Park
BACON PARK FOREST	Skidaway Rd/Bacon Pk Dr	53	Leisure Trails (1.1 mi.)	Special Use Area
BACON PARK TENNIS	6400 Skidaway Rd	7.5	Tennis Courts (16)	Special Use Area
BALDWIN	E. 41st/Atlantic Ave	1.5	Playground (1)	Pocket Park
BARJAN TERRACE	5600 Emory Dr	1.7	Playground (1) Picnic Areas (2) Multi-Purpose Field (1)	Neighborhood Park

Park	Location	Acres	Facilities (includes number of each type)	Classification
BLACKSHEAR	Wheaton/Dundee St	2.8	Playground (1) Basketball Courts (6) Spray Pool (1) Picnic Areas (3)	Neighborhood Park
BOAEN	1224 W 52nd St (Mills B Lane)	1.2	Open Space	Greenway/ Linear Park
BRYAN, CHARLIE S	128 King/Darling St	1	Playground (1) Basketball Court (1) Picnic Areas (2)	Pocket Park
CANN	800 46th St/Bulloch St	2.5	Playground (1) Basketball Courts (2) Ballfield (1) Picnic Areas (3)	Neighborhood Park
CARVER VILLAGE	Winburn/1000 Bowden St	1	Playground (1) Basketball Courts (2) Multi-Purpose Field (1) Picnic Areas (2)	Pocket Park
CEDAR GROVE	13317 Chesterfield	2	Leisure Trail (0.25 mi.)	Pocket Park
CLARK, BEN	Park Ave, Live Oak St	1.6	Playground (1) Picnic Areas (3) Basketball Courts (2)	Neighborhood Park
CLOVERDALE	Ryals Ave/Eleanor St	5	Playground (1) Basketball Courts (2) Tennis Courts (2) Ballfield (1) Neighborhood Ctr (1)	Neighborhood Park
COFFEE BLUFF MARINA	14915 Coffee Bluff Rd	2.1	Playground (1) Picnic Area (1) Fishing Pier Boat Launch Hoist	Special Use Area
CRAWFORD SQUARE	Perry/Houston St	0.6	Basketball Court (1) Picnic Areas (2)	Pocket Park
CROSSROAD VILLA	401 W Montgomery Cross Rd	0.6	Playground (1) Picnic Areas (2)	Pocket Park

Park	Location	Acres	Facilities (includes number of each type)	Classification
CRUSADER	89 Coffee Bluff Villa Rd	3.7	Playground (1) Basketball Court (1) Ballfield (1) Neighborhood Ctr (1) Golden Age Ctr (1) Picnic Areas (2)	Neighborhood Park
CUYLER PARK*	1801 Burroughs St	0.5	Open Space	Pocket Park
DAFFIN	1 Waring Drive S Victory Dr/Washington Ave/Bee Rd	77	Playground (1) Basketball Courts (2) Multi-Purpose Field (8) Tennis Courts (9) Volleyball Court (1) Swimming Pool (1) Leisure Trail (1.5 mi.) Picnic Areas (18) Lake/Pavilion (1)	Regional/ Large Urban Park
DAVANT	Lincoln St/201 E Perry Ln	0.6	Playground (1) Picnic Area (1)	Pocket Park
DELAWARE	35th St/Lincoln St	1.2	Regional Center (1) Swimming Pool (1)	Indoor Facility
DIXON	East Broad/Henry St	0.1	Playground (1) Picnic Areas (2)	Pocket Park
EASTSIDE*	409 Goebel Ave/Elgin St Shuman Elementary School	0.5	Swimming Pool (1) Regional Center (1) Golden Age Center (1)	Indoor Facility
FELLWOOD*	Richards/117 West St	1	Playground (1) Picnic Areas (2)	Pocket Park
FERNWOOD/ PARKWOOD	2238 N. Fernwood Dr	6.4	Leisure Trail (0.2 mi.)	Greenway/ Linear Park
FLOURNOY, MARY C	1001 W 39th St	0.8	Golden Age Center (1)	Indoor Facility
FORD, BOWLES	Cloverdale/Stiles Avenue	17	Playground (1) Swimming Pool (1) Leisure Trail (0.7 mi.) Pavilion (1) Picnic Areas (2) Fishing Lake	Neighborhood Park

Park	Location	Acres	Facilities (includes number of each type)	Classification
FORREST HILLS	Skidway/Berkshire Rd	7.2	Playground (1) Tennis Courts (2) Spray Pool (1) Picnic Area (2)	Neighborhood Park
FORSYTH	Drayton St/Gaston St/Whitaker St/E.Park Ave	19	Playground (1) Basketball Courts (2) Ballfield (2) Multi-Purpose Fields (2) Tennis Courts (4) Spray Pool (1) Leisure Trail (1.1 mi.)	Community Park
GRANT	1315 Richards St	1.2	Regional Center (1)	Indoor Facility
GRAY, REBECCA (HUDSON HILL)	W Lathrop/2227 Hudson Ave	8.7	Playground (1) Basketball Courts (2) Ballfield (1) Spray Pool (1) Neighborhood Center/ Golden Age Center (1) Picnic Areas (2)	Neighborhood Park
HABERSHAM	Habersham/Groveland	3.7	Open Space	Greenway/ Linear Park
HITCH	W. 56th St & Boyd St	2.3	Playground (1) Basketball Court (1) Picnic Areas (2)	Neighborhood Park
HULL	55th/Atlantic Ave	2.8	Playground (1) Ballfield (1) Picnic Areas (4) Spray Pool (1)	Neighborhood Park
JACKSON, MOSES	1410 Richards St	0.5	Community Resource Center (1)	Indoor Facility
JEFFERSON STREET	439 Jefferson St/Wayne St	0.1	Playground (1)	Pocket Park
JENKINS*	1800 E DeRenne Ave	0.5	Swimming Pool (1)	Special Use Area

Park	Location	Acres	Facilities (includes number of each type)	Classification
KENNEDY (CARVER HEIGHTS)	905 Collat Ave/Gwinnett St	6.2	Playground (1) Basketball Courts (2) Ballfield (1) Tennis Courts (2) Neighborhood Ctr (1) Golden Age Ctr (1) Picnic Areas (2)	Neighborhood Park
LAMARA HEIGHTS	Atlantic/417 E 66th St	0.9	Playground (1)	Pocket Park
LAW, W.W.	Harmon/900 E Bolton St	1.2	Playground (1) Regional Center (1) Swimming Pool (1)	Neighborhood Park
LIBERTY CITY	1401 Mills B Lane Blvd	7.3	Neighborhood Ctr (1) Golden Age Ctr (1) Picnic Area (1) Leisure Trail (0.3 mi.) Lake	Neighborhood Park
MAGNOLIA	Bacon Pk Dr/Morgan St	2.2	Playground (1)	Pocket Park
MAYFAIR*	1462 Dale Dr	0.6	Playground (1) Basketball Court (1) Picnic Areas (2)	Pocket Park
MINICK, GUY COMPLEX	Eisenhower/7200 Sallie Mood	14	Playground (1) Ballfields (4) Refreshment Building/Restrooms	Athletic Complex
MOHAWK LAKE	1132/1134 Mohawk St	29	Lake	Special Use Area
OGEECHEETON	2828 Pate St/ Dempsey Ave	0.5	Playground (1) Basketball Court (1)	Pocket Park
PAULSON, ALLEN SOFTBALL COMPLEX	7171 Skidaway Rd/Scott Dr	25	Ballfields (5) Picnic Areas (1)	Athletic Complex
RIVER'S END	8714 Hurst Ave/Rivers End Dr.	0.5	Playground (1)	Pocket Park
ROBINSON, R	Pendleton/Meadows St	5	Playground (1) Basketball Courts (1) Picnic Areas (2)	Neighborhood Park
ROSS, WILLIE C.*	1804 Stratford St	3.6	Playground (1) Swimming Pool (1) Picnic Area (2)	Neighborhood Park

Park	Location	Acres	Facilities (includes number of each type)	Classification
SAVANNAH GARDENS	516 Pennsylvania Ave	2	Playground (1) Spray Pool (1) Picnic Area (1)	Neighborhood Park
SCARBOROUGH, WILLIAM COMPLEX	Skidaway Rd/Bacon Pk Dr	7.5	Ballfields (3) Multi-Purpose Field (1)	Athletic Complex
SOLDIERS FIELD (PAULSON)	Paulson/700 Joe St	3	Playground (1) Ballfield (1) Spray Pool (1) Picnic Areas (2)	Neighborhood Park
STALEY HEIGHTS	Dillon Ave/600 Sherman St	3.2	Playground (1) Basketball Courts (2) Multi-Purpose Field (1) Swimming Pool (1) Picnic Areas (3)	Neighborhood Park
STILLWELL TOWERS*	5100 Waters Ave	N/A	Golden Age Center (1)	Indoor Facility
SUMMERSIDE	4113 Clinch St	0.3	Playground (1) Basketball Court (1) Picnic Area (1)	Pocket Park
SUNSET	2500 Sunset Blvd	3.9	Playground (1) Basketball Court (1) Picnic Areas (4) Leisure Trail (0.3 mile)	Neighborhood Park
SUSTAINABLE FELLWOOD*	S. Carolan St/Kenneth Dunham St/Fellwood	1.8	Playground (1) Picnic Area (1)	Pocket Park
TATEMVILLE	333 Coleman St	41	Playground (1) Basketball Court (1) Neighborhood Ctr (1) Golden Age Ctr (1) Leisure Trail (0.8 mi.) Pavilion (1) Picnic Areas (4)	Community Park
THOMAS	36th/Bull St	1.3	Picnic Area (1)	Pocket Park
TOMPKINS	39th St/Ogeechee Rd	3.9	Playground (1) Regional Center (1) Swimming Pool (1) Picnic Areas (2)	Neighborhood Park
TREAT	Treat Ave/Gable St	0.3	Playground (1) Picnic Area (1)	Pocket Park

Park	Location	Acres	Facilities (includes number of each type)	Classification
TREMONT PARK	Plymouth Ave/Comet	1.7	Playground (1)	Pocket Park
TREMONT CENTER	2015 Paige Ave	0.5	Basketball Court (1) Neighborhood Ctr (1)	Neighborhood Park
TRIBBLE LAKE	12519 Largo	51	Leisure Trail (0.6 mi.) Picnic Area (1)	Special Use Area
VERANDA*	1414 E. Anderson	1	Golden Age Center (1)	Indoor Facility
VERNON RIVER	13710 Coffee Bluff	10	Open Space	Greenway/ Linear Park
VICTORY HEIGHTS	2200 E 42nd St/Raskin Ave	1	Playground (1) Spray Pool (1) Picnic Areas (3)	Pocket Park
WELLS	38th St/MLK Blvd	1.4	Playground (1) Picnic Areas (2) Basketball Court (1)	Neighborhood Park
WESSELS, FRED*	East Broad/Henry St	0.5	Playground (1) Basketball Courts (2) Picnic Areas (2)	Pocket Park
WESTSIDE	Damon/Rogers/Carolan St	0.9	Playground (1) Basketball Courts (2) Picnic Areas (2)	Pocket Park
WHITE BLUFF ELEMENTARY*	9902 White Bluff Rd	7.5	Ballfields (2) Playground (1)	School Recreation Area
WHITNEY, ELI*	New Mexico St/Laura Ave	0.3	Playground (1) Picnic Areas (2)	Pocket Park
WILSHIRE PROPERTY	10610 Middleground Rd	45	Open Space	Greenway/ Linear Park
WINDSOR FOREST ELEM. SCHOOL*	414 Briarcliff Cir	4	Playground (1) Ballfield (1) Regional Center (1) Golden Age Center(1)	School Recreation Area
WINDSOR FOREST HIGH*	12419 Largo Drive	3.8	Ballfield (1)	School Recreation Area
WOODVILLE	127 Darling St	0.5	Neighborhood Ctr (1) Golden Age Ctr (1) Picnic Area (1)	Indoor Facility
YAMACRAW*	349 Bryan St (W Boundary/Zubley St)	1.2	Playground (2) Picnic Area (1)	Pocket Park

*Not owned by the City of Savannah

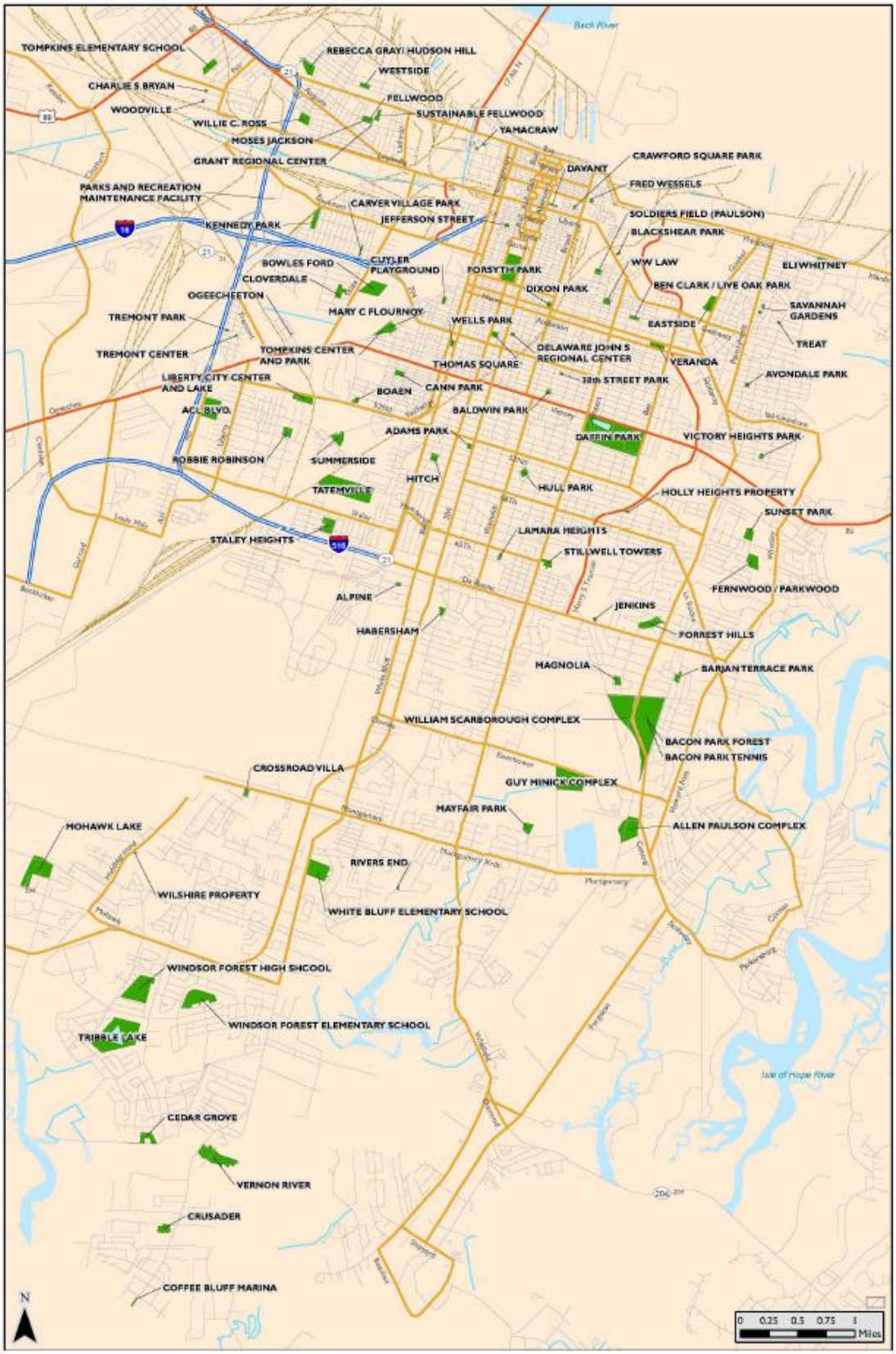


Figure 3.5 – City Parks included in the Savannah Recreation System

The open space parks and greenway trails highlighted in green in Table 3.2 have the potential to be included in a future open space plan for the City, similar to the current Countywide Greenway Implementation Plan detailed further below. Figure 3.6 shows the current open space areas within Chatham County. These open space areas provide beneficial functions by limiting development and preserving natural floodplain areas.

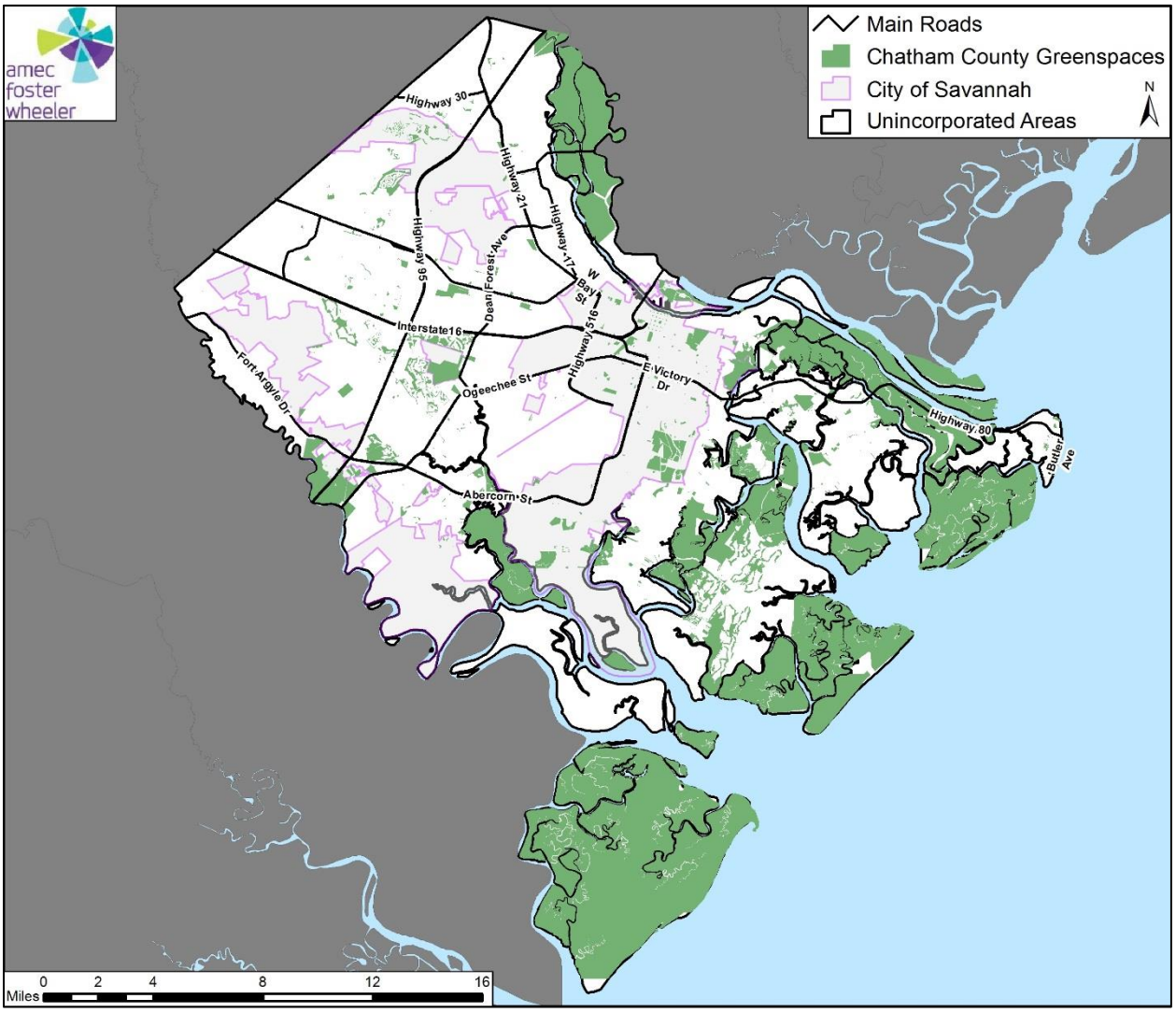
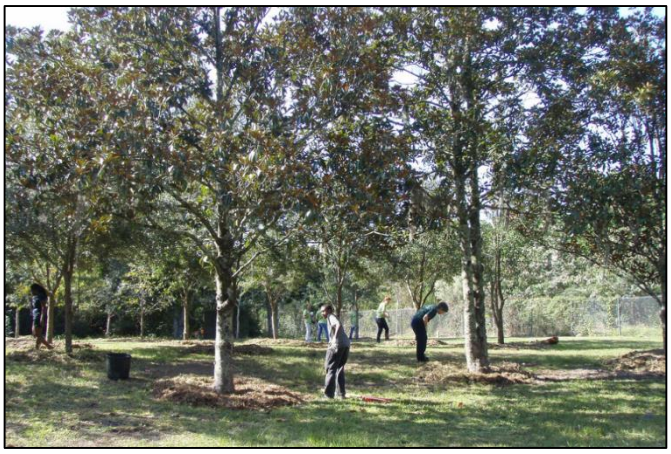


Figure 3.6 - Chatham County Greenspace

Trees

The Savannah Tree Foundation is a not-for-profit urban and community forestry organization dedicated to preserving, protecting and planting canopy trees in Savannah and Chatham County, Georgia. The Savannah Tree Foundation's tree planting program encompasses not only planting canopy trees within the community, but also their aftercare through mulching and ongoing tree maintenance activities. The Foundation aims to plant 200 trees per year.



Source: Savannah Tree Foundation

Canopy trees are different from other trees in that they tend to grow larger and provide more shade than the typical ornamental or understory tree; they also provide better measurable benefits, including stormwater absorption, carbon dioxide storage, reduction in heat island effects, less energy consumption for heating & cooling, and more.

Savannah Tree Foundation plants trees in public spaces throughout Chatham County, which means on property that is owned by the public or held in trust for public access. The Foundation typically plants on city or county property, in public parks and at other venues including those owned by nonprofit organizations and government entities. Trees benefit communities in the following ways[1]:

Energy Savings

•Streets with little or no shade need to be re-paved twice as often as those with 30% tree canopy cover
•Just three strategically placed trees can decrease utility bills by 50%
•Trees reduce the amount of water runoff from rain and clean the water that does run off, saving billions of dollars otherwise needed for storm water control and water treatment facilities

Economic Improvement

•Residential property values can increase 5 - 12% if landscaping includes trees
•Workers with views of green spaces from their desks report 23% fewer instances of illness

Environmental Health

•Each year an acre of trees absorbs the amount of carbon produced by driving a car for 26,000 miles
•Trees cool city heat islands by 10 – 20 degrees, thus reducing ozone levels

[1]*This information was provided by the Savannah Tree Foundation courtesy of The Alliance for Community Trees (ACT). The Savannah Tree Foundation is a National NeighborWoods partner with and member of ACT. http://www.savannahtree.com/learn/benefits-of-trees/*

Social Benefits and Safety for Residents

•Crime rates decrease by an average of 52% in areas with more greenery
•Access to green areas reduces stress and aggression for people who live in urban environments
•Residents who live near green spaces enjoy more social activities, know more of their neighbors, and have a stronger sense of belonging, resulting in stronger social ties

Educational

•Children who have a view of greenery in their lives perform better in school
•Increased exposure to nature enhances the ability of children to follow directions
•Access to green spaces relieves the symptoms of attention deficit disorder (ADD), resulting in better concentration

Climate Change

•By creating shade, trees moderate temperatures both globally and in the micro-climates of cities and counties
•One acre of forest absorbs six tons of carbon dioxide annually and puts out over four tons of oxygen
•Trees increase humidity in dry climates through evaporation of water from their leaves into the atmosphere

A study prepared by the Savannah Tree Foundation analyzed all developed and undeveloped land, water, and marshland in Chatham County, an area of 482 square miles (308,336 acres) using 2013 1-meter NAIP imagery. The land cover analysis revealed a 44% average tree canopy in the City of Savannah in 2013 (28,764 acres)[2]. Based on the 2013 land cover mapping and identified available space for tree planting comprised of grass, open space parking lots and more, Savannah has a total possible planting area of 24%. The study also analyzed historic canopy cover based on 30-meter resolution satellite images for 1996, 2006, and 2010 made available by NOAA's Coastal Change Analysis Program. The data were used to develop maps and statistics of canopy change. Based on 30-meter satellite imagery, the study revealed 6,400 acres of canopy loss in Savannah between 1996 and 2010, the greatest loss of any municipality within the County.

Greenways

The Chatham County Metropolitan Planning Commission (MPC), the City of Savannah and Unincorporated Chatham County have joined in a collaborative effort that will result in the creation of a first-time Countywide Greenway Implementation Plan. The scope will include possible greenway links such as retired railway beds (Rails to Trails), canals, and unopened road right-of-way. Greenways are defined within this project as natural pathways and multi-use trails that provide for alternative transportation modes (walking, biking, etc.) and create connections between civic and public interest points. Greenways are an integral part of a sustainable approach to transportation and provide valuable community amenities and access to the coastal environment.

[2] The Savannah Tree Foundation. February 2015. *An Assessment of Urban Tree Canopy in Chatham County, Georgia.*

Trails and greenways positively impact individuals and improve communities by providing not only recreation and transportation opportunities, but also by influencing economic and community development. Some of their many benefits that ultimately affect the sustainability of a region's economic, environmental and social health include but are not limited to:

- Creating Value and Generating Economic Activity
- Improving Bicycle and Pedestrian Transportation and Accessibility to schools, parks, and employment for residents
- Encouraging Physical Fitness and Improving Overall Health through Active Living
- Clear Skies, Clean Rivers, and Protected Wildlife
- Protecting People and Property from Flood Damage
- Preserving Culturally and Historically Valuable Areas

To ensure that the trails, systems and adjacent habitats are properly maintained throughout the County, a best management practices (BMPs) guidance document will also be developed. This will be used by Public Works staff when maintaining the municipally owned trails to ensure the protection of habitat and proper maintenance of the multi-use trails.

Not only will this project enhance the efforts of the Coastal Region Metropolitan Planning Commission (CORE MPC), the Savannah Bicycle Campaign, Healthy Savannah, and others, the deliverables of this project will also accomplish specific goals and strategies listed in the Chatham County – Savannah Comprehensive Plan focusing on natural resource protection, sea level rise resiliency planning, stormwater planning and compliance, public access, green infrastructure planning, alternative transportation access, walkability, and more.

Threatened & Endangered Species

According to the U.S. Fish & Wildlife Service Information Planning and Conservation System (IPaC) and the Georgia Department of Natural Resources (GADNR), there are known occurrences for 35 threatened, endangered, or candidate species within the City of Savannah as shown below in Table 3.3. It is also noted if the habitat for each species potentially exists within the City.

Table 3.3 - Protected Species for Chatham County, GA and Potential Habitat within the City of Savannah

Common Name	Species Name	Federal Status	State Status	Potential Habitat Available?
Amphibians				
Frosted Flatwoods Salamander	*Ambystoma cingulatum*	T	T	**Yes**
Gopher Frog	*Lithobates capito*	--	R	**Yes**
Striped Newt	*Notophthalmus perstriatus*	C	T	**Yes**
Birds				
American Oyster Catcher	*Haematopus palliatus*	--	R	**Yes**
Bald Eagle	*Haliaeetus leucocephalus*	BGEPA	T	**Yes**
Black Skimmer	*Rynchops niger*	--	R	**Yes**
Least Tern	*Sternula antillarum*	--	R	**Yes**

Common Name	Species Name	Federal Status	State Status	Potential Habitat Available?
Piping Plover	*Charadrius melodus*	T	T	No
Red Knot	*Calidris canutus rufa*	T	T	No
Red-Cockaded Woodpecker	*Picoides borealis*	E	E	**Yes**
Swallow-Tailed Kite	*Elanoides forficatus*	--	R	**Yes**
Wilson's Plover	*Charadrius wilsonia*	--	T	No
Wood Stork	*Mycteria americana*	E	E	**Yes**
Fish				
Atlantic Sturgeon	*Acipenser oxyrinchus oxyrinchus*	E	E	No
Bluebarred Pygmy Sunfish	*Elassoma okatie*	--	E	No
Robust Redhorse	*Moxostoma robustum*	--	E	No
Shortnose Sturgeon	*Acipenser brevirostrum*	E	E	**Yes**
Flowering Plants				
Climbing Buckhorn	*Sageretia minutiflora*	--	T	**Yes**
Florida Wild Privet	*Forestiera segregata*	--	R	**Yes**
Georgia Indigo Bush	*Amorpha georgiana*	--	E	No
Hooded Pitcherplant	*Sarracenia minor*	--	U	No
Pondberry	*Lindera melissifolia*	E	E	No
Soapberry	*Sapindus marginatus*	--	R	No
Invertebrates				
Savannah Lilliput	*Toxolasma pullus*	--	T	No
Mammals				
North Atlantic Right Whale	*Eubalaena glacialis*	E	E	No
West Indian Manatee	*Trichechus manatus*	E	E	**Yes**
Reptiles				
Diamondback Terrapin	*Malaclemys terrapin*	--	U	**Yes**
Eastern Indigo Snake	*Drymarchon corais couperi*	T	T	**Yes**
Gopher Tortoise	*Gopherus polyphemus*	C	T	**Yes**
Green Sea Turtle	*Chelonia mydas*	E	T	No
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	E	E	No
Leatherback Sea Turtle	*Dermochelys coriacea*	E	E	No
Loggerhead Sea Turtle	*Caretta caretta*	T	E	No
Southern Hognose Snake	*Heterodon simus*	--	T	**Yes**
Spotted Turtle	*Clemmys guttata*	--	U	**Yes**

Sources:

GADNR, 2015: Known occurrences of special concern plants, animals and natural communities, Chatham County. Accessed 04/09/2015. Available at: http://georgiawildlife.com/node/1370.

USFWS, 2015: Information, Planning, and Conservation System (IPaC) Chatham County, GA. Accessed 04/09/2015. Available at: http://ecos.fws.gov/ipac/.

Notes:

-- - No Status
BGEPA - Bald and Golden Eagle Protection Act
C – Candidate
R – Rare
T - Threatened
U - Unusual
E - Endangered

Figures 3.7 through 3.10 reflect endangered species habitat locations in relation to SFHAs within the City boundary.

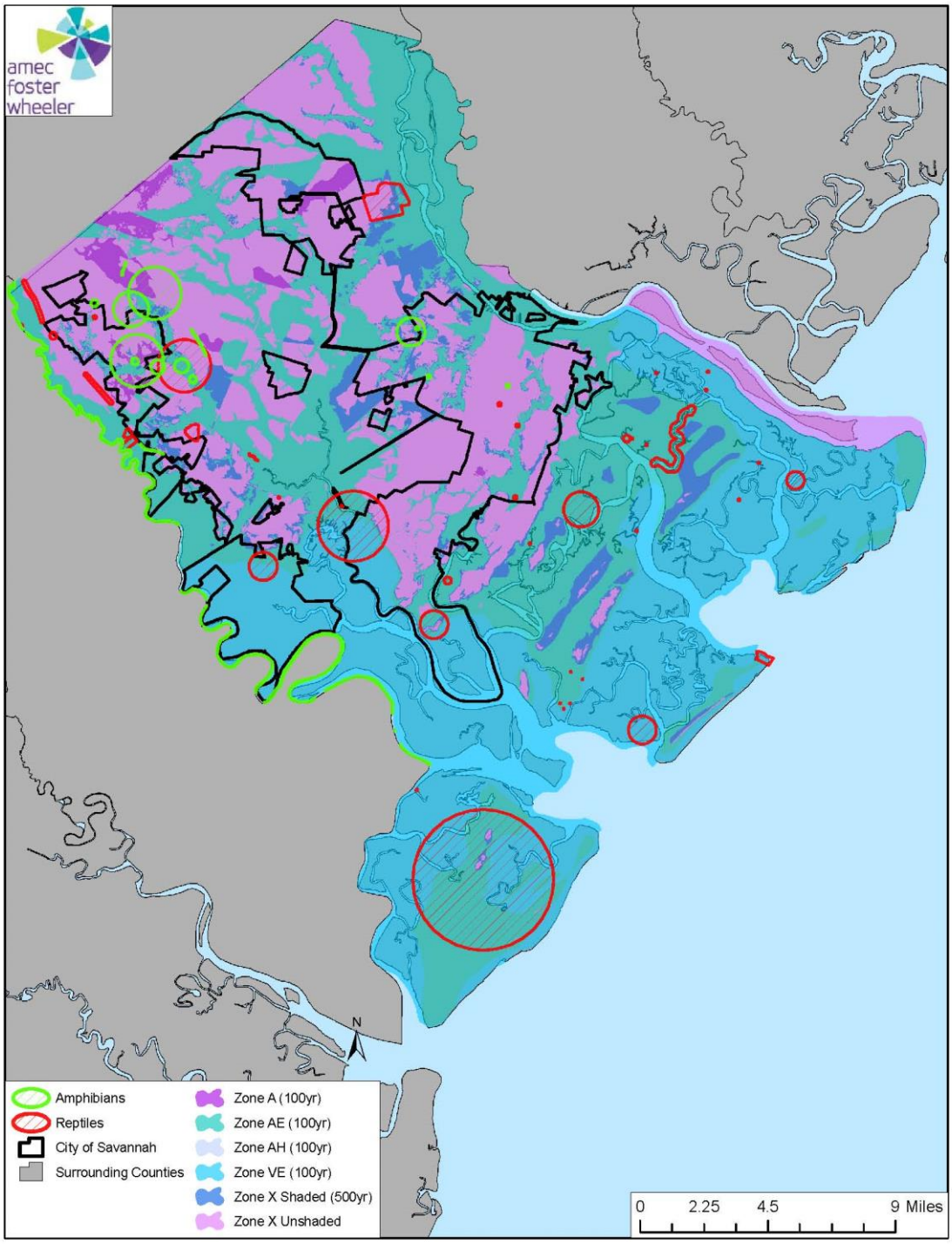


Figure 3.7 - Amphibian and Reptile Habitat

Amphibian and Reptile Habitat

The longleaf pine ecosystem provides habitat for amphibians and reptiles. The longleaf pine ecosystem is characterized by open-canopied stands of stately pines covering a carpet of grasses and other herbaceous vegetation. Over 20 federally-listed endangered species inhabit longleaf pine including the red-cockaded woodpecker (Picoides borealis), the eastern indigo snake (Drymarchon corais couperi), several plant species, and the gopher tortoise (Gopherus polyphemus). The eastern indigo snake is closely associated with the gopher tortoise as it commonly nests and dens in gopher tortoise burrows. The snake is primarily threatened by habitat loss.

The longleaf pine exists throughout the entire City of Savannah with exception of the tidal estuarine wetlands. However, there are specific areas in the City of Savannah where the longleaf pine is more concentrated. The Diamond Back Terrapin habitat exists primarily in the tidal estuarine wetland areas.

Habitat Preservation

Suitable habitat requires ample herbaceous ground cover, open canopy conditions, and relatively low basal area (timber density) in merchantable stands. These key habitat parameters can be influenced by tree stocking rates, prescribed fire, pre-commercial and commercial thinning, and chemical control of hardwood vegetation where necessary.

Options for conserving habitat include establishment of a conservation bank, financial incentives to protect existing habitat, and on-site mitigation. A conservation bank could serve as a mitigation site for loss of habitat that occurs in the City. As mitigation for the destruction of habitat, developers could be required to contribute funds to the purchase of preserve areas. An alternative to the conservation bank is to offer financial incentives to private land owners with tracts containing habitat or habitat that is readily restorable. The U.S. Fish and Wildlife Service does have some funding available that could be directed to this purpose. A third alternative is to require on-site mitigation on the parcel where habitat loss occurs. The City of Savannah can work with the Savannah Tree Foundation to encourage the preservation of the longleaf pine for protection of this habitat. The City can also consider setbacks and buffers as protective measures for this habitat. All development permits should conform to local and federal requirements including Fish and Wildlife habitat conservation requirements.

Recommendations

These recommendations are incorporated as detailed actions in Section 5.1:

1) Consider creating a conservation bank to replace the taking of habitat or consider financial incentives for private land owners with tracts containing habitat.
2) Work with the Savannah Tree Foundation for protection of the longleaf pine.
3) Expand riparian impervious surface setbacks including a 35’ setback on coastal marshland and wetlands.

Preserved or Increased Habitat

The above recommendations, if implemented, can lead to both habitat preservation and an increase in the number of long-leaf pines within the City of Savannah.

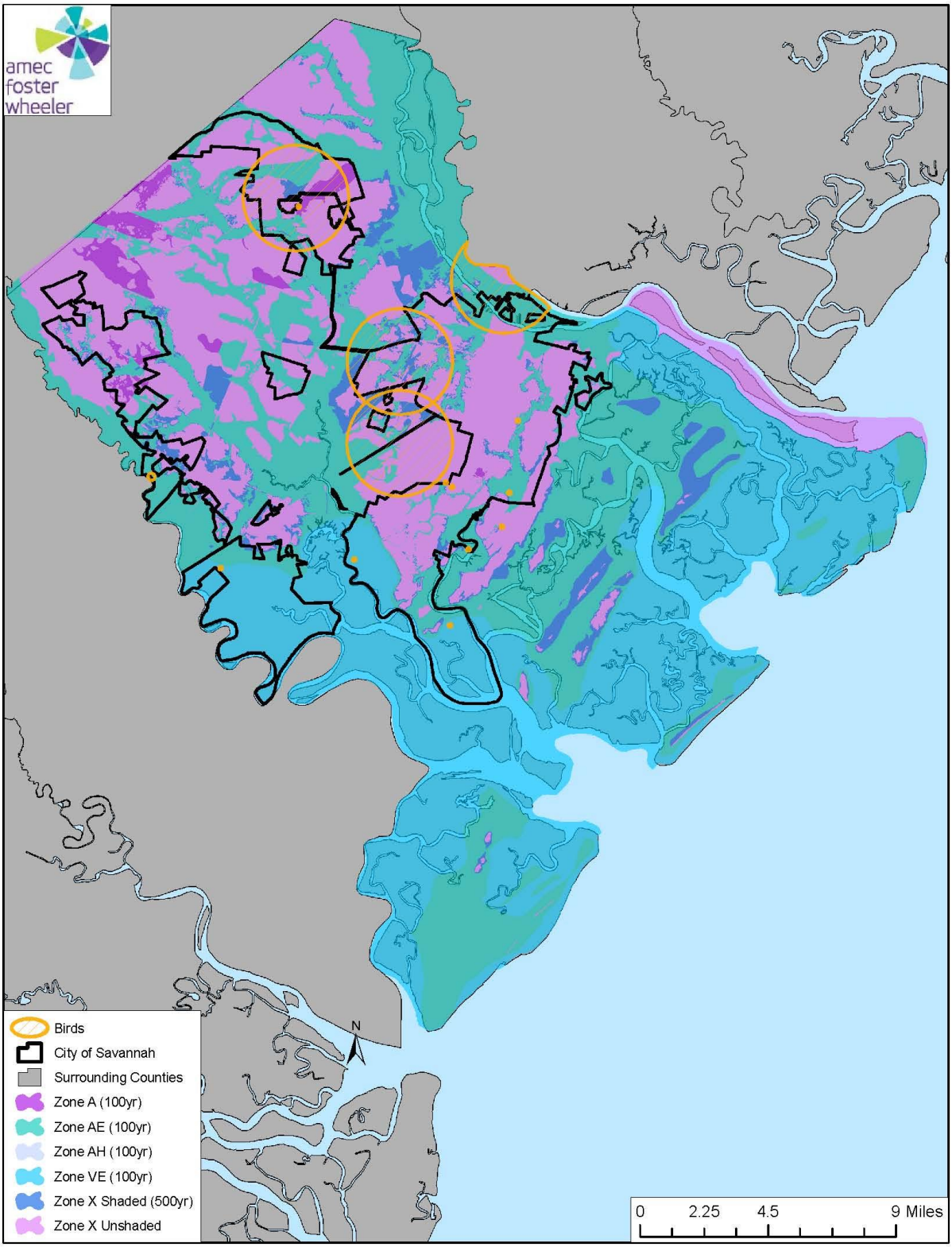


Figure 3.8 - Bird Habitat

Bird Habitat

While some birds such as the red-cockaded woodpecker (Picoides borealis) prefer longleaf pine habitat discussed above, other birds such as the Wood Stork use a variety of freshwater and estuarine wetlands for nesting, feeding and roosting. Freshwater colony sites must remain inundated throughout the nesting cycle to protect against predation and abandonment. Foraging sites occur in shallow, open water where prey concentrations are high enough to ensure successful feeding. Limiting factors include loss of feeding habitat, water level manipulations affecting drainage, predation and/or nest tree regeneration, human disturbance and pesticides or other chemical pollutants.

This habitat exists in both freshwater and estuarine wetland areas in the City.

Habitat Preservation

Mere preservation of wetland acreage does not necessarily preserve the processes necessary for the production of a strong prey base for wading birds. Wetlands must be managed to maintain or recover the dynamic wetland processes that create and make available the abundance of food required by nesting birds. Continuous habitat assessment and protection, and population monitoring will best assure that protection objectives are being met.

The City should identify important foraging and roosting habitat and develop a prioritization scheme to focus efforts on site with the greatest degree of threat. Property owners having priority foraging and roosting sites should also be informed and encouraged to comply with regulatory mechanisms. Property owner assistance can be provided in the form of written material explaining BMPs, site visits, and local recognition. Educational materials could be developed for use in schools and to educated policymakers and elected officials on the importance of maintain and protecting wetland habitats.

The City should continue to acquire land for habitat preservation or restoration, focusing on sites with the greatest potential. Nesting habitat should be protected from disturbance and human alteration. The City should also work with the Savannah Tree Foundation to encourage the preservation of the tree canopy for protection of this habitat.

Recommendations

These recommendations are incorporated as detailed actions in Section 5.1:

1) Expand riparian impervious surface setbacks including a 35’ setback on coastal marshland and wetlands.
2) Work with the Savannah Tree Foundation for protection of the tree canopy.

Preserved or Increased Habitat

The above recommendations, if implemented, can lead to both habitat preservation and an increase in the number of long-leaf pines which is home to the red-cockaded woodpecker and the estuarine wetland areas which is home to the wood stork.

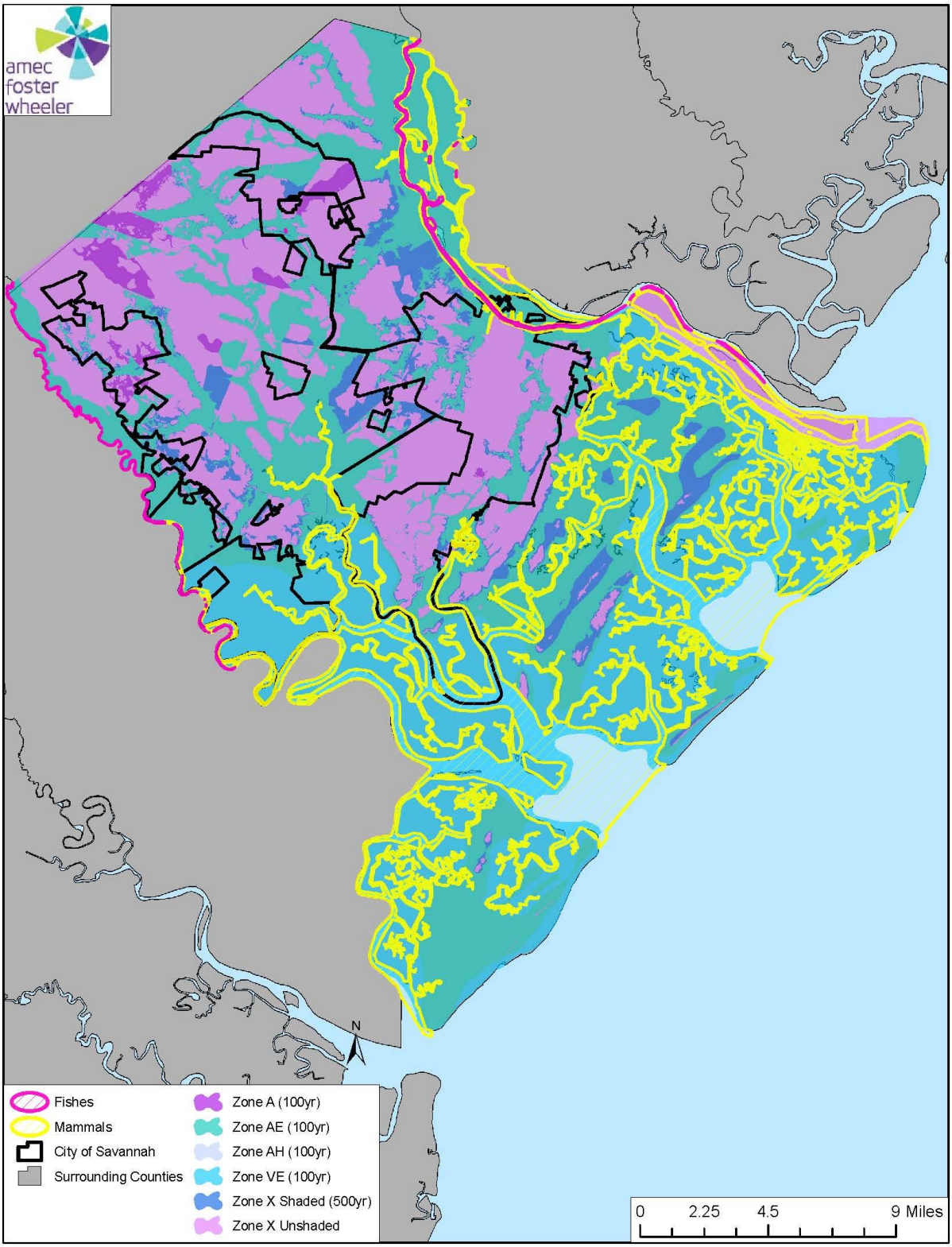


Figure 3.9 - Fish and Mammal Habitat

Fish and Mammal Habitat

Mammals such as the West Indian Manatee lives in freshwater, brackish and marine habitats. Submerged, emergent, and floating vegetation are their preferred food. In the southeastern United States, manatees occur primarily in Florida and southeastern Georgia. These areas include many habitat types (including vegetated freshwater bottoms, salt marshes, sea grass meadows, and many others) where manatees ably exploit the many resources found in these areas. As herbivores, manatees feed on the wide range of forage that these habitats provide. In addition, manatees utilize many other resources found in these areas, including: (1) springs and deep water areas for warmth; (2) springs and freshwater runoff sites for drinking water; (3) quiet, secluded tributaries and feeder creeks for resting, calving, and nurturing their young, (4) open waterways and channels as travel corridors, etc.

Shortnose sturgeon inhabit the main stems of their natal rivers, migrating between freshwater and mesohaline river reaches. Spawning occurs in upper, freshwater areas, while feeding and overwintering activities may occur in both fresh and saline habitats.

Habitat Preservation

Manatee habitats are affected by human activities. Dredge and fill activities, polluted runoff, propeller scarring, and other actions have resulted in the loss of vegetated areas and springs. Quiet backwaters have been made more accessible to human activities, and increasing levels of vessel traffic have made manatees increasingly vulnerable to boat collisions in travel corridors. Manatees seem to have adapted to some of these changes. For example, industrial warm-water discharges and deep-dredged areas are now used as wintering sites, stormwater pipes and freshwater discharges in marinas provide manatees with drinking water, and the imported exotic plant, hydrilla (which has replaced native aquatic species), has become an important food source at wintering sites.[3]

The first component of preserving manatee habitat is to first identify where manatees are roaming. In coordination with GADNR who has ample material on Manatee protection and conservation, the City should create outreach materials directing residents to report manatee sightings. The information will enhance knowledge of the endangered animal's distribution in the state. The City should also create outreach materials and signage urging boaters to slow down. Heeding low-speed and no-wake zones, particularly around docks where manatees eat algae growing on the structures, will reduce collision risks. Finally, the City should work in concert with Chatham County and GADNR to identify lands that can be purchased and conserved as manatee habitat.

Habitat degradation or loss of the shortnose sturgeon (resulting, for example, from dams, bridge construction, channel dredging, and pollutant discharges), and mortality (for example, from impingement on cooling water intake screens, dredging, and incidental capture in other fisheries) are

[3]U.S. Fish and Wildlife Service. 2001. Florida Manatee Recovery Plan, (*Trichechus manatus latirostris*), Third Revision. U.S. Fish and Wildlife Service. Atlanta, Georgia. 144 pp. + appendices.

principal threats to the species' survival. Water quality of the Savannah River and its tributaries along with responsible bridge construction and demolition projects can help to protect this habitat.

Recommendations

These recommendations are incorporated as detailed actions in Section 5.1:

1) Create outreach materials to educate residents on spotting and reporting of manatees.
2) Create outreach materials and signage educating residents on how boat speeds impact the manatee.
3) Identify restricted areas in order to keep boats and humans from interacting with the manatee population.

Preserved or Increased Habitat

The above recommendations, if implemented, may not necessarily preserve or increase habitat, but it could result in a safer habitat which may increase the survival rate of the manatee.

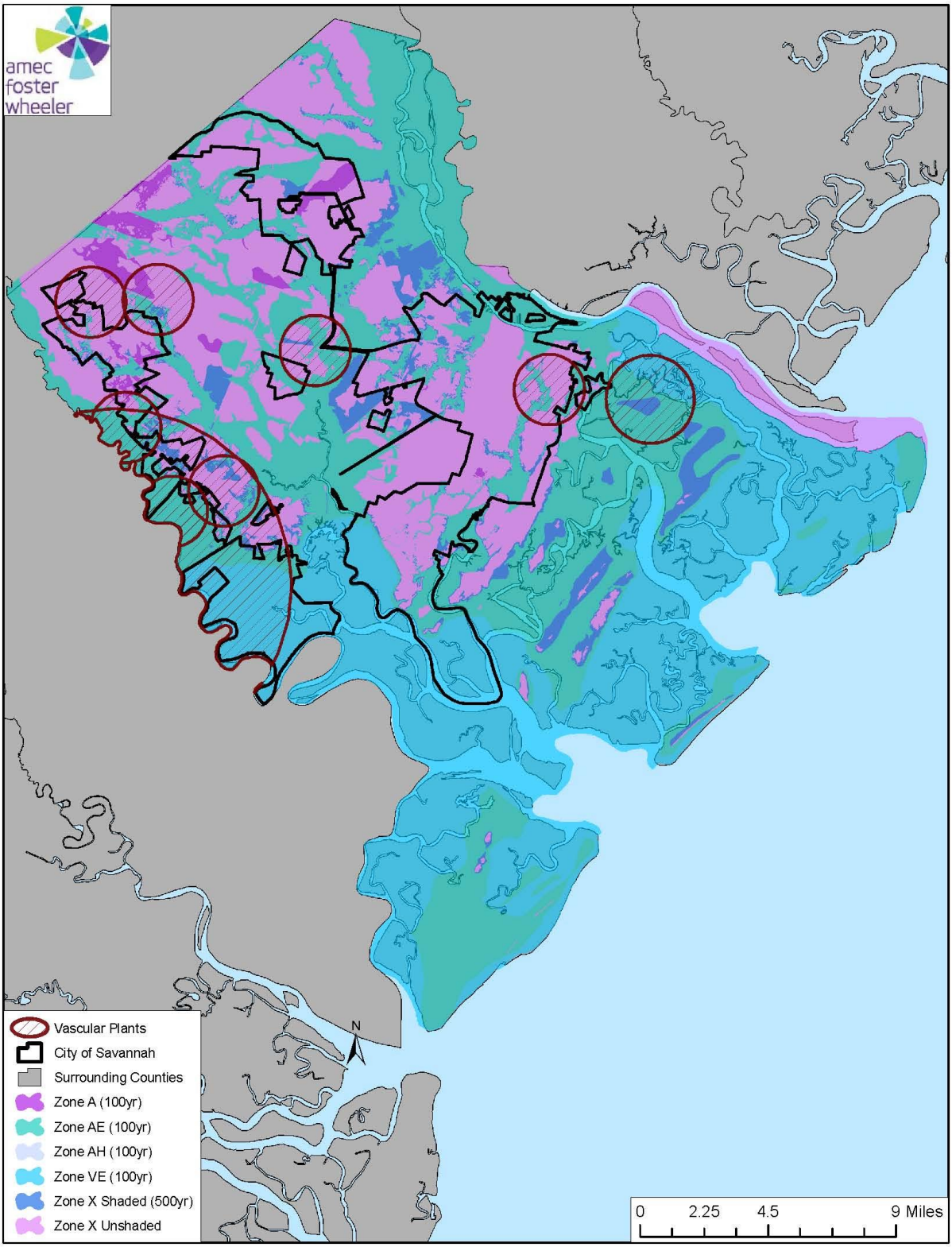


Figure 3.10 - Vascular Plant Habitat

Vascular Plant Habitat

Habitat for rare plants such as the Florida Wild Privet includes coastal/maritime forests and shrub-scrub areas over shell mounds on or near barrier islands or bordering salt marshes. The Climbing Buckhorn can be found on calcareous rocky bluffs, forested shell middens on barrier islands, and evergreen hammocks along banks of streams and coastal marshes.

Florida Wild Privet

Climbing Buckhorn

Habitat Preservation

Threats to this habitat include clearing and development in coastal habitats, digging and destruction of shell mounds, and exotic pest plants. Conservation and management recommendations include protecting coastal forests from clearing and development; protecting shell mounds from digging, clearing, dredging and spoil deposition; and eradication of exotic pest plants.

Recommendations

These recommendations are incorporated as detailed actions in Section 5.1:

1) Work with the Metropolitan Planning Commission on the Chatham County Greenway Master Plan to direct trails and recreation activity away from rare, threatened, or endangered plant habitat.
2) Promote a local education program on the benefits of protecting the Florida Wild Privet and the Climbing Buckhorn.

Preserved or Increased Habitat

The above recommendations, if implemented, may protect these plant species and their habitat.

4 PRESERVATION CAPABILITY ASSESSMENT

Prevention measures like planning, land acquisition and regulations help modify development in floodplains in order to reduce susceptibility to flood damage. Comprehensive and Capital Improvement Plans can be used to identify floodplain and wetland areas to be preserved by zoning, acquisition and other means. A Comprehensive Plan, in broad terms, is a policy statement that guides a community's growth and development. It is the basis for a community's zoning, subdivision and design regulations and a community's official maps and amendments to the zoning, subdivision and design ordinances. A Capital Improvement Plan (CIP) is a community planning and fiscal management tool used to coordinate the location, timing and financing of capital improvements over a multi-year period.

Planning and zoning activities should direct development away from floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of land that is prone to flooding, such as open space or recreation. Planning and zoning activities can also provide benefits by simply allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach.

Local Planning Mechanisms

Metropolitan Planning Commission

The Metropolitan Planning Commission is a joint planning agency for the City of Savannah and Chatham County. Each governmental body appoints seven members to the board. Two of these members are the City and County Managers. These fourteen members serve without pay and represent government, private enterprise, and citizens' interest groups. Commissioners are appointed for three-year overlapping terms. The MPC meets every three weeks to consider matters of zoning and land use, as well as other studies and issues for which it has responsibility. Planning Meetings are held as needed to discuss planning issues.

The Chatham County – Savannah Comprehensive Plan developed by the MPC was adopted in 2006 by the Chatham County Board of Commissioners and the Mayor and Aldermen of the City of Savannah. The Comprehensive Plan represents the first phase of the two-part Tricentennial Planning Process. The Unified Zoning Ordinance, which is currently underway, is the second phase.

Resource Protection Commission

The Chatham County Resource Protection Commission consists of a diverse group of individuals dedicated to protecting Chatham County's natural heritage. Specifically, this commission works to identify sites within the county that are of ecological, historical, and/or cultural significance and to find ways to protect, conserve, or rehabilitate these sites. Not the first to adopt this mission, the Resource Protection Commission owes its existence to the work of several committees preceding its establishment.

Beginning in 1994, the Chatham County Commission appointed the Open Space Committee to identify and protect areas within the county from development. Shortly thereafter, in 2000, the County's

Greenspace Committee was established, which provided each municipality in the county with funds to purchase and protect natural areas within their jurisdiction. As these committees came to an end, the MPC's Executive Director saw a need for a new resource protection body and therefore established the MPC Resources Protection Committee in 2004. During its existence the Committee created a list of over 100 environmentally sensitive sites, which the new Resource Protection Commission will build upon.

In April of 2008, the Chatham County Board of Commissioners officially established the Chatham County Resource Protection Commission (CCRPC) through the approval of the Resource Protection Ordinance. In addition to a board of commissioners, this ordinance created a Technical Advisory Committee (TAC) composed of individuals from environmental and historic non-profits, local governments, the Savannah Board of Realtors, the Greater Savannah Home Builders Association, neighborhood associations, and citizens at large. This Committee aids the Commission in identifying, evaluating, and ranking sites for protection. The CCRPC then uses this information to make recommendations to the Chatham County Commission regarding which properties to pursue for protection. Once a property is protected, the TAC creates a long-term management plan for the property detailing the uses allowed and enhancements to be made to the site. The RPC has the following site ranking criteria policy in place to determine the process of selecting parcels for protection:

- Incorporating or protecting significant wildlife habitat and corridors;
- Preventing encroachment on floodplain, riparian and marsh wetland areas; and
- Providing education and passive recreation opportunities throughout Chatham County.

Capital Improvement Program

The 2013-2017 Capital Improvement Program presents the five-year capital plan for the City of Savannah. Funding of Capital projects in the five-year plan is guided by the projects' potential impact on the well-being of the community at large. Capital projects are intended to create the greatest good for the greatest number of Savannah residents. With this in mind, projects are guided by the council priorities listed on the following page. Many of the projects may relate to multiple priorities – for instance, a project that creates good health and environment may also spur economic development. However, each project is assigned only one priority to which it primarily relates. The council priorities were developed to reflect citizen views regarding the services that government should provide. The council priorities reflected in the 2013-2017 Plan are as follows:

- **CULTURE AND RECREATION** – To ensure citizens have a community that provides recreational and cultural opportunities that keep their minds and bodies active and that recognizes the needs of all citizens.
- **ECONOMIC GROWTH** – To provide citizens a City that encourages and supports appropriate economic growth that creates jobs, expands City revenue and improves neighborhoods and commercial corridors.
- **HEALTH & ENVIRONMENT** – To provide citizens a community that promotes health through good infrastructure (e.g. water, sewer) while preserving the environment for future generations.
- **HIGH PERFORMING GOVERNMENT** – To provide citizens with a responsible, accessible and responsive government that maximizes use of public resources for services citizens need.

- **NEIGHBORHOOD VITALITY** – To provide a City of strong and vibrant neighborhoods that are clean, safe and encourage a sense of community.
- **PUBLIC SAFETY** – To provide a City where citizens are safe and feel safe from crime, fire and other hazards anywhere in the community.

The revenue sources for the Capital Improvement Program are the General Fund, Water and Sewer Funds and Special Purpose Local Option Sales Tax (SPLOST) funding.

Local Preservation Initiatives

- The City of Savannah has developed a Community Gardens program, allowing more than 1,250 city-owned parcels, stretching from Woodville and Hudson Hill to Paradise Park and Wilshire Estates, to be made available to residents and neighborhood associations to start community gardens. The City of Savannah recognizes community gardens as valuable recreational and educational activities that can contribute to open space, environmental awareness, positive social interaction within the community, and community education.
- The City's Landscape and Tree Ordinance is intended to protect and maintain the urban forest through the management of the impact of development, to preserve the environmental and aesthetic assets of the community through requirements for tree planting and landscaping, and provide protection from removal without a permit for all trees within the City of Savannah. The provisions of the Landscape and Tree Ordinance apply to all property in the city being developed or redeveloped for commercial, industrial, institutional, multi-family and single family subdivisions.
- The Savannah Tree Foundation (detailed in Section 3) promotes, through direct action and education, an awareness of trees as vital environmental resources and an important part of cultural heritage.
- Environmental protection priorities identified in the Land Use Element of the Chatham County-Savannah Comprehensive Plan are as follows:
  - ✓ Continue to use SPLOST funds for acquisition of sites for environmental protection;
  - ✓ Refine the Environmental Overlay District adopted by Chatham County in 2001 and extended in 2003;
  - ✓ Enhance marsh buffer protection with the use of Low Impact Development strategies and standards;
  - ✓ Create new hammock protection by reducing development densities; and
  - ✓ Provide incentives for countywide conservation subdivisions similar to those in the Environmental Overlay District.
- In 1970, the State of Georgia established the Coastal Marshlands Protection Act (CMPA) to protect the marsh and estuarine areas, and to regulate the activities within these public trust lands that are held for the citizens of Georgia. Through the Georgia Department of Natural Resources, Coastal Resources Division (GADNR-CRD), the CMPA is enacted to protect the estuarine area. Activities and structures in the coastal marshlands are regulated to ensure that the values and functions of the coastal marshlands are not impaired. GADNR-CRD allows for the

sustainable use of the estuarine area through permits and other methods of authorization that will preserve the condition of the marsh while still allowing for its enjoyment.

- The Coastal Georgia Regional Development Center prepared a Regional River Corridor Protection Plan that describes the ten local governments and the associated rivers that are affected by the River Corridor Protection Act, and puts forward a regional plan for the protection of river corridors. The plan provides for construction of road crossings, acceptable uses of river corridors, maintenance of a vegetative buffer along rivers for a minimum of 100 feet from the river's edge (residential structures are allowed within the buffer zone), timber production standards, wildlife and fisheries management, recreation, and other uses. Chatham County is one of the eight coastal counties affected by the River Corridor Protection Act and therefore, as required, has adopted a Regional River Corridor Protection Plan for the Savannah River. The maintenance of a 100-foot natural vegetative buffer, often referred to as a "riparian buffer", on both sides of any protected river is required under the River Corridor Protection Act. Similarly, under the State of Georgia Erosion and Sedimentation Act, one provision requires that land-disturbing activities shall not be conducted within 25 feet of the banks of any State waters, thus mandating a riparian buffer 25 feet in width.
- Savannah's Soil Erosion, Sedimentation and Pollution Control Ordinance establishes a 25-foot buffer along the banks of all state waters, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action.
- The City of Savannah has adopted the Environmental Part V ordinance and follows the criteria listed. The Part V criteria include protection of:
    - 391-3-16-.01 Criteria for Water Supply Watersheds
    - 391-3-16-.02 Criteria for Protection of Groundwater Recharge Areas
    - 391-3-16-.03 Criteria for Wetlands Protection
    - 391-3-16-.04 Criteria for River Corridor Protection
    - 391-3-16-.05 Criteria for Mountain Protection
- Savannah's Stormwater Management Ordinance requires that all stormwater management systems be designed to comply with the requirements of the latest City of Savannah Local Design Manual and comply with the latest edition of the Coastal Stormwater Supplement to the Georgia Stormwater Management Manual. The City of Savannah Local Design Manual requires stormwater runoff reduction and stormwater water quality BMPs. Post-construction stormwater management and site planning and design criteria must be applied to all new development and redevelopment activities that are subject to the Stormwater Management Ordinance. The criteria include a natural resources inventory, use of Green Infrastructure/Low Impact Development practices, stormwater runoff reduction, stormwater quality management and protection, aquatic resource protection and energy dissipation, overbank flood protection, and extreme flood protection.

5 Action Plan

This action plan is intended to protect the threatened and endangered species identified in Table 3.3 as well as preserve open space, tree cover and natural floodplain areas. The detailed actions summarize who is responsible for implementing each of the prioritized actions as well as when and how the actions will be implemented.

It should be noted that the actions included in this plan are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The City is not obligated by this document to implement any or all of these projects. Rather this action plan represents the desires of the City to preserve and/or restore critical habitat within the floodplain.

5.1 Detailed Actions

1. **Project Description: Expand riparian impervious surface setbacks including a 35' setback on coastal marshland and wetlands.**

Issue/Background: Expansion of the setback is an effort to protect the natural and beneficial functions of the salt water marsh, wetlands, and floodplain. This setback would align with the County's 35' riparian buffer requirement on properties adjacent to the marsh in the Environmental Overlay District (EOD). The City of Savannah will hold public meetings; produce flyers promoting and educating the public of the benefit; and will write and adopt an ordinance.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Zoning Ordinance

Responsible Office: Water & Sewer Director, Chatham County - Savannah Metropolitan Planning Commission, and City Council

Cost Estimate: $24,000

Benefits: Increased setbacks from streams, channels, wetlands, and other water sources protects those features from degradation and protects buildings from potential flood damage.

Potential Funding: City's operating budget

Timeframe: Within 60 months

2. **Project Description: Support the Chatham County Greenway Master Plan and coordinate with the MPC on the Plan as needed.**

Issue/Background: Greenway plans provide natural and beneficial functions of the floodplain by protecting certain areas of the city from development. Connectivity of green space (open space) benefits both Savannah and Chatham County. Working together to provide for additional greenways or open space provides not only a recreation benefit but an ecological benefit of protected land from development and intrusion into sensitive areas. Trails and recreational spaces should be directed away from rare, threatened or endangered species habitat.

Existing Planning Mechanism(s) through which Action Will Be Implemented: City of Savannah's Park and Recreation Master Plan and the Chatham County Greenway Master Plan

Responsible Office: Parks and Recreation Department, Community Planning & Development Department, Chatham County MPC

Cost Estimate: Staff time

Benefits: Protected land means potential development is restricted and no insurable building can be constructed.

Potential Funding: City and County combined funding of the MPC

Timeframe: Within 60 months

3. **Project Description: Coordinate with the Chatham County Resource Protection Commission to acquire lands vulnerable to flooding through SPLOST funds and other grant opportunities.**

Issue/Background: Savannah still has areas that continue to flood and may see an increase risk of flooding as higher tides and higher intensity storms pass through Savannah. The areas that continue to flood become blighted properties and raise health concerns. These properties need to be evaluated to determine if use of the property is still practical or if the property should be purchased for demolition. Purchasing the flooded areas provides a means to protect the affected families' lives and property by relocating them out of harm's way of flooding. The cleared property will provide green space not only for plant and animal habitat, but also preserve wetlands, naturally treat storm water runoff, allow for groundwater infiltration, and recreational opportunities that lead to healthier communities.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Zoning and subdivision control ordinances

Responsible Office: Parks and Recreation Department in cooperation with the Chatham County MPC and the Savannah City Council

Cost Estimate: $1,000,000

Benefits: Prevention of development in hazardous areas

Potential Funding: SPLOST Funding

Timeframe: Within 36 months

4. **Project Description: Continue to ensure the City's new zoning code limits development in floodplains and wetlands to low density, and that a certain percentage of land remains protected as open space to provide a natural buffer from water bodies.**

Issue/Background: Open space preservation can protect the natural and beneficial functions of the salt water marsh, wetlands, and floodplain.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Zoning and subdivision control ordinances

Responsible Office: City of Savannah Development Services & Chatham County MPC

Cost Estimate: Staff time

Benefits: Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Potential Funding: City's operating budget

Timeframe: On-going

5. **Project Description: Reserve vacant low-lying/flood-prone/wetland areas for open space through regulatory enhancements and acquisition.**

Issue/Background: Open space preservation can protect the natural and beneficial functions of the salt water marsh, wetlands, and floodplain.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Zoning Ordinance

Responsible Office: Development and Real Property Services

Cost Estimate: $1,000,000

Benefits: Keeping the floodplain open and free from development is the best approach to protecting natural and beneficial functions and preventing damage to new developments.

Potential Funding: City budget and FEMA mitigation grant funds

Timeframe: On-going

6. **Project Description: Review the Floodplain Damage Prevention Ordinance to propose improvements regarding floodplain management.**

Issue/Background: The Flood Damage Prevention Ordinance can be used to limit development within the floodplain and ensure that development results in a minimal impact to habitat.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Flood Damage Prevention Ordinance

Responsible Office: Development Services

Cost Estimate: Staff time

Benefits: To maintain relevant and current floodplain management standards.

Potential Funding: City's operating budget.

Timeframe: 5 years

7. **Project Description: Create public outreach materials on the following topics: procedures for manatee sighting and reporting; materials and signage to educate residents on boat speed impacts on the manatee; identify restricted areas in order to keep boats and humans from interacting with the manatee population; and the importance of protecting endangered plant species such as the Florida Wild Privet and Climbing Buckhorn and their habitat.**

Issue/Background: One of the most significant problems presently faced by manatees is death or injury from boat strikes.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Comprehensive Plan, Zoning Ordinance

Responsible Office: Development Services

Cost Estimate: Staff time

Benefits: To preserve manatee population by protecting habitat.

Potential Funding: City's operating budget.

Timeframe: 5 years

8. **Project Description: Work with the Savannah Tree Foundation for preservation of the tree canopy in Savannah.**

Issue/Background: The longleaf pine ecosystem provides critical habitat for amphibians, reptiles and birds.

Existing Planning Mechanism(s) through which Action Will Be Implemented: Zoning Ordinance, Comprehensive Plan

Responsible Office: Development Services

Cost Estimate: Staff time

Benefits: To maintain endangered species habitat as well as provide social, economic, and recreational benefits.

Potential Funding: City's operating budget.

Timeframe: 5 years

9. **Project Description: Consider creating a conservation bank for the purchase of reserve areas to replace the taking of endangered species habitat or consider financial incentives for private land owners with tracts containing endangered species habitat.**

Issue/Background: As mitigation for the destruction of habitat, developers could be required to contribute funds to the purchase of preserve areas. An alternative to the conservation bank is to offer financial incentives to private land owners with tracts containing habitat or habitat that is readily restorable.

Existing Planning Mechanism(s) through which Action Will Be Implemented: N/A

Responsible Office: Development Services

Cost Estimate: Staff time

Benefits: To maintain endangered species habitat.

Potential Funding: City's operating budget.

Timeframe: 5 years

6 PLAN ADOPTION

The purpose of formally adopting this plan is to secure buy-in from the City of Savannah, raise awareness of the plan, and formalize the plan's implementation. The Savannah City Council has adopted the Natural Floodplain Protection Plan by passing a resolution. A copy of the executed resolution is shown below.

Note to Reviewers: When this plan has been reviewed and approved, the adoption resolution will be signed and added here.

7 PLAN MAINTENANCE

Implementation and maintenance of the plan is crucial to the overall success of this Natural Floodplain Protection Plan. This section provides an overview of the overall strategy for plan implementation and maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan.

7.1 Implementation

Once adopted, the plan must be implemented in order to be effective. Implementation will be accomplished by adhering to the schedules identified for each action and through constant, pervasive, and energetic efforts to network and highlight the multi-objective, win-win benefits to each program and the community. This effort is achieved through the routine actions of monitoring agendas, attending meetings, and promoting a sustainable community.

Simultaneous to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more costly recommended actions. When funding does become available, the City will be in a position to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal earmarked funds, benefit assessments, and other grant programs, including those that can serve or support multi-objective applications.

Responsibility for Implementation of Actions

Officials appointed to head community departments and community staff are charged with implementation of various actions in the plan. During the annual review as described later in this section, an assessment of progress on each of the actions in the plan will be determined and noted. At that time, recommendations will be made to modify timeframes for completion of activities, funding resources, and responsible entities.

7.2 Maintenance

Plan maintenance implies an ongoing effort to monitor and evaluate plan implementation and to update the plan as progress, roadblocks, or changing circumstances are recognized.

7.2.1 Maintenance Schedule

The City of Savannah's Development Services Department is responsible for initiating plan reviews. In order to monitor progress, the City will revisit this plan annually. Furthermore, the plan must be updated at least once every 10 years. The update must include a review of any changes to conditions as well as progress made since the original plan was prepared. With this plan update anticipated to be fully approved and adopted in 2015, the next plan update for the City will occur in 2025. Any changes to the adopted plan must be approved by the Savannah City Council.

7.2.2 Incorporation into Existing Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is incorporation of the Natural Floodplain Protection Plan actions into other plans and mechanisms. Where possible, plan participants will use existing plans and/or programs to implement actions. As described in this plan's capability assessment, the City of Savannah already implements policies and programs to reduce losses

to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- Chatham County Pre- and Post-Disaster Mitigation Plans
- Chatham County – Savannah Comprehensive Plan
- Ordinances
- Flood/stormwater management/master plans
- Other plans, regulations, and practices with a mitigation focus

Those involved in these other planning mechanisms will be responsible for integrating the findings and recommendations of this plan with these other plans, programs, etc., as appropriate. As described in Section 7.1 Implementation, incorporation into existing planning mechanisms will be done through the routine actions of:

- Monitoring other planning/program agendas;
- Attending other planning/program meetings;
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this Natural Floodplain Protection Plan.

Appendix A: References

Association of State Floodplain Managers. 2008. *Natural and Beneficial Floodplain Functions: Floodplain Management – More than Flood Loss Reduction.* Madison, WI: ASFPM Foundation.

Federal Emergency Management Agency, Flood Insurance Study for Chatham County, Georgia and Incorporated Areas, 2014.

Task Force on the Natural and Beneficial Functions of the Floodplain, 2002. *The Natural &Beneficial Functions of Floodplains: Reducing Flood Losses by Protecting and Restoring the Floodplain Environment*. A Report for Congress. FEMA 409. Washington, D.C.: Federal Emergency Management Agency.

The Savannah Tree Foundation. February 2015. *An Assessment of Urban Tree Canopy in Chatham County, Georgia.*

U.S. Environmental Protection Agency, 2015. water.epa.gov

U.S. Fish and Wildlife Service. Information, Planning and Conservation System, 2015.

U.S. Fish and Wildlife Service. *Habitat Conservation Plan to Establish a Conservation Bank for Threatened Gopher Tortoises in Mobile County, Alabama*.

U.S. Fish and Wildlife Service. 1996. *Revised recovery plan for the U.S. breeding population of the wood stork.*

U.S. Fish and Wildlife Service. 2001. Florida Manatee Recovery Plan, (*Trichechus manatus latirostris*), Third Revision. U.S. Fish and Wildlife Service. Atlanta, Georgia. 144 pp. + appendices.

Patrick, Allison and Krakow (1995), *Protected Plants of Georgia*, Georgia Department of Natural Resources.

U.S. Bureau of the Census, Census 2010.

Georgia Department of Natural Resources – Coastal Resources Division. 2015. coastalgadnr.org

Georgia Department of Natural Resources – Wildlife Resources Division. 2015. georgiawildlife.com

Chatham County – Savannah Metropolitan Planning Commission. 2015. thempc.org

Chatham County – Savannah Metropolitan Planning Commission. *The Water Spout*. Winter 2015.

Savannah Area Chamber of Commerce. 2014. savannahchamber.com

Savannah Tree Foundation. 2015. savannahtree.com