NATURAL RESOURCE ELEMENT

07

NATURAL RESOURCES

Introduction

Pooler is home to exceptional natural resources that are vitally important to the quality of life, resilience, health, and economy of the region. The city therefore has an interest in promoting, developing, sustaining, and protecting its natural resources for current residents and future generations.

This element of Pooler 2040 includes an existing conditions assessment of specific natural resources and natural resource issues found in Pooler as well as specific goals and objectives for the management and protection of these resources for the next 20 years.

NATURAL RESOURCES

Not many landscapes can match the beauty and romance of the coastal environment. Since the earliest times of Oglethorpe, people have wanted to live near the water.

Coastal Georgia's streams, rivers and marshes are now more attractive than ever as a place to live and visit. Tide, climate, and geology all shape the unique relationship between land and water along the coastline. The region continues to grow as people leave colder climates to live near the beautiful oak trees and sandy beaches. With population growth, however, come many other elements of development.

The vision of a community that is a healthy place to live, work, and raise a family—where the protection of natural resources is considered an integral part of social and economic values—can be accomplished when forethought and reverence for the environment is considered. To effectively manage the development of Georgia's coastal areas, residents and local governments must continue in their efforts to protect and be good stewards of the community's natural resources. With proper planning, Pooler will remain a place of beauty for centuries to come.

Coastal Resources

Georgia's coastal marshlands and beaches are seen as one of the state's greatest resources and a defining feature of Chatham County. The beaches draw new residents and tourists to the area, while the marshlands are an essential ecosystem for many plant and animal species and also protect coastal residents from the impacts of storms and higher-than-normal tides. The landscape along the Georgia coast is also dotted with marsh hammocks—back barrier islands or small upland areas surrounded by tidal waters and marshes—that provide a haven for wildlife.

As the state's coastal population grows and development pressures threaten Georgia's coastal resources, public policies protecting and conserving coastal lands must be implemented. Preservation of the region's coastal resources through land use regulations and land acquisition programs is essential to the resilience of the community and the local economy, and the quality of life for its residents.

FUN FACTS

22%

of land in Pooler is classified as marsh

WATER RESOURCES

Water Supply

Pooler is located within the Atlantic Coast Flatwoods area of the state within both the Savannah and Ogeechee River Basins and, more specifically, within the boundaries of the Lower Savannah, Lower Ogeechee, and Ogeechee Coastal Watersheds.

The Ogeechee River Basin headwaters are located in mid- to southeastern Georgia and are flanked by the Altamaha and Oconee River Basins to the west and the Savannah River Basin to the east. The headwaters are located in the southeastern edge of the Piedmont province, and the basin continues southeastward to the Atlantic Ocean, draining approximately 5,540 square miles of land area. The river basin is located entirely in the State of Georgia and plays a significant role in forming Wassaw, Ossabaw, Saint Catherine's, Black Beard, and Sapelo islands off the coast of Chatham County.

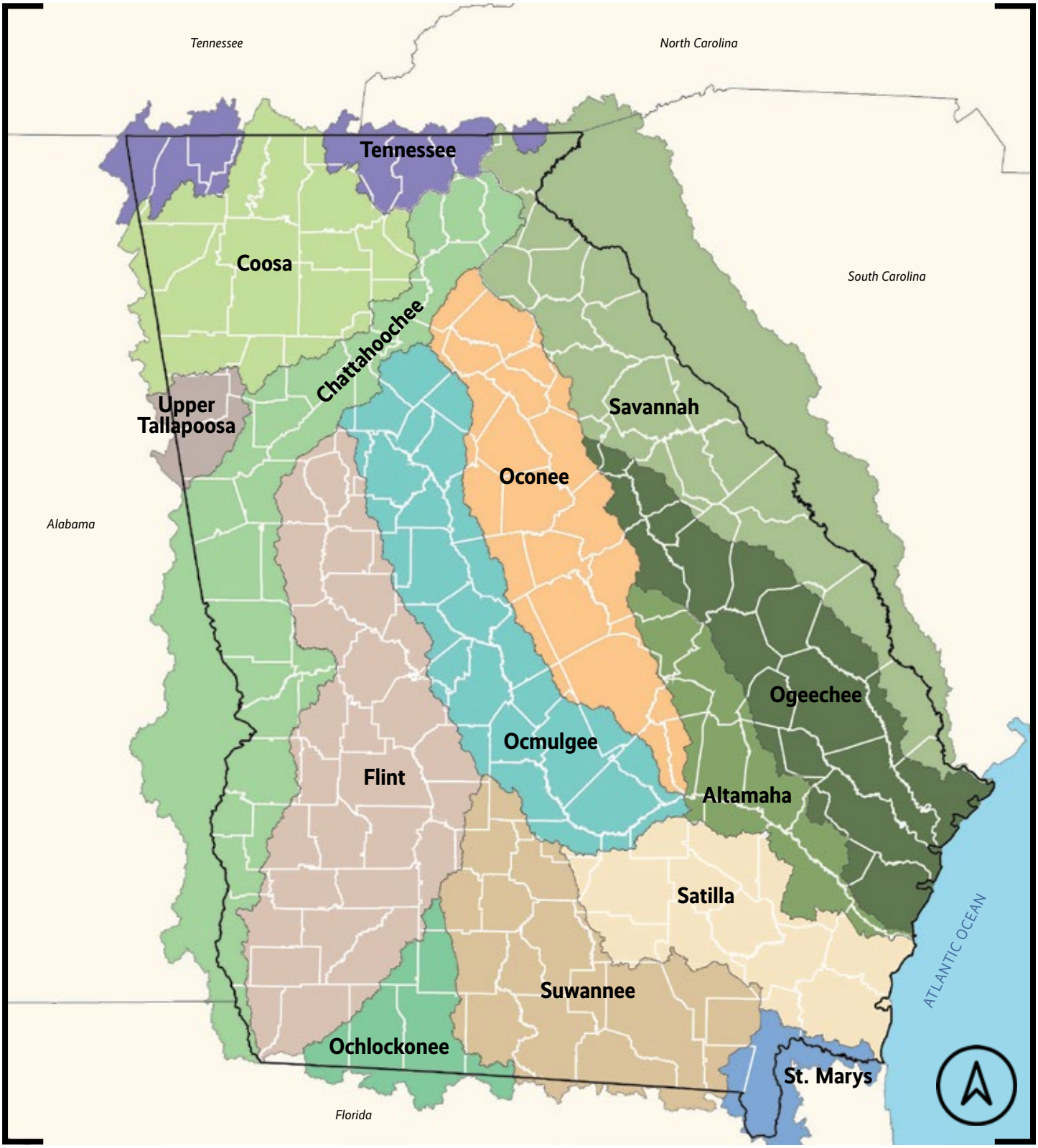
The Savannah River Basin is a 10,577 square mile watershed whose headwaters originate in the Blue Ridge Province of North Carolina, South Carolina, and Georgia. The Savannah River forms the boundary between South Carolina and Georgia as it flows southeast to the Atlantic Ocean at Savannah. The Savannah River is the most extensively used surface water source in the Savannah River Basin.

WATERSHEDS

A watershed is a land area that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean.

—USGS

SAVANNAH RIVER



Map 7.1–Georgia's River Basins

Public Water Supply Sources

The groundwater resources of Coastal Georgia—and the Floridan Aquifer system in particular—are recognized as some of the most productive in North America. This particular system underlies an area of about 100,000 square miles in southeastern Mississippi, southern Alabama, southeastern Georgia, southern South Carolina, and all of Florida. The depth below the ground surface to reach the top of the Floridan Aquifer increases from less than 150 feet in coastal South Carolina to more than 1,400 feet in Glynn and Camden counties, Georgia.

Approximately 95% of the population of Chatham County is served by municipal or community water systems (Chatham County Comprehensive Water Supply Management Plan (2000 Update)); 98% of the water provided by these systems is pumped from the Floridan Aquifer and meets or exceeds drinking water standards. Water is pumped directly into the distribution system with chlorine and fluoride being the only treatment necessary.

Public Water Supply Issues

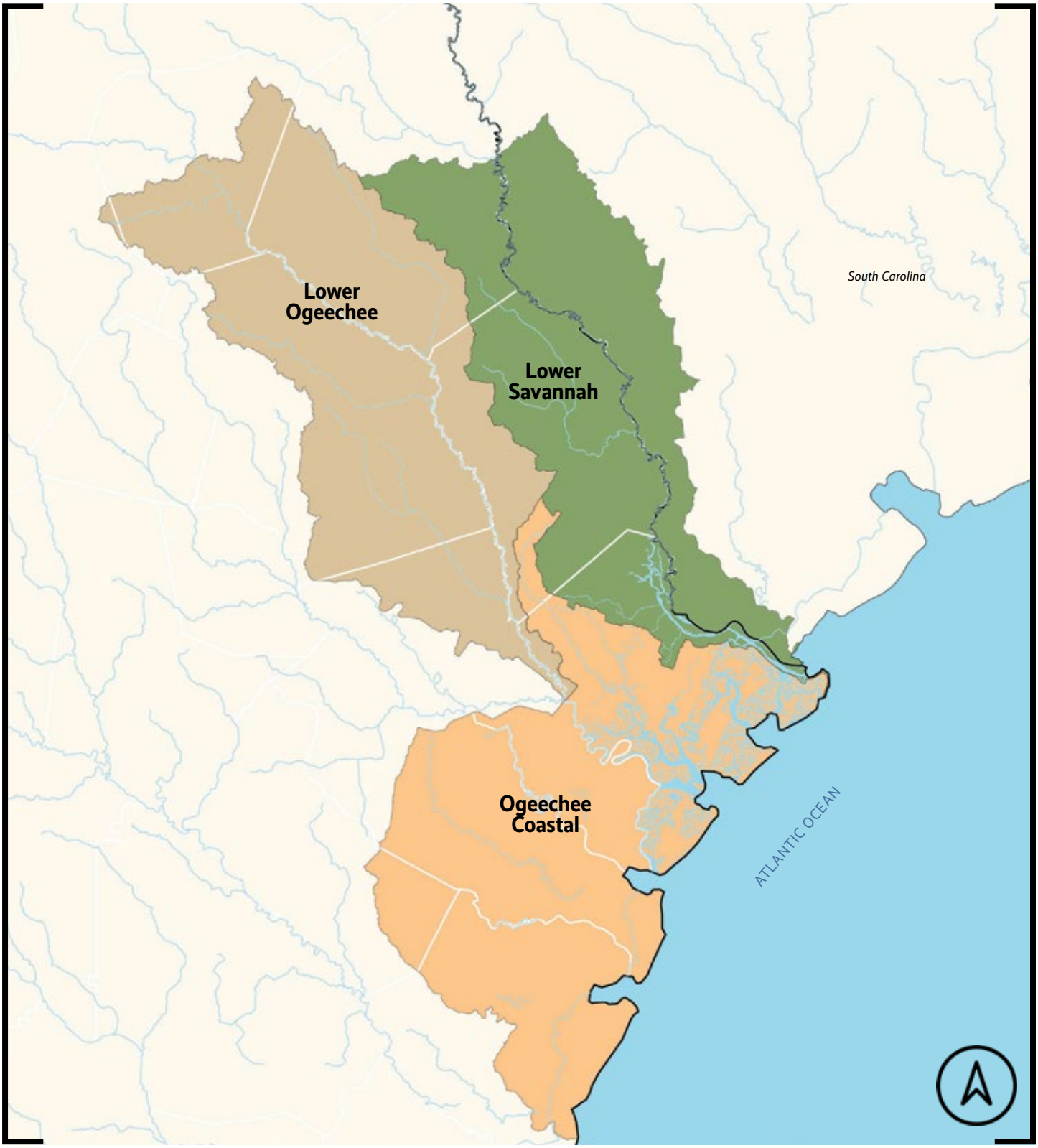
As a result of extensive pumping in much of the developed areas of Savannah and in the adjacent coastal areas in Georgia and South Carolina, the aquifer has experienced changes in the groundwater levels, rates and distribution of recharge and discharge, rates and direction of groundwater flow, and overall water quality in the aquifer system. As population growth increases the demand for drinking water, a reduction in groundwater usage becomes necessary to prevent saltwater intrusion into these critical water supplies.

Measures to reduce the amount of groundwater pumped from the Floridan Aquifer were instituted in 1995 when the Comprehensive Water Supply Management Plan for Chatham County was adopted. The Plan was the result of a cooperative effort by the local municipalities, major domestic water companies, and major industrial water users to reduce groundwater pumping.

Saltwater intrusion into the Floridan aquifer in the Savannah area threatens the continued viability of the region's primary drinking water supply source. In 1997, the State of Georgia Environmental Protection Division (EPD) limited the amount of groundwater that could be withdrawn from the Floridan Aquifer.

The EPD previously capped the amount of groundwater that could be withdrawn from the Aquifer and mandated a 10 million gallon reduction in pumping by 2005. The moratorium on additional groundwater withdrawal was viewed as a temporary measure pending a study to measure saltwater intrusion into the groundwater supply. This study, called the Sound Science Initiative, was completed in May 2010 and led to a multi-step approach to managing groundwater withdrawals along the coast.

Map 7.2–Floridan Aquifer System



Map 7.3–Chatham County's Large Watersheds

Red Zones

The Chatham and southern Effingham County region, classified as the "Red Zone," has experienced significant reductions to each county's groundwater withdrawal permit limits to help prevent impacts to the Floridan Aquifer system. Subsequent analysis of pumping indicated that the permit restrictions, conservation measures, and additional management strategies were proving effective. In October 2015, EPD again mandated a reduction in pumping from all groundwater withdrawal permittees within the Red Zone with reduction milestones for 2020 and 2025 included. In general, most of the 2015 permit limits for Red Zone users were reduced by 22% for 2025.

In light of the new directives from EPD, the municipal water providers within Chatham County and southern Effingham County continue to explore opportunities to coordinate water supply management and conservation efforts for the long-term.

The issues affecting groundwater quality (domestic, industrial, and agricultural pumpage, and vertical and horizontal migration of saltwater into the aquifer) must continue to be addressed on a regional basis because groundwater withdrawal in one area affects the piezometric pressure throughout the aquifer, and saltwater intrusion in one part of the aquifer may eventually contaminate the entire aquifer system.

SALTWATER INTRUSION

Saltwater intrusion occurs when too much groundwater is pumped from coastal aquifers and saltwater migrates inland, contaminating the water supply.

—USGS

MANAGING SALTWATER INTRUSION

Chatham County and the southern portion of Effingham County (south of GA Hwy 119) were identified in the 2006 Coastal Georgia Water and Wastewater Permitting Plan for Managing Saltwater Intrusion as having the highest vulnerability for the groundwater cone of depression that extends into South Carolina, where saltwater intrusion has already occurred.

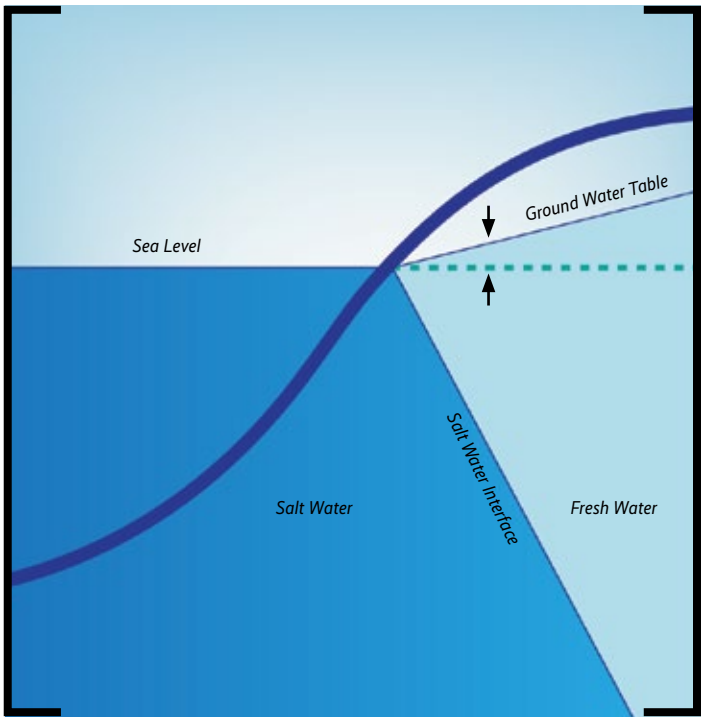
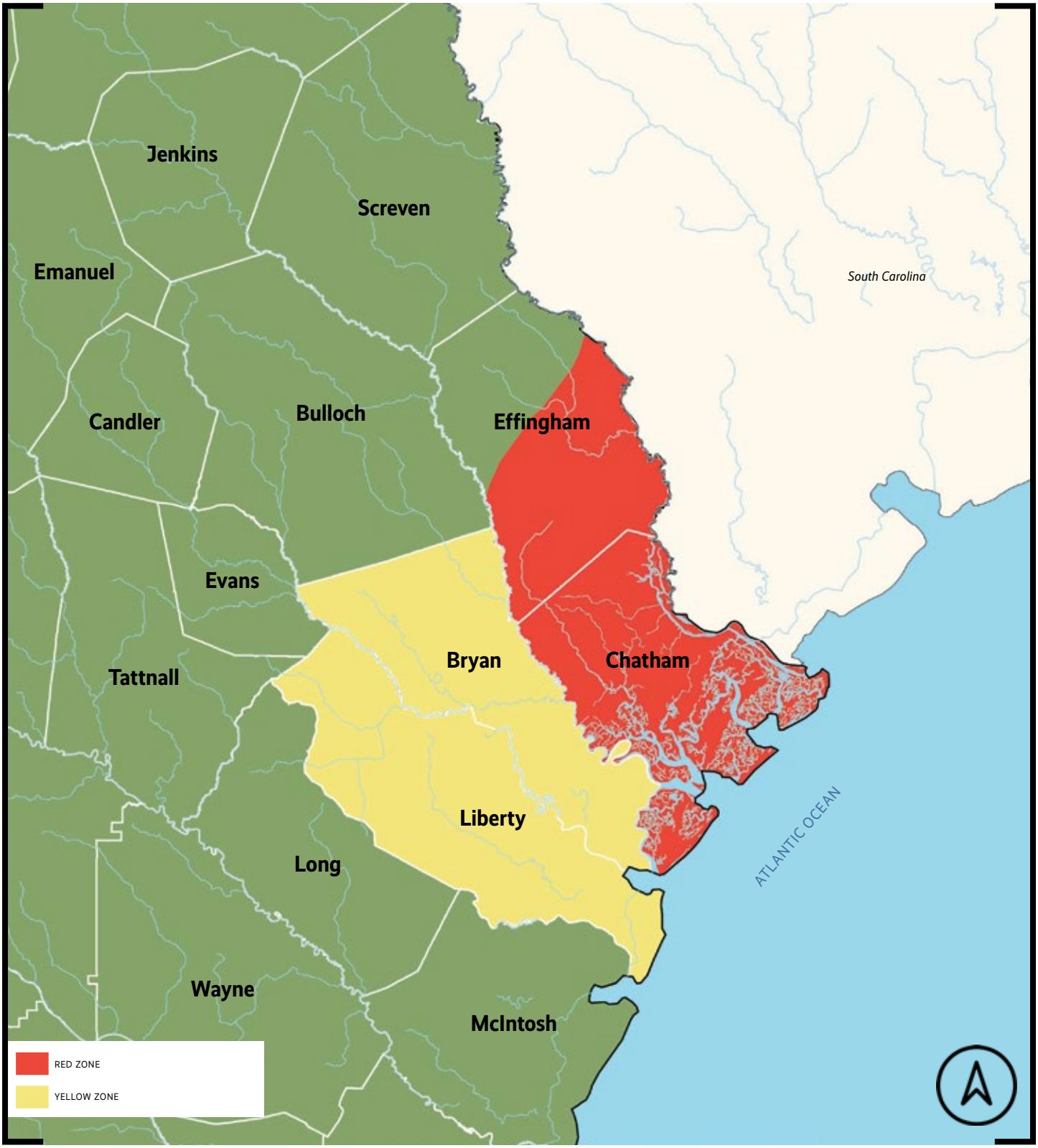


Figure 7.1–Aquifer Impact Diagram



Map 7.4–Chatham County's "Red Zone" Water Management Area

Groundwater Recharge Areas

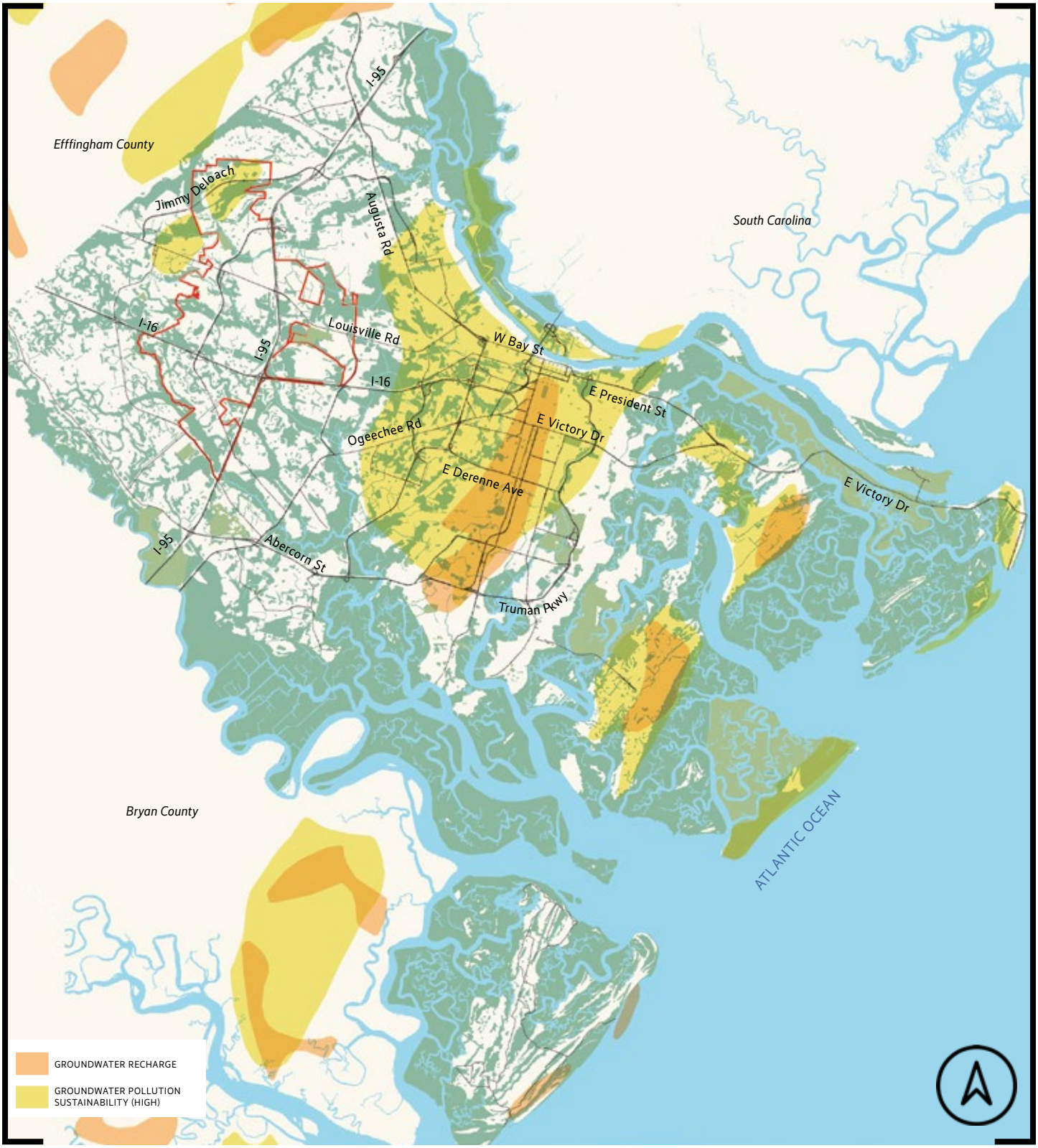
A groundwater recharge area is the land where the water that eventually seeps down into an aquifer first enters the ground. Groundwater can move readily through soils and rocks that have large pore spaces (porous) such as sand, gravel, sandstone, or limestone. However, soils and rocks with small pore spaces (non-porous) such as clay, shale, or granite, hinder water movement. The principal aquifer recharge zone for the Floridan Aquifer system is located approximately 100 miles northwest of the city of Savannah where the upper boundary of the aquifer's confining layer outcrops at the surface near the Fall Line separating the Piedmont province from the Coastal Plain. Smaller areas of groundwater recharge are specifically located in the Miocene/Pliocene-Recent unconfined aquifer system within Chatham County. These local recharge areas are generally located outside of Pooler on Wilmington Island, Skidaway Island, and along the Abercorn Street corridor in Savannah.

Groundwater Pollution Susceptibility

If hazardous or toxic substances pollute the water that seeps into the ground in a recharge area, these pollutants are likely to be carried into the aquifer and contaminate the groundwater, ultimately effecting a community's drinking water source. Once polluted, it is almost impossible for a groundwater source to be cleaned up. For this reason, a local wellhead protection ordinance was passed, and the City routinely performs inspections of community wells to prevent wellhead contamination and to address any stormwater pollutants that have the potential to impact groundwater quality through the wellhead.

In Pooler, the protection of groundwater recharge areas is also overseen by restricting land uses that generate, use, or store pollutants within groundwater recharge areas and by establishing minimum sizes for lots within groundwater recharge areas that are served by on-site sewage management systems. Prior to the issuance of a building permit or a demolition permit, the Zoning Administrator assesses whether the proposed activity is located within a groundwater recharge area as identified by the Georgia Department of Natural Resources (GA DNR). All lands identified as groundwater recharge areas are subject to restrictive development standards.

Specific areas adjacent to Pooler have also been deemed to have a higher pollution susceptibility. Careful consideration should be taken within these areas when deciding on land uses and new development to protect the area's groundwater system.



Map 7.5–Chatham County's Groundwater Recharge and Groundwater Pollution Areas

Impaired Water Bodies

Under related environmental protection measures, section 303(d) of the 1972 Clean Water Act mandates that all states develop lists of impaired waters within their jurisdiction. Impaired waters have been identified as polluted and are not currently or are not expected to meet applicable water quality standards. The EPD has a complete "303(d) list" for the State of Georgia and Chatham County.

Currently, there are two impaired waterways within Pooler that are currently being monitored and investigated for measures to improve water quality. One of these impaired bodies is Pipemakers Canal, a major waterway and floodway that traverses several jurisdictions and should be considered for more stringent protection measures due to the amount and type of flood waters it receives.

ARE YOU LOOKING FOR MORE INFORMATION?

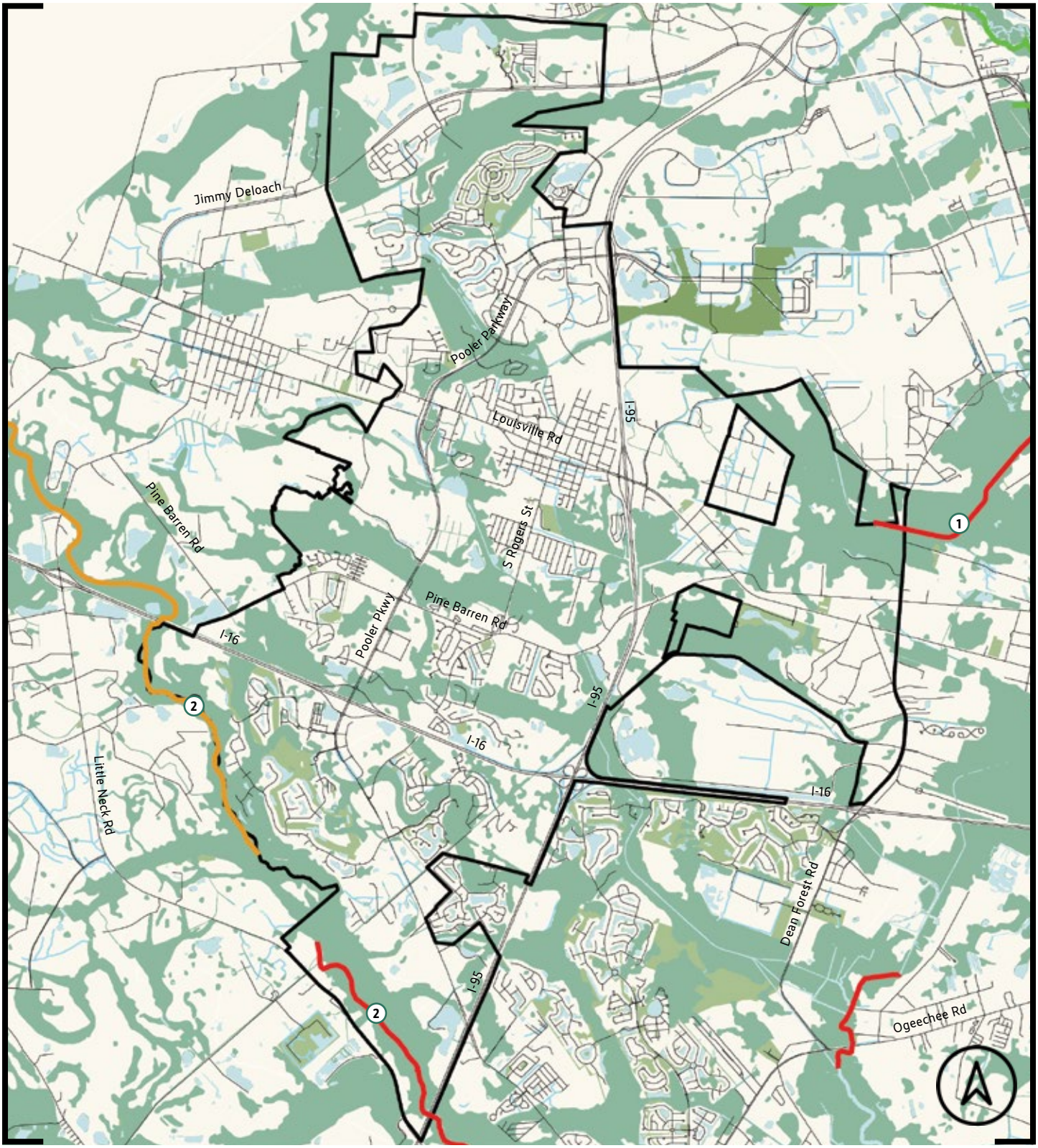
The most current 303(d) list for the State of Georgia and Pooler can be found at the link below...

https://epd.georgia.gov/watershed-protection-branch/watershed-planning-and-monitoring-program/water-quality-georgia

Impaired Waters 305(b)/303(d) List 2020

	Name
1	Pipemakers Canal
2	Little Ogeechee River

Figure 7.2–Impaired Water Bodies, Pooler



Map 7.6–Impaired Water Bodies, Pooler

STORMWATER MANAGEMENT

Stormwater runoff is generated from rain that flows over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, oils, dirt, and sediment that can harm our rivers, streams, lakes, and coastal waters. To protect these resources, communities, construction companies, industries, and others, use stormwater controls, known as best management practices (BMPs). These BMPs filter out pollutants and/or prevent pollution by controlling pollutants at their source.

The State and Local National Pollutant Discharge Elimination System (NPDES) stormwater programs regulate stormwater discharges through municipal separate storm sewer systems (MS4s). Depending on population size, operators of the MS4s are required to obtain an NPDES permit before they can discharge stormwater. This permitting mechanism is designed to prevent stormwater runoff from washing harmful pollutants into local surface waters (www.EPA.gov/ npdes/npdes-stormwater-program).

Stormwater Management Programs (SWMP) have been adopted by each municipality in Chatham County as a requirement of the NPDES administered by the GA DNR. Pooler is considered a Medium Phase I MS4 Permittee. The City's management plan includes routine water quality sampling and testing; calculation of pollutant loads; identification and elimination of illicit discharges; training, preparation of annual reports to the Georgia EPD; and education and public awareness programs.

Municipal Stormwater Programs & Permits

	MS4 Permit Number	Location
1	GAS000205	Savannah
2	GAS000206	Chatham County
3	GAS000207	Bloomingdale
4	GAS000208	Garden City
5	**GAS000209**	**Pooler**
6	GAS000210	Port Wentworth
7	GAS000211	Thunderbolt
8	GAS000212	Tybee Island

Figure 7.3–Phase I MS4s in Chatham County

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Coastal Stormwater Supplement

Pooler adopted the Coastal Stormwater Supplement to the Georgia Stormwater Management Manual (CSS). The CSS is a tool intended to provide Georgia's coastal communities with comprehensive guidance on an integrated, green infrastructure-based approach to natural resources protection, stormwater management, and site design.

As water flows across municipal boundaries and stormwater management efforts (or lack thereof) impact neighboring jurisdictions, Chatham County and all of the municipalities within it should work towards addressing stormwater issues collectively. The creation of a Regional Stormwater Committee or Commission should be considered to ensure that efforts being made are as efficient and effective as possible.

Statistically, most stream quality indicators decline when watershed impervious cover exceeds 10%, with severe degradation expected beyond 25%. In Chatham County, the majority of growth is targeted to western areas of the county. It is likely that future stream health indicators (e.g., biological health, streambank stability) will be impacted in watersheds that have a substantial amount of land development. Several of these watersheds may transition over to an Impacted category. As a result, these impacted watersheds are excellent target areas for advanced stormwater management, riparian buffer management, and development principles that protect water quality, such as low-impact development (LID).

STORMWATER RUNOFF

Stormwater runoff is rainfall that flows over the ground surface. It is created when rain falls on roads, driveways, parking lots, rooftops and other paved surfaces that do not allow water to soak into the ground.

—Center for Watershed Protection

#1

Stormwater runoff is the number 1 cause of stream impairment in urban areas*

*Center of Watershed Protection, 2006

GEOLOGY & SOIL TYPE

All of Chatham County is within the Atlantic Coast Flatwoods area of Georgia. The Atlantic Coast Flatwoods area occurs along the seaward portion of Georgia and is characterized by nearly level topography and poorly drained soils that are underlain by marine sands, loams, and/or clays. A series of marine terraces, roughly paralleling the coast, extends inward from sea level to an elevation of approximately 100 feet. The lower lying flat terraces do not have well-defined drainage systems and runoff moves slowly into slow-moving canals, streams, rivers, and finally into the ocean.

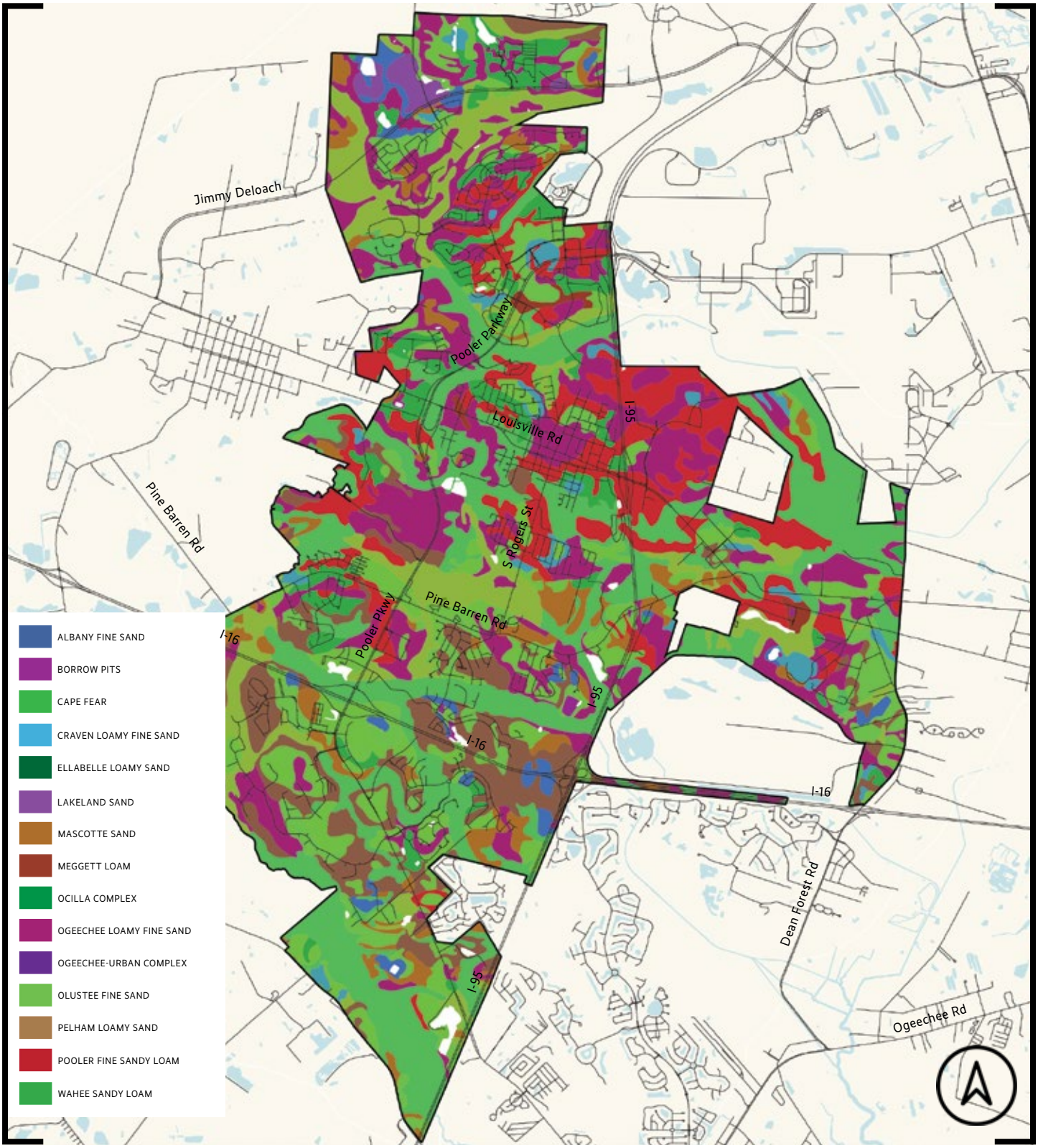
Pooler's soils tend to predominantly fall into the D-type category of soils, with shallow water tables that make infiltration difficult. Group D soils are clay loam, silty clay loam, sandy clay, silty clay, or clay. This Hydrologic Soil Group has the highest runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high-water table, soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material *(https://engineering.purdue.edu)*. The average soil rating in Chatham County, as measured by the National Commodity Crop Productivity (NCCPI), is 47.

NATIONAL COMMODITY CROP PRODUCTIVITY

The National Commodity Crop Productivity Index (NCCPI) is a model that uses inherent soil properties, landscape features, and climatic characteristics to assign ratings for dry-land commodity crops such as wheat, cotton, sorghum, corn, soybeans, and barley.

The value of ranges is from 0 to 100, with 100 being the best

—USDA



Map 7.7–Soil Types, Pooler

WETLANDS

Wetlands are vital features in the region's landscape that provide benefits for people and wildlife. Wetlands are able to improve our water quality, provide natural habitat, and store floodwaters. A wide variety of amphibians, animals, plants, and microbes inhabit wetlands, making them some of the most productive ecosystems in the world.

Over the past 60 years, many wetlands in Georgia have been altered and converted to other uses due to development; many of these conversions were of freshwater wetlands on the coastal plain. Conversion rates in Georgia have accelerated due to changing demands for agricultural and forest products, population growth, and urban expansion in the Piedmont, mountains, and along the coast. This has had a distressing effect on not only the natural environment, but also the human environment as flooding increases in frequency and magnitude with nowhere for floodwaters to go.

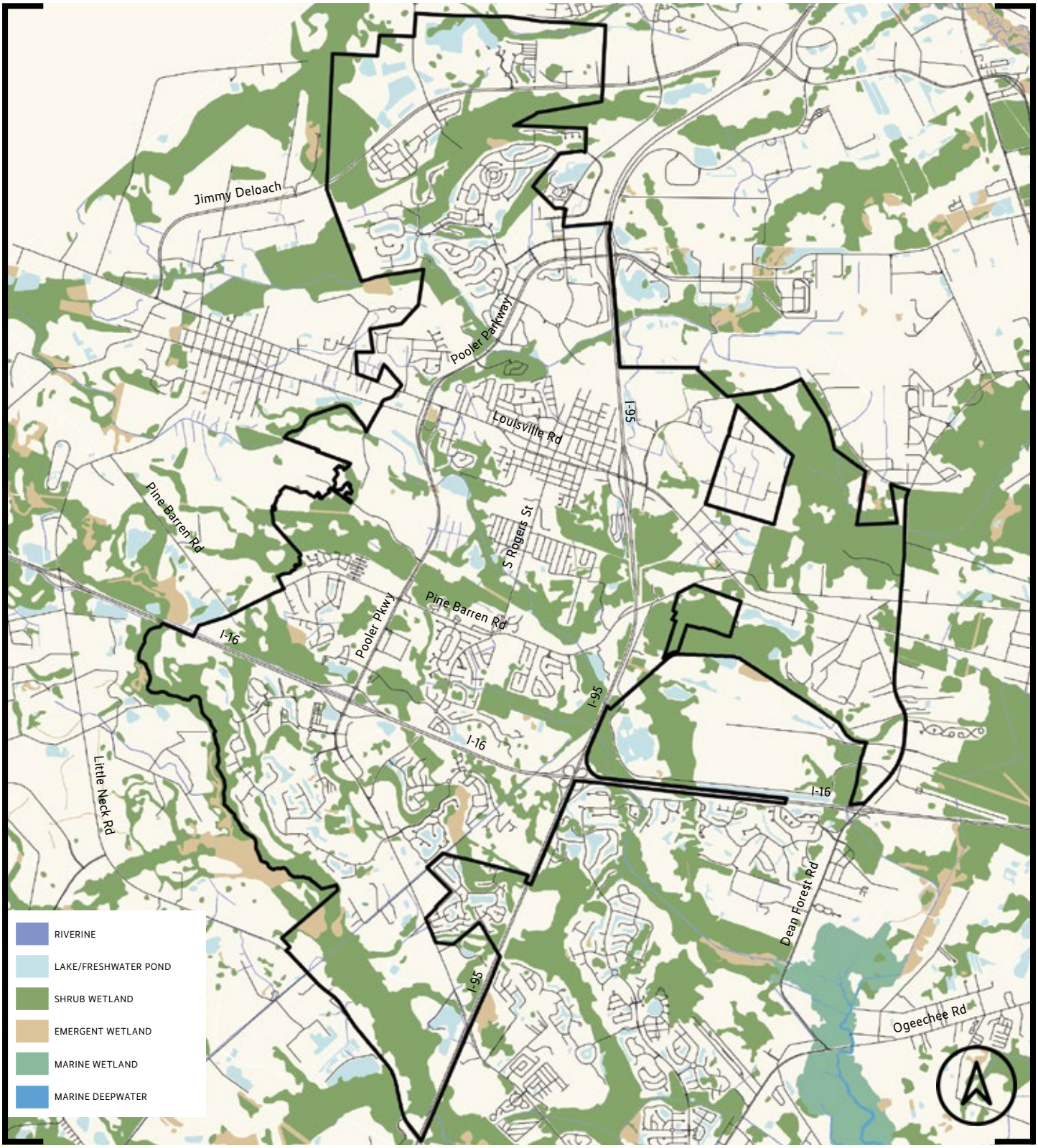
Over the past 60 years, many wetlands in Georgia have been altered and converted to other uses due to development; many of these conversions were of freshwater wetlands on the coastal plain.

BENEFITS OF WETLANDS

Among the numerous functions of wetlands, the following roles are the most critical:

- Flood control
- Water quality and availability
- Erosion control
- Fish and wildlife habitat
- Recreation and aesthetics

—US EPA



Map 7.8–Wetland Classification, Pooler

Directly related to the need for wetland conservation, under the Part V Environmental Planning Criteria requirements, Pooler has adopted a Wetland Protection Ordinance that provides a procedure to coordinate federal wetlands permitting with local permitting. This ordinance provides a regulatory framework by which potential wetland impacts are evaluated before local permits for land disturbance and building are issued.

The future of wetlands is closely linked to land use decisions made not only by local governments but by private landowners as well, since regulations are inexpensive relative to acquisition and can provide substantial protection for wetlands. Incentive-based programs—including nonconventional development standards such as subdivision regulations, stormwater management ordinances, and floodplain ordinances—are other means of protecting wetlands that have been implemented locally.

FUN FACTS

11.5

square miles of land in Pooler are classified as wetland

Stormwater management ordinances such as Pooler's can be used to protect wetlands as a means of reducing non-point source pollutants and to create artificial wetlands for the treatment of surface runoff. In addition, pollution controls may be used to prohibit discharges into area wetlands.

According to NOAA's Office of Coastal Management (NOAA OCM) CCAP Land Cover data, 8.54% of total area in Chatham County changed land cover from 1996–2016. This includes a net loss of 5.5 square miles of wetlands and 15.9 square miles of forested land, and a net gain of 23.9 square miles of developed land over the last 20 years.

PLANNING CRITERIA

To ensure continuous protection of water supply watersheds, groundwater recharge areas, wetlands, and river corridors, specific environmental planning criteria have been developed and discussed throughout this section of the Comprehensive Plan as required. These include:

- Criteria for water supply watersheds
- Criteria for protection of groundwater recharge areas
- Criteria for wetlands protection
- Criteria for river corridor protection

Chatham County Land Cover Changes Over Time

Land Cover Categories	1996 Area (sq. mi.)	Area Lost (sq. mi.)	Area Gained (sq. mi.)	2016 Area (sq. mi.)	Percent Change	Net Change (sq. mi.)
Developed (High Intensity)	19.15	0.00	8.95	28.10	46.73%	8.95
Developed (Low Intensity)	38.14	-0.34	10.00	47.80	25.32%	9.66
Developed (Open Space)	22.31	-1.02	6.35	27.63	23.87%	5.32
Grassland	8.36	-4.90	1.99	5.45	-34.74%	-2.90
Agriculture	3.54	-0.67	0.74	3.61	1.98%	0.07
Forested	89.97	-19.36	3.46	74.07	-17.67%	-15.90
Scrub/Shrub	8.76	-5.30	4.15	7.61	-13.10%	-1.15
Woody Wetland	78.04	-9.07	1.63	70.60	-9.54%	-7.44
Emergent Wetland	155.91	-2.13	4.06	157.84	1.23%	1.93
Barren Land	9.09	-1.06	2.59	10.62	16.76%	1.52
Open Water	199.03	-2.25	2.19	198.97	-0.03%.	-0.05

Figure 7.4–Chatham County Land Cover Changes 1996–2016

FLOODPLAINS & FLOOD ZONES

Floodplains are flat or lowland tracts of land adjacent to lakes, wetlands, and rivers that are typically covered by water during a flood. The ability of the floodplain to carry and store floodwaters should be preserved in order to protect human life and property from flood damage. Moreover, undeveloped floodplains also provide many other natural and economic resource benefits.

Floodplains often contain wetlands and other areas vital to a diverse and healthy ecosystem. By making wise land use decisions in the development and management of floodplains, beneficial functions are protected and negative impacts to the quality of the environment are reduced. Pooler has updated its Floodplain Protection Ordinance to begin addressing sea level rise and the natural migration of waters along the coast; however, more attention must be given, and measures must be enacted in the near future to allow for further protection of the coastal community from rising waters due to changes in the environment.

FLOOD ZONES

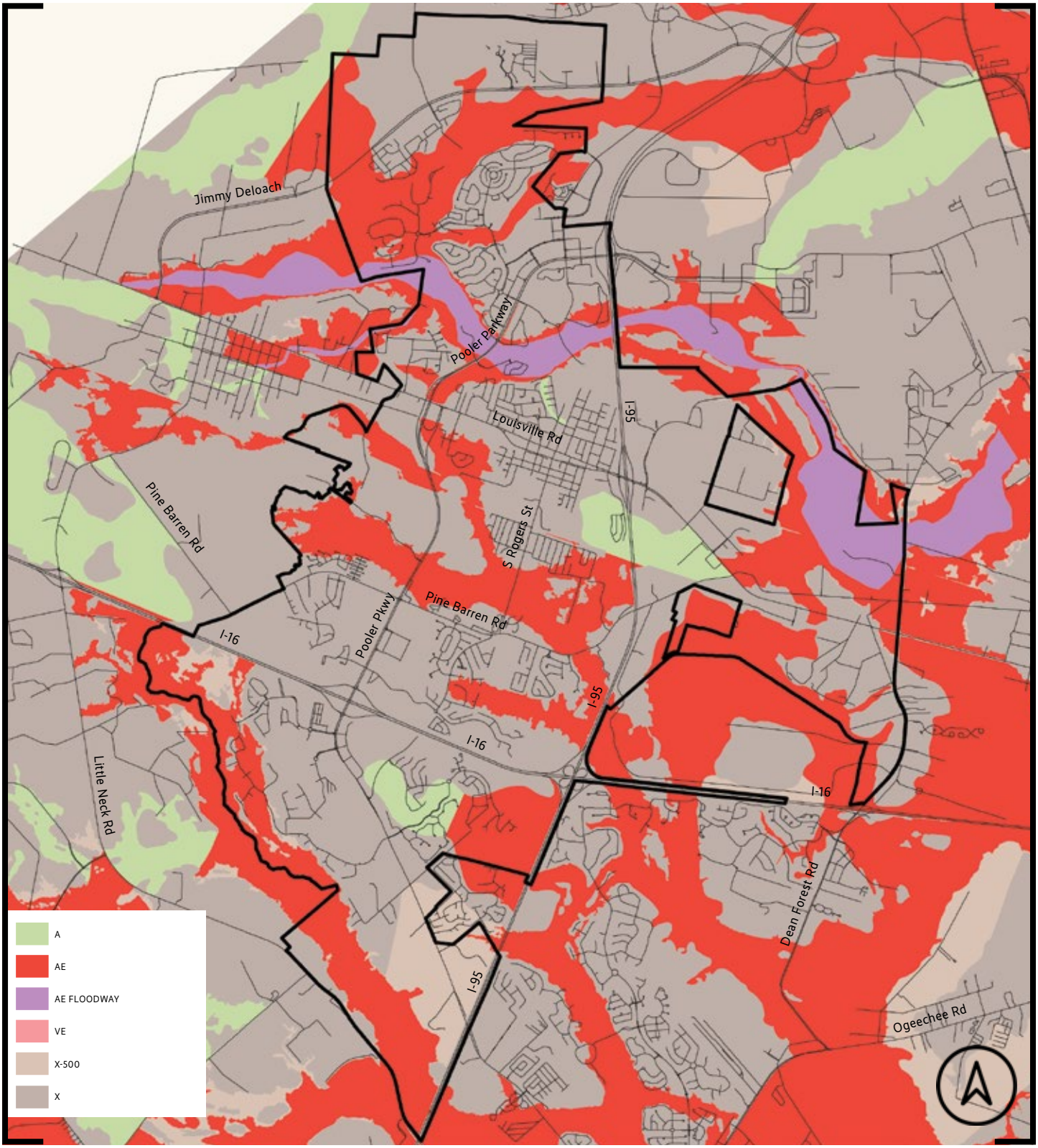
Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's FIRM or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

—FEMA

Flood Zones

The Federal Emergency Management Agency (FEMA) is tasked with creating Flood Insurance Rate Maps (FIRM) that determine flood zone designations for properties. Flood maps offer useful information and represent the official depiction of flood hazards for a community. Flood zone designations, coupled with local policies and the efforts of municipal floodplain managers, impact the flood insurance rates of individual properties.

It is important for property owners to know what their property's flood zone designation is in order to fully understand the potential risks their home, business, or land faces. This information can aid in making decisions regarding investments or alterations to property that will minimize possible risks, when making preparations for potential flooding events, and in determining if flood insurance is necessary.



Map 7.9–Flood Zones 2018, Pooler

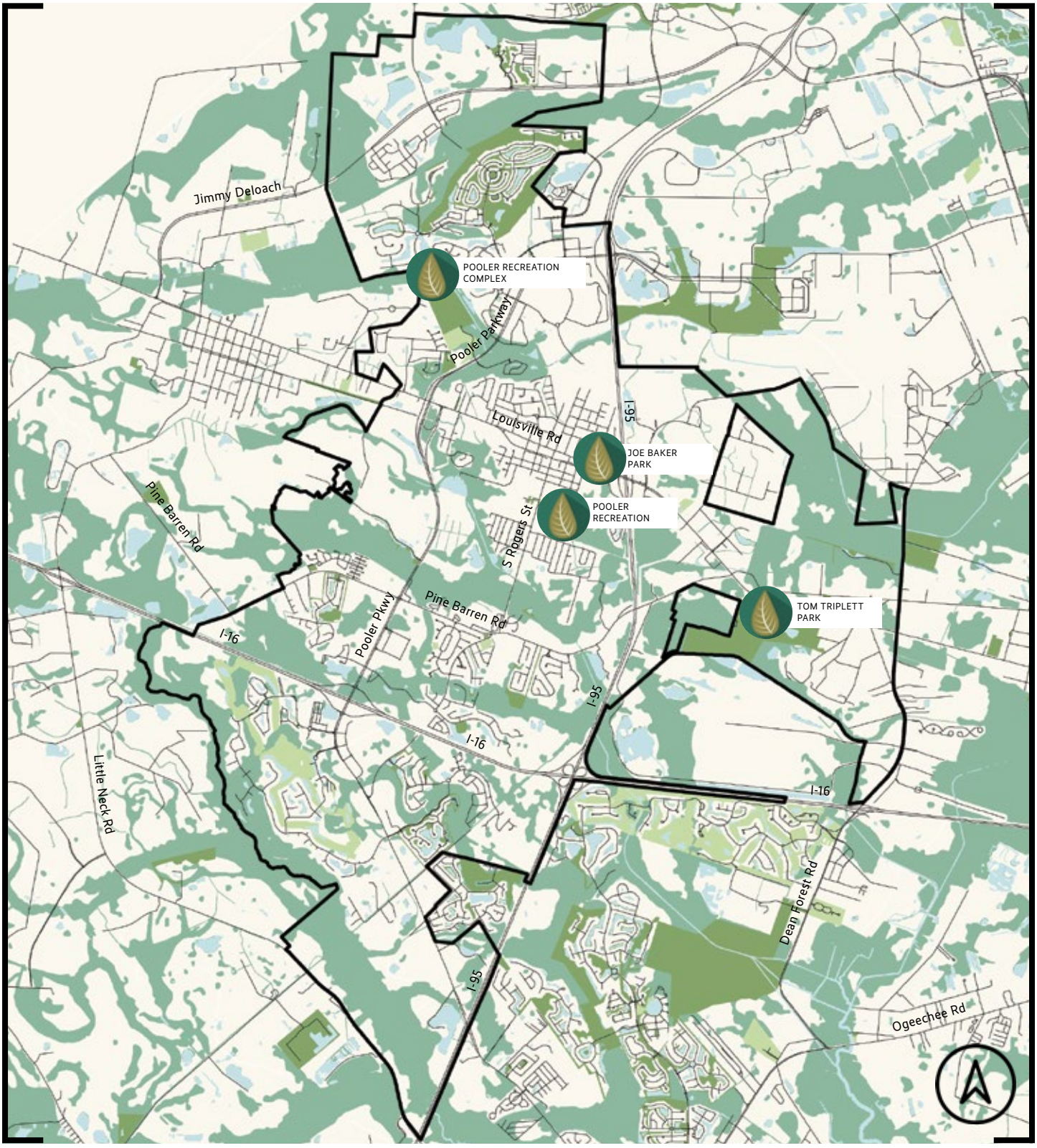
PARKS, RECREATION, & CONSERVATION AREAS

The natural and scenic amenities of Pooler offer many recreational and cultural opportunities. As open space in the city continues to be lost to development, it is imperative to explore all available means for land conservation before it is too late. Land acquisition programs such as the Chatham County Resource Protection Commission should be funded and utilized in conjunction with land use regulations to ensure the open space needs of the region will continue to be met.

In addition to providing an adequate quantity (acres) and type (ballfields, wildlife habitat) of open space, it is important to work to ensure equity to all residents. All residents should have access to a variety of parks, recreation, and open space within close proximity to their residence. Trails, bikeways, and pedestrian paths, as well as other non-vehicular paths should be incorporated into such areas to provide access for those without personal transportation.

"Open space" is an area that is valued for active and passive recreation and protection of natural resources (including natural processes and wildlife), provides public benefit, and is part of one or more of the following categories: developmentally difficult lands, natural resource areas, commercially used natural resources areas, natural amenity areas, recreational areas and urban form areas".

TOM TRIPLETT PARK



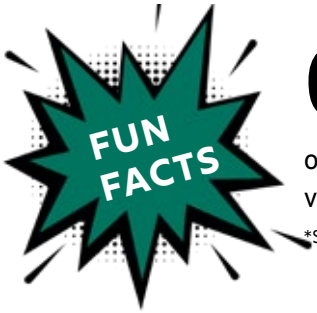
Map 7.10–Parks, Recreation, and Conservation Areas, Pooler

PRIME AGRICULTURAL & FOREST LAND

The loss of agricultural and forest land is not only a local issue, but is taking place across the country. More and more land that was once farmland or forest is being developed for residential subdivisions or commercial uses. The loss of these lands negatively impacts the environment in multiple ways: by increasing impervious surfaces resulting in flooding and nonpoint source pollution; by reducing air quality through the elimination of trees that filter pollutant gases; and by increasing energy consumption due to the additional miles traveled transporting crops and livestock. The loss of agricultural land can also make residents reliant on other states or countries for their food supplies.

According to the National Agricultural Statistics Service (USDA), between 2012 and 2017 there was a 91% increase in the number of farms in Chatham County from 35 to 67 farms totaling 4,677 acres. Chatham County's average farm area in 2017 was 70 acres. The number of farms in the county has been trending upward for the first time in almost 20 years, most likely due to the increasing movement of growing and sourcing local foods such as berries, honey, meat, and eggs from nearby nurseries and small farms.

Now more than ever, the implementation of land use regulations and incentive-based programs to prevent the loss of agricultural and forest lands is pertinent.



63%

of land in Pooler is classified as vegetation*

*Savannah Tree Foundation, Tree Canopy Assessment 2020

Tree Canopy

The Savannah Tree Foundation's 2020 Tree Canopy Assessment provided a bird's eye view and illustrated general trends in tree loss and gain countywide.

Major Takeaways

- While the county has gained tree quantity, it has lost quality trees
- The impacts of not having or not enforcing tree ordinances are evident
- Large-scale clear-cutting associated with industrial construction is having the most noticeable impact on the county's tree canopy

Tree Canopy Change Over Time

Municipality	2014 Percent Vegetation	2020 Percent Vegetation	Percent Change	Acreage Change
Unincorporated	25%	32%	7%	14,655
Savannah	39%	49%	10%	7,137
Garden City	53%	66%	13%	1,207
Pooler	**62%**	**63%**	**1%**	**204**
Bloomingdale	83%	83%	0%	-5
Tybee Island	7%	15%	8%	168
Thunderbolt	17%	31%	14%	146
Port Wentworth	66%	73%	8%	812
Vernonburg	73%	83%	10%	26
Overall	34%	41%	7%	23,757

Figure 7.5–Chatham County Tree Canopy Change

Challenges Ahead

GROWTH AND DEVELOPMENT:

The city of Pooler has seen a dramatic 39% increase in population since 2010. This is vastly higher than Chatham County's population growth of about 9% during the same time frame. This sustained residential growth and industrial expansion in the city will continue to drive a reduction in tree canopy with fewer trees being replanted versus what is being removed during construction. This additional growth will continue to put stressors on the city's infrastructure systems and require planning to ensure the growing population and related impacts do not adversely affect the city's efforts toward sustainability.

AGING TREE CANOPY:

Pooler is dealing with an aging tree canopy, especially in older neighborhoods with trees that are 75-100+ years old. Most urban live oaks will live to be about 150 years old, which means many local trees will age out around 2040. To ensure that a consistent tree cover remains intact at all times, the City will need to make certain that dollars are programmed, trees are systematically replanted, and strict protection and planting ordinances are strengthened.

INCREASED OCCURRENCES OF PESTS AND DISEASE:

Increased globalization means that pests and disease travel faster and further. For example, the adjacent city of Savannah has already lost more than 1,000 Sugarberry trees to an unknown disease and the Asian Longhorned Beetle—whose larvae feed on hardwoods and have led to large-scale destruction of trees elsewhere in the U.S.—was recently found nearby in South Carolina.

Impacts of a Changing Climate

The coastal area has begun to see scattered "ghost forests" that represent the extent of coastal trees lost to sea level rise and saltwater intrusion over the last several decades. By naturally absorbing large amounts of stormwater and helping to mitigate any flood impacts from increased sea levels, trees are a powerful resource for the local environment. However, a negative consequence of saltwater infiltration and storm surge can often be seen after storms and recurrent flooding: the rising waters cause saltwater intrusion into freshwater habitat, often gradually killing or severely damaging coastal trees from the roots up leading to their expensive removal later.

Additionally, tree canopies can greatly assist in lowering the temperature and overall "heat stress" in communities, especially those dealing with known heat island effects.

PROTECTED MOUNTAINS, RIVERS, & CORRIDORS

The State of Georgia requires every community to identify and put mechanisms in place to protect specific critical resources such as mountains, rivers, and river corridors that flank major rivers. The coastal region does not contain any protected statewide mountain areas; however, the coast's beautiful rivers and corridors are not only critical ecosystems, but they are paramount to the community's future growth and sustainability.

These river corridors are of vital importance because they help preserve those qualities that make a river suitable as a habitat for wildlife, a site for recreation, and a source for clean drinking water. River corridors also allow the free movement of wildlife from area to area within the state, help control erosion and river sedimentation, help absorb floodwaters during natural events, and allow the natural migration of floodwaters due to sea level rise.

Riparian buffers are of particular importance to the overall protection of water quality and habitat within the Lowcountry and coastal areas of Georgia. Scientific research has found many reasons for riparian buffers, including:

- to reduce the volume and velocity of stormwater runoff in order to protect the hydrological profiles of surrounding waterways
- to reduce sediment and pollutants going into open water
- to provide upland wildlife habitat areas
- to help maintain in-stream temperatures provided by shade within the tree canopy of the buffer system
- buffering adjacent neighborhoods
- enhancing community appearance.

RIVER CORRIDOR

Corridors include an expanded channel width to help preserve the qualities that make a river or stream suitable as a habitat for wildlife, a site for recreation, and a source for domestic and other water uses.

—FEMA

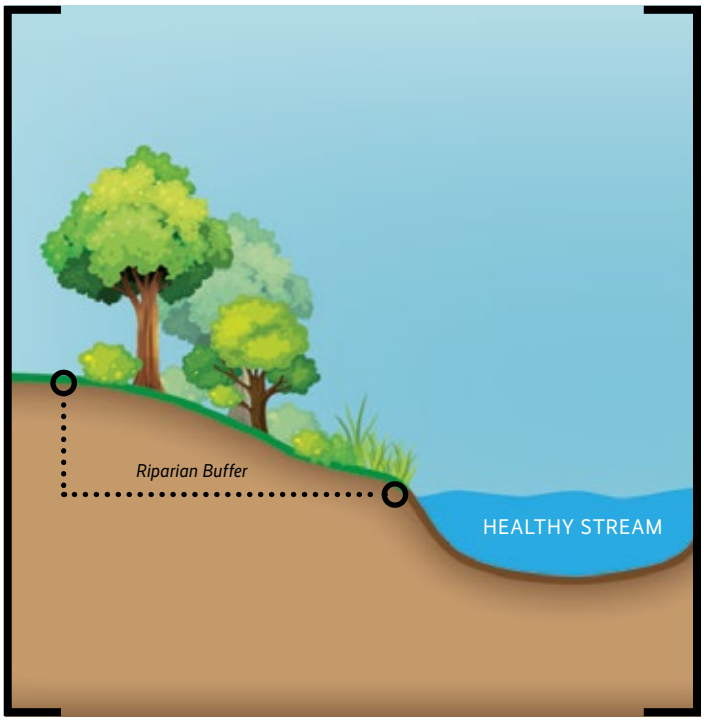


Figure 7.6–Riparian Buffer

RIPARIAN BUFFER

A riparian buffer or stream buffer is a vegetated area (a buffer strip) near a stream, usually forested, which helps shade and partially protect the stream from the impact of adjacent land uses.

—EPA

RENEWABLE ENERGY

A community's dependence on non-local fossil fuels as an energy source has many far-reaching consequences. Extracting these resources negatively impacts the environment, while burning fossil fuels contributes to poor air quality which can lead to respiratory disease and other ailments. The culmination of these actions depletes the atmosphere and exacerbates climate change.

Facing the challenge to accelerate the development and deployment of clean, renewable energy sources to respond to the negative impacts of burning fossil fuels while also protecting the natural resources and unique community character is a daunting endeavor. But it is one that must be made a priority in order to protect the environment and the quality of life of Pooler's residents.

Fundamentally, some basic goals which should be a focus include:

- Develop and adaptively refine a measurable working definition of "sustainability"
- Improve energy-efficiency to reduce power consumption
- Transition to clean energy
- Improve the diversity, equity, and stability of employment and investment in the green energy economy
- Reduce dependency on power sources that emit greenhouse gases
- Improve the ability to monitor and evaluate the parameters of "sustainability" in general, as well as the effects of policies, practices, and actions/projects initiated in accordance with the Comprehensive Plan

SOLID WASTE MANAGEMENT

Historically, the method for handling solid waste in Chatham County has been primarily through the disposal of solid waste in area landfills. This arrangement has been satisfactory from the standpoint of the landfill operators who enjoy the benefits of the profits generated and their customers who enjoy the relatively inexpensive disposal fees. However, because of the high land costs in Chatham County, it is unlikely that land will be available to construct new landfills when existing ones reach capacity, at which time county residents may be required to pay additional transportation costs to new landfills in other counties. In addition, it is likely that surrounding counties will demand a premium to accept waste generated outside of their area.

Chatham County's two landfills will reach capacity between the next 3-9 years. —Georgia EPD

Pooler has a curbside single-stream recycling program. The City's recycling program is popular with residents and has proven to be successful in removing materials from the waste stream prior to disposal in area landfills. The cheap cost of certain raw materials in comparison to the cost incurred to recycle that material continues to be a challenge in making recycling even more successful. In addition, recent years have seen adjustments in the recycling industry due to global market changes, leaving some materials unable to be recycled at all. Education campaigns should be adjusted to emphasize the need to reduce consumption and reuse materials where possible.

Preserving the capacity of the landfills by reducing the amount of waste generated, as well as recycling, composting, and mulching of yard waste should be a priority of the County. The City of Savannah is currently planning for expansion of its Dean Forest Landfill, however, as shown by the number of operating years remaining for each of the two area landfills, and because the management of solid waste requires a long-term perspective, a regional outlook and discussion on solid waste management is warranted.

Solid Waste Facilities

Facility	Facility Description	Average Daily Tons	Net Volume per Year	Rate of Fill (yd^3/day)	Years Remaining	Estimated Fill Date	Operating Days per Year
Savannah - Dean Forest Rd (SL)	Municipal Solid Waste Landfill	276	109,415	329	3	06.01.2024	333
Superior Landfill & Recycling Center 2 MSWL	Municipal Solid Waste Landfill	2,463	766,270	2,737	9	10.09.2030	280

Figure 7.7–Chatham County Permitted Landfills

CLIMATE CHANGE

It is widely recognized that shifts in large scale weather patterns—known as climate change—are already impacting residents in Chatham County. Negative impacts of climate change experienced locally include extreme heat, changes in the amount of annual rainfall, warmer ocean waters that feed and strengthen hurricanes, beach erosion, saltwater encroachment upon drinking water sources and natural habitats, infrastructure damage, loss of property, and more frequent flooding in the region due to sea level rise. The effects of climate change negatively impact the quality of life of residents in addition to causing irreparable damage to the natural and built environment.

Up to 178,787 people in Georgia could be at risk of sea level rise impacts by 2100 and, if sea levels rise 3 feet by 2100, Georgia will lose 36 square miles of salt marsh
—Georgia Climate Project

CLIMATE CHANGE

Climate change includes both global warming driven by human emissions of greenhouse gases and the resulting large-scale shifts in weather patterns.

Changes occurring on Georgia's coast due to climate change are expected to redistribute species and greatly modify ecosystems. Local ecosystems provide animal habitat and recreational opportunities, improve water quality, provide seafood, reduce erosion, minimize flooding impacts, and aid in the carbon sequestration process. These potential changes will come at a great cost financially, in the form of both tax dollars spent to mitigate impacts and the loss of revenue by small, local businesses that rely on fishing or working the land for their livelihood, in addition to the cost to the natural environment of such a loss of habitat (US Global Change Research Program, Fourth National Climate Assessment).

Climate change efforts can be in the form of mitigation—reducing activities that add to climate change—and adaptation—adapting to the changes in the climate that are currently occurring. Both mitigation and adaptation efforts will need to be implemented to protect the region from the impending negative impacts of climate change.

The way communities are developed has significant impacts on greenhouse gas emissions. Fundamental to this is for Pooler to support and require Smart Growth measures to manage the impacts of climate change as it relates to land use and development. This can be done through both mitigation and adaptation measures to help reduce greenhouse gas emissions from development and redevelopment projects.

Some mitigation efforts include preserving greenspace (particularly ecologically valuable land), preserving existing trees and/or requiring the planting of new trees, limiting the amount of impervious surfaces permitted, transitioning from fossil fuels to renewable and clean energy sources, and implementing land use regulations and capital improvement plans that limit development and infrastructure in areas at risk of sea level rise. All new infrastructure should be designed with climate change in mind.

The city is already seeing the effects of climate change, and these effects are projected to become more pronounced in the coming decades. Impacts will include more and stronger storms, more drought, more frequent extreme heat events, rising sea levels, and more localized flooding. Recognizing what specific changes might be projected for the city is essential to planning the community's future land use.

Adaptation efforts include elevating roads, lift stations, drinking water and other facilities where feasible, building flood defenses, preparing for reduced water availability, and planning for heat waves. It is a delicate balancing act to attempt to protect natural resources, public safety, and the economic stability of the community while implementing efforts to address climate change. Successful outcomes will depend on multi-jurisdictional cooperation in the development and implementation of policies that incorporate mitigation and adaptation measures.

The implementation of smart strategies can help the community adapt to these changes as well as other challenges that could arise regardless of climate change.

Four main challenges facing Pooler include:

- Urban infrastructure and health risks
- Flood risks in coastal and low-lying areas
- Natural ecosystem transformation
- Economic and health risks for more rural and low-income communities

URBAN INFRASTRUCTURE AND HEALTH RISKS:

Pooler is particularly vulnerable to climate change compared to cities in other regions, with expected impacts to infrastructure and human health. The vibrancy and viability of this area, including the people and critical regional resources located within, are increasingly at risk due to heat, flooding, and vector-borne disease brought about by a changing climate (https://nca2018.globalchange.gov/chapter/19/). Pooler is rapidly growing and offers opportunities to adopt effective adaptation efforts to prevent future negative impacts of climate change.

FLOOD RISKS IN COASTAL AND LOW-LYING REGIONS:

Pooler's inland low-lying area supports a rapidly growing population, a tourism economy, critical industries, and important cultural and natural resources that are highly vulnerable to climate change impacts. The combined effects of changing extreme rainfall events and sea level rise are already increasing flood frequencies, which impacts property values and infrastructure viability. Without the implementation of significant adaptation measures, the area is projected to experience daily high tide flooding by the end of the century.

NATURAL ECOSYSTEMS WILL BE TRANSFORMED:

Pooler's diverse natural systems, which provide many benefits to the community, will be transformed by climate change. Changing winter temperature extremes, sea levels, hurricanes, floods, droughts, and warming ocean temperatures are expected to redistribute species and modify ecosystems. As a result, the ecological resources that our community depends on for livelihood, protection, and well-being are increasingly at risk, and future generations can expect to experience and interact with natural systems that are much different than those seen today.

ECONOMIC AND HEALTH RISKS FOR MORE RURAL AND LOW-INCOME COMMUNITIES:

More frequent extreme heat episodes and changing seasonal climates are projected to increase exposure-linked health impacts and economic vulnerabilities in our manufacturing, fishing, and shrimping sectors. Projected warming ocean temperatures, sea level rise, and ocean and coastal acidification are raising concern over future harvests. By the end of the century, over one-half billion labor hours could be lost from extreme heat-related impacts. Such changes would negatively impact the region's labor-intensive occupations and compound existing social stresses in the city's low-income areas.

While adaptation and resilience can help to moderate climate change impacts, areas of the city facing other stressors, such as poverty and limited access to healthcare, will be less resilient and will have a harder time coping with climate-related challenges. Heat-related stresses are presently a major concern with future temperature increases projected to pose challenges for human health. While recent regional temperature trends for Chatham have not shown the same consistent rate of daytime maximum temperature increase as observed in other parts of the United States, climate model simulations strongly suggest that daytime maximum temperatures are likely to increase as greenhouse gases continue to be emitted into the atmosphere *(https://nca2018.globalchange.gov/chapter/19/)*.

The resulting temperature increases are expected to add to the heat health burden in both the more rural and more urbanized areas of Pooler. Additionally, drought has been a recurrent issue affecting the community's water resources. With rapid growth in population and overall demand, drought is increasingly a concern for the local jurisdictions' water resource managers, as well as the region's ecosystems and energy producers.

HEAT ISLANDS & CLIMATE CHANGE

As new development occurs to accommodate the city's population influx, the built environment will be altered in a way that significantly affects the natural environment surrounding it. The replacement of open, vegetated land with the dark, impervious surfaces that characterize cities modifies the local temperature and moisture characteristics, contributing to a climatological phenomenon known as the urban heat island effect.

The urban heat island effect can cause cities to have temperatures up to 10°F hotter than their more rural surroundings

—UCAR Center for Science Education

Generally, heat islands are grouped into two distinct categories: surface heat islands and atmospheric heat islands. Surface heat islands are simply the elevation in temperature of surfaces in urban areas over surfaces in the surrounding rural areas, while atmospheric heat islands directly impact the thermal comfort and health of people and animals in an area. Surface heat islands are present at all times, but are often most intense during the day when urban materials receive the most solar radiation. Additionally, surface heat islands are not heavily influenced by the anthropogenic heat sources that affect the air temperature of a city, such as transportation vehicles or heating and cooling units.

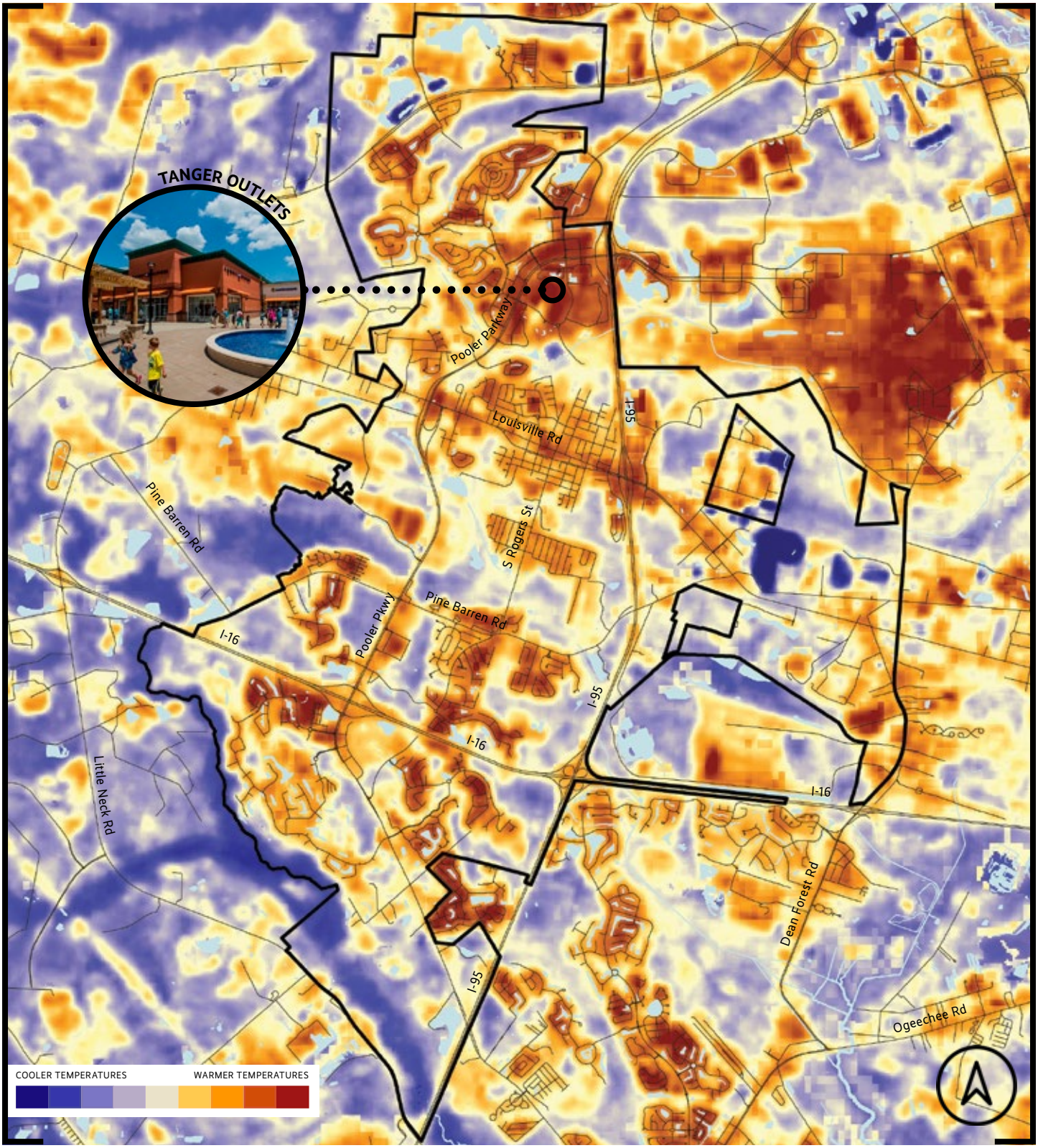
URBAN HEAT ISLAND EFFECT

Heat islands are urbanized areas that experience higher temperatures than outlying areas. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies.

—EPA

Temperatures vary within cities, too. Areas that are well-shaded or have ample green space are cooler than areas covered with asphalt or concrete. Historically, neighborhoods with little or no vegetation have been inhabited by minority populations and those with low socioeconomic status, exposing them to increased heat and the negative consequences associated with it. Land surface temperatures in Pooler are shown in Map 7.11.

It is important to understand and consider these environmental inequalities when working to improve our community for all residents.



Map 7.11–Land Surface Temperatures, Pooler

SMART GROWTH & CLIMATE CHANGE

Smart growth policies contribute to both mitigating and adapting to climate change. Mitigation strategies reduce greenhouse gas emissions from development, and adaptation strategies make communities more resilient to the effects of a changing climate

Smart growth strategies also bring environmental benefits and provide economic advantages to local governments and the private sector. In addition, they can save people money on energy and transportation, which is particularly important for low-income residents, and help protect human health.

Mitigation

The way communities are developed has significant impacts on greenhouse gas emissions. Pooler can reduce greenhouse gas emissions from development and redevelopment by:

- Building compactly and use energy-efficient, green building techniques, which reduce emissions from both electricity generation and transportation
- Reusing existing infrastructure and buildings to take advantage of previous investments and the energy already used to build them
- Putting homes, jobs, stores, parks, schools, and other destinations close to each other so that people can easily walk, bike, use public transit, or drive shorter distances
- Preserving green space, which can sequester CO_2, by conserving ecologically valuable land and promoting development in previously developed areas, which helps reduce pressure to build on undeveloped land

ARE YOU LOOKING FOR MORE INFORMATION?

The most current information about smart growth strategies and their environmental benefits can be found at the link below...

https://www.epa.gov

Adaptation

As noted earlier, the effects of climate change are already being experienced, and these effects are projected to become more pronounced in the coming decades. Impacts could include more and stronger storms, more drought, more frequent extreme-heat events, continual rising sea levels, and more flooding.

Smart growth strategies could help the community adapt to these changes, as well as natural disasters, economic changes, and other challenges that could arise regardless of climate change. Some strategies the City should consider include:

- Determine which areas are both well-connected to existing development and less vulnerable to current and projected climate change impacts such as sea level rise and higher storm surges, and riverine flooding, and encourage growth in these areas.
- Discourage building in areas that are currently or are projected to be more vulnerable to climate change-related impacts. Making it easier to build in safer areas can help relieve pressure to develop in more vulnerable areas.
- Preserve large, contiguous areas of open space to better protect ecosystems that might be under pressure from the changing climate. Open space preserved along water bodies can also absorb flood waters and reduce flooding in developed areas.
- Coordinate land use and transportation infrastructure decisions, and incorporate climate change projections into these decisions.
- Encourage water- and energy-efficient buildings and land use patterns so that communities can continue to thrive if energy prices rise. This strategy can also help communities and their residents better cope with drought and extreme heat.
- Upgrade stormwater systems to better manage heavier storm flows and use green infrastructure to reduce the amount of runoff from paved surfaces.
- Encourage green roofs, parks, street trees, and other elements that can reduce ambient air temperatures and filter pollutants from stormwater runoff and the air.
- Design buildings with adaptation and resilience in mind.

Recognizing the long-term challenges associated with climate change and taking proactive steps to adapt will allow the city to be much more prepared to retain population while moving residents away from danger.

Photo Credit: Cody Thomas

SEA LEVEL RISE

Concerns of sea level rise and the negative impacts associated with it are resulting in many coastal communities considering implementing measures to reduce risks to private property owners and public investments. It is important to identify what areas are at risk and gauge the level of risk, or severity of impacts, for each area in order to determine the most appropriate means to protect it. It is more costly to mitigate than to prevent development in areas that are at a higher risk. All future capital improvement projects should include an assessment of potential sea-level rise impacts through the expected life cycle design of the projects.

In an effort to have the information necessary for making decisions about future needs and infrastructure investments, Chatham County and the City of Savannah collaborated to assess the vulnerability of the region's stormwater management system to future changes due to sea level rise. The Stormwater System Sea Level Rise Vulnerability Assessment and Coastal Watershed Management Plan (CWMP) was completed in 2020 and provides actionable information for Chatham County, the City of Savannah, and other jurisdictions to use in developing plans and implementing appropriate capital improvement projects that can increase the resilience of the regional stormwater system to future conditions.

According to the CWMP, sea level data recorded at the tide gauge at Fort Pulaski begins in 1935 and indicates a historic sea level rise trend of approximately one foot over 100 years. More recent global data and local data from Fort Pulaski suggest that this rate is accelerating, although there remains a high degree of uncertainty within the future projections.

The results of the vulnerability assessment indicate that up to 3% of inland stormwater drainage structures in unincorporated Chatham County are currently vulnerable to daily tidal inundation, while 8% are currently vulnerable to inundation at least once a year during the year's highest annual tide (HAT).

The vulnerability assessment for 2100 indicates that up to 19% of structures in unincorporated Chatham County would be vulnerable to daily tidal inundation, with 30% being vulnerable to inundation at least once a year. Results for Savannah indicate that approximately 0.3% of stormwater inlets are vulnerable to daily tidal inundation, with 1% vulnerable at least once a year during the year's highest annual tide event.


FORT PULASKI

By 2100, these results would increase to 9% of inlet structures being vulnerable to tidal flooding on a daily basis, and 15% being vulnerable at least once a year during the highest annual tide. Based on the assessment, extensive measures that would likely include a combination of shoreline elevation, extensive tide gates, installation of pumps, and strategic disinvestment within areas that may be deemed infeasible to protect would be required for adaptation to the 2100 sea level rise condition.

PLAN 2040 SURVEY

The MPC's Plan 2040 survey asked how important was "Protecting the community from environmental hazards and climate change?"

Eighty-eight percent (88%) of the respondents felt that this objective was either very important, important, or mildly important for Pooler to work on.

A full copy of the survey and the results can be found in the Pooler 2040 Appendix.

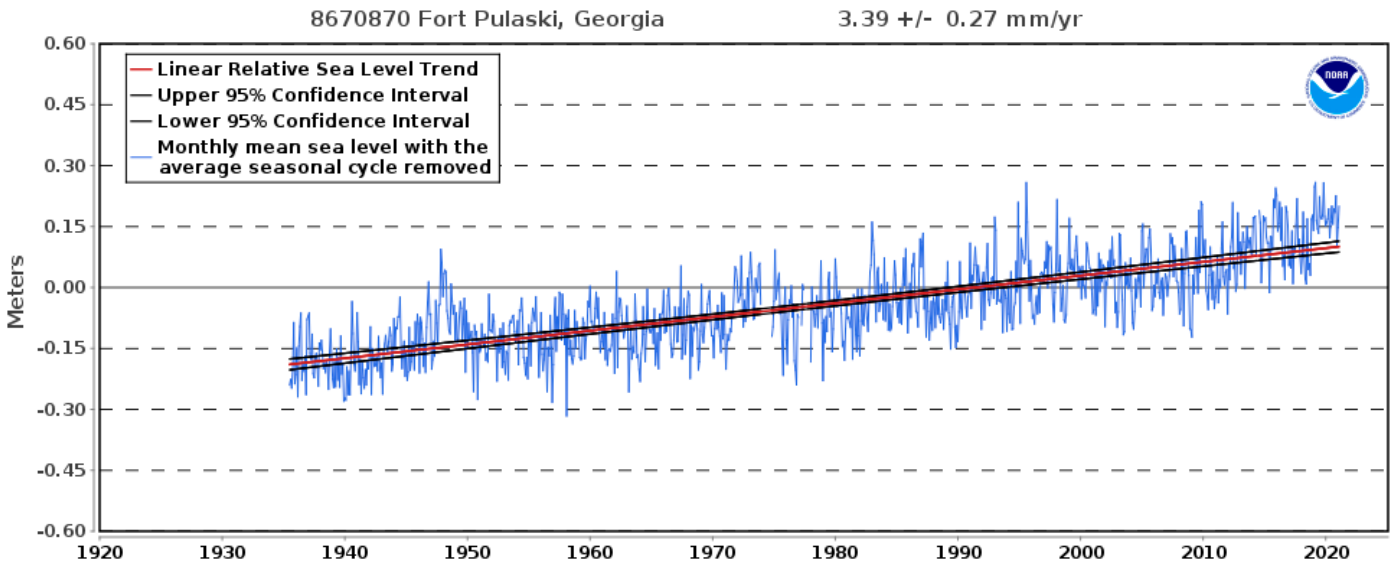


Figure 7.8–Local Sea Level Trend

RESILIENCE & LOCAL PREPAREDNESS

All communities are vulnerable to the potential impacts of an event such as a hurricane, pandemic, or infrastructure failure that can cripple the routine of residents, businesses, industry, infrastructure, and government services. Community resiliency includes implementing safeguards so that all members of the community are better prepared for such events, ensuring that all of the community will bounce back and flourish as quickly as possible following the event.

Community resilience also protects against more common occurrences such as sea level rise, sunny day flooding, and severe economic inequities. Building a strong network focused on addressing equity gaps and elevating vulnerable populations is necessary to create a truly resilient community.

Temperature Projection

Increase in Extremely Hot Days*

79% Within 25 Years

*Headwaters Economics

Coastal Empire Resilience Network

The Metropolitan Planning Commission began work in 2020 to expand previous work done around sea level rise impacts along Chatham County's coast. The MPC began partnering with Chatham County, the City of Savannah, University of Georgia, Georgia Sea Grant, Georgia Department of Natural Resources Coastal Resources Division, and others to develop a Coastal Empire Resilience Network (CERN).

CERN will engage regional community partners, municipal staff, and policymakers to coordinate strategies to address the physical, economic, and social challenges that the region faces due to climate change and other hazards. Also included will be an effort to ensure all local level policy makers have adequate education on climate change and sea level rise. CERN will work to align regional strategies, share resources, and advocate for collective action to improve the resilience of the coastal region.

CLIMATE RESILIENCE

Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.

—Center for Climate and Energy Solutions

Hurricanes

Hurricane season officially runs from June 1 through November 30, with the peak period for hurricane development in early to mid-September. Over the last decade there has been an increase in both frequency and intensity of storms during hurricane season due to warming ocean temperatures. In addition, rising sea level has resulted in higher storm surges during these storm events, most recently in 2016 with Hurricane Matthew (category 2 off the Chatham coast), Hurricane Michael in 2018 (category 1 and tropical storm in Georgia), and Hurricane Dorian in 2019 (category 3 off the Chatham coast).

The six coastal counties at highest risk of evacuation because of storm surge are Bryan, Camden, Chatham, Glynn, Liberty, and McIntosh. The hurricane threat in Chatham County is high because Georgia's coastline is impacted from tropical systems from both the Atlantic Ocean and the Gulf of Mexico.

Population growth along the coast has complicated the evacuation and sheltering process. Millions of residents and tourists from Georgia and its neighboring states of Florida, North Carolina, and South Carolina jam highways in search of safety and shelter when evacuation orders are issued. And often, just the threat of a hurricane is enough to put voluntary and mandatory evacuation orders into effect.

Improved forecasting and warning capabilities have diminished hurricane-related deaths in the 20th century; however, damage to property has increased with the rapid growth along the coast. For this reason, population growth, flood plain management, and housing development issues are carefully monitored by government agencies to ensure that all coastal communities and their inhabitants are safe for years to come.

COVID-19 Impacts

COVID-19's impact on the environment has been mixed. Although the pandemic resulted in improved environmental conditions, there have been other negative effects, some of which are obvious, others less so.

In short, the positive effects have been reduced greenhouse gas (GHG) emissions, improved water quality, reduced noise pollution, improved air quality and in some cases, wildlife restoration. However, some negative effects have also increased such as the amount of medical waste, haphazard disposal of PPEs (i.e., face masks), increased municipal waste and reduced recycling efforts. Building back with sustainability in mind will be critical for our future success *(www.bdo.global)*.

HURRICANES

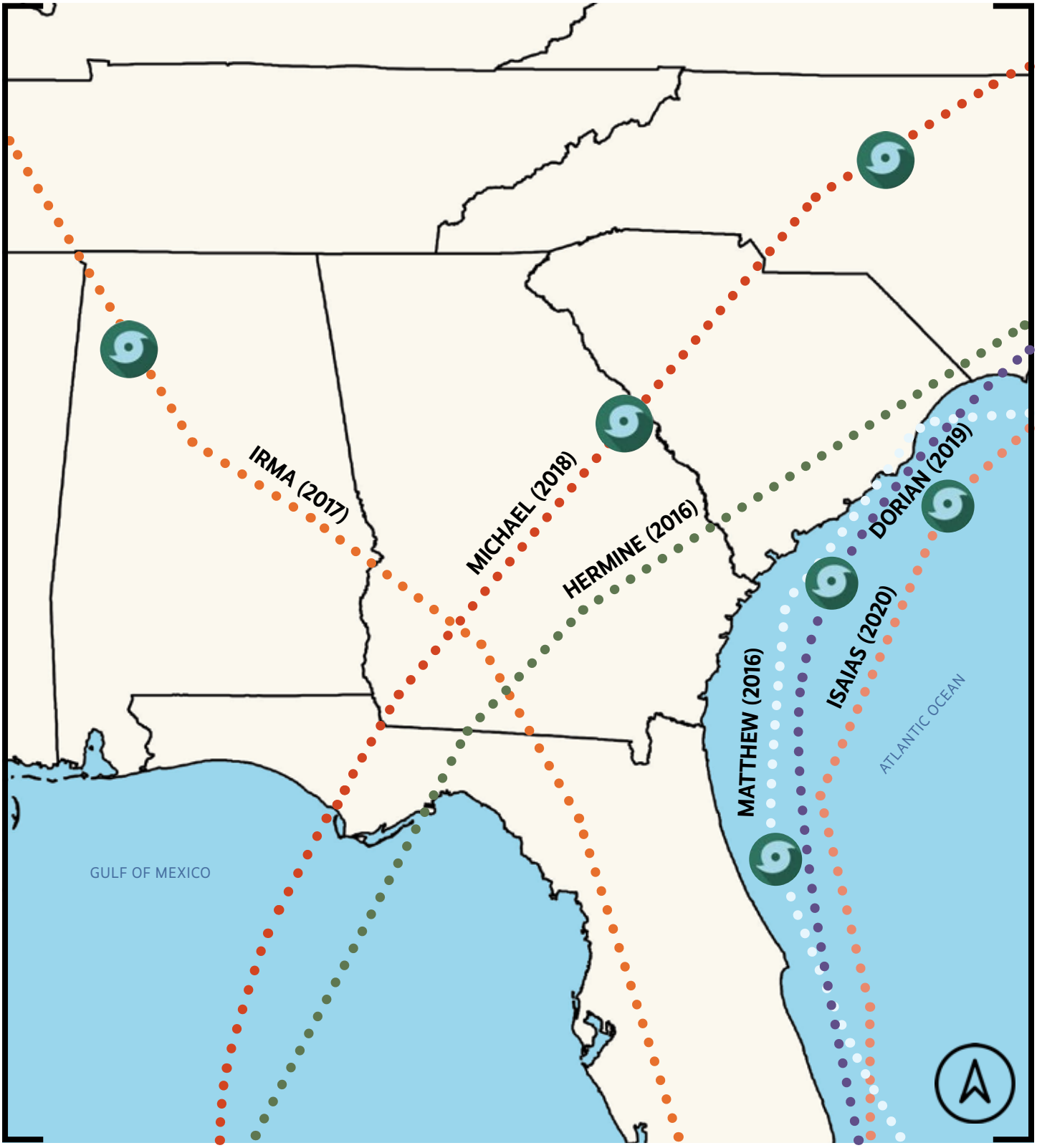
A hurricane is a type of storm called a tropical cyclone that forms over tropical or subtropical waters. When a storm's maximum sustained winds reach 74 mph, it becomes a hurricane. The Saffir-Simpson Hurricane Wind Scale gives the storm a 1 to 5 rating, or category, based on the hurricane's maximum sustained wind.

—NOAA

Hurricane List 2016–2020

Storm Name	Date Range	Max Wind Speed	Min Pressure	Max Category
Hurricane Hermine	8.28.16–9.08.16	70 mph	981 mb	1
Hurricane Matthew	9.28.16–10.10.16	145 mph	934 mb	5
Hurricane Irma	8.30.17–9.13.17	155 mph	914 mb	5
Hurricane Michael	10.06.18–10.15.18	140 mph	919 mb	5
Hurricane Dorian	08.24.19–09.09.19	160 mph	910 mb	5
Hurricane Isaias	7.23.20–7.05.20	75 mph	987 mb	1

Figure 7.9–Hurricanes Impacting Chatham County



Map 7.12–Hurricane & Tropical Storm Tracks

PLANNING ISSUES & OPPORTUNITIES

In order to determine the adequacy of existing natural resource policies and programs, a thorough assessment of both is needed. This will ensure that resources are utilized, developed, managed, and preserved wisely for maximum long-range benefits for the community.

After careful review, the following list was created to highlight the points that will need careful attention in the future.

COASTAL RESOURCES:

More intense local programs and development standards for marsh, wetland, and island protection need to be established, implemented, and maintained. There is also a strong need for natural resource sites in need of protection to be identified and ultimately "protected" through a number of means: possible acquisition using SPLOST funds, zoning, conservation easements, and donation, to name a few. Also in need of continued protection are coastal species of flora and fauna in danger of population decline and extinction. The previously active Chatham County Resources Protection Commission (CCRPC) was a viable mechanism for this type of protection effort; however, due to discontinued funding, the program has stalled as of 2021.

LOCAL IMPACT OF COVID-19

COVID-19's impact on the environment has been mixed. Although the pandemic resulted in improved environmental conditions, there have been other negative effects, some of which are obvious, others less so.

In short, the positive effects have been reduced greenhouse gas (GHG) emissions, improved water quality, reduced noise pollution, improved air quality and in some cases, wildlife restoration. However, some negative effects have also increased such as the amount of medical waste, haphazard disposal of PPEs (i.e., face masks), increased municipal waste and reduced recycling efforts. Building back with sustainability in mind will be critical for our future success (www.bdo.global).

EFFICIENT LAND USE:

Maximizing the use of existing infrastructure and minimizing the costly conversion of undeveloped land at the periphery of the community should continue. This is achieved by encouraging development or redevelopment of sites closer to the traditional core of the community and focused around transportation; designing new development to minimize the amount of land consumed; carefully planning investment in public infrastructure; and maintaining open space and conservation uses.

Enhancements to existing regulations to require and/or incentivize open space preservation are needed. Both data and public feedback have shown that the community is calling for development that minimizes the amount of land consumed and allows for more open space to be set aside for public use as parks, greenways, and wildlife corridors.

PARK, RECREATION, AND CONSERVATION AREAS:

Too often laws are not sufficient to protect conservation sites from adjacent development impact. More restrictive zoning regulations and buffer requirements may be needed in the future to limit or prohibit certain uses in these areas. In addition, the CCRPC program cited above could be a possible viable mechanism for increasing the number of permanently protected areas within the city should funding again become available.

WEST CHATHAM COUNTY GROWTH:

Rapid growth in western Chatham County has led to separate, unique challenges for Pooler. A strong program for natural resource protection is needed to ensure that the area's isolated wetlands, tree canopies, and greenspace are not lost due to the rapid development in Pooler. Additionally, the community is requesting more open and park space, which directly correlates to the protection of greenspace.

Photo Credit: Hussey Gay Bell

STORMWATER:

Stormwater Best Management Practices (BMPs) such as Low Impact Development (LID) strategies that reduce stormwater runoff must continue to be implemented elsewhere throughout the county to lessen the impacts of runoff on the entire coastal environment. The City should evaluate to determine whether a stormwater utility is feasible for the continued maintenance, management, and treatment of the city's stormwater system. Additionally, all of the jurisdictions within Chatham County need to collectively discuss stronger, more unified options for handling stormwater and flood waters related to growth on a county-wide scale.

SALTWATER INTRUSION:

Saltwater intrusion into the Floridan Aquifer system needs to continue being addressed regionally to ensure the protection of the coastal area's groundwater source of drinking water. An update of the Red Zone Water Management Plan needs to be completed to determine total usage for the region and the city's capacity for growth.

WASTEWATER TREATMENT PLANT

Photo Credit: Hussey Gay Bell

SOLID WASTE:

Solid waste control and disposal need to be evaluated and addressed on a regional basis to allow for a more thorough approach to management, reduction, and continued capacity for the coastal areas. This effort should include the reduction of waste streams through recycling, composting, and mulching of yard waste.

SEA LEVEL RISE:

The City needs to continue to evaluate and update the current building standards, zoning code, and related regulations to ensure the adequate protection of the existing built environment, the design of future construction, and the resiliency of the natural environment to periodic and permanent inundation over time due to sea level rise.

LOCAL PREPAREDNESS:

Chatham County's Disaster Recovery Plan (DRP), overseen by the Chatham Emergency Management Agency (CEMA), is a multi-phase effort to help the County address the complications that can arise following a disaster as the community attempts to rebuild and recover. The DRP is a tool that can identify and put in place the prerequisites for the type of future the community seeks to achieve. Additionally, the countywide Hazard Mitigation Plan (HMP) outlines specific hazards and highlights areas being focused on to become a more resilient community. Continued efforts are needed around planning for infrastructure (roads, water, sewer, hospitals, housing) to pinpoint where to direct new growth.

RACIAL DISPARITIES:

Environmental racism refers to the disproportionate exposure to and impact of environmental harm on people of color (POC). POC-majority neighborhoods are often more likely to be exposed to these harms due to previous redlining and development policies that segregated their communities into specific areas. These areas are often more likely to be near pollutant-heavy industries and/or traffic-heavy roads, lack foliage, and contain a large amount of asphalt, impacting how hot the neighborhood is for residents. Summertime temperatures in neighborhoods containing fewer trees are often more than five degrees hotter than in a tree-heavy neighborhoods. Furthermore, redlined neighborhoods tend to be low-lying neighborhoods that experience recurring flooding.

These environmental impacts may increase health problems such as asthma, cancer, and heat-related illness. Stronger policy action—such as reducing pollution, reducing segregation, enhancing the tree canopy, and investing in flood protection—is necessary to improve the environmental health of these communities.