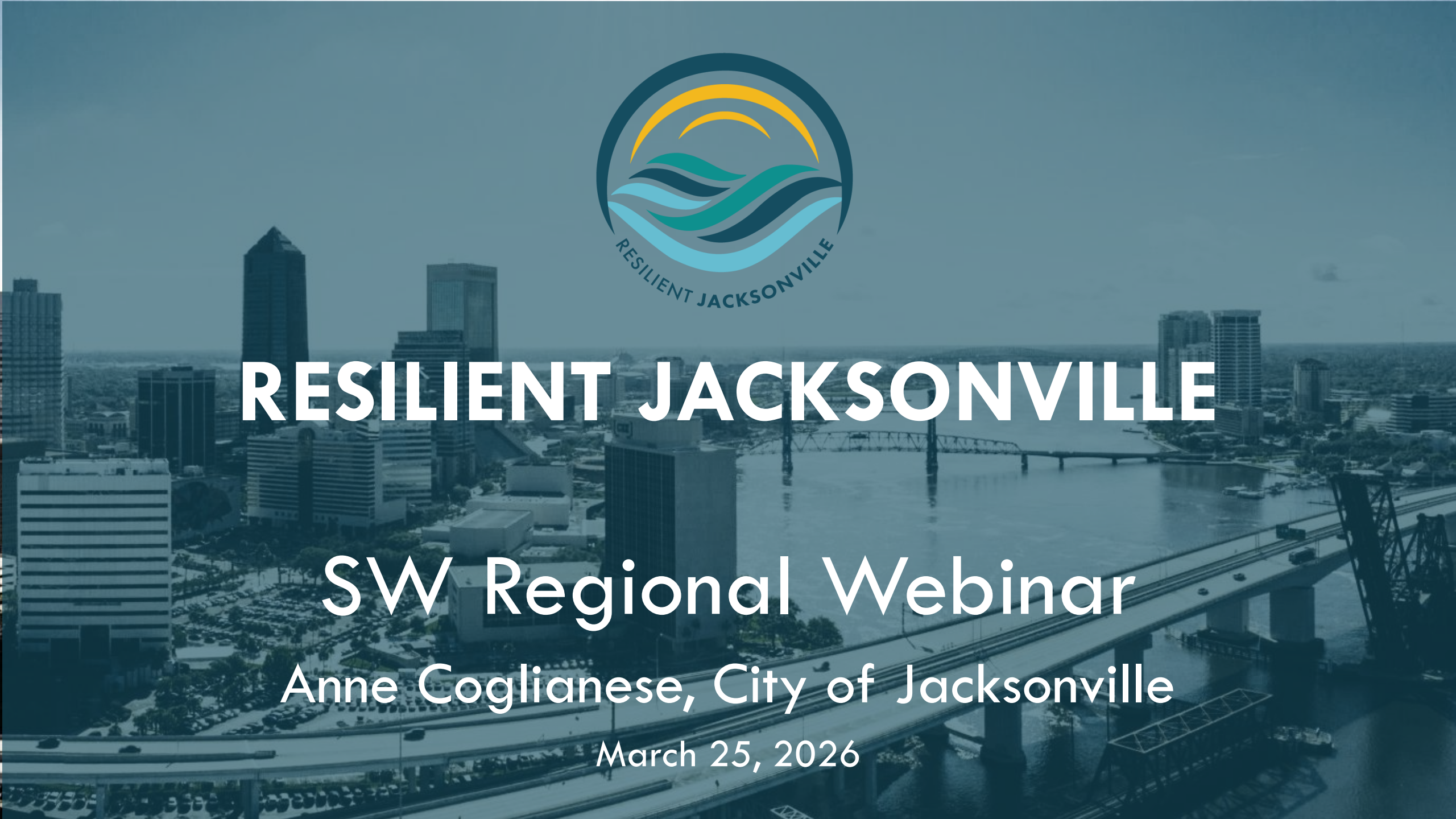


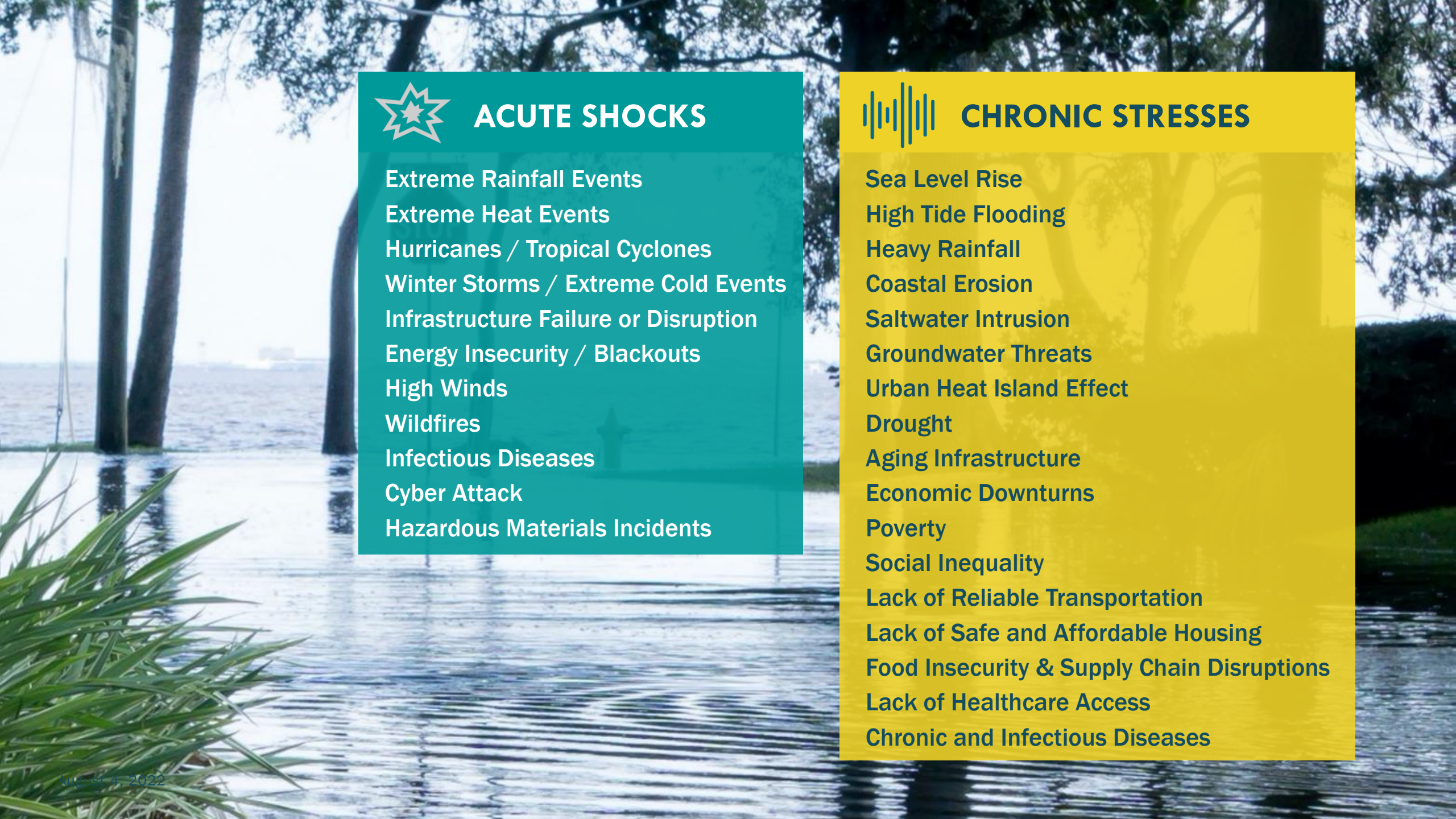
RESILIENT JACKSONVILLE

SW Regional Webinar

Anne Coglianese, City of Jacksonville

March 25, 2026

CITY RESILIENCE is the ability of city systems to **adapt** and **thrive** in the face of **acute shocks** *(sudden, extreme events that threaten a community)* and **chronic stresses** *(long-term pressures that weaken the fabric of a community over time)*.



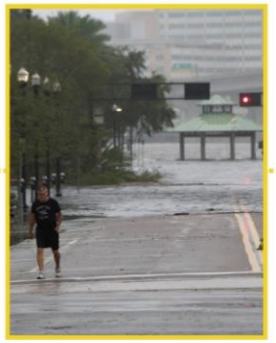
ACUTE SHOCKS

- Extreme Rainfall Events
- Extreme Heat Events
- Hurricanes / Tropical Cyclones
- Winter Storms / Extreme Cold Events
- Infrastructure Failure or Disruption
- Energy Insecurity / Blackouts
- High Winds
- Wildfires
- Infectious Diseases
- Cyber Attack
- Hazardous Materials Incidents

CHRONIC STRESSES

- Sea Level Rise
- High Tide Flooding
- Heavy Rainfall
- Coastal Erosion
- Saltwater Intrusion
- Groundwater Threats
- Urban Heat Island Effect
- Drought
- Aging Infrastructure
- Economic Downturns
- Poverty
- Social Inequality
- Lack of Reliable Transportation
- Lack of Safe and Affordable Housing
- Food Insecurity & Supply Chain Disruptions
- Lack of Healthcare Access
- Chronic and Infectious Diseases

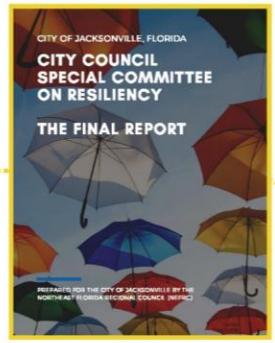
BUILIDING ON EXISTING EFFORTS



Storm Resiliency & Infrastructure Development Review Committee

Adaptation Action Area Workgroup

Duval County Local Mitigation Strategy

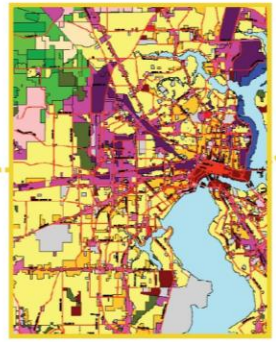


City Council Special Committee on Resiliency

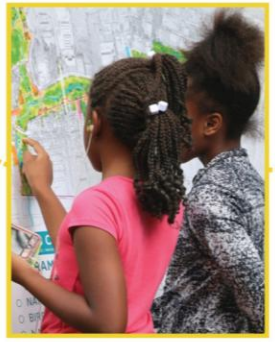
Regional Threat and Hazard Identification & Risk Assessment

CAPA Strategies & UNF Citywide Heat Map Study

Tributary Flood Risk Modeling

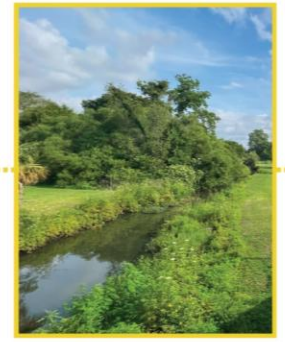


2030 Comprehensive Plan Update

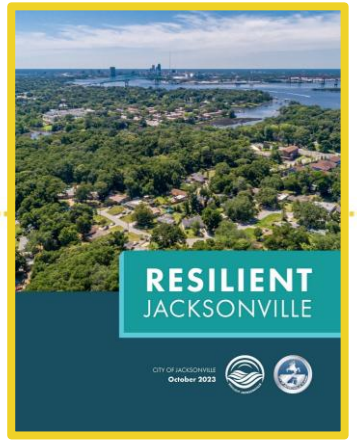


McCoys Creek Restoration Project

Emerald Trail Master Plan



Hogans Creek Restoration Project



COLLABORATIVE DEVELOPMENT OF ACTIONS

- 45 Actions
- 90 Sub-Actions
- All identify implementation details, partners, funding mechanisms, timelines, and costs.

RESILIENT JACKSONVILLE

CITY OF JACKSONVILLE
October 2023

SYSTEMS

Adaptation Approaches and Actions that work across multiple sites at a neighborhood, corridor, landscape, or regional scale.

GROW RESILIENTLY	Guide safe and connected development to areas of low flood risk and high resilience potential.
TRANSFORM	Redesign infrastructure and the built environment to make space for water, reduce urban heat, and improve connections between places.
PRESERVE	Conserve and enhance valuable open space and ecosystems and limit development in areas of high flood risk.
PROTECT	Fortify critical city systems against future threats.
PREPARE	Plan in advance of a threat to improve the response of city systems during an emergency.

SITES

Adaptation Approaches and Actions that can be implemented at the scale of a single asset or site.

ACCOMMODATE	Alter or retrofit vulnerable buildings and the built environment at the parcel level to adapt to heat and manage water.
RELOCATE	Offer voluntary, incentivized, or gradual retreat where fortification and accommodation are not efficient or effective.

PEOPLE

Resilience Approaches and Actions that focus on residents, communities, businesses, organizations, and partnerships.

SUPPORT	Invest in the health and quality of life of Jacksonville residents.
THRIVE	Ensure shared prosperity for Jacksonville's people and businesses for the long-term.
COLLABORATE	Strengthen partnerships and coordination among city departments, between government agencies, with civic organizations, and in support of regional coalitions.

PROJECTS NEARING COMPLETION

40 | Establish an Office of Resilience to facilitate the ongoing implementation of *Resilient Jacksonville*.

To guarantee that the recommendations set forth in *Resilient Jacksonville* are coordinated and well-positioned for implementation, the City will establish and adequately staff an Office of Resilience. The office will be responsible for the ongoing implementation of *Resilient Jacksonville* by leading coordination across City departments and with external partners and collaborating with local academic partners to organize a system that tracks implementation progress. The office will also prioritize the development, sharing, and application of the best available data and science on climate projections, flood and heat risk, and other shocks and stressors to inform decisions across City government. The Office of Resilience will also ensure that the use of resilience data is managed ethically and accessed through the appropriate channels.

Shocks and Stressors Addressed
All Shocks and Stressors

Implementation Partners
COJ / The Water Institute / JU

Potential Funding Mechanisms
General Fund / FUSE Fellows

Implementation Timeframe

Immediate (2025)	Short-Term (2030)	Medium-Term (2035)	Long-Term (2050)

Relative Cost

$ (10,000s)	$$ (100,000s)	$$$ (1,000,000s)	$$$$ (10,000,000s)

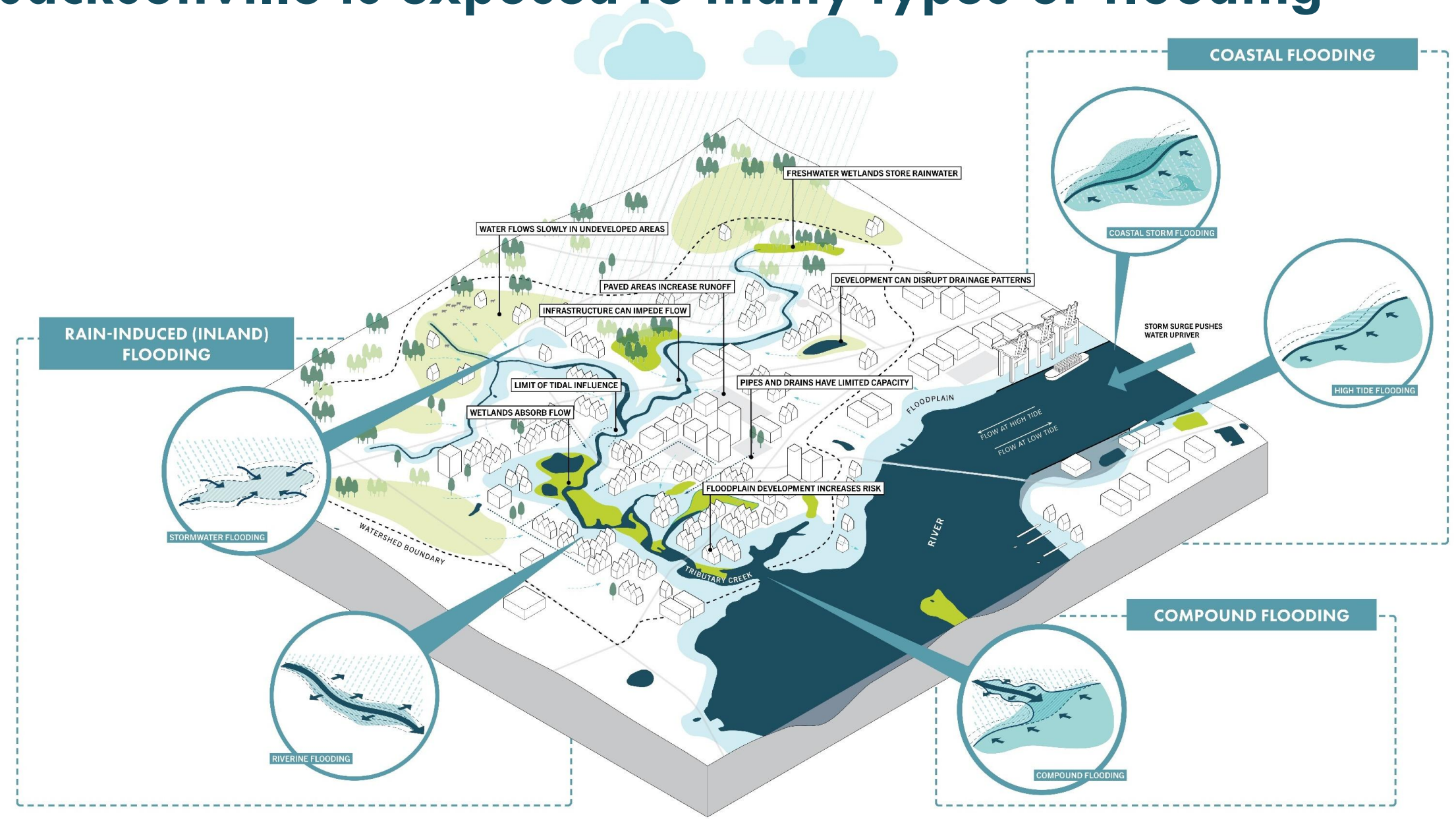
40.1 Facilitate interdepartmental and interagency collaboration throughout City government and with external partners.

The main purpose of establishing the Office of Resilience is to ensure all aspects of City government are well-coordinated, and that decisions are made holistically rather than in silos. The development of this Strategy began a process of inter-agency collaboration, and the success of *Resilient Jacksonville* will rely on the creation of collaborative processes that continue into implementation. By filling this role, the Office of Resilience can ensure that investments make the best use of taxpayer dollars and are aligned with resilience goals—that infrastructure is designed and built to withstand future conditions and that city staff are able to build stronger relationships across departments. Additionally, this office can help articulate a cohesive vision in partnership with other outside agencies to ensure that all key entities in Jacksonville are moving towards a shared future.

40.2 Use the best available science and data to inform decisions.

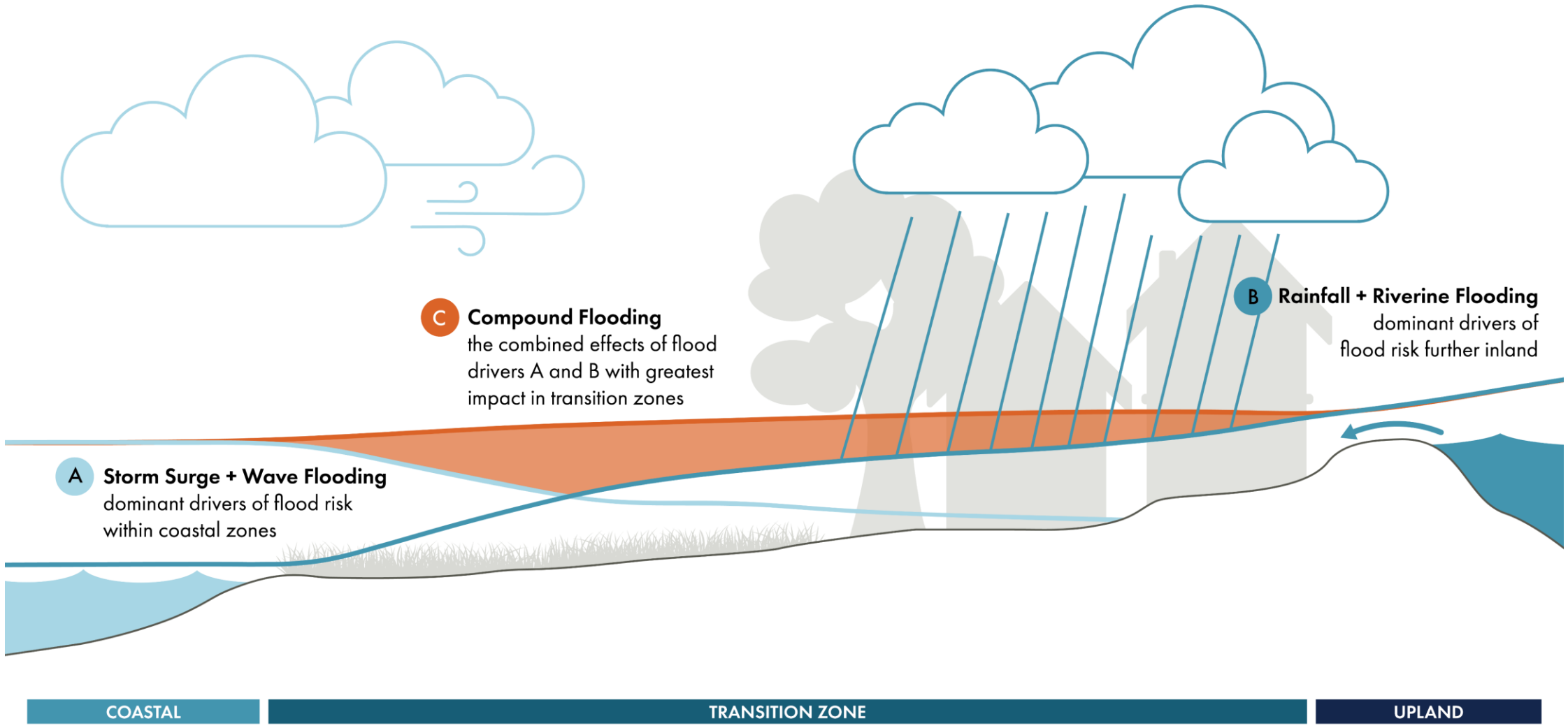
Just as *Resilient Jacksonville* was developed using the latest and most comprehensive science and data, continuing to develop and use the best available data will be critical for achieving the many goals set forth in this Strategy. The Office of Resilience will serve as the agency in charge of maintaining and deploying robust climate and vulnerability datasets across all departments and helping to contextualize data for city leaders to use in decision-making processes. More specifically, over the next two years, the Office of Resilience will be developing a compound flood model in conjunction with The Water Institute that will provide the City with the most advanced flood data in the state. This work will identify the most flood-prone areas of the city and guide project development. As new datasets become available—whether it be the compound flood model or future national climate assessments—the Office of Resilience will be responsible for updating policies and procedures that reflect the most accurate data.

Jacksonville is exposed to many types of flooding



COMPOUND FLOODING

IN COASTAL TRANSITION ZONES



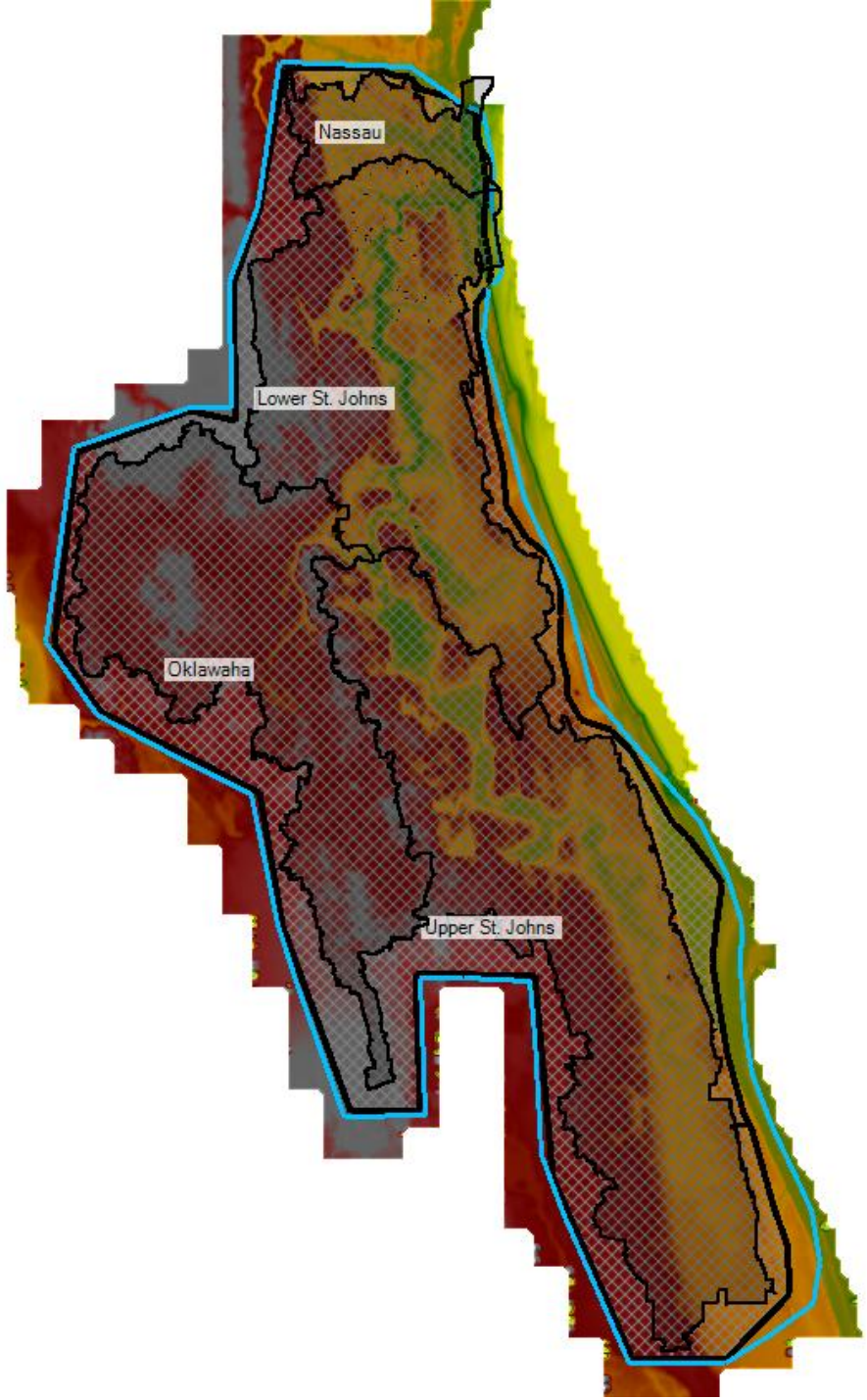
Compound flooding occurs when rainfall, riverine flooding, and coastal flooding interact to produce combined flood hazards.

HEC-RAS 2D MODEL

Model Domain Covers 4 HUC-8 Basins:

1. Lower St. Johns River
2. Upper St. Johns River
3. Ocklawaha River
4. Nassau River

Model domain extended well outside delineated boundary to capture any interflow and allow flow out of the model.



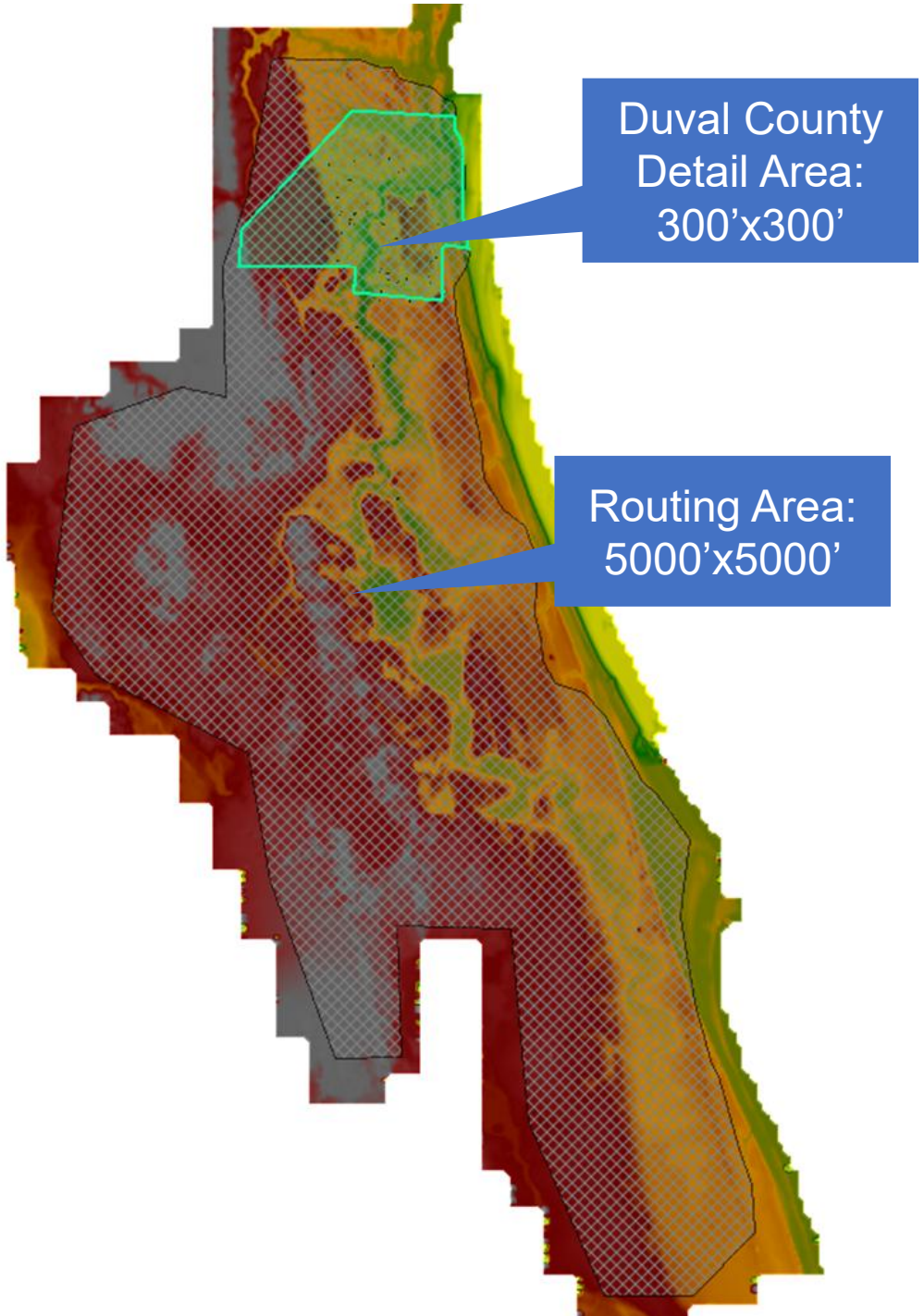
HEC-RAS 2D MODEL

Routing Area:

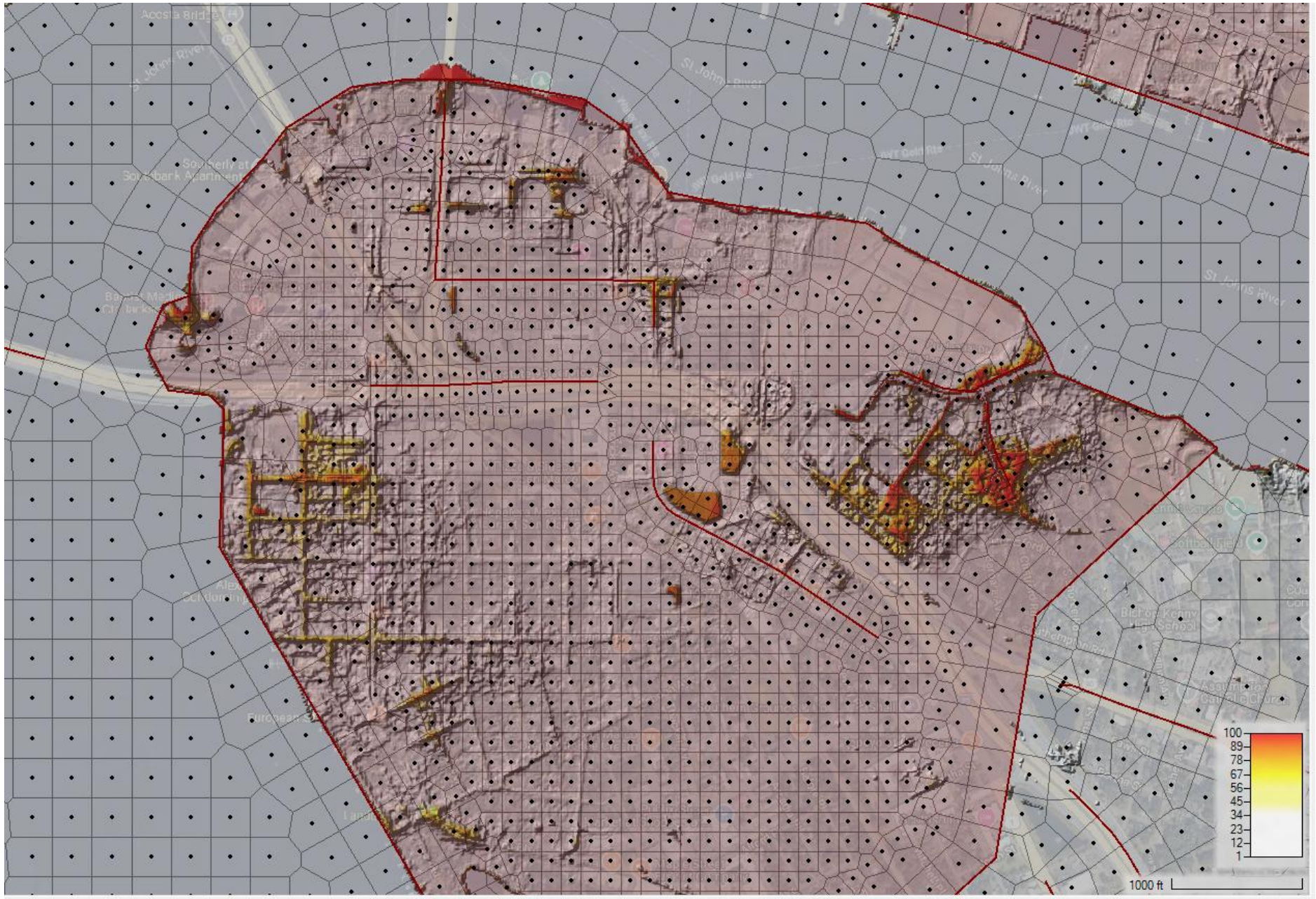
- 5000’x5000’ Mesh
- Used to route flow to the City of Jacksonville
- Mesh size kept large to optimize model run time

Detail Area:

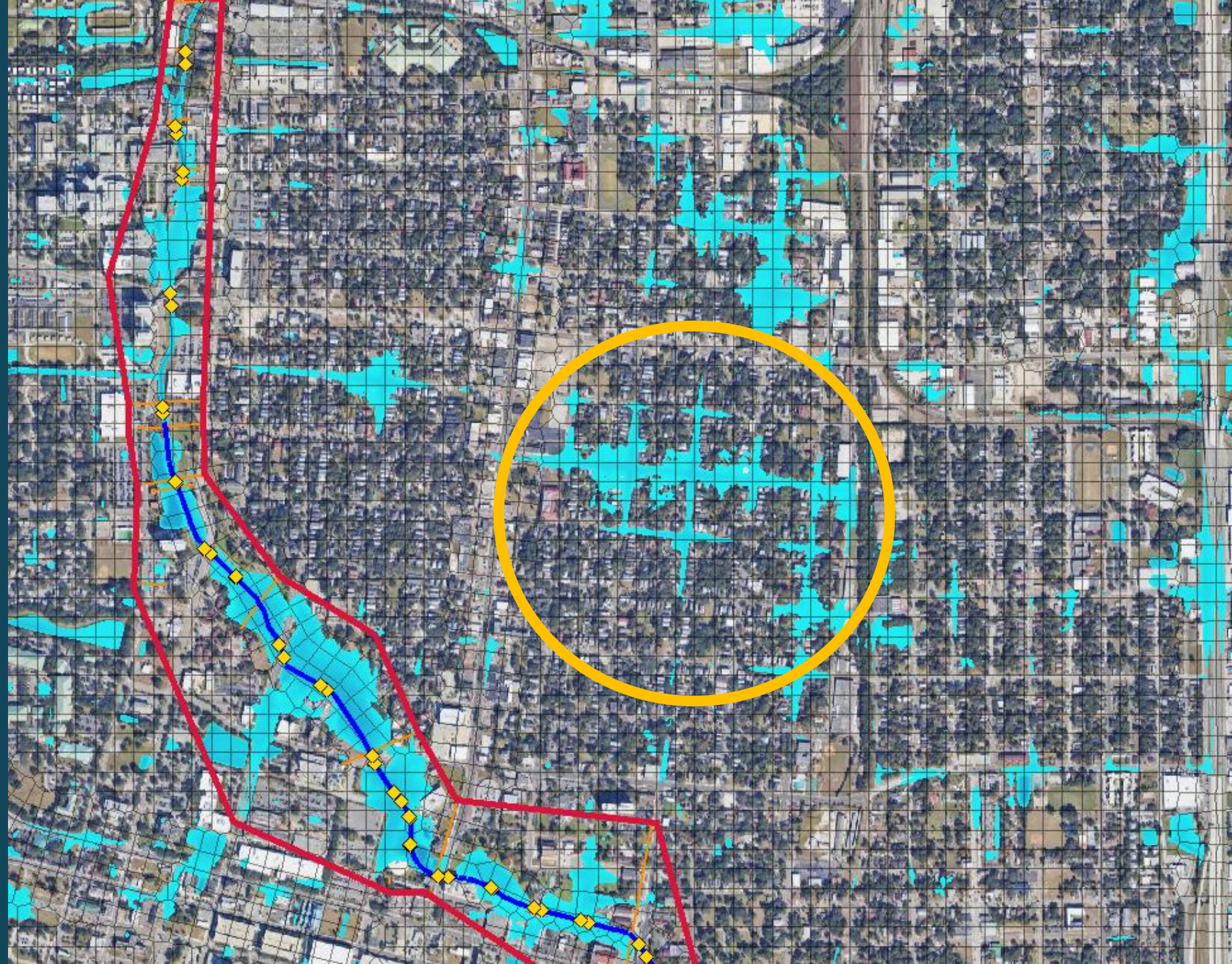
- 300’x300’ Mesh
- Results require high level of accuracy
- Allows for accurate tidal wave propagation
- Additional regions of refinement (150’) of frequently flooded areas



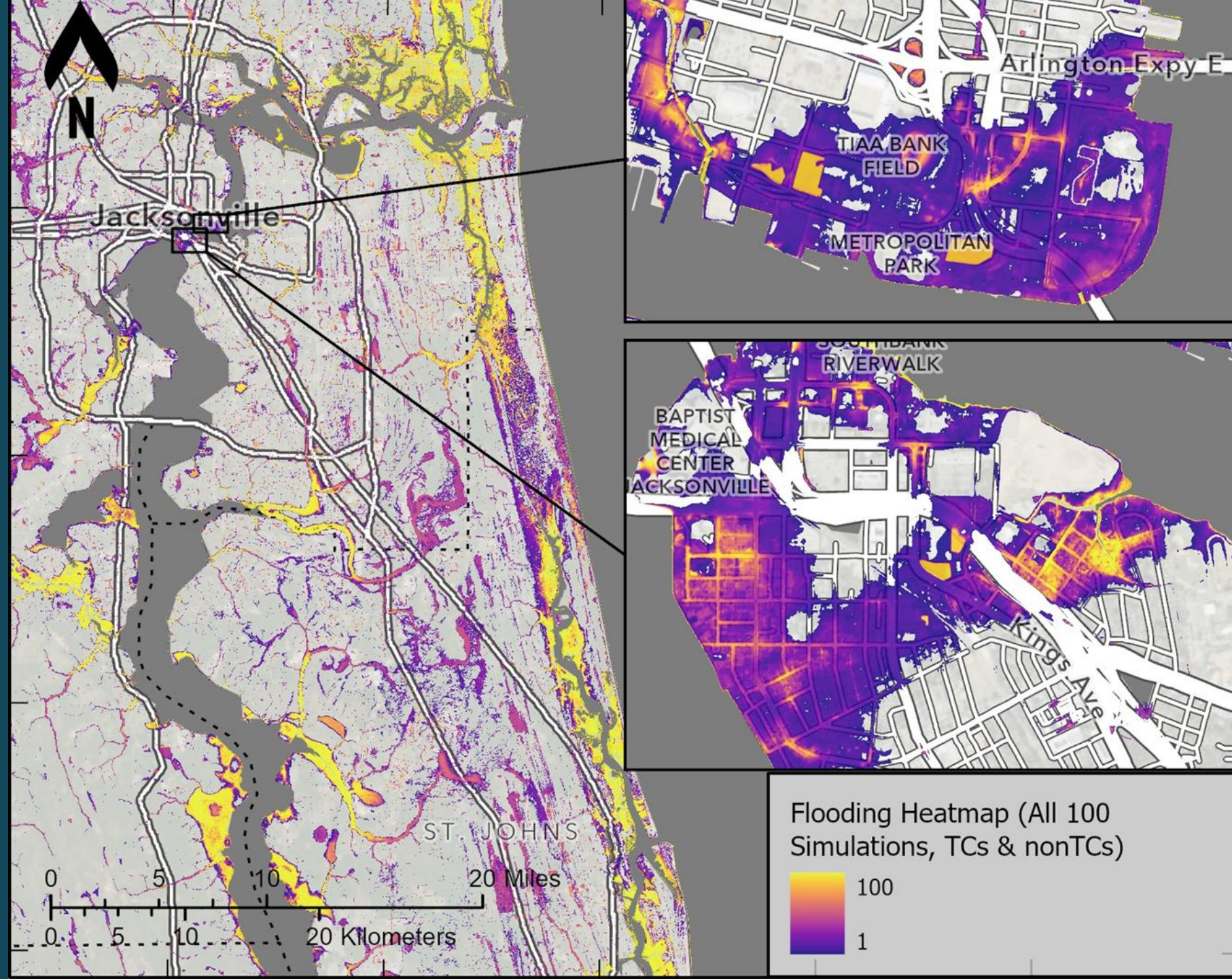
We have developed new detailed models to better capture these complex flood dynamics.



Compound flood model captures localized flooding not included in existing flood data



Visualizing Results



1 | Guide future growth in areas that are at low risk and well-connected to infrastructure.

Resilience and growth can be complementary goals if new development is guided to areas that are at lower risk of flooding and other climate threats and well-connected to the existing infrastructure necessary to support thriving communities, such as various modes of transportation and energy and water utilities. Multiple interrelated dynamics shape decisions around where growth and development happen, making it challenging to advance resilience objectives alongside other economic and social considerations. Jacksonville can guide growth in a resilient way by using a suite of planning, regulatory, and incentive-based tools in concert toward a common vision for the city's future. By guiding growth in locations well-suited for low-risk development, the City can avoid increasing the number of homes, critical facilities, and people located in flood-prone areas and thus avoid further increasing potential damages from flood events.

Resilient strategies for growth, like infill development, can also provide additional benefits. Infill development focuses growth on underutilized sites, such as parking lots or vacant properties, within an already developed area. It is a model of growth that "fills in," rather than expands from the existing urban fabric and supports increased density in areas where infrastructure and resources already exist. Infill development can reduce the distance that people need to travel to jobs and services; enable diverse modes of transportation, like public transit and bicycles; reduce urban sprawl and protect ecologically and recreationally valuable open spaces from development; make multi-unit housing options accessible for more residents; increase the return on investment in existing infrastructure; and reduce the extent and cost of infrastructure and services the City needs to provide and maintain.[1]


Credit: Halff

Shocks and Stressors Addressed

Flooding / Sea Level Rise / Chronic Flooding / Housing Instability

Implementation Partners

Planning & Development / JEA / JTA / North Florida TPO / Development Community

Potential Funding Mechanisms

CIP / Modified Fee Structure

Implementation Timeframe

Immediate (2025)	Short-Term (2030)	Medium-Term (2035)	Long-Term (2050)

Relative Cost

$ (10,000s)	$$ (100,000s)	$$$ (1,000,000s)	$$$$ (10,000,000s)

SUB-ACTIONS

1.1 Update the City's land development regulations.

The City's land development regulations govern multiple aspects of where and how land is developed, including allowable uses, site requirements, and building and construction standards. Jacksonville's land development regulations include the Zoning Code, the Code of Subdivision Regulations, and the Floodplain Management Ordinance. Jacksonville's current land development regulations were written when climate threats were not a major consideration and do not account for the full range of current and future conditions that climate change brings. New homes, businesses, services, and subdivisions are permitted in a manner that may be inconsistent with the goals of *Resilient Jacksonville*, placing residents at greater risk from climate hazards. Projections for how climate change will increase flood risks to certain areas of the city are now available and can be used to regularly update regulatory tools to reflect the best available data and science in a way that serves Jacksonville residents for generations to come. The City is working on updating its land development regulations over the coming year to account for future flood risk projections in where and how land and buildings are developed. Land development regulations will also be regularly updated to account for changes in the environment and exposure to risk over time.

1.2 Facilitate strategic infill development in areas of low flood risk.

The City of Jacksonville, in partnership with Jacksonville Transportation Authority (JTA), JEA, the development community, and other partners, will explore and implement a range of tools to encourage infill development that is resilient to increasing climate impacts and located in high, dry, and connected areas. These tools may include incentivizing redevelopment of vacant properties in high, dry, and connected areas; thoughtfully and strategically increasing allowable densities or providing density bonuses in those areas; partnering with developers to transfer development rights from one property to another; reducing utility connection fees in target areas; and reducing parking minimum requirements for new developments. City Council passed legislation in 2022 that expands where accessory dwelling units (ADUs), small housing units built on the same lot as a single-family home, are allowed in Jacksonville. This is another important tool that will support affordable infill development in Jacksonville. The City will combine tools for infill development with approaches for maintaining and expanding affordable housing (see Action 4) to ensure that making room for new neighbors improves conditions for existing residents and minimizes displacement.

1.3 Incorporate resilience considerations into future land use planning.

Jacksonville's 2030 Comprehensive Plan is a policy document required by Florida Statutes and the City's Code of Ordinances. This plan guides future growth and development with the goal of promoting public health, safety, and welfare. The plan also guides updates to the City's land development regulations. Jacksonville will incorporate resilience goals, climate threats, and risk considerations into updates of the Comprehensive Plan, including the Future Land Use Element and Future Land Use Map that describe the land uses and physical characteristics intended for all areas of the city.

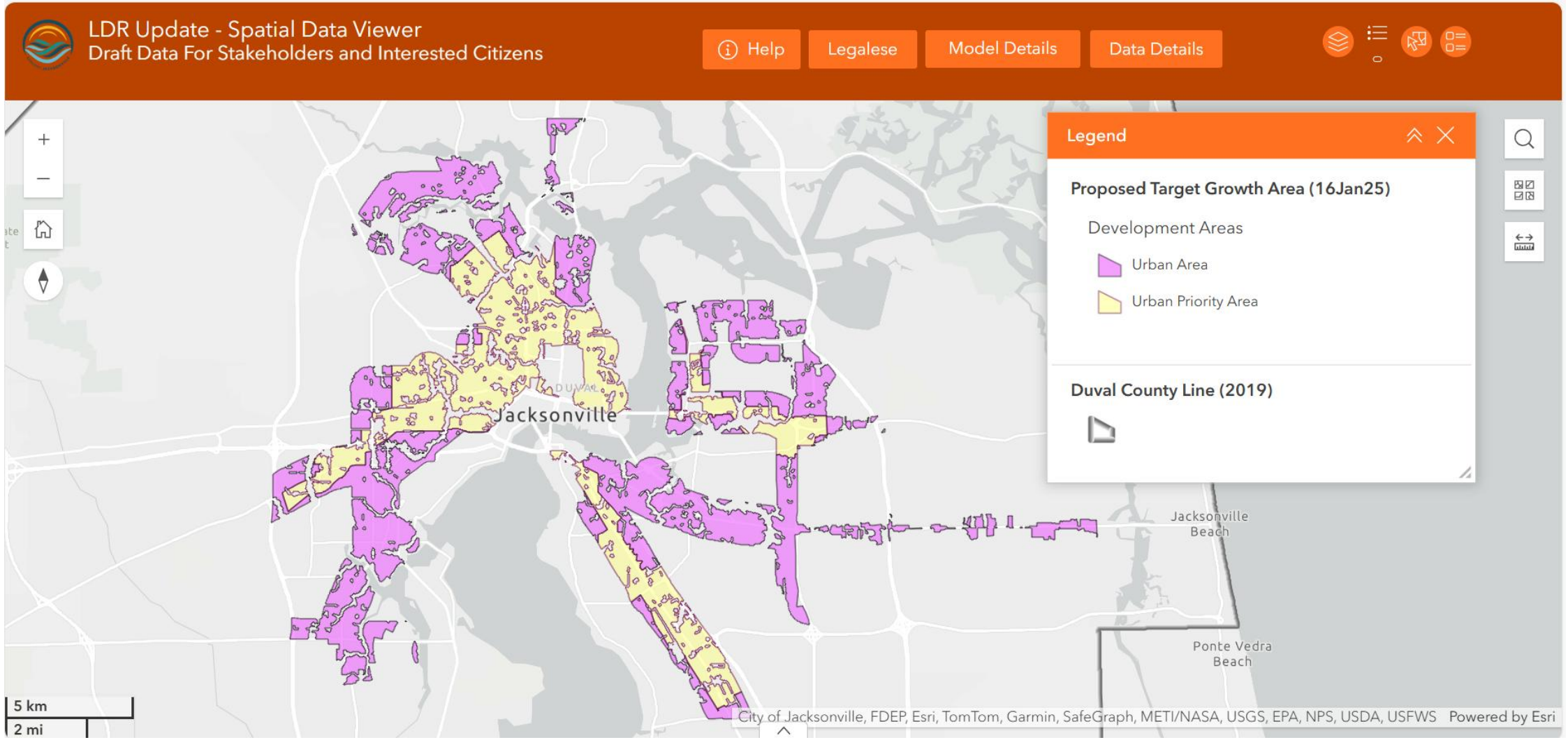
Land Development Regulation Committee

- Formed in November 2023 by the City of Jacksonville
- Included planners, engineers, developers, housing advocates, neighborhood voices, CPAC representation, and City staff

COMMITTEE GOALS

- Increase resilience to flood risk
- Increase housing opportunities
- Protect neighborhood character while accommodating growth

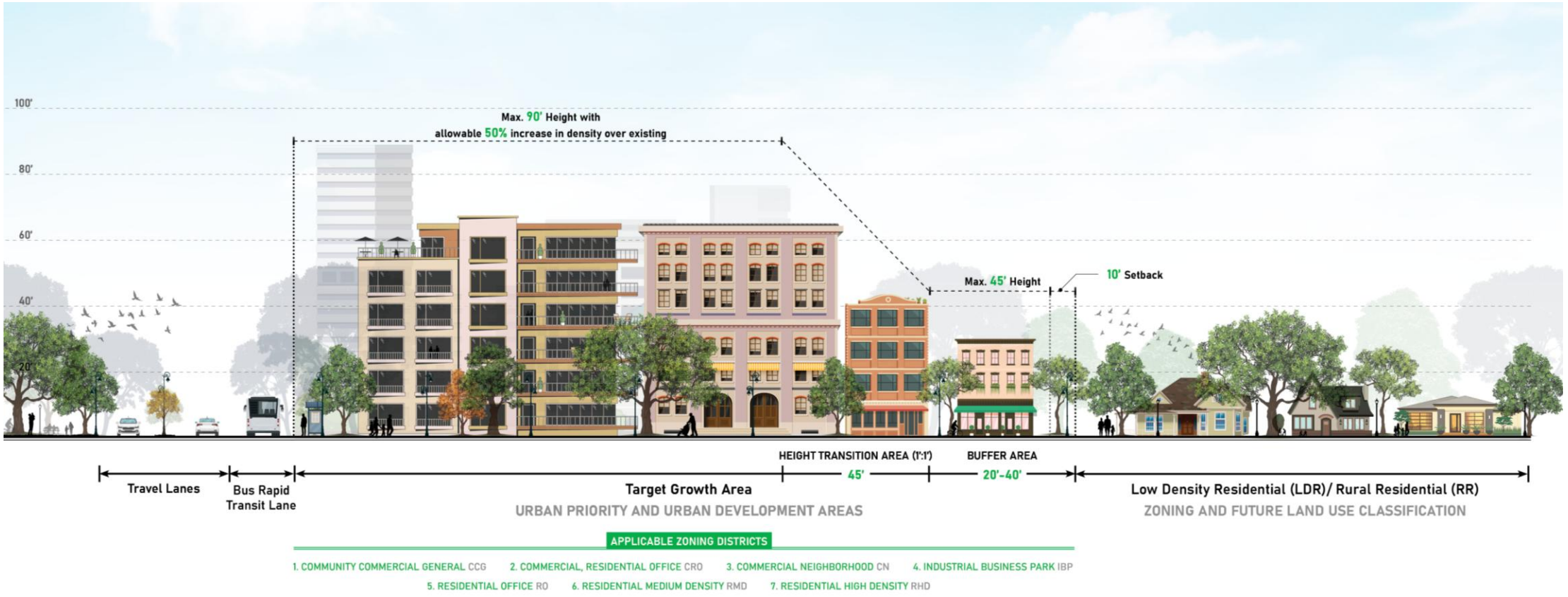
Land Development Regulation Committee



INCENTIVES THAT MAY BE OFFERED

If a project is located in a Target Growth Area, it may qualify for:

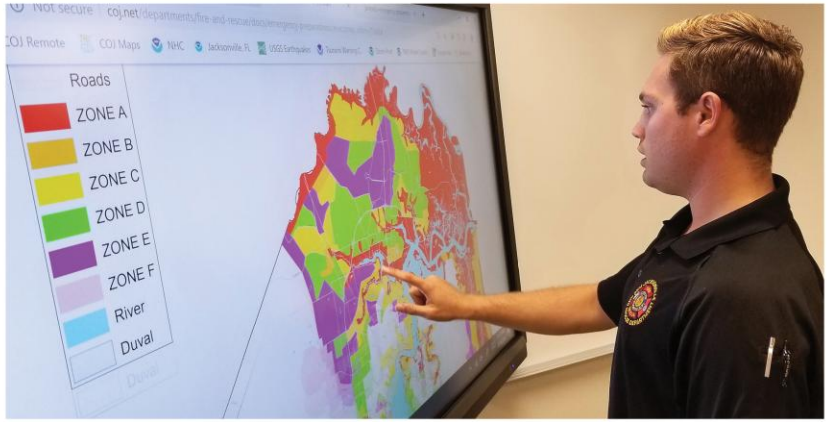
- Density bonuses (more units per site)
- Height flexibility (with transition standards)
- Increased lot coverage
- Lot flexibility
- Parking flexibility



PROJECTS UNDERWAY

19 | Strengthen emergency response and evacuation plans.

As climate change continues to impact the frequency and severity of extreme weather events, it is important that Jacksonville residents have access to strong evacuation plans informed by the best available data. Using road network analyses conducted in 2023, Jacksonville's Emergency Preparedness Division will be able to anticipate and plan for potential chokepoints and neighborhoods that could be cut off from the rest of the network during an extreme flood event. The City has established criteria for activating the Emergency Operations Center (EOC) for hurricanes, but the City still needs to develop standards for activating the EOC during heat and freeze events. A citywide plan for heat and freeze events will address these gaps and provide guidance for partners such as hospitals and other critical facilities. The Office of Resilience will provide data from Jacksonville's citywide vulnerability assessment to support the Emergency Preparedness Division in the update of evacuation zones for the 2024 hurricane season and the development of a citywide plan for extreme heat and freeze events. The Emergency Preparedness Division will communicate with JEA to ensure that the Emergency Preparedness freeze plan and JEA's freeze plan are coordinated and supportive of each other.



Shocks and Stressors Addressed

Hurricanes / Extreme Heat / Extreme Cold

Implementation Partners

Resilience / JFRD - Emergency Preparedness / JEA / NEFRC

Potential Funding Mechanisms

FEMA HMGP / USDOT / NOAA

Implementation Timeframe

Immediate (2025)	Short-Term (2030)	Medium-Term (2035)	Long-Term (2050)

Relative Cost

$ (10,000s)	$$ (100,000s)	$$$ (1,000,000s)	$$$$ (10,000,000s)

SUB-ACTIONS

19.1 Routinely refine the city's hurricane evacuation zones based on the best available data.

Revisiting hurricane evacuation zones on a regular basis is a best practice used to ensure that there is a plan in place for any areas that could be potentially inundated during a major flood event. Using road network analyses and additional data from Jacksonville's citywide vulnerability assessment, Jacksonville's Emergency Preparedness Division will routinely update the city's evacuation zones.

19.2 Identify high frequency flooding intersections for automated flood alert signage.

Automated flood alert signage can save lives and property in areas that frequently experience high water levels during or after major flood events. Jacksonville's Emergency Preparedness Division will use data from the City's vulnerability assessment to identify intersections that are at high risk for frequent flooding and inform decisions around installation for automated flood alert signage.

19.3 Create plans for extreme heat and freeze events.

The Emergency Preparedness Division has established strong criteria for hurricanes and tropical systems that is used to decide when to activate the Emergency Operations Center. To ensure the safety of Jacksonville's residents during extreme heat and freeze events, the Emergency Preparedness Division is working to secure grant funding to develop a citywide plan for these types of events. This plan will establish a set of standards to inform when to activate the Emergency Operations Center during extreme heat or freeze events and will provide more specific guidance for hospitals and other critical facilities.

Extreme Temperature Readiness

Extreme Temperature Risk Analysis

- Identify vulnerabilities and failure points of infrastructure to extreme temperature events
- Create coordinated emergency response to extreme temperature events in much the same way as the city coordinates for tropical storms and hurricanes.

10 | Expand Jacksonville's tree canopy.

Trees improve air quality, reduce the amount of energy needed to cool buildings, provide shade, absorb stormwater, increase property values, and enhance an area's beauty. Trees are also critically important for wildlife. A strategic approach to the management and long-term care of the urban forest can increase the likelihood of achieving benefits from trees. The City will develop, implement, and monitor an Urban Forest Management Plan which will guide proactive and effective management for long-term community benefits. This plan will be developed in coordination with the Jacksonville Tree Commission, city arborists, urban foresters, and natural resource staff, and will inform plans to manage invasive species, set guidelines for planting climate-adaptive species, and provide recommendations for pruning and tree maintenance processes across the city. The Office of Resilience will work with the Tree Commission to lead the development, implementation, and monitoring of the Urban Forest Management Plan. The Department of Public Works and Parks Department will support the development of guidance for planting and maintaining resilient tree species and the revision of codes to improve tree maintenance and account for temperature, salinity, rainfall fluctuations, and invasive species. They will also coordinate with JEA to ensure North American Electric Reliability Corporation (NERC) reliability standards for electric line clearance and JEA's standards for tree trimming are met.

Shocks and Stressors Addressed

Extreme Heat / Urban Heat Island Effect / Stormwater Flooding

Implementation Partners

Parks / Public Works / Tree Commission / Greenscape

Potential Funding Mechanisms

City Tree Mitigation Fund / U.S. Forest Service Urban Community Forestry Program

Implementation Timeframe

Immediate (2025)	Short-Term (2030)	**Medium-Term (2035)**	Long-Term (2050)

Relative Cost

$ (10,000s)	**$$ (100,000s)**	$$$ (1,000,000s)	$$$$ (10,000,000s)

10.1 Plant more climate-adaptive trees to increase shade and ecosystem value.

As Jacksonville's climate changes, temperatures increase, and rainfall and storms become more intense and frequent, selecting tree species able to tolerate these conditions will be critical to long-term survival of a healthy urban forest. Some species are more adapted to these climate changes than others, and being aware of these differences will support more long-term survivability of the urban forest. Regardless of climate change, site-specific conditions need to be understood when planting a tree. Trees near the coast should be tolerant of flooding by saltwater during storms and salt spray. Trees should be able to withstand hurricane force winds and should be relatively drought tolerant to reduce water use. Additionally, planting a wide variety of species will support biodiversity and improve resilience. Investing in the planting and maintenance of native, climate-adaptive trees in parks, on public lands, and on rights of way can increase tree canopy coverage to mitigate the impacts of urban heat and enhance the value of ecosystems throughout the city.

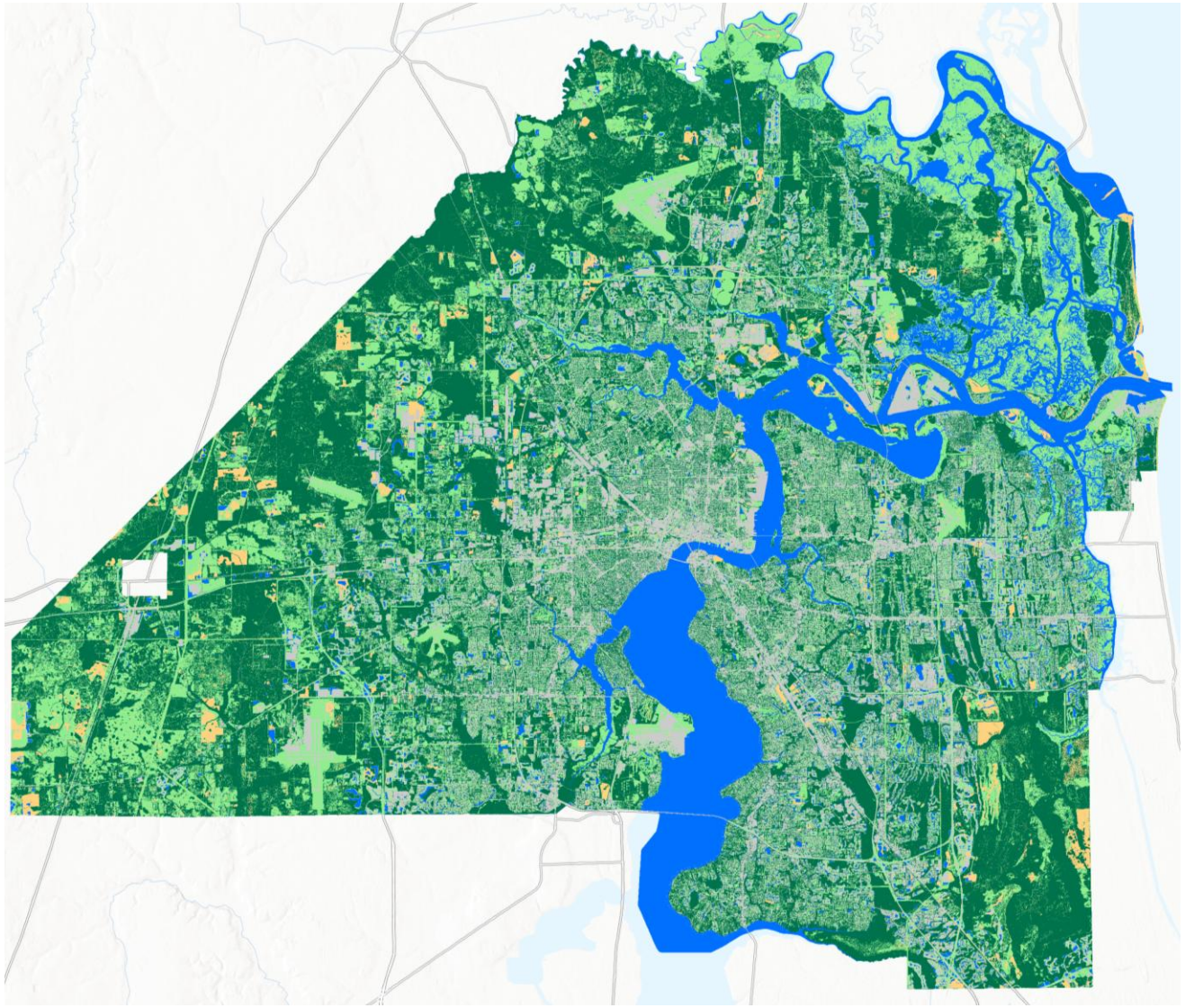
10.2 Develop an Urban Forest Management Plan.

The Office of Resilience will work with the Parks Department, Department of Public Works, JEA, and the Jacksonville Tree Commission to develop and coordinate the implementation of a citywide Urban Forest Management Plan. The coordinated development and implementation of this plan will ensure that Jacksonville's tree canopy is maintained, it continues to expand, and new plantings are in line with resilience goals. This plan will include a citywide tree inventory, detailed procedures for handling invasive species and identifying new planting zones, and a framework for improving pruning and maintenance processes. The Tree Commission can draw on support from several national Urban Forestry resources, such as the Forests in Cities Network, the Urban Forest Management Plan Toolkit provided by the Inland Urban Forest Council, and resources from the Natural Areas Conservancy and the Trust for Public Land.

10.3 Connect open spaces and ecosystems to establish habitat corridors and improve water management.

A healthy and robust tree canopy provides many benefits to Jacksonville communities; however, some residents are skeptical about the value of existing and newly planted trees and the requirements of maintaining them. Common concerns include property damage or power outages from ill-maintained trees and a lack of resources needed for tree maintenance and planting. Engaging and including Jacksonville communities in decisions about the management and expansion of the tree canopy in their neighborhoods can build trust between the City and its residents, increase support for tree plantings, and foster a collective stewardship of a thriving urban forest. The City will partner with local nonprofit organizations, such as Greenscape, to conduct outreach and education efforts across Jacksonville. This could include activities like hosting public meetings, participating in citywide public events to inform residents about the Urban Forest Management Plan and the state of Jacksonville's tree canopy, offering professional arborist training, or organizing leaf collection programs. The City can utilize Jacksonville's TreePlotter website and resources from the University of Florida Institute of Food and Agricultural Sciences to inform residents about tree health, proper maintenance, resources available to assist homeowners, and the multiple benefits of trees.

Urban Forestry Management Plan (UFMP)



The Urban Forestry Management Plan includes:

- A tree canopy assessment and canopy change over time
- Recommendations to improve the health of our urban forest and reduce risks
- Strategies to increase the adaptive capacity of our urban forest

Land Cover Classification

- Tree Canopy
- Impervious Surface
- Grass Low-Lying Vegetation
- Bare Soil
- Open Water

Expanding Jacksonville's Tree Canopy Through Partnerships

17 | Identify shorelines where natural and nature-based solutions can provide long-lasting ecosystem service benefits.

Natural and nature-based solutions, when implemented strategically, have the capacity to provide multiple resilience benefits. As defined by the U.S. Army Corps of Engineers, natural and nature-based features refer to landscape features that produce flood risk management benefits. Projects such as oyster reef installation, salt marsh restoration, dune establishment, and hybrid gray-green infrastructure have the potential to mitigate impacts from coastal hazards, improve ecosystem health, and even lower long-term costs of shoreline maintenance. For example, oyster reefs can serve as breakwaters as they absorb the force of waves, slow coastal erosion, create habitat, and provide water filtration that enhances surrounding ecosystems. Restoration of salt marsh can also contribute to many of these benefits. The Parks Department, in partnership with the Office of Resilience, will prioritize sites for nature-based shoreline stabilization opportunities, develop solutions for coastal erosion within the City's park system, and identify additional opportunities to implement nature-based solutions that yield multiple public benefits. Additional partnerships with the University of Florida and homeowner associations can facilitate the identification of potential private property natural and nature-based opportunities. To facilitate a data-driven process, the Parks Department will combine results from the *Resilient Jacksonville Vulnerability Assessment* with federally funded research and analyses.


Credit: University of North Florida

Shocks and Stressors Addressed
Coastal Erosion / Chronic Flooding / Water Quality

Implementation Partners
Parks / Resilience / USACE

Potential Funding Mechanisms
Resilient Florida / NFWF Coastal Resilience Fund

Implementation Timeframe
Immediate (2025) | Short-Term (2030) | Medium-Term (2035) | **Long-Term** (2050)

Relative Cost
$ (10,000s) | $$ (100,000s) | $$$ (1,000,000s) | $$$$ (10,000,000s)

17.1 Conduct research and analyses to identify waterfront edges most suitable for natural and nature-based solutions.

With 59 tributaries, the St. Johns River, and the Atlantic Ocean, Jacksonville has hundreds of miles of waterfront edges. Many of these edges may be suitable for natural and nature-based solutions, particularly to address shoreline erosion. The City will pursue a Living Shoreline Suitability Model, as was developed for the Tampa Bay Area by the Florida Fish and Wildlife Research Institute, and will use the results in conjunction with the vulnerability assessment to prioritize sites for stabilization solutions like oyster reefs, living breakwaters and/or salt marsh restoration.[13] Hybrid gray-green approaches may also be suitable where some degree of hardening is needed, but additional habitat area might provide cascading benefits.

17.2 Address shoreline erosion in coastal parks.

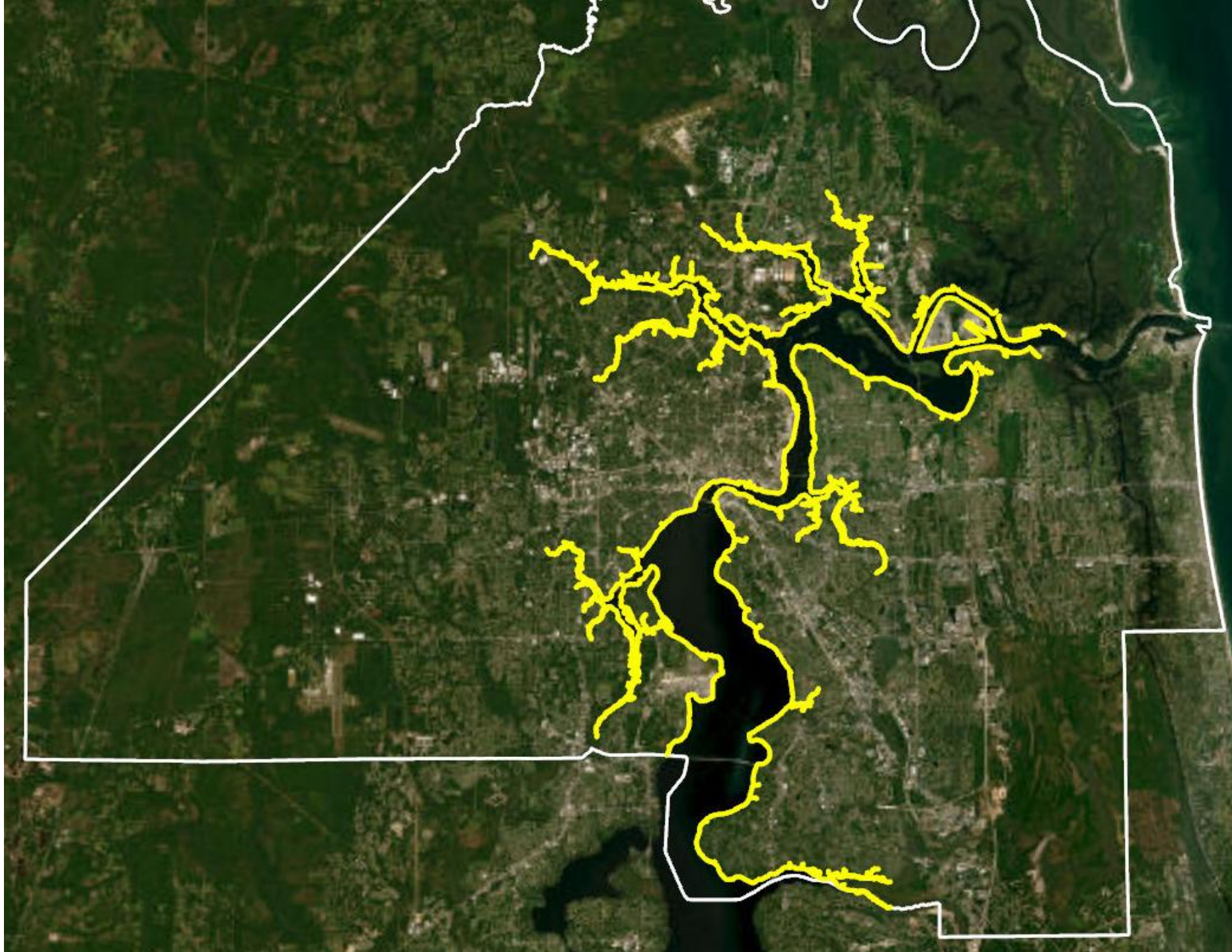
Hurricanes and tropical events can cause large-scale erosion to Jacksonville's coastal parks and beaches. Past projects, like the Duval County Shore Protection Project implemented by the Jacksonville District of the U.S. Army Corps of Engineers, have successfully renourished hurricane-eroded beaches, adding sand to provide recreation and tourism opportunities as well as shorebird and marine turtle habitat.[14] Renourished beach and dune systems also provide protection to life and property from storm surge and waves during hurricanes and nor'easters. New partnerships, like the University of North Florida's work with the National Park Foundation, Groundwork Jacksonville, and Stericycle, are bringing oyster reefs to protect sensitive areas in the Timucuan Preserve from erosion.[15] The City and its partners will continue to search for new and innovative ways to address shoreline erosion.

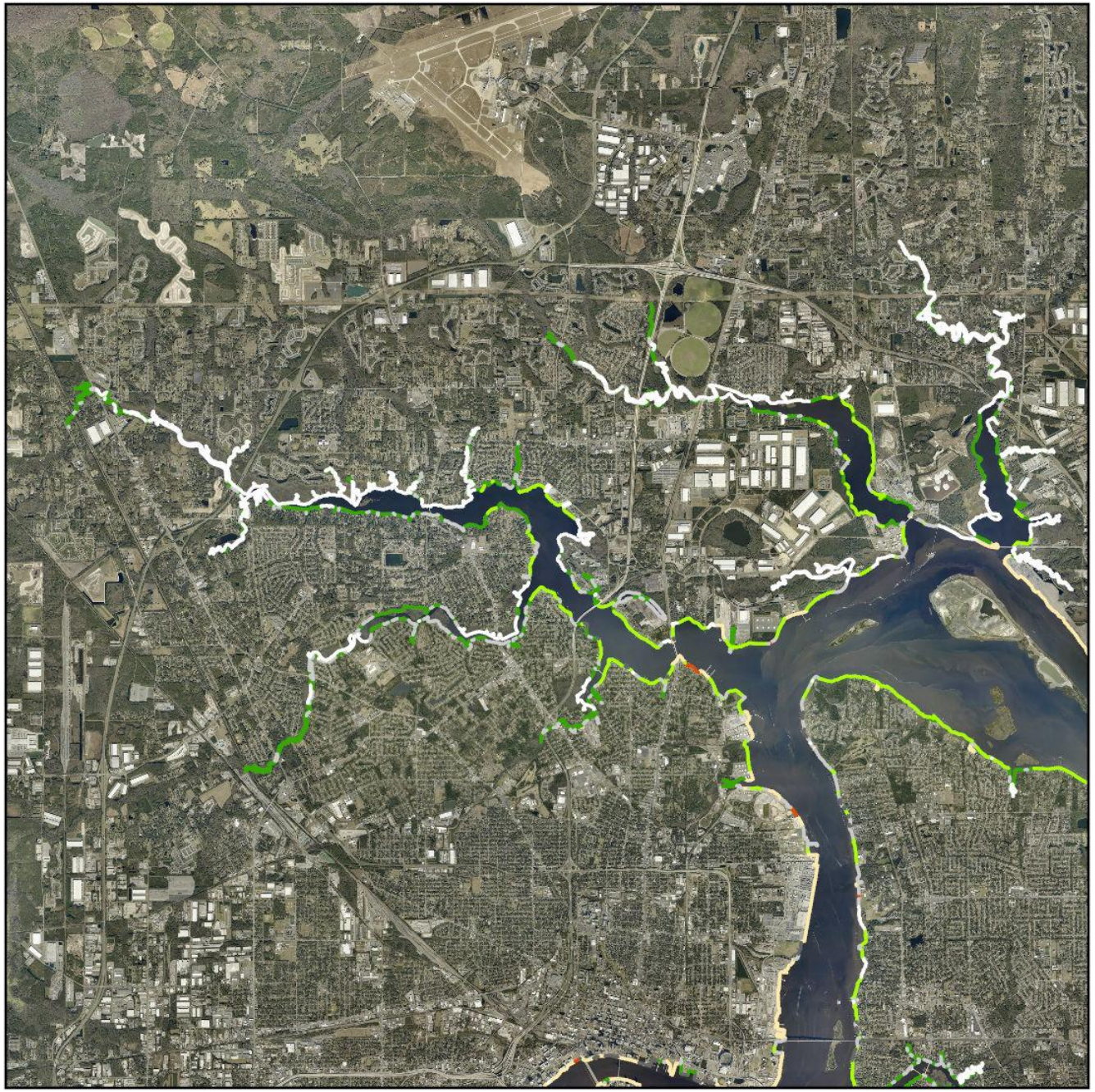
17.3 Identify sand and sediment resources for natural and nature-based solutions.

Natural and nature-based solutions like beach nourishment and marsh creation can help protect communities and ecosystems while providing recreational benefits to residents, beachgoers, and local businesses. These approaches rely on sand and other sediments which, in the future, may become increasingly expensive as readily available sources of suitable material become depleted. The City of Jacksonville will coordinate with partners such as the U.S. Army Corps of Engineers to identify long-term solutions for supporting beach nourishment, thin layer placement of dredged materials, and other coastal protection measures.

Living Shoreline Suitability Model

- Based on model by Virginia Institute of Marine Science
- Identifies areas suitable for living shorelines and where gray infrastructure is needed

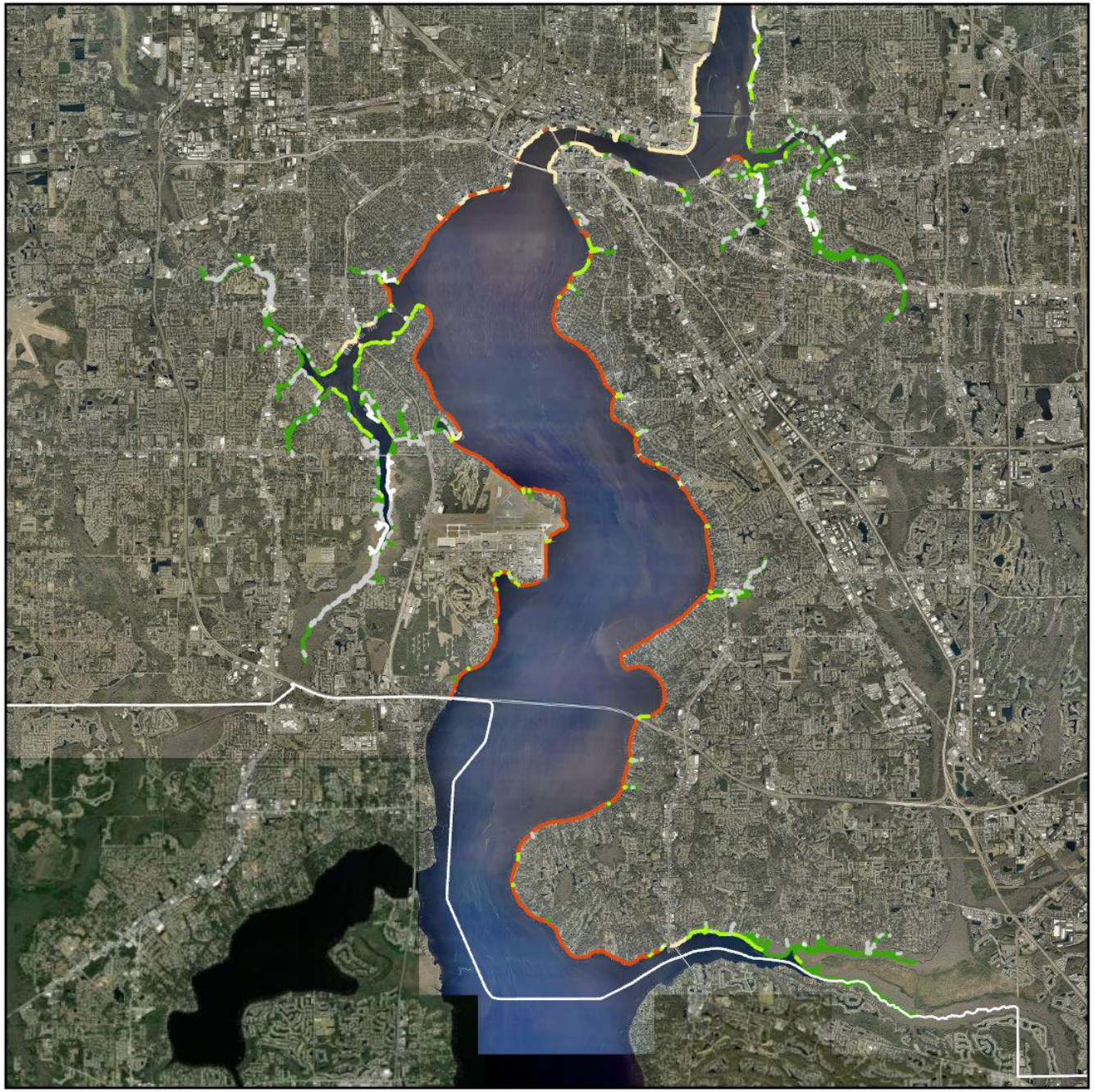




Living Shoreline Classification

- Highly Modified Area. Seek expert advice.
- Land Use Management. Seek expert advice.
- Unique Riverine Conditions. Seek expert advice.
- Non-Structural Living Shoreline
- Plant Marsh with Sill
- Revetment
- Revetment/Bulkhead Toe Revetment
- No Action Needed

RESILIENT JACKSONVILLE



Living Shoreline Classification

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NEW PROJECTS

31.2 Ensure residents can easily connect to available public and nonprofit resources and services.

Many Jacksonville organizations provide valuable services for seniors, children, families, veterans, and neighbors, but connecting to these resources can be a challenge. United Way of Northeast Florida operates the region's 211 hotline, available 24/7 to connect people to free resources. 988 is the City's mental health hotline, which is operated by trained crisis managers from multiple local mental health service groups. The 988 hotline has been successful; referring less than 1.3% of the calls to the emergency room or 911. Additionally, the City's Department of Parks, Recreation, and Community Services operates critical social and senior services, like emergency financial assistance, HIV/AIDS services, programs for victims of crime, and more. These services are accessible through the hotline (904) 630-CITY. Other resources, like the opioid overdose reversal drug Narcan, are being made available throughout Jacksonville by the Florida Department of Health, Jacksonville Fire and Rescue, and additional partners. The City will work with the region's social service providers to support the continued coordination, regular updating, and expansion of these and similar resources to improve service delivery to residents in need.

31.3 Improve food security and healthy food access in all neighborhoods.

Access to nutritious food is essential for a healthy city. Like many other cities across the U.S., a significant percentage of Jacksonville residents rely on Supplemental Nutritional Assistance Program (SNAP) retailers, and must be able to access these providers before, during, and after extreme weather events take place. The 2019 USDA Food Access Research Atlas identifies 38 census tracts within the city as "Low Income and Low Access," which are areas where residents have limited access to healthy food in combination with limited buying power. Baltimore's FreshCrate program[43] is an example of an initiative that takes a multifaceted approach to reducing the number of food deserts. This program addresses the supply issue but also focuses on consumer education, provides coupons to residents within the same ZIP code as participating stores, and works with local universities to pilot programs that help eliminate barriers between residents and healthy food options. Using data from Jacksonville's vulnerability assessment, the City will work with the Economic Development Department to identify stores that accept SNAP benefits, are located in areas with the greatest need, and face significant flood risk. Identifying these areas will help the City and local nonprofit partners facilitate the supply of affordable and nutritious food. Additionally, the City will work with Feeding Northeast Florida to support continued development of their ongoing work, including the expansion of urban and community farming practices.

31.4 Prioritize veteran and servicemember health services.

Veterans and servicemembers are valuable members of Jacksonville's community, and the health of veterans impacts both their families and larger networks. According to the National Alliance on Mental Illness, research suggests that 11–20% of veterans experience post-traumatic stress disorder (PTSD) in a given year.[44] Providing veterans with both mental and physical health services is a priority, and the City will coordinate with Veterans Affairs to ensure that all of Jacksonville's veterans are receiving the support they need to thrive in Jacksonville.

31.5 Identify and connect with housebound seniors and people with disabilities.

The City will work with the Health Department, the Emergency Preparedness Division, the Parks Department's Senior Services Division, and local nonprofits to identify and connect with housebound seniors, residents with disabilities, and other vulnerable populations ahead of extreme heat days and other extreme weather threats to provide the support needed to keep people safe during these events. JaxReady already has a robust list of elderly individuals with special needs that they help connect with shelters during weather-related emergencies, and Jacksonville Transportation Authority (JTA) provides each registered resident with transportation to and from special needs shelters. However, the City will expand communications about the registry to ensure that these services reach more of Jacksonville's senior residents. The City will also explore the possibility of reinstating the collaborative efforts that existed at the height of the COVID-19 pandemic to feed senior residents at least one fresh meal a day.

31.6 Continue the existing collaboration between organizations serving homeless individuals.

Like many cities across the U.S., a significant number of people within Jacksonville have experienced homelessness or are currently unhoused. Sustaining a healthy population is an important part of strengthening city resilience, and providing services to help unhoused individuals access basic needs is one step the City can take to ensure Jacksonville's people are prepared to cope with hazards such as extreme weather events or public health emergencies. Without a home or shelter, people are far more vulnerable to extreme weather and other shocks. When the COVID-19 pandemic reached Jacksonville, the city's homeless-serving organizations, like Sulzbacher and Changing Homelessness, came together to coordinate services and rapidly change their service delivery model. This collaboration has endured, allowing for partnerships addressing veteran homelessness, building supportive housing, and more. The City will continue to facilitate and encourage these collaborations to serve people experiencing homelessness and build more housing.

The Pillars of the Food System

Production

Urban farming, regional agriculture & the resilience of those supply chains

Processing & Distribution

Local food hubs, warehousing, logistics that move products efficiently throughout Jacksonville.

Waste & Recovery

Diversion programs composting, food recovery networks, that reduce landfill impact &redirect surplus to those in need.

Access

Availability of grocery stores, restaurants & emergency food providers, while also addressing affordability challenges and nutrition gaps.

9 | Develop a green stormwater infrastructure program across Jacksonville based on the best available science and data.

The growing trend of "cloudburst" rain events that drop many inches of rainfall in a short period of time is a phenomenon impacting every part of Jacksonville. These increasingly regular events can overwhelm the city's drainage systems and worsen flooding. Oftentimes, cloudbursts are not named storms, not always easy to predict, and may arrive as one single heavy rain event or many sustained days of rain when the ground is saturated and storage systems are full. Like many other cities experiencing these types of events, Jacksonville's drainage systems, including underground pipes, stormwater ponds, and open-air drainage ditches on the side of the road, can be overwhelmed by the frequency and severity of such rainfall events. Simply put, there is often too much water and not enough places for it to go. Green stormwater infrastructure can help relieve the pressure that heavy rainfall puts on Jacksonville's drainage system by capturing and holding water before it reaches the storm drain system and absorbing overflow during rain events. Green infrastructure also improves water quality, mitigates extreme heat, expands natural space, and creates a healthier environment for residents.

Action Description

Up until now, Jacksonville and other cities across the U.S. have sought to address stormwater flooding by looking at historical data to identify where it has already been happening. Analyzing reported flood data from 630-CITY, for example, is a useful first step to identify key areas that experience repeat stormwater flooding, but the City recognizes the need for more sophisticated estimates that can more accurately project future flood risk from both heavy rainfall events and compound flood events (events when different types of flooding, such as storm surge and heavy rain, occur at the same time). Using new estimates of flood risk and mapped outputs from Jacksonville's upcoming compound flood analyses, the City will establish a new program focused on green stormwater infrastructure, identify locations with the greatest need for these types of interventions, and invest resources accordingly.

Shocks and Stressors Addressed

Stormwater Flooding / Urban Heat Island Effect

Implementation Partners

Resilience / Public Works / Parks

Potential Funding Mechanisms

Resilient Florida / USACE Silver Jackets

Implementation Timeframe

Immediate (2025)	Short-Term (2030)	**Medium-Term (2035)**	Long-Term (2050)

Relative Cost

$ (10,000s)	$$ (100,000s)	**$$$ (1,000,000s)**	$$$$ (10,000,000s)

Credit: Philadelphia Water Department

CASE STUDY

GREEN CITY, CLEAN WATERS

Philadelphia, PA | 2011

Green City, Clean Waters is a comprehensive 25-year plan developed by the Philadelphia Water Department (PWD) to implement green stormwater infrastructure (GSI) citywide. The primary goal of this program is to reduce water pollution by utilizing GSI such as rain gardens, swales, and stormwater tree trenches to store stormwater runoff before it reaches the sewers and causes an overflow of polluted waters into the city's rivers. PWD has partnered with other city departments, agencies, private developers, and organizations to install GSI at recreation centers and schools, as well as in parking lots. Green City, Clean Waters is also looking into opportunities for GSI to be coupled with future renovations, such as upgrades to athletic fields.

In the program's first decade of implementation, nearly 800 sites across the city have incorporated GSI, resulting in more than 2.7 billion gallons of polluted water kept out of local waterways. These efforts yield additional environmental benefits like reduced stormwater flooding, improved air quality, energy conservation, ecological support, and reduced impacts from extreme heat. They also provide economic and social benefits such as improved opportunities for recreation, increased property values, investment in local businesses, and reductions in crime.

Green Infrastructure Initiatives

- Project prioritization framework in development
- Pilot projects being designed in city parks
- Updating Duval's Low Impact Development Design Manual

5 | Update public works design standards to account for climate change impacts and support resilient infrastructure development.

Public works design standards set a precedent for the safety and resilience of public infrastructure and establish a baseline of resilience for any city investment. Prioritizing the resilience of infrastructure is critical, not only to avoid costly repairs but also to minimize the wide-ranging consequences of natural disasters for the livelihoods and well-being of residents.[4] Integrating climate change data into public works design standards and the Capital Improvement Plan prioritization process will ensure that retrofits and new construction performed by the Department of Public Works are resiliently designed and built to withstand flooding, high winds, heat, and other extreme weather.

Resilient design standards will also guide the development of community services, jobs, retail, and affordable housing in low-risk areas with existing infrastructure, transit networks, and underutilized sites, and reduce the amount of capital spent on repairing infrastructure. In addition, actions intended to improve infrastructure resilience—for example, a park that is "designed to flood" and provide additional water storage capacity during heavy rainfall events—can often yield additional benefits during non-emergency conditions.[5] The multiple benefits derived from interventions like this are often referred to as the "resilience dividend," which represents the many benefits that accrue by investing in actions that strengthen the city's resilience. Extensive research from the National Institute of Building Sciences has repeatedly shown that investments in mitigation provide substantial benefits over cost. Their study of federal mitigation grant programs found a $6 benefit for every dollar invested.[6]

Credit: Montgomery County DEP

Shocks and Stressors Addressed

Flooding / Sea Level Rise / Chronic Flooding / Urban Heat Island Effect

Implementation Partners

Public Works / JEA / Subdivision Standards and Policy Advisory Committee / Context Sensitive Streets Committee

Potential Funding Mechanisms

Resilience Office / Fuse Fellows

Implementation Timeframe

Immediate (2025)	Short-Term (2030)	Medium-Term (2035)	Long-Term (2050)

Relative Cost

$ (10,000s)	$$ (100,000s)	$$$ (1,000,000s)	$$$$ (10,000,000s)

SUB-ACTIONS

5.1 Align above-ground and below-ground infrastructure specifications and review processes.

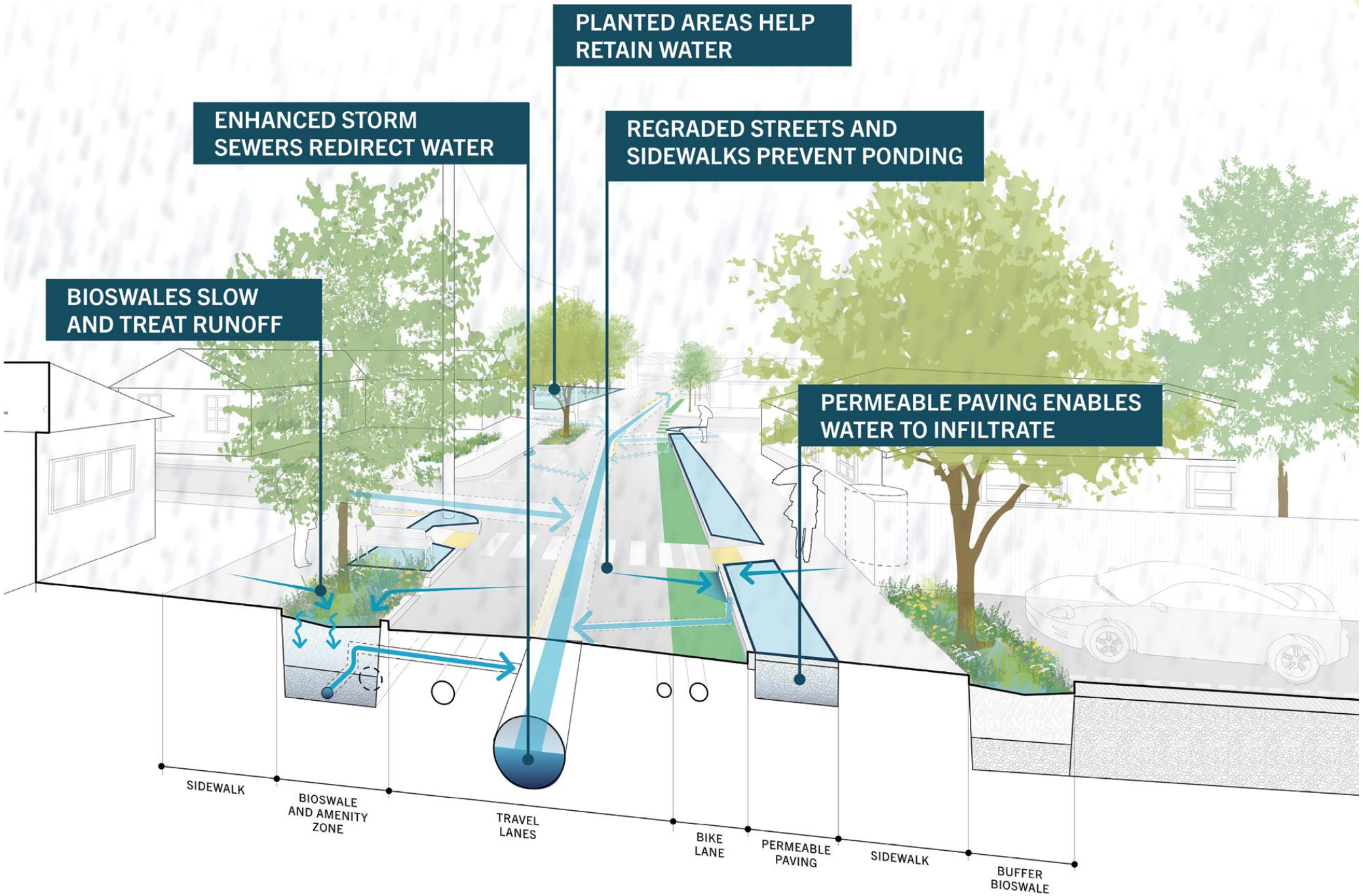
To ensure consistency in design for above- and below-ground infrastructure, it's important that the committees setting these standards are in close coordination. The City will facilitate the merging of the Subdivision Standards and Policy Advisory Committee (SSPAC) and the Context Sensitive Streets Committee to allow for holistic planning and streamlined decisionmaking. Additionally, to save on costs and materials and improve sustainability citywide, the City and JEA will closely coordinate projects and maintenance, collaborate to improve standards and specifications, and implement resilient standards where applicable.

5.2 Update the standard details and specifications for City of Jacksonville street designs.

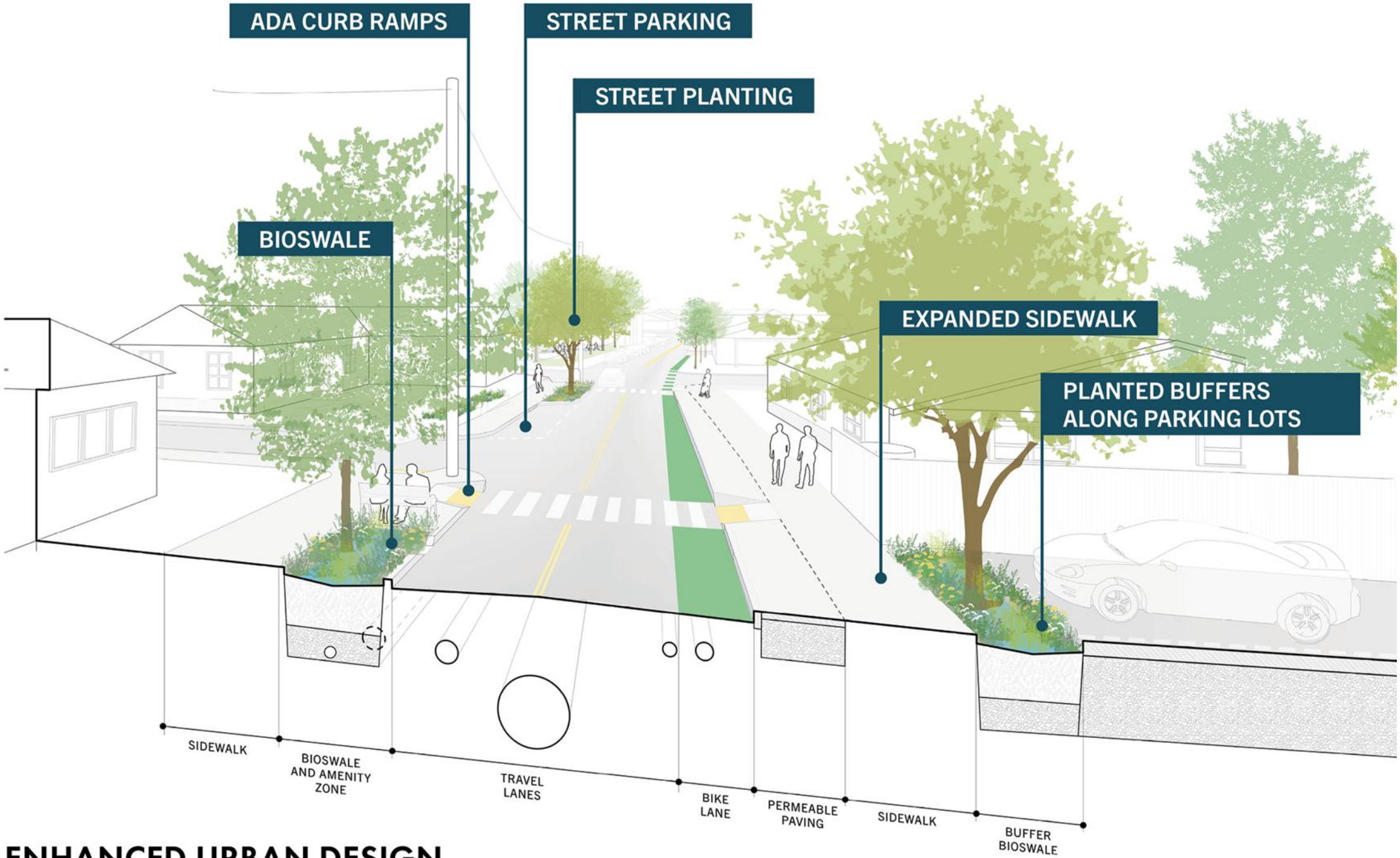
If you laid all of Jacksonville's City-managed roads in a straight line, you could get from Downtown to Los Angeles and halfway back—a total of over 3,400 miles. Each road has the potential to provide significant resilience benefits beyond transportation. The City will undergo a streetscape design update that will comprehensively look at the various types of roadways in Jacksonville and provide standards for roadway design and upgrades that provide additional quality of life, stormwater management, and urban heat reduction benefits. These redesigns could include multiple components, such as multimodal active transportation with lanes and pavement markings for buses and bicyclists. They could also include light-colored roadways to reduce urban heat absorption and additional street trees to provide shade, absorb stormwater, and lower air temperatures. Redesigns could both benefit pedestrians through the installation of safe and accessible sidewalks and include permeable paving to reduce runoff and promote infiltration. Updating the City's streetscape design standards is an opportunity to make significant improvements to meet resilience goals.

5.3 Incorporate green infrastructure features into drainage specifications.

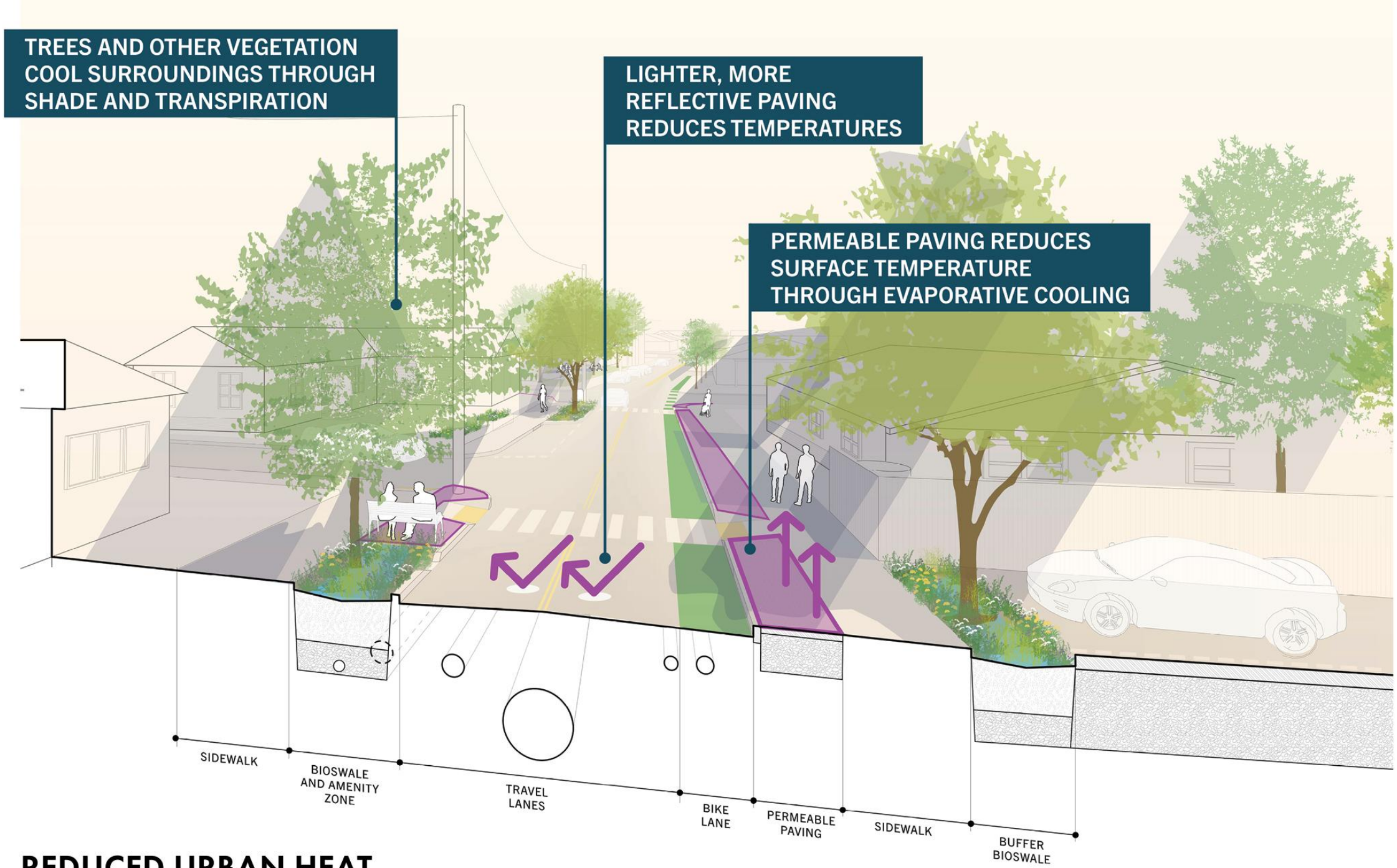
Though not a catch-all solution for drainage, green infrastructure features can take pressure off the city's drainage system while simultaneously providing multiple benefits by filtering, storing, and even infiltrating stormwater (the process by which water flows into and through the soil). Development of design guidelines for green infrastructure features as part of a drainage guidebook is one mechanism that can be used to implement citywide standards around green infrastructure installation (e.g., determining what an urban bioswale should look like in specific parts of the city). In addition to establishing design guidelines and standard details—and separate from the regular flow capacity the city relies on from the traditional drainage system—the City can set targets for how much water different parts of Jacksonville should be able to temporarily retain during and after one or more major rainfall events.



IMPROVED STORMWATER MANAGEMENT



ENHANCED URBAN DESIGN



REDUCED URBAN HEAT

13 | Improve land management and stewardship to enhance ecosystem value, improve public safety, and reduce wildfire risk.

Investment in the stewardship of open space is critical for maintaining healthy ecosystems and the services they provide to Jacksonville's residents. Well-maintained open spaces support native biodiversity, which is key to ecosystem resilience. Native ecosystems provide valuable ecological functions, such as water filtration and storage, while also providing resilience benefits such as reduced flood risk and mitigation of extreme heat effects. Proper land management can reduce the risk of wildfire damage and provide improved visibility and public safety in park land. Land management is also needed to prevent land loss or degradation and habitat conversion due to various climate threats, such as sea level rise, increasing salinity of the St. Johns River, flood damage, increased heat and drought, wildfire, extreme storm events, coastal erosion, and invasive species.

Shocks and Stressors Addressed

Wildfire / Air Quality / Water Quality / Sea Level Rise / Saltwater Intrusion / Coastal Erosion / Drought

Implementation Partners

Parks / JFRD

Potential Funding Mechanisms

Increased General Funding for Parks Department

Implementation Timeframe

Immediate (2025)	**Short-Term (2030)**	Medium-Term (2035)	Long-Term (2050)

Relative Cost

$ (10,000s)	**$$ (100,000s)**	$$$ (1,000,000s)	$$$$ (10,000,000s)

SUB-ACTIONS

13.1 Establish guidelines, resources, and trainings for resilient land management.

Knowledge of and adherence to best practices in land management is an effective step toward strengthening Jacksonville's resilience. In addition to the ecosystem types described in Action 12, there are also many types of working lands and open space on private land in Jacksonville. Each of these ecosystems and land uses require a specific suite of land management approaches to support, restore, and enhance ecological functions. The City will provide comprehensive guidance and training for City staff, contractors, and volunteers to improve land management practices across the full range of ecosystem and open space types. These resources can guide management of City-owned lands as well as be shared with other agencies and landowners.

13.2 Manage invasive species and nuisance animals.

Invasive species and nuisance animals can severely damage ecosystems and harm native biodiversity, and invasive plants, in particular, are adversely impacting natural areas in Jacksonville. It can be costly and difficult to treat invasive plants once they become established. For context, the City spent approximately $30,000 in 2022 to treat invasive plants, and much more work is needed to address the problem. Though a wide variety of invasive plants have been treated in Jacksonville's preserve parks, the problem is not limited to a few species. The City will explore opportunities such as increasing landscape inspector and contractor trainings, prohibiting invasives from use on City projects, encouraging property owners to remove invasive trees and plants, and strengthening enforcement of existing codes related to invasive species.

13.3. Manage forests to reduce wildfire risk.

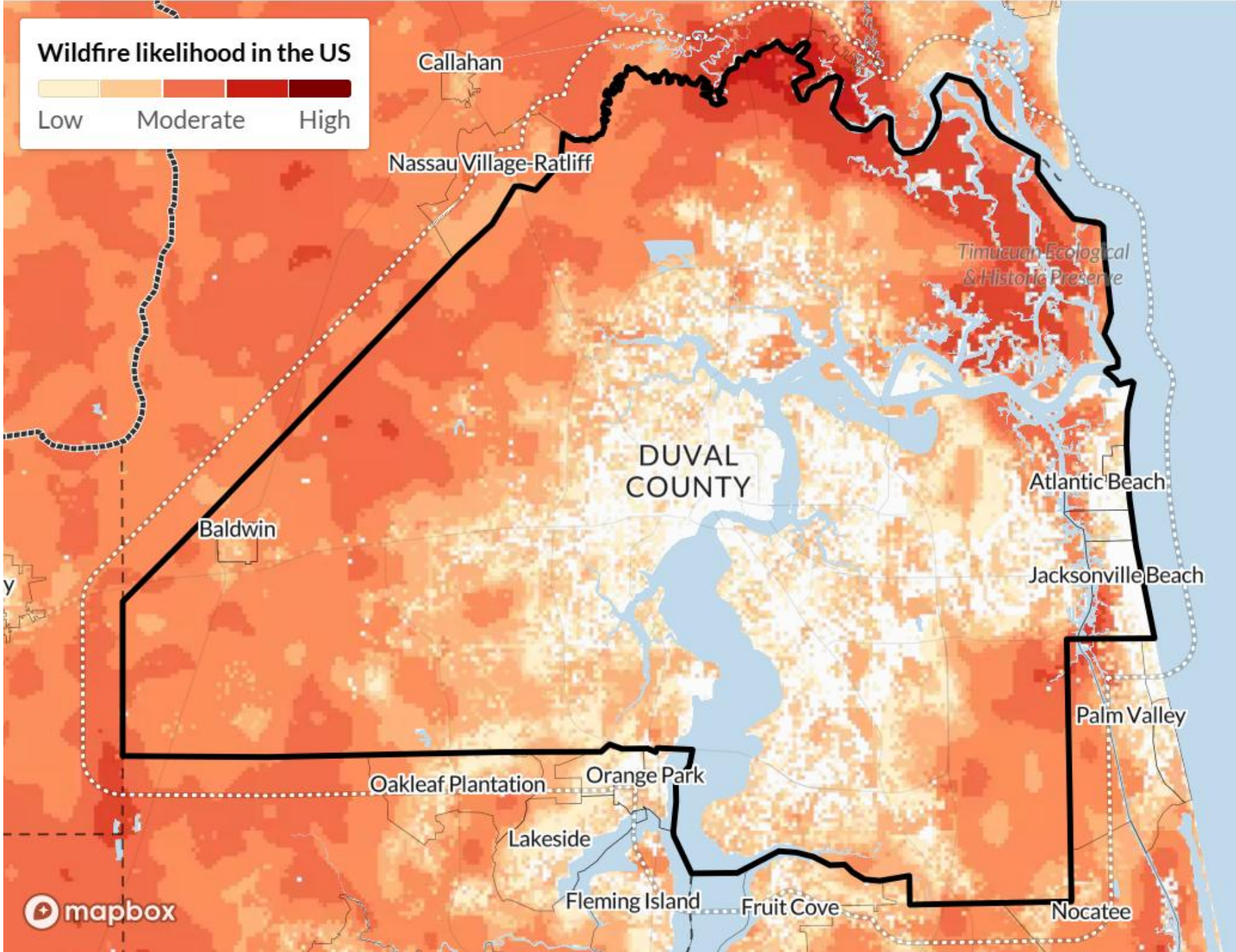
Unmanaged forests can pose a risk for wildfire damage. Prescribed burning, or a planned fire under controlled conditions, maintains the health of forests and reduces the risk of wildfires. Other vegetation management activities, such as the mechanical treatment of overgrown understory vegetation, can be used where prescribed burns are not appropriate. To protect Jacksonville's ecologically valuable open space and its people, the City will prioritize investments in proactive land management to reduce wildfire risk, including increased monitoring to prevent wildfires from growing out of control.

Community Wildfire Protection Plan

- Designed to reduce wildfire risks
- Complements existing plans, such as the Hazard Specific Plan and Local Mitigation Strategy

Community Wildfire Protection Plan

Duval has, on average, a greater wildfire likelihood than 76% of counties in the U.S.



REGIONAL RESILIENCE

44 | Support regional resilience efforts.

Jacksonville isn't alone in facing the increasing risks of shocks and stressors. In recent years, Northeast Florida has been investing time and resources in the advancement of resilience work to maximize benefits throughout the entire region. Past initiatives, such as the Northeast Florida COVID-19 Economic Recovery Plan and the Northeast Florida Regional Analysis of Resilience Priorities, are examples of how Northeast Florida can continue to expand regional partnerships and demonstrate commitment to a shared vision for future resilience. By working together with regional partners, the City of Jacksonville can extend and amplify the impacts of this Resilience Strategy.

Action Description

To support regional resilience efforts, the City will continue to participate and form partnerships within Resilient First Coast collaborative, which is comprised of Baker, Clay, Duval, Flagler, Nassau, Putnam, and St. Johns counties in the Northeast Florida region, and includes partners from local governments, businesses, non-profits, academia, and federal and state agencies. As part of this collaboration, the City will also play a role in helping to lead the region's first Climate Action Plan.

Shocks and Stressors Addressed

All Shocks and Stressors

Implementation Partners

Northeast Florida Regional Planning Council

Potential Funding Mechanisms

General Fund

Implementation Timeframe

Immediate (2025)	Short-Term (2030)	Medium-Term (2035)	Long-Term (2050)

Relative Cost

$ (10,000s)	$$ (100,000s)	$$$ (1,000,000s)	$$$$ (10,000,000s)

CASE STUDY

SOUTH FLORIDA REGIONAL CLIMATE CHANGE COMPACT

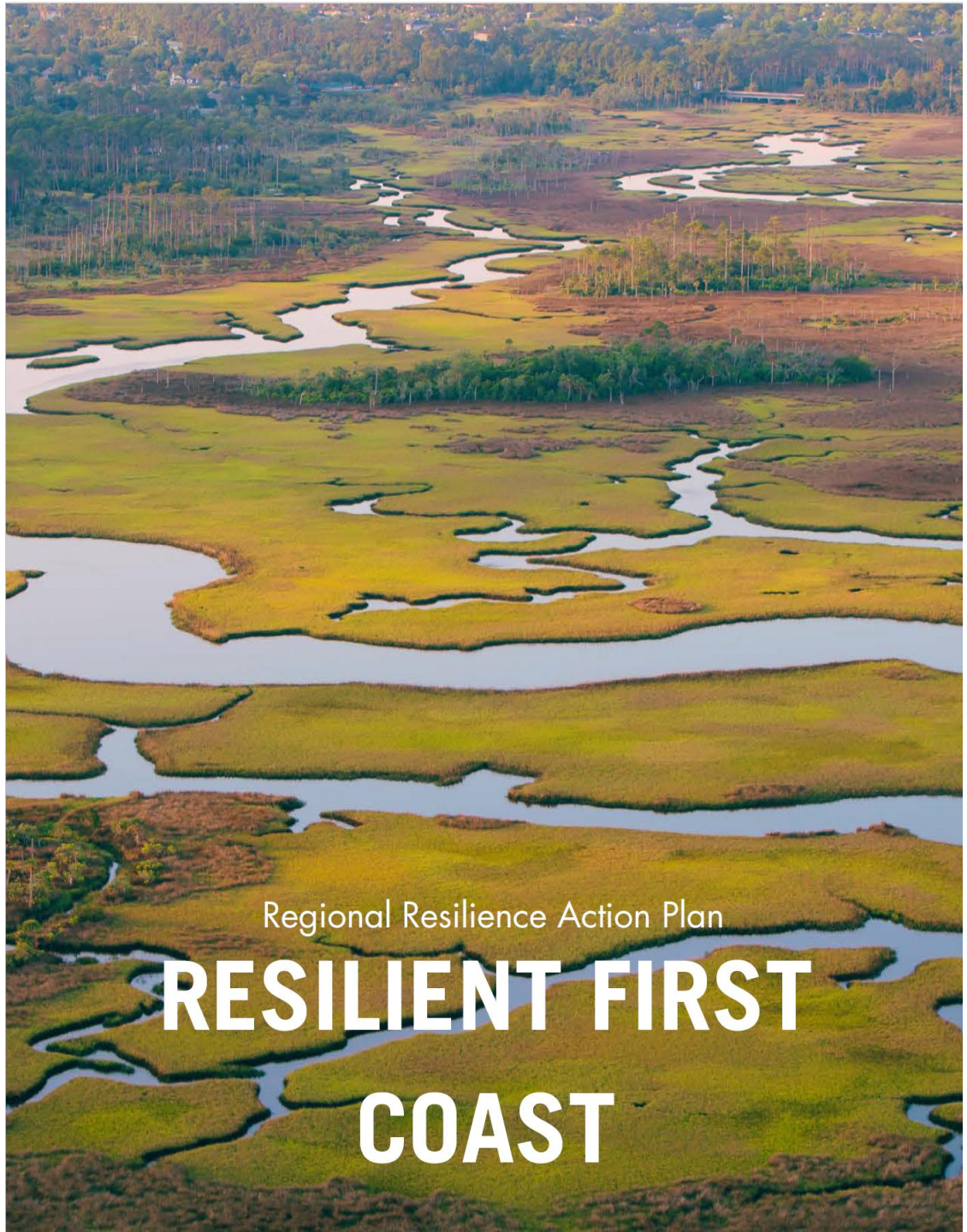
South Florida | 2009

The South Florida Regional Climate Change Compact is a partnership between four counties in South Florida—Broward, Miami-Dade, Monroe, and Palm Beach—focused on reducing greenhouse gas emissions and instituting climate adaptation strategies at the regional scale. The compact works collaboratively to build public and political support for climate action, coordinates regional actions to strengthen resilience, and facilitates tool and knowledge sharing to build the local capacity needed for implementation.[53] The South Florida Regional Climate Change Compact has established a unified understanding of sea level rise projections, has partnered to acquire federal funding, and has coordinated on several other fronts to develop a common policy platform, a regional greenhouse gas inventory, a climate assessment tool, and several other resources.

Regional Resilience Action Plan

www.nefrc.org/rrap

- Effort was spearheaded by NEFRC and First Coast Collaborative
- Plan contains 34 Actions focused on improving resilience in NE Florida



RRAP Action Organization

FACILITATE

Actions that influence regional resilience in ways that could not be easily accomplished by individual counties

GUIDE

Actions that provide resources to counties and organizations throughout the region to inform resilience at the local level (best practices, case studies, and standardized language)

ANALYZE

Actions that generate, report on, and/or synthesize data to inform decision making at the regional and local levels

RRAP Near-Term Actions

Action 05 Promote the conservation and restoration of ecologically significant natural ecosystems

Action 11 Improve Northeast Florida flood and homeowners' insurance markets

Action 12 Foster public engagement on resilience

Action 13 Facilitate partnerships to advance resilience work

Action 14 Encourage Smart Growth and Building Practices

Action 16 Identify Adaptation Options for Critical Infrastructure to enhance resilience

Action 17 Support shoreline stabilization of natural and modified shorelines

Action 22 Promote deployment of green infrastructure and nature-based solutions

Action 32 Inventory Critical and Significant Assets

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resilientjacksonville.com