

# SCOR

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South Carolina Office of Resilience (SCOR)



# SCOR Mission

SCOR lessens the impact of disasters on the communities and citizens of South Carolina by planning and coordinating statewide resilience, long term recovery and hazard mitigation.

*What does this mean?*

The SC Office of Resilience exists to **increase resilience** to disasters and reduce or **eliminate** the long-term **risk of loss of life, injury, damage to and loss of property, and suffering and hardship**, by lessening the impact of future disasters.

# History

- ▶ **SC Gov. Nikki Haley established the SC Disaster Recovery Office (SCDRO) following the historic 2015 Flood**
  - SCDRO deployed the HUD CDBG-DR funded housing recovery for the state
  - Directive was to undertake an apolitical recovery targeting our most socially vulnerable citizens (LMI), doing housing only
- ▶ **SCDRO subsequently tasked with handling the recoveries for Hurricane Matthew 2016 and Hurricane Florence 2018**
- ▶ **SCDRO received CDBG-MIT money to do mitigation in 2019**

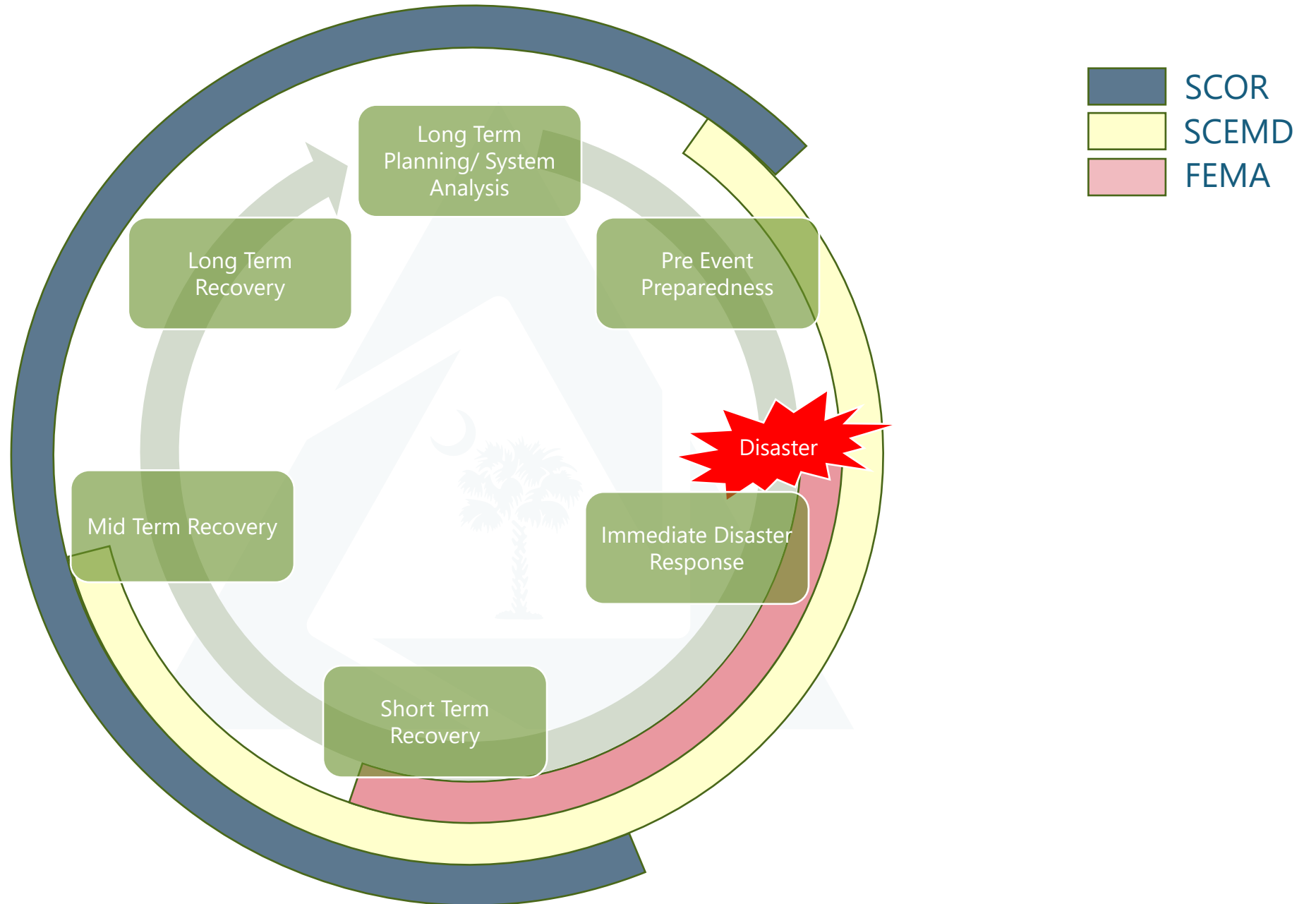
# History

- ▶ **October 2018 - Governor McMaster established the South Carolina Floodwater Commission by Executive Order 2018-50. The Commission was charged with developing short- and long-term recommendations to alleviate and mitigate flood impacts to the state with special emphasis on communities located near the coast or rivers.**
- ▶ **Effective Sept 29, 2020, the General Assembly created the SC Office of Resilience with SCDRO becoming a part of the new agency by the Disaster Relief and Resilience Act (S.C. Code. Ann. § 48-62-10, et. seq.)**
  - ▶ **Statewide Resilience Plan**
  - ▶ **Disaster Relief and Resilience Reserve Fund**
  - ▶ **Resilience Revolving Fund**
  - ▶ **Coordinate statewide disaster recovery efforts and collaborate between federal, state, and local stakeholders**
- ▶ **Governor McMaster appointed SCDRO Director Ben Duncan as the state's first Chief Resilience Officer and the SC Senate confirmed Ben on April 7, 2021**
- ▶ **July 2021- SCOR receives state funding**

# History

- ▶ **July 2021- SCOR receives state funding**
- ▶ **September 2020 - Disaster Relief and Recovery Act (SC Code §48-62). The act created the South Carolina Office of Resilience (SCOR).**
  - ▶ **The Act directed SCOR to develop Implement the Strategic Statewide Resilience and Risk Reduction Plan (SSRRRP). The Act stated that the SSRRRP should be developed with the principals recommended in the South Carolina Floodwater Commission Report. The SSRRP is intended to serve as a framework to guide state investment in flood mitigation projects. Additionally, the SSRRRP adopts programs and policies to protect the people and property of South Carolina from damage and destruction of extreme weather events. The Act directed that the initial version of the plan be completed by July 1, 2022\*.**
- ▶ **April 2021 - Ben Duncan confirmed as Chief Resilience Officer.**

# The Recovery Continuum



# All Federal/State Funded Programs

Grant	2015 Hurricane Joaquin	2016 Hurricane Matthew	2018 Hurricane Florence	2020 Mitigation	2022 ARPA
Grant Authority	HUD	HUD			Department of Treasury/ SC General Assembly
Grant Amount	\$126M	\$95M	\$72M	\$162M	\$100M
Service Area	22x counties	24x counties	8x counties	17x counties	46x counties (statewide)
End of Construction/ Program	SEP 2021	JULY 2022	NLT 2026	NLT 2032	NLT 31 DEC 2026

Completed two FEMA Disaster Case Management Program grants for the 2016 and 2018 disasters with a combined total of \$7.8M

# **CDBG-Disaster Recovery**



# Disaster Recovery (CDBG-DR)

- ▶ **Currently working three HUD Community Development Block Grant- Disaster Recovery (CDBG-DR) grants**
- ▶ **2015 Hurricane Joaquin**
  - 22 counties
  - \$126M
- ▶ **2016 Hurricane Matthew**
  - 24 counties
  - \$95M
- ▶ **2018 Hurricane Florence**
  - 8 counties
  - \$72M



# Before & After



**To date, SCOR has repaired, replaced, or constructed 3,147 homes for disaster impacted low to moderate income South Carolinians**

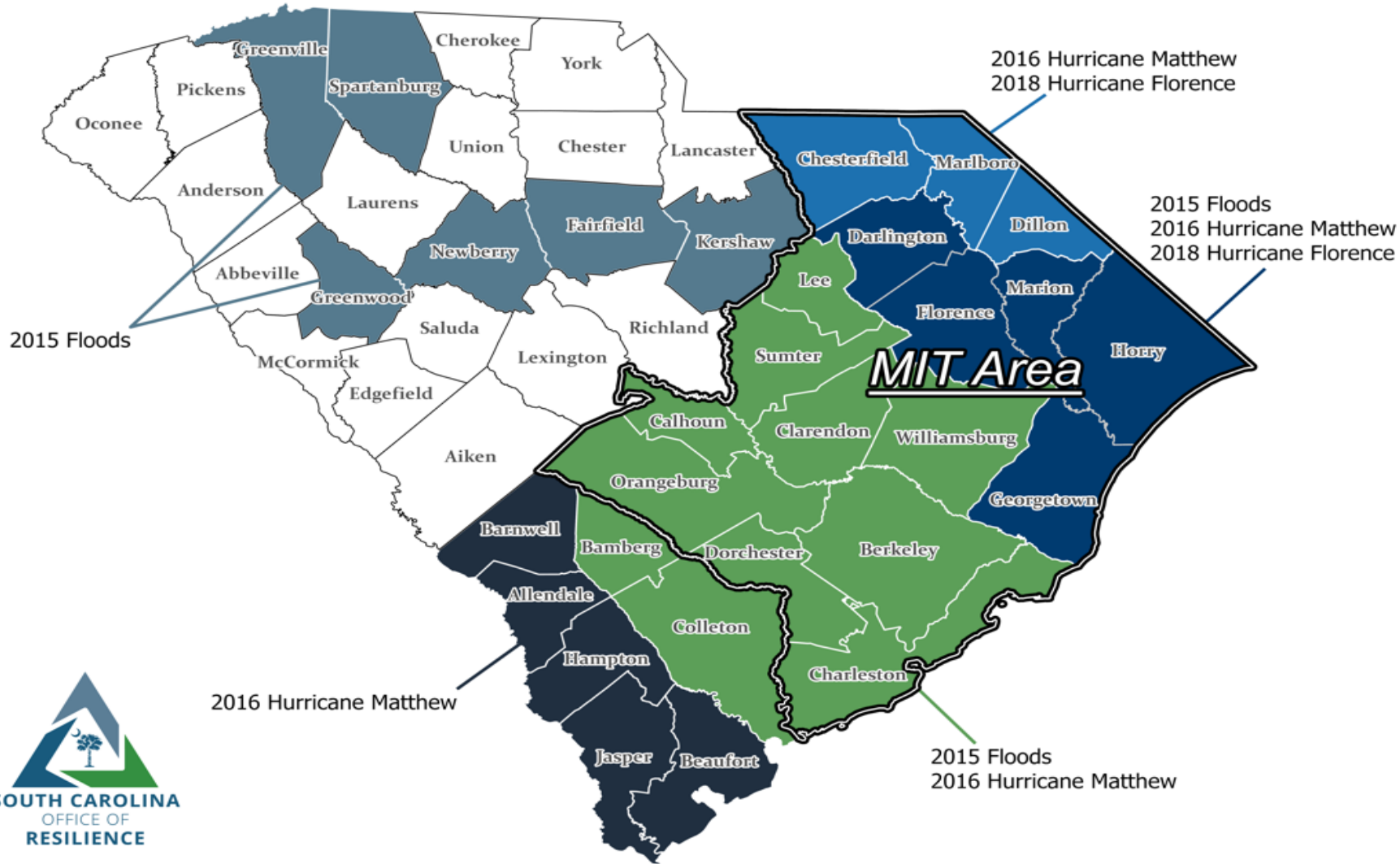
# CDBG-Mitigation Program

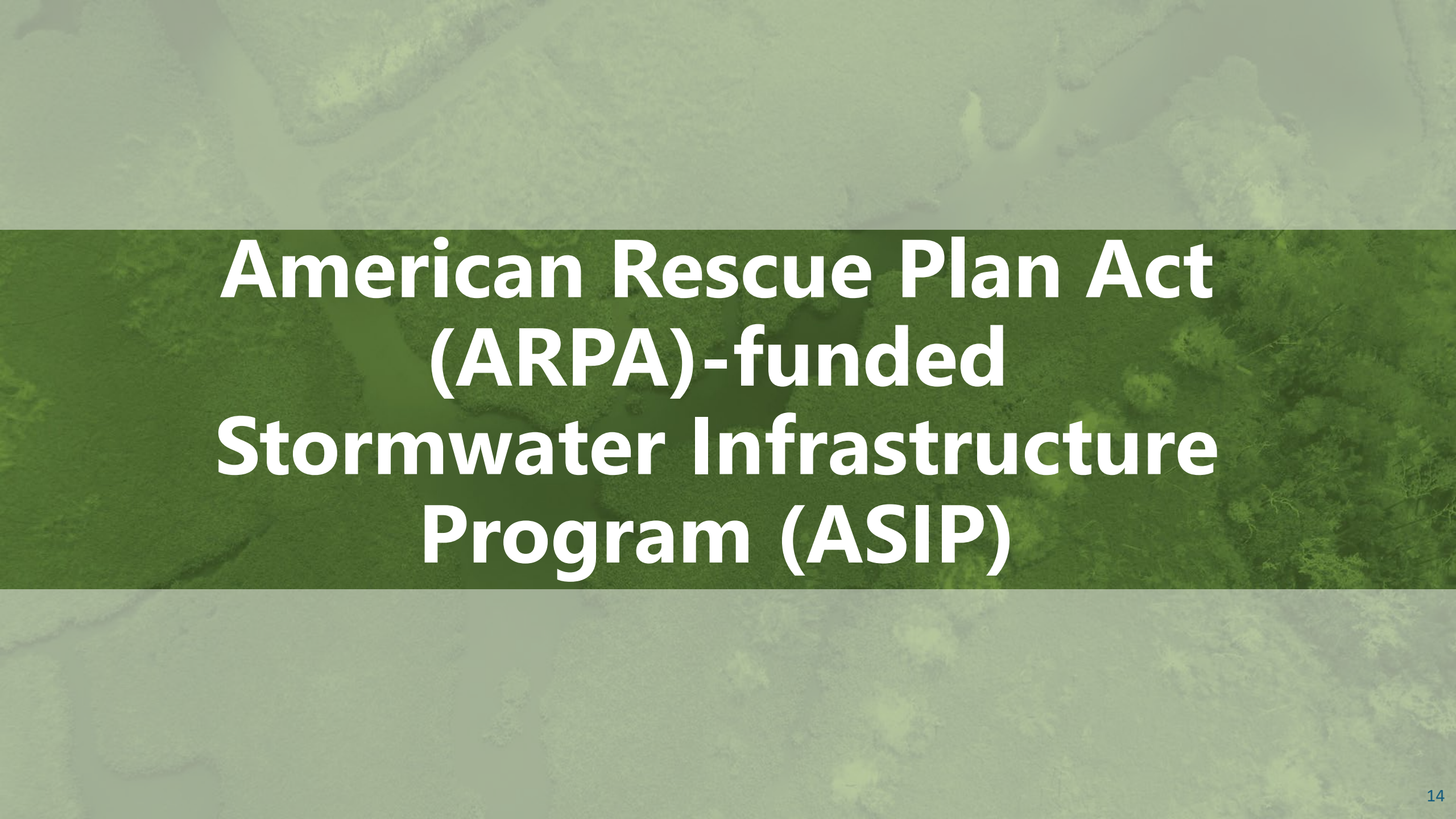
# Mitigation – Program

- ▶ SCOR's Mitigation team administers \$162M in HUD CDBG-Mitigation (CDBG-MIT) grant funds
- ▶ Funds are for mitigation activities that will increase resilience to future disasters and reduce or eliminate long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship
- ▶ SCOR funds four types of activities:
  - Infrastructure projects
  - Buyouts of residential properties in the floodplain or that have been repeatedly flooded
  - Plans and studies to identify potential flood reduction projects
  - Matching funds for federally funded mitigation projects
- ▶ To date, awarded approximately 50% of the \$162M with more than 51 active projects across the four program areas.
- ▶ To date 66% of funds obligated benefit LMI citizens

# Area of Operations

## Disaster Recovery and Mitigation Counties



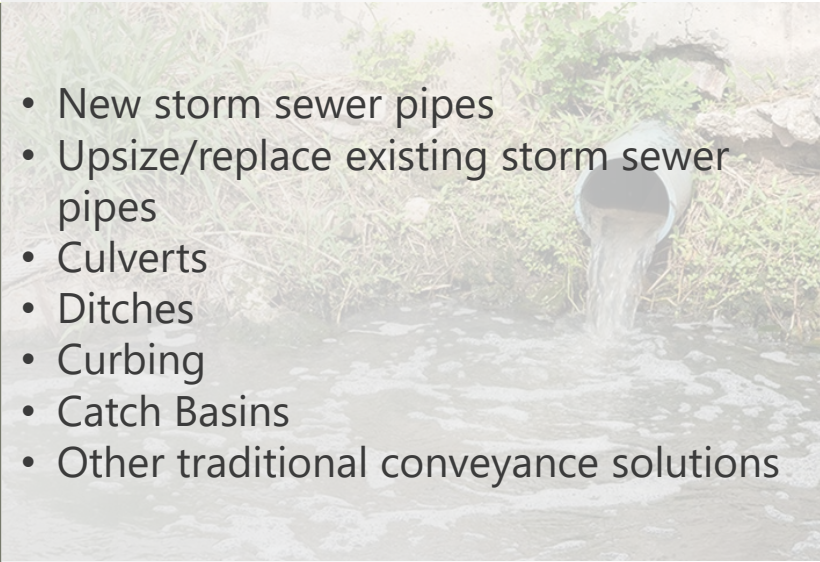
An aerial photograph of a dense forest, showing various shades of green and brown. A semi-transparent green horizontal band is overlaid across the center of the image, containing white text. The text is centered and reads: 

**American Rescue Plan Act  
(ARPA)-funded  
Stormwater Infrastructure  
Program (ASIP)**


# ARPA-funded Stormwater Infrastructure Program

- ▶ \$55M program
- ▶ Statewide
- ▶ Counties, cities, or towns in **all 46 counties** of SC are eligible to apply
- ▶ Projects can be state run or applicant run
- ▶ No local match required
- ▶ Eligible projects – grey or green stormwater infrastructure:

## GREY INFRASTRUCTURE

- 
- New storm sewer pipes
  - Upsize/replace existing storm sewer pipes
  - Culverts
  - Ditches
  - Curbing
  - Catch Basins
  - Other traditional conveyance solutions

## GREEN INFRASTRUCTURE

- 
- Rain Gardens
  - Stormwater Planter Boxes
  - Bioswales
  - Stormwater Tree Trenches
  - Infiltration Trenches
  - Stormwater Wetlands
  - Pervious Surfaces
  - Other innovative nature-based solutions

# **Strategic Statewide Resilience & Risk Reduction Plan**



# Legislative Guidance

- The Act stated that the plan should be developed with the principles recommended in the South Carolina Floodwater Commission Report.
- Intended to serve as a framework to guide state investment in flood mitigation projects. adopts programs and policies to protect the people and property of South Carolina from damage and destruction of extreme weather events.
- The Act directed that the initial version of the plan be completed by July 1, 2022. \*

# Floodwater Commission Principals

- Flood management plans and actions should be based on watershed boundaries, recognizing that water flows and floods do not follow jurisdictional or political lines.
- Decisions and actions should be based on high-quality, shared and integrated hydrologic and hydrographic models that are derived from increased data collection; the data and models should be transparent and freely accessible to all stakeholders.
- Building the capacity of local governments to develop science-based and actionable flood management plans and hazard mitigation plans should be a priority, especially for under-resourced communities. It does little good for one local jurisdiction to have high-quality plans if the upstream jurisdiction does not.
- Success will depend on collaboration. Collaboration must take place between state agencies to bridge boundaries, as well as between the state and local governments. Collaboration is essential to build trust among all stakeholders, which leads to partnerships, coordination and more effective programs. Collaboration should also be explicitly encouraged with key federal agencies (i.e. US Army Corps of Engineers, US Geological Survey, NOAA).

# Floodwater Commission Principals

- Ongoing opportunities for public participation and education should be developed to encourage collaboration and build trust.
- Flood management programs should recognize the beneficial functions of natural floodplains, salt marshes, beach dunes, forests, living shorelines and other natural features to reduce flood risk, as well as the co-benefits they deliver for recreation, forestry, tourism, fisheries, and wildlife. “Nature-based solutions” should be considered included in the design of flood control projects whenever possible in order to increase resilience and be cost-effectiveness.
- Post-disaster funding coming to South Carolina from congressional appropriations should be managed in a unified state plan as much as federal rules and guidelines will permit, and coordinated across the multiple sources (i.e. FEMA, HUD).

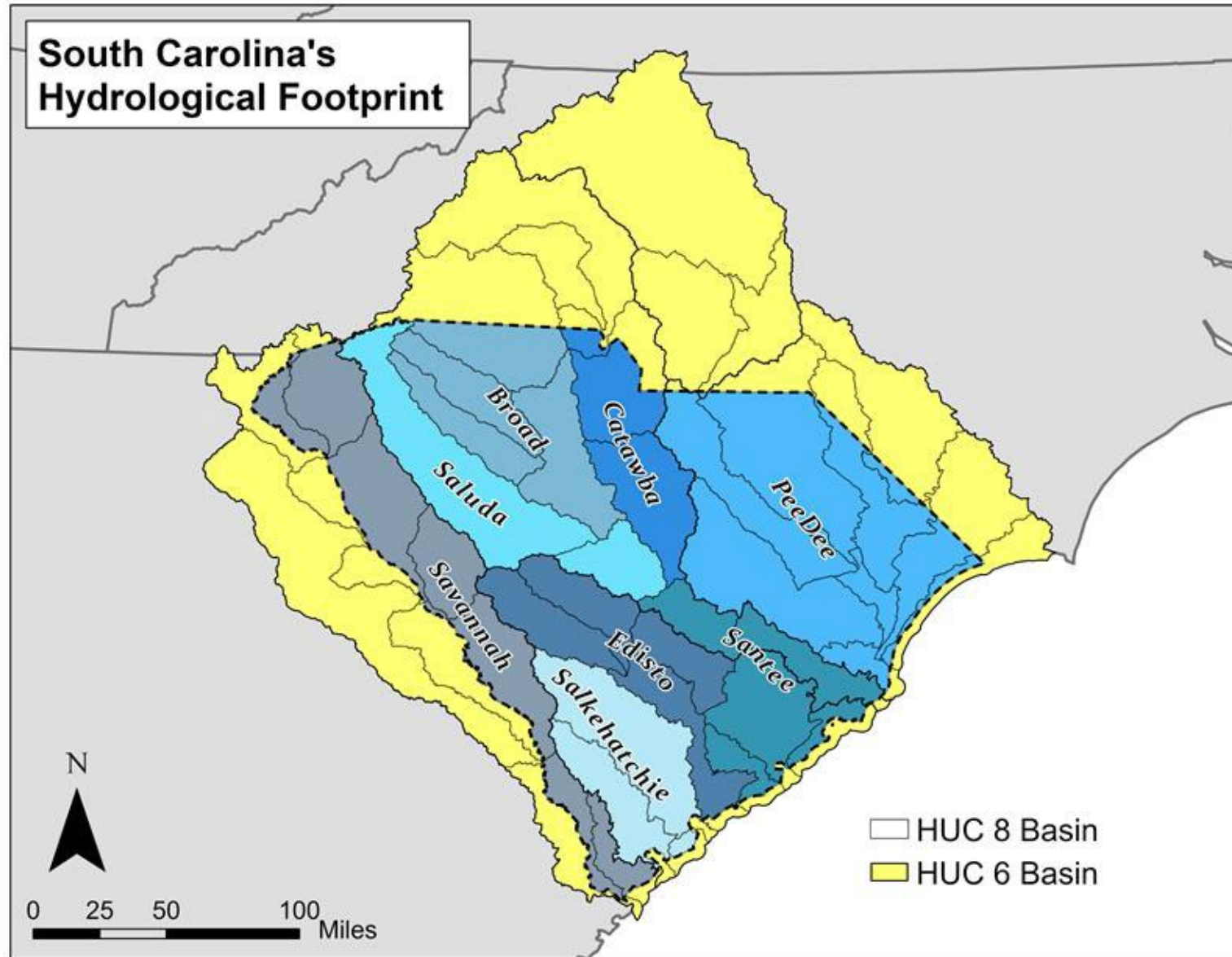
# Resilience Planning Assumptions

- The plan will not try to provide solutions to prevent changes to the climate but will offer recommendations for how the state may minimize the impacts that are expected to occur.
- Resilience Planning will utilize an adaptive management approach so that it can adjust to changing conditions and integrate new data sources as they become available.
- Initial Plan recommendations will focus on flooding.
  - Other extreme weather events /disasters to be addressed in more detail in subsequent versions of the plan

# Resilience Definition

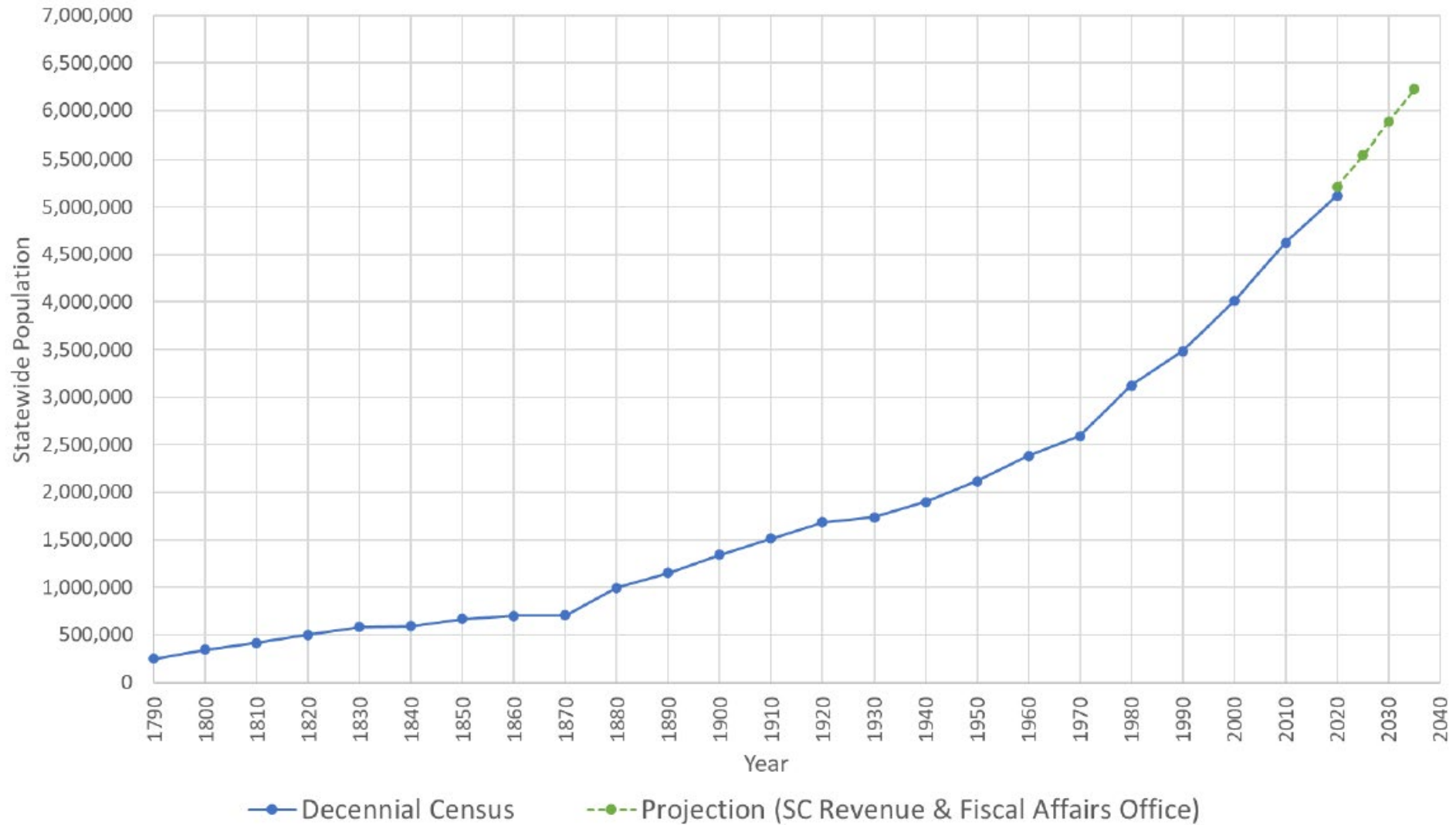
**Resilience:** The ability of communities, economies, and ecosystems within South Carolina to anticipate, absorb, recover, and thrive when presented with environmental change and natural hazards.

# Water doesn't follow political boundaries



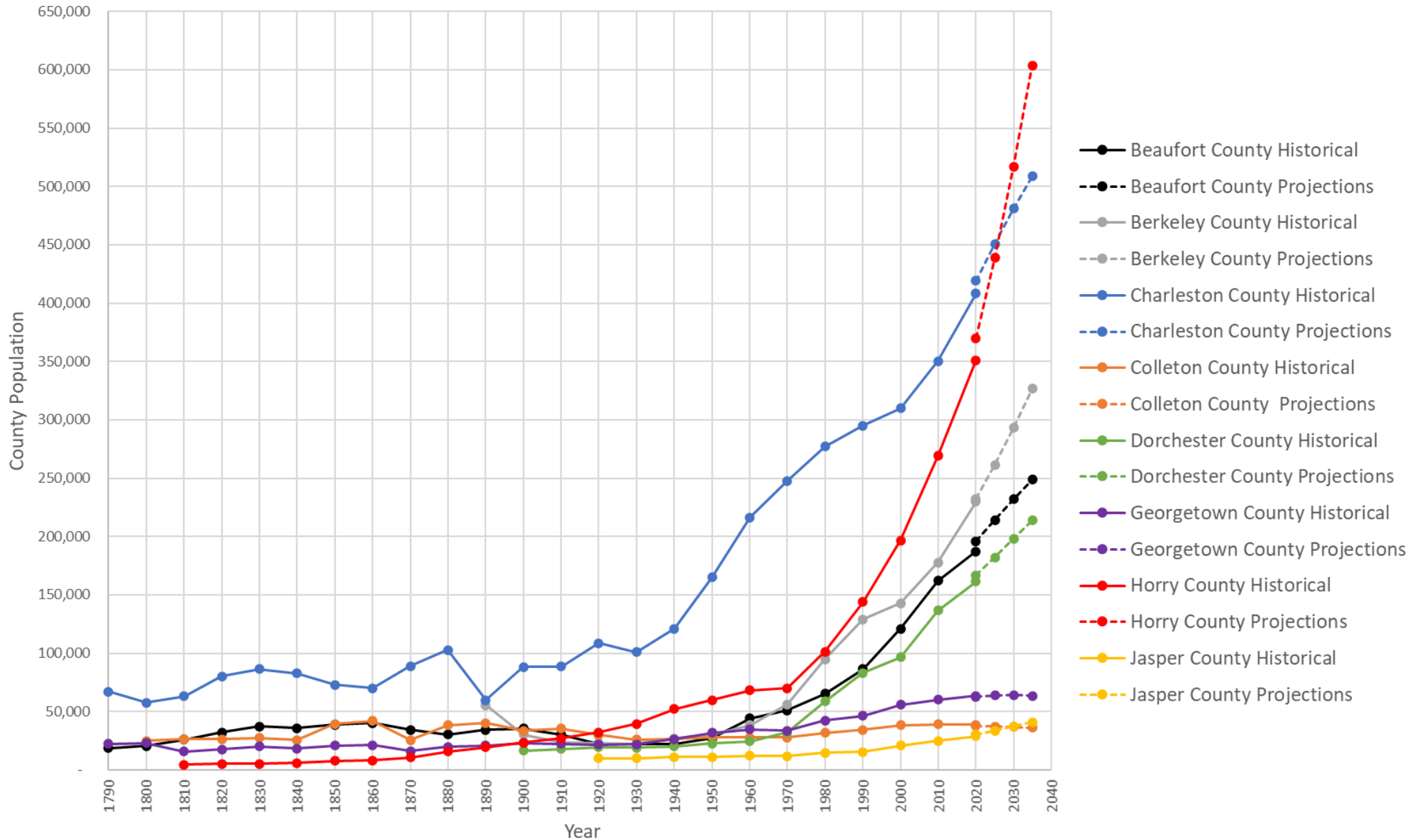
# South Carolina Population

1790-2035



Sources: Decennial Census (1790-2020); Projections from SC Revenue & Fiscal Affairs Office

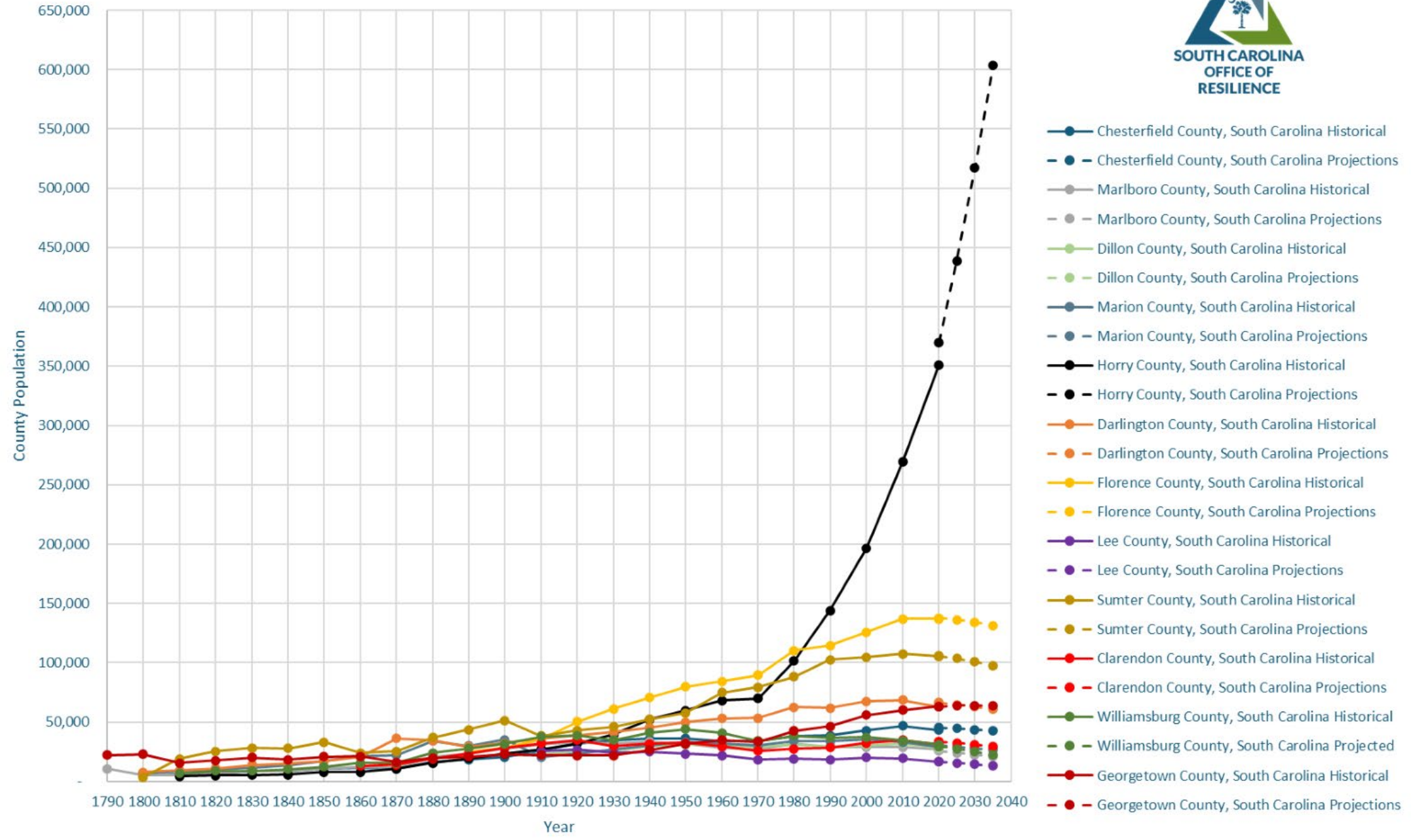
# Population of South Carolina Coastal Zone Counties 1790-2035



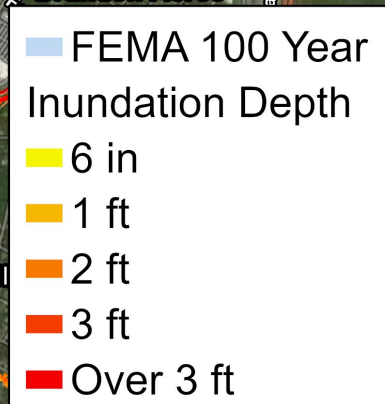
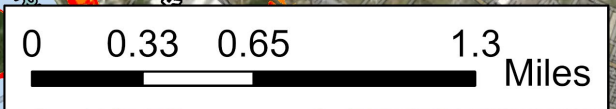
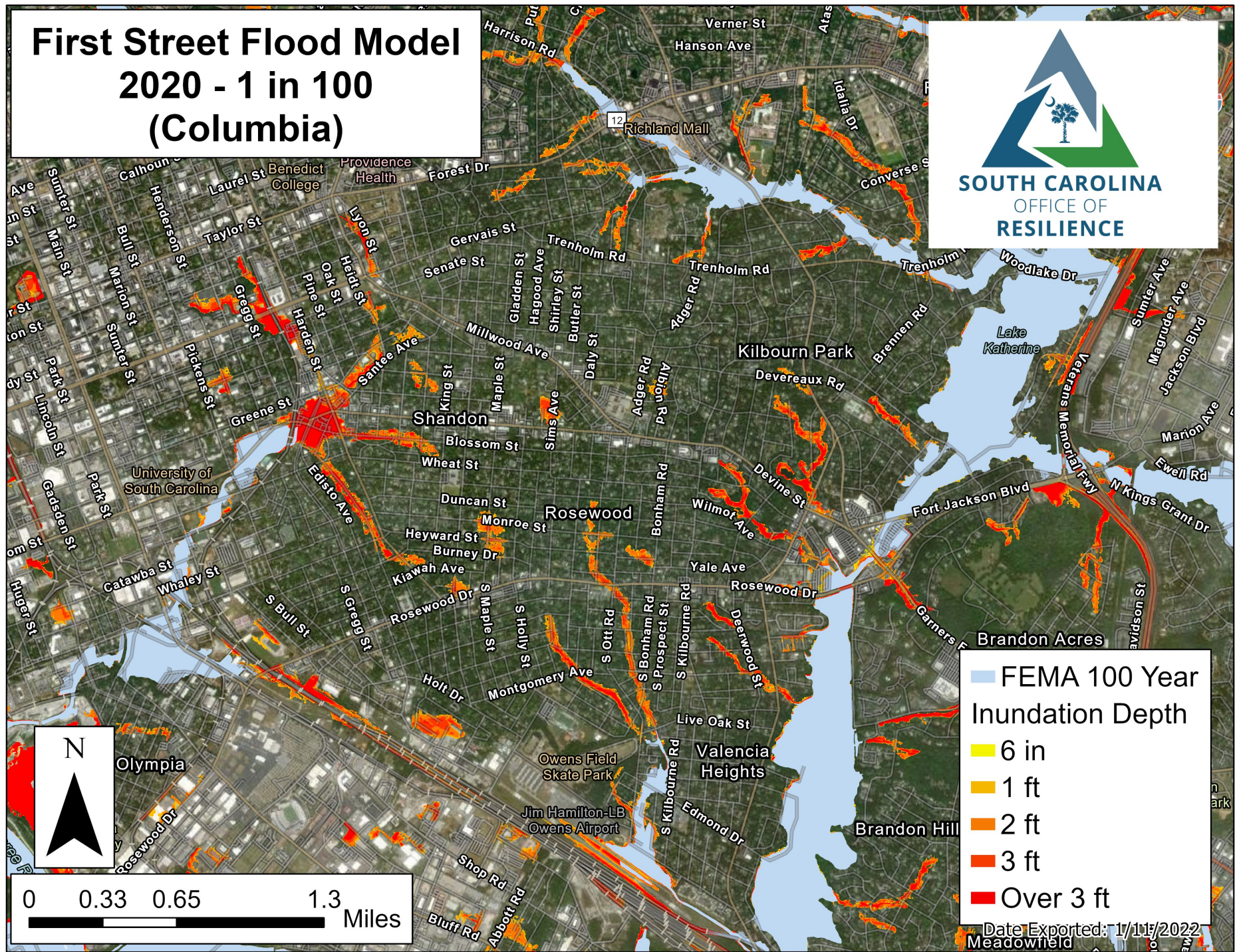
Sources: Decennial Census (1790-2020); Projections from SC Revenue & Fiscal Affairs Office



# Population of South Carolina Pee Dee Counties 1790-2035



# First Street Flood Model 2020 - 1 in 100 (Columbia)



Date Exported: 1/11/2022  
Meadowfield

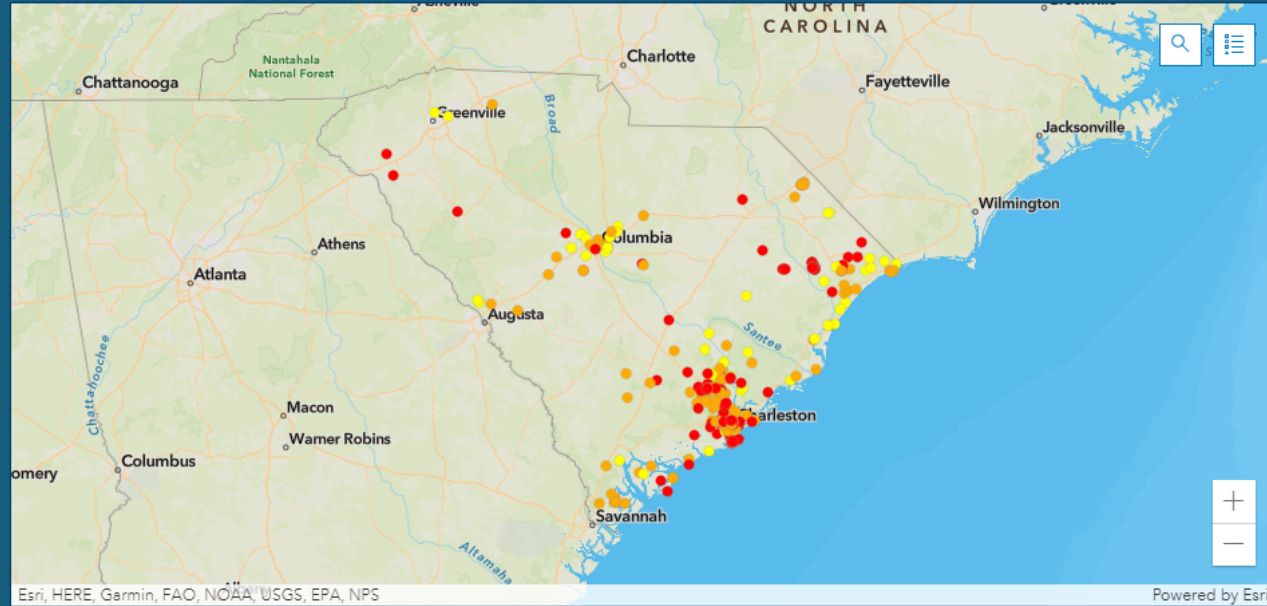


### Total Surveys Collected

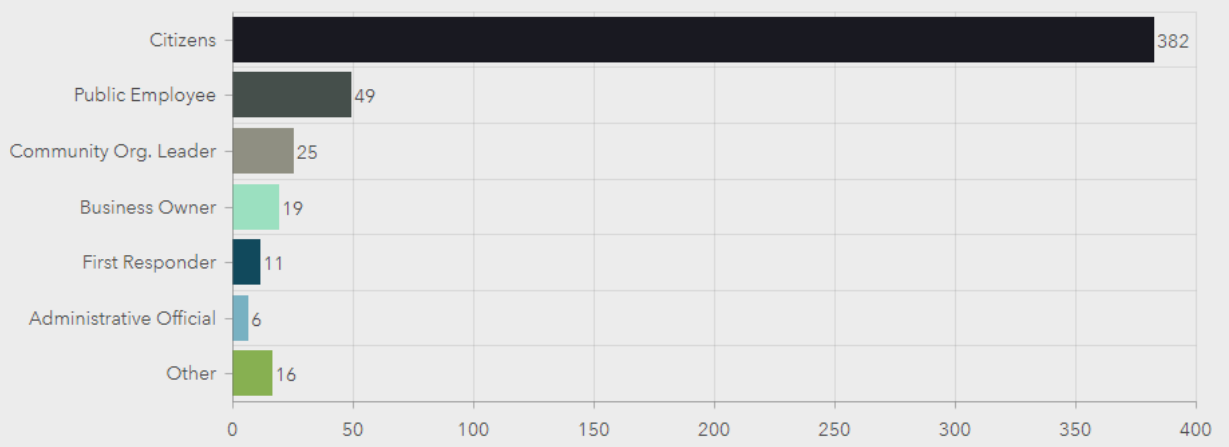
**421**

### Welcome

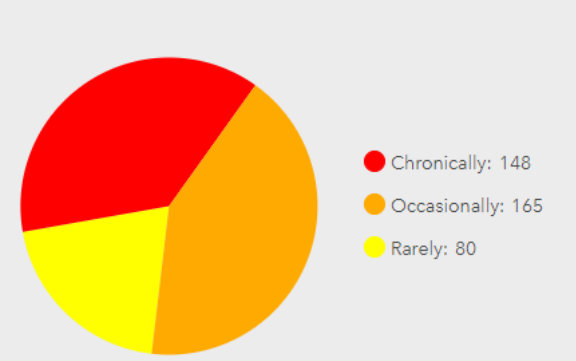
- The mission of the [SC Office of Resilience](#) is to lessen the impact of disasters on the communities and citizens of South Carolina by planning and coordinating statewide resilience, long term recovery and hazard mitigation. Our office is responsible for developing a statewide plan that will offer strategies and solutions to counties, cities, and towns to help manage flooding.
- The data displayed represents individual experiences captured through a public survey, and is therefore does not represent risk levels or a complete understanding of flooding in South Carolina. Responses to this survey will assist us in gathering accurate data about how and where South Carolinians experience flooding, which will help guide in the formulation of the statewide plan.
- If you would like to respond to the survey, please [click here](#).



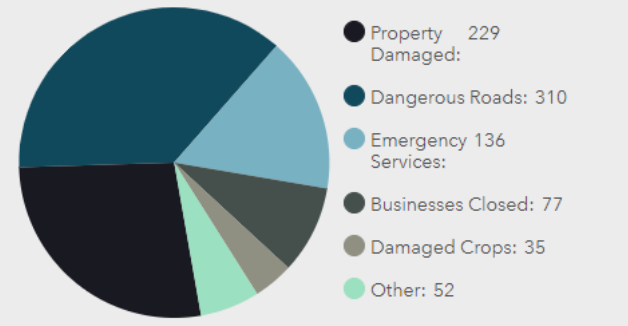
### Who is Responding?



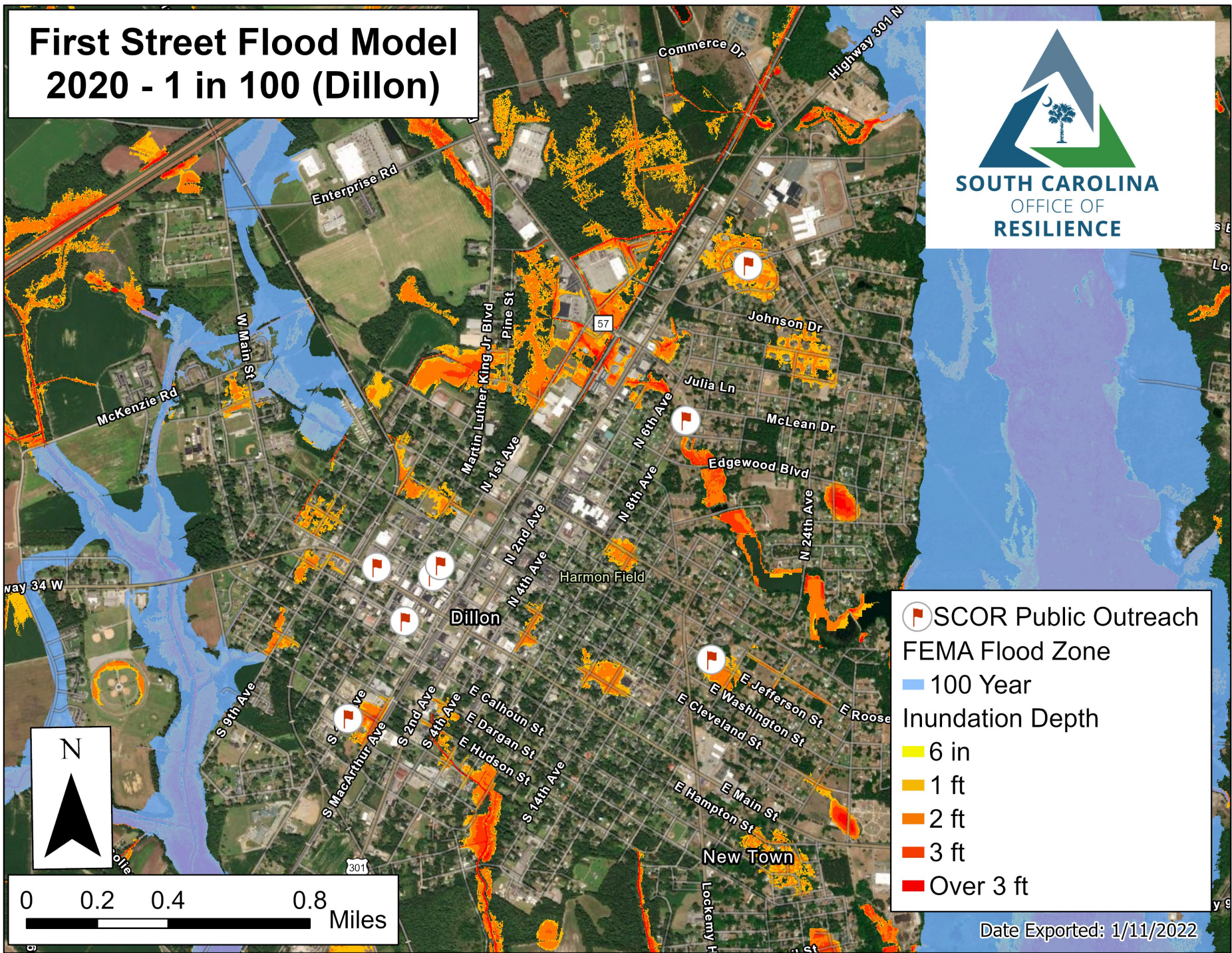
### How often does flooding affect this area?



### How does flooding affect this area?

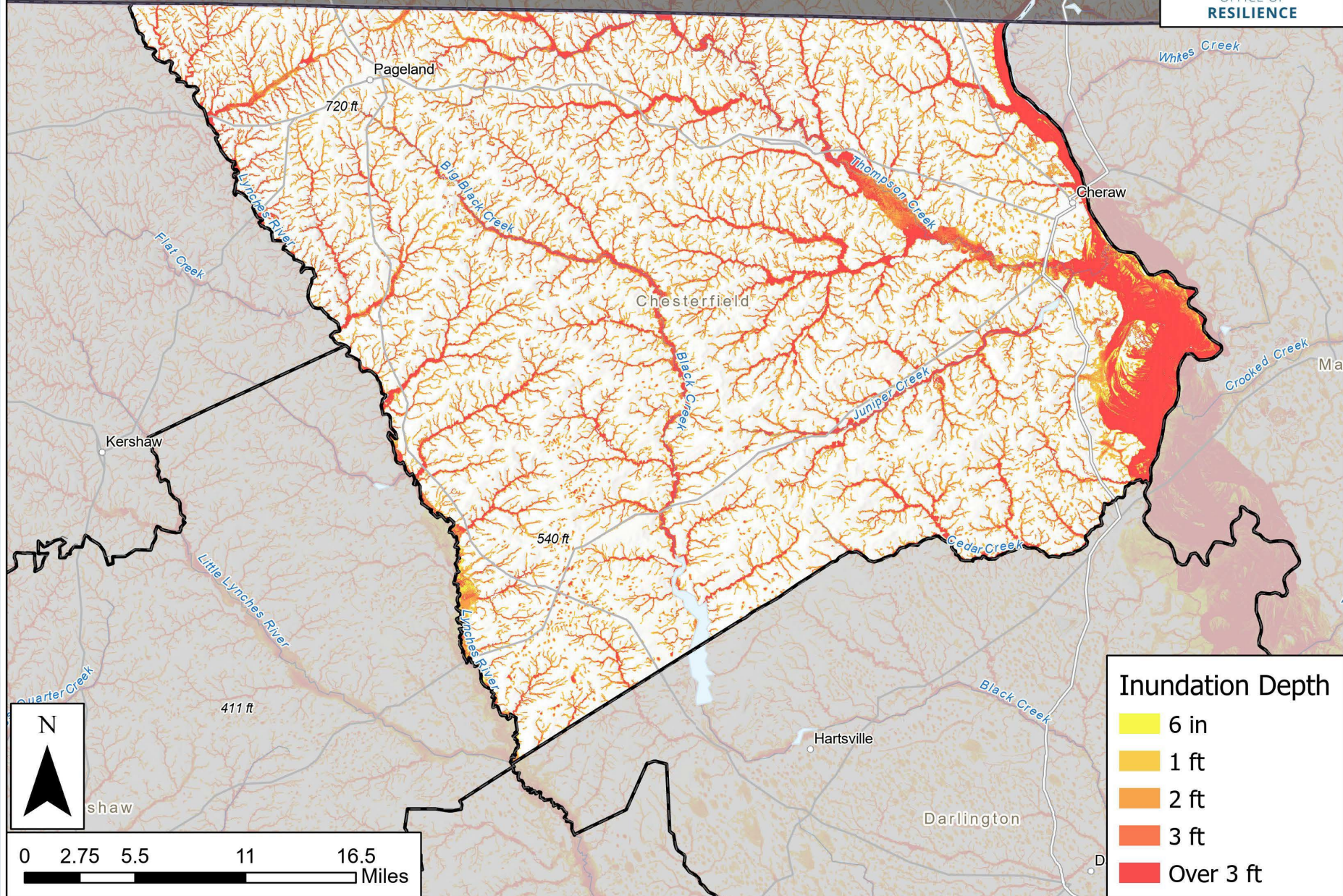


# First Street Flood Model 2020 - 1 in 100 (Dillon)

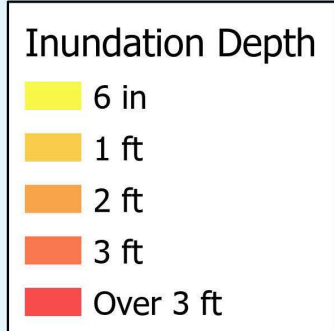
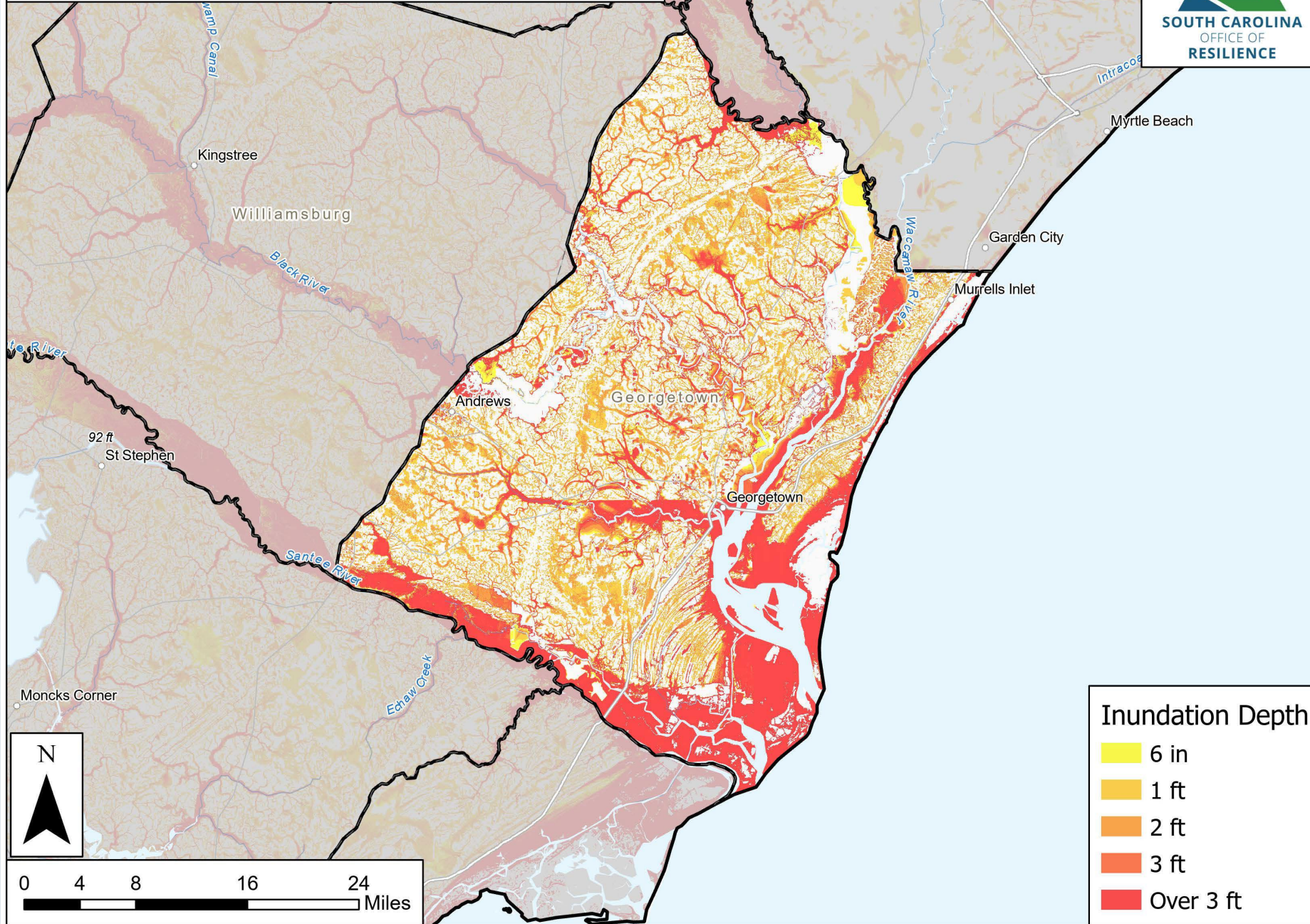


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# Chesterfield County 2022 - 1% Annual Chance Flooding Event

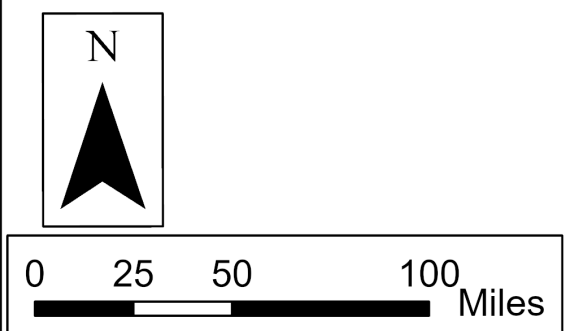
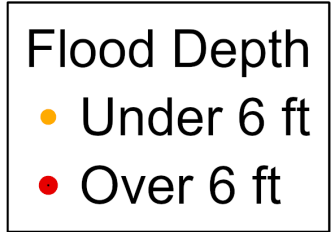
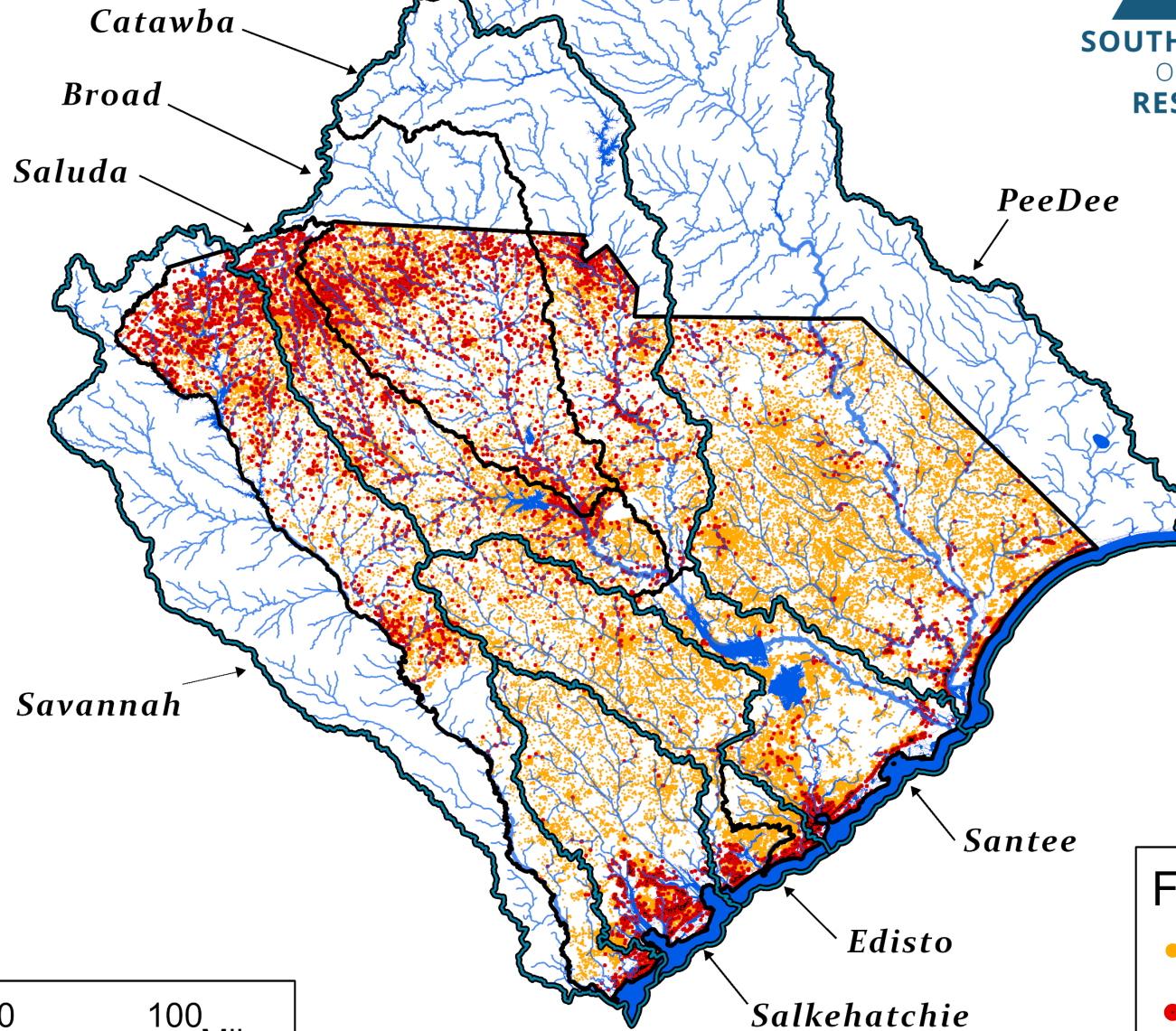


# Georgetown County 2022 - 1% Annual Chance Flooding Event

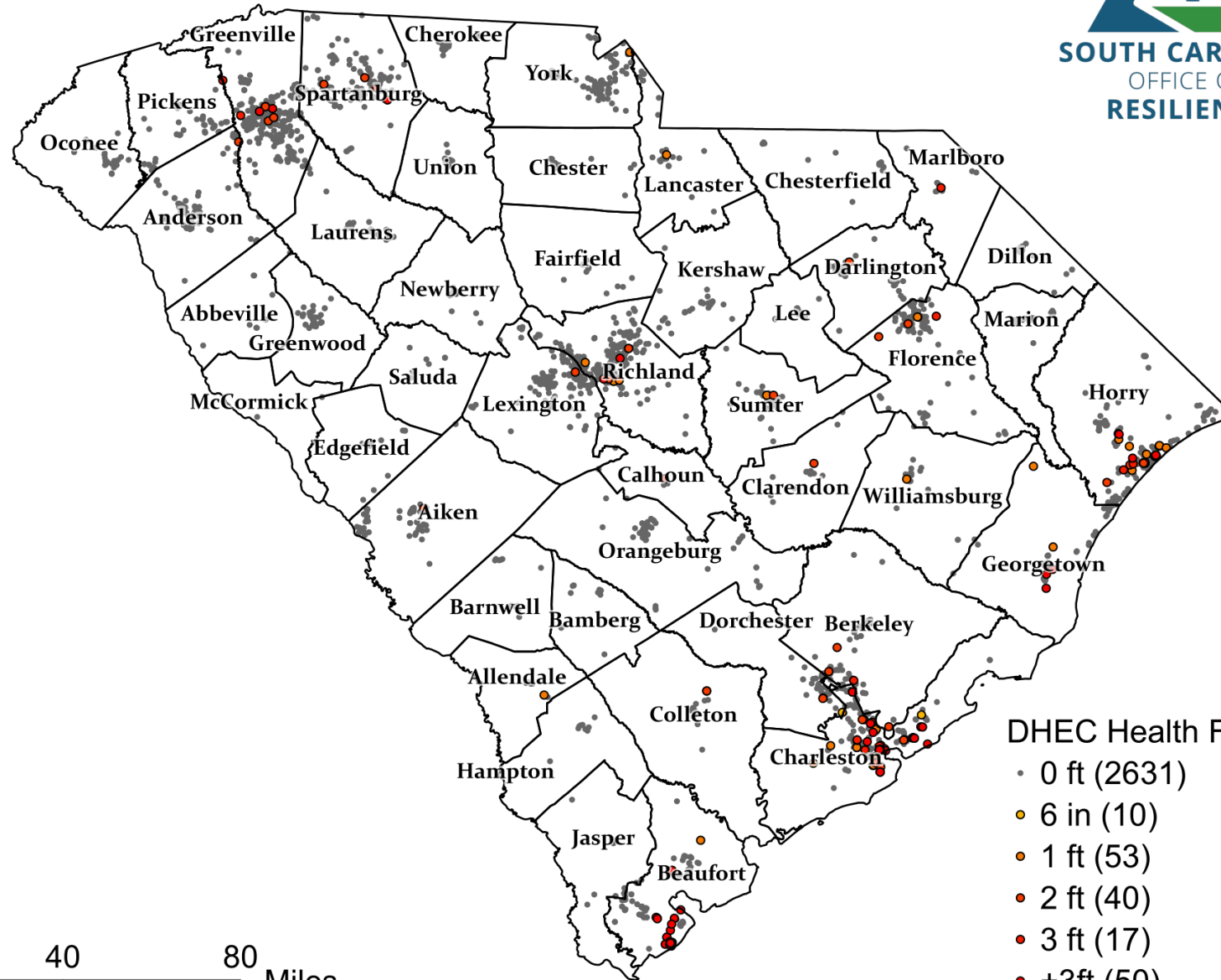


# Vulnerable Properties

2021 - 1% Annual Chance  
Flooding Event



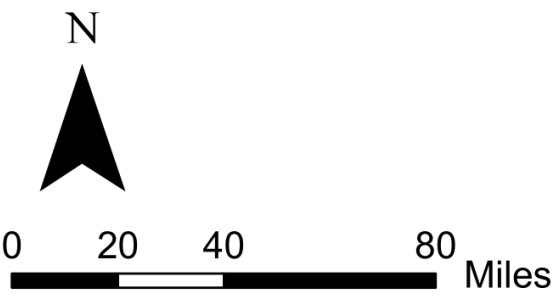
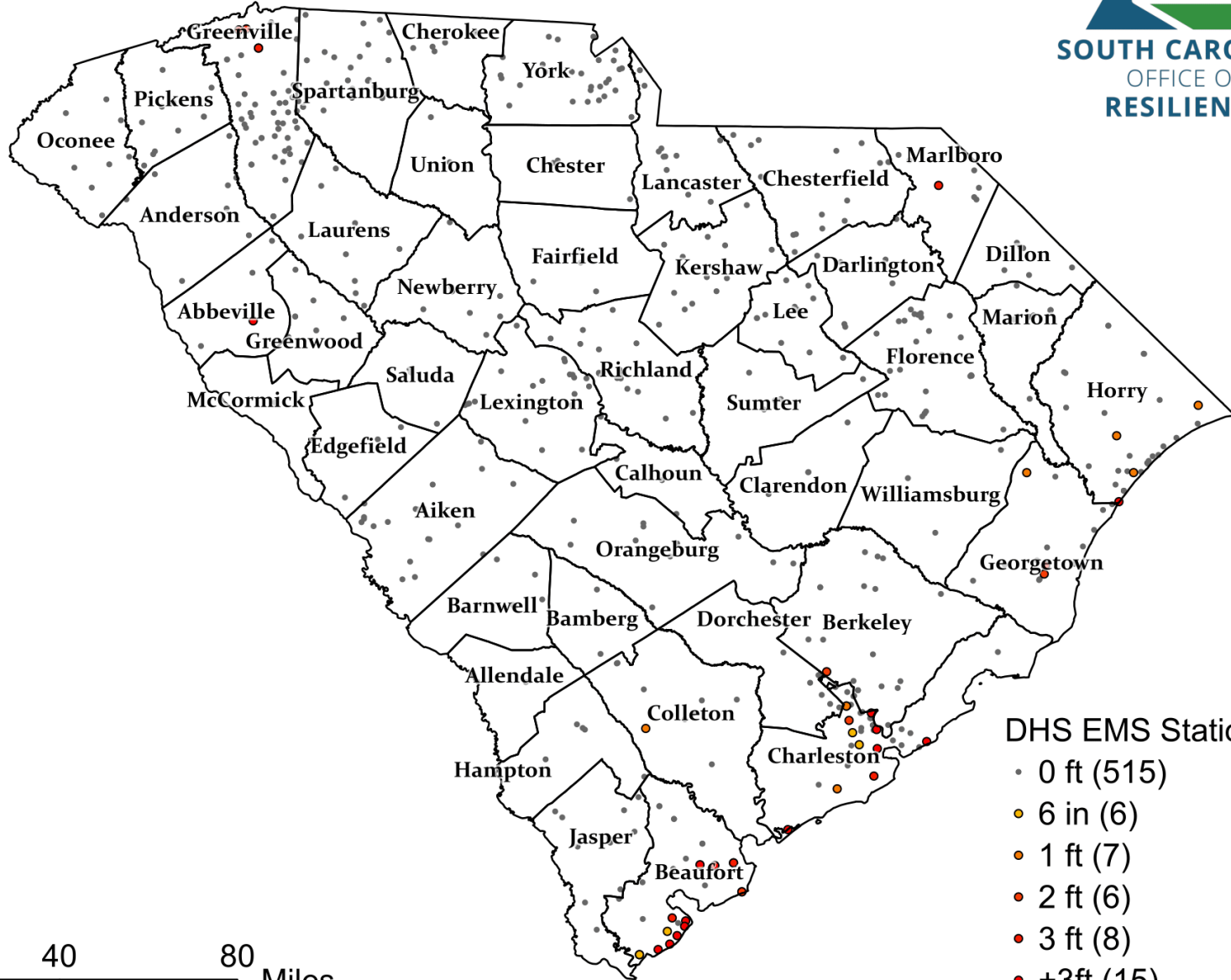
# DHEC Health Facilities



- DHEC Health Facilities
- 0 ft (2631)
  - 6 in (10)
  - 1 ft (53)
  - 2 ft (40)
  - 3 ft (17)
  - +3ft (50)

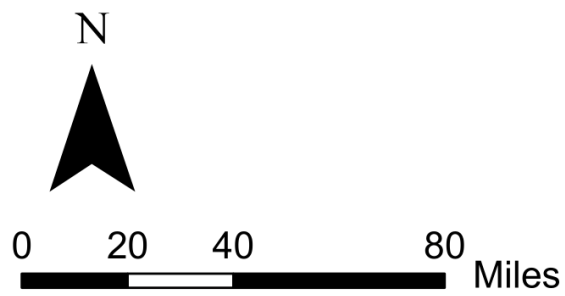
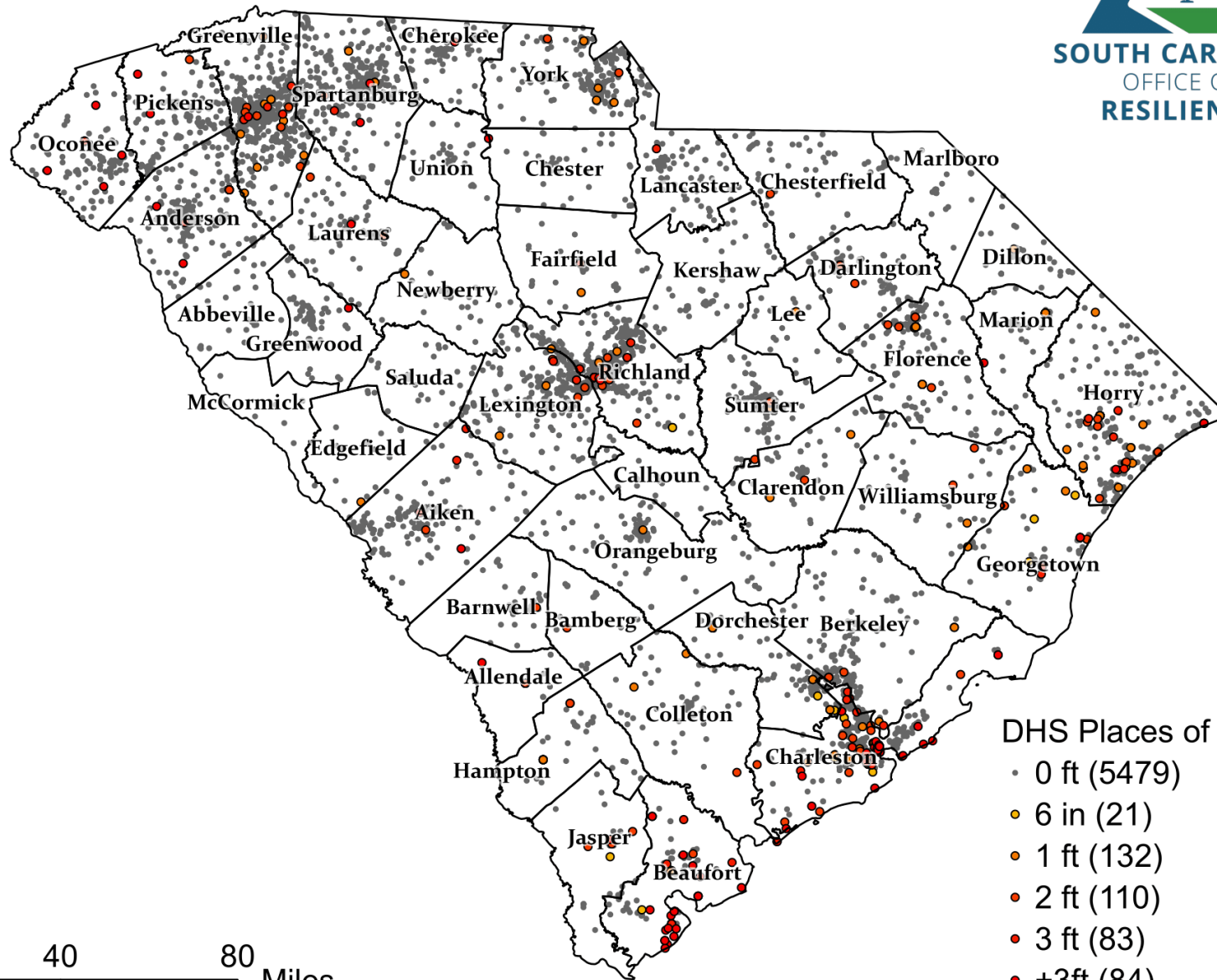


# DHS EMS Stations



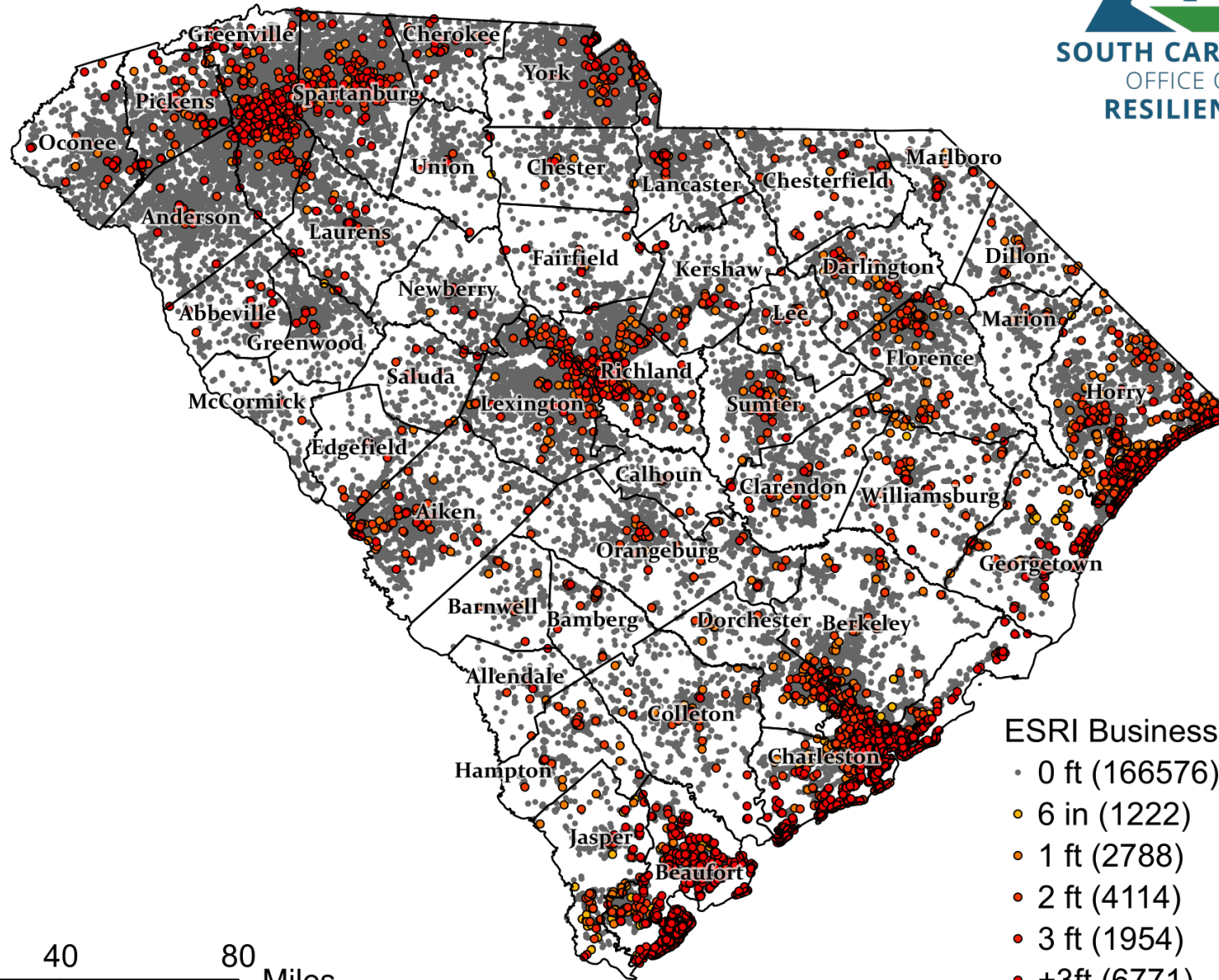
- DHS EMS Stations
- 0 ft (515)
  - 6 in (6)
  - 1 ft (7)
  - 2 ft (6)
  - 3 ft (8)
  - +3ft (15)

# DHS Places of Worship



- DHS Places of Worship
- 0 ft (5479)
  - 6 in (21)
  - 1 ft (132)
  - 2 ft (110)
  - 3 ft (83)
  - +3ft (84)

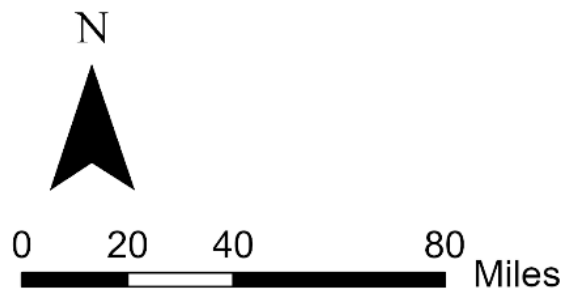
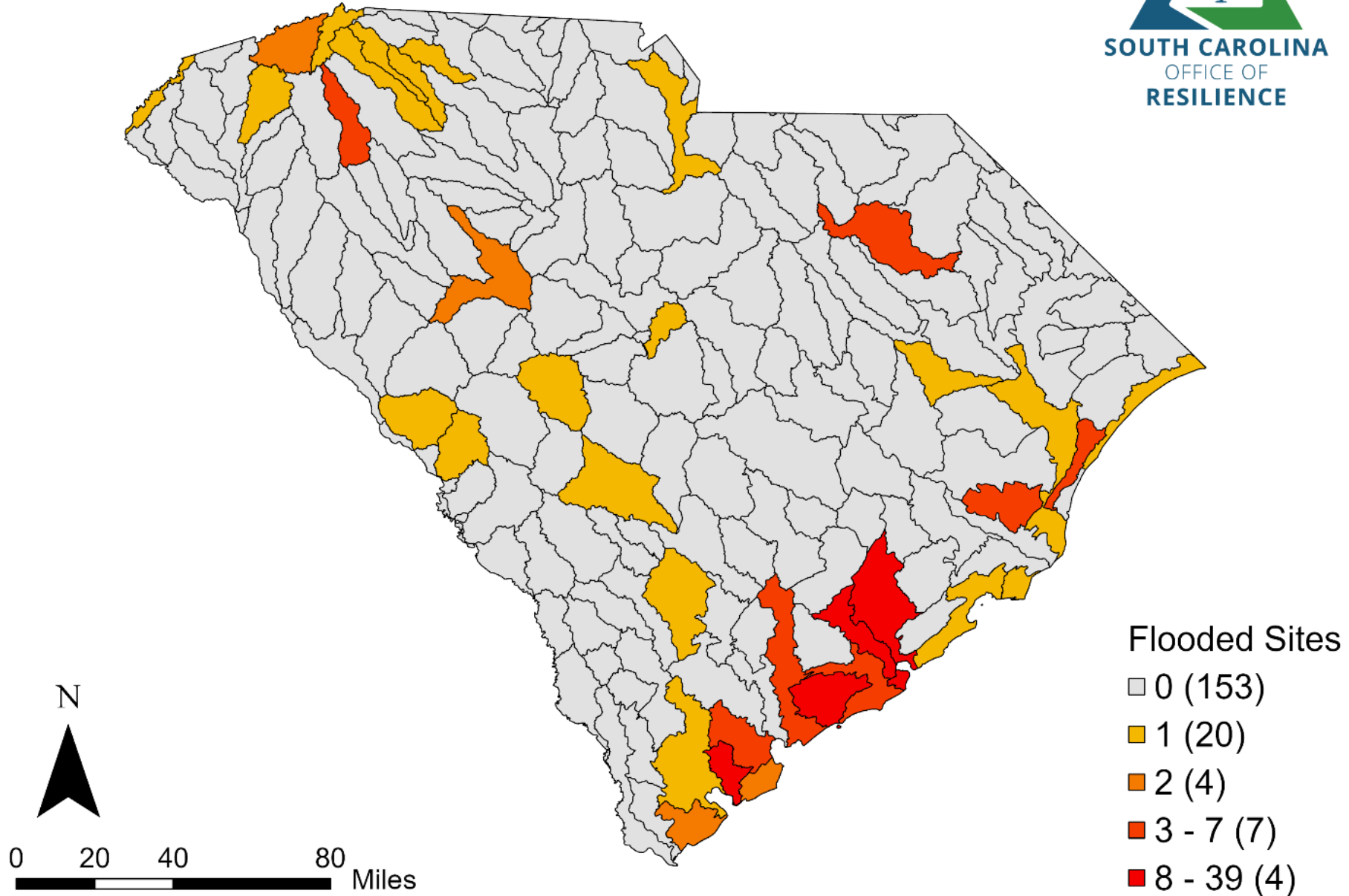
# ESRI Business Analyst



- ESRI Business Analyst
- 0 ft (166576)
  - 6 in (1222)
  - 1 ft (2788)
  - 2 ft (4114)
  - 3 ft (1954)
  - +3ft (6771)

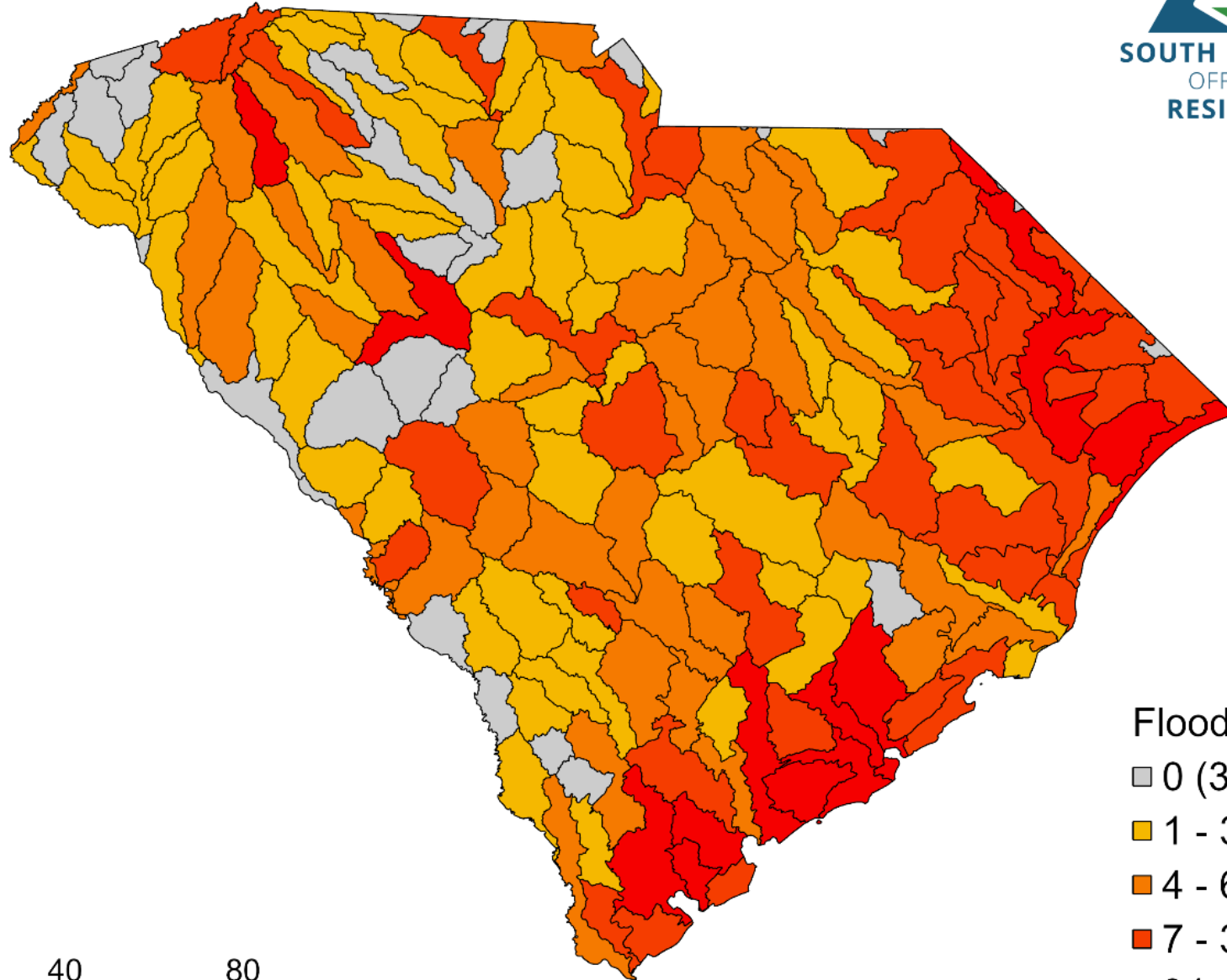
# ArchSite National Register Points

2022 - 1% Annual Chance Flooding Event



# ArchSite Historic Structures

2022 - 1% Annual Chance Flooding Event



Flooded Sites

- 0 (35)
- 1 - 3 (58)
- 4 - 6 (40)
- 7 - 33 (40)
- 34 - 289 (15)



0 20 40 80 Miles

# Estimated Count of Commercial Facilities by HUC12

2021 - 1% Annual Chance Flooding Event

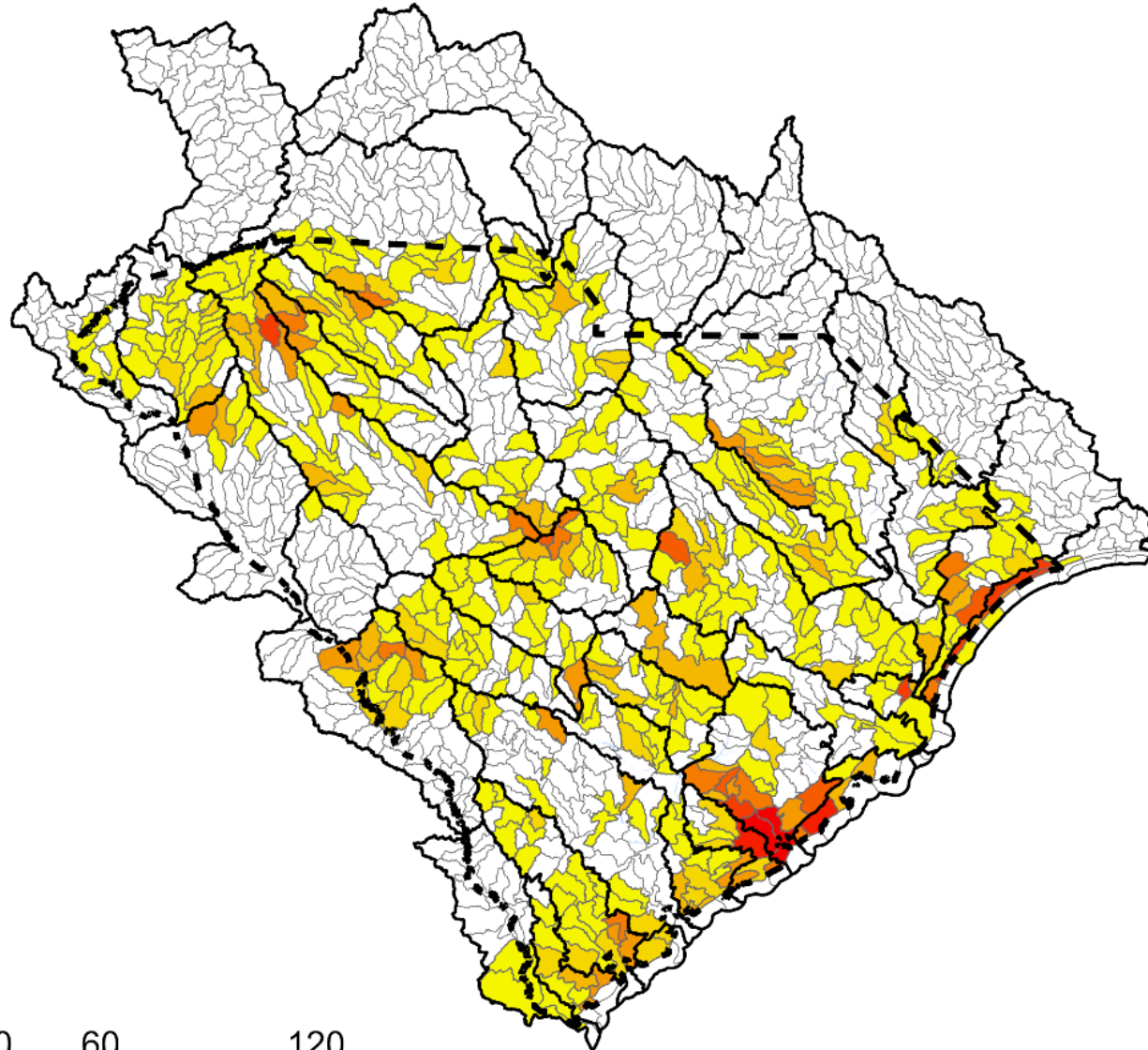


## Legend

- WBDHU8
- WBDHU12

### Count

- 1 - 4
- 5 - 10
- 11 - 20
- 21 - 35
- 36 - 62
- 63 - 95
- 96 - 136
- 137 - 204
- 205 - 303
- 304 - 1191



0 30 60 120 Miles

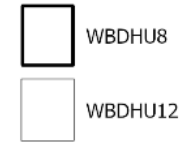
Date Exported: 6/23/2022

# Estimated Average Days Loss of Commercial Facilities by HUC12

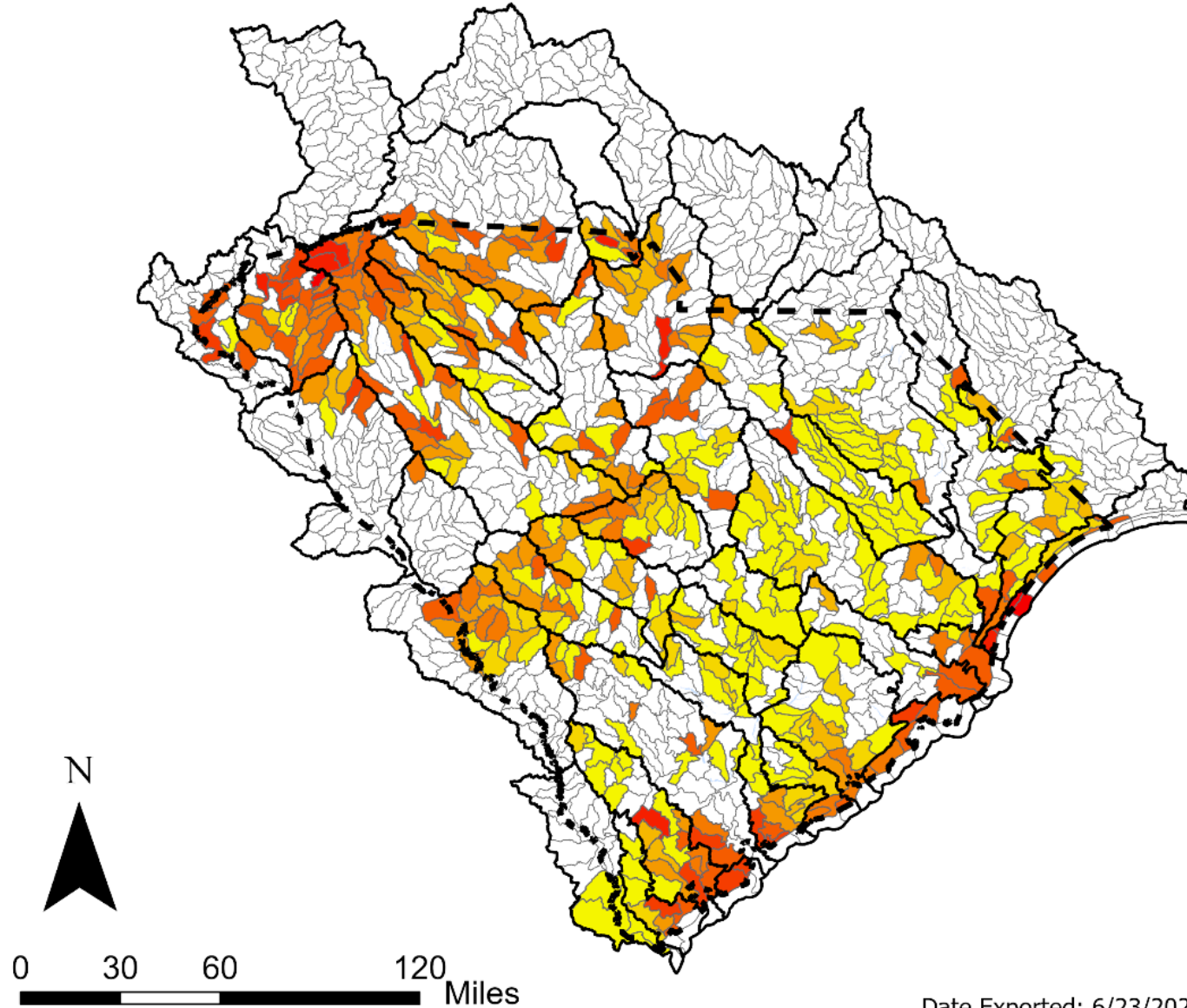
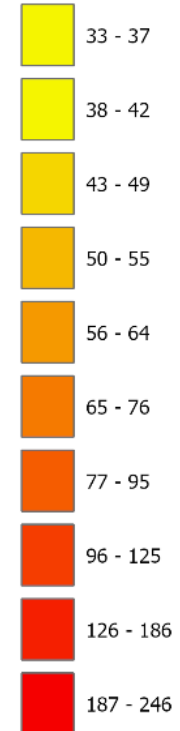
2021 - 1% Annual Chance Flooding Event



## Legend

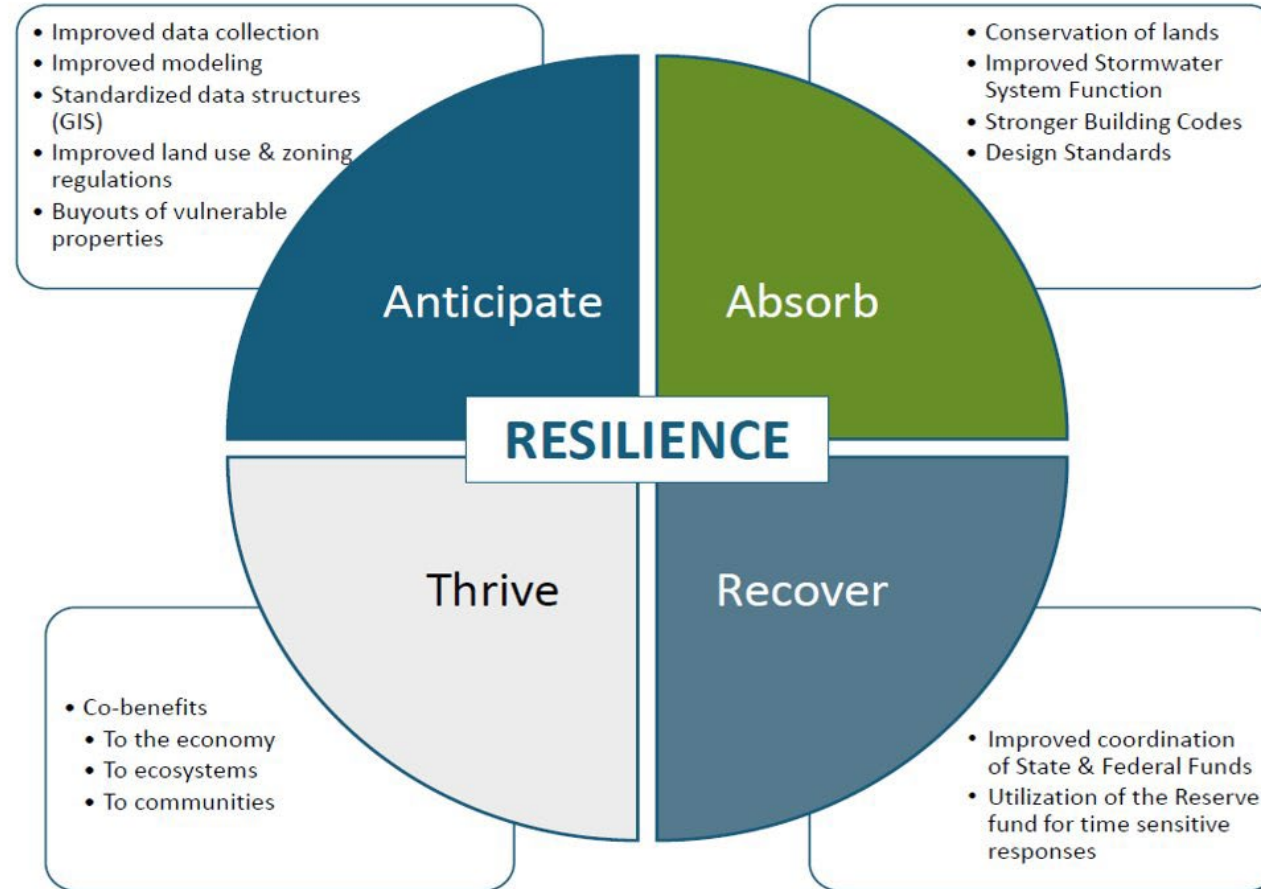


Avg\_Days\_loss



Date Exported: 6/23/2022

# Developing Recommendations for Action



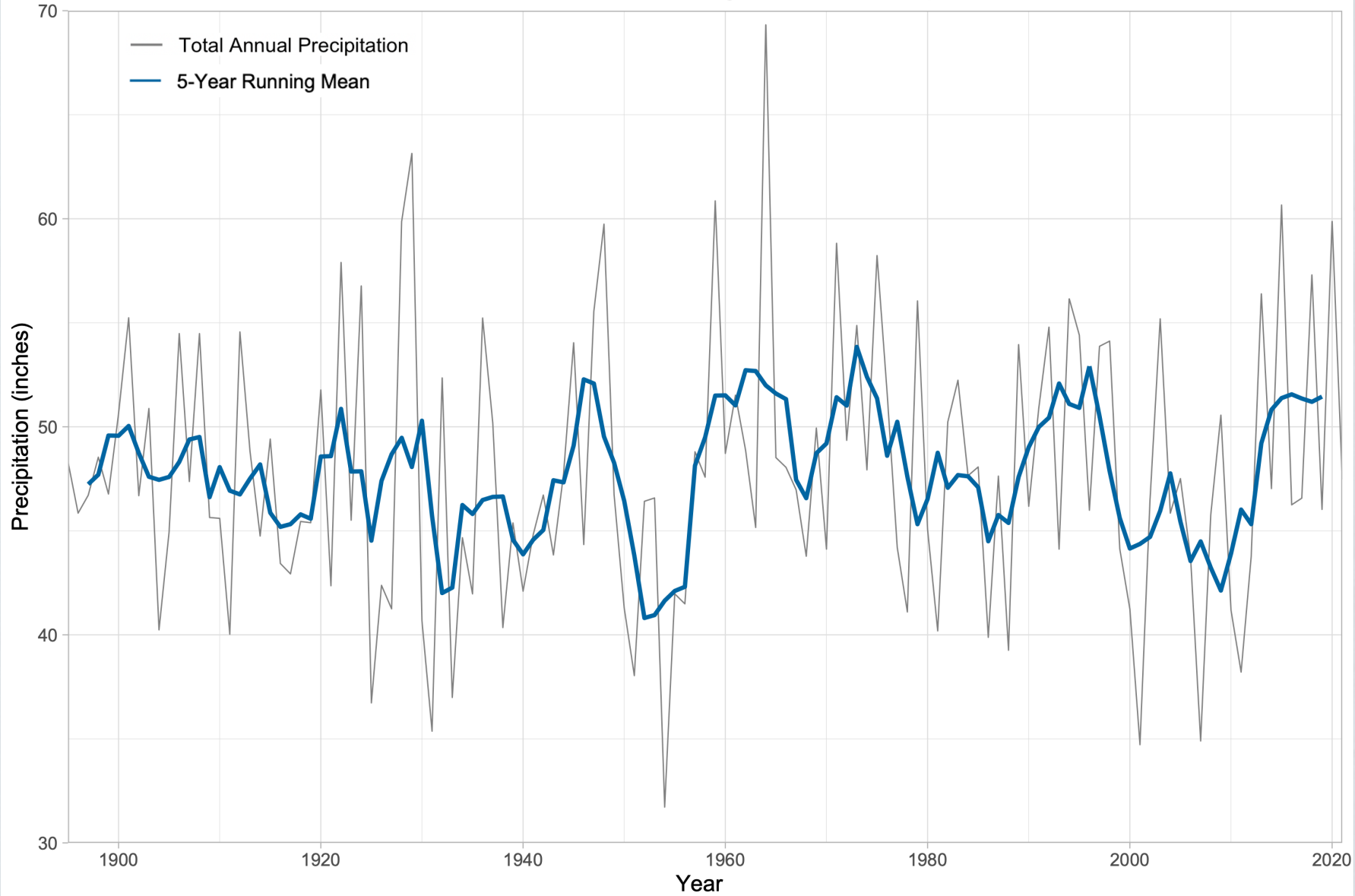


# South Carolina precipitation

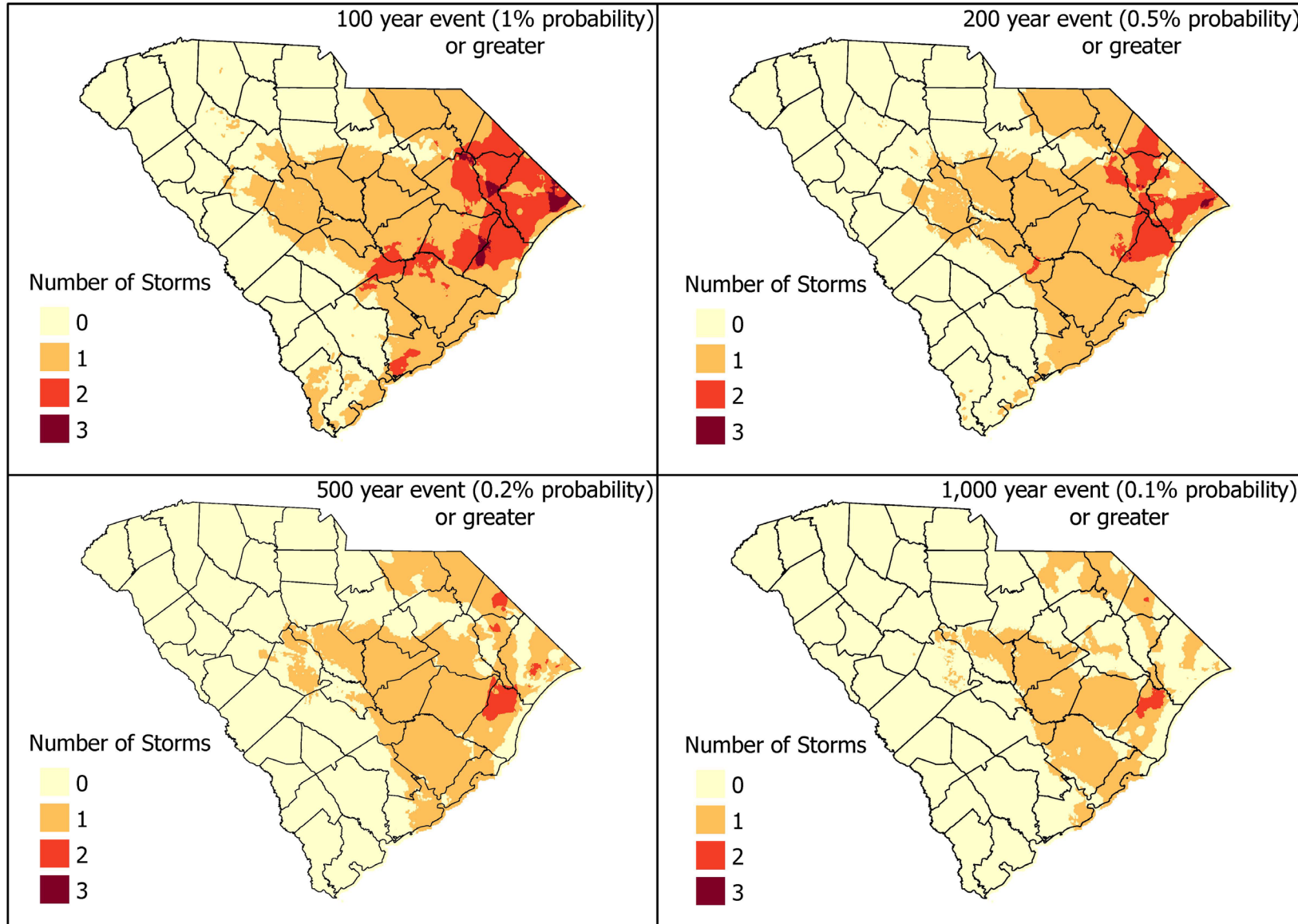
## Key findings

- Precipitation has varied greatly on a yearly and decadal basis.
- Summer precipitation has decreased and the number of precipitation days in fall has increased; overall, few other statistically significant trends are found for seasonal or annual total precipitation.
- There are relatively few statistically significant long-term trends in heavy precipitation. However, recent heavy precipitation events affecting the coastal regions and the Pee Dee River Basin (2015, 2016, 2018) match expectations of a warmer world with higher evaporation rates and atmospheric moisture.
- Drought has periodically affected all parts of the state. The historical record reveals lots of interannual and interdecadal variability, but no statistical trend. Rising temperatures in the 21st century will likely exacerbate agricultural and hydrologic drought.

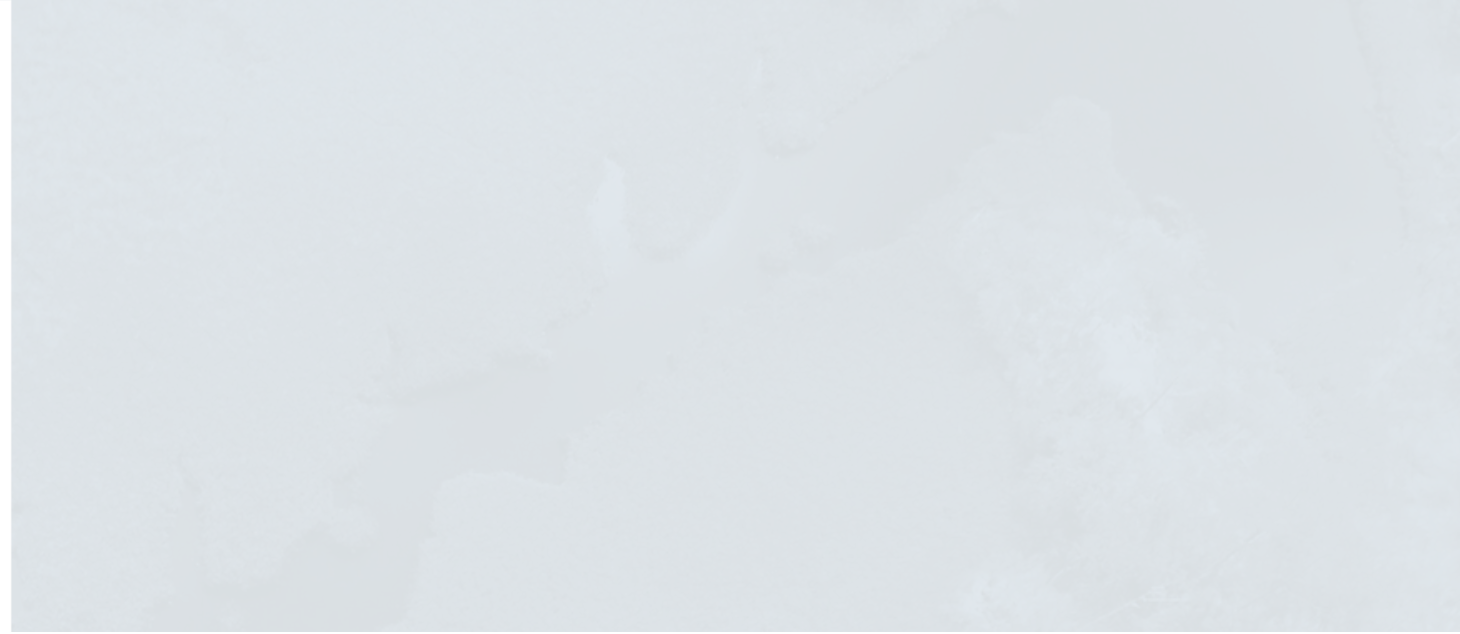
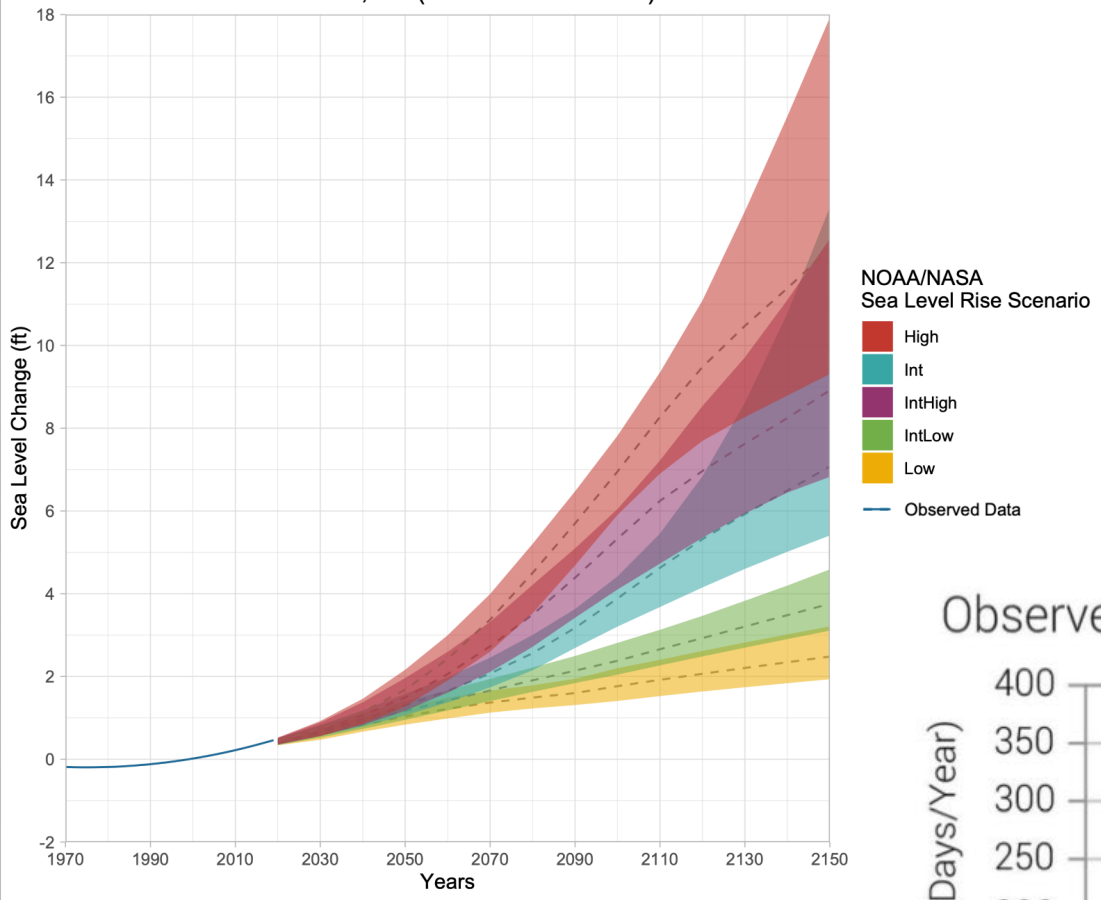
South Carolina State-Averaged Annual Precipitation



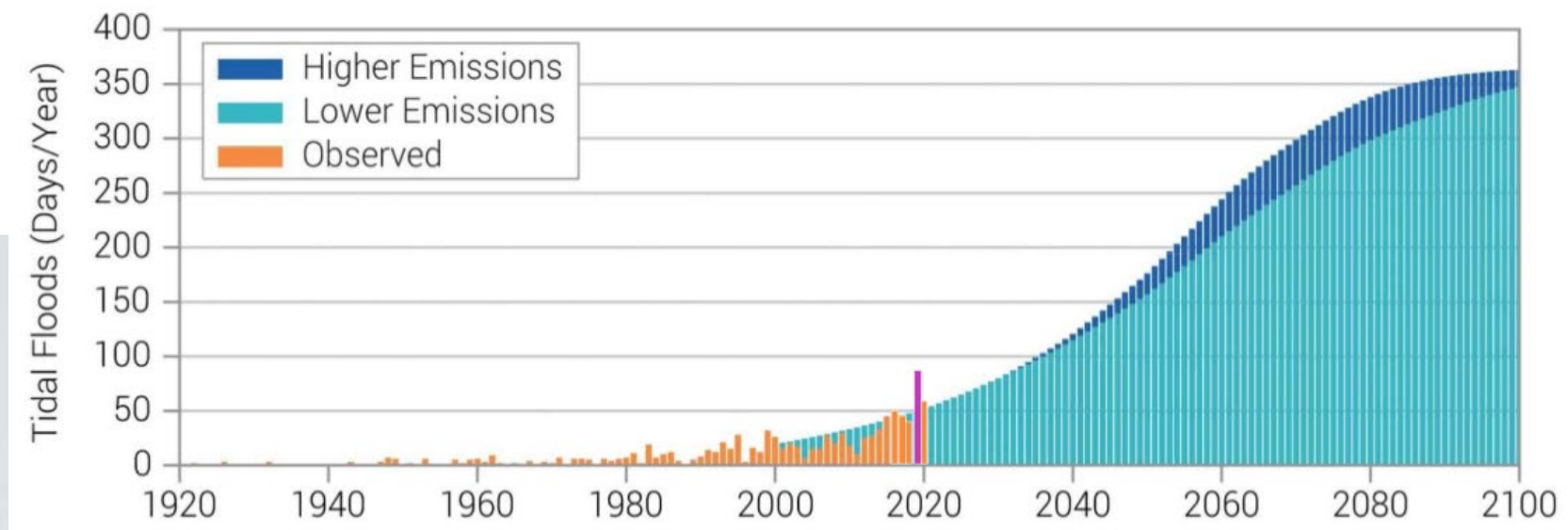
# Areas Impacted by One or More of the Recent Extreme Storms (October 2015, Hurricane Matthew 2016, and Tropical Storm Florence 2018)



Interagency Sea Level Rise Projections  
Charleston, SC (Station ID: 8665530)



Observed and Projected Annual Number of Tidal Floods for Charleston, SC



# Buyout Estimates (draft)

**TIER 1:** Repetitive Loss Properties in the FEMA Floodway

Repetitive Loss Properties Seaward of the DHEC Beachfront Setback Line

170 Properties with an Estimated Value of 51.2 Million Dollars

**TIER 2:** Properties FEMA Regulatory Floodway

Properties Seaward of OCRM Baseline Line

5,750 Properties with an Estimated Value of 1.3 Billion Dollars

**TIER 3:** FEMA Repetitive Loss Properties

Properties Seaward of OCRM Setback Line

4,974 Properties with an Estimated Value of 2 Billion Dollars

**TIER 4:** First Street 100-year flood event with 6+ feet of inundation

33,158 Properties with an Estimated Value of 11.1 Billion Dollars

**TIER 5:** First Streets 100-year flood event (2051) with 6+ feet of inundation

50,121 Properties with an Estimated Value of 17.8 Billion Dollars

# South Carolina Office of Resilience Conservation Priorities

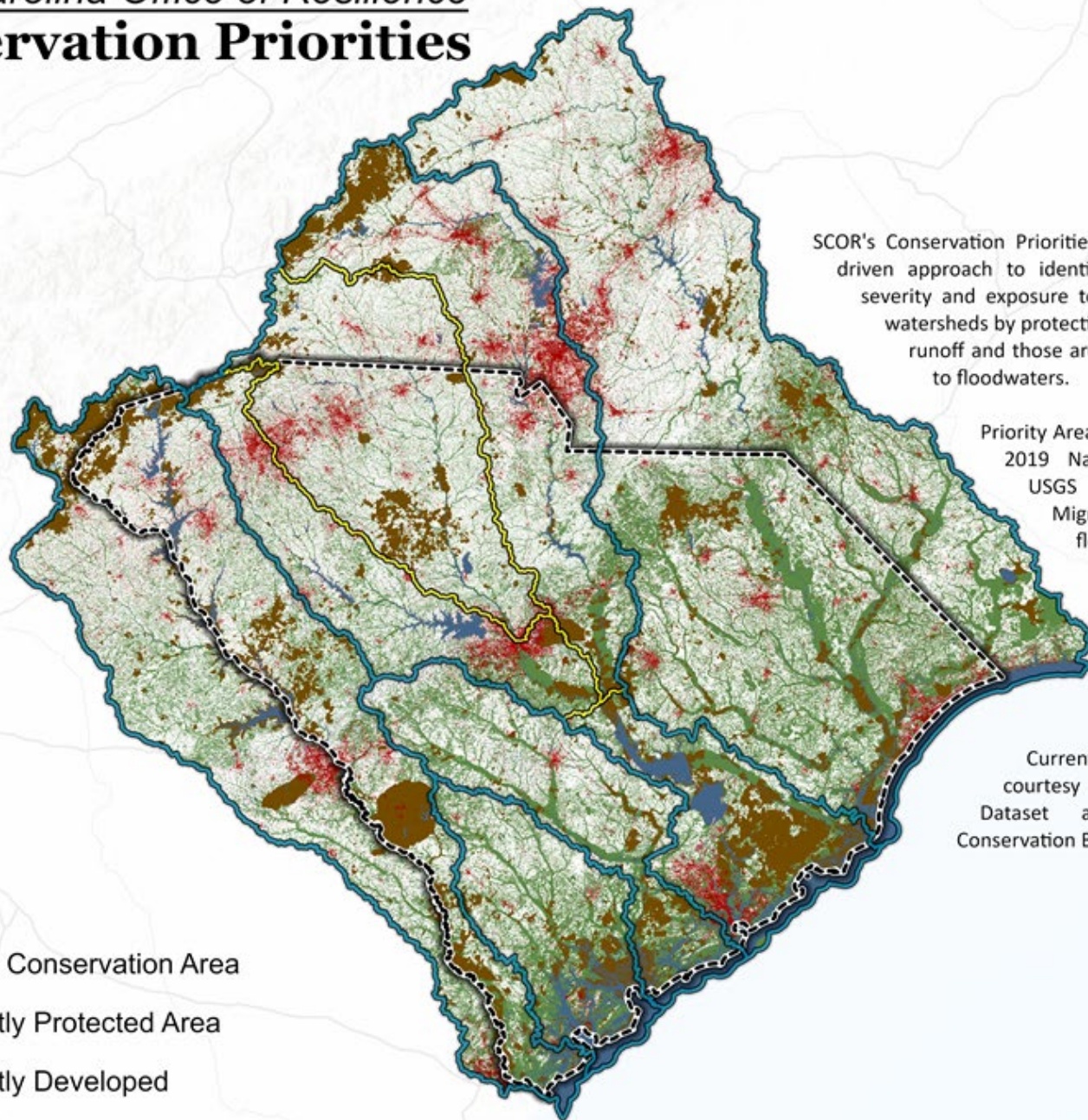


SCOR's Conservation Priorities are the outcome of a data driven approach to identifying areas that will reduce severity and exposure to flooding in South Carolina's watersheds by protecting areas with potential for low runoff and those areas that are the most exposed to floodwaters.

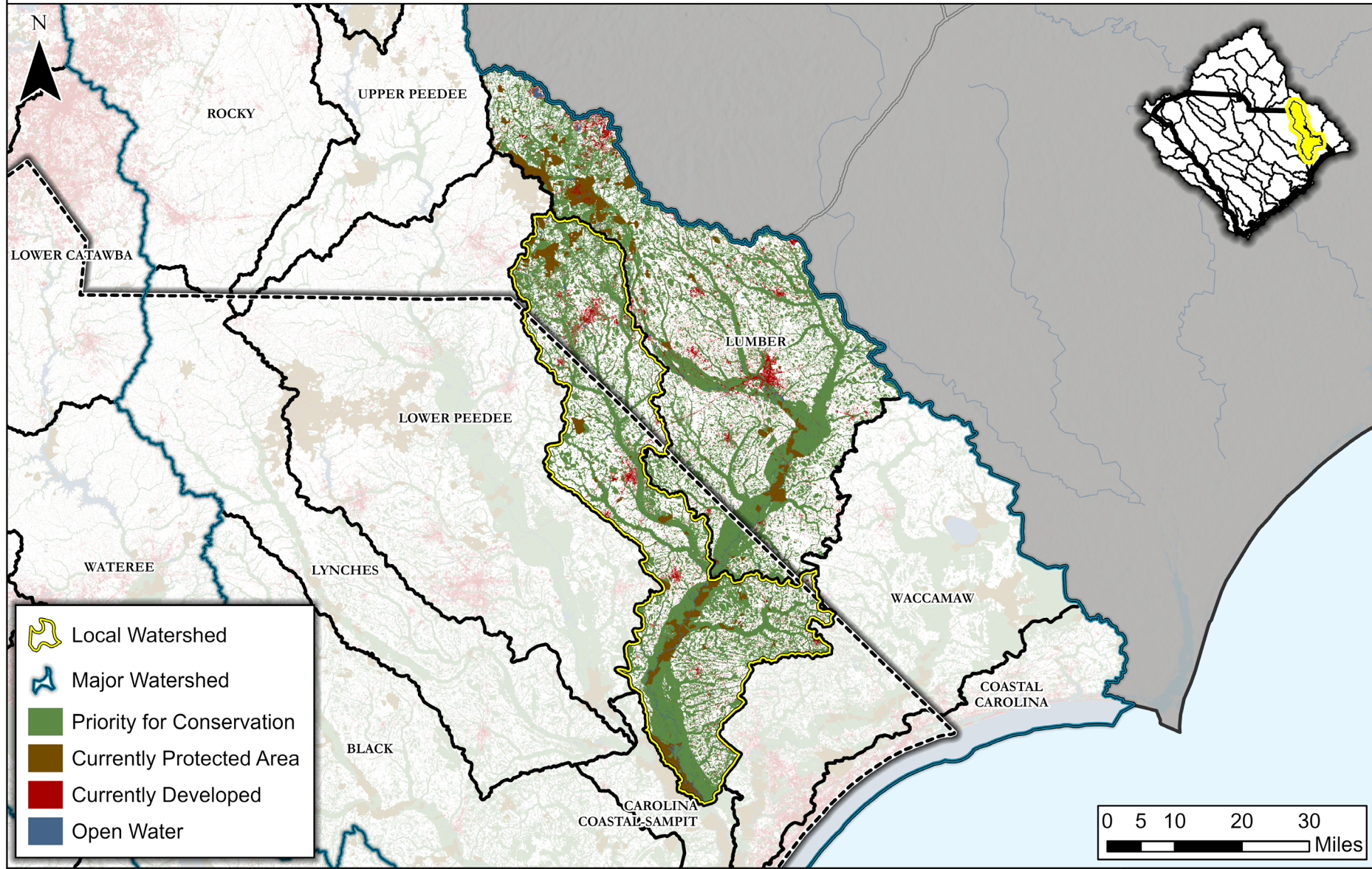
Priority Areas incorporate inputs from the 2019 National Land Cover Dataset, USGS SSURGO, NOAA's Marsh Migration model, future high-risk flood areas from the First Street Foundation, and FEMA's Special Flood Hazard Areas.

Currently Protected Areas are courtesy of the USGS Protected Areas Dataset and the South Carolina Conservation Bank.

-  Priority Conservation Area
-  Currently Protected Area
-  Currently Developed
-  Open Water



# Conservation Priorities - Little PeeDee Watershed



SCOR's Conservation Priorities are the outcome of a data driven approach to identifying areas that will reduce severity and exposure to flooding in South Carolina's watersheds. Priority Areas incorporate inputs from the 2019 National Land Cover Dataset, USGS SSURGO, NOAA's Marsh Migration model, future high-risk flood areas from the First Street Foundation, and FEMA's Special Flood Hazard Areas.



# Reserve Fund

- ▶ Purpose
- ▶ Components: Strategic Statewide Resilience & Risk Reduction Plan, disaster relief and mitigation
- ▶ Disaster relief programs in development:
  1. Disaster Match
  2. Infrastructure repairs for those not eligible for CDBG-DR grant or other federal assistance
  3. Loans and grants for immediate cash flow assistance for local governments
  4. Grants to voluntary agencies and governments for equipment and infrastructure repair tied to a FEMA lifeline
  5. Assistance for verifiable disaster losses of agricultural commodities
  6. Disaster Recovery Reserve Corps activities

## Point of Contact

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Anu.Nair@scor.sc.gov



# Let's connect!

**On the web:** [www.scor.sc.gov](http://www.scor.sc.gov)

**Facebook:** SC Office of Resilience

**Instagram:** @scresilience

**Twitter:** @scresilience\_

**LinkedIn:** SC Office of Resilience



# Questions?

