



December 8, 2025 \* Port St. Lucie Council – Regular Meeting



TETRA TECH

# Agenda

- Project Overview
- Regional Resilience Plan
  - Vulnerability Assessments
  - Adaptation Strategies
- Questions & Answer



# Community Resilience Planning

Community resilience planning is a process that takes a systematic, evidence-based approach to analyze local community risks and develop actions or adaptations that reduce those risks now and in the future.



# Project Overview

## SLC Draft Regional Resilience Plan (RRP)

- Funded through a CDBG-Mitigation Grant with support from the Resilient Florida Program
- A comprehensive roadmap to enhance resilience across St. Lucie County and its municipalities
- Identifies adaptation strategies to reduce current and future risks and maintain safety, health, and economic stability
- Emphasizes collaboration, policy integration, and adaptive management for long-term resilience



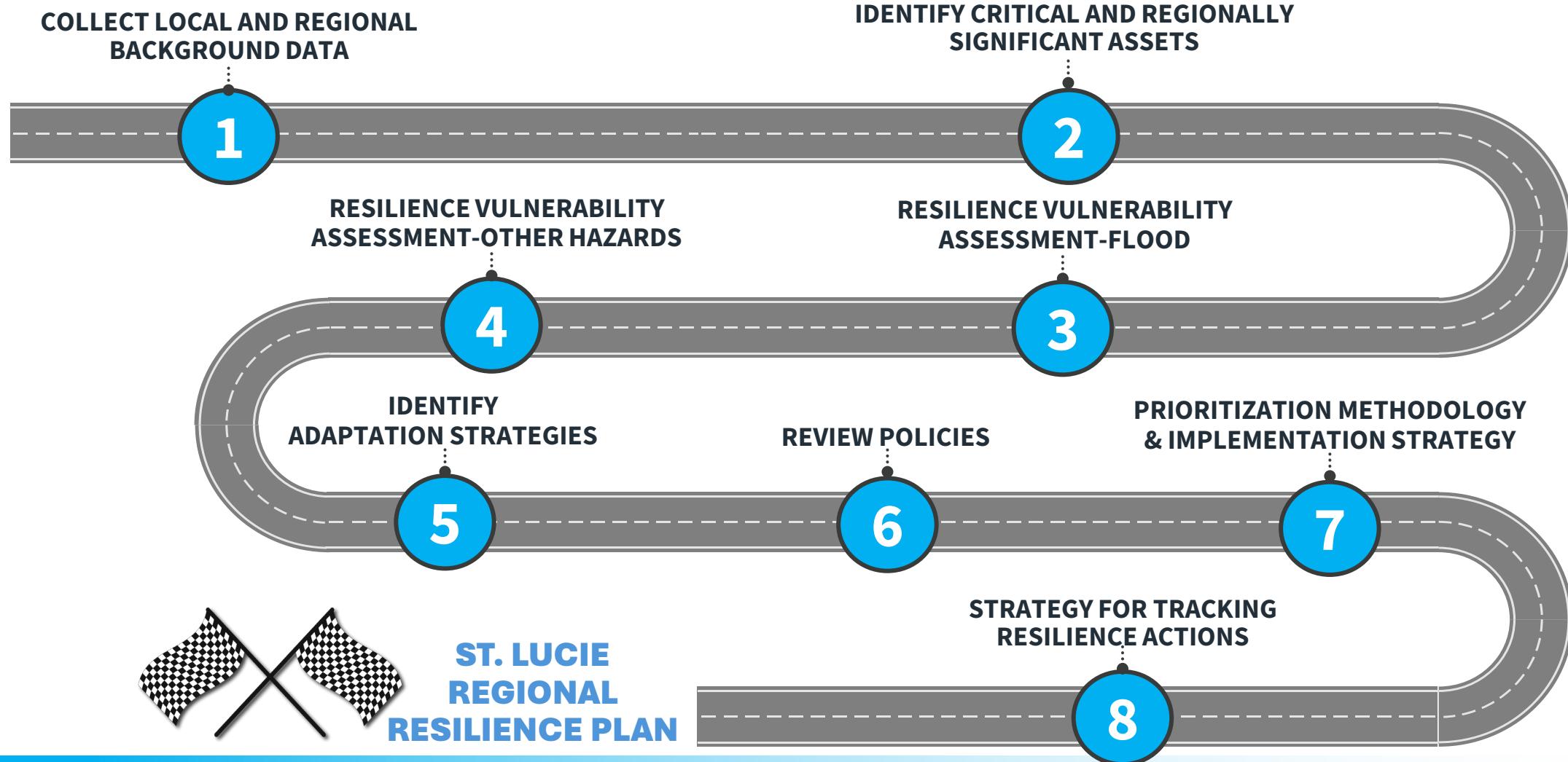
# St. Lucie County's Unique Approach

- **Collaborative Approach:** St. Lucie County, Port St. Lucie, Fort Pierce, and St. Lucie Village worked together to develop community-wide vulnerability assessments and resilience plan
- **Diverse Steering Committee:** Includes key collaborators from a wide range of backgrounds and associations
- **Community Engagement:** Outreach meetings and engagement activities to gather local input and ensure community-driven solutions
- **Project Objectives:** Combines regional collaboration, science-based assessments, and inclusive engagement to create a model for integrated resilience planning



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# Project Process



# Hazards Evaluated



## Flooding:

- Sea Level Rise
- Tidal Flooding
- Storm Surge
- Rainfall
- Compound Flooding



## Flooding: Inland (Non-Coastal)

Temporary inundation of normally dry land due to excessive precipitation rates.



## Extreme Heat:

A period of hotter and more humid temperatures than average for a specific location at that time of year.



## Drought:

A period of abnormally dry weather due to a rainfall deficit



## Severe Storm:

Tornadoes, hurricanes, tropical storms, and other weather events that often intensify rapidly, bringing excessive rainfall and/or wind.



## High Wind:

Events with sustained wind speeds that are powerful enough to down trees and powerlines, damage property, and knock debris loose.



## Wildfire:

An uncontrolled fire that begins in an undeveloped area but may spread and threaten nearby communities, populations, and critical assets.



## Coastal Erosion:

The permanent removal of sand from shorelines and coastal lands due to wind, waves, and longshore currents.

# Resilience Vulnerability Assessments (RVA)

*Serve as the foundation of the Regional Resilience Plan, guiding policies, and adaptation strategies*

## RVA-FLOOD

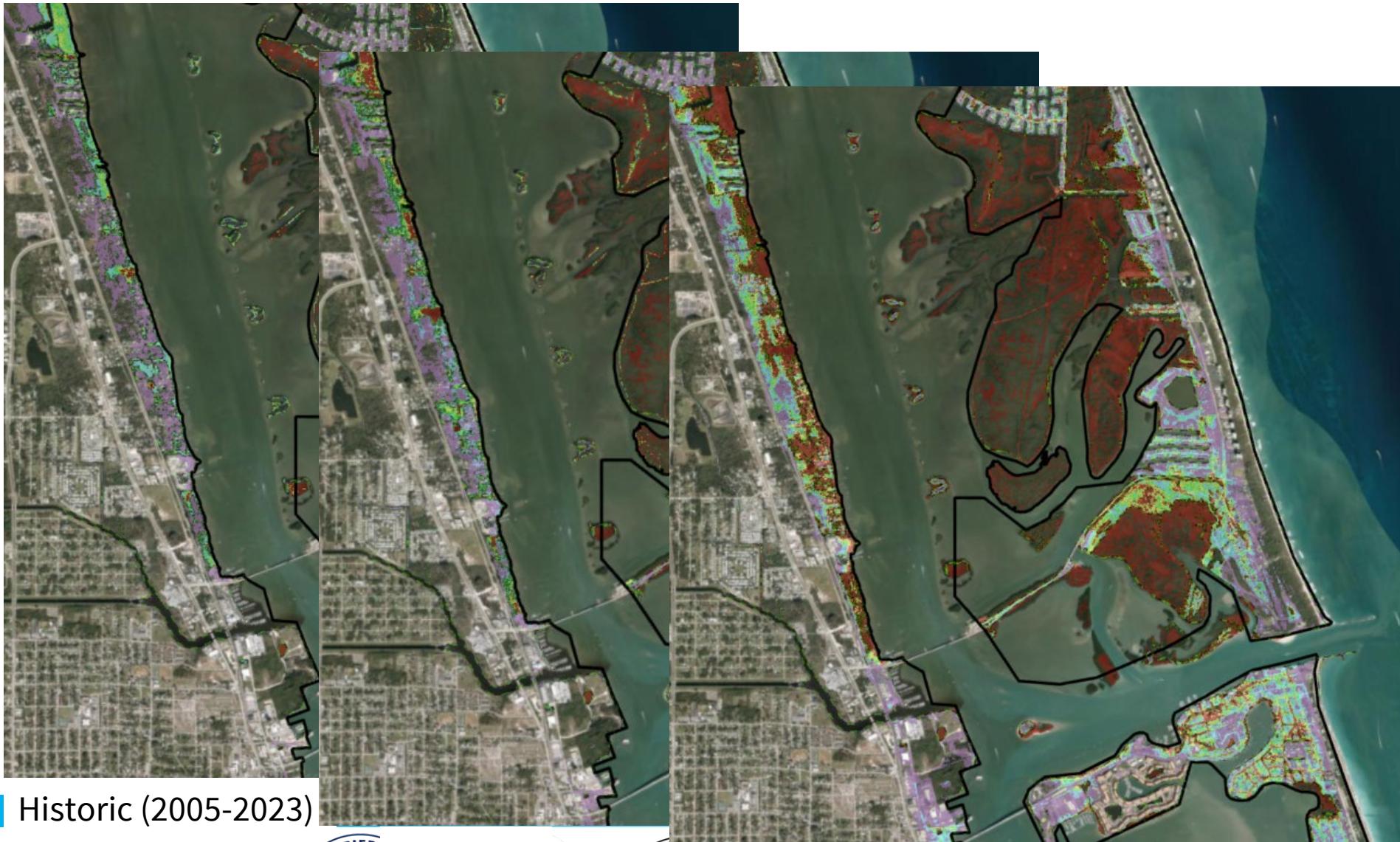
- FDEP Resilient Florida grant funded to evaluate vulnerability of critical assets from flooding hazards
- Focused on current and future flood risks (2040, 2070, 2100) from rainfall, sea level, storm surge, high tides / king tides, and combination (compound)
- Incorporated local and regional datasets, hydrologic models, and GIS-based analysis

## RVA-OTHER HAZARDS

- CDBG-Mit grant funded to evaluate vulnerability of community assets, land and populations from a range of natural hazards
- Focused on coastal erosion, extreme heat, drought, high winds/storms, wildfires, storm surge, and inland flooding (2040 & 2070 scenarios)
- Includes SLAMM model analysis that offers a framework for utilizing conservation and restoration as an efficacious and cost-effective community resilience planning strategy.



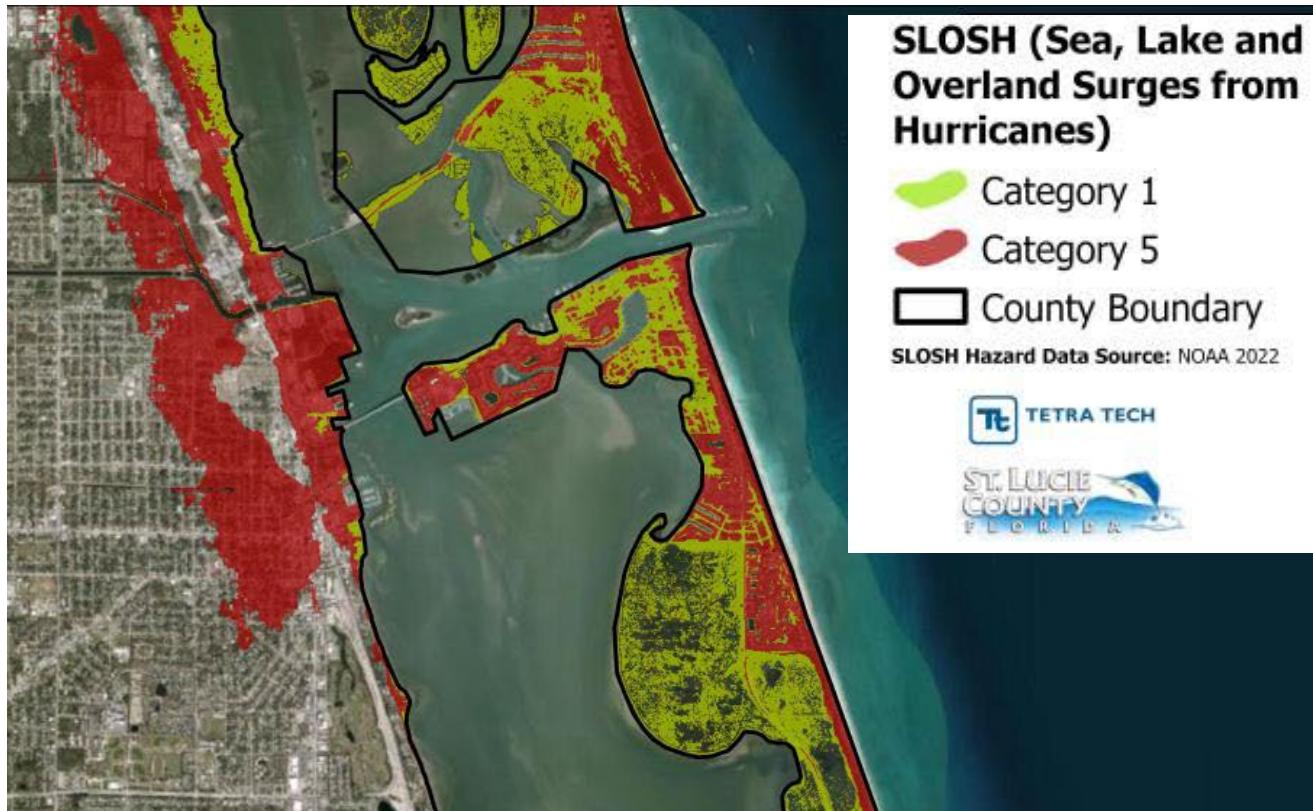
# Days of Tidal Flooding



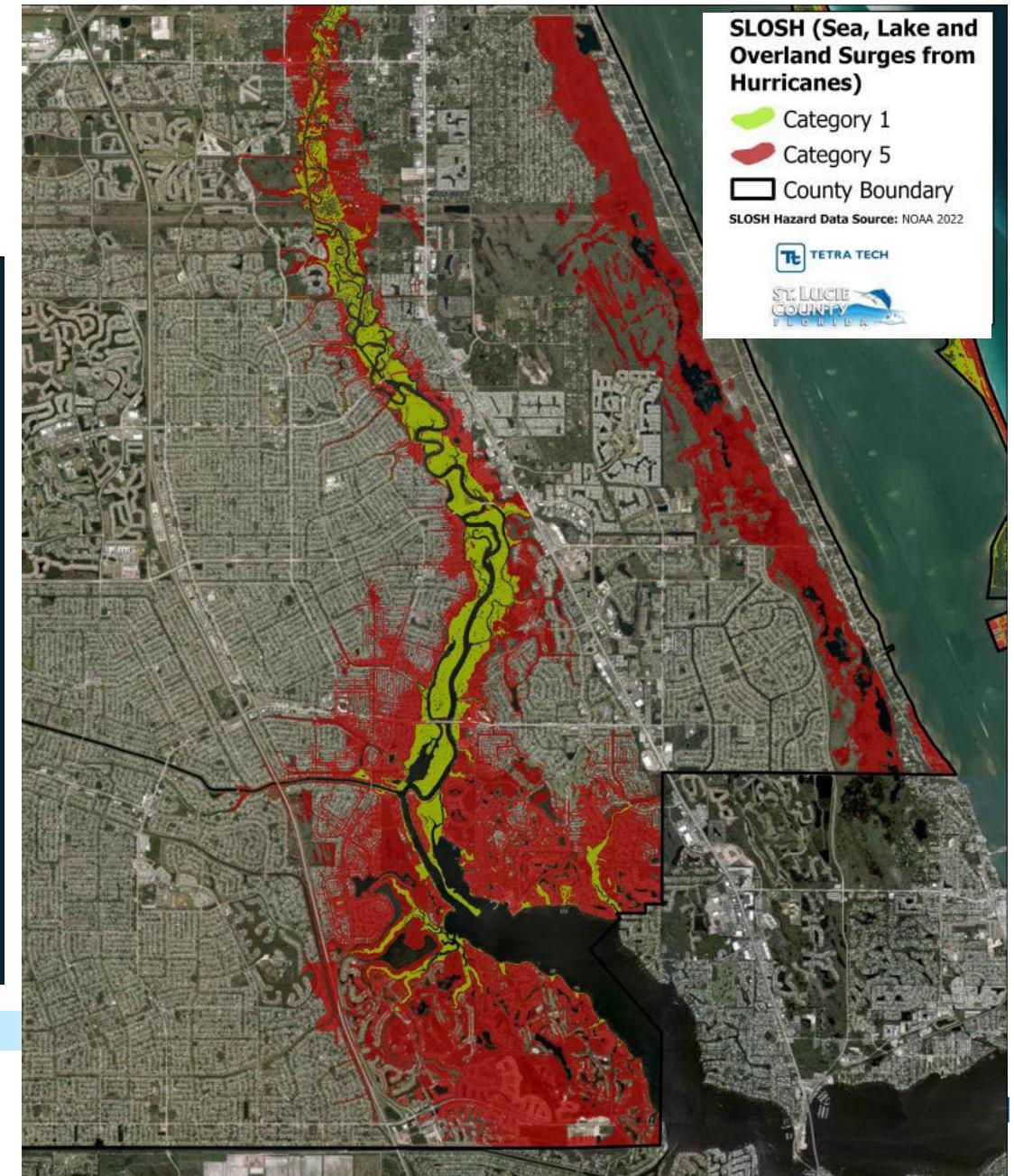
NIH 2070

# Storm Surge

## Fort Pierce area

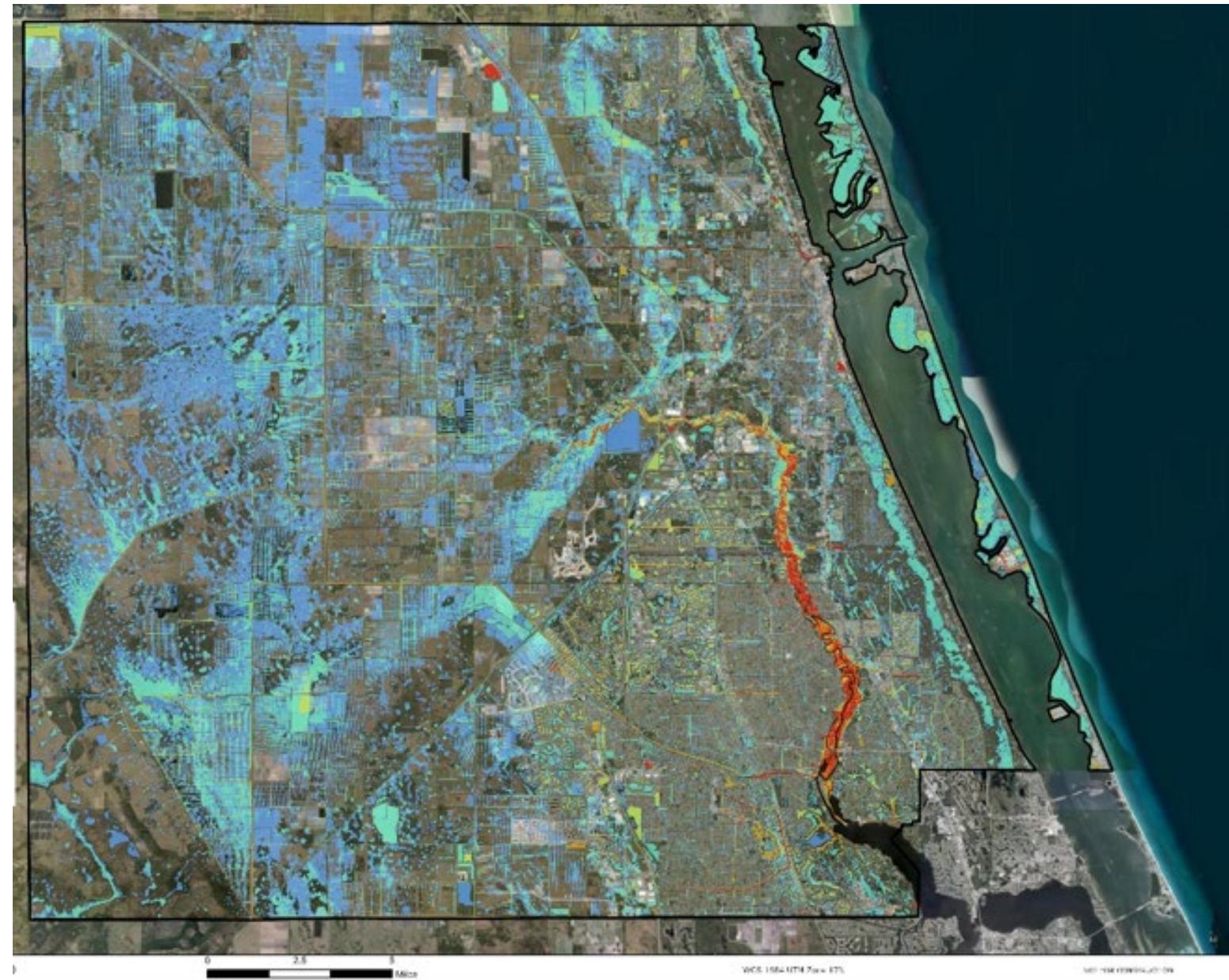
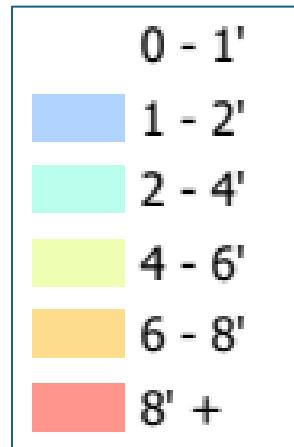


## Port St. Lucie area

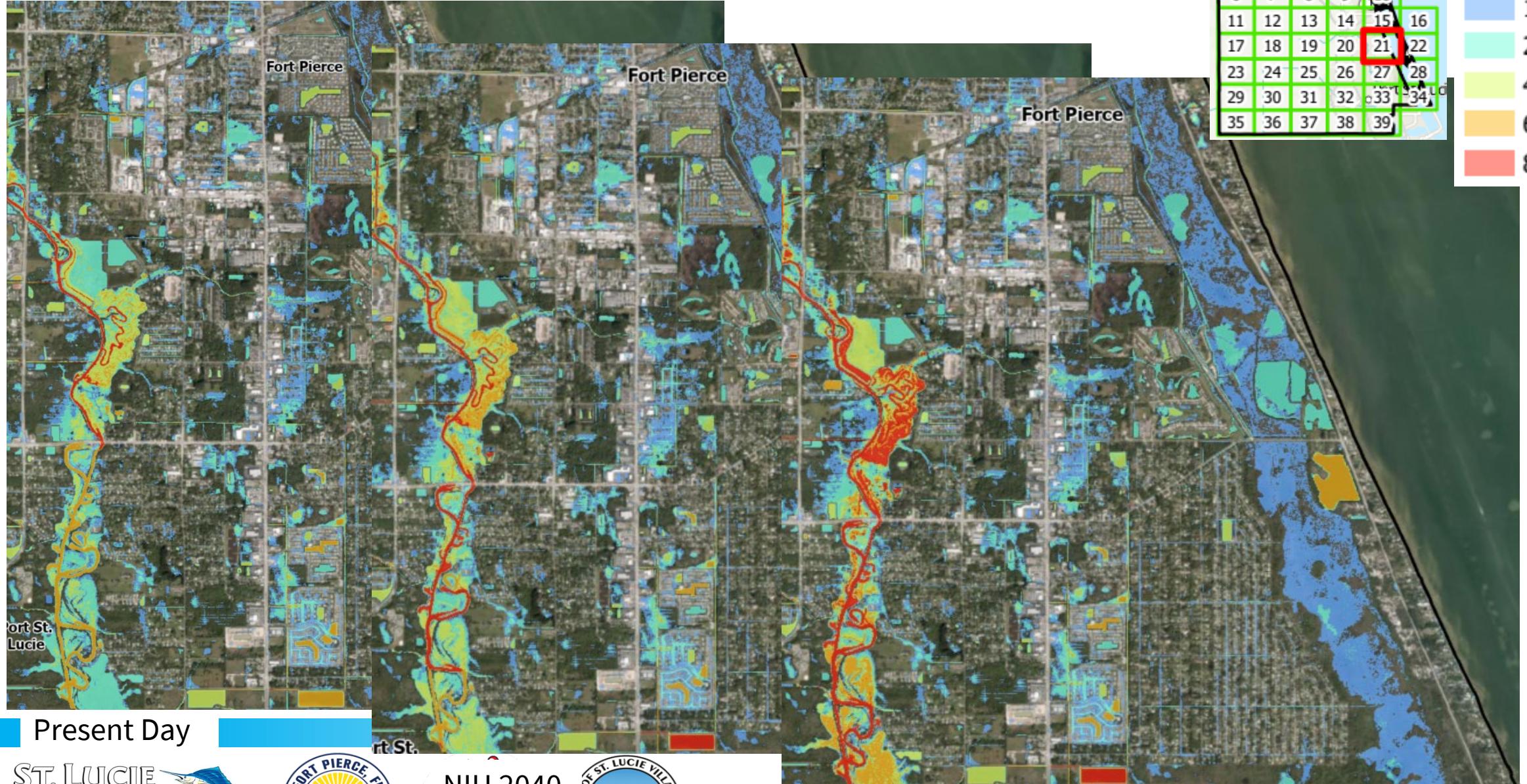


# County-wide Map

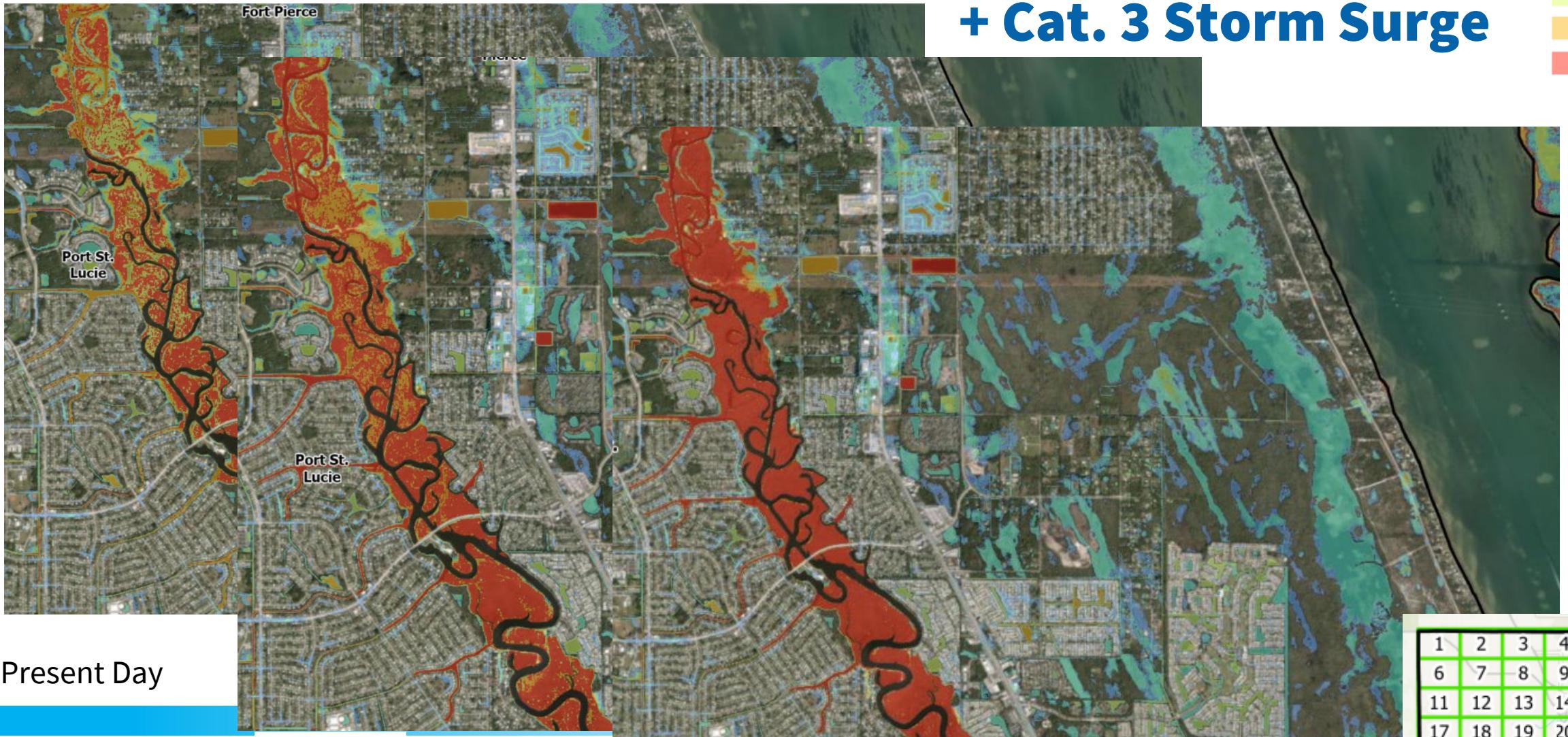
- Year 2070
- 100-Year/24-Hour Rainfall
- NOAA Intermediate High Sea Level Projections



# Rainfall: 100-year/24-hour Rain Event



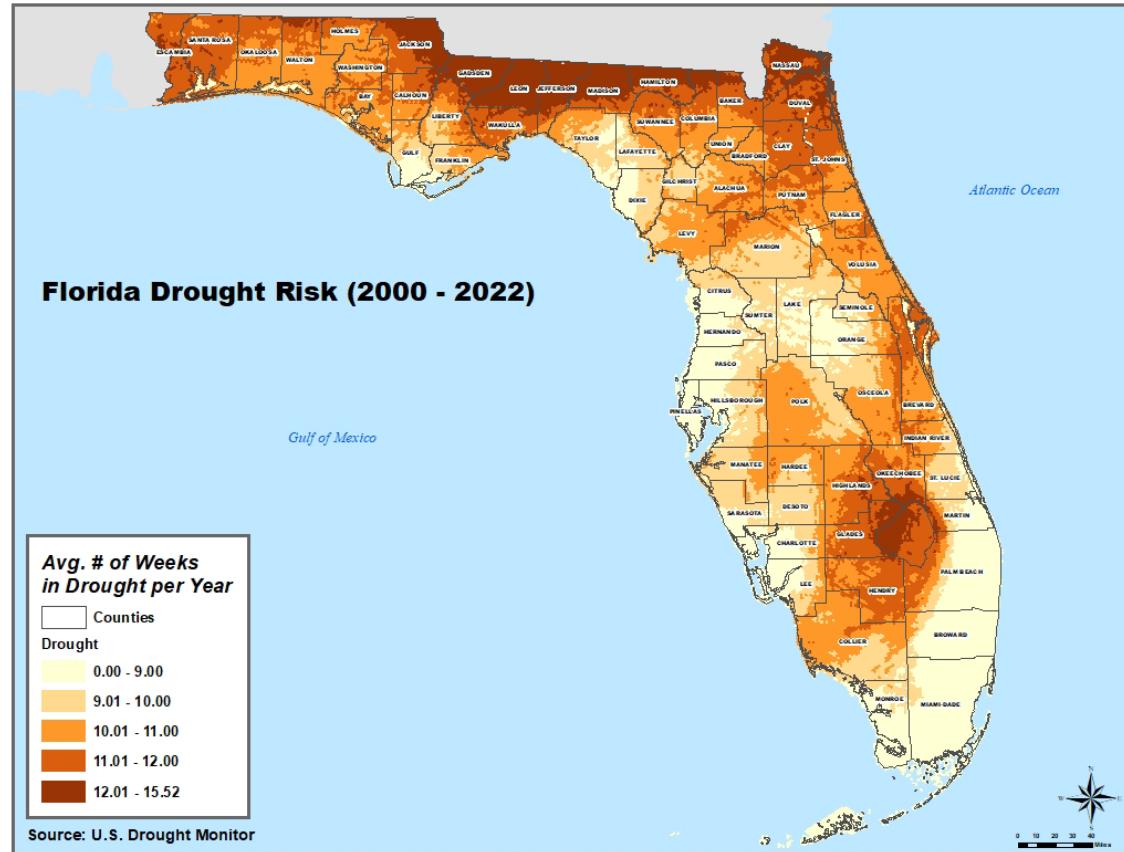
# Compound Flooding: 100-year/24-hour Rain Event + Cat. 3 Storm Surge



NIH 2070

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
17	18	19	20	21
23	24	25	26	27
29	30	31	32	33
35	36	37	38	39

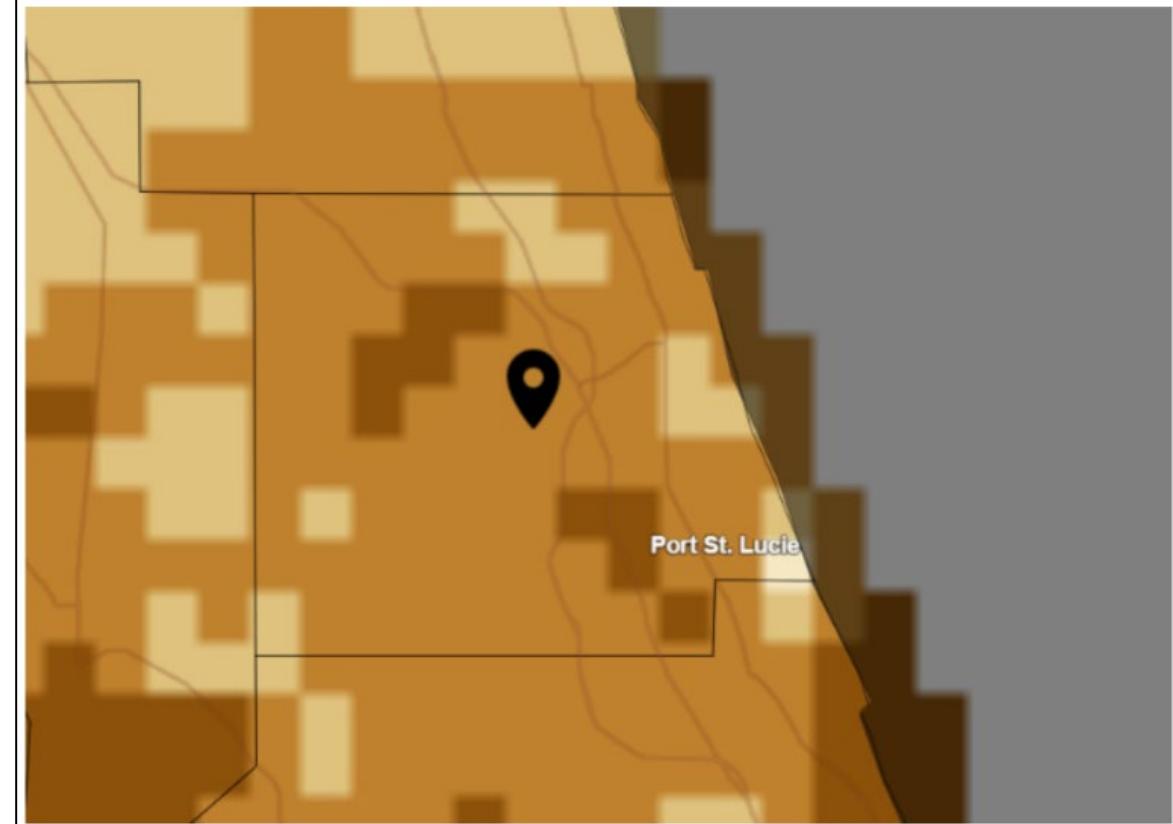
# Drought



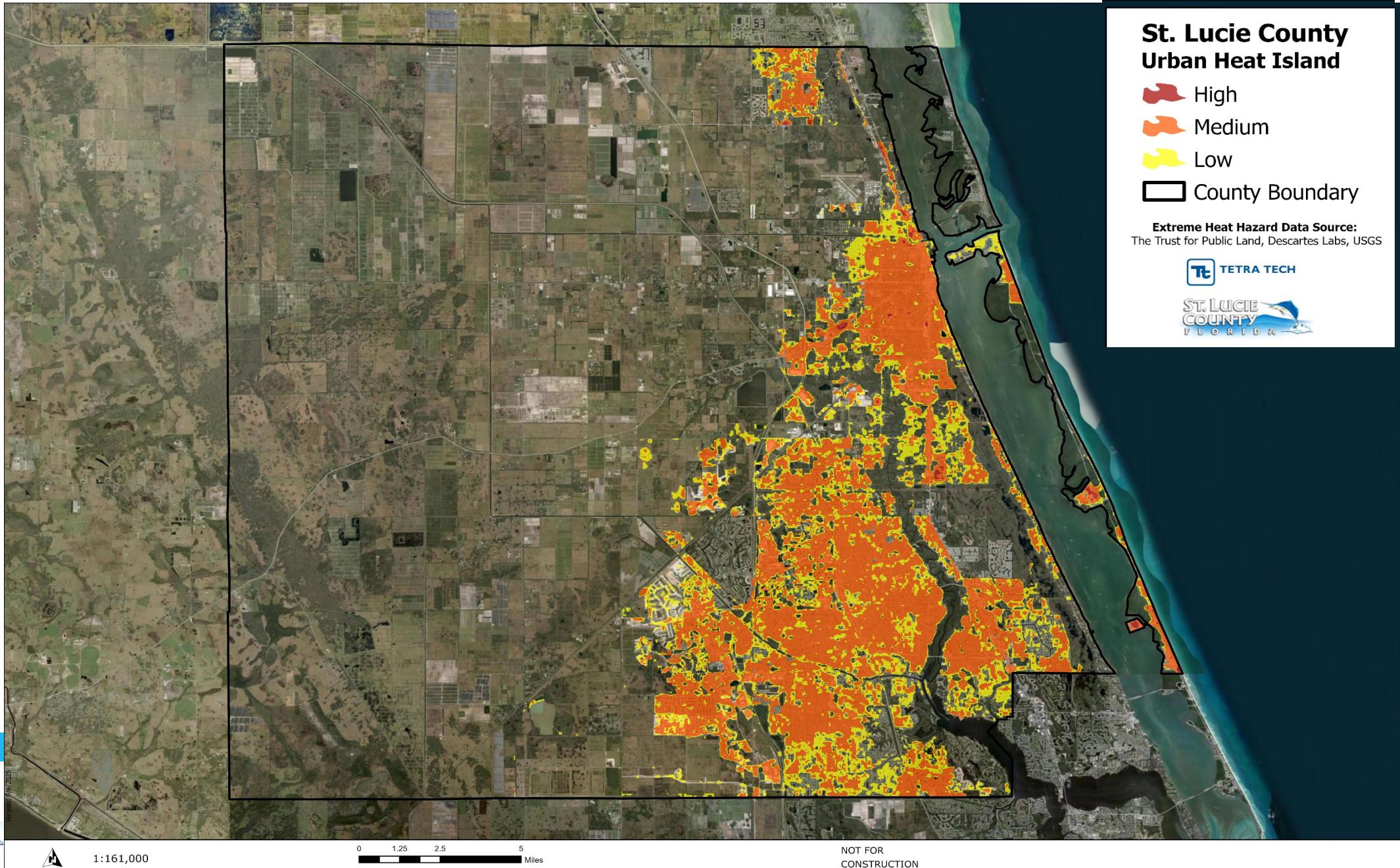
St. Lucie County has experienced an average of 9 to 10 weeks of drought annually from 2000-2022.

Recent example: April-May 2025

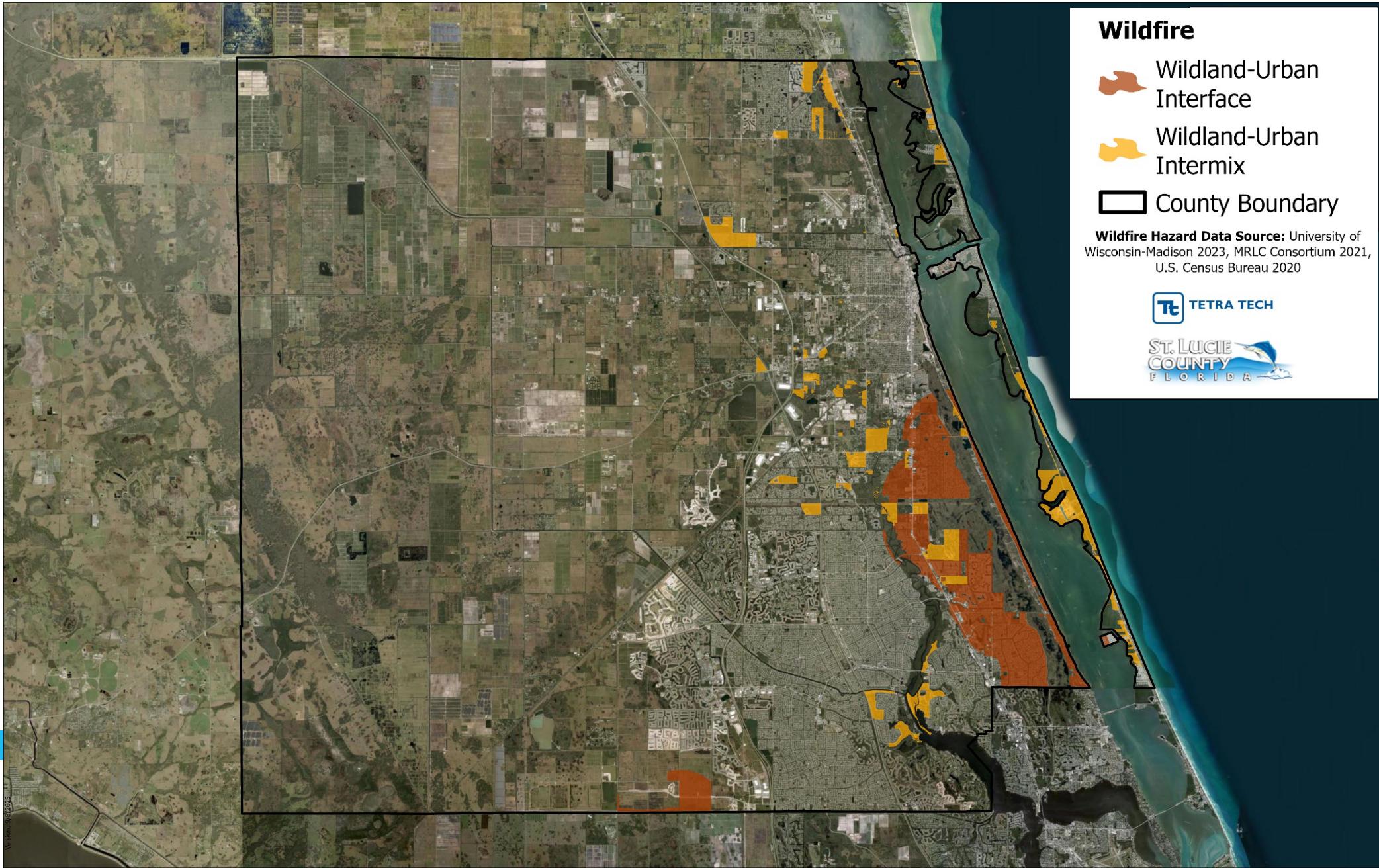
30-Day Percent of Normal Precipitation



# Extreme Heat



# Wildfire



# Regional Resilience Plan



# Regional Resilience Plan

- Enhance county-wide resilience by offering adaptation and mitigation strategies based on identified risks
- Considerations include hazard mitigation, emergency preparedness, land use planning, code & policy development, infrastructure investment, and public health policies & programs
- Informed by:
  - Resilience Vulnerability Assessments, existing plans & studies, stakeholders
- Includes capacity assessment and implementation plan

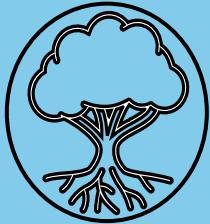


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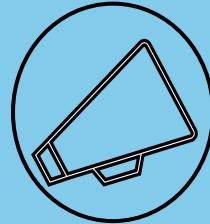
# Adaptation Strategies



**Grey Infrastructure**  
(fortify, elevate, relocate)



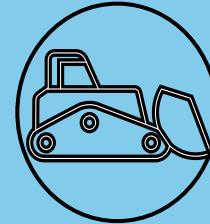
**Green Infrastructure**  
(protect, restore, augment)



**Community Education, Programs, and Readiness**



**Emergency Management Planning**



**Land Use and Code Guidelines**

# Phased Adaptation Approach

## 1. Immediately Actionable:

Actions that can begin immediately using existing resources, staff capacity, and current authority.

## 2. Requires Planning and Coordination:

Actions that need more preparation before implementation, such as detailed design work, engineering studies, permitting processes, supplemental funding, and/or formal partnerships with other agencies and stakeholders.

## 3. Requires Significant Research, Investment, and/or Sequencing:

Actions that depend on major funding commitments, technical studies, and/or enabling policies before they can move forward. These strategies may involve large-scale infrastructure projects, advanced modeling, or phased implementation to ensure feasibility and cost-effectiveness.



# Example Adaptations: **Facilities & Infrastructure**

## Retrofitting Critical Facilities

- Retrofit and design with energy-efficient cooling systems, renewable energy sources, and passive design features like reflective & cool roofing materials to reduce utility costs, mitigate extreme heat impacts on buildings, and maintain operations during power outages.
- Retrofit and design with impact-resistant windows, reinforced roofs, and other wind-hardened features to ensure continuity of operations.



## Construction of New Facilities & Infrastructure

- Utilize vulnerability assessments and other studies in decision-making process based on expected lifespan of specific infrastructure.
- Enhance freshwater and potable water systems by implementing salinity barriers or adaptive culverts at estuarine-freshwater interfaces.
- Establish roadway design standards that are resilient to sea level rise and extreme rain events.



# Example Adaptations: **Ecosystems & Nature-Based Solutions**

- Restore and protect inland wetlands and floodplains to enhance natural flood storage, improve water quality, and support habitat resilience.
- Maintain and expand strategic land acquisition programs and scale up use of conservation easements by prioritizing landowner outreach.
- Expand parks/preserves and tree coverage to provide shade and cooling benefits.
- Upgrade stormwater infrastructure using future rainfall projections and hybrid gray-green systems to address compound flooding risks.
- Identify and utilize public open spaces for enhanced stormwater management, including dual-purpose uses such as green space, preservation, and floodwater retention.



# Adaptation Project Types: **Community Planning & Policy**

- Conduct a comprehensive analysis for consistency and opportunities to strengthen resiliency goals and policies.
- Integrate resilience considerations, practices, and professionals into the daily functions of government agencies and infrastructure management
- Prioritize permitting incentives for resilient and low-impact development (LID); review development requirements to enhance incentives for resilient building standards.
- Ensure affordable housing requirements account for future flood risk and other hazard vulnerabilities.
- Encourage structure elevation programs for residents in low-lying areas to reduce flood risk.



# Adaptation Project Types: **Emergency Management**

- Use vulnerability assessment results in emergency management planning and to prioritize projects.
- Create a dataset on hazardous materials and analyze potential impacts by future flood risk.
- Develop a countywide extreme heat early warning system and cooling center network, with targeted siting and outreach.
- Develop a flood early warning system with gauges in strategic locations to monitor water levels and provide alerts when roads may be flooding.
- Complete property-level risk analysis using NFIP data to identify under-insured areas for targeted flood preparedness outreach.



# Adaptation Project Types: **Community Education, Programs, and Readiness**

- Maintain a database of low-interest capital resources and insurance mitigation programs to incentivize property owners to invest in storm resilience improvements and lower insurance premiums.
- Develop an online library of disaster preparedness and recovery resources that is broadly advertised and available to the public, emphasizing individual roles in community resilience.
- Encourage and incentivize residents to inspect their stormwater systems before major rain events through education and recognition programs.
- Prioritize community-based planning and development



# Capacity Assessment

*The ability of a community, infrastructure system, or organization **to respond to evolving hazards** or future risk conditions through its preparedness, operations, resources, policies, or physical assets to **reduce long-term risk** of loss of life, injury, property damage, and hardship, consistent with the objective of **increasing resilience** to natural disasters.*

The Capacity Assessment includes an evaluation of plans, policies, and response and recovery documents to determine the County and municipalities capability to adjust or withstand future hazard events

SLC as a whole scored:

**STRONG adaptive capacity for**

Inland Flooding and Storm Surge Flooding

**Moderate adaptive capacity for**

Coastal Erosion, Drought, Heat, Wildfire and Wind



# Policy Strategies

**Policy review comprised of two main components:**

1. Development of a set of uniform policies directly shaped by the Adaptation Strategies developed for the project
2. Review of individual participating local government's Comprehensive Plans and Codes for opportunities and constraints related to the Regional Resilience Plan



**Strategies to address resiliency were a priority including:**

- Stormwater design/management and/or assessment policies
- Municipal Service Benefit policies (County-level)
- Landscaping policies
- Shoreline policies
- Floodplain management policies
- Community & Neighborhood recommendations
- Others as relevant



# Key Takeaways

- ✓ The RRP provides a unified strategy for St. Lucie County and its municipalities to address risks collaboratively
- ✓ Built on comprehensive vulnerability assessments that evaluate both flooding and other natural hazards
- ✓ Identifies actionable adaptation strategies to protect critical infrastructure, natural resources, and residents
- ✓ Continued community engagement and stakeholder input is important for future updates to the RRP, ensuring local priorities and needs are reflected
- ✓ The RRP establishes a long-term roadmap that is adaptive and designed to evolve with changing conditions and new data



# Thank You!

ST. LUCIE  
COUNTY  
FLORIDA



Discussion  
and  
Questions

Website:  
[ResilientStLucie.com](http://ResilientStLucie.com)

