Addressing Vulnerabilities along the Ribault and Trout Rivers in Duval County, FL: Using GIS Tools and Data-Driven Methodologies

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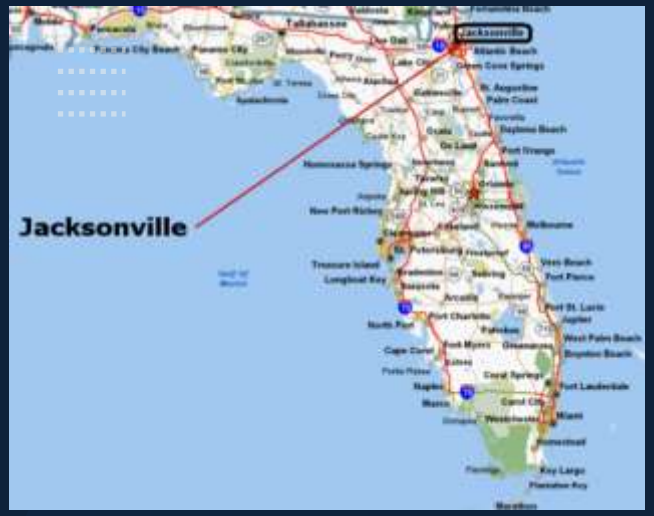
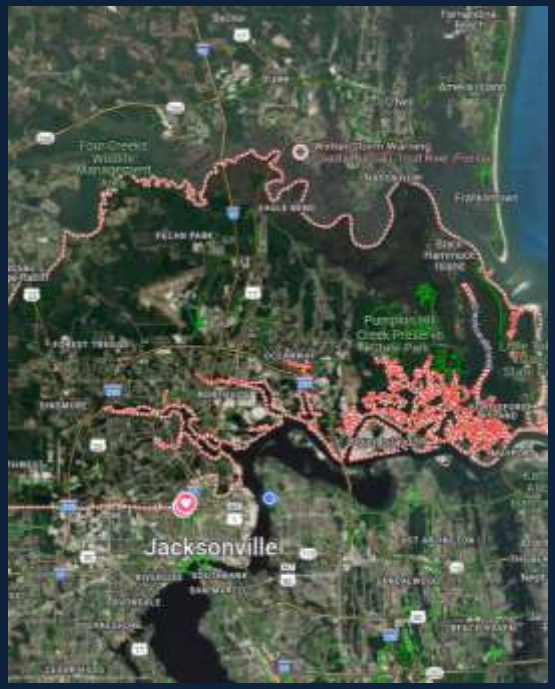




Introduction

- Overview of Ribault and Trout Rivers in Jacksonville, FL
- Environmental, socioeconomic, and infrastructural challenges
- Study area: 12,000 acres, 53,531 residents

Project Objectives

1. Analyze environmental and infrastructure vulnerabilities
2. Prioritize interventions to enhance community resilience
3. Leverage GIS tools for comprehensive spatial analysis

Methodology

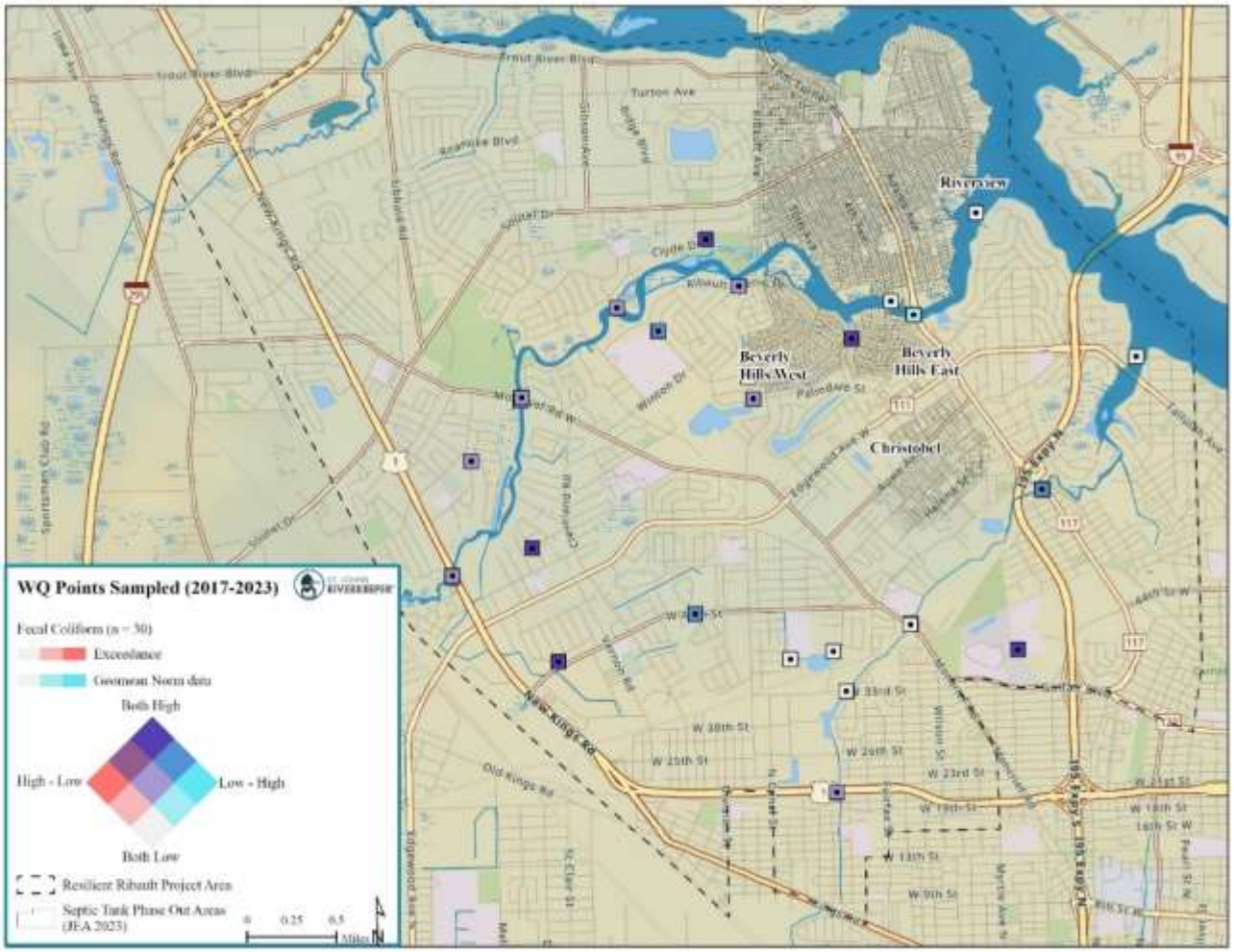
Data Collection: Environmental data, infrastructure, social vulnerability indices

Indices Used: CDC SVI, U.S. CVI, Justice40 Initiative, First Street Flood Risk Scores

GIS Techniques: geocoding, pollutant mapping, heat index analysis, flood risk mapping

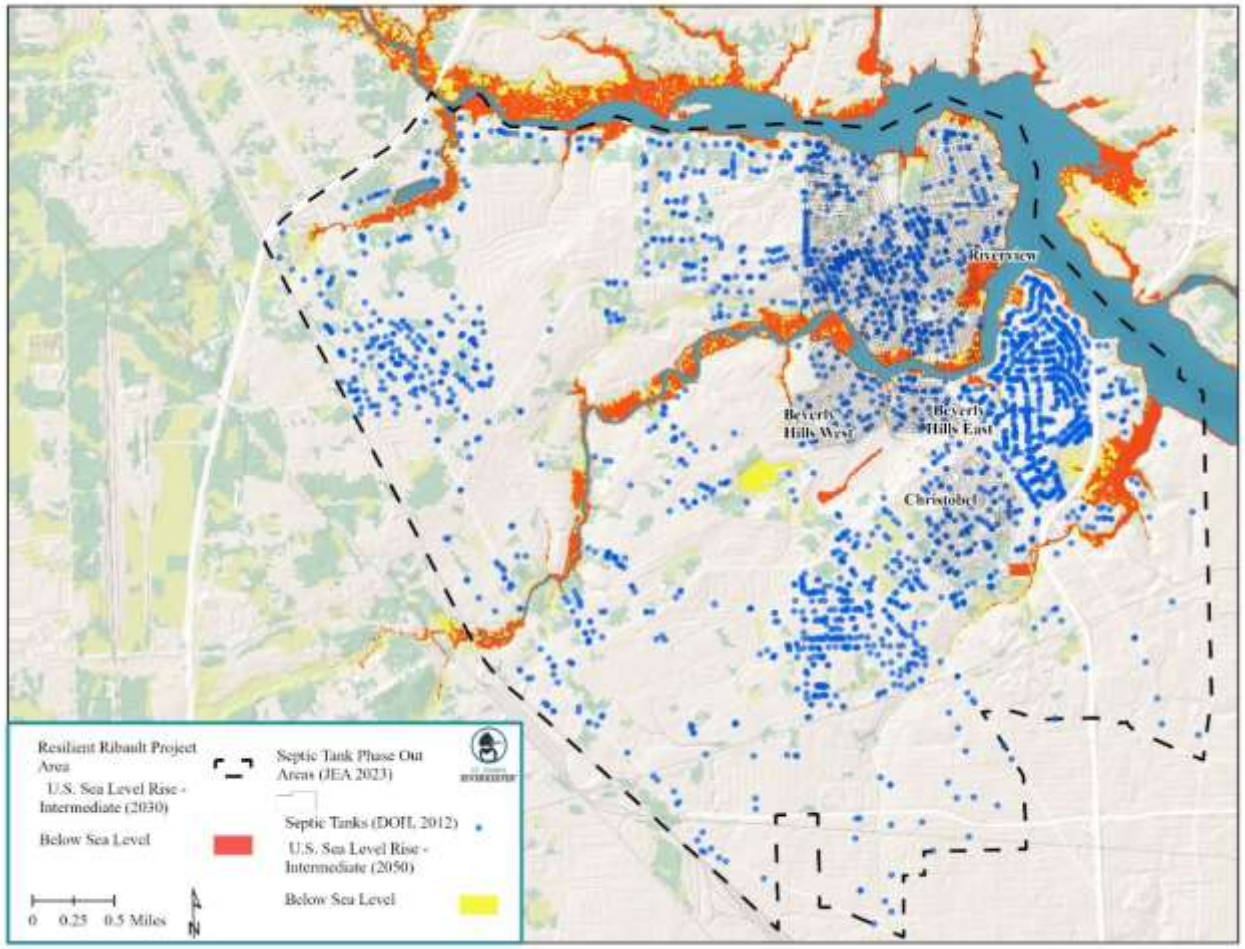
Environmental Vulnerabilities

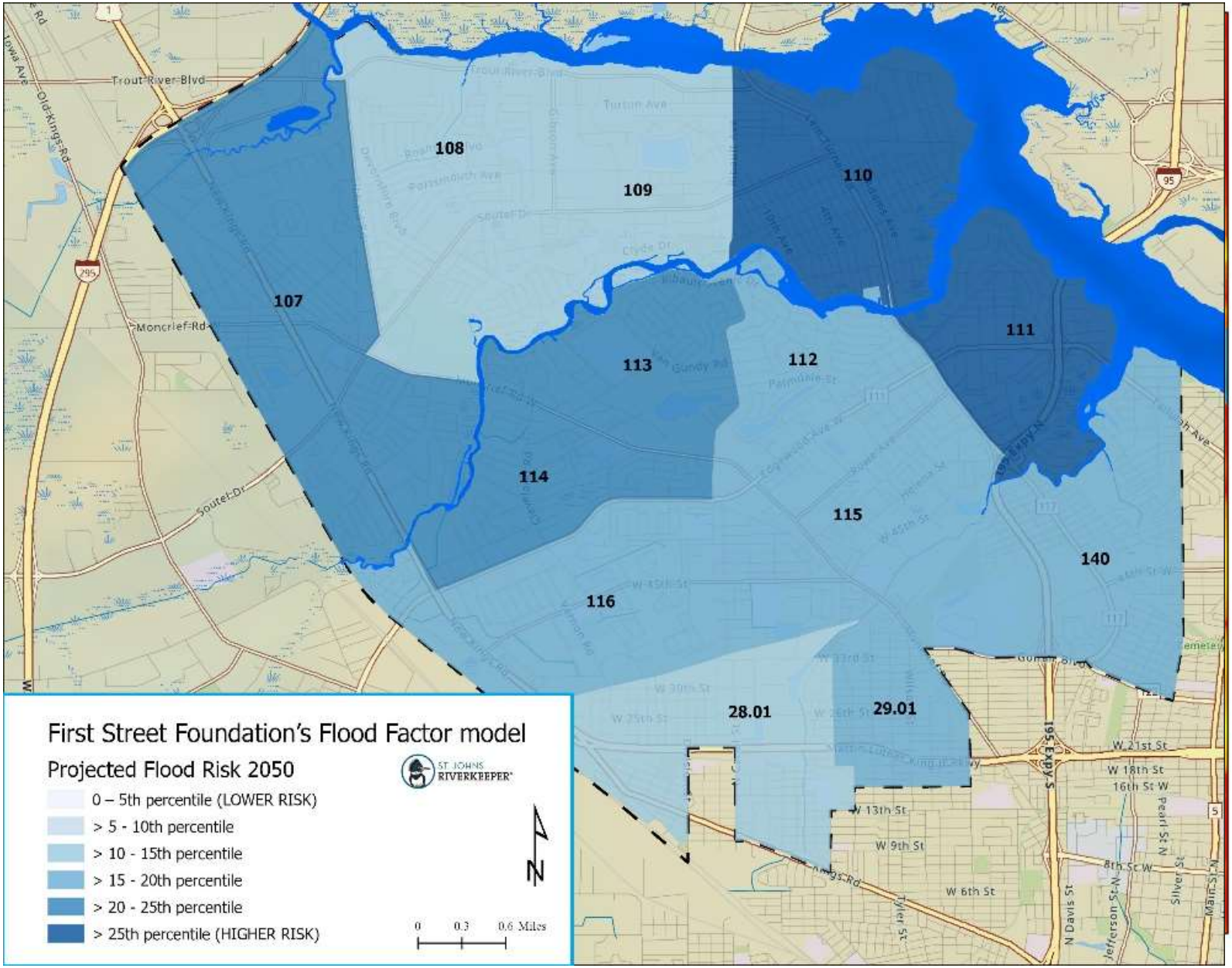
- - 50% of water quality sites exceed fecal coliform standards
- - 2,859 active septic tanks contributing to water pollution



Infrastructure Challenges

- Failing septic systems in critical zones
- Need for accelerated septic-to-sewer conversions ($40-60K each)

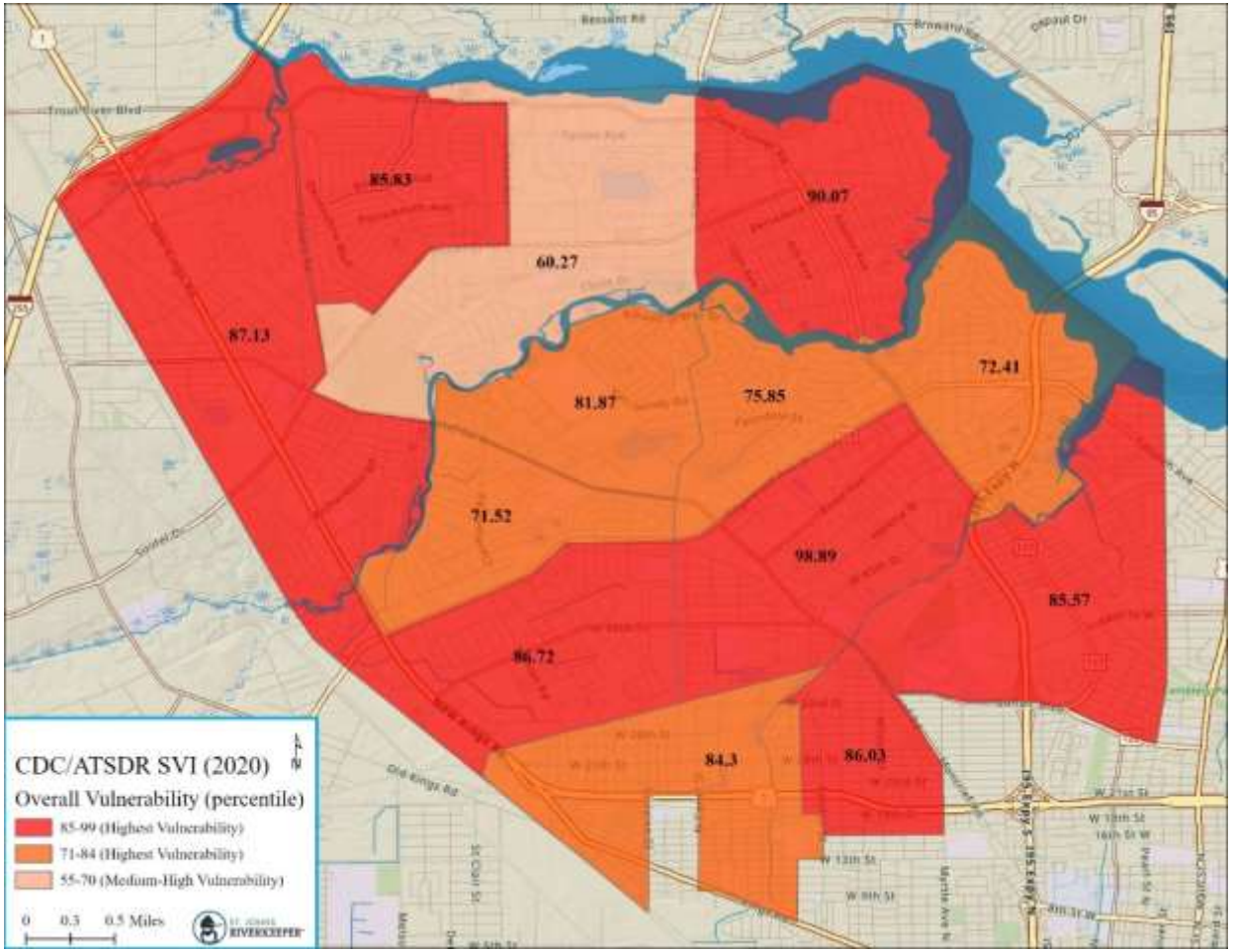




Flood and Heat Risks

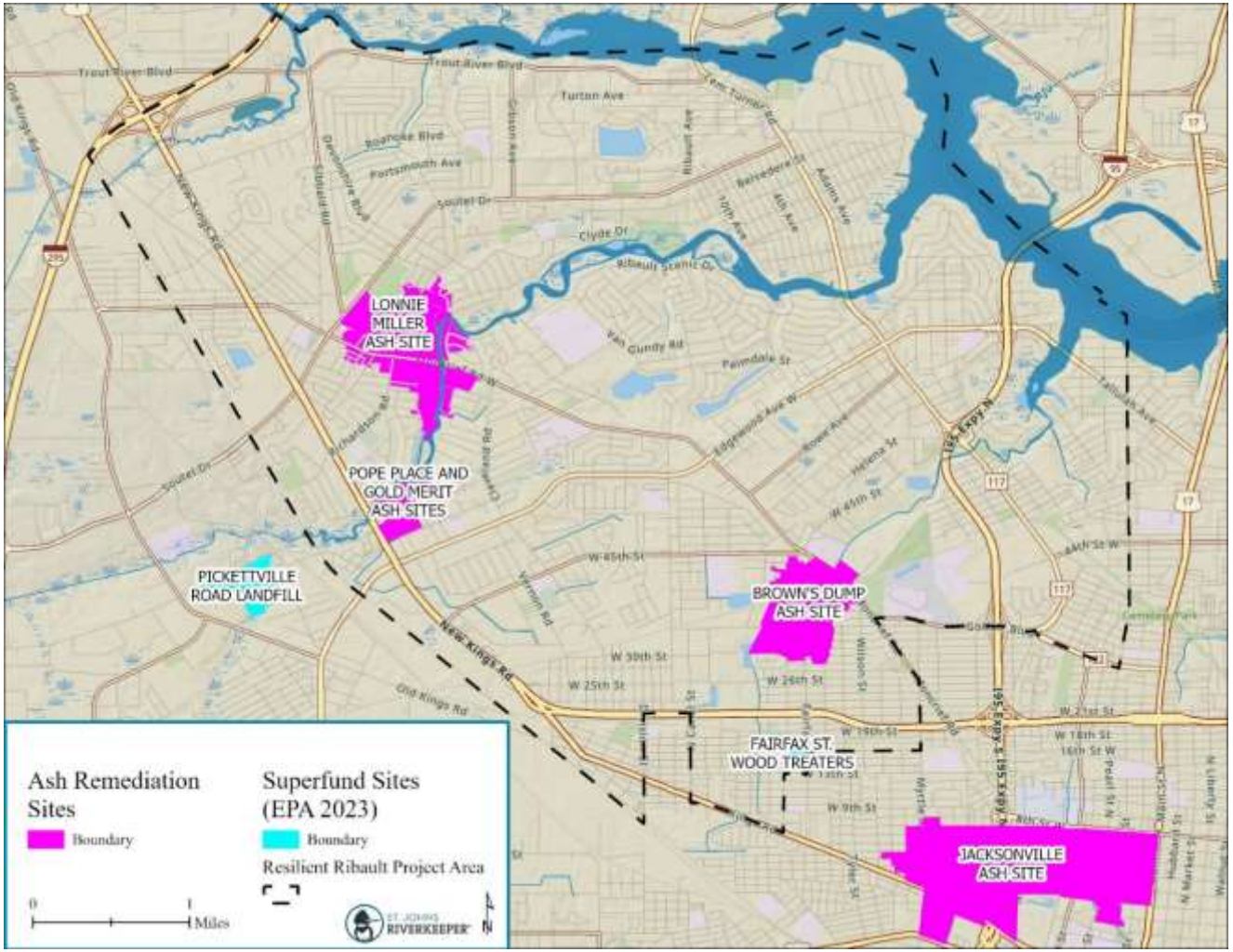
Socioeconomic Disparities

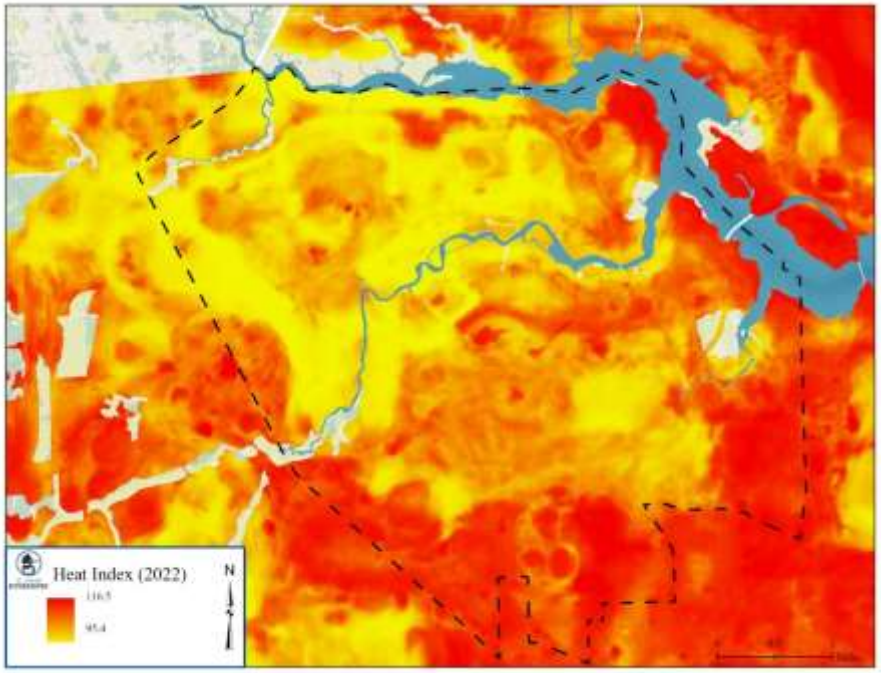
- High unemployment and low-income levels
- 92.3% of census tracts qualify for Justice40 funding

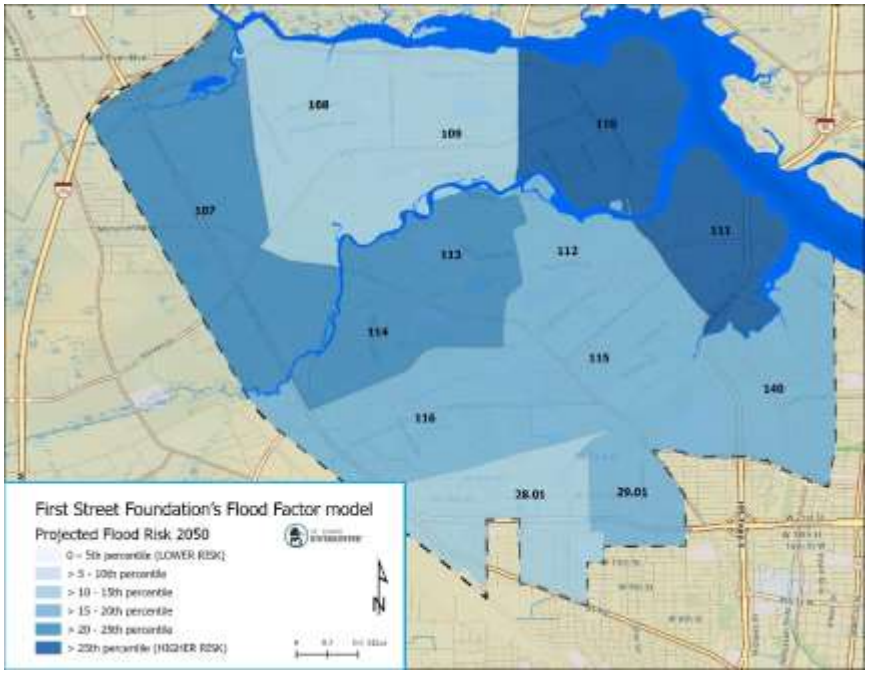


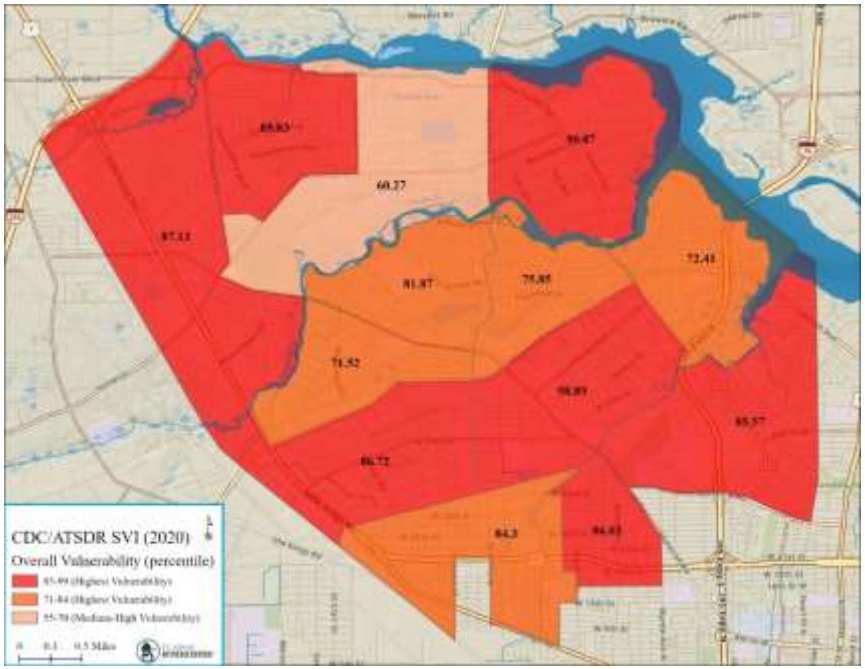
Environmental Hazards

- Legacy pollution hotspots and community health impacts




Heat Index (2022)
116.5
95.4
N


108
109
110
107
111
113
112
114
115
140
116
28.01
29.01
First Street Foundation's Flood Factor model
Projected Flood Risk 2050
0 - 5th percentile (LOWER RISK)
> 5 - 10th percentile
> 10 - 15th percentile
> 15 - 20th percentile
> 20 - 25th percentile
> 25th percentile (HIGHER RISK)
N


85.83
90.47
69.27
87.33
72.41
81.87
75.85
71.52
98.89
85.57
86.72
84.3
84.83
CDC/ATSDR SVI (2020)
Overall Vulnerability (percentile)


Beverly Hills West
Beverly Hills East
Cleveland
WQ Points Sampled (2017-2023)

Recommendations

Infrastructure: Accelerate septic-to-sewer conversions

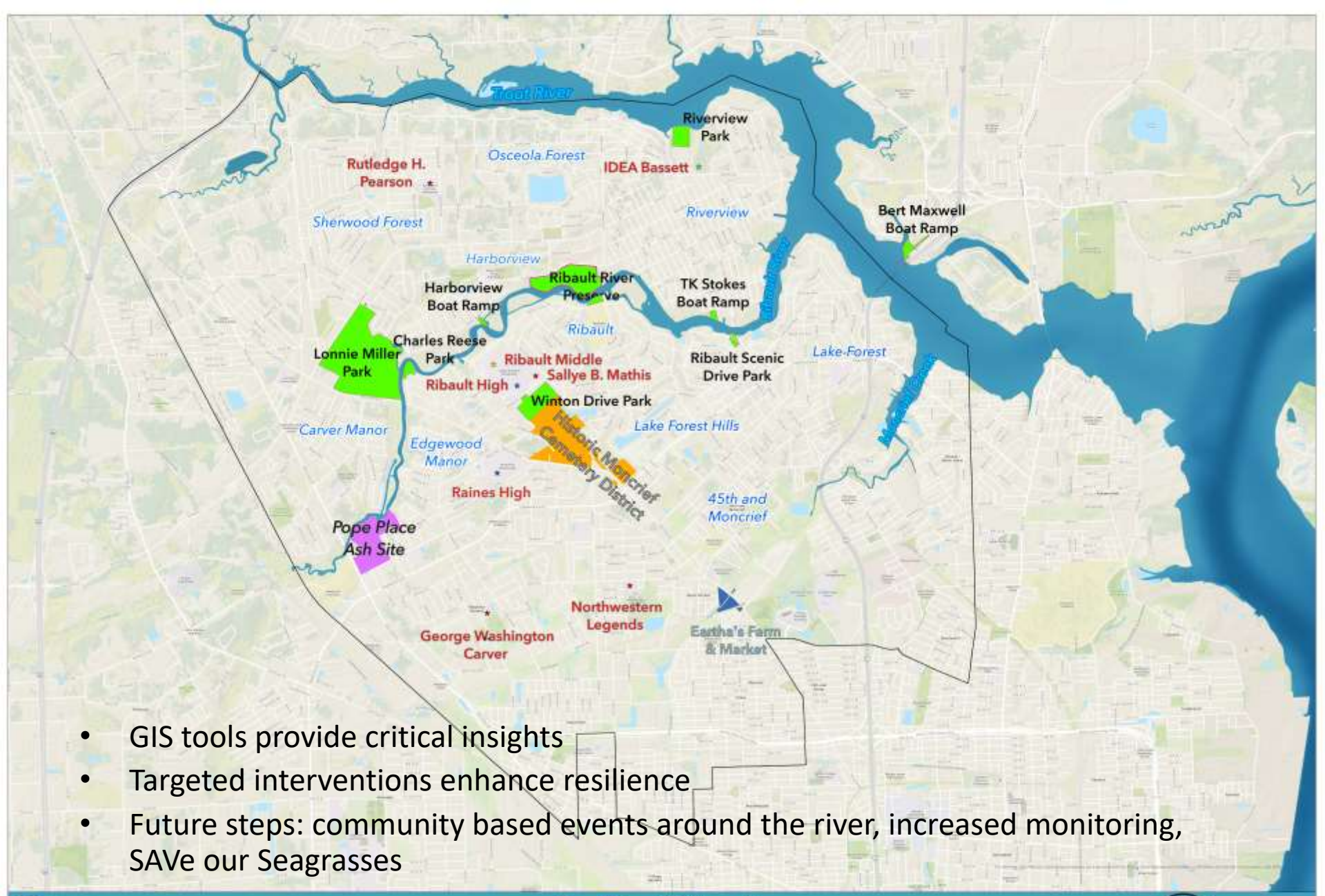
Monitoring: Enhanced water quality monitoring

Funding: Leverage Justice40 and federal grants

Resilience Planning: Long-term adaptation strategies

Community Engagement

- Involve local communities in planning
- Promote equitable resource allocation
- Foster partnerships (St. Johns Riverkeeper, City of Jacksonville, LISC)



- GIS tools provide critical insights
- Targeted interventions enhance resilience
- Future steps: community based events around the river, increased monitoring, SAVe our Seagrasses

Acknowledgments

- St. Johns Riverkeeper
- LISC Jacksonville
- Jacksonville University

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