



February 11, 2025

Flood Resiliency Blueprint

Stuart Brown, NC Flood Resiliency Blueprint Manager
Sushma Masemore, Deputy Secretary for Environment



Presentation on the North Carolina Flood Resiliency Blueprint

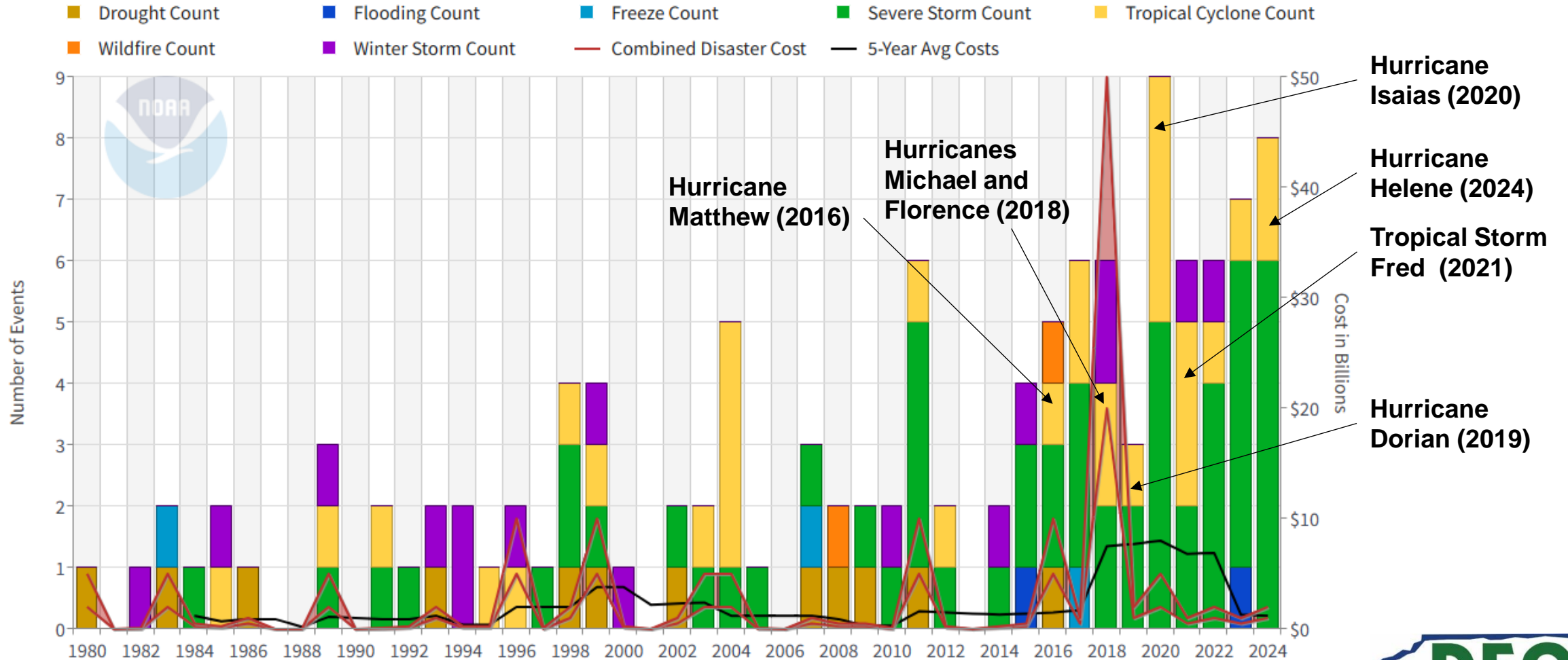
Agenda:

- NC Flood Resiliency Blueprint – Overview
- Blueprint Phase II & Online Tool
- Project Implementation Strategy & Status
 - Helene-Impacted Areas
- Q&A



Billion-Dollar Disaster Events

North Carolina Billion-Dollar Disaster Events 1980-2024 (CPI-Adjusted)

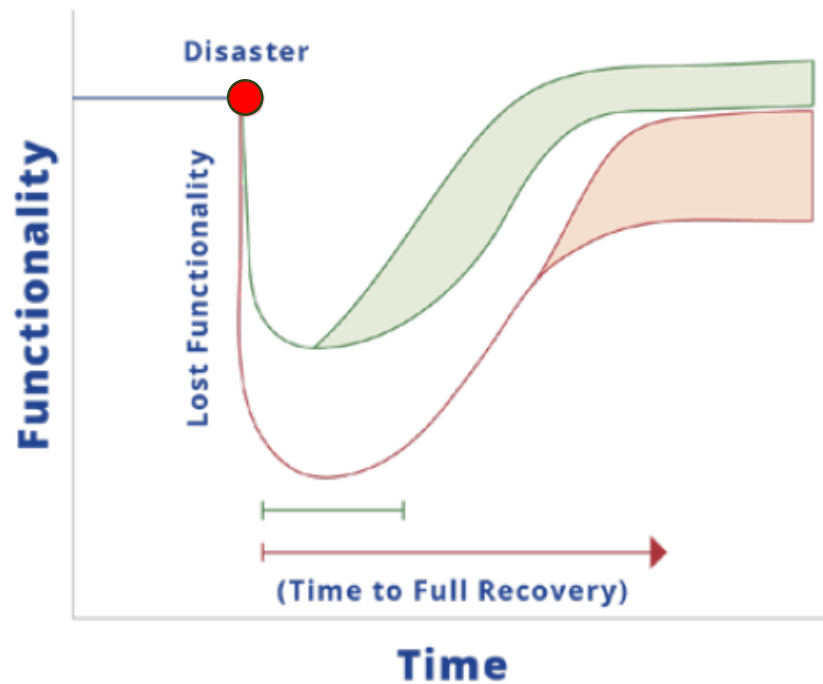


Updated: November 1, 2024

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North Carolina Flood Resiliency Blueprint

Overall goal: **Make North Carolina more resilient to flooding.**



North Carolina Flood Resiliency Blueprint

Goals:

- Serve as the backbone of State flood planning
- Increase community resilience to flooding
- Reduce the cost and complexity for local governments in the planning and implementation of flood risk reduction projects
- “...A successful blueprint should ultimately lead to a **prioritized set of projects** and funding strategies that the State can implement.”



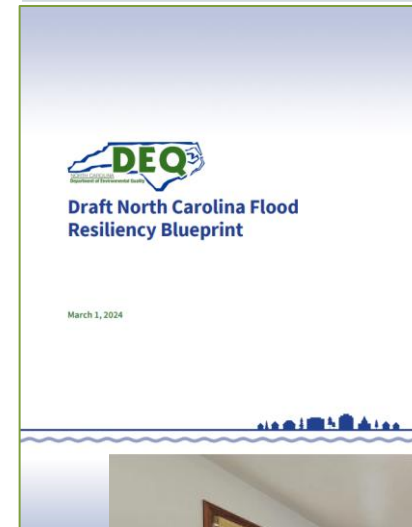
North Carolina Major River Basins by Order of Inclusion in Blueprint

Targeted River Basins: Neuse, Cape Fear, Lumber, Tar-Pamlico, White Oak, and French Broad (added 2024)

Blueprint Overview

- **Phase I** (2022 - 2024) - *Complete*
 - Research and evaluation, gap analysis, recommendations and decisions
 - Draft Neuse River Basin Action Strategy (Pilot)
 - Draft Blueprint
- **Phase II** (2023 - 2025) - *Ongoing*
 - Model improvement
 - Develop online decision support tool (Blueprint Tool)
- **Phase III** (2024 - 2026) - *Ongoing*
 - Develop Action Strategies for five prioritized areas
 - Refine Blueprint and Neuse Action Strategy (including additional data)
 - Refine Decision Support Tool
 - Additional River Basin Action Strategies as funding allows
- **Implementation** (2024 - ____) - *Ongoing*

Phase I	
2024 Flood Resiliency Blueprint	March 2024
Draft Neuse RBAS	July 2024
Supplementary Reports	Jan-July 2024

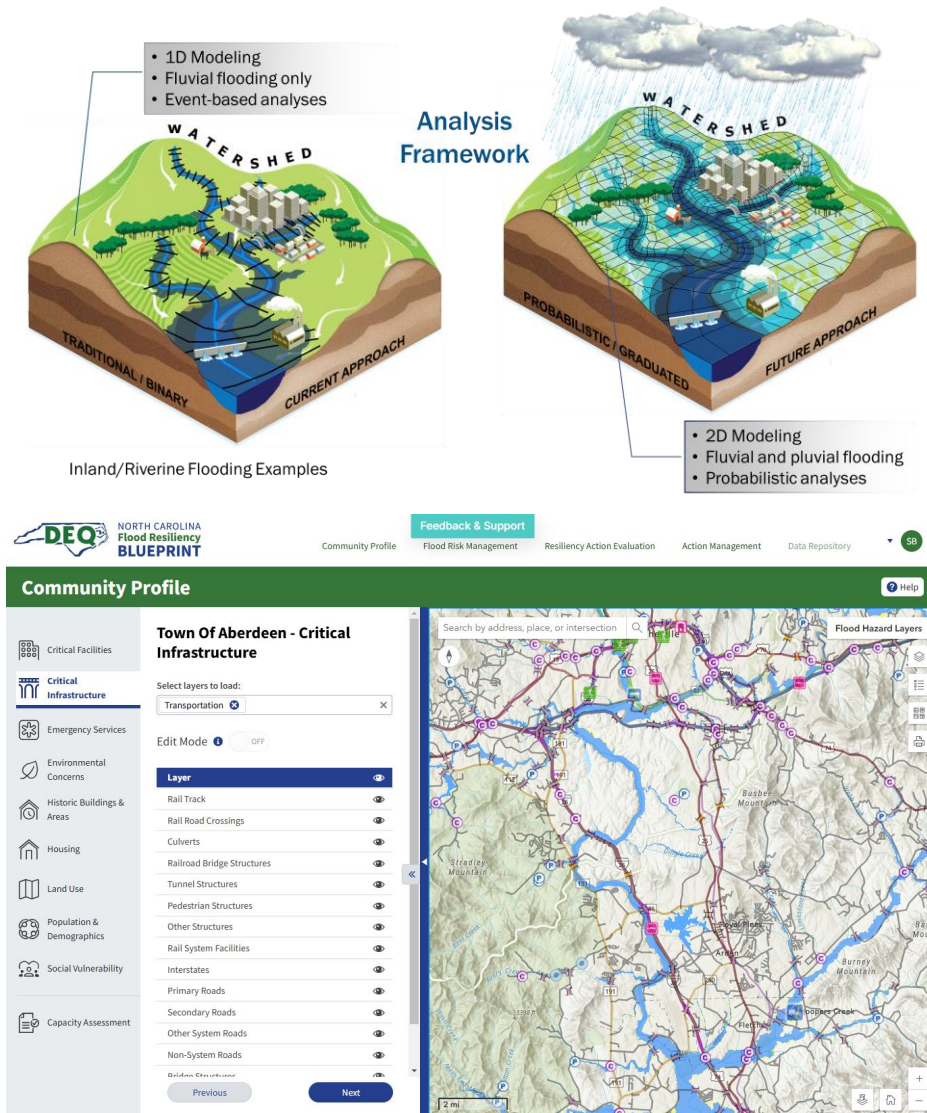


Community Engagement Q&A Meeting in Canton, 6/22/2023

Blueprint Overview

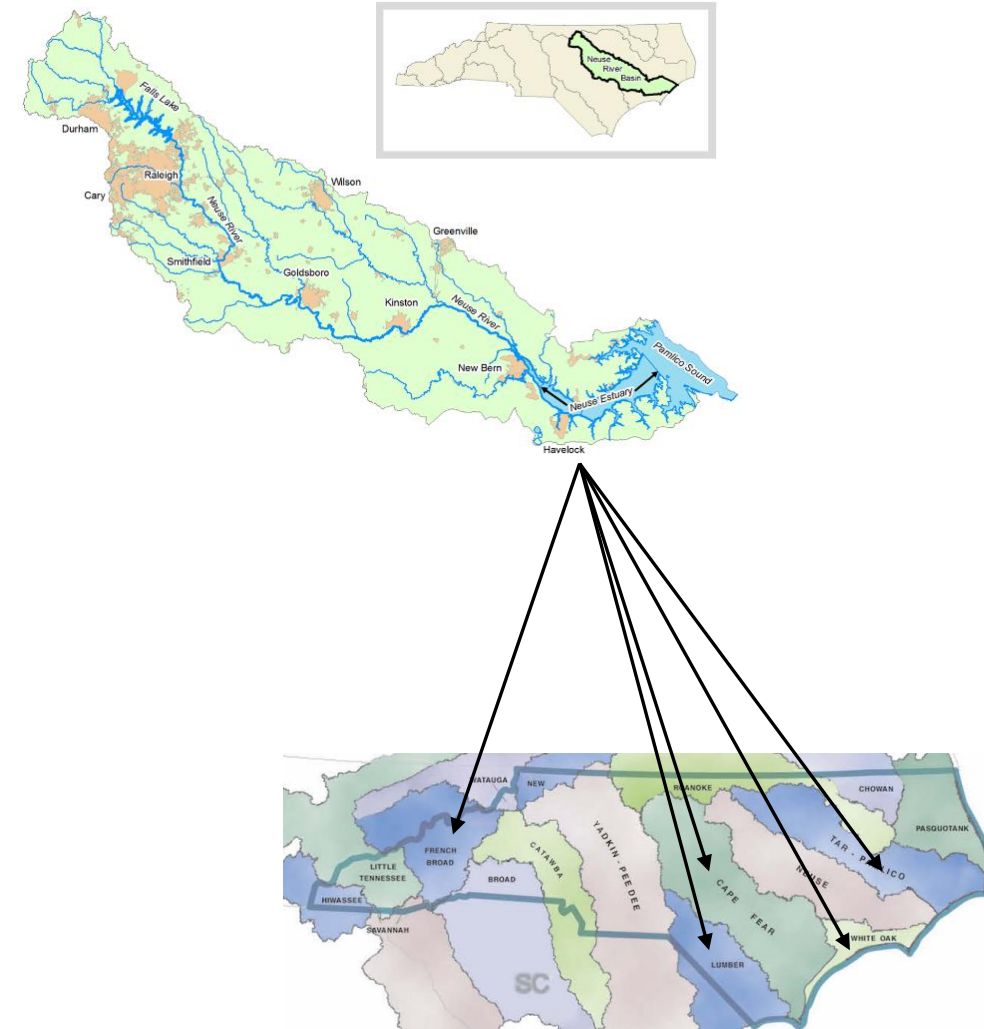
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Department of Environmental Quality



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Progress and Milestones

- **Phase III (2024 - 2026) - Ongoing**
 - Develop Action Strategies for five prioritized areas
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	Tar-Pamlico, White Oak, Cape Fear, Lumber	
Ongoing outreach and support to local governments, planning organizations, communities, etc.	Set up and hold initial meetings with RBAG and Community Partners, Provide Draft outreach and engagement plan	February 2025
	Complete Basin Wide Data Collection and Gap Analysis	Spring, 2025 (reporting June)
	Draft Vulnerability Analysis	Fall 2025
	Draft River Basin Action Strategy	Winter 2026
	Final River Basin Action Strategy and supporting materials	Spring, 2026
Neuse and French Broad Statements of Work		March 2025

Blueprint Staff

Stuart Brown, Flood Resiliency Blueprint Manager

<p>Jessica Gray</p> <p><i>Cape Fear</i></p> 	<p>Shana Shapiro</p> <p><i>Lumber</i></p> 	<p>Chris Dreps</p> <p><i>Tar-Pamlico</i></p> 
<p>Suna Morkoc</p> <p><i>French Broad</i></p> 	<p>Chris Dreps & Brad Connell</p> <p><i>Neuse</i></p>	<p>Brad Connell</p> <p><i>White Oak</i></p> 

Blueprint - Phase II



Department of Environmental Quality



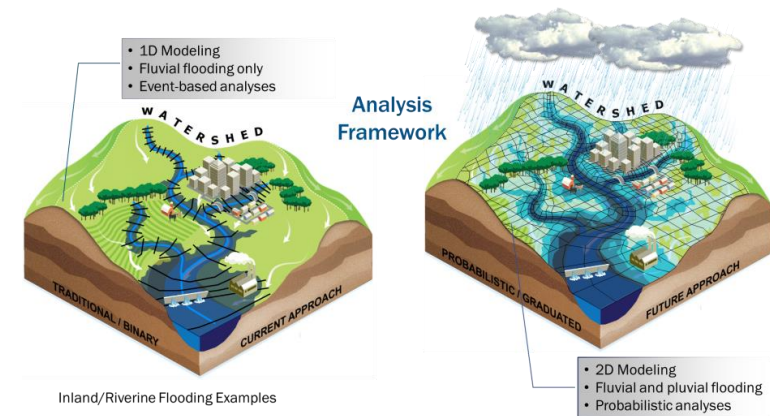
Phase II – Modeling Strategy

Better define flood extent and depths

- Current Conditions
- Capture *future* flooding
 - Changes in precipitation patterns
 - Sea level rise
 - Increased impervious surfaces
- Facilitate future improvements
 - Storm surge and compound flooding

Support tool functionality

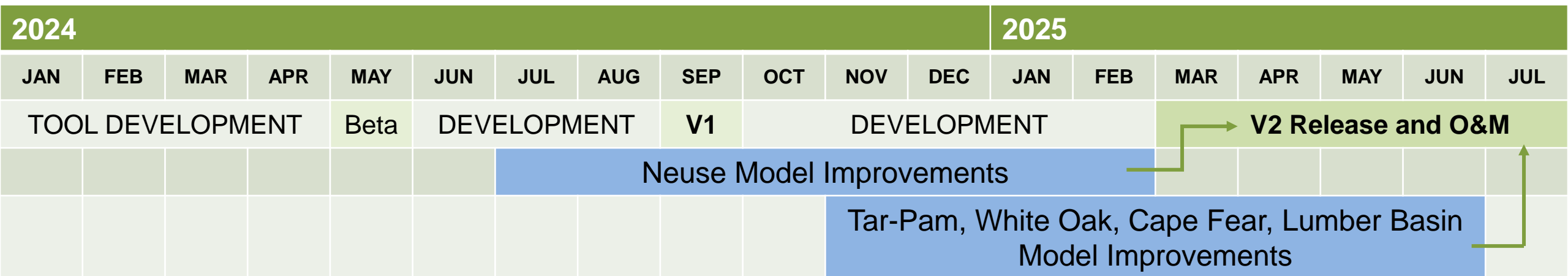
“According to a 2022 study from North Carolina State University, **68% of flood damage reports were outside of FEMA's high-risk flood zones in 2020** [and]... 16% of damage reports were in unmapped locations.”



Phase II – Modeling and Tool Development

Tool Development and Model Improvement

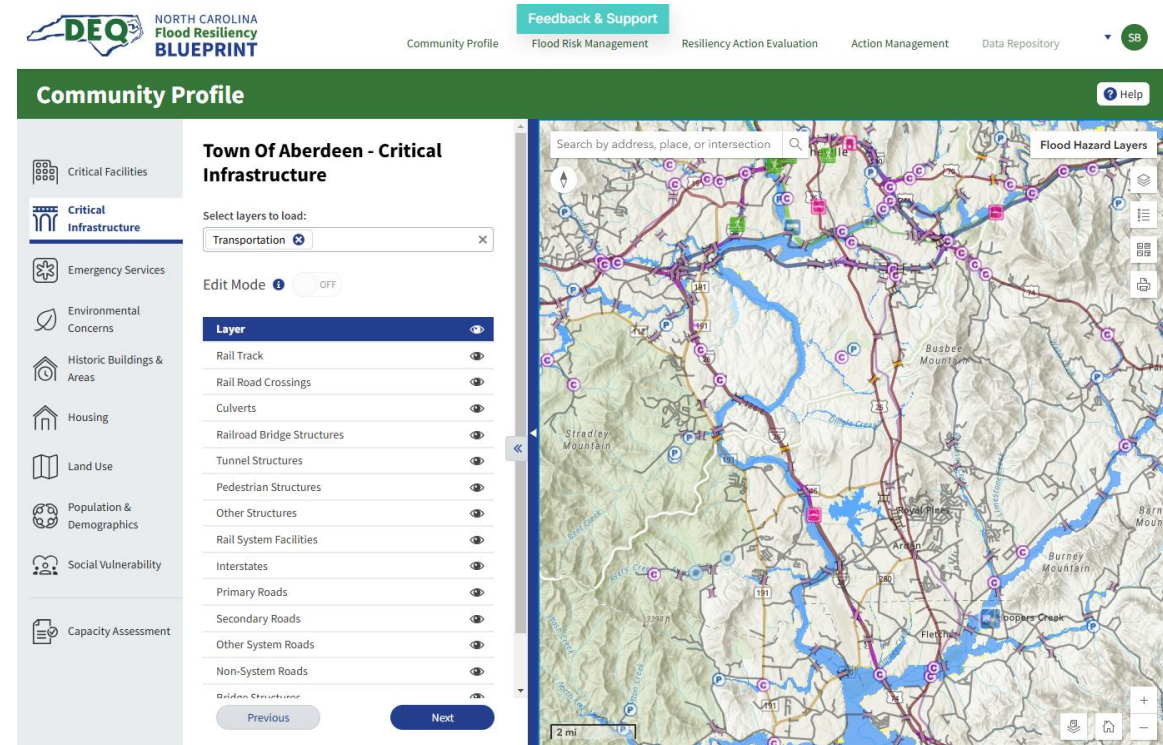
- Spring 2025 – Blueprint Tool – *Public with improved modeling Neuse basin*
- Summer 2025 – *Improved modeling and added functionality for Tar-Pam, White Oak, Cape Fear, and Lumber Basins*



Phase II - Blueprint Tool

Goals:

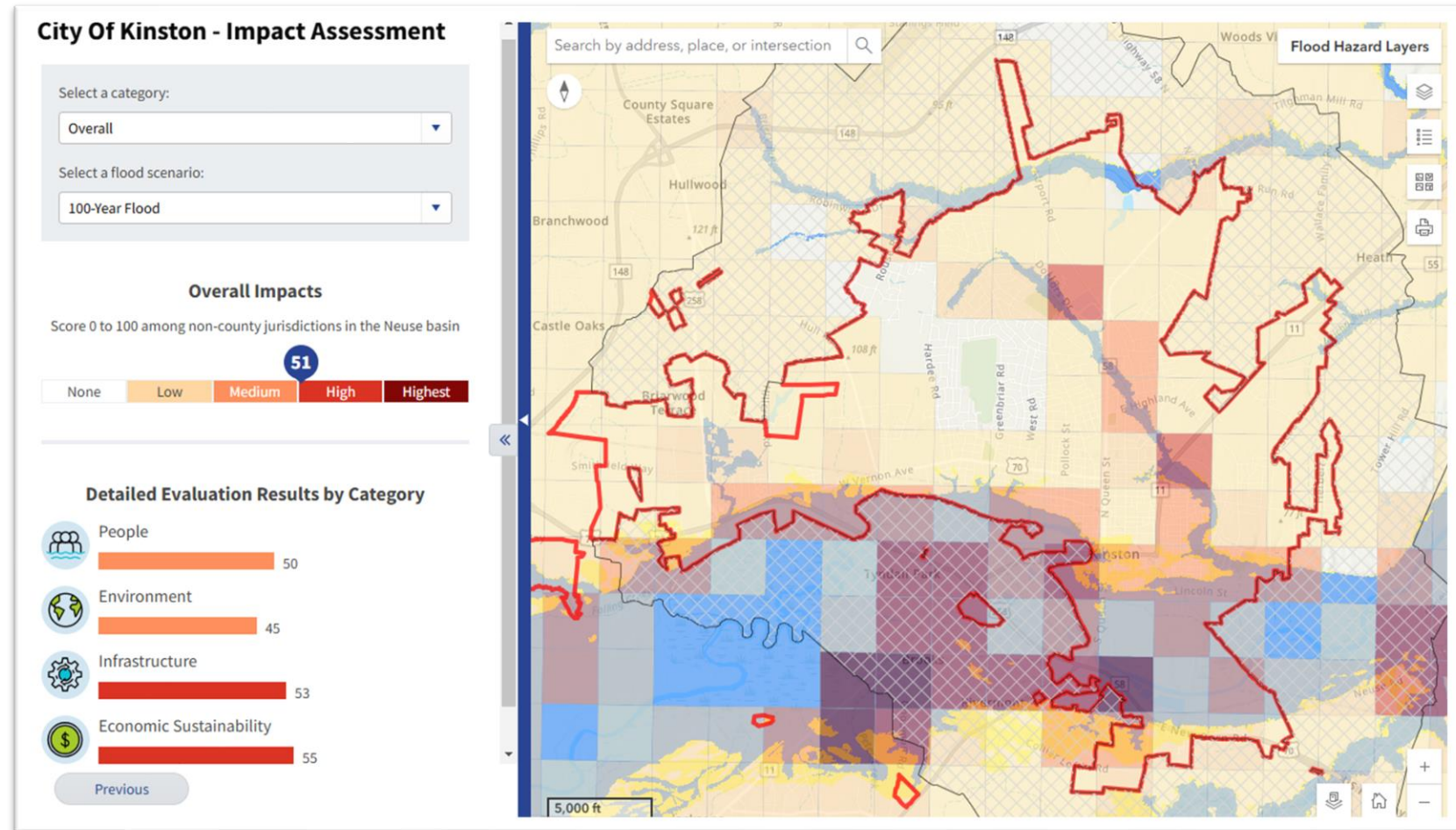
- Be a resource for communities, local governments, and other partners for the planning and implementation of resilience actions
 - Provide users with accurate, data-driven flood risk and vulnerability assessments
 - Allow users to explore, develop, and define flood resilience actions
 - Help users to evaluate and prioritize effective flood resilience actions
- Be a resource to DEQ and partners in the development of River Basin Action Strategies
- Support DEQ/State funding decisions for planning and implementation



Blueprint Tool – Understand Your Vulnerability

Provide users with accurate, data-driven flood risk and vulnerability assessments

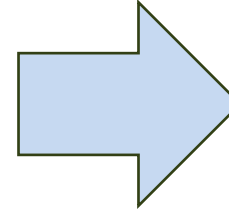
- Flood risk to structures
- Impacts on:
 - People
 - Environment
 - Infrastructure
 - Economic Sustainability



Blueprint Tool – Understand Your Opportunities

Explore, develop, and define flood resilience actions

- Known Actions (Feasibility Studies / E&D)
- Conceptual Resilience Actions
- Areas of Concern



Resilience Action

With estimated Costs, Impacts,
Complexity, Score

Building Level Mitigation

- Relocation
- Utility Elevation
- Structural Elevation
- Reconstruction
- Wet Floodproofing
- Dry Floodproofing
- Critical Infrastructure
- Acquisition/Demolition

Channel Modifications

- Debris Removal
- Channel Dredging, Widening, Diversion

Nature Based Solutions

- Water Farming
- Bioretention
- Raingardens/Sand Filters/Bio-Swales
- Green Roofs
- Living Shorelines
- Permeable Pavement
- Afforestation
- Flood Storage Wetlands
- Floodplain Restoration
- Riparian Buffers
- Floodplain Preservation

Infrastructure and Control Structures

- Levee/Dike/Berm
- Dams
- Roadway Elevation/Road Crossing Modification
- Storm Water Management Activities
- Quarries

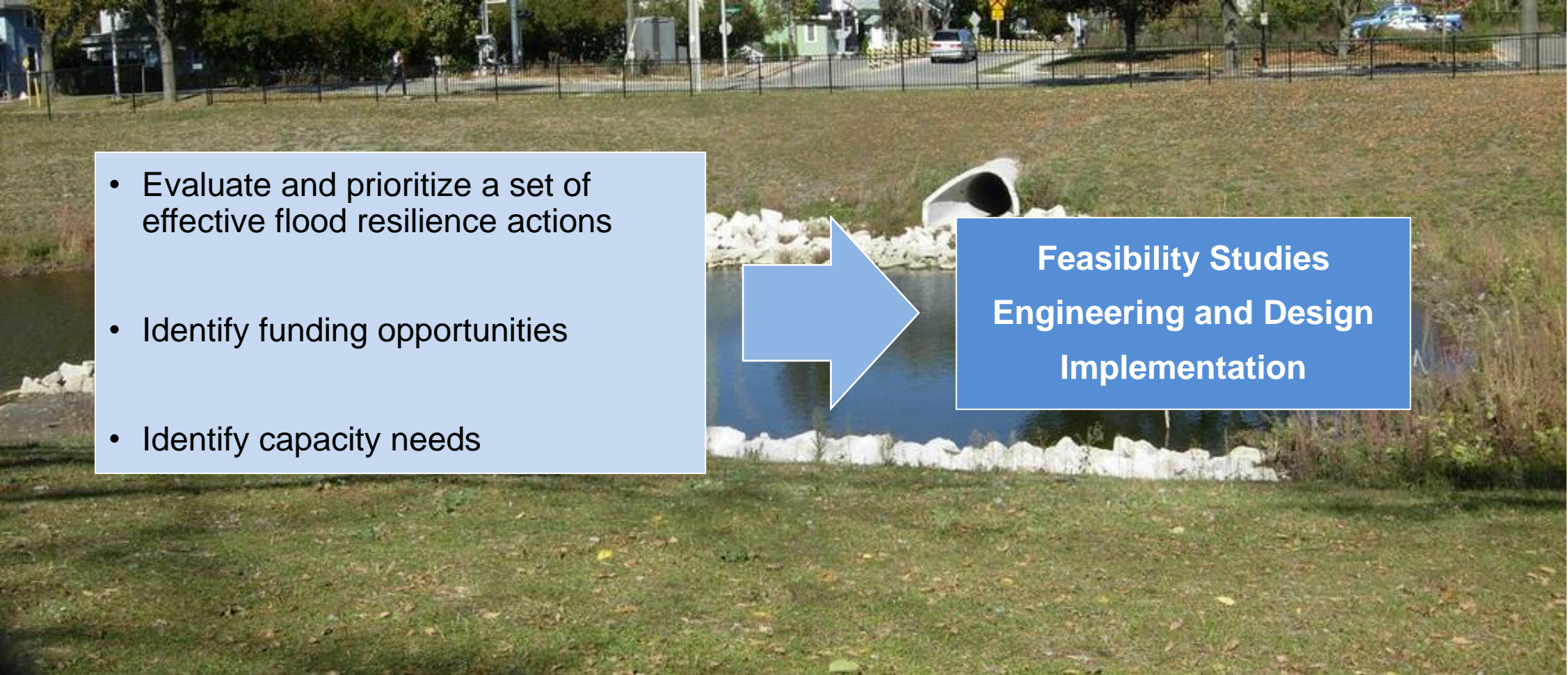
Other

- Beaver Management
- Coastal Resiliency Action

Policy and Planning

- Enhanced Zoning
- Land Use/Impervious Area Restrictions
- Multi-use Floodplains
- Stormwater, Water Quality, Floodplain Regulations

Blueprint Tool – Take Action

- 
- Evaluate and prioritize a set of effective flood resilience actions
 - Identify funding opportunities
 - Identify capacity needs

**Feasibility Studies
Engineering and Design
Implementation**

Blueprint - Implementation Strategy



Department of Environmental Quality



Implementation – Goals

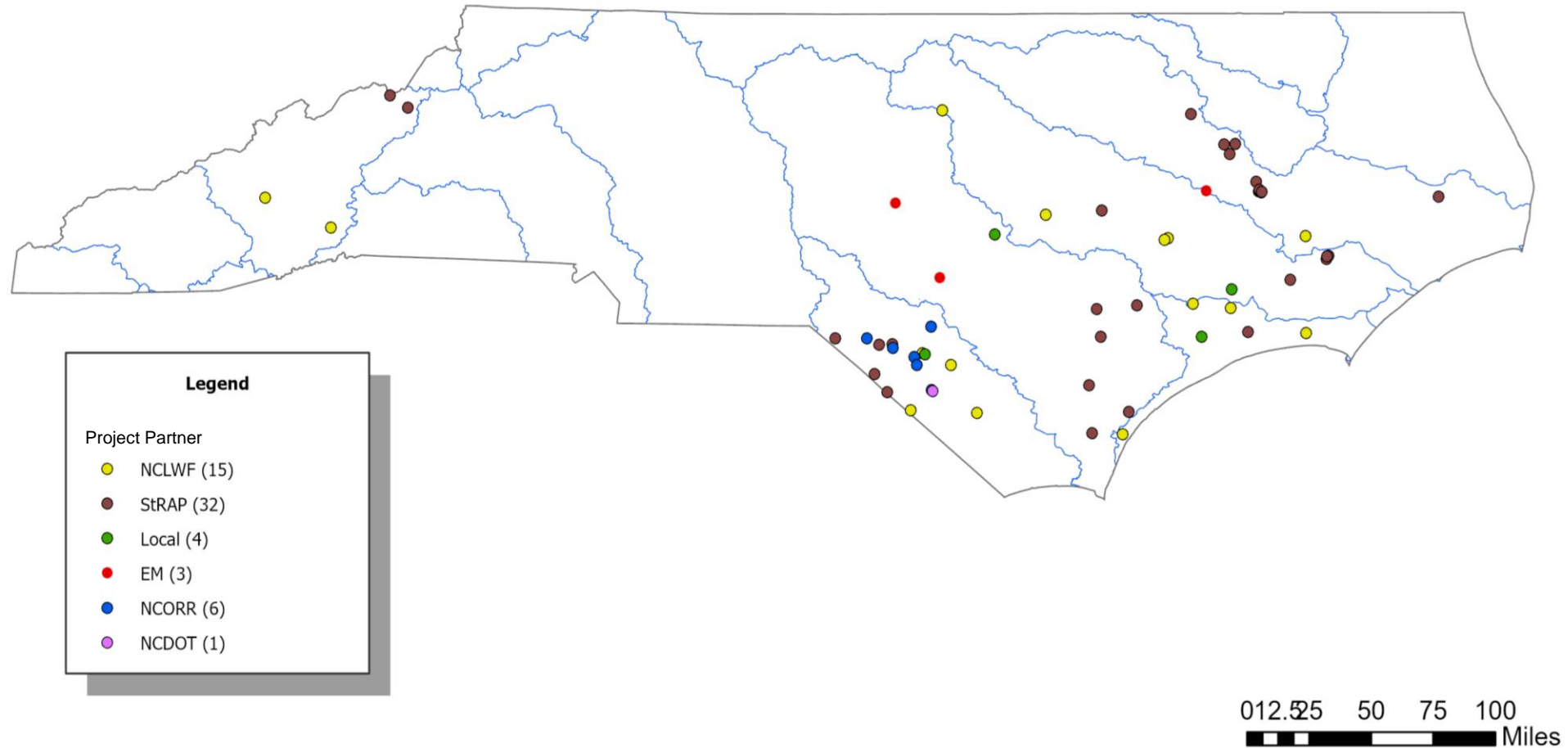
Blueprint project implementation goals:

- Build flood resilience
- Move quickly but make informed investments and meet the goals of the Blueprint
- Blueprint Prioritization Criteria
- Build relationships with state and local partners
- Illustrate the breadth of resilience actions
 - Stormwater, nature-based solutions, water treatment, housing, transportation

Project prioritization criteria:

- Ability to reduce risk to human life
- Ability to reduce flood impact to critical community infrastructure
- Ability to reduce flood damage to other infrastructure, homes, businesses, etc.
- Identified in a Hazard Mitigation or other Resilience Planning effort
- In a high-risk area
- Likelihood of reducing flood risk to underserved communities
- Additional public benefit (e.g. parks, trails, etc).
- Low likelihood of negative externalities

Implementation – Projects Under Contract



Implementation

Implementation Category - Partner	Total Committed		Under Contract	In process	Status
StRAP 2023 - Department of Agriculture & Consumer Services	\$4,387,666.00		\$4,387,666.00	\$0.00	Funded
Land Water Fund (22-23) - Department of Natural and Cultural Resources	\$9,047,404.00		\$9,047,404.00	\$0.00	Funded
Disaster Relief and Mitigation Grants - NC Emergency Management	\$3,910,000.00		\$3,910,000.00	\$0.00	Funded
RISE Priority Projects - Direct Funding Local Governments	\$3,679,476.00			\$3,679,476.00	Four contracts w/ local govs in process
Lumberton Recovery and Infrastructure Resilience - NCORR	\$8,000,000.00		\$0.00	\$8,000,000.00	Contract by Feb 2025
Water Resources Development Grants - DEQ - Water Resources	\$5,000,000.00		\$5,000,000.00	\$0.00	Funded
Agricultural Pond Flood Storage - Department of Agriculture Consumer Services	\$10,000,000.00		\$0.00	\$10,000,000.00	Waiting on Partner
Natural Infrastructure Flood Mitigation Program Implementation - DEQ Mitigation Services	\$10,000,000.00		\$0.00	\$10,000,000.00	RFP in Process
Resilient Transportation - NC Dept. Of Transportation	\$10,000,000.00		\$270,000.00	\$9,730,000.00	Identifying and funding opportunities ongoing
French Broad Resilient Recovery Opportunities - Direct Funding Local Governments	\$10,000,000.00		\$0.00	\$10,000,000.00	Identifying and funding opportunities ongoing
Administration	\$2,880,000.00		\$2,880,000.00	\$0.00	
Total	\$76,904,543.00		\$25,495,070.00	\$51,409,476.00	

Implementation Strategy

Implementation Opportunity - Partner	Active Opportunities
Direct Funding Local Gov	\$10,000,000.00
Full Delivery - Direct RFP for Flood Mitigation - DEQ Mitigation Services	\$10,000,000.00
High Hazard Dams - DEQ Dam Safety	\$5,000,000.00
DEQ - Resilient Coastal Communities	\$4,000,000.00
DNCR - Land Water Fund New Solicitation 24-25	\$4,000,000.00
Subtotal	\$33,000,000.00

Implementation – Helene-Impacted Counties

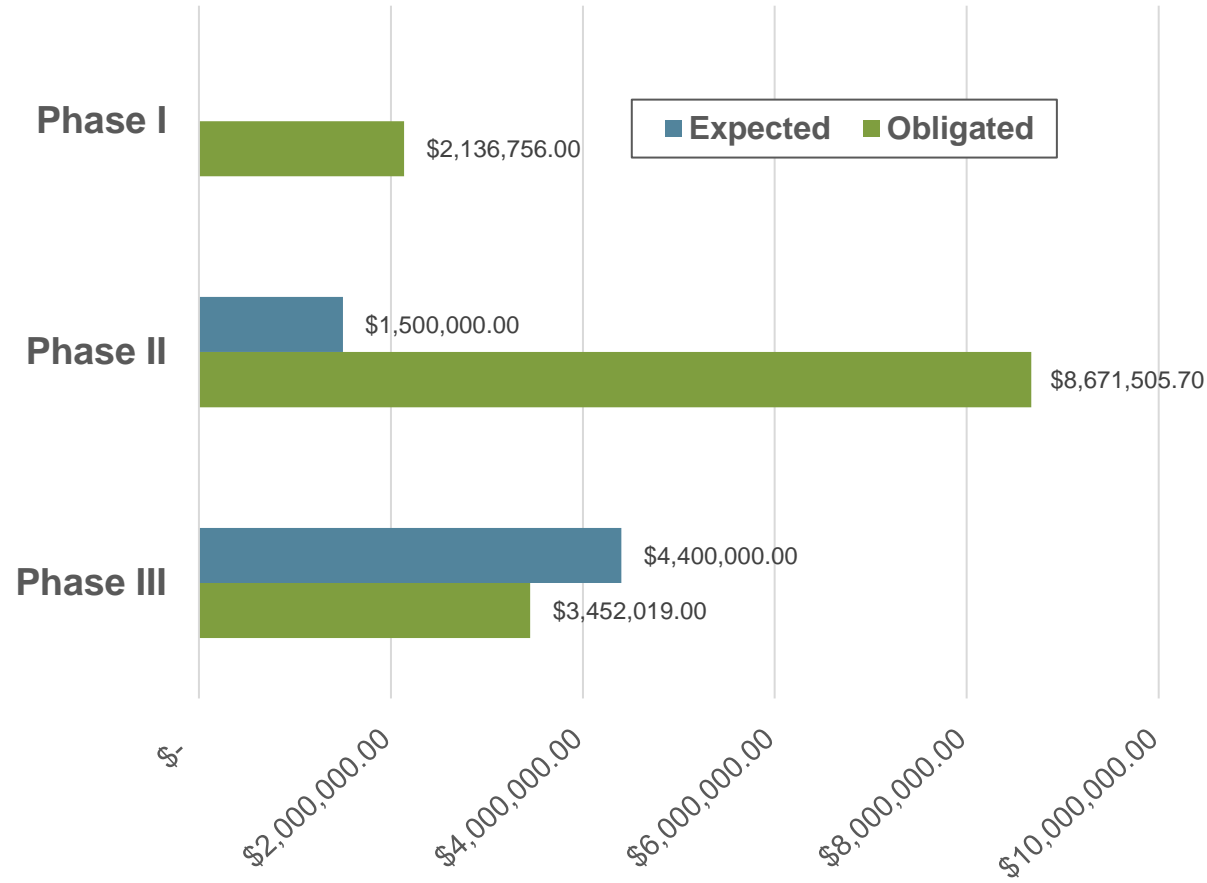
Implementation Opportunity - Partner	Total Committed	French Broad – Helene Impacts
StRAP 2023 - Department of Agriculture Consumer Services	\$495,200.00	<p>Funded</p> <p>Two Projects in French Broad Basin, Progress update:</p> <p>(1) Mitchell SWCD Stream Debris Removal (36.089000, -82.119000) - Mitchel County - Scope of work was updated on December 20, 2024, to adjust planned work to focus on repair activities associated with Hurricane Helene damage. Per quarterly report 1/31/2025 work has begun on debris removal.</p> <p>(2) Avery SWCD Stream Debris Removal (36.022000, -82.014100) – Avery County - Due to Hurricane Helene, partners have limited access to the site, working on revised scope of work based on additional damage caused by Helene.</p>
Land Water Fund (22-23) - Department of Natural and Cultural Resources	\$1,404,625.00	<p>Funded</p> <p>Two Projects in French Broad Basin, Progress update:</p> <p>(1) Upper Pigeon River Flood Mitigation (35.518580, -82.845520) – Haywood County - "Appraisal under review for spring closing."</p> <p>(2) Lower Mud Creek Floodplain Restoration and Flood Reduction Project (35.352900, -82.463900) – Columbus County - "Appraisal review complete, spring closing anticipated."</p>

Implementation Strategy – Helene-Impacted Counties

Implementation Opportunity - Partner	Total Committed	Status/French Broad Comments
Water Resources Development Grants - DEQ - Water Resources	\$5,000,000.00	Funded TBD – RFP to be released this month.
Agricultural Pond Flood Storage - Department of Agriculture & Consumer Services	\$10,000,000.00	Waiting on Partner DACS is evaluating potential implementation sites.
Natural Infrastructure Flood Mitigation Program Implementation - DEQ Mitigation Services	\$10,000,000.00	RFP in Process \$2,000,000 (potentially more) dedicated to French Broad to Pilot NIFMP type projects in Western NC.
Resilient Transportation - NC Dept. Of Transportation	\$10,000,000.00	Identifying and funding opportunities ongoing This money is intended to leverage recovery efforts in the areas impacted to rebuild transportation infrastructure in ways that minimize future damage. Per Blueprint legislation, this is limited to the French Broad in WNC.
French Broad Resilient Recovery Opportunities - Direct Funding Local Governments	\$10,000,000.00	Identifying and funding opportunities ongoing All intended to be spent in the French Broad basin

Current Status of Planning & Development Funds

Session Law 2021-180 - Financial Update
Blueprint Planning - \$20,000,0000



Expected:

- Phase II
 - Tool Maintenance and Updates
 - Data Processing
- Phase III
 - French Broad RBAS - Contract 3/25
 - Complete Neuse RBAS - Contract 3/25
 - Tier 2 Modeling and Feasibility

Thank You & Questions

Contacts:

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