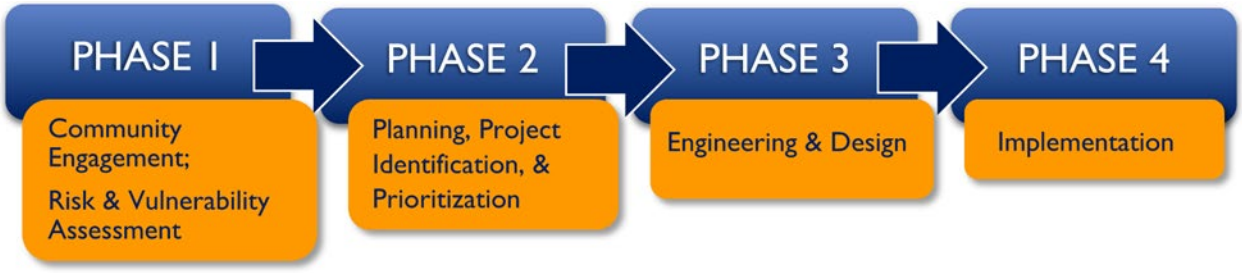
RESILIENCE STRATEGY

TOWN OF PLYMOUTH

Spring 2024

EXECUTIVE SUMMARY

The North Carolina Resilient Coastal Communities Program (RCCP) was established with the objective of providing financial grants and technical assistance to support a proactive, locally and data driven, and equitable approach to coastal resilience planning and project implementation. The RCCP is administered by the North Carolina Department of Environmental Quality – Division of Coastal Management (DCM) and is comprised of four phases.



Source: NC DCM

The four phases of the RCCP are focused on:

- Forming a Community Action Team (CAT) and identifying and engaging stakeholders, including traditionally underserved populations;
- Establishing community vision and goals;
- Assessing coastal risks and vulnerabilities;
- Developing nature-based solutions that incorporate sustainable planning, design, engineering, and natural resource management; and,
- Linking communities to funding streams and technical expertise for project implementation

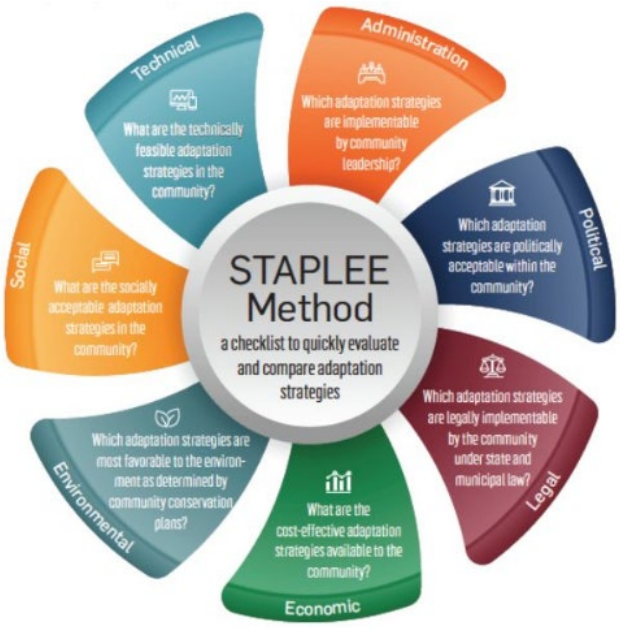
The **Town of Plymouth** was selected to participate in the first two phases of the RCCP in Spring 2023. Phases 1 and 2 were completed between August 2023 and June 2024, culminating in this Resilience Strategy, the main deliverable of the program's initial phases, which is designed to be integrated into existing local plans and ordinances.

The Resilience Strategy provides a framework to:

- Document the steps and outcomes of the Phase 1 and 2 resiliency planning process;
- Provide a clarity of purpose;
- Identify opportunities for short-term and long-term resiliency actions based on community input;
- Set project priorities for Phase 3 – Engineering and Design; and,
- Identify, attract, and secure potential funding opportunities for project implementation

Through input from the CAT and the public and available data, community hazards were identified to include flooding (riverine and nuisance), sea level rise, storm surge, drought, wildfire, and tidal riverine erosion. Varying types of critical assets and natural infrastructure, located throughout the town's jurisdiction, were identified. Critical assets were also identified outside of the Town's jurisdictional boundaries, in the case of particularly vital assets or services.

The Town's **resilience vision** is defined as "Plymouth exemplifies a culture of resilience through protection of critical infrastructure, quality infrastructure and services, community engagement, education and outreach, and effective response and recovery capabilities which recognize the diversity of needs. The Plymouth community is able to quickly rebound, positively adapt, and thrive amid changing conditions and challenges including disasters and climate change, thereby supporting community health, quality of life, economic resilience, and economic growth."



Source: FEMA

To implement the vision, fourteen (14) resiliency **goals and objectives** were defined and grouped under economic, social, and environmental categories.

Based on local input and the risk and vulnerability assessment, a suite of fifteen (15) potential solutions, including planning/policy related solutions and green/hybrid and hard/grey infrastructure projects, were evaluated using the FEMA STAPLEE method and a benefit-cost analysis. This method takes into consideration the social, technical, administrative, political, legal, economic, and environmental aspects, and potential impacts of each project solution.

The cost or the economic case for different strategies or actions must be considered when developing resilience strategies. The proposed adaptation actions were also reviewed using an informal benefit-cost analysis. Ratings of high, medium, or low are assigned to the anticipated costs and the benefits associated with each action based on general criteria that are established by the community.

	Benefit/cost ratings
	Benefit
HIGH	Action would have significant impact on risk reduction
MEDIUM	Action would have an impact on risk reduction
LOW	Long-term benefits are difficult to quantify in the short term
	Cost
HIGH	Cost of project is high and/or funding will be more difficult to acquire
MEDIUM	Cost of project is medium and/or funding will be easier to acquire
LOW	Cost of project is low and/or funding is available in existing budget

After additional stakeholder input, scoring analysis and consideration by the CAT, nine (9) **prioritized project solutions** were identified for the Town of Plymouth (see Table 1). The most popular project based upon Phase 2 Open House input was the Neighborhood Drainage Project. The CAT selected the Stormwater Action Plan to

move forward to RCCP Phase 3. This will be combined with the Upgrade Stormwater System Project, to advance to Phase 4 implementation. These project solutions are described in more detail in the Project Portfolio.

Table 1. Priority Project Solutions

Project Name	Project Description
✓ Stormwater Action Plan – Stormwater System Upgrade	Develop a Stormwater Action Plan combined with strategically upgrading the stormwater system through improved and expanded infrastructure. The project will establish mapping and condition assessments for stormwater system components and outfalls with a focus on known problem areas and areas identified via a desktop analysis. The project will promote proactive stormwater maintenance through development of interactive mapping tools and maintenance guidance. The project will encourage stormwater quality awareness through public outreach efforts and produce construction drawings for a priority project.
Neighborhood Drainage Improvement Projects	Complete hybrid drainage improvement projects with priority areas at: 1. Riverside Plantation Community 2. 4th Street Community (including side streets such as Adams St. and Winesset Cir.) 3. The block of Patton Ct., Bradley Rd., and Gavin Rd. 4. Madison St. Community
Conaby Creek Flood Study - Conaby Creek Flood Improvement Projects	Complete a detailed flood study and implement projects to relieve flooding from Conaby Creek. The effective FEMA model for the stream is outdated and this project will study projected rainfall, current landcover, and projected landcover. The project will then prioritize solutions and provide a final design for the solution chosen in partnership with the community.
Stream Debris Cleanout	Complete stream cleanouts (snag and drags) with a focus on: 1. Conaby Creek from NC 32 to town limits boundary past E Main St. 2. Unnamed Tributary to Roanoke River from Bateman St. to W. Main St. 3. Unnamed Tributary to Roanoke River north of Plymouth HS (Plywood Rd. area)
Improve Constructed Wetland at West Water Street	Improve the function of the constructed wetland behind the senior public housing complex to address over street flooding of West Water Street.
Washington Street Stormwater and Streetscape Project	Upgrade stormwater infrastructure along Washington Steet from W. Main Steet to US 64 utilizing a mix of hard and green infrastructure combined with an aesthetic streetscape improvement project.
Improve Wastewater Treatment Plant Access Road	Improve Gage Lane from a location north of River Road to the Plymouth Wastewater Treatment Plant. The road is located in the Roanoke River effective floodway.
Relocate or Retrofit Vulnerable Lift Stations	Relocate or retrofit vulnerable sewer lift stations on Water Street, Johnson Court and East Main Street to improve risk of impacts from flooding.
Back-up Generators at Critical Facilities	Acquire back-up generators for critical facilities.

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INTRODUCTION

The Resilient Coastal Communities Program (RCCP) is funded through the North Carolina General Assembly, the National Fish and Wildlife Foundation, and the National Oceanic and Atmospheric Administration (NOAA) and administered by the North Carolina Department of Environmental Quality – Division of Coastal Management (DCM). Program partners include the North Carolina Office of Recovery and Resiliency, the North Carolina Sea Grant, and the North Carolina Nature Conservancy. The goal of the RCCP is to increase community adaptation ability and resilience and is a component of the statewide North Carolina Resilient Communities Program, called for in the North Carolina Climate Risk Assessment and Resilience Plan.

The four phases of the RCCP are designed to address barriers to coastal resilience at the local level; engage community stakeholders including those that are socially vulnerable; assess coastal risks and vulnerabilities; develop nature-based solutions to strategically improve the resiliency of communities and their natural and built infrastructure; and link communities to funding streams for project implementation.

- Phase 1 – Community Engagement/Risk and Vulnerability Assessment
- Phase 2 – Planning, Project Identification and Prioritization
- Phase 3 – Engineering and Design
- Phase 4 – Project Implementation

The 20 designated North Carolina Coastal Area Management Act (CAMA) counties, as well as, municipalities, homeowners associations, and federal and state-recognized tribes within this jurisdictional area are eligible to apply for the RCCP. The Town of Plymouth was selected to participate in the first two phases in Spring 2023 which were completed between August 2023 and June 2024.

This Resilience Strategy documents Phase 1 and 2 steps and includes all associated deliverables/materials including those for the development of a CAT, stakeholder engagement, inventory and review of existing local and regional plans, defining of community vision and goals, development of a Community Engagement Strategy, identification/mapping of hazards and critical assets/natural infrastructure/socially vulnerable populations, Risk and Vulnerability Assessment Report, identification of a suite of potential project solutions, project prioritization, and the concluding Project Portfolio.

COMMUNITY ACTION TEAM REPORT

RCCP Phase 1, Step 1 involves of the creation of a CAT consisting of key stakeholders, ideally with diverse and multi-disciplinary backgrounds, and expertise in planning and community development, hazard mitigation, utility management, engineering, the community's economy, engaging with vulnerable and underrepresented populations, and nature-based solutions. CAT members could include:

- Community residents
- Neighborhood or faith leaders
- Municipal/county managers
- Planners
- Elected officials
- Utility managers
- Community and economic developers
- Business community representatives

- Disaster recovery coalitions/groups
- Councils of Governments (COGs)
- State and federal land managers
- Non-governmental organizations (NGOs)
- Others working with the community on resilience planning

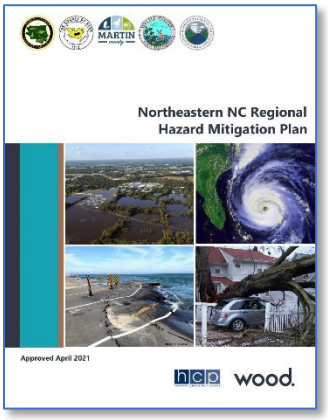
The CAT Champion, or lead member, was identified and worked with the contractors to identify additional CAT members to fill the roles detailed above. Potential members were contacted by phone and/or email either by the contractors or the CAT Champion. The need for CAT members was announced to the public at Town Council meetings and elected officials were selected to serve and underserved community representatives were identified.

COMMUNITY ACTION TEAM MEMBERS

- CAT Champion – Mike Wright, Public Works Director
- Joanne Floyd – Town Manager
- Dorenda Wallace – Town Clerk/Finance Officer
- Brian Roth – Mayor
- Preston Moore – Citizen representative and Planning Board member
- Tammy Shepard – Citizen representative
- Sarah Baird-Forner – Citizen representative

Refer to Appendix A for Community Action Team Materials.

REVIEW OF EXISTING LOCAL & REGIONAL EFFORTS



To avoid the duplication of work and build upon and remain consistent with previous resiliency efforts, existing programs, plans, policies and ordinances were reviewed and incorporated as part of RCCP Phase 1, Step 2. The Northeastern NC Regional Hazard Mitigation Plan contains a baseline vulnerability and risk assessment and served as a reference point for conducting the assessments while considering additional factors and the local context.

RELEVANT PLANS, ORDINANCES, POLICIES, and PROGRAMS

- **NCORR Regions Innovating for Strong Economies and Environment (RISE) Program: Resilience Projects for the Mid-East Region (2022)** – The Regional Resilience Portfolio Program is a two-part effort consisting of the Climate Change and Natural Hazards Vulnerability Assessment for the Mid-East Region and a Project Portfolio. The Project Portfolio is a compilation of regionally focused resilience projects that will provide benefits throughout the Mid-East Region. *(Source: NCORR)*
- **Albemarle-Pamlico National Estuary Partnership Comprehensive Conservation and Management Plan (2012-2022)** – This plan is organized around four basic questions and related answers: what is a

healthy Albemarle-Pamlico system; what is the current condition of the system; what are the most significant challenges facing the system over the next 10 years; and what actions should be implemented to best achieve a healthy system? *(Source: APNEP)*

- Northeastern NC Regional Hazard Mitigation Plan (2020) – This plan ensures all possible activities are reviewed and implemented so that the problems are addressed by the most appropriate and efficient solutions. This plan provides a framework for all interested parties to work together toward mitigation. It establishes the vision and guiding principles for reducing hazard risk and proposes specific mitigation actions to eliminate or reduce identified vulnerabilities. *(Source: Holland Consulting Partners/Wood.)*
- Washington County Emergency Operations Plan (2020) – The Washington County Emergency Operations Plan has been developed to address multiple hazards which threaten the county. Using a functional format, this plan encourages an Integrated Emergency Management approach to disaster and fosters prompt, efficient and coordinated response operations by elements of the emergency organization. *(Source: NCEM)*
- Hurricane Matthew Resilient Redevelopment Plan, Washington County (2017) – The purpose of the plan is to provide a roadmap for community rebuilding and revitalization assistance for the communities that were damaged by the hurricane. The program empowers communities to prepare locally driven recovery plans to identify redevelopment strategies, innovative reconstruction projects, and other needed actions. *(Source: NCEM)*
- Hurricane Matthew Resilient Redevelopment Plan, Northeast Region (2017) – As part of the program, NC Emergency Management facilitated development of regional resilient redevelopment plans for four "prosperity zones" as identified by the NC Dept of Commerce, created to facilitate collaborative and coordinated planning and use of resources. *(Source: NCEM)*
- Facing the Future in Plymouth, NC: Preparing for Increased Flood Risks (2012) – This report presents the results of efforts in the Town of Plymouth, focused on identifying and clarifying local leaders' understanding of the challenges that changing environmental conditions could pose to their community in the future. Leaders were interviewed to identify their concerns and maps of future potential flood areas were created. Leaders also worked with a research team to further explore their concerns and identify strategies to address the impact localized flooding could have on the town's stormwater and wastewater collection and treatment systems. *(Source: North Carolina Sea Grant)*
- Washington County Comprehensive Transportation Plan (2015) – The Washington County Comprehensive Transportation Plan (CTP) is a long-range plan which identifies major transportation improvement needs and develops long term solutions for the next 25 to 30 years. The CTP study involves both government officials and the public in an effort to determine the area's future transportation needs based on the best information available including, but not limited to, population, economic conditions, traffic trends and patterns of land development in the county. *(Source: NCDOT)*
- Town of Plymouth CAMA Land Use Plan (2024) – This locally adopted land use plan is certified by the North Carolina Coastal Resources Commission and is then used by DCM in making CAMA permit decisions and to ensure projects and activities remain consistent with the policies of a local land use plan. *(Source: NCDEQ)*
- Plymouth Streetscape and Riverfront Design Rendering (2022) – This study is a plan for improvements to the public spaces in the central core of the downtown in order to set the stage for preservation and new development. There is a window of opportunity to prepare a plan and obtain funding to implement these improvements. Public space improvements will encourage downtown

redevelopment, tourism, and will increase the tax base, benefiting the entire town, the county and citizens. *(Source: Regeneration by Design)*

- Town of Plymouth Code of Ordinances – The adopted code includes applicable ordinances such as Building Code; Flood Damage Prevention; Minimum Housing; Subdivision; Zoning; Streets and Sidewalks; Sewer Regulations; Water and Wastewater; and Stormwater Management Utility.

VISION & GOALS

Phase 1, Step 3 involves developing a community-specific vision, goals, and objectives to guide the planning process. Relevant local and regional plans were summarized for the CAT and vision statements and goals from each plan were reviewed as well as, example goals from resiliency plans outside the area. Using this input, example vision statements, goals, and themes were identified and were used to guide the CAT's brainstorming process during CAT Meeting 1.

The team was encouraged to employ the triple bottom line approach to resiliency, which considers environmental, economic, and social factors. Worksheets were provided to CAT members for use in identifying draft vision statements, goals, and objectives that reflected local values and priorities. The team worked together during the meeting to complete the worksheets. Team members also had an opportunity to complete the worksheets following the meeting.

Input from the CAT was used to finalize the resilience vision, goals, and objectives listed below.

RESILIENCE VISION

Plymouth exemplifies a culture of resilience through protection of critical infrastructure, quality infrastructure and services, community engagement, education and outreach, and effective response and recovery capabilities which recognize the diversity of needs. The Plymouth community is able to quickly rebound, positively adapt, and thrive amid changing conditions and challenges including disasters and climate change, thereby supporting community health, quality of life, economic resilience, and economic growth.

RESILIENCE GOALS and OBJECTIVES

Economic

Goal 1: Improve and maintain buildings to support resilience to hazards.
Objectives:

- Incentivize the construction of "flood resistant" homes.
- Elevate homes in flood prone areas.
- Floodproof businesses and other non-residential buildings in flood prone areas.
- Promote research and development of building construction and design standards that can better withstand storm damage.
- Promote energy efficiency and solar panels for homes and businesses.

Goal 2: Protect and maintain critical infrastructure and ensure that critical infrastructure is resilient to anticipated hazards.
Objectives:

- Identify key community assets that will need increased physical and fiscal protection from the major weather events and incremental climate change impacts anticipated in the next 20-50 years.

- Protect, maintain, and enhance critical infrastructure.
- Reduce power outages for residents and businesses.
- Promote research and development of utility infrastructure hardening.
- Create redundancies in the water and sewer service networks.

Goal 3: Provide quality municipal infrastructure and services.
Objectives:

- Maintain the town's sewer system and improve/upgrade the system as needed.
- Maintain the town's water system and improve/upgrade the system as needed.
- Maintain the town's road system and improve/upgrade the system as needed.
- Develop strong partnerships with electric providers including Dominion Energy and Tideland Electric Membership Cooperative (EMC).
- Provide high quality public services.

Goal 4: Encourage commercial and industrial development that enhances job opportunities while also maintaining the desired quality of life.
Objectives:

- Reverse the declining population trend by attracting more residents.
- Make Plymouth more attractive for housing and education.
- Revitalize the historic downtown.
- Attract new, sustainable businesses.
- Support businesses in achieving natural hazard resilience and in recovery efforts when events occur.
- Strive for a sustainable economic base that allows all residents equal access to good jobs and meaningful education.
- Identify economic development opportunities that are best suited for the area.

Goal 5: Develop the tourism and ecotourism industries.
Objectives:

- Continue to market Plymouth as a destination for historic tourism and ecotourism.
- Continue hosting festivals and events that draw visitors to town.
- Support and capitalize on the planned inner banks ferry trips.
- Develop waterfront amenities such as canoe/kayak launches and fishing piers.
- Continue planning for the protection and development of the town's waterfront assets.
- Attract businesses that support tourism and ecotourism.

Goal 6: Identify and obtain funding for resilience projects.
Objectives:

- Develop a list of resilience projects suitable for funding.
- Identify funding and grant opportunities to implement resilience projects.
- Identify funding to reduce repetitive losses from previous hazard events, such as funding for building elevation/floodproofing and equitable buyouts.
- Utilize partnerships and apply for identified grant opportunities to implement projects.

Environmental

Goal 7: Reduce flooding.
Objectives:

- Reduce the potential for flooding of homes and businesses.
- Develop flood mitigation projects, including nature based and sustainable solutions.
- Identify both structural and non-structural solutions to flooding.

Goal 8: Improve stormwater management.
Objectives:

- Map the town's stormwater system in GIS.
- Maintain and improve the capacity of the stormwater system.
- Conduct planning processes leading to recommendations for stormwater BMPs.
- Improve construction and site design standards to reduce debris caused by flooding and storms.
- Demolish dilapidated homes and remove impervious surfaces as practicable and feasible.
- Encourage the construction of permeable surfaces to reduce flash flooding.
- Drainage ditches should be targeted for stormwater projects to reduce runoff and improve water quality.

Goal 9: Preserve natural resources.
Objectives:

- Incentivize reliance on "natural" protective systems as much as possible (i.e., leaving wetlands, forests and marshes as intact as possible to absorb floodwaters and mitigate storm surge).
- Discourage excessive covering of land with impervious surfaces.
- Conserve resources for present and future generations.
- Protect a connected network of green spaces.
- Clean up trash in and along waterways.
- Control illegal dumping.

Goal 10: Improve water quality.
Objectives:

- Improve the water quality of the Roanoke River, the Middle River, Conaby Creek, Welch Creek, and their tributaries.
- Explore implementation of a local riparian buffer ordinance to encourage intensive development to occur away from rivers and streams.
- Support federal and state regulations related to water quality and report known violations.
- Partner with the local council of governments, environmental non-profits, and local universities to plan, develop, and implement water quality projects.

Social

Goal 11: Develop effective hazard response and recovery.
Objectives:

- Continue partnering with Washington County Emergency Management.
- Restore services quickly and efficiently following a hazard event.
- Minimize damage and loss of life from disasters.
- Plan how to deal with increased solid waste and storm debris disposal as natural disasters are anticipated to result in more home and property destruction in the future.
- Develop a Comprehensive Evacuation Plan.
- Plan for serving areas cut off by flood waters post storm events.

- Rebound quickly following a hazard event.
- Review local land development regulations and capital improvement plans for opportunities to incorporate hazard resilience.

Goal 12: Foster strong partnerships with residents.
Objectives:

- Foster strong relationships and partnerships with residents to achieve success.
- Continue developing and nurturing partnerships with community and business organizations and non-profit organizations.
- Communicate with residents on a regular basis through multiple communication venues (websites and social media, newspaper, television, radio, newsletters, in-person community events, etc.).
- Involve local community and faith-based groups in resilience work and public outreach.
- Utilize social networks to be proactive in resilience efforts.

Goal 13: Serve vulnerable and disadvantaged populations.
Objectives:

- Enhance public education about available transportation options during evacuations.
- Ensure that bedridden citizens, elderly non-drivers, low income, and other vulnerable populations have information on available transportation options.
- Provide the public, including socially vulnerable populations, with the tools needed to protect themselves from natural hazards.
- Conduct grassroots outreach efforts to share information and engage residents in resiliency efforts.
- Partner with local community groups and faith organizations.
- Ensure that all programs are equitable.

Goal 14: Educate the public about resiliency.
Objectives:

- Educate the public, including socially vulnerable populations, on the tools needed to protect themselves from natural hazards.
- Educate the public on the natural environment, such as education on the benefits of preserving the natural functions of ecosystems and protecting sensitive lands, education on water quality and how to reduce personal impacts from non-point source pollution, local wildlife education/appreciation, etc.
- Educate the public on the health risks of mold.
- Educate the public on nature-based solutions to flooding.
- Ensure that information related to potential impacts of flooding reaches those in high flood risk communities.
- Educate owners of repetitive loss properties on opportunities for building elevation/floodproofing, equitable buyouts, and other mitigation options.
- Conduct grassroots outreach efforts to share information and engage residents in resiliency efforts.

STAKEHOLDER ENGAGEMENT STRATEGY

EXISTING CONDITIONS, ISSUES, and OPPORTUNITIES

RCCP Phase 1, Step 4 directs contractors to develop and implement a stakeholder engagement strategy. Information was presented and stakeholder input was gathered through various methods such as site visits,

two public open houses coinciding with Phase 1 and Phase 2, a public survey, interactive displays, handouts, PowerPoint presentations and a GIS storymap available at the second open house.

Public Survey

A public survey was developed in partnership with the CAT and released after CAT Meeting 1. Survey questions were based around resiliency to flooding, coastal erosion, coastal storms and sea level rise and were designed to be completed in 15 minutes or less depending on the amount of input.

Advertisement methods included:

- Flyer contained a link to the online survey and information on hard copies available at Town Hall, plus a phone number to request a mailed hard copy
    - Flyer posted electronically – Town website, Town Facebook page
    - Flyer posted in person – Town Hall, Police Dept./Town Council Chambers, Washington County Library
    - Flyers were distributed at Police and Pastors event
- Announcement was made at Town Council meeting

Survey input was used to identify existing conditions, issues, needs, and opportunities to enhance resiliency. Information was gathered on how personal lives and property have been affected by flooding, how flooding is perceived in the community, and what measures they have taken to prevent or avoid flooding. This information was used to recommend appropriate strategies for flooding resilience including public education campaigns. A total of 30 stakeholders responded to the survey.

Phase 1 Open House

The in-person Phase 1 Open House was held on December 12, 2023 from 4:00 p.m. – 6:30 p.m. at the Town Council Chambers/Police Dept. and a virtual meeting was held December 15, 2023 from 4:00 p.m. – 6:30 p.m.

Advertisement methods included:

- Flyer posted electronically – Town website, Town Facebook page
- Flyer posted in person – Town Hall, Police Dept./Town Council Chambers, Washington County Library
- Notice was sent via text using the Town's AP Connect system
- News release ran in Roanoke Beacon newspaper
- Announcement was made at Town Council meeting

For the Phase 1 Open House, poster displays included:

- What is resiliency?
- Hazard Identification Exercise Maps (interactive)
- What does resiliency mean to you? (interactive)
- North Carolina Resilient Coastal Communities Program
- Community Vision and Goals Exercise (interactive)

The public survey was available at the Phase 1 Open House to gather stakeholder input and there was also a resource table with handouts on topics such as the RCCP, flood readiness, stormwater education, creating

home rain gardens, septic maintenance, mold remediation, etc. Some of these materials were made available in Spanish. Contractors and CAT members were on hand to interact with the public during the in-person and virtual events.

DRAFT RESILIENCY ACTIONS

In Spring 2024, a storymap was created using ArcGIS Online and was posted at PlymouthFloodResilience.org. The storymap presented Resiliency 101, Plymouth's vision statement, CAT members, existing resiliency plans, public survey input, the risk and vulnerability assessment, the top flood related hazards, the STAPLEE analysis, and proposed draft actions. The storymap was presented at the Phase 2 Open House.

Phase 2 Open House

The Phase 2 Open House was held on March 21, 2024 from 4:00 p.m. – 6:30 p.m. at the Town Council Chambers/Police Dept.

Advertisement methods included:

- Flyer posted electronically – Town website, Town Facebook page
- Flyer posted in person – Town Hall, Police Dept./Town Council Chambers, Washington County Library
- Notice was sent via text using the Town's AP Connect system
- News release ran in Roanoke Beacon newspaper
- Notice went out on radio station Magic 95.9
- Announcement was made at Town Council meeting

For the Phase 2 Open House, displays included:

- What is resiliency?
- North Carolina Resilient Coastal Communities Program
- Action Strategy Areas
- Draft Actions
    - Rank your top fifteen (15) preferred actions and provide input, including an option to suggest other projects that were not listed (interactive)

In addition to the interactive posters, comment forms were also available to provide another method to solicit feedback on preferred projects and other aspects of the community's resiliency program. Resource handouts were also available, and contractors were in attendance to interact with the public.

The most popular project based upon Phase 2 Open House input was the Neighborhood Drainage Project.

ENGAGEMENT TOOLS LIST

- Public Survey
- Webpage/GIS storymap
- Notifications (news release, social media ads, flyers, announcements)
- Public Open Houses (In-person and Virtual)

Refer to Appendix B for Stakeholder Engagement Materials.

RISK AND VULNERABILITY ASSESSMENT REPORT

The Risk and Vulnerability Report details the quantitative and qualitative assessments performed for evaluating the vulnerability of critical assets, natural infrastructure, and vulnerable populations to hazards faced by the community.

As part of Phase 1, Step 5, the contractor team identified critical assets including community resources, built infrastructure, natural infrastructure, and socially vulnerable populations. Critical assets were identified primarily within the Town's jurisdictional boundaries, and in some cases were identified outside of the Town's jurisdictional boundaries in the case of particularly vital assets or services.

MAPPING ASSETS, NATURAL INFRASTRUCTURE, AND VULNERABLE POPULATIONS

Community Assets

Contractors worked with the CAT at Meeting 2 to identify community assets in list format, then researched what GIS data was available and created maps of community assets located within the Town's jurisdictional boundaries. In some cases, there was already a data layer available. In other instances, the GIS data was created by the contractors based on CAT input on which assets to include. In the sources listed below, "created" is used to designate data that was developed by the contractor.

Sources:

- Emergency Management – created
- Law Enforcement – created
- Fire and EMS Stations – NC Office of State Fire Marshall
- 911 Dispatch – created
- Government Services – created
- Food – created
- Water/Wastewater
    - Public Water Supply Wells – NC Dept. of Environmental Quality (NC DEQ) Division of Water Resources
    - Wastewater Discharge Permits – NC DEQ Division of Water Resources
    - Town Wide Water and Wastewater System Mapping – Wooten Company
- Propane Suppliers – created
- Transportation
    - Road Network – Washington County
    - Bridges – NC Dept. of Transportation (NC DOT)
    - Rail – NC DOT
    - Public Docks – created
    - Airports – created
    - Public Transportation – created
- Medical – created
- Schools - created

- Libraries - created
- Community Buildings and Museums - created
- Affordable Housing Areas - created
- Downtown Commercial District – created
- Highway Commercial District – created
- Tax Parcels – Washington County

Natural Infrastructure

Contractors researched existing natural infrastructure data and shared an initial list with the CAT. The team helped to add additional natural assets to the list. Contractors also worked with the team to identify local public land and private land used for public recreational purposes. Contractors then created maps of natural infrastructure located within the Town's jurisdictional boundaries.

Sources:

- Parks/Public Land – created
- Public Boat Ramps – created
- Wetlands – NC Coastal Regional Evaluation of Wetland Significance (NC CREWS)
- Priority Forests – NC Natural Heritage Program
- Floodplains – Federal Emergency Management Agency (FEMA)
- Surface Water
    - Rivers and Streams – NC DEQ
- Managed Areas – NC Natural Heritage Program
- Natural Areas – NC Natural Heritage Program
- Biodiversity and Wildlife Habitat Assessment – NC Natural Heritage Program

Vulnerable Populations

Maps of vulnerable populations were downloaded from the Center for Disease Control including the overall Social Vulnerability Index, Socioeconomic Status, Household Composition/Disability, Race/Ethnicity/Language, and Housing Type/Transportation. The CAT reviewed the series of vulnerable populations maps and provided additional input on the presence of vulnerable populations and the accuracy of the data.

Sources:

- Social Vulnerability Index – US Center for Disease Control
- 2021 American Community Survey 5-year estimates from the US Census Bureau
- EPA Environmental Justice Screen Reports

IDENTIFYING AND MAPPING HAZARDS

Riverine flooding, nuisance flooding, sea level rise, storm surge, drought, wildfire and tidal riverine erosion were evaluated as community hazards to assess risk and vulnerability within the community. Hazards not applicable to specific communities were not factored into the complete risk and vulnerability assessments. After the initial assessment, riverine flooding, nuisance flooding, sea level rise, storm surge, drought, wildfire and tidal riverine erosion were further evaluated for Plymouth as community hazards. Definitions of each hazard and the data used to calculate risk and vulnerability are shown below. Refer to the vulnerability index for the thresholds used for each dataset and how each dataset was used to calculate vulnerability. Maps were created of each hazard, including hazard layers overlaid with critical assets and natural infrastructure.

Riverine Flooding

Riverine flooding is defined as when a stream exceeds its capacity and overflows into adjacent low-lying or dry land (Riverine Flooding | National Risk Index (fema.gov)). FEMA has created datasets to indicate flooded areas during a 100-yr and 500-yr storms. This data, along with Zone X indicating moderate to low flooding risk, was used to identify potential flood vulnerabilities within the community.

Sources:

- North Carolina Emergency Management Floodplain Mapping program
- OpenFEMA Data Sets | FEMA.gov
- Riverine Flooding | National Risk Index (fema.gov)

Nuisance Flooding

Nuisance flooding is caused by stormwater holding in low-lying areas within a community. To assess nuisance flooding, a digital elevation model was downloaded from the North Carolina Spatial Data Download (nc.gov) to identify low lying areas using ESRI ArcGIS PRO Hydrology tools including Fill DEM, and Sink. Low lying areas capable of holding a storm greater than or equal to the 5-yr storm were evaluated based on proximity to an asset to determine vulnerability.

Sources:

- North Carolina Spatial Data Download (nc.gov)
- ESRI Arc Hydro
- National Stormwater Calculator (epa.gov)

Sea Level Rise

Sea level rise (SLR) is the direct effect of climate change rising the global mean sea level from thermal expansion of warming ocean waters with the addition of water mass caused by melting glaciers and ice sheets. To assess SLR, the 1ft, 2ft, and 3ft NOAA Sea Level Rise data for North Carolina was used evaluate the vulnerability of each asset within each scenario.

Sources:

- Sea Level Rise Data Download (noaa.gov)
- Sea Level Rise Technical Report: Download and FAQs (noaa.gov)

Storm Surge

Storm surge is the rise in water, generated by a storm, over and above the predicted tide levels. To assess storm surge, The National Hurricane Center data for the potential storm surge of Hurricane Florence (2018) was used to identify storm surge vulnerability. This data presented the highest risk for the communities based on current data from a recent storm event. This dataset uses a 1 thru 5 symbology to categorize vulnerability: Intertidal Zone/ Estuarine Wetland, Greater than 1-foot above ground, Greater than 3 feet above ground, Greater than 6 feet above ground, Greater than 9 feet above ground, respectively. These categories were placed into three scenarios (Intertidal Zone/Estuarine Wetland, 1-3 ft, and above 3 ft) where each scenario was assigned a high, medium, low threshold to evaluate vulnerability to critical assets.

Sources:

- NHC Data in GIS Formats (noaa.gov)
- Storm Surge Overview (noaa.gov)

- Potential Storm Surge Flooding Map (Inundation): Interactive Example (noaa.gov)

Drought (2000-Present)

Drought is defined as a prolonged period of dry conditions caused by a lack of precipitation, resulting in a water shortage. To assess drought conditions for each community, the Historical Drought data from Drought.gov was used to calculate the potential vulnerability for drought conditions based on previous data (2000-2023). Each community was given a constant drought vulnerability score based on the thresholds presented with the vulnerability index.

Sources:

- Historical Data and Conditions | Drought.gov
- Drought Basics | Drought.gov

Wildfire

A wildfire is an unplanned, uncontrolled fire that spreads quickly. The Wildfire Risk to Communities data from the US Forest Service was used to predict the vulnerability of a wildfire affecting each community and its assets. This data takes into consideration population, building location, building coverage, land cover, and wildfire hazards.

Sources:

- Data: USFS – Wildfire Risk to Communities Wildfire VHazard Potential
- WRC_PopulatedAreas_Methods_Dec2020.pdf (wildfirerisk.org)

Tidal Riverine Erosion

Tidal Riverine erosion is the wearing down of rock, soil, and/or sand along riverbanks causing displacement and loss of land. Tidal Riverine erosion is typically caused from SLR, wave action, tides, and coastal riverine flooding. To assess Tidal Riverine erosion, Google Earth time lapse imagery was used to generate a shoreline profile. This data was then analyzed within ESRI ArcGIS Pro to calculate erosion rate per year using soil erosion susceptibility rates based on USGS soil data. The vulnerability index thresholds were then used to determine the vulnerability of the shoreline.

Sources:

- Google Earth
- Web Soil Survey - Home (usda.gov)
- Coastal Erosion | U.S. Climate Resilience Toolkit

ASSESSING VULNERABILITY

Vulnerability = Exposure + Sensitivity - Adaptive Capacity

- **Vulnerability** – Describes a system's susceptibility to harm or change. Vulnerability is the combined result of exposure, sensitivity, and adaptive or response capacity and, as such, a function of the character, magnitude, and rate of the climate change hazard to which a system is exposed, as well as of non-climatic (social and environmental) characteristics of the system, which determine its sensitivity and adaptive capacity.
- **Exposure** – Refers to the probability of physical contact between an asset and a hazard.
- **Sensitivity** – Is the degree to which an asset is impacted by a hazard.
- **Adaptive Capacity** – Is the ability of an asset to cumulatively adapt to all hazards.

To assess vulnerability, the contractor developed multiple vulnerability indexes which combined exposure, sensitivity, and adaptive capacity to estimate cumulative vulnerability of critical assets within six categories: Building Infrastructure, Affordable Housing, Downtown Commercial District, Transportation Infrastructure, Sewer & Utility System Infrastructure, and Natural Resources.

Exposure and sensitivity were objective factors within the vulnerability equation.

EXPOSURE – The exposure parameter analyzed effects of different coastal hazards on community critical assets by categorizing each exposure to the individual hazard as high, medium, or low. This score was weighted based on the hazard risk within the community. These hazards included: riverine flooding, nuisance flooding, storm surge, drought, fire, and sea level rise. Hazards that did not directly affect the community were considered and removed from the list. Exposure thresholds were set based on best available data and can be viewed in the Vulnerability Index.

SENSITIVITY – The sensitivity parameter analyzed the cumulative effects of the hazards on critical assets within each category by assigning a percent threshold or indicating a high/low need for that asset within the community. For example, high sensitivity for building infrastructure indicates that greater than 66% of the community asset building – within a certain subcategory (e.g., police stations) - were affected by the coastal hazard or that a particular building was highly sensitive to the function of the community. This assessment indicated the value of redundancy and alternative uses of assets.

ADAPTIVE CAPACITY – Adaptive capacity was a subjective factor within our assessment that used objective data and community input to evaluate an asset's ability to recover and/or the ability of that assets to be modified for resiliency. Factors such as: social vulnerability, feasibility of relocation, feasibility of retrofit, and possible alternatives were evaluated to give each critical asset an adaptive capacity score. Contractors relied on input from the CAT to evaluate the adaptive capacity of each critical asset. Thresholds for adaptive capacity are within the Vulnerability Index.

Asset	Exposure Score 0-3	Sensitivity Score 0-3	Adaptive Capacity 0-3	Vulnerability Score 0-6
Asset name	*0 = no exposure* *1 = low* *2 = medium* *3 = high*	*0 = no sensitivity* *1 = low* *2 = medium* *3 = high*	*0 = no adaptive capacity* *1 = low* *2 = medium* *3 = high*	*0-2 = low* *3-4 = medium* *5-6 = high*

Critical assets were given a score based on the average exposure, sensitivity, and adaptive capacity scores. These scores were then used in the vulnerability equation to calculate cumulative vulnerability. The thresholds for each category are listed below:

Exposure Parameters

Riverine Flooding

- High: Zone AE (100-yr flood level)
- Med: 0.2 percent (500-yr flood level) + adjacent lower elevation up to 47 ft
- Low: X Zone (Low to Moderate risk)

Nuisance Flooding

- High: Low lying area on the property or within 25 ft of structure or asset / intersect linear feature
- Med: Up to 50 ft from property or within 50 ft of structure or asset

- Low: >50 ft from property or >50 ft of structure or asset

Sea Level Rise

- High: 1 ft SLR
- Med: 2 ft SLR
- Low: 3 ft SLR

Storm Surge (Based on CAT 5 Storm)

- High: 9+ ft
- Med: 3-9 ft
- Low: <3 ft

Drought (2000 - Present)

Plymouth was given a consistent medium score based on county evaluation. Historical Data and Conditions | Drought.gov

- High – 3+ periods >18 days of Extreme or Exceptional Drought or 5+ periods of 30+ days of Severe Drought
- Med – 1-2 periods of Extreme or Exceptional Drought or >12 days or 2-5 periods of Severe Drought >18 days
- Low – No cases of prolonged (>12 day) Severe or Extreme or Exceptional Drought periods

Wildfire - (Data: USFS – Wildfire Risk to Communities Wildfire VHazard Potential)

- Low: USFS – Very low or low
- Med: USFS – Moderate
- High: USFS – High or very high

Generated Report for Risk and Vulnerability. Map | National Risk Index (fema.gov)

Coastal Erosion

- High: Potential erosion on property along Roanoke River
- Med: Potential erosion on property along tributaries
- Low: Surface erosion

Groups

Buildings

Exposure

- High weight (3): Riverine Flood, Storm Surge, and Nuisance Flood
- Med weight (2): Drought, Fire
- Low weight (1): SLR, Coastal Erosion

Sensitivity (Infrastructure group)

- High: >66%+ Facilities affected / Needed by the community
- Medium: 33%-66% / Other facilities can be used (Alternatives)
- Low: <33% / Facility not needed to operate

Adaptive Capacity

- Subjective – need community input
- Social Vulnerability Index
- Ability to relocate building infrastructure (Ex. From 25yr to 50yr floodplain)

- The ability to raise structure
- Accessibility to residents once moved (SVI)
- Land availability
- Ability to retrofit for flooding (raise generator/sensitive components)
- Another facility can be used in its place
- Facility is not needed to operate

Affordable Housing

Exposure

- Average Score of exposure parameters

Sensitivity (Infrastructure group)

- High: >66% of area affected by 2 exposure parameters / High SVI
- Medium: 33%-66% of area affected by 2 exposure parameters / Moderate SVI
- Low: <33% of area affected by 2 exposure parameters / Low SVI

Adaptive Capacity

- Subjective – need community input
- Social Vulnerability Index
- Ability to relocate building infrastructure
- The ability to raise structure
- Accessibility to residents once moved (SVI)
- Land availability
- Ability to retrofit for flooding (raise generator/sensitive components)

Downtown Commercial District

Exposure

- Average Score of exposure parameters

Sensitivity (Infrastructure group)

- High: >66% of area affected by 2 exposure parameters / Buildings affected are needed by the community / Cultural significance
- Medium: 33%-66% of area affected by 2 exposure parameters / alternatives available
- Low: <33% of area affected by 2 exposure parameters / Buildings impacted do not affect the community

Adaptive Capacity

- Subjective – need community input
- Economically viable
- Ability to relocate building infrastructure
- The ability to raise structure
- Accessibility to residents once moved (SVI)
- Land availability
- Ability to retrofit for flooding (raise generator/sensitive components)

Transportation Infrastructure

Exposure

- High weight (3): Riverine Flood, Storm Surge, and Nuisance Flood

- Med weight (2): SLR, Coastal Erosion
- Low weight (1): Fire, Drought

Sensitivity

- High: >50% of structures affected by natural hazards
- Medium: 25% - 50% affected by natural hazards
- Low: <25% affected by natural hazards

Adaptive Capacity

- Subjective – need community input
- Replacement cost
- Detour length
- Disruption duration
- FHWA roadway functional classification (roadways with higher functional classification may result in greater system disruptions if damaged)
- Evacuation routes
- Emergency services/freight route
- Access to food and services (supermarkets, bottled water, prescriptions, batteries, critical goods)
- Historical repair cost
- Access to critical areas (roads that provide the only access to critical areas are more significant to the adaptive capacity of larger response systems)

Sewer Infrastructure & Utility System Infrastructure (Sewer/Water/Electric/Communications)

Exposure

- Hight weight value (3): Riverine Flood, Storm Surge, and Nuisance Flood
- Med Weight value (2): SLR and Drought
- Low Weight value (1): Fire and Coastal Erosion

Sensitivity

- High: > 66% Exposure and/or Age >30 yrs. and structural repair needed
- Medium: 33% - 66% Exposure and/or Age 15-30 yrs. and maintenance needed
- Low: >33% Exposure and/or Age <15 and no action needed for repair or maintenance

Adaptive capacity

- Waterlines
  - Low = 8” or greater pipe
  - Med = 4” - 6” pipe
  - High = 2” or less diameter pipe
- Sewer
  - Low = Poor Capacity
  - Med = Good Capacity
  - High = Excellent Capacity
- Subjective– need community input
- Social Vulnerability Index
- Ability to relocate utility infrastructure (Ex. From 25-yr to 50-yr floodplain)
- The ability to increase capacity

- Ability to retrofit infrastructure to be more resilient to flooding

Natural Resources (Streams, Wetlands, Managed Areas, Natural Areas)

Exposure

- Average Score of exposure parameters

Sensitivity (Increased flooding due to deforestation or removal of buffers and no ability to replace)

- High: Buffer <50 ft / 50ft from structure / 50% affected / 1 ft SLR
- Med: Buffer <50 ft and >100ft / 100ft from structure / 25%-50% / 2 ft SLR
- Low: Buffer >100 ft / >100 ft form structure / >25% / 3 ft SLR

Adaptive Capacity

- Wetlands/ Open Areas
  - Low = Less than 5 ac.
  - Med = >5 - <15 ac.
  - High = >15 ac.
- Stream
  - Low = Less than 3000 ft
  - Med = >3000 ft and <10,000 ft
  - High = >10,000 ft
- Restorative capacity
- Ability to increase flood capacity
- Alternative use capacity (Ex. park and floodplain)

ESTIMATING RISK

In order to estimate risk to critical assets, supplemental data was gathered in addition to what was available from the hazard mitigation and a quantitative tool was utilized.

Asset Values

The following critical assets and natural infrastructure were assigned a rough estimate of monetary value using the identified methodology. Assets were only valued if they were in Plymouth's jurisdiction (city limits or ETJ).

Table 2. Risk Estimate Methodology and Sources

Critical Asset or Natural Infrastructure	Methodology and Sources
Emergency Management	Sum of tax value of each critical asset
Law Enforcement	Sum of tax value of each critical asset
Fire and EMS Stations	Sum of tax value of each critical asset
911 Dispatch	Sum of tax value of each critical asset
Government Services	Sum of tax value of each critical asset
Food	Sum of tax value of each critical asset
Water System	$57.73 per linear foot of water line (Uni-Bell PVC Pipe Association) + $7,000 per fire hydrant + $506,104 per water storage tank (Landmark) + $57,500 per public water supply well + tax value of water treatment plant

Wastewater System	$110 per linear foot of sewer line (Next Level Pipe Lining) + $250,000 per pump station (Water Level Controls) + $5,015 per manhole (Buncombe County) + tax value of wastewater treatment plant
Electric System	$73.86 per linear foot of electric transmission lines (Power Grid International) + tax value of electric substations
Fuel Stations	Sum of tax value of each critical asset
Propane Suppliers	Sum of tax value of each critical asset
Roads	$10,133,333 per mile of roadway (NCDOT average cost)
Bridges	$4,800,000 per bridge (NCDOT average cost)
Railroad	$2,000,000 per mile of railroad (National Academies Press)
Public Docks	$60,000 per boat slip (AccuDock)
Public Transit	Sum of tax value of each critical asset
Medical	Sum of tax value of each critical asset
Schools	Sum of tax value of each critical asset
Libraries	Sum of tax value of each critical asset
Churches	Sum of tax value of each critical asset
Community Buildings and Facilities	Sum of tax value of each critical asset
Downtown Commercial District	Sum of tax value of each property in district
Highway Commercial District	Sum of tax value of each property in district
Low-Income Housing Areas	Number of housing units x median home value $91,800 (2021 US Census American Community Survey)
Wetlands	$76,150.13 per acre for non-coastal wetlands (NC Division of Mitigation value)
Streams	$740.09 per linear foot (NC Division of Mitigation value)
Parks/Public Land	Sum of tax value of each critical asset, for greenways $2,000,000 per mile (NCDOT average cost in urban areas)
Public Boat Ramp	Sum of tax value of each critical asset
Natural Areas	Sum of tax value of each critical asset
Managed Areas	Sum of tax value of each critical asset

Table 3. Risk Estimate Worksheet

Critical Asset or Natural Infrastructure	Number of Critical Assets or Areas at Risk	Estimated Monetary Value
Emergency Management	1 building/property	$152,200
Law Enforcement	2 buildings/properties	$2,335,400
Fire and EMS Stations	2 buildings/properties	$759,800
911 Dispatch	1 building/property	$2,173,700
Government Services	8 buildings/properties	$3,725,600
Food	3 buildings/properties	$1,923,267
Water System	219,617.12 linear feet of water lines, 212 fire hydrants, 3 water storage	$16,077,201

	tanks, 6 water supply wells, 1 water treatment plant	
Wastewater System	180,877.57 linear feet of sewer lines, 579 manholes, 16 pump stations, 1 wastewater treatment plant	$26,911,455
Electric System	306,240 linear feet of electric lines, 3 electric substations	$22,781,686
Propane Suppliers	2 buildings/properties	$456,300
Roads	58 linear miles	$587,733,314
Bridges	5 bridges	$24,000,000
Railroad	13.28 linear miles	$26,560,000
Public Docks	9 boat slips	$540,000
Public Transit	1 building/property	$489,500
Medical	6 buildings/properties	$2,649,400
Schools	1 building/property	$1,098,200
Libraries	1 building/property	$387,000
Community Buildings and Facilities	3 buildings/properties	$959,700
Downtown Commercial District	75 tax parcels (most parcels contain buildings, some do not)	$6,296,500
Highway Commercial District	73 tax parcels (most parcels contain buildings, some do not)	$27,308,090
Affordable Housing Areas	1,580 housing units	$145,044,000
Wetlands	1,503.9 acres	$114,552,180
Streams	74,405 linear feet	$55,066,396
Parks/Public Land	12 properties, 0.3 linear miles of greenways	$2,838,600
Public Boat Ramps	2 boat ramps, 2 kayak launches	$571,900
Natural Areas	3 properties	$194,400
Managed Areas	1 property	$159,200

Refer to Appendix C for Risk and Vulnerability Assessment Materials.

PROJECT PORTFOLIO

The assembled project portfolio details nine (9) high priority projects, addressing hazards, type of strategy area and approach, priority rating, potential sources of funding, cost and project duration estimates, project map(s), project description, and project scope. These projects were developed to coincide with the top priority solution that would help make the community more resilient to the hazards identified: riverine flooding, nuisance flooding, sea level rise, storm surge, drought, wildfire, and coastal erosion. One nature-based or hybrid solution project is eligible to move forward into Phase 3 of the RCCP, Engineering and Design. The Town of Plymouth CAT, along with stakeholders, choose to move forward with the Stormwater Action Plan to RCCP Phase 3. This will be combined with the Upgrade Stormwater System project, to advance to Phase 4 implementation. Steps taken to assemble the project portfolio that led to the community and the CAT choosing this project are outlined below.

IDENTIFY A SUITE OF POTENTIAL PROJECT SOLUTIONS

The first step to assembling the project portfolio was to identify a suite of potential solutions. The contractors helped the CAT identify 39 potential solutions. The Pamlico Sound Hazard Mitigation strategies and the Hurricane Mathew Resilient Redevelopment Plan alternative actions identified an additional 34 potential solutions that could also be carried forward. These solutions were categorized by Planning/Policy, Green and Hybrid Infrastructure Solutions, and Hard/Grey Infrastructure Solutions and presented to the CAT at Meeting 4. Each CAT member then identified their top solutions.

CONSOLIDATE AND PRIORITIZE PROJECTS

The second step in assembling the project portfolio was to consolidate and prioritize the project solutions. The CAT identified fifteen (15) solutions from the suite of potential solutions that could move forward based on the STAPLEE Method and a simple benefit/cost rating system to help consolidate and prioritize all the potential project solutions. The STAPLEE Method assesses the social, technical, administrative, political, legal, economic, and environmental aspects and potential impacts of each project solution. The benefit/cost rating system used a high/medium/low scoring system to predict benefits and costs of each project solution.

Potential priority projects were presented to the CAT during the 5th meeting where the STAPLEE and benefit/cost rating metrics were reviewed and finalized. These projects were then brought to the community for additional feedback at the Phase 2 Public Open House. The Town of Plymouth along with the CAT identified nine (9) priority projects to be presented in the project portfolio.

Priority Projects

- Stormwater Action Plan – Stormwater System Upgrade
- Neighborhood Drainage Improvement Projects
- Conaby Creek Flood Study - Conaby Creek Flood Improvement Projects
- Stream Debris Cleanout
- Improve Constructed Wetland at West Water Street
- Washington Street Stormwater and Streetscape Project

- Improve Wastewater Treatment Plant Access Road
- Relocate or Retrofit Vulnerable Lift Stations
- Back-up Generators at Critical Facilities

Stormwater Action Plan – Stormwater System Upgrade

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

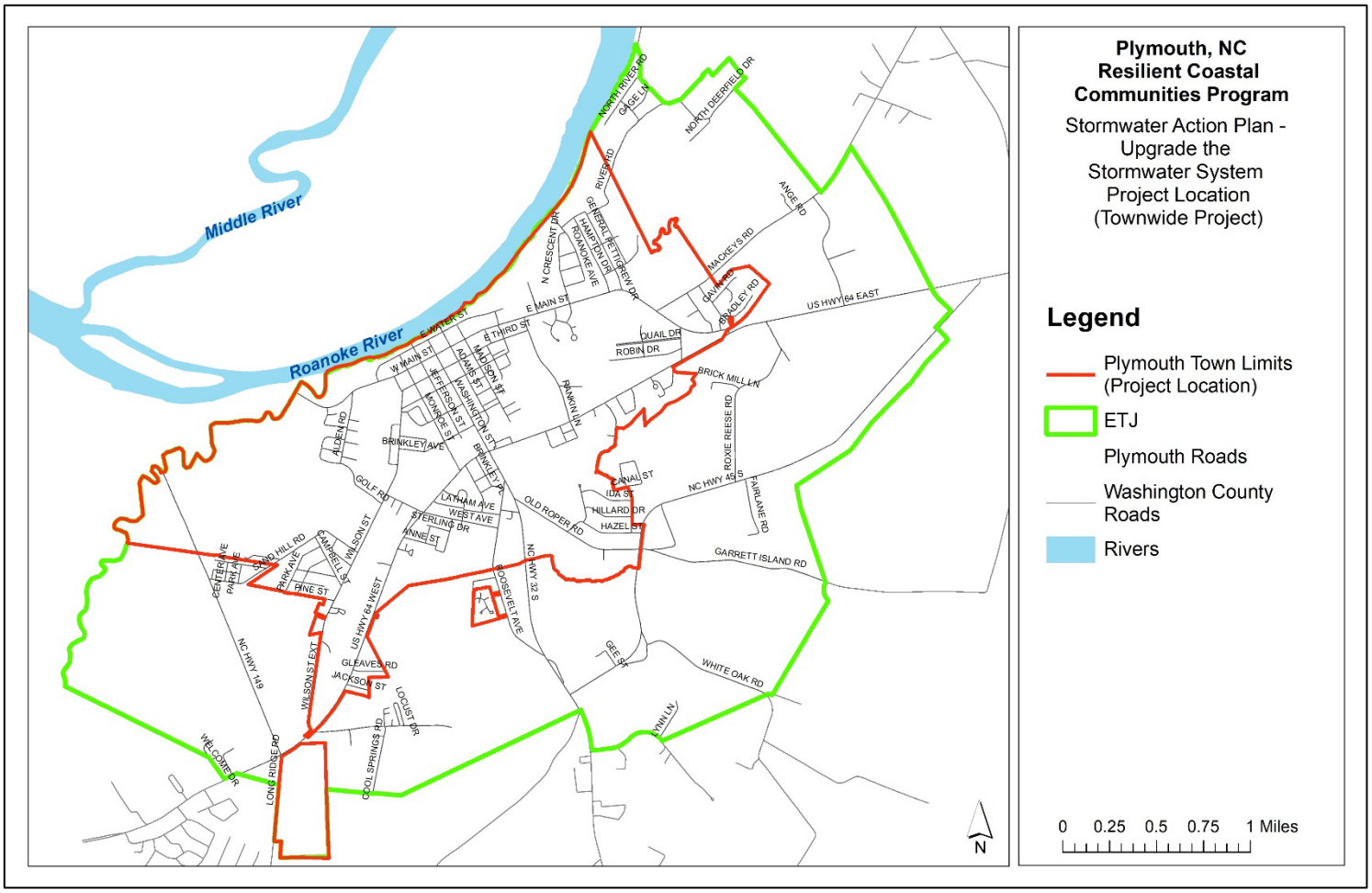
Stormwater Action Plan – Stormwater System Upgrade

Project Summary	
Project Description	Develop a Stormwater Action Plan combined with strategically upgrading the stormwater system through improved and expanded infrastructure. The project will establish mapping and condition assessments for stormwater system components and outfalls with a focus on known problem areas and areas identified via a desktop analysis. The project will promote proactive stormwater maintenance through development of interactive mapping tools and maintenance guidance. The project will encourage stormwater quality awareness through public outreach efforts and produce construction drawings for a priority project.
Project Scope	Engineering/Design - Develop a Stormwater Action Plan. This plan will complete a stormwater ground assessment and surface hydrology analysis that will be incorporated into an online mapping system that can submit real-time data to analyze, prioritize, and take action on a problem area. The plan will also incorporate a maintenance plan that will be tracked by the online tool. The plan will include assessing and documenting the type and location of stormwater infrastructure, collecting and analyzing data on the hydraulic flow, assessing stormwater system capacity and functionality, and identifying projects to upgrade the system and improve the ability of the system to convey water and/or improve water quality. Both hard/grey infrastructure and green/nature-based solutions will be considered in the Stormwater Action Plan. A public education campaign on stormwater responsibilities will also be included. Design and construction drawings will be completed for one project chosen in partnership with the community. - Hydro Analysis / vulnerability assessment - Field Work - Natural Resource Technical Report - Project Prioritization/Recommendations - Arc Online Tool - Stormwater Maintenance Manual - Public Education Campaign – Stormwater Responsibilities - Permitting Due Diligence - Project Surveys / Utility Locations - Engineering/Design Implementation - Strategically upgrade the stormwater system through pipe replacements (upsizing where needed), increasing the size and quantity of culverts and catch basins, redefining ditches, implementing backflow preventors, installing bioswales, bioretention cells, etc. The previously developed Stormwater Action Plan will determine project prioritization. - Permitting - Construction

	- Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Flooding (Nuisance, Riverine)
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) <u>Stormwater Action Plan</u> ▪ Planning ▪ Green and Hybrid Solutions <u>Stormwater System Upgrade</u> ▪ Green and Hybrid Solutions
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Accommodate ▪ Build Adaptive Capacity
Project Estimated Cost	<u>Engineering/Design</u> - $500,000 <u>Implementation</u> - $200,000 - $750,000 (per stormwater retrofit project)
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Stormwater Action Plan</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Capability and Capacity Building (C&CB) Grant ▪ NC Department of Environmental Quality Water Resources Development Grant (WRDG) <u>Stormwater System Upgrade</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ NC Department of Environmental Quality Water Resources Development Grant (WRDG) ▪ NC Department of Environmental Quality 319 Grant ▪ HUD Community Development Block Grant – Mitigation (CDBG-MIT)
Project Estimated Timeline	3-10 years (project will be completed in phases)
Priority Rating	High

Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*

Project Map



Neighborhood Drainage Improvement Projects

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

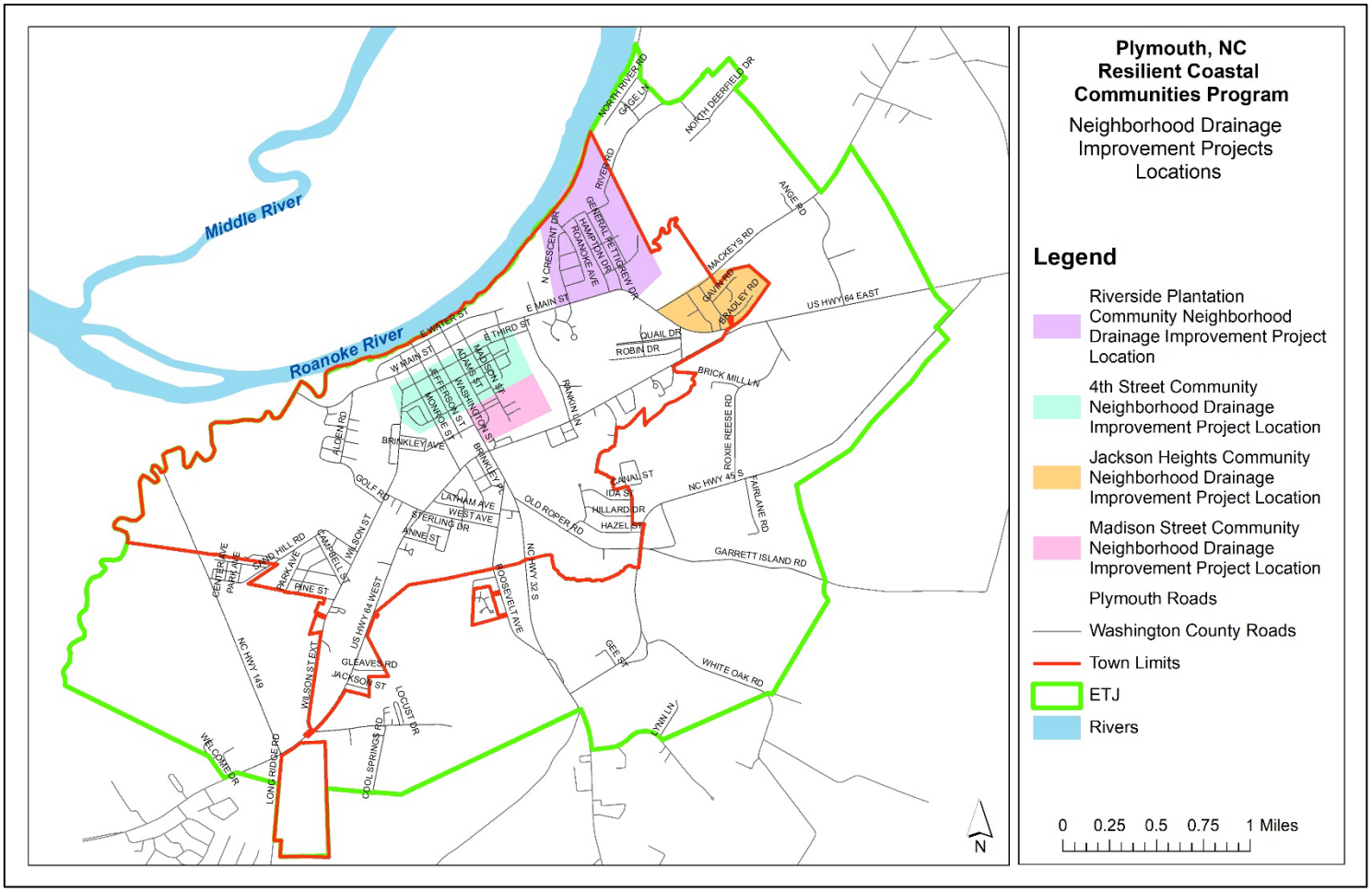
TOWN OF PLYMOUTH

Neighborhood Drainage Improvement Projects

Project Summary	
Project Description	Complete hybrid drainage improvement projects with priority areas at: 1. Riverside Plantation Community 2. 4th Street Community (including side streets such as Adams Street and Winesset Circle) 3. Jackson Heights Community 4. Madison Street Community
Project Scope	Engineering/Design – Design hybrid drainage improvement projects with priority areas at: 1.) Riverside Plantation Community, 2.) 4th Street Community (including side streets such as Adams St. and Winesset Cir.), 3.) Jackson Heights Community, 4.) Madison Street Community. The engineering/design phase will include detailed assessment and documentation of the type and location of stormwater infrastructure in the neighborhood, collecting and analyzing data on the neighborhood's hydraulic flow, assessing the neighborhood drainage system's capacity and functionality, and identifying projects to upgrade the neighborhood's drainage system and improve the ability of the system to convey water and/or improve water quality. Both hard/grey infrastructure and green/nature-based solutions will be incorporated. Public education on the proposed projects will be incorporated. - Hydro Analysis - Inventory Field Work - NEPA / SEPA Documentation - GIS analysis - Project Prioritization/Recommendations - Public Education - Engineering/Design - Permitting Due Diligence Implementation – Construct neighborhood drainage improvement projects based on the designs completed in the engineering/design phase. Projects could include pipe replacements (upsizing where needed), increasing the size and quantity of culverts and catch basins, redefining ditches, implementing backflow preventors, installing bioswales, bioretention cells, and other green and hybrid solutions. - Permitting - Construction - Construction Administration - Construction Inspections

Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Flooding (Nuisance, Riverine)
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) <u>Engineering/Design</u> ▪ Hybrid/Green Infrastructure Solution <u>Implementation</u> ▪ Hybrid/Green Infrastructure Solution
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Accommodate
Project Estimated Cost	Engineering/Design - $225,000 Implementation - $150,000 - $500,000 (per local stormwater retrofit project)
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) <u>Implementation</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)
Project Estimated Timeline	2-3 years
Priority Rating	High

Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					



Conaby Creek Flood Study - Conaby Creek Flood Improvement Projects

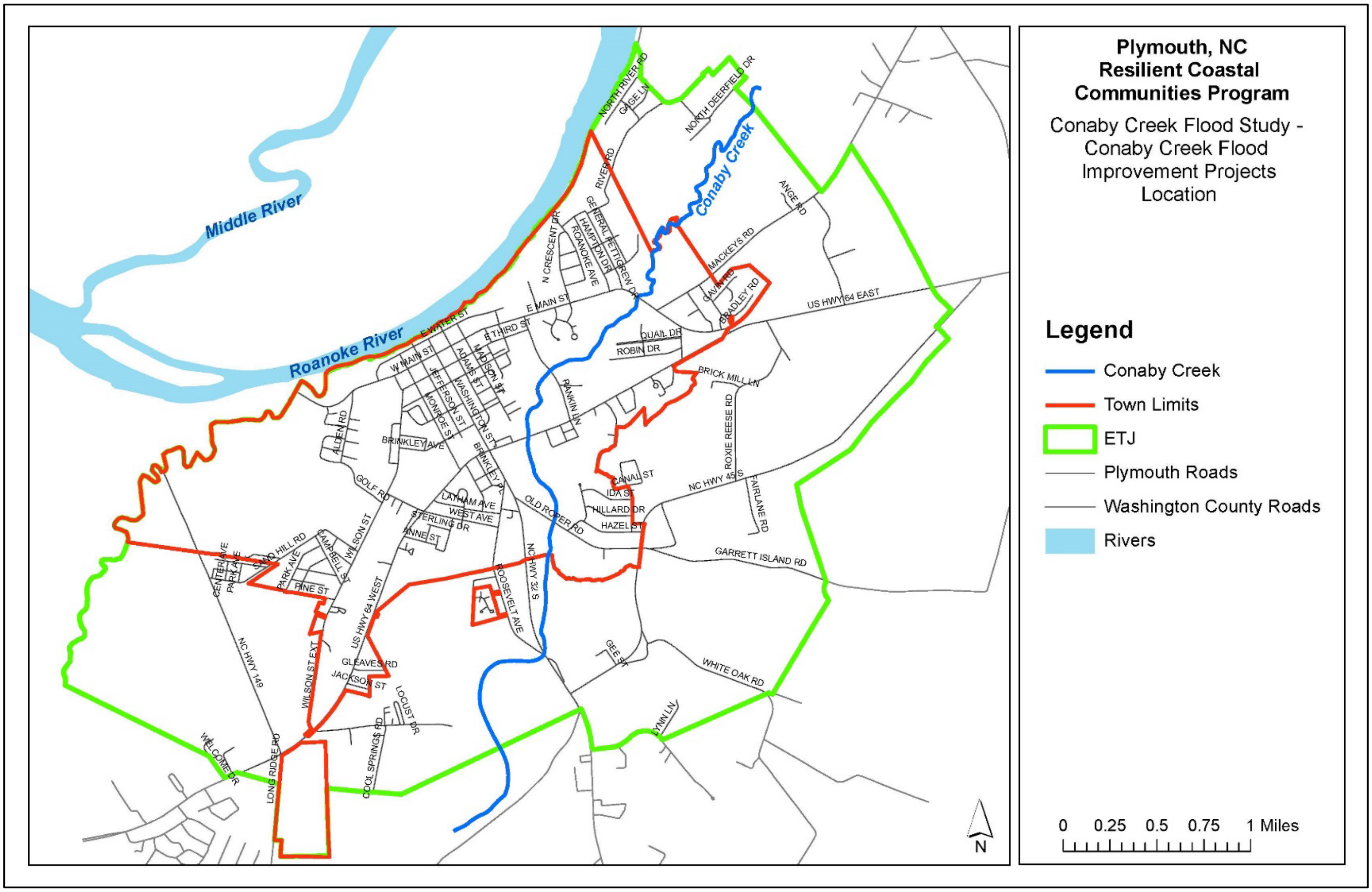
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Conaby Creek Flood Study – Conaby Creek Flood Improvement

Project Summary	
Project Description	Complete a detailed flood study and implement projects to relieve flooding from Conaby Creek. The effective FEMA model for the stream is outdated and this project will study projected rainfall, current landcover, and projected landcover. The project will then prioritize solutions and provide a final design for the solution chosen in partnership with the community.
Project Scope	Engineering/Design – Complete a detailed flood study for Conaby Creek. This study will focus on flood-prone areas, including the Highway 64 area, Old Roper Rd./Highway 32 area, E. Main St. area, neighborhoods nearby Conaby Creek, and the crossings of Conaby Creek within the town's jurisdiction. NC DOT hydro analysis documents for bridges will be used to support the study and there will be a partnership with NC DOT Division 1. The study will evaluate conceptual projects to relieve flooding impacts from Conaby Creek. Then engineering/design will be completed for the chosen project. - NEPA - Flood Study and Mapping - Public Outreach - Project Concept Planning - Engineering/Design Implementation – Construct a flood improvement project for Conaby Creek. Projects will be determined in the engineering/design phase. - Permitting - Construction - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Planning ▪ Hybrid/Green Infrastructure Solution Implementation

	▪ Hybrid/Green Infrastructure Solution				
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Accommodate ▪ Protect				
Project Estimated Cost	<u>Feasibility</u> - $70,000 <u>Engineering/Design</u> - $430,000 - $950,000 <u>Implementation</u> - $ 2,000,000 - $10,000,0000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Capability and Capacity Building (C&CB) ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) <u>Implementation</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)				
Project Estimated Timeline	5-10 years (project may be completed in phases)				
Priority Rating	High				
Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Plymouth, NC
Resilient Coastal Communities Program
Conaby Creek Flood Study - Conaby Creek Flood Improvement Projects Location
Legend
Conaby Creek
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
Middle River
Roanoke River
Conaby Creek
US HWY 64 EAST
US HWY 64 WEST
NC HWY 32 S
NC HWY 45 S
NC HWY 149
GARRETT ISLAND RD
WHITE OAK RD
BRICK MILL LN
ROXIE REESE RD
FAIRLANE RD
OLD ROPER RD
MACKEYS RD
ANGE RD
NORTH DEERFIELD DR
NORTH RIVER RD
RIVER RD
E MAIN ST
W MAIN ST
E WATER ST
E THIRD ST
WASHINGTON ST
JEFFERSON ST
MONROE ST
ADAMS ST
MADISON ST
BRINKLEY AVE
GOLF RD
ALDEN RD
WILSON ST
WILSON ST EXT
LONG RIDGE RD
COOL SPRINGS RD
LOCUST DR
GLEAVES RD
JACKSON ST
ROOSEVELT AVE
RANKIN LN
QUAIL DR
ROBIN DR
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
PINE ST
PARK AVE
SAND HILL RD
GEE ST
LYNN LN
WELCOME DR
BRADLEY RD
N CRESCENT DR
ROANOKE AVE
HAMPTON DR
GAGE LN

Stream Debris Cleanout

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

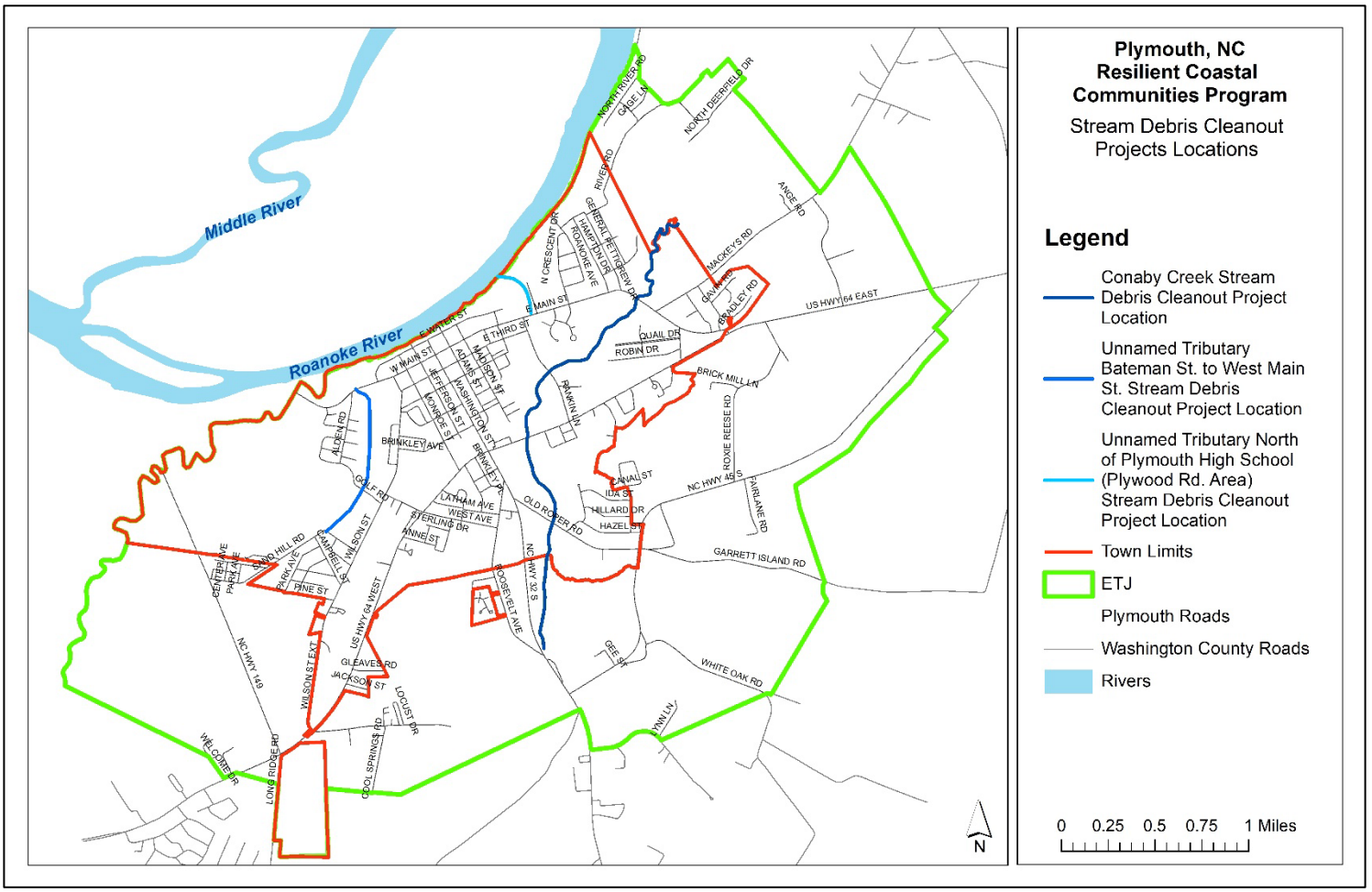
TOWN OF PLYMOUTH

Stream Debris Cleanout

Project Summary	
Project Description	Complete stream cleanouts (snag and drags) with a focus on: 1. Conaby Creek from NC 32 to town limits boundary past E Main St. 2. Unnamed Tributary to Roanoke River from Bateman St. to W. Main St. 3. Unnamed Tributary to Roanoke River north of Plymouth High School (Plywood Rd. area)
Project Scope	Complete stream cleanouts (snag and drags) with a focus on: 1. Conaby Creek from NC 32 to E Main St. 2. UT to Roanoke River Bateman St. and W. Main St. 3. Tributary north of Plymouth High School (Roanoke Ave./Crescent Dr. area). These projects would remove debris from the channel to allow higher volumes of flow. These stream cleanouts would be completed using the U.S. Army Corps of Engineers 1992 Woody Removal Guide and the NRCS Conservation Practice Standard – Clearing and Snagging (code 326) document. Only those log accumulations that are obstructing the flow of water shall be removed. This includes downed trees, broken tops and woody/vegetative debris that has fallen into the stream beds and is restricting water flow and/or contributing to flooding with heavy rains. Minimal disturbance to stream banks is required, therefore; hand-operated equipment will be the first choice in removal, such as-winches, chain saws, shallow draft barge, or boat. Beavers dams will also be removed in the cleanout process.
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) ▪ Hybrid/Green Infrastructure Solution
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Accommodate
Project Estimated Cost	Up to $25 per linear foot (currently StRAP funds pay $10.80 per linear foot for coastal streams)

Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation ▪ NC Dept. of Agriculture Streamflow Rehabilitation Assistance Program (StRAP) ▪ NCDEQ Stream Debris Removal Program				
Project Estimated Timeline	1-2 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*

Project Map



Improve Constructed Wetland at West Water Street

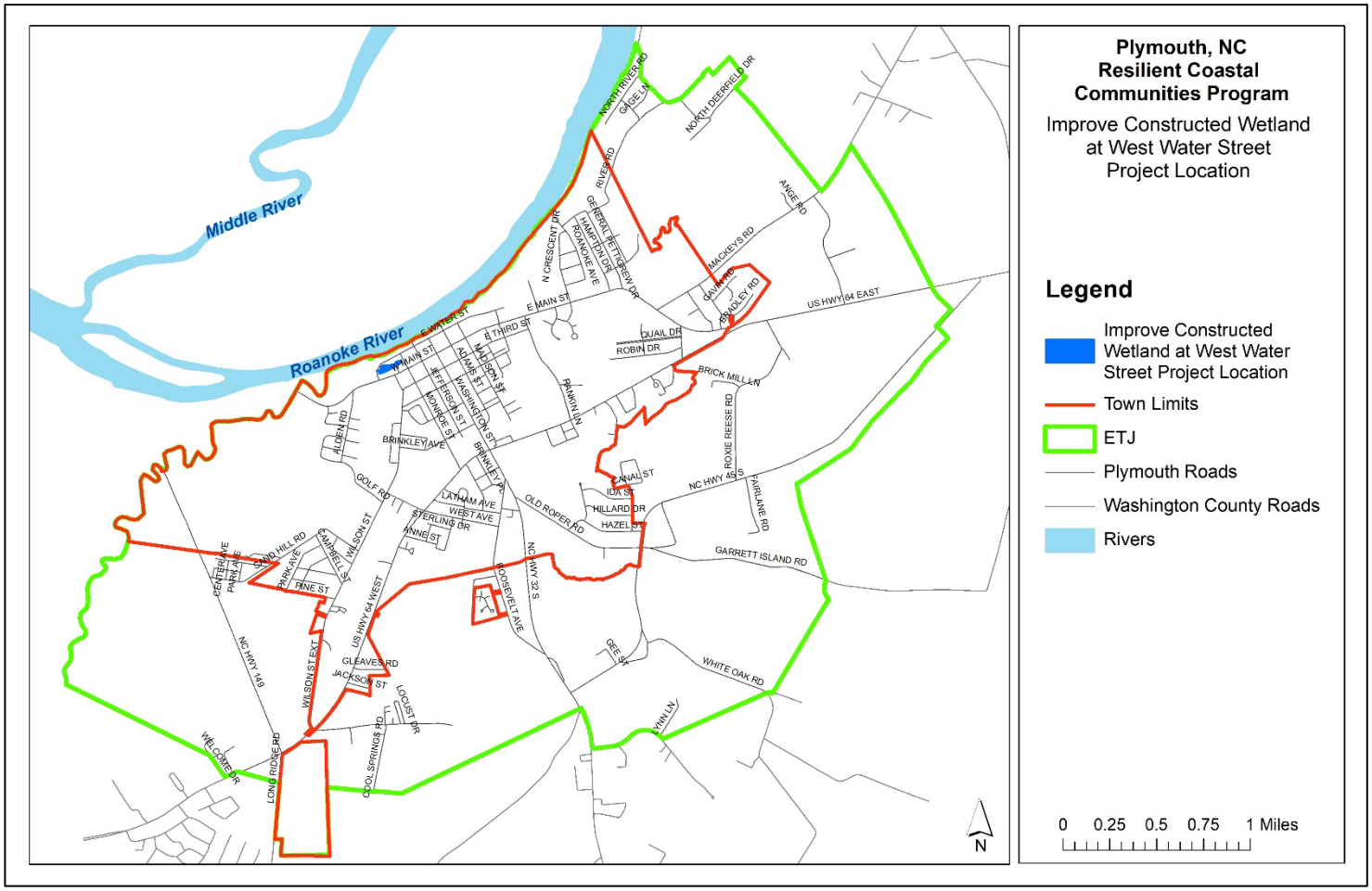
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Improve Constructed Wetland at West Water Street

Project Summary	
Project Description	Improve the function of the constructed wetland behind the senior public housing complex to address over street flooding of West Water Street.
Project Scope	Engineering/Design – Design solutions to improve the function of the constructed wetland behind the elderly housing complex to address over street flooding of W Water St. There is the potential that a pump needs replacement. There is a preference that over flow from the wetland is piped to run under W Water St. rather than being allowed to overtop the street. Consider an automated bar/light system to stop traffic if the over street flooding cannot be completely resolved. - Survey - Site Analysis - Environmental / Planning Documentation - Concept Designs / Alternatives - Engineering/Design - Permitting Due Diligence Implementation – Construct identified project(s) to improve the function of the constructed wetland behind the elderly housing complex to address over street flooding of W Water St. Project(s) will be determined during the engineering/design phase. An automated bar/light system to stop traffic will be installed if the over street flooding cannot be completely resolved. - Permitting - Construction - Construction Administration - Construction Inspection
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Nuisance Flooding
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Hybrid Green Infrastructure Solution Implementation ▪ Hybrid Green Infrastructure Solution

Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity				
Project Estimated Cost	<u>Engineering/Design</u> - $65,000 <u>Implementation</u> - $250,000 - $750,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) <u>Implementation</u> ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)				
Project Estimated Timeline	2-3 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Middle River
Roanoke River
Plymouth, NC
Resilient Coastal
Communities Program
Improve Constructed Wetland
at West Water Street
Project Location
Legend
Improve Constructed Wetland at West Water Street Project Location
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
E MAIN ST
E THIRD ST
MAIN ST
WATER ST
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
N CRESCENT DR
GENERAL PETIGREW DR
HAMILTON DR
ROANOKE AVE
ANGE RD
MACKEYS RD
GRAY RD
BRADLEY RD
US HWY 64 EAST
QUAIL DR
ROBIN DR
BRICK MILL LN
ROXIE REESE RD
FAIRLANE RD
NC HWY 45 S
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
OLD ROPER RD
GARRETT ISLAND RD
WHITE OAK RD
GEE ST
THIN LN
ROOSEVELT AVE
NC HWY 32 S
ADAMS ST
MADISON ST
JEFFERSON ST
MONROE ST
WASHINGTON ST
FRANKLIN
BRINKLEY AVE
BRINKLEY PL
ALDEN RD
GOLF RD
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
WILSON ST
CAMPBELL ST
OLD HILL RD
PARK AVE
CENTER AVE
PINE ST
US HWY 64 WEST
WILSON ST EXT
NC HWY 149
GLEAVES RD
JACKSON ST
LOCUST DR
ODOL SPRINGS RD
LONG RIDGE RD
WELCOME DR

Washington Street Stormwater and Streetscape Project

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

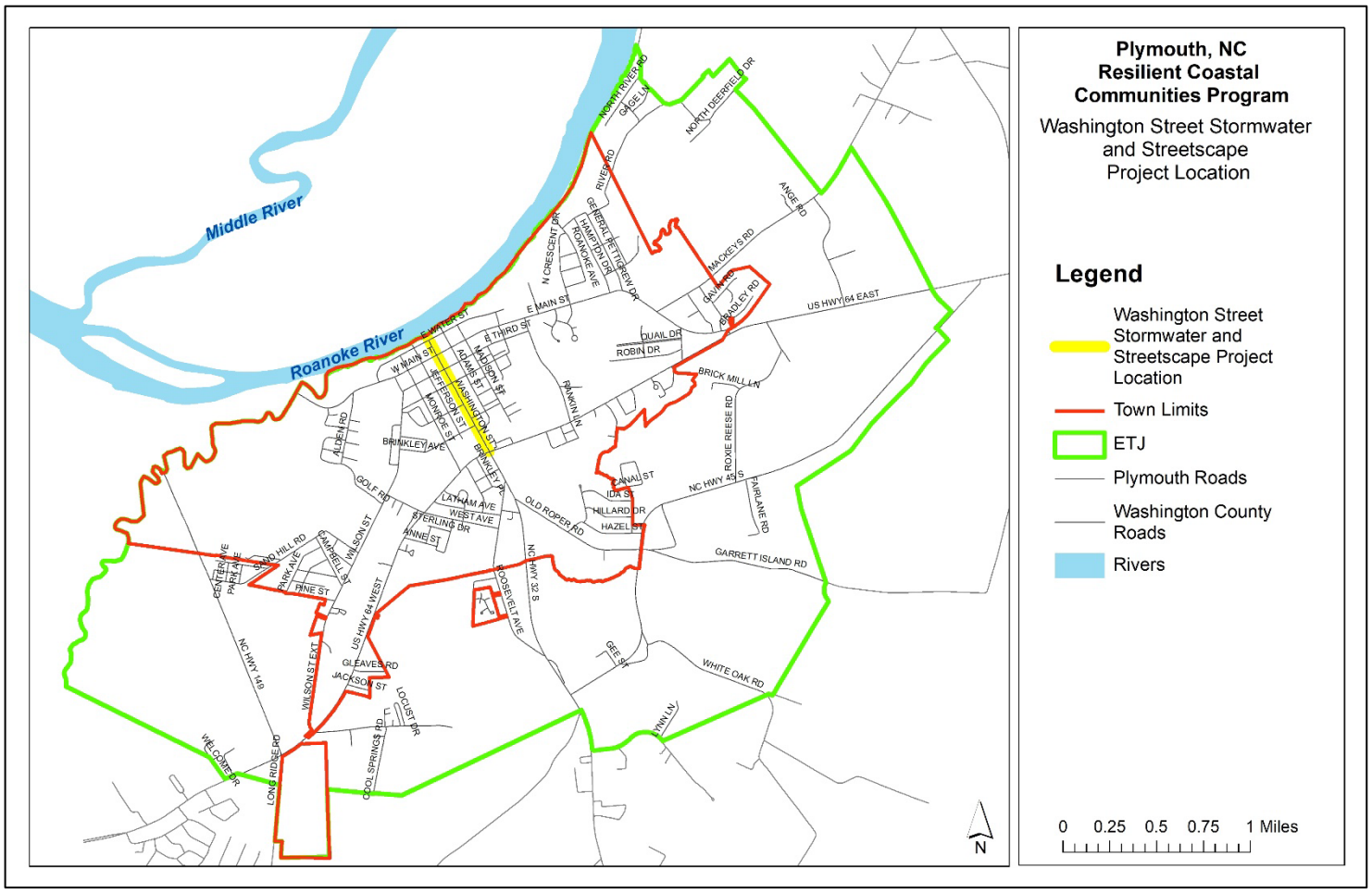
TOWN OF PLYMOUTH

Washington Street Stormwater and Streetscape Project

Project Summary	
Project Description	Upgrade stormwater infrastructure along Washington Steet from W. Main Steet to US 64 utilizing a mix of hard and green infrastructure combined with an aesthetic streetscape improvement project.
Project Scope	Engineering/Design – The primary project need is to replace stormwater pipes under Washington Street, as these pipes are collapsing and causing sinkholes in the road. Primary maintenance including paving should also be performed to ensure the project's longevity. This is a primary travel route connecting US-64 to downtown Plymouth and surrounding residential neighborhoods. This will be a partnership with the Albemarle RPO and NC DOT. Additionally, this project will incorporate streetscape improvements in partnership with the Plymouth Downtown Development Association. Street improvements will include green stormwater infrastructure which will also improve the route's aesthetics, including tree planting, rain gardens, bioretention cells, etc. This is also a great opportunity to complete a "Green Street" project to be rated by a 3rd party such as The Sustainable Transportation Council or Envision. - NEPA/SEPA Planning - Survey - Engineering/Design - Green Street Planning - Permitting Due Diligence Implementation – Work with NCDOT to replace stormwater pipes under Washington Street. This is an important project for stormwater as well as for public safety, as collapsing stormwater pipes are causing sinkholes in this heavily traveled road. Construct streetscape improvements including green stormwater infrastructure, based on designs completed during the engineering/design phase. - Permitting - Construction - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Flooding (Nuisance, Riverine)

Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) <u>Engineering/Design</u> ▪ Hybrid/Green Infrastructure Solution <u>Implementation</u> ▪ Hybrid/Green Infrastructure Solution
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Protect ▪ Build Adaptive Capacity
Project Estimated Cost	<u>Engineering/Design</u> - $700,000 <u>Implementation</u> - $6,000,000 – $8,000,000
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation <u>Engineering/Design</u> ▪ NC Dept. of Transportation (NC DOT) ▪ NC Resilient Coastal Communities Program Phase 3 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) ▪ NC Dept. of Commerce ▪ US Economic Development Administration (EDA) ▪ Golden Leaf <u>Implementation</u> ▪ NC Dept. of Transportation (NC DOT) ▪ NC Resilient Coastal Communities Program Phase 4 ▪ NC Environmental Enhancement Grant (EEG) ▪ NC Land and Water Fund Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG) ▪ NC Dept. of Commerce ▪ US Economic Development Administration (EDA) ▪ Golden Leaf
Project Estimated Timeline	2-3 years

Priority Rating	High				
Potential Submission for RCCP Phase 3	♦	Yes		No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					



Improve Wastewater Treatment Plant Access Road

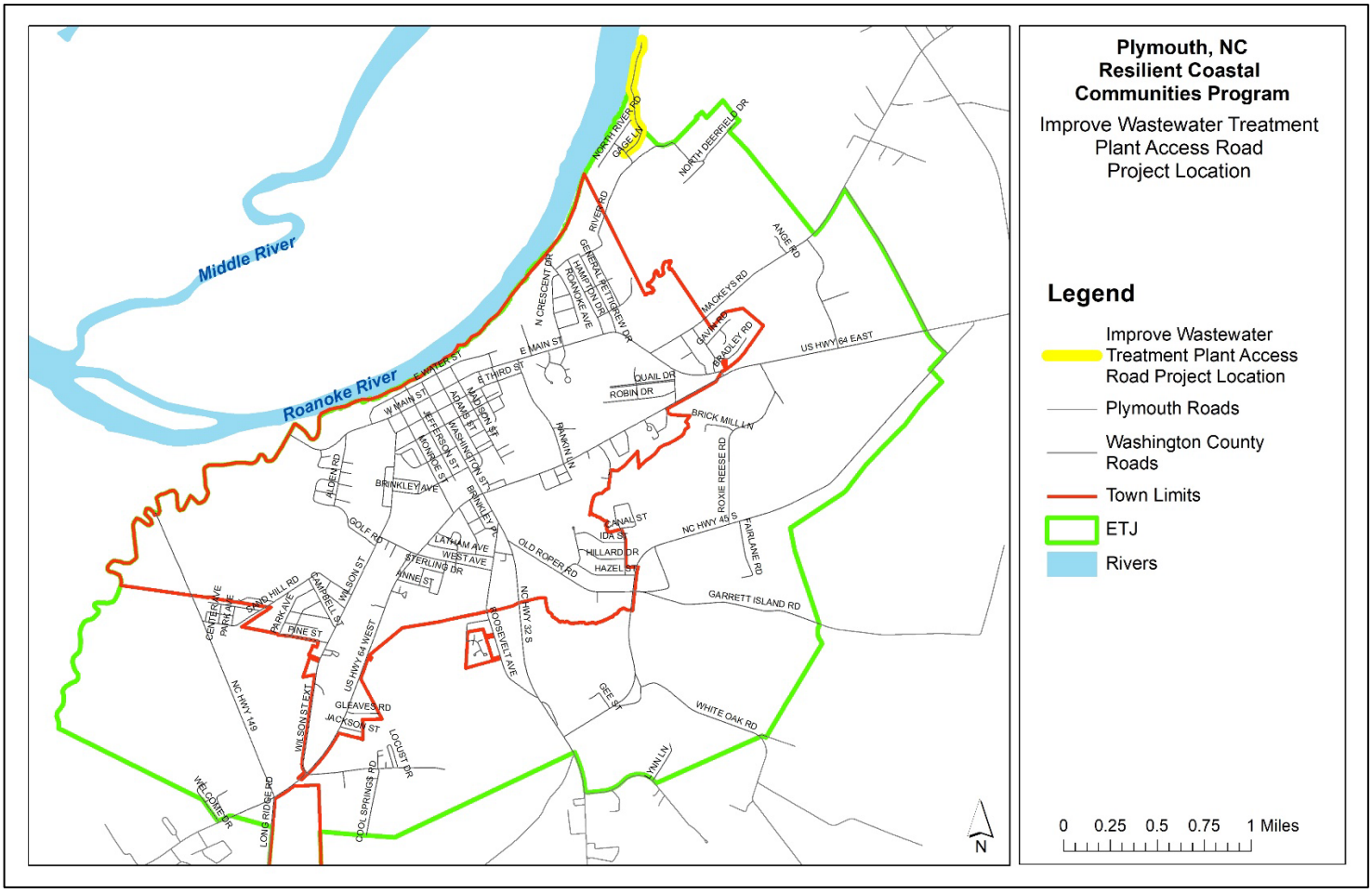
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Improve Wastewater Treatment Plant Access Road

Project Summary	
Project Description	Improve Gage Lane from a location north of River Road to the Plymouth Wastewater Treatment Plant. The road is located in the Roanoke River effective floodway.
Project Scope	Engineering/Design – Design a solution to improve Gage Ln. from River. Rd. to the Plymouth Wastewater Treatment Plant. This is a vital project since access to the Wastewater Treatment Plant is impeded during major storm and employees often have to camp out at the facility. The project will consider the elevation and pavement type of Gage Lane. - Survey - Road evaluation - Natural Resource Evaluation - Engineering/Design - FEMA Permitting - Permitting Due Diligence Implementation – Construct improvements at Gage Ln. to facilitate access to the Plymouth Wastewater Treatment Plant during storm events. The engineering/design phase will determine the project to be completed. Elevation of Gage Ln. is a possibility. - Permitting - Construction - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding ▪ Storm Surge
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Hard/Grey Infrastructure Solution Implementation ▪ Hard/Grey Infrastructure Solution

Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Accommodate ▪ Build Adaptive Capacity				
Project Estimated Cost	Engineering/Design - $80,000 Implementation - $525,000 - $775,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation Engineering/Design ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Golden Leaf Disaster Recovery Grant ▪ NC Emergency Management (NCEM) Disaster Relief and Mitigation Fund Implementation ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Golden Leaf Disaster Recovery Grant ▪ NC Emergency Management (NCEM) Disaster Relief and Mitigation Fund				
Project Estimated Timeline	2-3 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Middle River
Roanoke River
Plymouth, NC
Resilient Coastal
Communities Program
Improve Wastewater Treatment
Plant Access Road
Project Location
Legend
Improve Wastewater Treatment Plant Access Road Project Location
Plymouth Roads
Washington County Roads
Town Limits
ETJ
Rivers
0 0.25 0.5 0.75 1 Miles
N
E MAIN ST
W MAIN ST
E THIRD ST
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
ANGEL RD
MACKEY'S RD
BRADLEY RD
US HWY 64 EAST
QUAIL DR
ROBIN DR
BRICK MILL LN
ROXIE REESE RD
NC HWY 45 S
FARLANE RD
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
OLD ROPER RD
GARRETT ISLAND RD
WHITE OAK RD
GEE ST
LYNN LN
NC HWY 32 S
ROOSEVELT AVE
US HWY 64 WEST
GLEAVES RD
JACKSON ST
LOCUST DR
COOL SPRINGS RD
WILSON ST EXT
NC HWY 149
WILCOTTE DR
LION RIDGE DR
WILSON ST
CAMPBELL ST
PARK AVE
PINE ST
OLD HILL RD
CENTER AVE
PARK AVE
GOLF RD
ALDEN RD
BRINKLEY AVE
BRINKLEY PL
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
ADAMS ST
MADISON ST
JEFFERSON ST
MONROE ST
WASHINGTON ST
PRAWN LN
GENERAL PETTIGREW DR
HAMPTON DR
ROANOKE AVE
N CRESCENT DR

Relocate or Retrofit Vulnerable Lift Stations

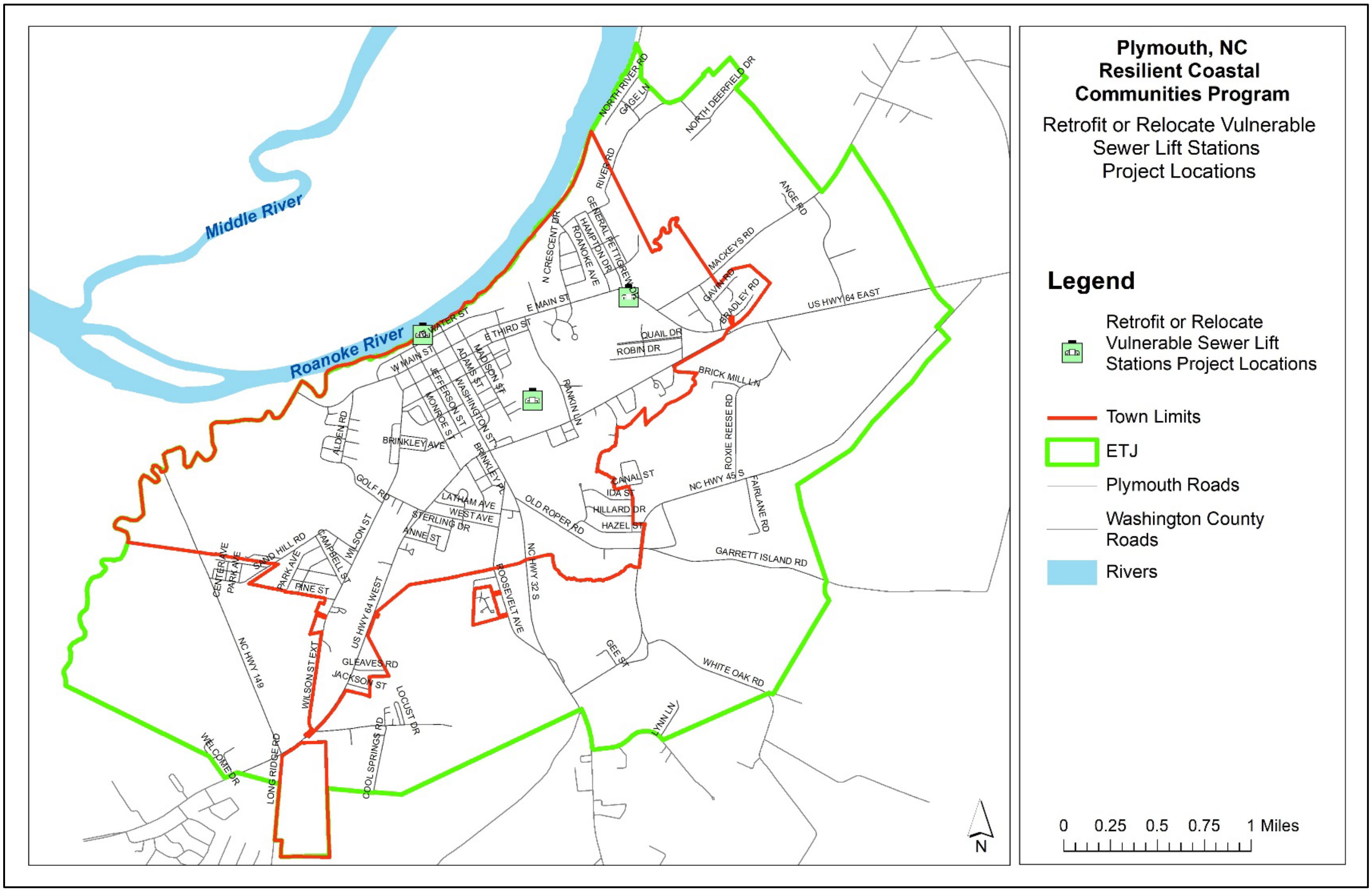
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Relocate or Retrofit Vulnerable Lift Stations

Project Summary	
Project Description	Relocate or retrofit vulnerable sewer lift stations on Water Street, Johnson Court and East Main Street to improve risk of impacts from flooding.
Project Scope	Engineering/Design – Analyze the three vulnerable sewer lift stations on Water St., Johnson Ct. and East Main St. Determine which can be retrofitted through elevation, protective barriers, etc. and which need to be relocated. Design retrofits and/or select locations for relocation. - Desktop Analysis - Surveys/Utility location - Lift station analysis - Retrofit engineering/design - Relocation site selection Implementation – Construct retrofit projects and/or relocate the three vulnerable sewer lift stations, as determined during the engineering/design phase. - Permitting - Construct retrofits and/or relocate sewer lift stations - Construction Administration - Construction Inspections
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Riverine Flooding ▪ Nuisance Flooding ▪ Storm Surge
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) Engineering/Design ▪ Hard/Grey Infrastructure Implementation ▪ Hard/Grey Infrastructure

Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity ▪ Retreat ▪ Protect				
Project Estimated Cost	Engineering/Design - $700,000 Implementation - $6,000,000 - $9,000,000				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation Engineering/Design ▪ HUD Community Development Block Grant Mitigation Funds (CDBG-MIT) ▪ NC Division of Water Infrastructure Programs (Clean Water State Revolving Fund, State Reserve Program, Viable Utility Reserve Program) ▪ Golden Leaf Disaster Recovery Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant Implementation ▪ HUD Community Development Block Grant Mitigation Funds (CDBG-MIT) ▪ NC Division of Water Infrastructure Programs (Clean Water State Revolving Fund, State Reserve Program, Viable Utility Reserve Program) ▪ Golden Leaf Disaster Recovery Grant ▪ Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant				
Project Estimated Timeline	2-3 years				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*
Project Map					


Plymouth, NC
Resilient Coastal Communities Program
Retrofit or Relocate Vulnerable Sewer Lift Stations Project Locations
Legend
Retrofit or Relocate Vulnerable Sewer Lift Stations Project Locations
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
Middle River
Roanoke River
US HWY 64 EAST
US HWY 64 WEST
NC HWY 45 S
NC HWY 32 S
NC HWY 149
GARRETT ISLAND RD
WHITE OAK RD
BRICK MILL LN
ROXIE REESE RD
FAIRLANE RD
OLD ROPER RD
ROOSEVELT AVE
WILSON ST EXT
E MAIN ST
W MAIN ST
WATER ST
WASHINGTON ST
JEFFERSON ST
MONROE ST
ADAMS ST
MADISON ST
BRINKLEY AVE
GOLF RD
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
QUAIL DR
ROBIN DR
MACKEYS RD
BRADLEY RD
ANGE RD
NORTH DEERFIELD DR
NORTH RIVER RD
GAGE LN
RIVER RD
N CRESCENT DR
ROANOKE AVE
HAMPTON DR
RANKIN LN
ALDEN RD
WILSON ST
CAMPBELL ST
PINE ST
PARK AVE
CENTER AVE
GLEAVES RD
JACKSON ST
LOCUST DR
COOL SPRINGS RD
LONG RIDGE RD
WELCOME DR
GEE ST
LYNN LN

Back-up Generators at Critical Facilities

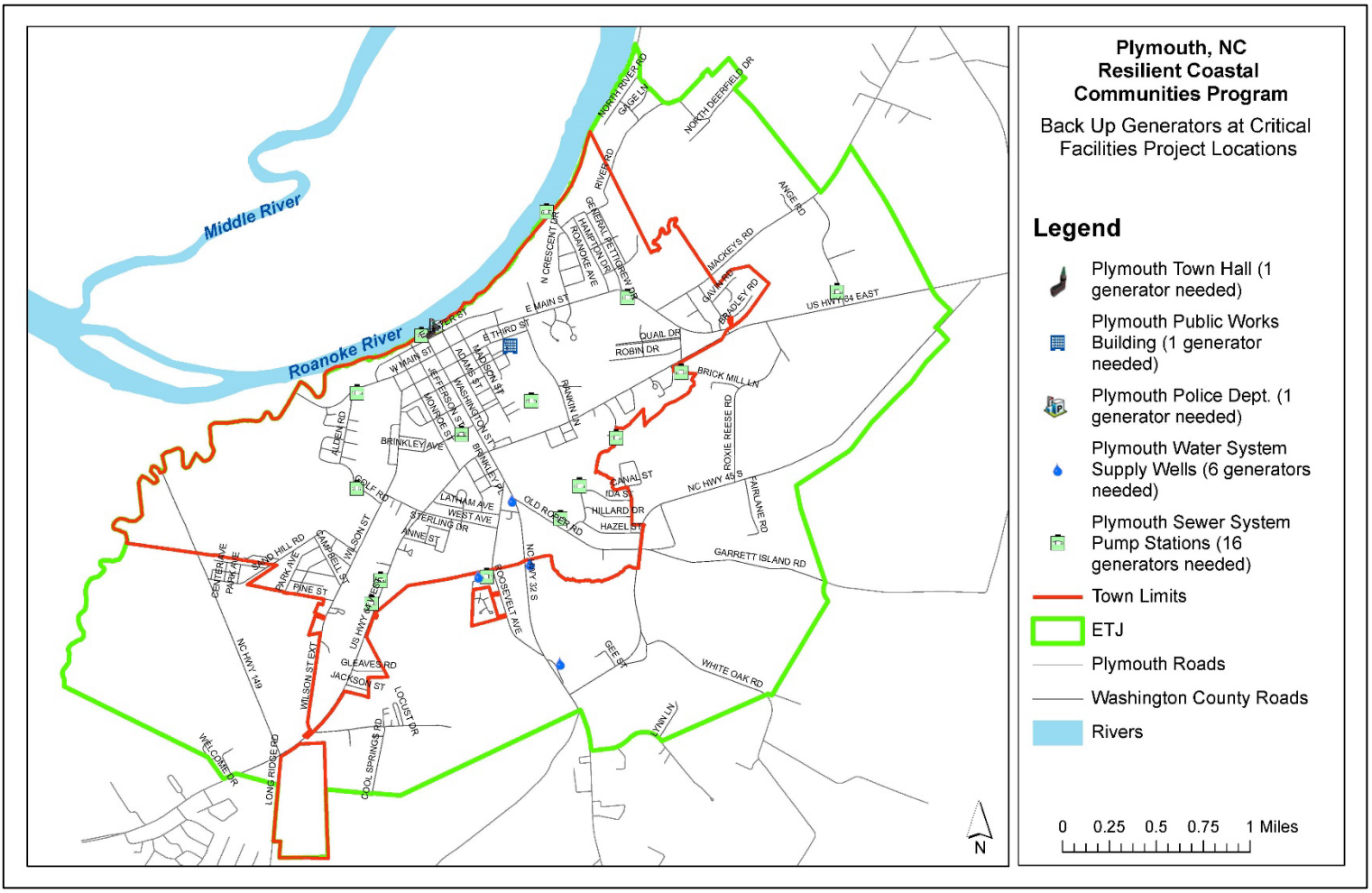
North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

TOWN OF PLYMOUTH

Back-up Generators at Critical Facilities

Project Summary					
Project Description	Acquire back-up generators for critical facilities.				
Project Scope	Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available. Current generator needs include sewer lift stations (16), water supply wells (6), the Public Works building, the Police Dept., and Town Hall.				
Hazard(s) Addressed by Project	List Hazards Specific to the Community Which Impact the Project Location (Refer to Hazard Mapping) ▪ Any major storm or event which makes normal power supply unavailable (hurricane, tornado, flooding, wildfire, etc.)				
Type of Solution/Strategy Area	List Strategy Area Column(s) from Matrix (e.g., Policy, Planning, Green and Hybrid [Nature-Based] Solutions, Hard/Grey Infrastructure) ▪ Hard/Grey Infrastructure				
Type of Strategy Approach	List Strategy Approach from Matrix (e.g., Avoid, Accommodate, Protect, Retreat, Build Adaptive Capacity) ▪ Build Adaptive Capacity				
Project Estimated Cost	1 generator – 100 kw: $50,000 each with installation 24 generators – 50 kw generators: $35,000 each with installation				
Potential Implementation Funding Sources	Potential Sources for Project/Action Implementation ▪ Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) ▪ Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program ▪ Golden Leaf Disaster Recovery Grant				
Project Estimated Timeline	1 year				
Priority Rating	High				
Potential Submission for RCCP Phase 3		Yes	♦	No	*Project must be a nature-based solution or hybrid solution to be considered for RCCP Phase 3.*

Project Map


Middle River
Roanoke River
Plymouth, NC
Resilient Coastal
Communities Program
Back Up Generators at Critical
Facilities Project Locations
Legend
Plymouth Town Hall (1 generator needed)
Plymouth Public Works Building (1 generator needed)
Plymouth Police Dept. (1 generator needed)
Plymouth Water System Supply Wells (6 generators needed)
Plymouth Sewer System Pump Stations (16 generators needed)
Town Limits
ETJ
Plymouth Roads
Washington County Roads
Rivers
0 0.25 0.5 0.75 1 Miles
N
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
ANGE RD
MACKEY'S RD
GENERAL PETTIGREW DR
HAMPTON DR
ROANOKE AVE
N CRESCENT DR
E MAIN ST
E THIRD ST
QUAIL DR
ROBIN DR
BRADLEY RD
US HWY 64 EAST
BRICK MILL LN
ROXIE REESE RD
NC HWY 45 S
FAIRLANE RD
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
GARRETT ISLAND RD
WHITE OAK RD
GEE ST
ROOSEVELT AVE
OLD ROPER RD
PAMLIN LN
W MAIN ST
MADISON ST
ADAMS ST
JEFFERSON ST
MONROE ST
WASHINGTON ST
BRINKLEY AVE
BRINKLEY PL
ALDEN RD
GOLF RD
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
WILSON ST
CAMPBELL ST
OLD HILL RD
PARK AVE
PINE ST
CENTER AVE
PARK AVE
US HWY 64 WEST
GLEAVES RD
JACKSON ST
LOCUST DR
WILSON ST EXT
NC HWY 149
WELCOME DR
LONG RIDGE RD
COOL SPRINGS RD
LYNN LN

Appendix A

Community Action Team Materials

Community Action Team Members:

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Brian Roth – Mayor
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Preston Moore – Citizen representative and Planning Board member
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Tammy Shepherd
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Sarah Baird-Forner
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(252)741-9281

Contractors:

Mid-East Commission:

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North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

Town of Plymouth

Community Action Team - Meeting Framework

Each meeting is anticipated to be approximately 2-hours in duration. Meeting dates, times and locations are noted below. The review of relevant RCCP materials and CAT coordination will occur between each meeting. Meeting agendas will be provided in advance of each meeting. Meeting topics are subject to change as additional topics or needs are identified.

PHASE 1 COMMUNITY ENGAGEMENT AND RISK/VULNERABILITY ASSESSMENT

MEETING 1

Date: Wed. Oct. 4, 2023

Time: 2:00 – 4:00 pm

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water St. Plymouth, NC 27962

VISION AND GOALS, EXISTING PLANS & COMMUNITY ENGAGEMENT

Phase 1, Step 1: Form Community Action Team

- A. Introduce team members and contractors.

Phase 1, Step 2: Review Existing Plans and Efforts

- A. Review existing plans, ordinances, policies, and programs, including Pamlico Sound Regional Hazard Mitigation Plan.
- B. Compile information on critical assets, natural resources, social vulnerability, risk assessments, and resiliency related projects.
- C. Identify and document additional data and resources necessary to complete the community's Risk and Vulnerability Assessment.

Phase 1, Step 3: Set Vision and Goals

- A. Review community plans and Hazard Mitigation Plan for resiliency vision and goal statements.
- B. Identify example resiliency vision and goal statements.
- C. Develop community-specific visions and goals.

Phase 1, Step 4: Develop a Community Engagement Strategy

- A. Identify audiences/stakeholders, including vulnerable populations.
- B. Identify tools, techniques, and strategies for informing and engaging the community, including a targeted approach for reaching vulnerable populations.
- C. Develop a community engagement strategy and schedule.

MEETING 2

Date: Wed. Nov. 1, 2023

Time: 2:00 – 4:00 pm

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water St. Plymouth, NC 27962

EXISTING CONDITIONS – CRITICAL ASSETS & NATURAL INFRASTRUCTURE

Phase 1, Step 5: Map Critical Assets and Natural Infrastructure

- Review inventory of critical assets and natural infrastructure.
- Review and discuss critical assets, natural resources, social vulnerability, available risk assessments, and resiliency related projects.
- Review draft mapping of critical assets and natural infrastructure.
- Select critical assets and natural infrastructure to include in the RCCP Risk and Vulnerability Assessment.
- Discuss hazards to include in the Risk and Vulnerability Assessment.

MEETING 3

Date: Wed. TBD

Time: 2:00 – 4:00 pm

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water St. Plymouth, NC 27962

RISK & VULNERABILITY ASSESSMENT & PUBLIC MEETING PLANNING

Phase 1, Step 6: Conduct Risk and Vulnerability Assessment

- A. Identify and map the hazards.
  - 1. Review hazard mapping including hazards overlaid with critical assets and natural resources.
- B. Assess Vulnerability
  - 1. Review vulnerability index to measure exposure, sensitivity and adaptive risk for critical assets and natural infrastructure.
  - 2. Complete vulnerability worksheets.
- C. Estimate Risk
  - 1. Complete quantitative risk worksheets.
- *Community Engagement:* Plan a Public Open House to engage the community during Phase 1. Two-week public comment period required before moving into Phase 2.

PHASE 2 PLANNING, PROJECT IDENTIFICATION, AND PRIORITIZATION

MEETING 4

Date: Wed. TBD

Time: 2:00 – 4:00 pm

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water St. Plymouth, NC 27962

SUITE OF POTENTIAL STRATEGIES

Phase 2, Step 1: Identify a Suite of Potential Solutions

- A. Review the community's plans and other local sources for previously identified projects.
- B. Brainstorm a suite of potential solutions.
- C. Capture a suite of innovative solutions that can be used to apply for funding or self-funding.
- D. Link various strategies to the Phase I Risk Assessment with those being most vulnerable or most at risk
- E. Collaborate to further define the solutions.
- F. Discuss development of resiliency projects and actions portfolio.

MEETING 5

Date: Wed. TBD

Time: 2:00 – 4:00 pm

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water St. Plymouth, NC 27962

PRELIMINARY PROJECT PRIORITIZATION & PUBLIC MEETING PLANNING

Phase 2, Step 2: Consolidate and Prioritize Projects

- A. Describe strategies.
- B. Evaluate strategies and their feasibility (STAPLEE method).
- C. Conduct an informal cost-benefit analysis to review proposed strategies.
- D. CAT to review strategies and discuss preliminary project priorities.
- *Community Engagement:* Plan a Public Open House to engage the community during Phase 2 and obtain input on strategies and priorities. One-week public comment period following Open House.

MEETING 6

Date: Wed. TBD

Time: 2:00 – 4:00 pm

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water St. Plymouth, NC 27962

PUBLIC INPUT & DRAFT RESILIENCE STRATEGY ELEMENTS

Phase 2, Step 2: Consolidate and Prioritize Projects (continued)

- A. Consider public input and select priority projects.
- B. Identify at least five (5) priority projects for final project portfolio.
- C. Discuss project sites and details for each priority project.
- D. Collaborate on priority project templates.

MEETING 7

Date: Wed. TBD

Time: 2:00 – 4:00 pm

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water St. Plymouth, NC 27962

RESILIENCE STRATEGY DOCUMENT

Phase 2, Step 3: Develop the Resilience Strategy Document

- A. High level review of Resilience Strategy document.
- B. Review priority project portfolio.
- C. Discuss RCCP Phase 3 and 4 application process.
- D. Pick one nature-based or hybrid project to apply for Phase 3 & 4 funding.
- E. Vote on endorsement of Resilience Strategy document.

RESILIENCY STRATEGY DOCUMENT

Following Meeting 6, the Contractor team will develop the Town of Plymouth Resilience Strategy Document. Elements of the document will be shared with the CAT as developed throughout the planning process. The CAT will be provided the entire draft Resilience Strategy Document for review and comment before the plan is finalized.

Thank you for participating on the Town of Plymouth Community Action Team!
We appreciate your involvement as we plan for a more resilient community.

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

Town of Plymouth

Community Action Team – Meeting #1

AGENDA

Wednesday, Oct. 04, 2023, 2:00 - 4:00 PM

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water Street, Plymouth, NC 27962

2:00 – 2:15 PM	**Introduction to Resilient Coastal Communities Program** ▪ Introduction of contractors and team members ▪ Review of Resilient Coastal Communities Program ▪ Review of Community Action Team meeting schedule and tasks ▪ See Community Action Team Meeting Framework document
2:15 – 2:30 PM	**Review of Existing Plans and Ordinances**
2:30 – 2:50 PM	**Community Vision Statement Exercise** ▪ Review Vision Statements from adopted plans and other vision statement examples ▪ Exercise: Community Vision Statement
2:50 – 3:15 PM	**Community Goals Exercise** ▪ Review goals from adopted plans and other resiliency goal examples ▪ Goals should address all three points; economic, environmental, social ▪ Exercise: Community Goals
3:15 – 3:30 PM	**Social Vulnerability Data**
3:30 – 3:50 PM	**Community Engagement Strategy** ▪ Public Survey ▪ Public Open House ▪ Strategies to engage the community, including vulnerable populations
3:50 – 4:00 PM	**Discussion / Adjournment**

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

PLYMOUTH

Community Action Team – Meeting #1

MEETING SUMMARY

WEDNESDAY, OCTOBER 4, 2023, 2:00 PM - 4:00 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Lisa Williams, Mid-East Commission (virtual attendee)
- Tris Ford, RK&K
- Sarah Spiegler, NC Sea Grant
- Mackenzie Todd, NC Division of Coastal Management
- Kasen Wally, NC Division of Coastal Management
- Mike Wright, Town of Plymouth
- Dorenda Wallace, Town of Plymouth
- Preston Moore, GFB / Town of Plymouth Planning Board member
- Joanne Floyd, Town of Plymouth

Meeting Purpose:

- Introduction of contractors and team members
- Review of Resilient Coastal Communities Program
- Review of Community Action Team meeting schedule and tasks
- Review of existing plans and ordinances
- Review vision statements from adopted plans and other vision statement examples
- Exercise: Community Vision Statement
- Review goals from adopted plans and other resiliency goal examples
- Exercise: Community Goals
- Review social vulnerability data
- Plan Community Engagement Strategy

Notes:

- All team members introduced themselves.
- Jamie Heath presented overview of Resilient Coastal Communities Program.
- Existing plans and ordinances were reviewed.
    - We will review and build off of the Facing Future in Plymouth, NC plan, which NC Sea Grant assisted the town with in 2012.
- Example vision statements were reviewed.

- The Community Vision Statement exercise was completed and worksheets were collected. Jamie Heath stated draft vision statement would be made available for comment via email.
- Example goals were reviewed.
- The Community Goals exercise was completed and worksheets were collected. Jamie Heath stated draft goals and objectives would be made available for comment via email.
- Social vulnerability data was reviewed.
    - Center for Disease Control (CDC) Social Vulnerability Index data was reviewed.
        - Socioeconomic status - Group agreed that SVI seemed accurate.
        - Household characteristics – Group agreed that SVI seemed accurate.
        - Racial and ethnic minority – Group agreed that SVI seemed accurate.
        - Housing type & transportation – Group agreed that SVI seemed accurate.
    - EPA Environmental Justice Screen reports were reviewed.
    - Local census data was reviewed.
        - It was noted that the town has always had a high percentage disabled population.
- The Community Engagement Strategy was planned, including vulnerable populations to consider and outreach methods. There will be a survey and public open house in Phase 1 and Phase 2.
    - The draft public survey for Phase 1 was reviewed. The survey will be available both online and in hard copy format.
    - Outreach methods were discussed.
        - Town has a website and Facebook page.
        - There is a public works app in development that will gather emails.
        - There is a newsletter in development.
        - In addition to public places such as town hall, library and senior center listed, the food pantry, IBX seafood restaurant and Mama's Pizza on the highway are frequented by residents. Downtown businesses are also a good place and most would be willing to post flyers.
        - Jamie Heath stated that the survey and flyer can be made live by Friday, in time for the Police and Pastors event to occur on Saturday.
- Other notes about the community.
    - Riverview public housing development is vulnerable. It is a 55-unit housing development.
    - The town is looking into programs to increase home ownership.
    - The town has an RFQ for a streetscape plan in progress. It is going to build on the waterfront area architectural rendering that was done. The streetscape plan has shifted since the initial concept and will now cover blocks between Adams and Washington Streets.
    - There are stormwater flooding issues from intense rainfall. Riverine flooding is not the issue. There are also drainage issues.
    - There was flooding during Hurricane Isabel and Hurricane Matthew that was significant.

- The police station was a loss in Hurricane Isabel, and that was due to flooding from heavy rainfall.

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

Town of Plymouth

Community Action Team – Meeting #2

AGENDA

Wednesday, Nov. 01, 2023, 2:00 - 4:00 PM

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water Street, Plymouth, NC 27962

2:00 – 2:30 PM	**Critical Assets and Natural Infrastructure** ▪ Inventory list ▪ Maps
2:30 – 2:45 PM	**Potential Hazards and Non-Climate Stressors**
2:45 – 3:00 PM	**Available Risk Assessments** ▪ From Northeastern NC Regional Hazard Mitigation Plan
3:00 – 3:30 PM	**Known Issues** ▪ From "Facing the Future in Plymouth, NC: Preparing for Increased Flood Risks" ▪ From RCCP application ▪ Other known issues
3:30 – 3:45 PM	**Current / Past Resilience Projects**
3:45 – 4:00 PM	**Discussion / Adjournment**

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

PLYMOUTH

Community Action Team – Meeting #2

MEETING SUMMARY

WEDNESDAY, NOVEMBER 1, 2023, 2:00 PM - 4:00 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Seth Laughlin, Mid-East Commission
- Gordon Marsh, RK&K
- Sarah Spiegler, NC Sea Grant
- Mackenzie Todd, NC Division of Coastal Management
- Kasen Wally, NC Division of Coastal Management
- Mike Wright, Town of Plymouth
- Brian Roth, Town of Plymouth
- Joanne Floyd, Town of Plymouth

Meeting Purpose:

- Review draft critical assets and natural infrastructure inventory list and maps
- Discuss potential hazards and non-climate stressors
- Review available risk assessments
- Discuss known coastal hazard issues
- Discuss any current/past resilience projects

Notes:

- Review draft critical assets and natural infrastructure inventory list and maps
    - Washington County Emergency Operations Center is now located at 116 Adams Street.
    - Noted there will be new Emergency Operations Center. The airport site has been considered but Washington County is not sure where they are going to build it anymore.
    - The EMS Station is located at 128 E Water St. upstairs from the extension office. Noted to check where ambulances dispatch from. That may be where hospital location came from.
    - Noted that Wooten has mapped water/sewer system. Unsure if town has GIS files or just PDF maps. Jamie Heath will follow up with Mike Wright and contact Wooten for GIS files if needed.

- Noted that one of the town lift stations serves only the school site (former Pines Elementary School, future Washington K-12 school campus site), and the Health Department.
- Noted that former Pines Elementary School always served as a shelter and hope new K-12 school campus will as well. Although it was not an official shelter due to concerns with a large influx of people coming from the Outer Banks. It has been opened up for residents later after the Outer Banks traffic moved through.
- The company in the old FCX building next to Bojangles provides propane gas. Will see grain elevators at site.
- Washington Regional Medical Center should be noted that it is a Hospital.
- Roanoke Therapy Services at 2756 US-64 should be added under medical.
- The Inner Banks Doctor's Office closed but should be noted that the Doctor now operates out of O'Neal's Drug Store.
- Other critical infrastructure seems correct.
- Under parks/public land;
  - Add nature trail on old rail bed.
  - Noted that the public open space around the Port o' Plymouth Museum is the William Flowers Park. The park we have marked as William Flowers is actually Brickhouse Landing Park.
  - Pettigrew Park name is incorrect, it should be Plumbee Park.
  - Add Bear Track Landing at E Main St. Also has kayak launch.
  - Add Adams St. basketball court (500 block)
  - Add Washington Street gym and football field (former school site)
  - Add county-owned Owen's Childrens Park at 8th and Washington Streets.
- Under public boat ramps
  - Add Plymouth Landing Marina, town owned at light house. Includes kayak launch.
  - Add the NC Wildlife Conaby Creek Boating Access Area.
  - Add the NC Wildlife Hwy-45 Boating Access Area near the bridge.
  - Add kayak launch at Bear Track Landing.
  - Add town-owned public boat ramp next to Police Department.
- Noted to double check calculated floodplain area.
- Other natural infrastructure seems correct.
- Noted that Plymouth has been referred to as the "Crown Jewel" of NC. This section of the Roanoke has high biodiversity and has been well studied by NC Wildlife biologists who are impressed by the area.
- The Roanoke River is very deep and the water is clean due to the fast flow.

- Discuss potential hazards and non-climate stressors
  - Flooding is a concern including riverine, tidal, and rainfall. Storm surge is a concern.

        - Not much lunar tidal flooding, but yes wind driven tidal.
        - During hurricanes, the Albemarle Sound shoves water up the river and the fast moving Roanoke River flows in the opposite direction. They come together in Plymouth and cause storm surge and flooding. But the water doesn't sit, it leaves quickly when the hurricane leaves. Slow hurricanes make the effect worse.
    - Damaging storms, tornadoes and winds are a concern.
    - Shoreline erosion is not a major concern but there are some minor issues behind the commercial buildings downtown with shoreline degradation. It is a slow, long-term issue.
    - Sea level rise is not a concern.
    - Wildfire and heatwaves are not a concern, but drought is.
        - Wildfires have been an issue in other parts of the county due to peat soils in the southwest area.
        - The Roanoke River water flow is regulated up north in some areas (it runs all the way to the mountains in Virginia).
        - The Roanoke River water level can get low during droughts and this causes a salt water wedge. The paper mill ran a pipe for emergencies due to this because they can't have salt.
    - For non-climate stressors, all were applicable, including;
        - Aging or potentially undersized infrastructure
        - Population dynamics
            - Large low income population, many residents live in poverty.
            - Crime and drug issues.
        - Economic shifts
            - Property values are depressed.
            - Noted tourism economy. Town is a popular fishing and ecotourism destination.
        - Increased subsidence
            - Tax base: Don't have organic funding for projects, can barely pay bills. Hard to make infrastructure improvements in that state. Washington County had the second highest tax rate in the state, they have since lowered it. The tax rate in Plymouth is now 54 cents.
        - Altered drainage patterns
        - Land cover change
- Review available risk assessments
    - Reviewed the Washington County risk assessment from the Northeastern NC Regional Hazard Mitigation Plan. There were no comments.

- Discuss known coastal hazard issues
    - Reviewed issues from Facing the Future In Plymouth, NC Plan. The Mayor stated that the resulting mapping and problem areas were very accurate.
    - Reviewed issues from the RCCP application.
    - Additional issues identified;
        - Noted that the Capital Improvements Plan identifies many flood issues.
        - There are also manholes for the water and sewer systems that flood. They should be added to the nuisance flooding list.
        - Noted that the old DMV building is now the Food Pantry. The town owns the building.
        - Many businesses flooded during Hurricane Matthew. A dumpster was floating around the Dollar Tree parking lot, the whole parking lot of Subway was underwater, Pizza Hut closed for months after the building flooded, for examples.
        - During Matthew there was a drainage tile on 64 that was restricting water at Conaby Creek and caused flooding all around up to NC-32.
        - The front wall fell off the Police Station due to wind in Hurricane Isabell. Damage from that storm was primarily from wind and rain. Recovery took a long time from that storm. The electricity was not even back on for 13 days.
        - Noted that some businesses on US-64 are FEMA repetitive loss properties. For example, the Sportsman Inn is a severe repetitive loss property and they now have a hard time getting insurance.
        - All around the railroad track is an issue. The railroad area is raised but now it floods behind it.
        - “Winesett” Circle is misspelled.
        - There are drainage issues including on private property. A Drainage Ditch Maintenance and Easement Plan is a high priority. The town has 23 miles of streets and approximately 60-90 miles of drainage system. Drainage in agricultural fields outside the town also affect the town.
        - Large mouth bass are important to the local economy. Fish kills sometimes occur during hurricanes from swamp water entering the river. The fish kills can last from 3-4 years. The river has been restocked with bass in the past. Probably not preventable due to it being a natural function of the ecosystem.
        - Noted issues at W Main Street. On the corner there is a constructed wetland that was not done properly and overflows onto the road. This is by the senior housing complex which is a high priority.
        - There is a crossing that is maybe not a bridge but a culvert at W Main Street, high priority for drainage issues. Just east of Alden Rd. intersection.

        - Sinkholes on Washington St. (DOT road) thought to be caused by old collapsing stormwater drainage pipes.
- Current/past resilience projects
    - Town is going to be participating in the "Harbor Town Program" for Inner Banks passenger ferry tours.
- Other
    - Discussed that project implementation is key.
    - Discussed the need for a top-down solution program from the state.
    - The next Community Action Team meeting has been set for Wed. Dec. 6th from 2:00 – 4:00 pm.
    - Tentatively looking at Tues. Dec. 12th from 4:00 – 6:30 pm, drop-in style, for the Public Open House for Phase 1. Jamie Heath will work with Joanne Floyd to confirm and advertise.
    - Virtual Public Open House for Phase 1 will be Fri. Dec. 15th, drop-in style from 4:00 – 6:30 pm. Will be co-hosted for all 4 of our participating communities.

North Carolina
RESILIENT
COASTAL
COMMUNITIES
PROGRAM

Town of Plymouth

Community Action Team – Meeting #3

AGENDA

Wednesday, Dec. 6, 2023, 2:00 - 4:00 PM

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water Street, Plymouth, NC 27962

2:00 – 2:30 PM	**Hazards Mapping**
2:30 – 3:15 PM	**Vulnerability Assessment**
3:15 – 3:30 PM	**Risk Estimate**
3:30 – 3:45 PM	**Public Open House Activity Plan**
3:45 – 4:00 PM	**Discussion / Adjournment**

North Carolina
RESILIENT
COASTAL
COMMUNITIES
PROGRAM

PLYMOUTH

Community Action Team – Meeting #3

MEETING SUMMARY

WEDNESDAY, DECEMBER 6, 2023, 2:00 – 4:00 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Seth Laughlin, Mid-East Commission
- Gordon Marsh, RK&K
- Tris Ford, RK&K
- Brian Roth, Town of Plymouth
- Joanne Floyd, Town of Plymouth
- Dorenda Wallace, Town of Plymouth

Meeting Purpose:

- Review draft hazards mapping
- Review draft vulnerability assessment
- Review draft risk estimate
- Discuss public open house activity plan

Notes:

- Draft hazards maps
    - Draft hazards maps for Plymouth were reviewed including:
        - Floodplain, storm surge, and sea level rise layers overlaid with critical assets and affordable housing areas.
        - Sea level rise layer overlaid with natural infrastructure.
        - Potentially hazardous sites.
    - The Hurricane Florence storm surge map seems accurate.
    - Low-income housing areas terminology should be updated to affordable housing areas.
    - Mayor provided some tweaks to affordable housing areas which will be incorporated.
    - The brownfield site shown on the potentially hazardous sites map is the former Atlas Plywood site. It was also used as an asphalt plant in the early 90s. It was an EPA superfund site and has already been cleaned up. It is probably still showing as a brownfield since it is still under monitoring.
    - Need to add Hwy 64 business district as a critical asset, similar to how we added the downtown business district.

- Draft vulnerability assessment
    - Vulnerability assessment thresholds were reviewed.
    - The draft vulnerability assessment worksheet was reviewed.
    - Discussed adding SLOSH to vulnerability assessment (interconnection Albemarle Sound and Roanoke River and the push up). Will review SLOSH data but may have similar results to storm surge data.
    - 1st low-income housing header should be changed to affordable housing areas.
    - 2nd low-income housing header should be titled public housing.
    - Plymouth WWTP and riverine swamp forest exposure should be 3 (says 4).
    - Bear Track Landing listed twice.
    - Need to spell out acronyms as much as possible.
    - Vulnerability assessment seems accurate.
- Draft risk estimate
    - Reviewed draft risk estimate methodology and worksheet.
    - Discussed that many community-owned assets were valued based on property tax values, which some communities feel undervalues the asset.
    - Water and wastewater system numbers may be undervalued. Recommended emailing Mike Wright for better base cost estimates.
    - Noted that the replacement value in affordable housing areas may be higher than the tax value. Explained that in this instance the total number of units was multiplied by the town's median home value.
    - Need to add Hwy 64 business district.
    - Question about road length. Noted that it includes ETJ area, so should be correct.
    - Noted that the ETJ is served by Washington County water, not town water.
    - Noted that the property tax value undervalues most assets compared to what the replacement cost would be. Suggestion to contact town staff and county staff for insurance values and this would probably be the most accurate.
- Public open house
    - Discussed public open house and activities we will have. Open house will occur on Dec. 12th in person and Dec. 15th virtually.
- Other
    - Can contact Mayor for CAT member recommendations. The open house is another opportunity to solicit members.
    - The next Community Action Team meeting will be held Wed. Jan. 17, 2024 at 2:00 pm.

North Carolina
RESILIENT
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Town of Plymouth

Community Action Team – Meeting #4

AGENDA

Wednesday, Jan. 17, 2024, 2:00 - 4:00 PM

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water Street, Plymouth, NC 27962

2:00 – 2:30 PM	**Phase 1 Public Input Review** • Public survey response summary • Public open house feedback summary
2:30 – 3:45 PM	**Identify a Suite of Potential Solutions** • STAPLEE worksheets
3:45 – 4:00 PM	**Discussion / Adjournment**

North Carolina
RESILIENT
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PLYMOUTH

Community Action Team – Meeting #4

MEETING SUMMARY

WEDNESDAY, JANUARY 17, 2024, 2:00 – 4:00 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Gordon Marsh, RK&K
- Tris Ford, RK&K
- Mackenzie Todd, DCM
- Kasen Wally, DCM
- Sarah Siegler, NC Sea Grant
- Joanne Floyd, Town of Plymouth
- Dorenda Wallace, Town of Plymouth
- Sarah Baird-Forner, Resident/DDA member
- Mike Wright, Town of Plymouth
- Brian Roth, Town of Plymouth
- Tammy Shepherd, Resident/DDA member
- Crystal Davis, Town of Plymouth

Meeting Purpose:

- Review Phase 1 public input (survey and open house)
- Review draft Suite of Potential Solutions

Notes:

- Phase 1 public survey results
    - Phase 1 public survey results were reviewed. There were 30 total responses.
    - Noted under “Coastal Hazards and Impacts” the first question was cut off in the document.
    - We mentioned using text as a communication method in the next public survey.
    - There was no further discussion on the public survey results.
- Phase 1 public open house results
    - Phase 1 public open house results were reviewed.
    - There was a comment that a majority of attendees were town officials. The lack of resident turnout was discussed.

- Additional outreach methods were discussed. Setting up at the supermarket was a suggestion.
- It was stated that there will be additional opportunity for public input during Phase 2.
- We discussed linking the next public open house to the term flooding rather than the term resilience.

- Draft suite of potential solutions
  - The draft suite of potential solutions on the STAPLEE worksheets were reviewed. There was also a brief explanation of the STAPLEE scoring method which will be used to further prioritize projects at the next meeting.
  - Noted that projects need to be manageable for a small town. Focus on the "abilities", feasibility, fundability, designability, maintainability. Feasibility and staffing for maintenance is a concern.
  - Fundability, discussed future grants and that some grants are more favorable at the town level rather than county level. SVI, small town, etc.
  - Noted that many projects can be combined, i.e. stormwater maintenance plan and assessment. All lift station projects can be combined into one.
  - Noted that county responsibilities should be removed from our project prioritization, but should still be mentioned separately in a stand-alone chart as county functions or things the town partners with the county to complete. This way it is acknowledged that the town is a part of/supports these efforts. Noted that there is a good relationship with the county and the EM director.
  - "Improve building codes" should be moved to county responsibility.
  - Under planning, the education isn't there, homeowners don't know who to contact. Add project for Public Information Plan.
  - Under hard/grey infrastructure, add a project to retrofit Town Hall for flooding including weatherproofing the basement. Add the same project for the old Fire Station next door to Town Hall (will be used for high speed ferry tourism office).
  - Under Northeastern NC Hazard Mitigation Plan projects, noted that W1, the new dedicated EOC, is in process. The location is being decided on.
  - W17 should be moved up, (generators) but needs to be reworded because it sounds like none are in place. There are additional generator needs for water and sewer. Some lift stations don't have. Public Works Building, Town Hall, and Police Department need generators.
  - W18 should be moved up (post disaster recover service provider), add this is partnership with Washington County Emergency Management and possibly the state. Noted that debris removal post disaster is a struggle. The county handles it but not adequately. Discussed the need for the town to maybe handle this in house.
  - Under Hurricane Matthew Resilient Redevelopment Plan projects. "Lift Station Mitigation Study" should be moved up. There are several at risk.
  - "Remove Abandoned Structures" should also be moved up.

- Noted that there are no bridges that are town responsibility, only DOT bridges.
- Noted that "Flood Insurance Education" and "Agricultural Risk Reduction Study" are needed but are better as a county responsibility.
- Asked CAT members to turn in STAPLEE worksheet comments if desired and they will be incorporated into prioritization.

- Other
  - Noted that natural gas is a desire, currently only available in some places.
  - We will contact the town and send everyone an email and calendar invite to schedule CAT meeting 5.

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

Town of Plymouth

Community Action Team – Meeting #5

AGENDA

Wednesday, Feb. 14, 2024, 2:00 - 4:00 PM

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water Street, Plymouth, NC 27962

2:00 – 3:30 PM	**Consolidate and Prioritize Projects** • Project examples • Revised project list • STAPLEE scoring explanation • STAPLEE worksheet • Cost-benefit worksheet
3:30 – 3:45 PM	**Phase 2 Public Open House** • Thurs. March 21st, 4:00 – 6:30 pm, drop-in style • Activities • Advertising
3:45 – 4:00 PM	**Discussion / Adjournment** • Next CAT meeting: Wed. April 10th, 2:00 – 4:00 pm

North Carolina
RESILIENT
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PLYMOUTH

Community Action Team – Meeting #5

MEETING SUMMARY

WEDNESDAY, FEBRUARY 14, 2024, 2:00 – 4:00 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Gordon Marsh, RK&K
- Tris Ford, RK&K
- Doug Keller, RK&K
- Kasen Wally, DCM
- Sarah Spiegler, NC Sea Grant
- Joanne Floyd, Town of Plymouth
- Dorenda Wallace, Town of Plymouth
- Sarah Baird-Forner, Resident/DDA member
- Mike Wright, Town of Plymouth
- Brian Roth, Town of Plymouth
- Preston Moore, Resident/Planning Board member

Meeting Purpose:

- Consolidate and prioritize projects
- Plan Phase 2 public open house

Notes:

- Consolidate and prioritize projects
    - Project categories were discussed including policy, planning, green/hybrid infrastructure solutions and hard/grey infrastructure solutions.
    - Examples of nature-based solutions (green infrastructure) were discussed with example photos on PowerPoint.
    - The STAPLEE scoring method was discussed.
    - The cost-benefit analysis was discussed.
    - The updated draft suite of potential solutions was reviewed.
        - Under policy, “Improve land use policies…” Rephrase to say review codes and improve if needed. For instance, they already have a two-foot freeboard requirement. This project could possibly be removed.

- Under planning, "Work with local Council of Governments and/or contractor to match local projects with grant opportunity, apply for those grants and administer successful grants." This is important but should be an implementation step for projects, not a project within itself.
- Under planning, "Develop a stormwater action plan and assessment tool…" Noted that many issues go back to needing a hydro analysis. A town-wide hydro analysis is a high priority and should be included in this stormwater action plan and assessment project.
- Under planning, "Develop a land management and stewardship plan…" Due to staff capacity issues, this is not a priority project and can be removed.
- Under planning, "Develop an Emergency Preparedness and Response Plan…" This project can be removed. They are under the county plan and happy with that partnership.
- Under planning, "Develop a stormwater personnel training guide…" This project can be removed. Current training is sufficient.
- Instead of the above, there needs to be a focus on educating the public on their responsibilities related to stormwater management. This could be a combined "Public Information and Responsibilities Plan". Educating students should also be a focus in the plan. The Early College High School is a potential for student education initiatives.
- Under planning, "Make information regarding hazards and development regulations within floodplains available…" Remove this project and combine with the above "Public Information and Responsibilities Plan".
- Under planning, "Work to develop continuity of operations plans…" This responsibility falls under county emergency management and can be removed. Town staff does not have the capacity to do this.
- Under planning "Work with NCDOT and the Albemarle RPO to prioritize needed retrofits to roads and bridges…" This is a need. Noted there are DOT road problems in many areas. Noted that the bridge over Conaby Creek overtops.
- Under green and hybrid infrastructure solutions, "Complete a tributary restoration between Golf Rd. and W. Main St." After on site evaluation by engineer, this is not feasible. Change the project to a snag and drag/debris removal project. Possible Dept. of Agriculture partnership.
- Another snag and drag/debris removal project is needed on a tributary north of Plymouth High School (Roanoke/Crescent area).
- Under green and hybrid infrastructure solutions, "Complete a hybrid drainage improvement project within the Riverside community…" This is a high priority. A hydro analysis is needed for the area to understand the flow. Stormwater system upgrades are needed. This could potentially be combined with a planned water/sewer project. Construction for that project will be occurring in

approximately one year. This leaves a tight schedule to fund the stormwater project but may be possible. Golden Leaf was discussed as a possible funding source and they have a rolling application. The Rural Center stormwater funds were mentioned as another potential funding source. There is also the potential to combine grants where RCCP would pay for nature-based stormwater projects in the neighborhood and Golden Leaf or another source could pay for the grey infrastructure.

- Under green and hybrid infrastructure solutions, "Complete a hybrid drainage improvement project within the Pine Forest Apt…" This project can be removed. Water collects behind the apartments but the buildings don't flood.
- Instead of above, add a project, "Complete a hybrid drainage improvement project within the 4th Street neighborhood…"
- Also add a project, "Complete a hybrid drainage improvement project within "The Bottom"/Madison St. community."
- Under green and hybrid infrastructure solutions, "Complete a hybrid drainage improvement project within the Jackson Heights community…" It should be noted that most of the neighborhood here only needs ditch clean outs. However, the Bradley Rd. / Patton Ct. / Ridgeway Dr. area is a problem. That area needs a whole analysis. This project should be focused in there.
- Under green and hybrid infrastructure solutions, "Complete a downtown commercial district green infrastructure revitalization project." This project can be removed. Since downtown does not flood, it is not a priority for this program. They are working on streetscape improvements downtown already, can be noted as a continuing action.
- Under green and hybrid infrastructure solutions, "Implement 20 strategically placed bioretention cells…" This is a need. Noted that this would be for flash flood areas.
- Under green and hybrid infrastructure solutions, "Increase stormwater capacity along railroad using green stormwater techniques." Noted that small devices may not make a large impact. However, this is a priority area as it is along the Hwy 64 commercial district. With the railroad and Hwy 64 running adjacent to each other, there is a large impact. A hydro analysis for the area is needed to recommend effective projects.
- Need to make sure we have a project for the Hwy 64 commercial area. Could potentially be combined with railroad project above.
- Under green and hybrid infrastructure solutions, "Design and construct a floodplain pool system to increase flood capacity along Conaby Creek." Noted that this may not be feasible, but we need to have some project for Conaby Creek since it is a primary source of flooding. Noted that the bridge over Conaby Creek is also an issue. DOT reroutes the water so it does not overtop the bridge.

- The entirety of Conaby Creek needs debris removal/snag and drag. Could be combined with above or be a separate project.
- Under green and hybrid infrastructure solutions, "Improve the function of the constructed wetland behind the elderly public housing complex to address over street flooding of W Water St." Noted that this is a high priority project.
- Under hard/grey infrastructure solutions, "Increase culvert sizes and catch basins at highly flooded areas." This is a high priority but needs to be implemented after hydro analysis.
- Under hard/grey infrastructure solutions, "Strategically upgrade stormwater system through…" Yes, this is a high priority.
- Under hard/grey infrastructure solutions, "Upgrade the stormwater system along Washington Street." Yes, this is a big deal due to sinkholes and is a high priority. Noted that Washington Street is a DOT road.
- Under hard/grey infrastructure solutions, "Improve WWTP access along Gauge Ln…" Yes, this is a need.
- Under hard/grey infrastructure solutions, "Relocate or retrofit lift stations on Water St., Johnson Ct., and E Main St." Yes, this is a need.
- Under hard/grey infrastructure solutions, "Acquire generators…." Yes, this is a need. Specify a possible partnership with Washington County.
- Under hard/grey infrastructure solutions, "Partner with Washington County and the state to maintain debris removal and monitoring services contracts for post-disaster response…" Yes, this is a need. The town would like to participate in this because current services do not always meet all town needs.
- Under hard/grey infrastructure solutions, "Relocate or retrofit Elderly Housing Complex." This project should be removed due to political sensitivity.

- The Phase 2 Public Open House was discussed.
  - The event will be held Thurs. March 21st from 4:00 – 6:30 pm, drop-in style, in the Council Chambers at the Police Dept.
  - We will be asking the public for input on the priority projects and they will be able to vote for which projects they like. There will also be education on the program and the project types including green infrastructure/nature-based solutions.
  - Advertisement materials were discussed. A flyer will be sent to the town to be shared on the town's Facebook page and posted in person at Town Hall and the Washington County Library.
  - The event will be on the town website calendar.
  - There will be a notice sent out via the town's Public Works app.
  - A press release will be developed and sent to the Roanoke Beacon.
  - Sarah Baird-Forner and Preston Moore volunteered to pass out flyers around the community. Jamie Heath said she would request to have Town Hall staff print copies for them.

- There was a recommendation to share the flyer for advertisement by the Martin County Chamber of Commerce. Jamie Heath said she would share it with them and ask for them to help advertise via website and social media.
- There was a recommendation to advertise via the radio station Magic 95.9. Bill Benjamin is the contact (252)793-9995. He will usually run it for free if the newspaper does. Jamie Heath said she would contact Bill Benjamin if the Roanoke Beacon agreed to run the press release for free.

- The next Community Action Team meeting will occur on Wed. April 10th at 2:00 pm.

North Carolina
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Town of Plymouth

Community Action Team – Meeting #6

AGENDA

Wednesday, April 10, 2024, 2:00 - 4:00 PM

Location: Plymouth Council Chambers at Plymouth Police Dept., 132 E Water Street, Plymouth, NC 27962

2:00 – 2:30 PM	**Phase 2 Public Open House Results**
2:30 – 3:45 PM	**Priority Project Portfolios** • Review draft project portfolios • Discuss additional project details for portfolios • Select project to move forward – RCCP Phase 3 (engineering/design) applications due May 31st
3:45 – 4:00 PM	**Discussion / Adjournment**

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

PLYMOUTH

Community Action Team – Meeting #6

MEETING SUMMARY

WEDNESDAY, APRIL 10, 2024, 2:00 - 4:00 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Tris Ford, RK&K
- Gordon Marsh, RK&K
- Doug Keller, RK&K
- Mike Wright, Town of Plymouth
- Sarah Baird-Forner, Town of Plymouth resident/DDA member

Meeting Purpose:

- Review Phase 2 public open house results
- Review draft project portfolios
- Discuss additional details for project portfolios
- Select project to move forward to RCCP Phase 3

Notes:

- Reviewed results from public open house. There was a good turnout.
    - Gordon explained the weighted scoring system.
    - The most popular project from the open house was the "Neighborhood Drainage Project".
- Reviewed draft priority project portfolios.
    - We need to pull up the Back-up Generators project to include in the portfolio.
    - Neighborhood Drainage Project
        - Discussed that this is a high priority for the town. Riverside Plantation neighborhood is first priority and 4th St. community is close second priority.
        - Discussed a Golden Leaf Flood Mitigation Grant application for the Riverside Plantation project.
        - Need to add public education on stormwater responsibilities to the project description.

- Upgrade the stormwater system.
  - Discussed combining this project with the Stormwater Action Plan project. Stormwater Action Plan being first step (planning/engineering/design) and Upgrade the Stormwater System being the implementation project.
  - Noted that this could potentially be a hybrid project rather than just hard/grey infrastructure if green/nature based solutions are evaluated as well.
  - Need to review timeline.
- Stormwater Action Plan
  - Discussed combining this with the Upgrade Stormwater System project, as discussed above.
  - Noted that mapping has not been done for the stormwater system. This is a high priority and the project that was discussed when the town entered the RCCP (along with hydro/flow analysis).
  - Need to add engineering/design elements to project description. (To prepare for implementation grant.)
  - Need to add a public education component to the plan on stormwater responsibilities.
  - Yes, the town is very interested in the online system. This is a big need for stormwater management.
- Conaby Creek Pump System
  - Discussed potential alternatives.
  - Discussed that the main Hwy 64 flooding is at the bridge and may be a simple DOT fix. The other two bridges on Conaby Creek including the one over E Main also cause flooding.
  - Noted that the last Conaby Creek flood study is 40 years old.
  - We need to take a deeper look at the Conaby Creek problem areas.
  - Agreed to change this project to a detailed flood study of Conaby Creek including the three problem bridge areas. This study will recommend the most appropriate project or projects to address Conaby Creek flooding.
- Stream Debris Cleanout
  - These stream cleanouts are a high priority.
  - Discussed that the NC Dept. of Agriculture's Streamflow Rehabilitation Assistance Program (StRAP) is specifically for this and would be the best grant to pursue.
- Improve Constructed Wetland at Water Street
  - Discussed challenges with preventing over road flooding.
  - Discussed an automated bar/light system to stop traffic when water is high. Police Dept. currently goes out and puts cones when water is high.
- Washington Street Stormwater Project
  - Noted that there are sinkholes related to collapsing stormwater pipes.

        - Noted that the DDA is looking at beautification efforts along this route. Could possibly be combined as a streetscape project.
        - A partnership with DOT is needed. The Albemarle RPO would be a good partner to assist with DOT communication.
        - Noted that it would be best to convince DOT to complete this as a maintenance project so it does not need to go into competitive scoring as an upgrade project. It should be considered as maintenance since the town is just asking to repair what is there already, not expand lanes, etc.
    - Improve Gage Ln. from River Rd. to the Plymouth WWTP
        - DOT funding may not be relevant since it is not a DOT road.
    - Improve Sewer Lift Stations
        - Should rephrase title to say "Relocate or Retrofit Vulnerable Sewer Lift Stations".
        - This is a high priority project for public works.
    - Bioretention Cells
        - This could be included in Stormwater Action Plan/Upgrade the Stormwater System project as the green infrastructure element, to make the project hybrid and be favorable to more grant programs.
- The project the team selected to move forward to RCCP Phase 3 (engineering/design) was the Stormwater Action Plan project (will be confirmed with board). This will be combined with the Upgrade the Stormwater System project as the implementation piece. Applications are due May 31st.
- The next Community Action Team meeting will occur on Thurs. May 23rd at 2:00 pm. We will tentatively have a joint meeting with the Washington County CAT starting at 3:00 pm.

North Carolina
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PLYMOUTH

Community Action Team – Meeting #7

MEETING SUMMARY

THURSDAY, MAY 23, 2024, 2:00 PM – 3:00 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Tris Ford, RK&K
- Gordon Marsh, RK&K
- Sarah Spiegler, NC Sea Grant
- Mackenzie Todd, NC DCM
- Kasen Wally, NC DCM
- Sarah Baird-Forner, Resident and DDA member
- Mike Wright, Town of Plymouth
- Dorenda Wallace, Town of Plymouth
- Brian Roth, Town of Plymouth

Meeting Purpose:

- Review draft Plymouth Resilience Strategy and vote on endorsement.

Notes:

- The draft Plymouth Resilience Strategy was reviewed. A general overview of the document layout was given and the primary focus was the project profiles.
- Discussed details of Stormwater Action Plan – Upgrade the Stormwater System project. Noted system inventory needs. Noted that the town currently only has easements along roads. Discussed need for tactful approach for public education campaign and need for town to be clear on policy ahead of educating the public.
- Updates needed:
    - SVI maps in Appendix A need to be changed to landscape format/page size standardized.
    - Credit Washington County for parcel data where mapping is discussed.
    - Stormwater Action Plan – Upgrade the Stormwater System project profile: Sentence that reads “Design and construction drawings will be completed for project chosen in partnership with the community.” Should be “one project chosen…”. In implementation cost “$750-000”. Should be “$750,000”.

- Neighborhood Drainage Improvements project profile: For Patton/Bradley/Gavin neighborhood, expand to Mackey's Rd. and E Main St. (the t-shaped roads to the west included in the neighborhood). Update map to include that area. Reference neighborhood name in the description as Jackson Heights.
- Conaby Creek Flood Study – Conaby Creek Flood Improvements project profile: Add construction administration and construction inspections to implementation scope bullet list. In engineering/design scope where areas are discussed, include the Old Roper Rd. and Highway 32 area. Note a partnership with NC DOT Division 1 and gathering their hydro analysis for bridges.
- Stream Debris Cleanout project profile: Change project estimated cost. "Up to $25 per linear foot (currently StRap funds pay $10.80 per linear foot for coastal streams)"
- Improve Constructed Wetland at West Water Street project profile: In project scope, note the likely need to repair the pump. Note the preference for the over drainage to be run under W Water St. so it no longer flows over the street. Need one cost for engineering/design, not range (so cost can be used for grant applications). Can go with higher number, $65,000.
- Washington Street Stormwater and Streetscape project profile: Need one cost for engineering/design, not a range (so cost can be used for grant applications). Can go with higher number, $700,000.
- Add the Meeting 7 summary to the appendix.

- The Community Action Team voted to endorse the Plymouth Resilience Strategy with the noted updates.
- This was the final Community Action Team meeting. Board adoption of the Plymouth Resilience Strategy document is recommended. Jamie Heath is available to facilitate if needed and will deliver three final bound hard copies after board adoption is completed.
- A joint meeting with Washington County and Creswell Community Action Teams to discuss potential project partnerships and joint grant applications was held immediately following the Plymouth Community Action Team meeting from 3:00 – 4:30 pm. The joint meeting summary follows.

Meeting Summary
Joint Community Action Team (CAT) Meeting
Thursday, May 23, 2024 from 3:00-4:30 pm

Meeting Objectives

- Review related RCCP projects with potential for collaboration
- Identify joint funding opportunities
- Confirm next steps to pursue projects together

Participants

Washington County CAT Members
Allen Pittman, Planning and Inspections Director
Ann Keyes, County Commissioner
Carol Phelps, County Commissioner
Chris Respess, Washington County Soil and Water Conservation District
Curtis Potter, County Manager
Jason Squires, Assistant County Manager
Lance Swindell, Emergency Manager, Wash. Co.

Town of Creswell CAT Members
Alfredia Williams, Mayor
Ryan Swain, Water & Sewer Superintendent
Thomas Patrick, Town Commissioner

Town of Plymouth CAT Members
Brian Roth, Mayor
Mike Wright, Public Works Director
Sarah Forner, CAT Member

Facilitation and Support Staff
Gordon Marsh, RK&K
Holly White, North Carolina Office of Recovery and Resilience
Jamie Heath, Mideast Commission
Kasen Wally, Division of Coastal Management
Mackenzie Todd, Division of Coastal Management
Molly Chamberlain, SWCA
Meg Perry, SWCA
Sarah Spiegler, NC Sea Grant
Tris Ford, RK&K

Action Items:

Backup Generators and Other Equipment for Critical Facilities

Who	Action	Due by
Washington County	Washington County add generators to the capital assets list in the Capital Improvement Plan at next opportunity so this can be prioritized for funding along with other county projects that may be submitted for funding from FEMA or other sources.	Next opportunity/ update to the CIP

Drainage Study Projects

Who	Action	Due by
WCSWCD/ Chris Respess	Work with Town of Plymouth for future StRAP applications to identify priority areas that weren't included in this year's application.	2025 StRAP applications

Drainage Projects/Maintenance Related Projects

Who	Action	Due by

WCSWCD/Chris Respess	Send project list to CAT for additional review and input	2025 StRAP applications

Relocation, Removal, and Retrofit Projects

Who	Action	Due by
Washington County	Continue to have follow-up conversations about the abandoned properties, develop list of properties and landowners if known and establish contact (work closely with Plymouth).	Ongoing, develop list by September 2024

Emergency Operations Projects

Who	Action	Due by
Creswell	Creswell representatives to contact a Red Cross representative to determine shelter criteria and schedule a visit to potential shelter site(s) in Creswell.	Summer 2024

Projects with Education/Public Outreach Component

Who	Action	Due by
Washington County, Creswell, Plymouth	Review policies during current/ongoing ordinance reviews, adjust rules and ordinances, and gather public feedback. The County and Towns coordinate on ordinances and use model ordinances as a guide. These projects should also be flagged for APNEP, as they may be a good future funding partner. If the Town of Plymouth's Phase 3 funding application is approved for the Stormwater Action Plan, work with Chris to develop messaging.	Summer 2024

Other County projects that may benefit from collaboration

Who	Action	Due by
Washington County	Keep Weyerhaeuser in mind as potential funding source for Broadband Project. Make connection with Giving Fund coordinator givingfund@weyerhaeuser.com for any questions.	Ongoing
SWCA	Meg will be coordinating with folks from the Scuppernong Study to discuss SECOORA funding and see if they can get additional gauges installed at key locations around the county. It will be important to confirm that the SECOORA funded gauges will be part of the FIMAN network for maximum data accessibility.	Summer 2024

NC Resilient Coastal Communities Program
Joint CAT Meeting

Summary of Key Points from Presentation and Discussion

Welcome and Announcements

The meeting started with introductions around the room and announcements. Mackenzie Todd reminded the team that applications for Phase 3 (Engineering & Design) and Phase 4 (Implementation of an engineered and designed project) are due Friday, May 31. Board signatures are required on the application, and there is flexibility to submit the application a few days late if needed. In response to a question, DCM staff confirmed that communities can apply for multiple rounds of Phase 3 Funding. Communities can also submit more than one application for the grant cycle but must indicate which of the applications is the priority project.

Holly White highlighted the Community Disaster Resilience Zone (CDRZ) designation that covers the northeastern part of the County and includes Roper and Creswell. She explained NCORR staff can assist with identifying projects and funding partners and support grant writing for any resiliency-related projects in CDRZ designated areas. Holly noted that if a project benefits a CDRZ zone but includes an area that is not classified as a CDRZ, such as the Town of Plymouth, NCORR can still provide support to pursue the project.

Meg Perry explained that the goal of this meeting is to help develop an action plan to advance projects identified through RCCP Phases 1 and 2. This meeting was intended to give the County, Town of Creswell, and Town of Plymouth an opportunity to identify projects that they may want to work together on, funding sources they may want to pursue together, and any projects that would be better pursued separately.

The meeting attendees then discussed whether to collaborate on a series of related projects excerpted from the Resilience Strategies for Washington County, Plymouth, and Creswell. Related projects that might benefit from collaboration were grouped as follows and provided as a handout during the meeting: [Backup Generator Projects, Drainage Study Projects, Drainage Projects, Relocation, Removal, and Retrofit Projects, Emergency Operations Projects, Site-Specific Infrastructure Projects, Projects with Education/Public Outreach Component, Other County Projects that May Benefit from Collaboration. The notes below include the excerpted descriptions of the projects in each grouping from the handout, followed by notes on the discussion around each project grouping, including action items and potential funding sources.

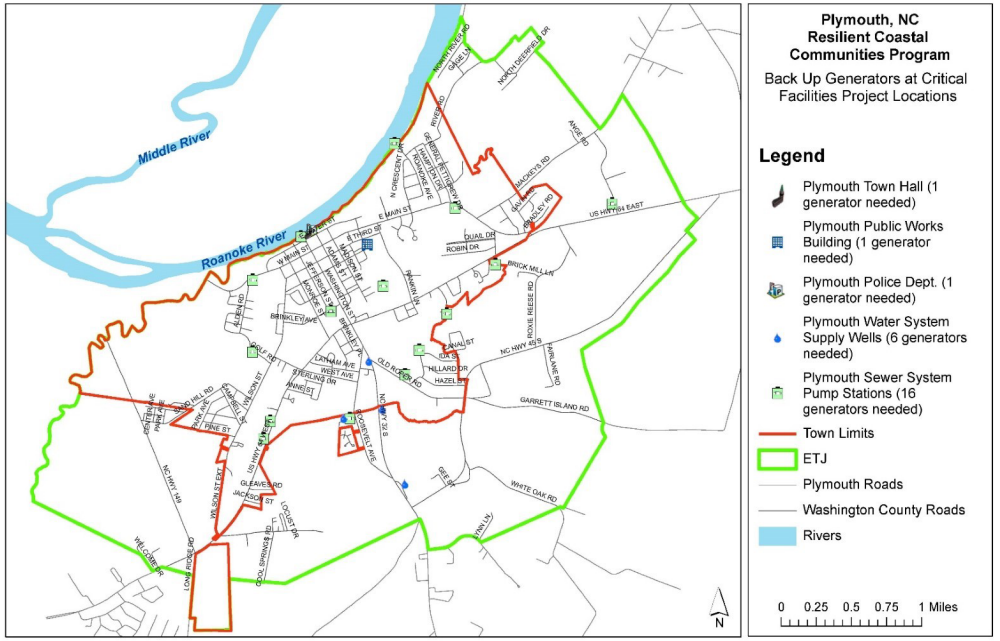
Backup Generator Projects

Washington County- Backup Generators or Other Equipment for Critical Facilities

PROJECT DESCRIPTION	Seek funding to ensure redundant power and equipment for critical facilities, including generators and backup water pumps or pump parts. Specifically: Create list of critical facilities that need a generator or other forms of redundant equipment or parts and acquire/maintain these to ensure that critical facilities and infrastructure remain operational during emergencies or power outages.
Potential Funding Sources	• FEMA Emergency Management Performance Grant (EMPG); • Generators for critical facilities are also eligible under the FEMA Pre-Disaster Mitigation (PDM) Program

Plymouth- Backup Generators at Critical Facilities

Project Scope	Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available. Current generator needs include sewer lift stations (16), water supply wells (6), the Public Works building, the Police Dept., and Town Hall.
Potential Funding Sources	• Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) • Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program • Golden Leaf Disaster Recovery Grant



Backup Generator Projects

Meg asked the group if anyone has experience pursuing grant funding for generators. Ryan Swain said the Town of Creswell applied through FEMA right after Hurricane Matthew and it took 6-7 years to get the generator(s). Lance Swindell said that there are grant programs through the State that can be used, and these may be easier to pursue/obtain funding from rather than Federal funding. Lance also reminded the group that there needs to be a specific need for the generator. Commissioner Ann Keyes mentioned that applying together (e.g., Washington County and Plymouth) will be viewed more favorably.

Holly said she can talk to NC Emergency Management about potential opportunities.

Curtis Potter said that the County is looking to apply to the FEMA Facilities Grant (due in early June) for development of an Emergency Management Center, which will include generators. Curtis also said that the County should add generators to the capital assets included in the Capital Improvement Plan, which is updated every other year. Once these assets are included in the plan, they will be easier to justify need/ funding for in future grant applications. Generators should also be included for applications on current/future infrastructure, such as lift station upgrades. For FEMA grants, it may helpful to establish contact with the Federal representative.

Curtis also mentioned that a priority for the County would be a generator for the new school facility (this would be overlapping for the Town of Plymouth and County).

Brian Roth mentioned that the cost for the 25 generators that Plymouth has on their project list is roughly $900K for equipment alone.

Next steps:

- Washington County add generators to the capital assets list in the Capital Improvement Plan at next opportunity so this can be prioritized for funding along with other county projects that may be submitted for funding from FEMA or other sources.

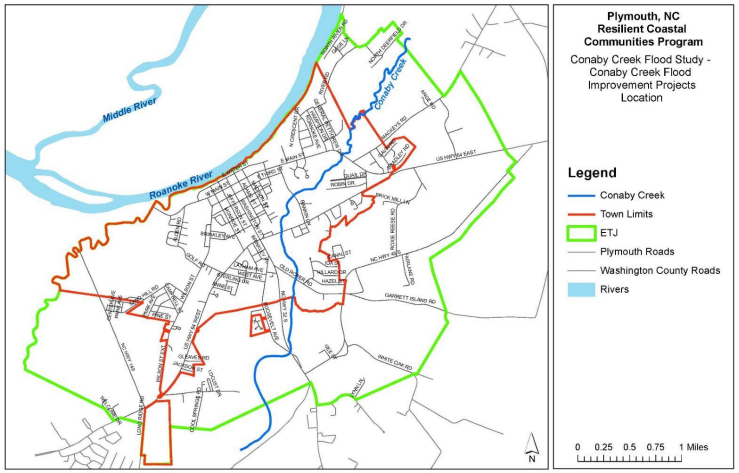
Drainage Study Projects

Washington County- Identify Strategic Drainage Improvements Outside of the Scuppernong Watershed

PROJECT DESCRIPTION	The Scuppernong Water Study will provide detailed hydrologic assessment for areas of flooding concern within the Scuppernong River watershed. This project would involve pursuing similar analysis in other areas of concern within the county that are not part of the Scuppernong Study. This analysis would help identify and prioritize areas where debris removal or other solutions, such as those mentioned in project 3, can be implemented.
POTENTIAL FUNDING SOURCES	• North Carolina Division of Water Infrastructure (DWI) Local Assistance for Stormwater Infrastructure investments (LASII) program • Golden LEAF Foundation • FEMA Hazard Mitigation Grant Program (HMGP)

Plymouth - Conaby Creek Flood Study- Conaby Creek Flood Improvement Projects

Project Description	Complete a detailed flood study and implement projects to relieve flooding from Conaby Creek. The effective FEMA model for the stream is outdated and this project will study projected rainfall, current landcover, and projected landcover. The project will then prioritize solutions and provide a final design for the solution chosen in partnership with the community.
Project Scope	Engineering/Design – Complete a detailed flood study for Conaby Creek. This study will focus on flood-prone areas, including the Highway 64 area, E. Main St. area, neighborhoods nearby Conaby Creek, and the crossings of Conaby Creek within the Town's jurisdiction. The study will evaluate conceptual projects to relieve flooding impacts from Conaby Creek. Then engineering/design will be completed for the chosen project.
Potential Funding Sources	• NC Resilient Coastal Communities Program Phase 3 (engineering), Phase 4 (implementation) • NC Environmental Enhancement Grant (EEG) • NC Land and Water Fund Grant • Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant • Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Capability and Capacity Building (C&CB) • Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant • NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)



Drainage Study Projects

Plymouth team members discussed Conaby Creek and how it causes consistent nuisance flooding and major flooding during named storms. The flood study project idea came from not knowing what type of solutions would be appropriate to address/relieve flooding, and the types of questions prompted by this type of project Where are the connectivity points to the Roanoke River?, what are the chokepoints?, what options are there to address flooding? are all questions that have been raised throughout the County.

Chris Respess mentioned that he in the process of applying for a StRAP grant that includes some of Conaby Creek, and will work with the Town of Plymouth for future StRAP applications to identify priority areas that were not included in this year's application.

The group discussed what approach would be the most helpful for pursuing drainage studies. Would a larger study, that included the Conaby Creek area, provide helpful information? Chris Respess expressed interest in a platform that could help determine which areas need the most support. Where there is opportunity to fund work in specific locations, that is preferred for some funders, though there is also value in having a large-scale study.

Commissioner Keyes mentioned that if the areas to be studied are included in the Hazard Mitigation Plan, that could help to qualify these types of projects for more funding sources.

Funding Sources Discussed: Land and Water Fund, StRAP, Golden Leaf Grant, and possibly in the future the NC Floodplain Blueprint

Drainage Projects

Washington County- Implement Key Drainage Improvements in Areas of Interest

Project Description	This could include several potential types of drainage improvement, which Project 2 above can help prioritize and site. For some areas of interest, maps helping depict potential work needed are included in Appendix F. Drainage improvement methods could include: • Remove debris from waterways and ditches, restoring hydraulic efficiency. • Resizing undersized culverts. • Two-stage ditch at Moccasin Canal – both as a drainage improvement and a demonstration project for landowners to see. • Water farming/wetland mitigation banks. Coastal farmlands could be converted to wetlands and established as conservation easements or mitigation banks in exchange for payments to landowners. • Aquatic weed spraying, clearing/snagging, and beaver control.
Potential Funding Sources	Pending StRAP grants applied for by WCSWCD, other sources to be determined based on projects selected.

Plymouth- Stream Debris Cleanout

Project Description	Complete stream cleanouts (snag and drags) with a focus on: 1. Conaby Creek from NC 32 to town limits boundary past E Main St. 2. Unnamed Tributary to Roanoke River from Bateman St. to W. Main St. 3. Unnamed Tributary to Roanoke River north of Plymouth High School (Plywood Rd. area)
Potential Funding Sources	• NC Dept. of Agriculture Streamflow Rehabilitation Assistance Program (StRAP) • NCDEQ Stream Debris Removal Program

Creswell- Critical Ditch Improvements

PROJECT DESCRIPTION	The town lies between the Scuppernong River and Interstate 64. The Program application identified issues with the dike that was built to redirect water. There are several ditches that are supposed to drain to the dike, then to the Scuppernong River. The ditches are full of debris/water and need to be cleaned out to properly drain to the dike. Scuppernong Study modeling may help pinpoint specifically which ditches will provide the best flood risk reduction for the money. Ditches are located throughout the town and as part of the existing dike system, including from 4th Street at Cherry Road east to 1st Street, the south end of Main Street, and south crossing Main Street near the school building, and extending from the gate valve to the Scuppernong River and other areas associated with the dike system.
POTENTIAL FUNDING SOURCES	• Streamflow Rehabilitation Assistance Program (StRAP) Grants

Plymouth- Neighborhood Drainage Improvement Projects

Project Description	Complete hybrid drainage improvement projects with priority areas at: 1. Riverside Plantation Community 2. 4th Street Community (including side streets such as Adams Street and Winesset Circle) 3. The block of Patton Court, Bradley Road, and Gavin Road 4. Madison Street Community
Project Scope	Engineering/Design – Design hybrid drainage improvement projects with priority areas at: 1.) Riverside Plantation Community, 2.) 4th Street Community (including side streets such as Adams St. and Winesset Cir.), 3.) The block of Patton Ct, Bradley Rd., and Gavin Rd., 4.) Madison St. Community. Implementation – Construct neighborhood drainage improvement projects based on the designs completed in the engineering/design phase. Projects could include pipe replacements (upsizing where needed), increasing the size and quantity of culverts and catch basins, redefining ditches, implementing backflow preventors, installing bioswales, bioretention cells, and other green and hybrid solutions.
Potential Funding Sources	• NC Resilient Coastal Communities Program Phase 3 (engineering), Phase 4 (implementation) • NC Environmental Enhancement Grant (EEG) • NC Land and Water Fund Grant • Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant • NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)

Drainage Projects/Maintenance Related Projects

These projects all involve drainage and maintenance. For the Creswell projects/areas mentioned, the Town is waiting to get information from the Scuppernong Study to pinpoint locations where projects would have the most benefit.

For Plymouth, a future round of StRAP funding could cover the areas that are mentioned in their project list and not included in the recent StRAP funding application. Plymouth is also exploring combining these types of projects with green infrastructure (for example, adding a bioswale), and this could be a good idea to broaden the type of grants that these projects could be eligible for. Holly also suggested potentially combining a storm drain maintenance activities in applications for stormwater infrastructure inventory funding.

Next steps: WCSWCD coordinate with Town of Plymouth on the next StRAP funding application.

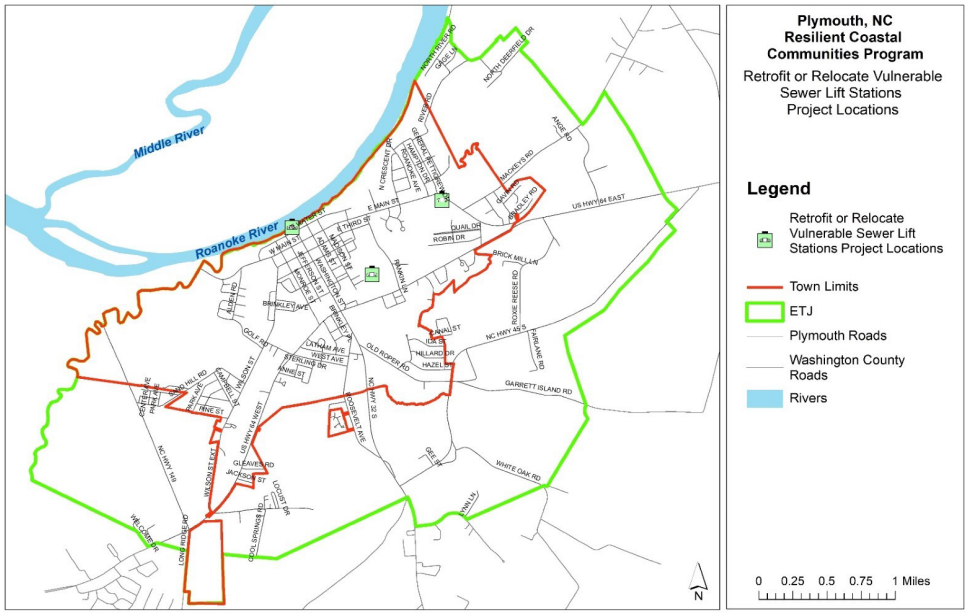
Relocation, Removal, and Retrofit Projects

Washington County- Remove Abandoned Structures and Critical Infrastructure from the Floodplain

PROJECT DESCRIPTION	Remove an estimated 75 abandoned structures/homes in the floodplain including unanchored utilities and other debris swept into floodway by Hurricane Matthew. Replace them with green space. Removal of critical infrastructure that supports services such as transportation, water, energy, communications, and medical services from the floodplain is currently underway, but there is more to be accomplished and will require assistance from Washington County Emergency Management. Some examples of specific projects that would be beneficial include: • Adding lift stations to sewer pipes in Roper that are currently at water level. • Planning ahead to relocate larger infrastructure, such as wastewater treatment facilities, when they need to be replaced due to age or repaired after a disaster. A first step would be to create a confirmed list and map of abandoned properties and identify critical infrastructure that would benefit from upgrades or replacement.
POTENTIAL FUNDING SOURCES	• FEMA Building Resilient Infrastructure and Communities (BRIC), FEMA Flood Mitigation Assistance (FMA) Program, • U.S. Department of Housing and Urban Development Community Development Block Grant – Neighborhood Revitalization (CDBG-NR) Program • County General Fund ($10k annually 10-4350-600)

Plymouth- Relocate or Retrofit Vulnerable Sewer Lift Stations

Project Description	Relocate or retrofit vulnerable sewer lift stations on Water Street, Johnson Court and East Main Street to improve risk of impacts from flooding.
Potential Funding Sources	• HUD Community Development Block Grant Mitigation Funds (CDBG-MIT) • NC Division of Water Infrastructure Programs (Clean Water State Revolving Fund, State Reserve Program, Viable Utility Reserve Program) • Golden Leaf Disaster Recovery Grant • Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Grant • Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) • Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) Grant



Relocation, Removal, and Retrofit Projects

Jamie Heath said that Plymouth had a project for removing abandoned structures but this project was moved off the priority project list due to lack of interest at the public meeting.

Abandoned structures fall under the County Planning department, and the County does not currently have the funding or capacity to oversee this process. There are many factors involved, including voluntary participation of the landowner, otherwise the property will go through the condemnation process. Many of the abandoned properties may be heirs property, which can make taking action difficult if the owner is unclear. Often, tax foreclosure is the most efficient process. Mayor Roth said that a common way of removing abandoned structures is to use the structure for a fire training exercise and burn it down.

The question was brought up of if there is a creative way to fund these properties as conservation or open space? Commissioner Keyes said that if structures are in the floodplain, they will have to be converted to open space.

A comprehensive list of abandoned structures and landowners is needed. Commissioner Keyes mentioned that there is a map from 2010 that identified all abandoned structures, this could be used to determine which of those are located in the floodplain.

For repetitive loss properties, the County or Towns can work with FEMA to remove a property from the floodplain. FEMA and the State both have Strategic Buyout programs, which could be an option for properties where the owner is known. Also, if there's a cluster of homes or areas with a large concentration of abandoned homes, Holly said the County could work with the State representative to have a meeting about this.

One idea that was mentioned was bringing in a team to educate the town landowners about recurring loss and properties that fall in the floodplain.

For lift stations, funding for these should come from the enterprise fund in the CIP. Funding for these projects could fall under the Division of Water Infrastructure, Viable Utilities Unit. Holly said that Helene can look into the Viable Utilities funding to see if it applies to these projects.

Next steps: Continue to have follow-up conversations about the abandoned properties, develop list of properties and landowners if known and establish contact.

Emergency Operations Projects

Washington County- New Emergency Operations Center

PROJECT DESCRIPTION	Construct a new dedicated EOC facility. Washington County has been working toward establishing a new EOC for many years. The county will continue to look for opportunities to move forward with this project. The county's existing facility is minimally adequate and relies on shared space with county administration—there is a need for a new and dedicated facility.
POTENTIAL FUNDING SOURCES	• NCDPS Emergency Preparedness Grants, • FEMA Emergency Management Performance Grant (EMPG) Program includes funding for both sheltering and EOC • FEMA Pre-Disaster Mitigation (PDM) Program • FEMA Emergency Operations Center Grant Program

Creswell- Designate Emergency Shelter and Emergency Operations Center

PROJECT DESCRIPTION	Designate a dedicated Emergency Operations Center (EOC) facility and Emergency Shelter. Currently there is no identified shelter to house residents in flood events. The county school building is not approved as a shelter location by the American Red Cross due to flood risk. The Pocosin Charter School was suggested by the CAT as a possible location. To pursue this project, the Town needs to identify potential locations for the facility, confirm shelter criteria that will need to be met, and then take any steps necessary to create or outfit a facility that meets the criteria.
POTENTIAL FUNDING SOURCES	• NCDPS Emergency Preparedness Grants, • FEMA Emergency Management Performance Grant (EMPG) Program includes funding for both sheltering and EOC • FEMA Pre-Disaster Mitigation (PDM) Program • FEMA Emergency Operations Center Grant Program

Emergency Operations Projects

The county is already in the process of pursuing funding to upgrade the county Emergency Operations Center. Emergency Shelters and Emergency Operations Center facilities need be located outside of the floodplain to get grant funding. For a shelter in Creswell, choice of location will very important, because flooding can make parts of the town inaccessible (highwater vehicles have been used in the past to rescue people). When discussing potential shelter locations, Thomas Patrick mentioned that the area where he lives on 1st Street does not flood when other parts of the town are underwater.

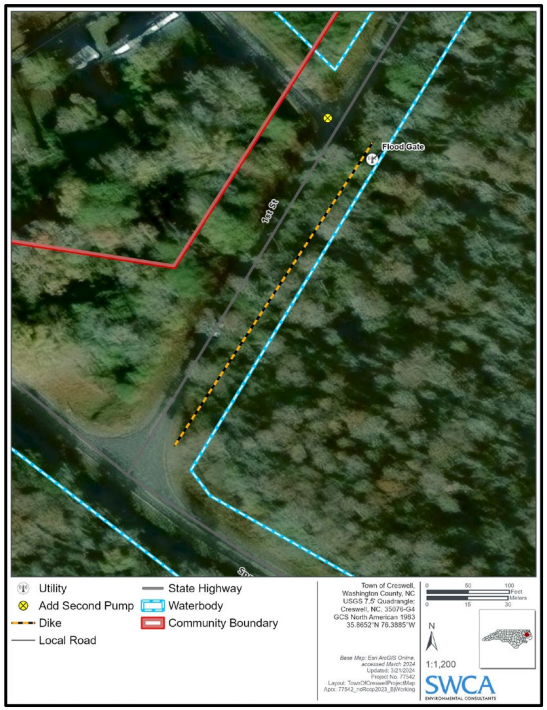
Other important considerations for these projects are funding, staffing, and capacity. In order to get funding, facilities must be Red Cross approved. Commissioner Keyes said that a Red Cross representative can come out to evaluate and approve a property.

Next steps: Creswell representatives to contact a Red Cross representative to determine shelter criteria and schedule a visit to potential shelter site(s) in Creswell.

Site-Specific Infrastructure Projects

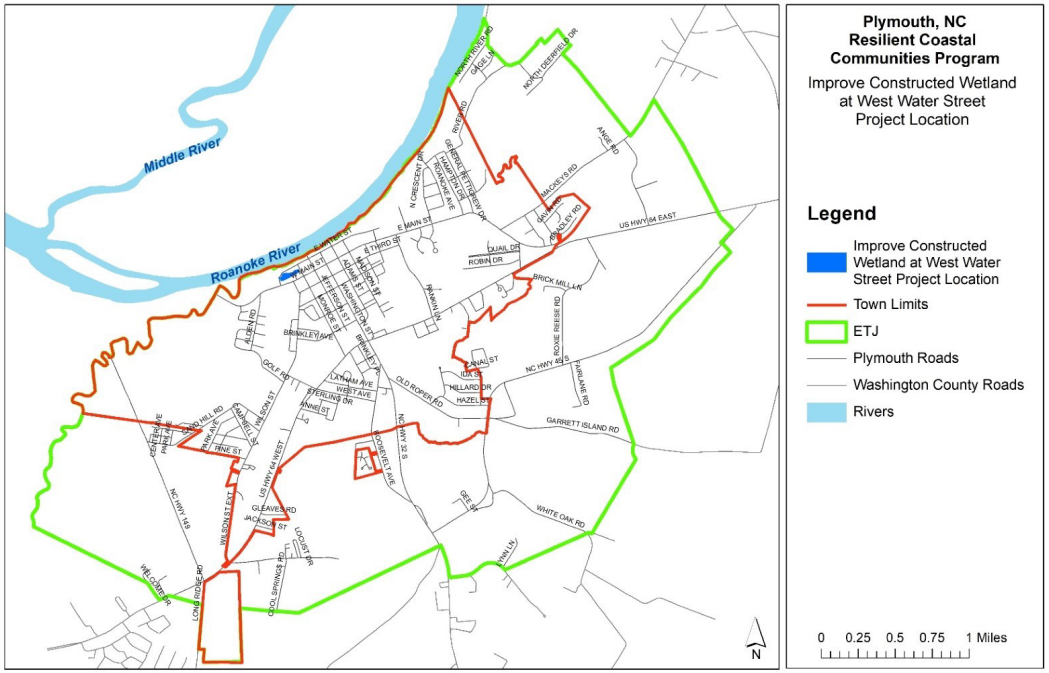
Creswell- Reduce Flooding Impacts in the 1st-4th Steet Area

PROJECT DESCRIPTION	The area from 4th Street at Cherry Road east to 1st Street between Main St and Palmetto St experiences the worst flooding impacts in Town. This project proposes to evaluate what potential solutions could help reduce flooding impacts in this area. Possible solutions could include extending the dike from 1st Street to Main Street, adding an additional pump at Palmetto Street, and/or nature-based flood risk mitigation solutions. This evaluation would build on initial modeling under the Scuppernong Study to determine more specifically what solutions would be most effective to create the desired flood risk reduction. Based on this evaluation, the Town would then seek funding to pursue the recommended solution(s).
POTENTIAL FUNDING SOURCES	• North Carolina Division of Water Infrastructure (DWI) Local Assistance for Stormwater Infrastructure investments (LASII) program, • Golden LEAF Foundation, • FEMA Building Resilient Infrastructure and Communities (BRIC)



Plymouth- Improve Constructed Wetland at West Water Street

Project Description	Improve the function of the constructed wetland behind the senior public housing complex to address over street flooding of West Water Street.
Potential Funding Sources	• NC Resilient Coastal Communities Program Phase 3 (engineering), Phase 4 (implementation) • NC Environmental Enhancement Grant (EEG) • NC Land and Water Fund Grant • NC Department of Environmental Quality (DEQ) Water Resources Development Grant (WRDG)



Site Specific Infrastructure Projects

These projects were grouped together because they both involve infrastructure such as a gate or pump and may have similar funding sources. Plymouth and Creswell should stay in communication about where they are able to obtain funding for these projects in case the same source could be used for both.

Projects with Education/Public Outreach Component

Plymouth- Stormwater Action Plan- Stormwater System Upgrade

Project Description	Develop a Stormwater Action Plan combined with strategically upgrading the stormwater system through improved and expanded infrastructure. The project will establish mapping and condition assessments for stormwater system components and outfalls with a focus on known problem areas and areas identified via a desktop analysis. The project will promote proactive stormwater maintenance through development of interactive mapping tools and maintenance guidance. The project will encourage stormwater quality awareness through public outreach efforts and produce construction drawings for a priority project.
Potential Funding Sources	• NC Resilient Coastal Communities Program Phase 3 (Action Plan) • Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure in Communities (BRIC) Capability and Capacity Building (C&CB) Grant • NC Department of Environmental Quality Water Resources Development Grant (WRDG)

Washington County- Develop Water Management Guide for Landowners, Homeowners, and Renters

PROJECT DESCRIPTION	Discussion with residents has shown that most people do not know for sure what they are expected to do to maintain ditches, storm drains, and other water management systems. What are they responsible for doing? And what are they allowed to do? How does what they do on their land impact downstream neighbors and the system as a whole? This project would be to develop and distribute information in the form of key talking points and summary information tailored to local audiences. Messaging should include compelling numbers that help explain how the water management system is interconnected and what people can do to help maintain it and not pass along negative impacts to their neighbors. The messages should also touch on what water management actions are handled by entities such as Washington County or other agencies.
POTENTIAL FUNDING SOURCE	Local Washington County General Fund advertising funds

Washington County - Share Information about Wetland Mitigation Banks and/or Water Farms with Landowners

PROJECT DESCRIPTION	Coastal farmlands could be converted to wetlands and established as conservation easements or mitigation banks in exchange for payments to landowners. Or similarly, certain lands could be designated as “water farms,” with payments to landowners for retaining water on the land under certain flood conditions. A first step toward this will be sharing information with landowners about this type of project and its benefits.
POTENTIAL FUNDING SOURCE	NC DWI Stream & Wetland Mitigation Program, NCDEQ Mitigation Sources

Projects with Education/Public Outreach Component

These projects all involve a public education component. Education around water management for landowners and stormwater quality awareness may help reduce local problems and provide collaboration opportunities. There is an education gap of what should be maintained, by whom, and when, and complex situations involving private property or multiple landowners should be considered.

Commissioner Keyes recommended identifying key leaders in the community because people have the tendency to listen to them, and holding community meetings with trusted ministers can help spread and gather information effectively.

Mayor Roth suggested an internal policy review prior to educating the public or developing and printed materials such as a management guide. They want to ensure that local policies and ordinances are clear and up to date before putting guidance out to the public. Washington County has a new intern who can review ordinances, and Creswell and Plymouth are currently reviewing theirs. This is a good time to collaborate.

Model ordinances from the state may be a helpful resource, and Holly said that NCORR is working on creating an ordinance for small communities that includes best practices.

Next steps: With ordinance reviews in progress, this is a great time for the County and Towns to review their current policies, adjust rules and ordinances, and gather public feedback. The County and Towns should coordinate on ordinances and use model ordinances as a guide. These projects should also be flagged for APNEP, as they may be a good future funding partner.

If the Town of Plymouth's Phase 3 funding application is approved for the Stormwater Action Plan, work with Chris Respess to develop messaging.

Other County Projects that May Benefit from Collaboration

Washington County- Identify and Upgrade Broadband for County Buildings and Other Critical Facilities Connected via Copper/Legacy Internet

PROJECT DESCRIPTION	Some internet/broadband services use copper wiring that is often susceptible to water intrusion and leads to unreliable service and outages during flooding events. Make a list of county buildings/assets and other critical facilities that use copper/legacy connections and connect them to a more reliable provider, such as the Microelectronics Center of North Carolina (MCNC) fiber network.
POTENTIAL FUNDING SOURCES	MCNC, NC Department of IT, Albemarle Commission

Washington County- Install River Gauges

PROJECT DESCRIPTION	There are currently only three gauges in the NCEM Flood Inundation Mapping and Alert Network countywide: one in Roper on Kendrick Creek, one in Plymouth on Conaby Creek, and one in Van Swamp along North Carolina Highway 32 South. This project would install additional gauges within the upstream portion of the county to help improve flood predictions and track flooding trends. The following potential locations have been identified for consideration: Eddiesmith Canal, Highland Canal, Kendrick Creek, Mackey's Creek, Main Canal, Scuppernong River, Swinson Swamp, Beaver Dam Branch. Part of this project would include confirming locations and functionality of existing gauges.
POTENTIAL FUNDING SOURCES	Southeast Coastal Ocean Observing Regional Association (SECOORA), National Weather Service, Washington County Drainage Fund

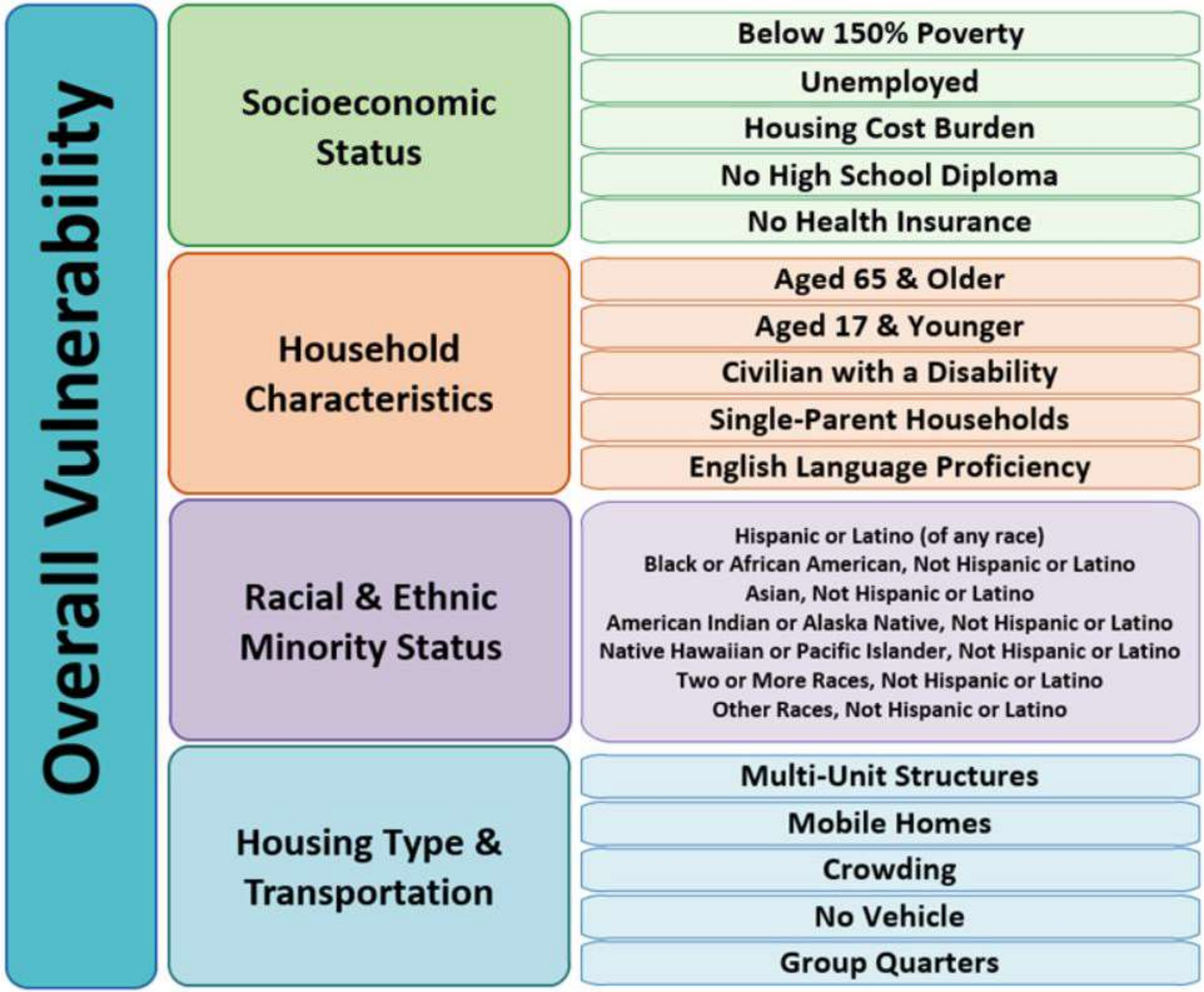
Other County projects that may benefit from collaboration

A potential funding source for Washington County's Broadband upgrade project is Weyerhaeuser. Their website includes information on the Rural Communities program Phase 2 (2023-2025), which mentions broadband expansion. The County has applied for their funding in the past.

For the River Gauge installation project, Meg will be coordinating with folks from the Scuppernong Study to discuss SECOORA funding and see if they can get additional gauges installed at key locations around the county. It will be important to confirm that the SECOORA funded gauges will be part of the FIMAN network for maximum data accessibility.

Variables Used

American Community Survey (ACS), 2016-2020 (5-year) data for the following estimates:



CDC/ATSDR Social Vulnerability Index 2020

WASHINGTON COUNTY, NORTH CAROLINA

Overall Social Vulnerability[1]

Highest (Top 4th) — Vulnerability (SVI 2020)[2] — Lowest (Bottom 4th)

Data Unavailable[3]

0 1 2 4 6
Miles

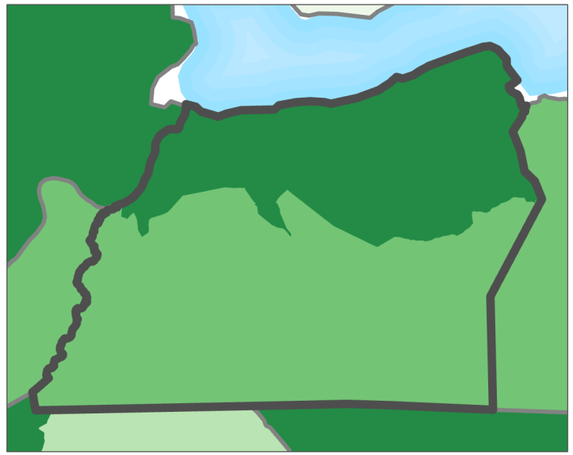
Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. The **CDC/ATSDR Social Vulnerability Index (CDC/ATSDR SVI 2020)[4] County Map** depicts the social vulnerability of communities, at census tract level, within a specified county. CDC/ATSDR SVI 2020 groups **sixteen census-derived factors** into **four themes** that summarize the extent to which the area is socially vulnerable to disaster. The factors include economic data as well as data regarding education, family characteristics, housing, language ability, ethnicity, and vehicle access. Overall Social Vulnerability combines all the variables to provide a comprehensive assessment.

ATSDR Agency for Toxic Substances and Disease Registry

GRASP Geospatial Research, Analysis, and Services Program

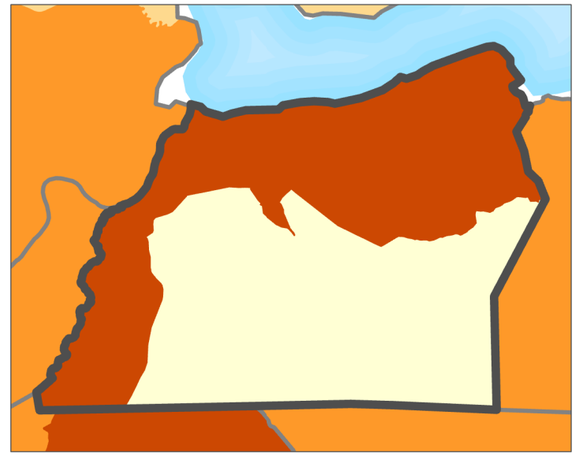
CDC/ATSDR SVI Themes

Socioeconomic Status[5]



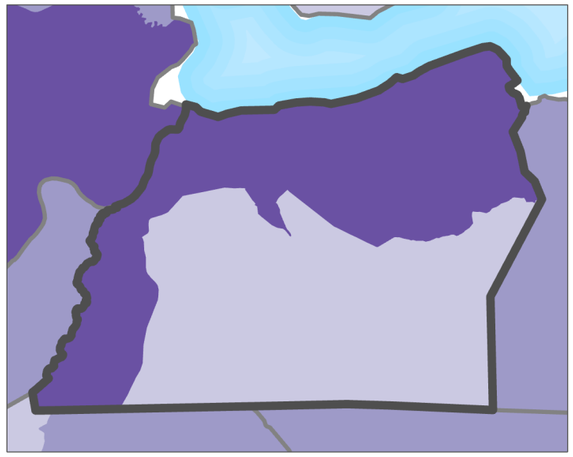
Highest (Top 4th) — Vulnerability (SVI 2020)[2] — Lowest (Bottom 4th)

Household Characteristics[6]



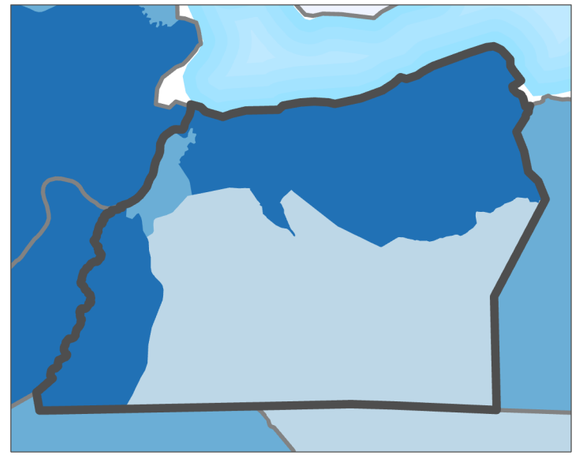
Highest (Top 4th) — Vulnerability (SVI 2020)[2] — Lowest (Bottom 4th)

Racial and Ethnic Minority Status[7]



Highest (Top 4th) — Vulnerability (SVI 2020)[2] — Lowest (Bottom 4th)

Housing Type/Transportation[8]



Highest (Top 4th) — Vulnerability (SVI 2020)[2] — Lowest (Bottom 4th)

Data Sources: [2]CDC/ATSDR/GRASP, U.S. Census Bureau, Esri® StreetMapTM Premium.

Notes: [1]Overall Social Vulnerability: All 16 variables. [3]Census tracts with 0 population. [4]The CDC/ATSDR SVI combines percentile rankings of US Census American Community Survey (ACS) 2016-2020 variables, for the state, at the census tract level. [5]Socioeconomic Status: Below 150% Poverty, Unemployed, Housing Costs Burden, No High School Diploma, No Health Insurance. [6]Household Characteristics: Aged 65 and Older, Aged 17 and Younger, Civilian with a Disability, Single-Parent Household, English Language Proficiency. [7]Race/Ethnicity: Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino. [8]Housing Type/Transportation: Multi-Unit Structures, Mobile Homes, Crowding, No Vehicle, Group Quarters.

Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet.

References: Flanagan, B.E., et al., A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*, 2011. 8(1).

CDC/ATSDR SVI web page: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html.

Overall SVI Nationwide Comparison
By Census Tract | 2020

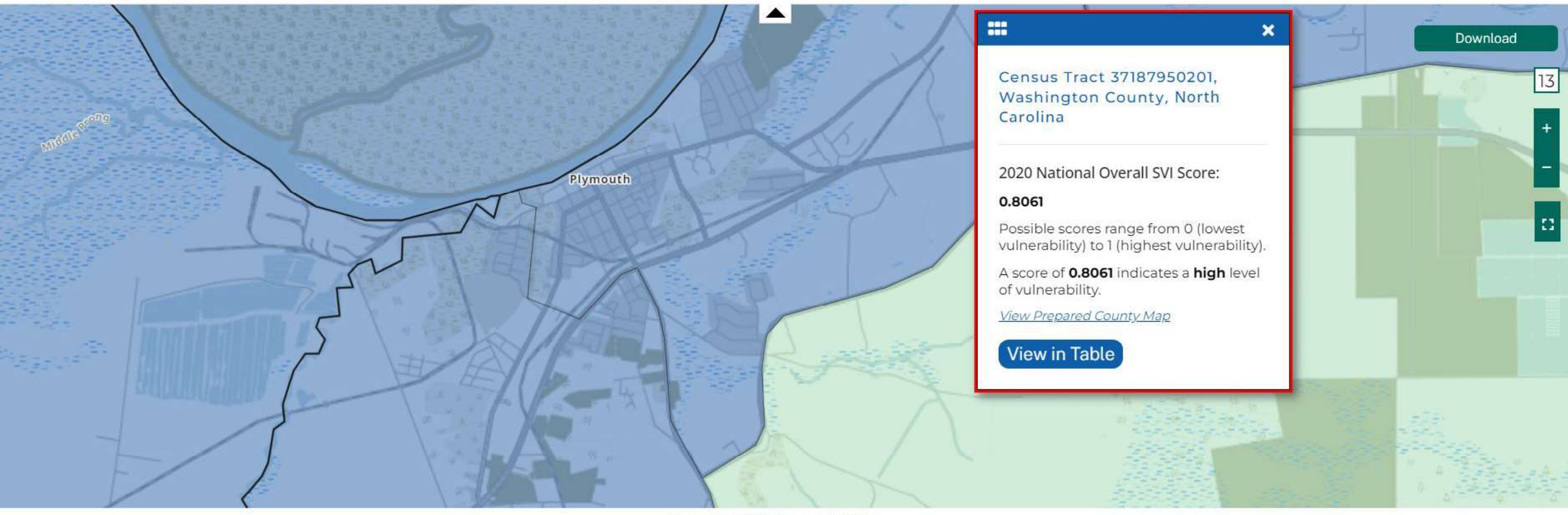
Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More



Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Overall SVI Nationwide Comparison
By Census Tract | 2020

Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More

Download

13

Census Tract 37187950202, Washington County, North Carolina

2020 National Overall SVI Score:

0.8682

Possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability).

A score of **0.8682** indicates a **high** level of vulnerability.

View Prepared County Map

View in Table

Plymouth

Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Socioeconomic Status Nationwide Comparison
By Census Tract | 2020

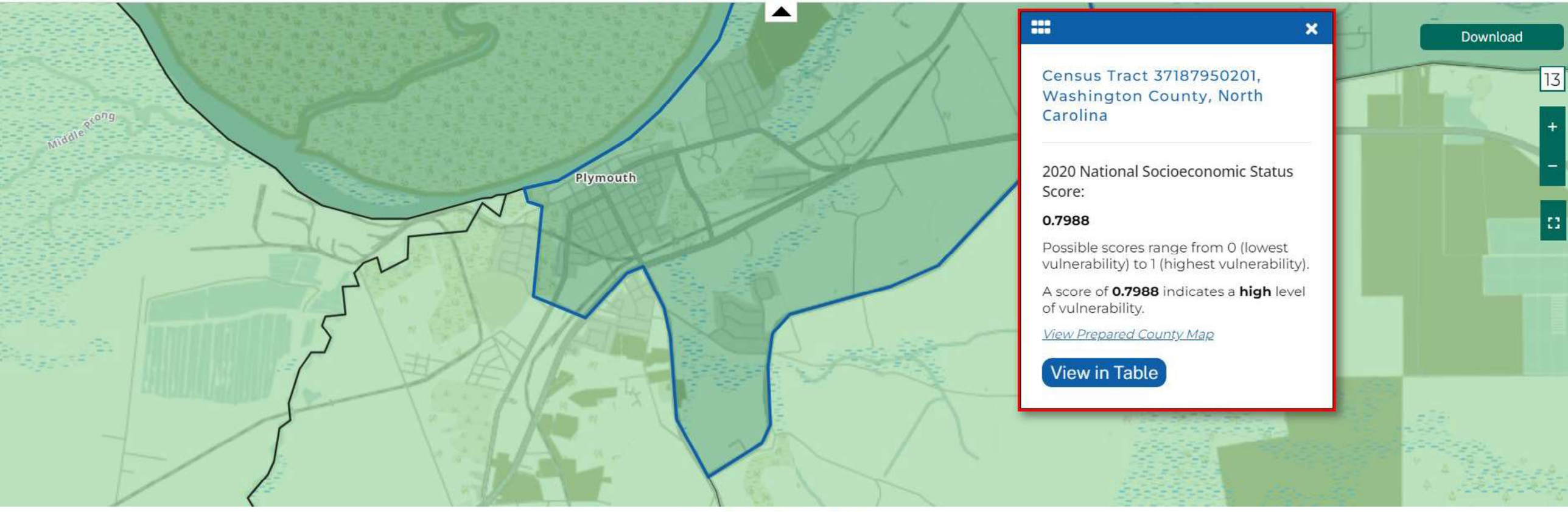
Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More



Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Socioeconomic Status Nationwide Comparison
By Census Tract | 2020

Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More

Download

13

Census Tract 37187950202, Washington County, North Carolina

2020 National Socioeconomic Status Score:

0.6768

Possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability).

A score of **0.6768** indicates a **medium to high** level of vulnerability.

View Prepared County Map

View in Table

Middle Prong

Plymouth

Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Household Characteristics Nationwide Comparison
By Census Tract | 2020

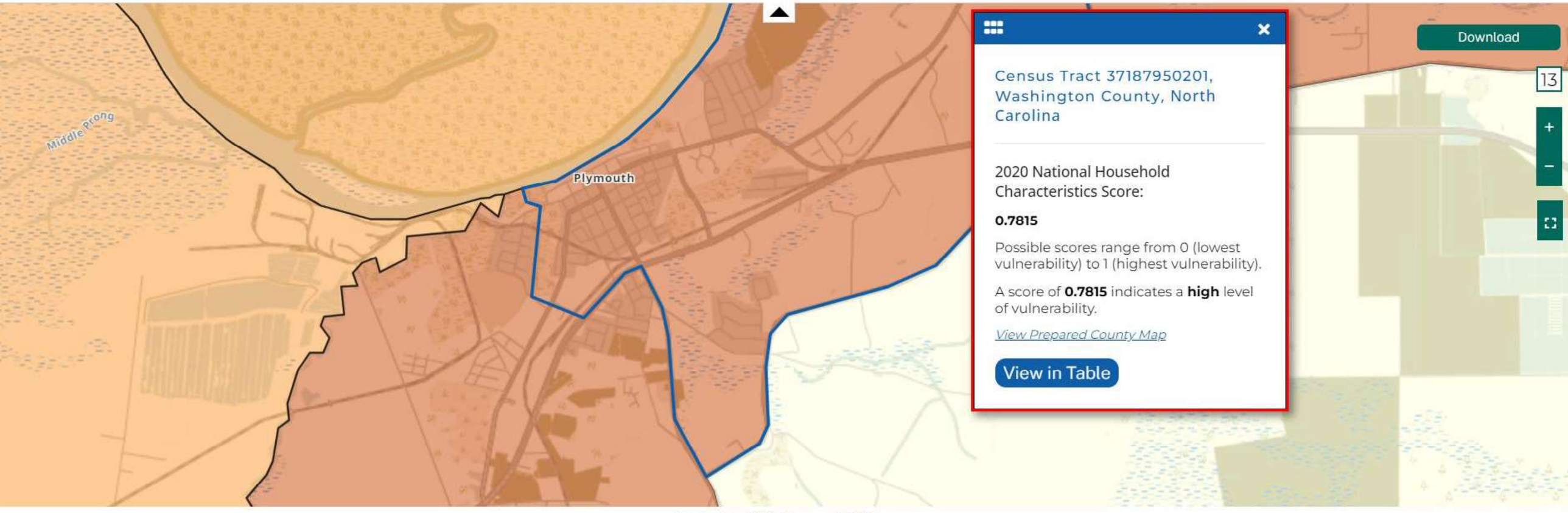
Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More



Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Household Characteristics Nationwide Comparison
By Census Tract | 2020

Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More

Download

13

Census Tract 37187950202, Washington County, North Carolina

2020 National Household Characteristics Score:

0.825

Possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability).

A score of **0.825** indicates a **high** level of vulnerability.

View Prepared County Map

View in Table

Plymouth

Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Racial & Ethnic Minority Status

Nationwide Comparison

By Census Tract | 2020

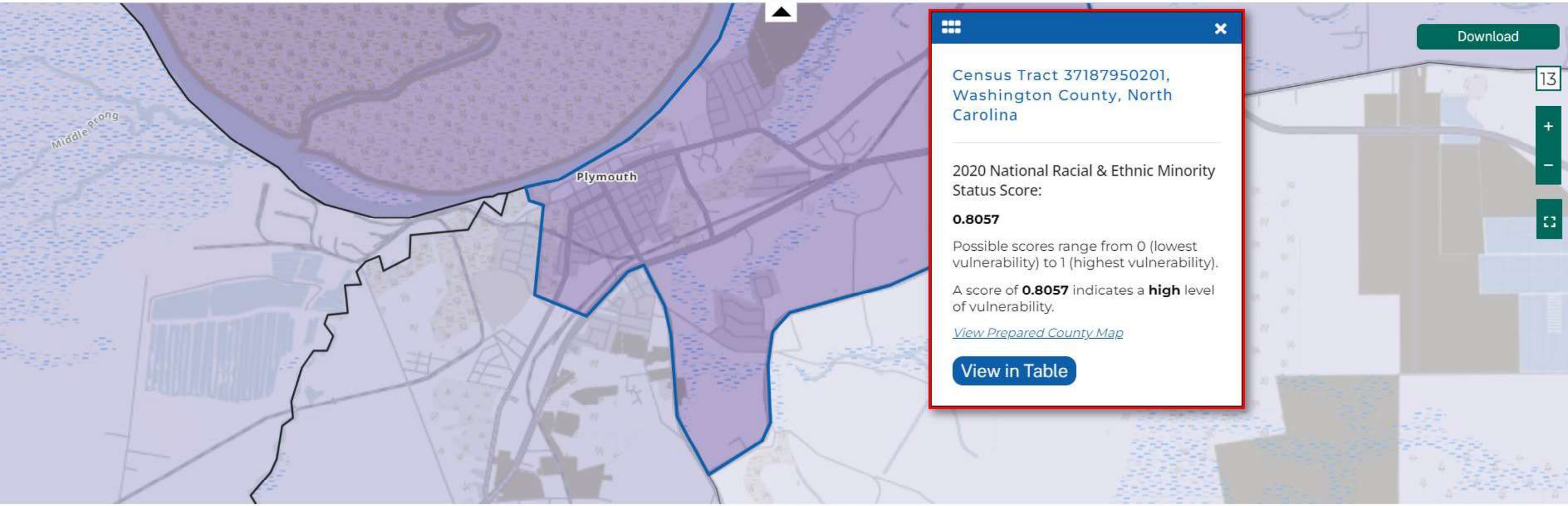
Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More



Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Racial & Ethnic Minority Status

Nationwide Comparison

By Census Tract | 2020

Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More

Download

13

Census Tract 37187950202, Washington County, North Carolina

2020 National Racial & Ethnic Minority Status Score:

0.7261

Possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability).

A score of **0.7261** indicates a **medium to high** level of vulnerability.

View Prepared County Map

View in Table

Plymouth

Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Housing Type & Transportation

Nationwide Comparison

By Census Tract | 2020

Map Features

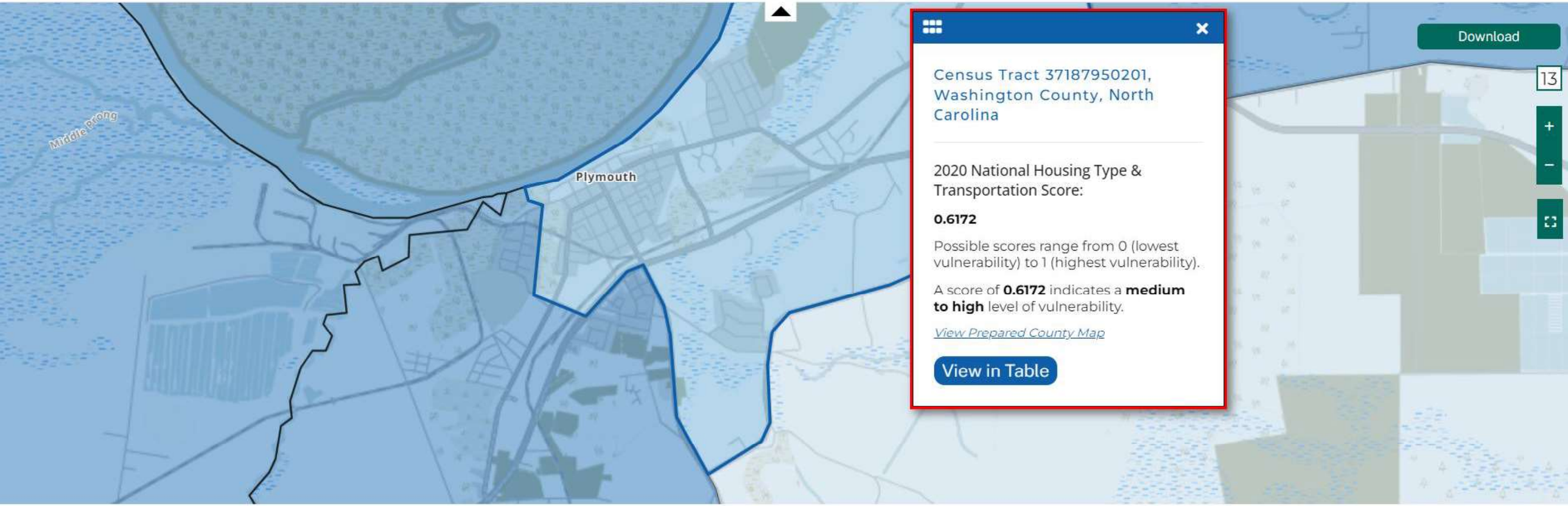
Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More



Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

Housing Type & Transportation

Nationwide Comparison

By Census Tract | 2020

Map Features: Click to view

Map Transparency

Search within: U.S.

Find address, county, or ZIP code

Map | Table | More

Download

13

Census Tract 37187950202, Washington County, North Carolina

2020 National Housing Type & Transportation Score:

0.9444

Possible scores range from 0 (lowest vulnerability) to 1 (highest vulnerability).

A score of **0.9444** indicates a **high** level of vulnerability.

View Prepared County Map

View in Table

Plymouth

Level of Vulnerability

Low	Low-Medium	Medium-High	High	No Data

North Carolina
RESILIENT
COASTAL
COMMUNITIES
PROGRAM

Town of Plymouth

Town Level Social Vulnerability Data – US Census Bureau

TOWN OF PLYMOUTH CENSUS DATA

Disability: 30.5% of population with a disability

Elderly: 21.9% of population 65 years and over

Language Barrier: 0.4% of population speak a language other than English at home

Median Household Income: $20,943

Minority: 73.3% minority population (2020 US Decennial Census)

Poverty Rate: 43.6% of population below poverty rate

Vehicle Access: 23.9% of households have no vehicle available

(All data except minority population is 2021 American Community Survey 5-year estimates from the US Census Bureau.)

EJScreen Report (Version 2.11)

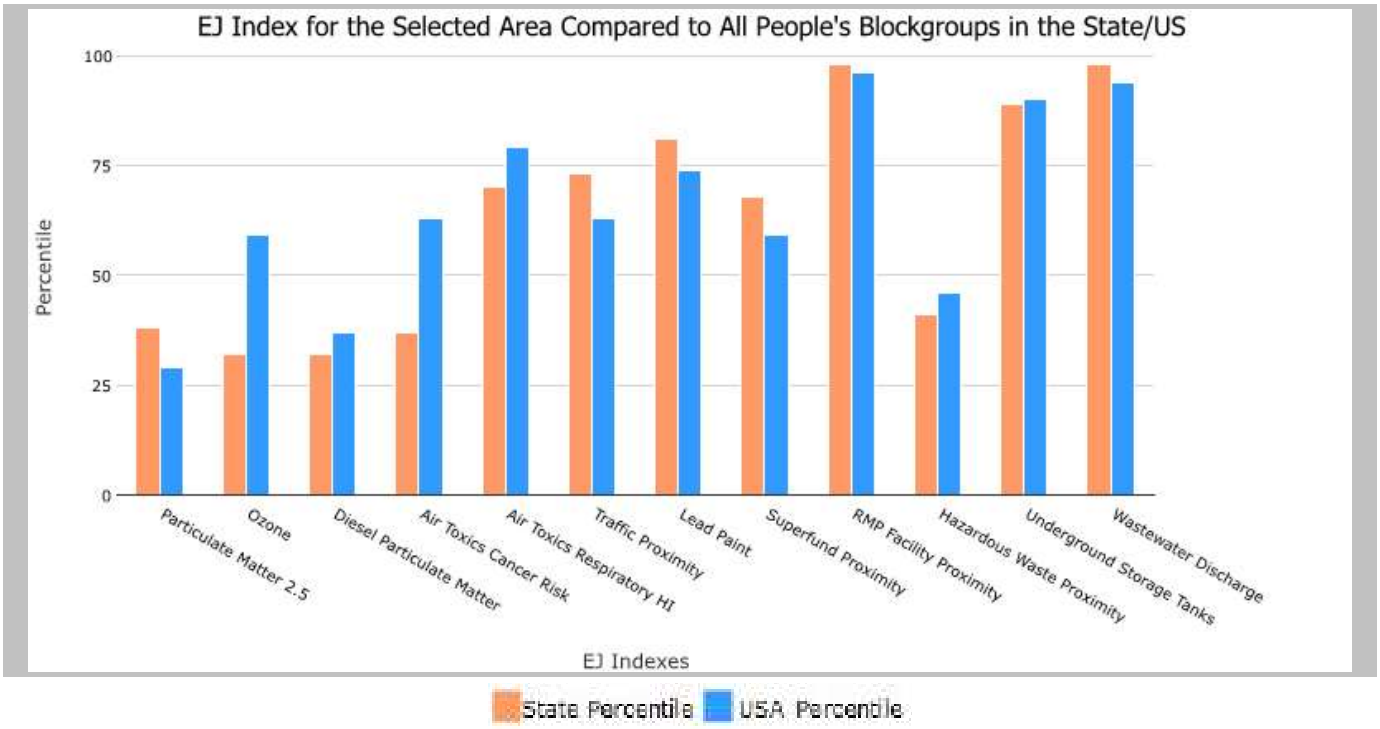
Blockgroup: 371879502011, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,266

Input Area (sq. miles): 6.42

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
Particulate Matter 2.5 EJ index	38	29
Ozone EJ index	32	59
Diesel Particulate Matter EJ index*	32	37
Air Toxics Cancer Risk EJ index*	37	63
Air Toxics Respiratory HI EJ index*	70	79
Traffic Proximity EJ index	73	63
Lead Paint EJ index	81	74
Superfund Proximity EJ index	68	59
RMP Facility Proximity EJ index	98	96
Hazardous Waste Proximity EJ index	41	46
Underground Storage Tanks EJ index	89	90
Wastewater Discharge EJ index	98	94

EJ Indexes - The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.



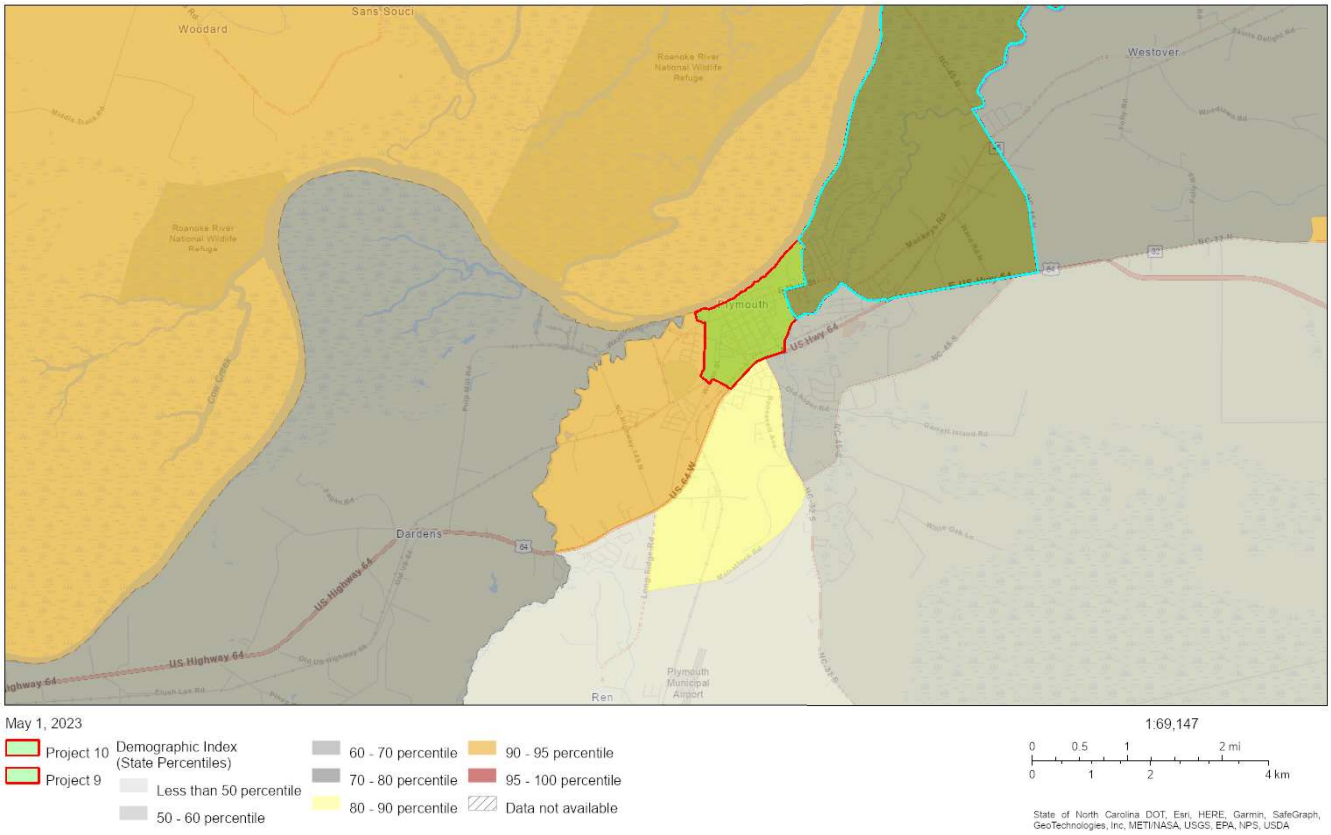
*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

EJScreen Report (Version 2.11)

Blockgroup: 371879502011, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,266

Input Area (sq. miles): 6.42



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.11)

Blockgroup: 371879502011, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,266

Input Area (sq. miles): 6.42

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	6.35	7.67	12	8.67	7
Ozone (ppb)	37.4	41.5	10	42.5	18
Diesel Particulate Matter* (µg/m^3)	0.082	0.178	9	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	20	28	21	28	<50th
Air Toxics Respiratory HI*	0.3	0.36	39	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	56	400	35	760	25
Lead Paint (% Pre-1960 Housing)	0.081	0.15	41	0.27	31
Superfund Proximity (site count/km distance)	0.021	0.08	24	0.13	19
RMP Facility Proximity (facility count/km distance)	1.2	0.41	92	0.77	80
Hazardous Waste Proximity (facility count/km distance)	0.072	0.83	11	2.2	13
Underground Storage Tanks (count/km^2)	2.3	3.9	61	3.9	61
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0067	0.28	78	12	66
Socioeconomic Indicators					
Demographic Index	81%	35%	97	35%	95
Supplemental Demographic Index	23%	15%	87	15%	85
People of Color	81%	37%	90	40%	84
Low Income	81%	33%	97	30%	97
Unemployment Rate	5%	5%	55	5%	55
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	9%	11%	46	12%	53
Under Age 5	0%	6%	0	6%	0
Over Age 64	10%	16%	24	16%	27
Low Life Expectancy	21%	21%	60	20%	70

EJScreen Report (Version 2.11)

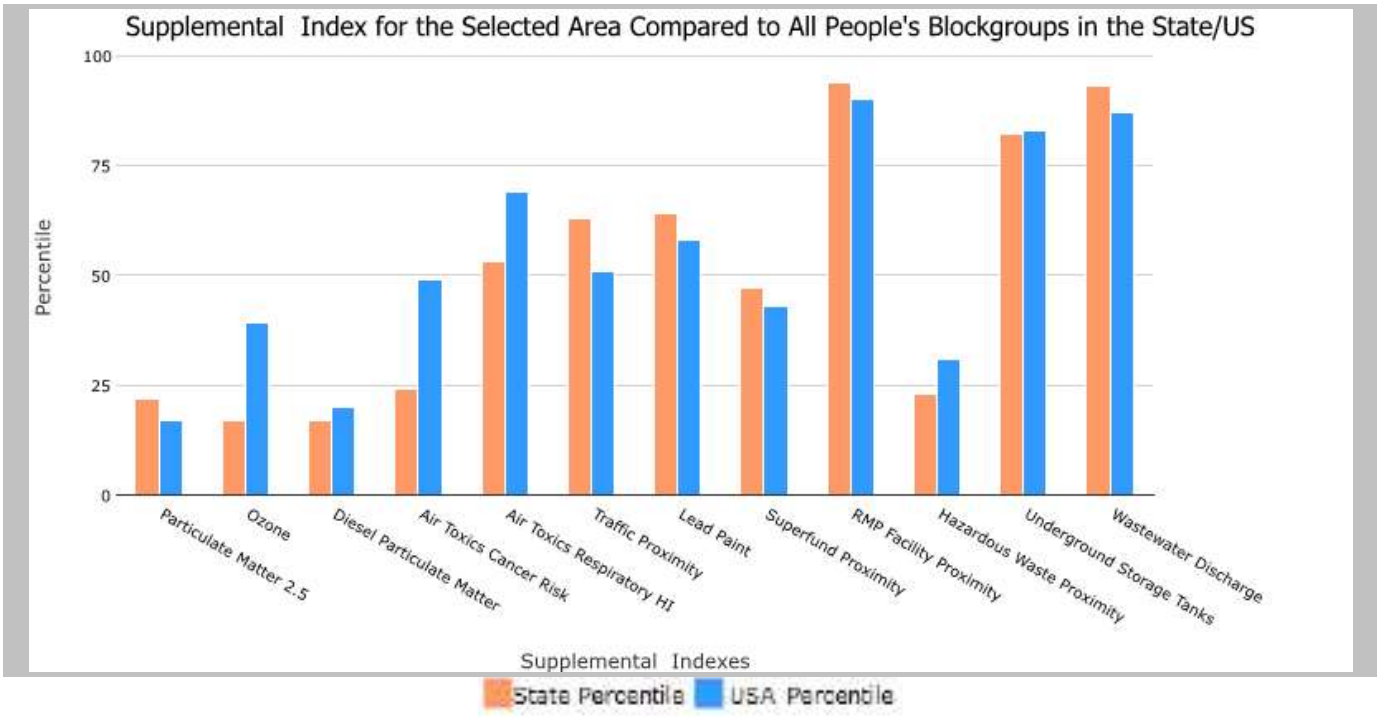
Blockgroup: 371879502011, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,266

Input Area (sq. miles): 6.42

Selected Variables	State Percentile	USA Percentile
Supplemental Indexes		
Particulate Matter 2.5 Supplemental Index	22	17
Ozone Supplemental Index	17	39
Diesel Particulate Matter Supplemental Index*	17	20
Air Toxics Cancer Risk Supplemental Index*	24	49
Air Toxics Respiratory HI Supplemental Index*	53	69
Traffic Proximity Supplemental Index	63	51
Lead Paint Supplemental Index	64	58
Superfund Proximity Supplemental Index	47	43
RMP Facility Proximity Supplemental Index	94	90
Hazardous Waste Proximity Supplemental Index	23	31
Underground Storage Tanks Supplemental Index	82	83
Wastewater Discharge Supplemental Index	93	87

Supplemental Indexes - The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on low-income, limited English speaking, less than high school education, unemployed, and low life expectancy populations with a single environmental indicator.



This report shows the values for environmental and demographic indicators, EJScreen indexes, and supplemental indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. For additional information, see: www.epa.gov/environmentaljustice.

EJScreen Report (Version 2.11)

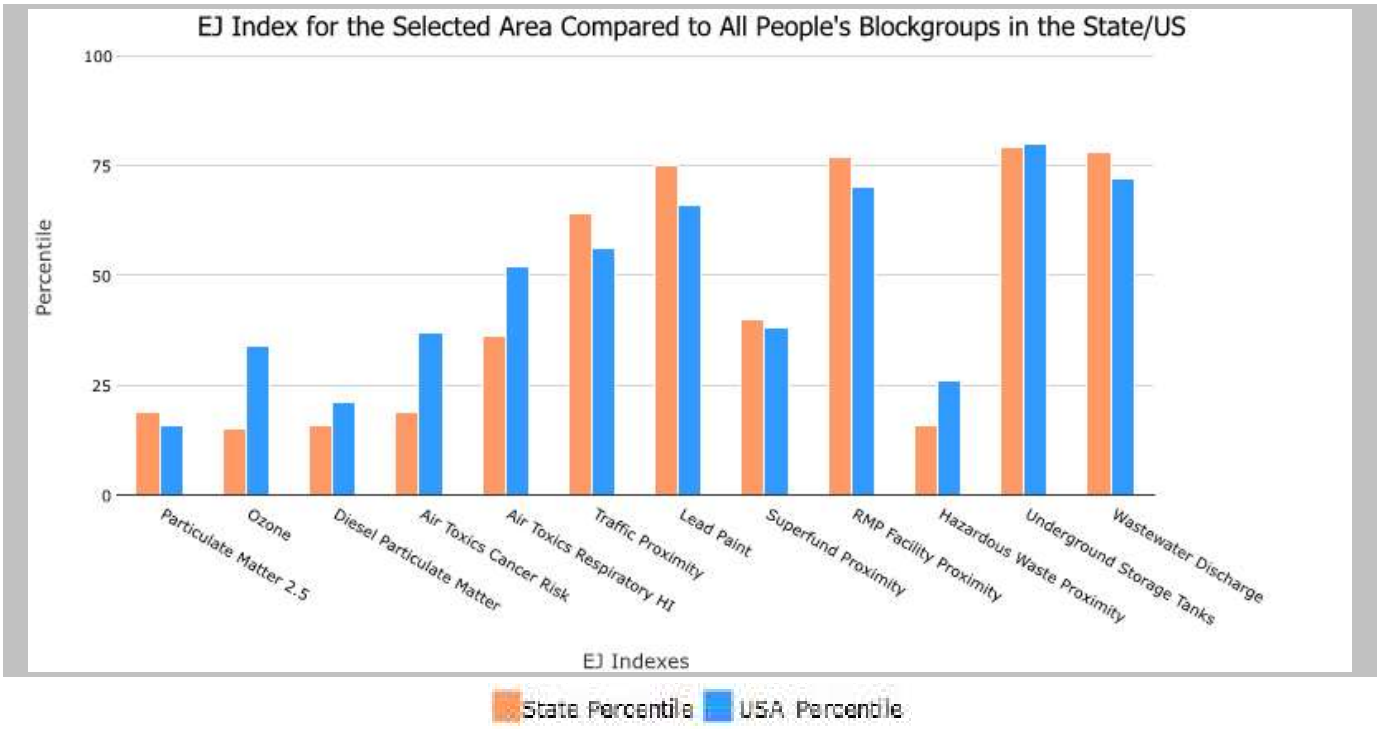
Blockgroup: 371879502012, NORTH CAROLINA, EPA Region 4

Approximate Population: 538

Input Area (sq. miles): 2.22

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
Particulate Matter 2.5 EJ index	19	16
Ozone EJ index	15	34
Diesel Particulate Matter EJ index*	16	21
Air Toxics Cancer Risk EJ index*	19	37
Air Toxics Respiratory HI EJ index*	36	52
Traffic Proximity EJ index	64	56
Lead Paint EJ index	75	66
Superfund Proximity EJ index	40	38
RMP Facility Proximity EJ index	77	70
Hazardous Waste Proximity EJ index	16	26
Underground Storage Tanks EJ index	79	80
Wastewater Discharge EJ index	78	72

EJ Indexes - The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.



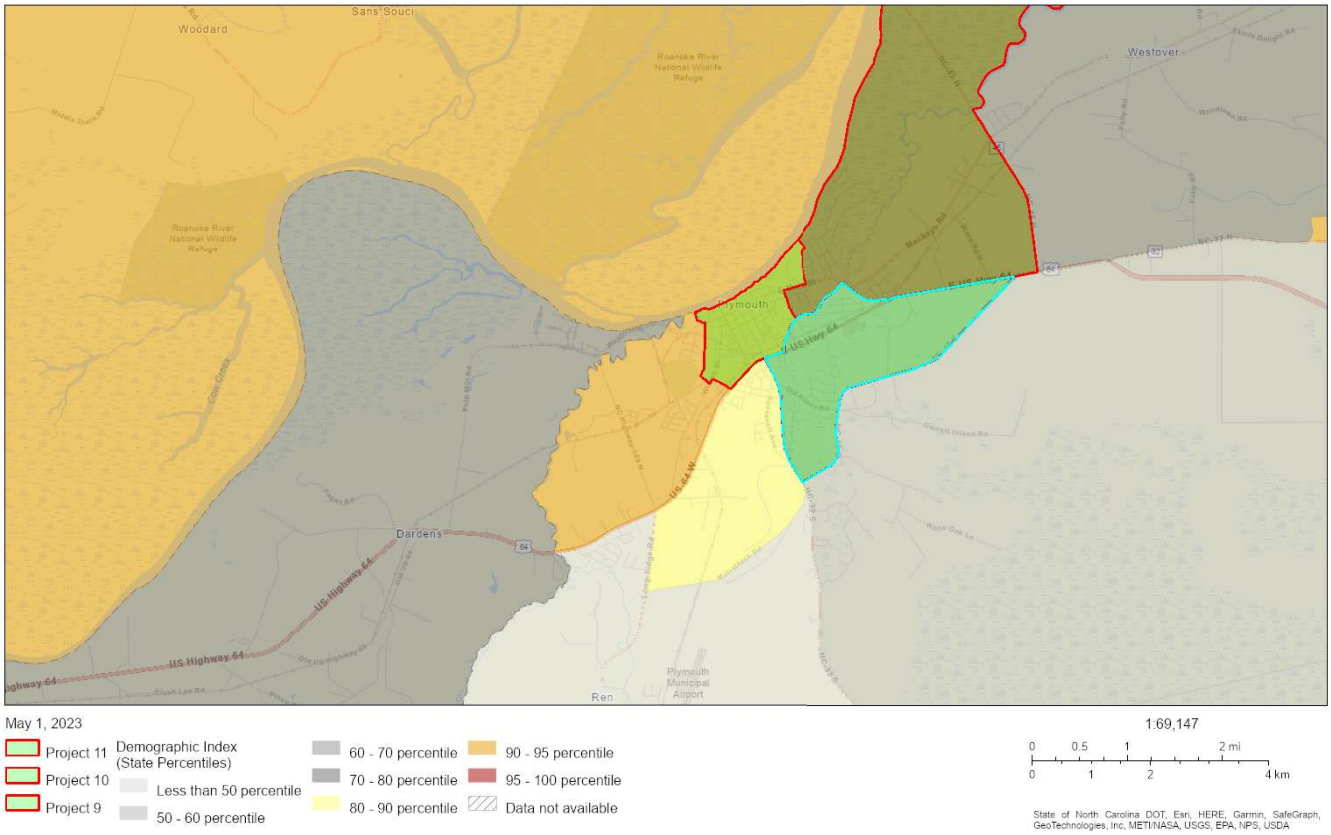
*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

EJScreen Report (Version 2.11)

Blockgroup: 371879502012, NORTH CAROLINA, EPA Region 4

Approximate Population: 538

Input Area (sq. miles): 2.22



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.11)

Blockgroup: 371879502012, NORTH CAROLINA, EPA Region 4

Approximate Population: 538

Input Area (sq. miles): 2.22

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	6.35	7.67	12	8.67	7
Ozone (ppb)	37.4	41.5	10	42.5	18
Diesel Particulate Matter* (µg/m^3)	0.082	0.178	9	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	20	28	21	28	<50th
Air Toxics Respiratory HI*	0.3	0.36	39	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	170	400	55	760	43
Lead Paint (% Pre-1960 Housing)	0.24	0.15	72	0.27	51
Superfund Proximity (site count/km distance)	0.022	0.08	25	0.13	20
RMP Facility Proximity (facility count/km distance)	0.64	0.41	81	0.77	64
Hazardous Waste Proximity (facility count/km distance)	0.063	0.83	9	2.2	12
Underground Storage Tanks (count/km^2)	10	3.9	88	3.9	89
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0039	0.28	74	12	61
Socioeconomic Indicators					
Demographic Index	38%	35%	60	35%	62
Supplemental Demographic Index	13%	15%	44	15%	52
People of Color	50%	37%	70	40%	67
Low Income	26%	33%	37	30%	47
Unemployment Rate	0%	5%	0	5%	0
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	19%	11%	78	12%	79
Under Age 5	0%	6%	0	6%	0
Over Age 64	54%	16%	99	16%	98
Low Life Expectancy	21%	21%	60	20%	70

EJScreen Report (Version 2.11)

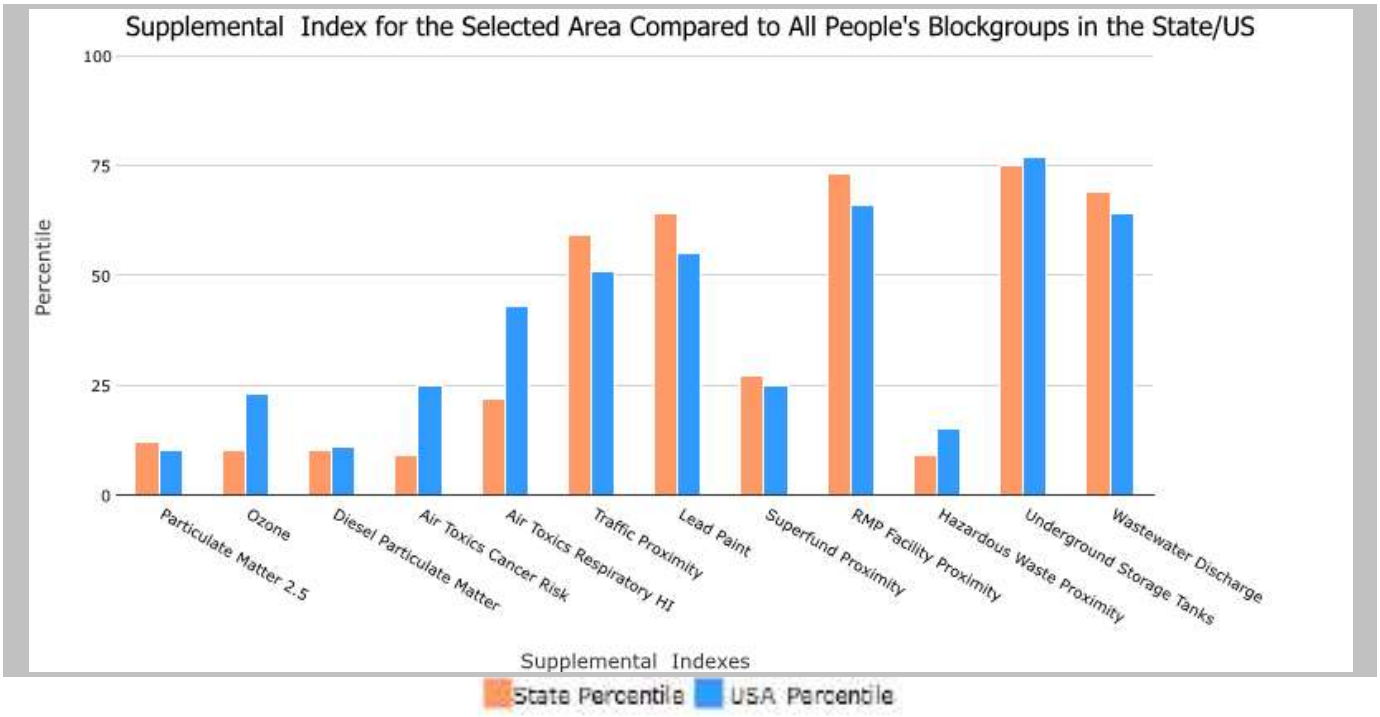
Blockgroup: 371879502012, NORTH CAROLINA, EPA Region 4

Approximate Population: 538

Input Area (sq. miles): 2.22

Selected Variables	State Percentile	USA Percentile
Supplemental Indexes		
Particulate Matter 2.5 Supplemental Index	12	10
Ozone Supplemental Index	10	23
Diesel Particulate Matter Supplemental Index*	10	11
Air Toxics Cancer Risk Supplemental Index*	9	25
Air Toxics Respiratory HI Supplemental Index*	22	43
Traffic Proximity Supplemental Index	59	51
Lead Paint Supplemental Index	64	55
Superfund Proximity Supplemental Index	27	25
RMP Facility Proximity Supplemental Index	73	66
Hazardous Waste Proximity Supplemental Index	9	15
Underground Storage Tanks Supplemental Index	75	77
Wastewater Discharge Supplemental Index	69	64

Supplemental Indexes - The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on low-income, limited English speaking, less than high school education, unemployed, and low life expectancy populations with a single environmental indicator.



This report shows the values for environmental and demographic indicators, EJScreen indexes, and supplemental indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJScreen documentation for discussion of these issues before using reports. For additional information, see: www.epa.gov/environmentaljustice.

EJScreen Report (Version 2.11)

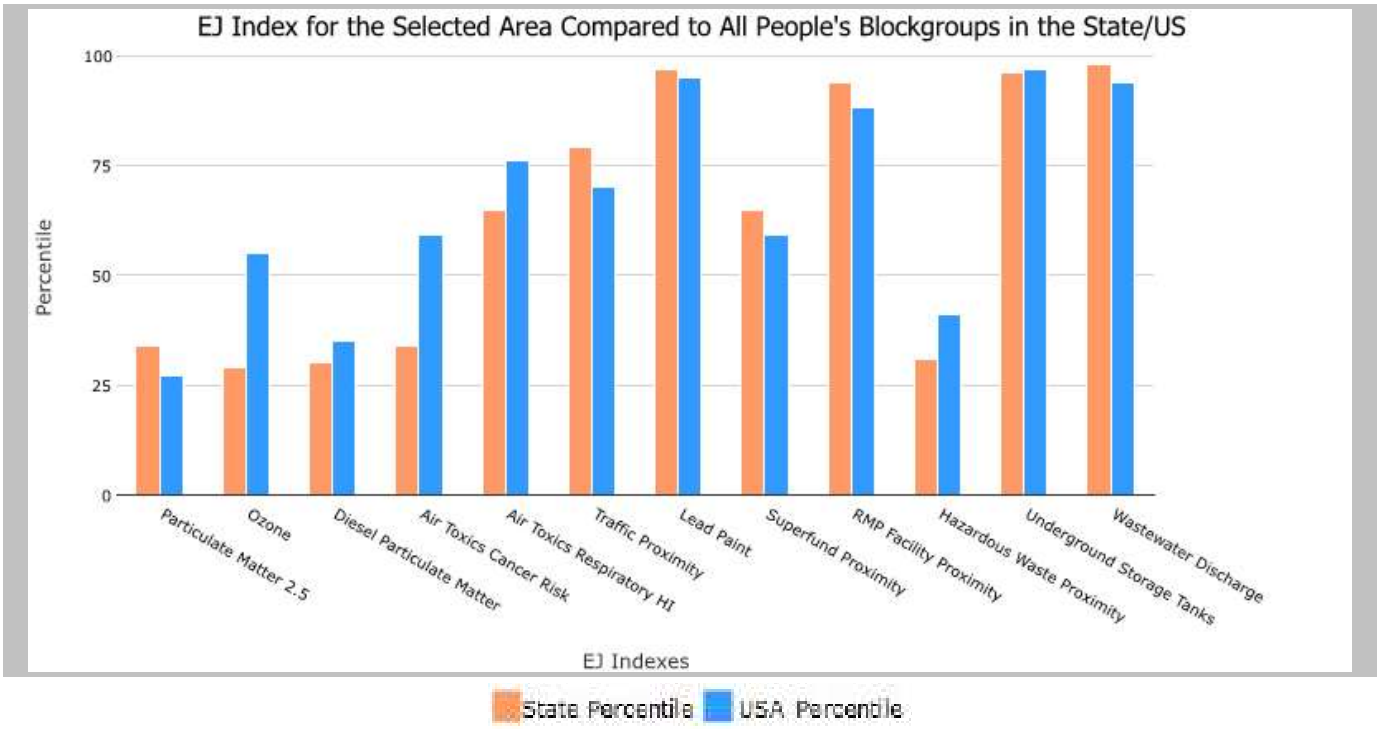
Blockgroup: 371879502013, NORTH CAROLINA, EPA Region 4

Approximate Population: 488

Input Area (sq. miles): 0.86

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
Particulate Matter 2.5 EJ index	34	27
Ozone EJ index	29	55
Diesel Particulate Matter EJ index*	30	35
Air Toxics Cancer Risk EJ index*	34	59
Air Toxics Respiratory HI EJ index*	65	76
Traffic Proximity EJ index	79	70
Lead Paint EJ index	97	95
Superfund Proximity EJ index	65	59
RMP Facility Proximity EJ index	94	88
Hazardous Waste Proximity EJ index	31	41
Underground Storage Tanks EJ index	96	97
Wastewater Discharge EJ index	98	94

EJ Indexes - The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.



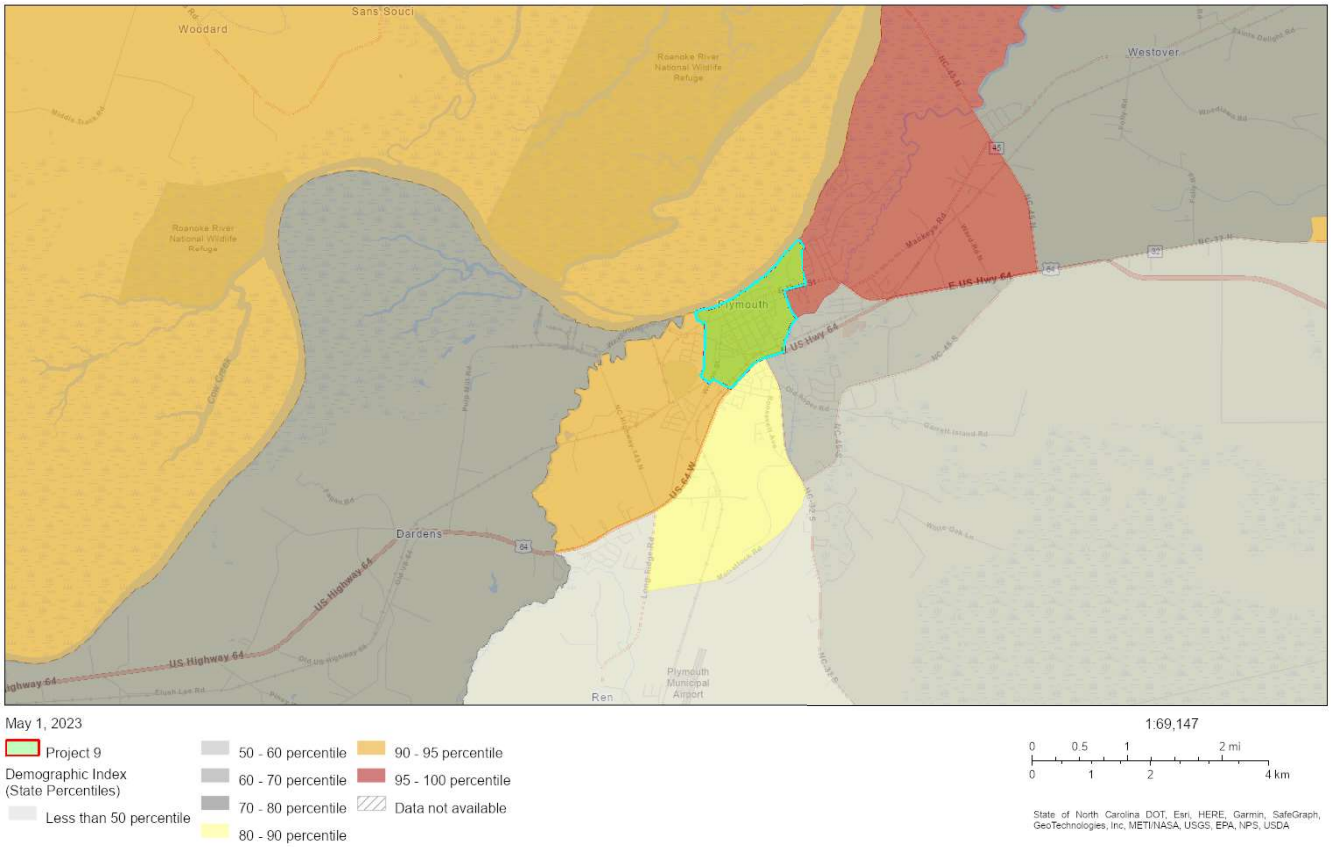
*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

EJScreen Report (Version 2.11)

Blockgroup: 371879502013, NORTH CAROLINA, EPA Region 4

Approximate Population: 488

Input Area (sq. miles): 0.86



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.11)

Blockgroup: 371879502013, NORTH CAROLINA, EPA Region 4

Approximate Population: 488

Input Area (sq. miles): 0.86

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	6.35	7.67	12	8.67	7
Ozone (ppb)	37.4	41.5	10	42.5	18
Diesel Particulate Matter* (µg/m^3)	0.082	0.178	9	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	20	28	21	28	<50th
Air Toxics Respiratory HI*	0.3	0.36	39	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	110	400	46	760	35
Lead Paint (% Pre-1960 Housing)	0.6	0.15	95	0.27	80
Superfund Proximity (site count/km distance)	0.022	0.08	25	0.13	21
RMP Facility Proximity (facility count/km distance)	0.65	0.41	82	0.77	65
Hazardous Waste Proximity (facility count/km distance)	0.064	0.83	9	2.2	12
Underground Storage Tanks (count/km^2)	17	3.9	94	3.9	94
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.016	0.28	83	12	73
Socioeconomic Indicators					
Demographic Index	73%	35%	93	35%	91
Supplemental Demographic Index	26%	15%	92	15%	89
People of Color	71%	37%	84	40%	79
Low Income	75%	33%	96	30%	95
Unemployment Rate	0%	5%	0	5%	0
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	31%	11%	94	12%	92
Under Age 5	0%	6%	0	6%	0
Over Age 64	14%	16%	42	16%	45
Low Life Expectancy	21%	21%	60	20%	70

EJScreen Report (Version 2.11)

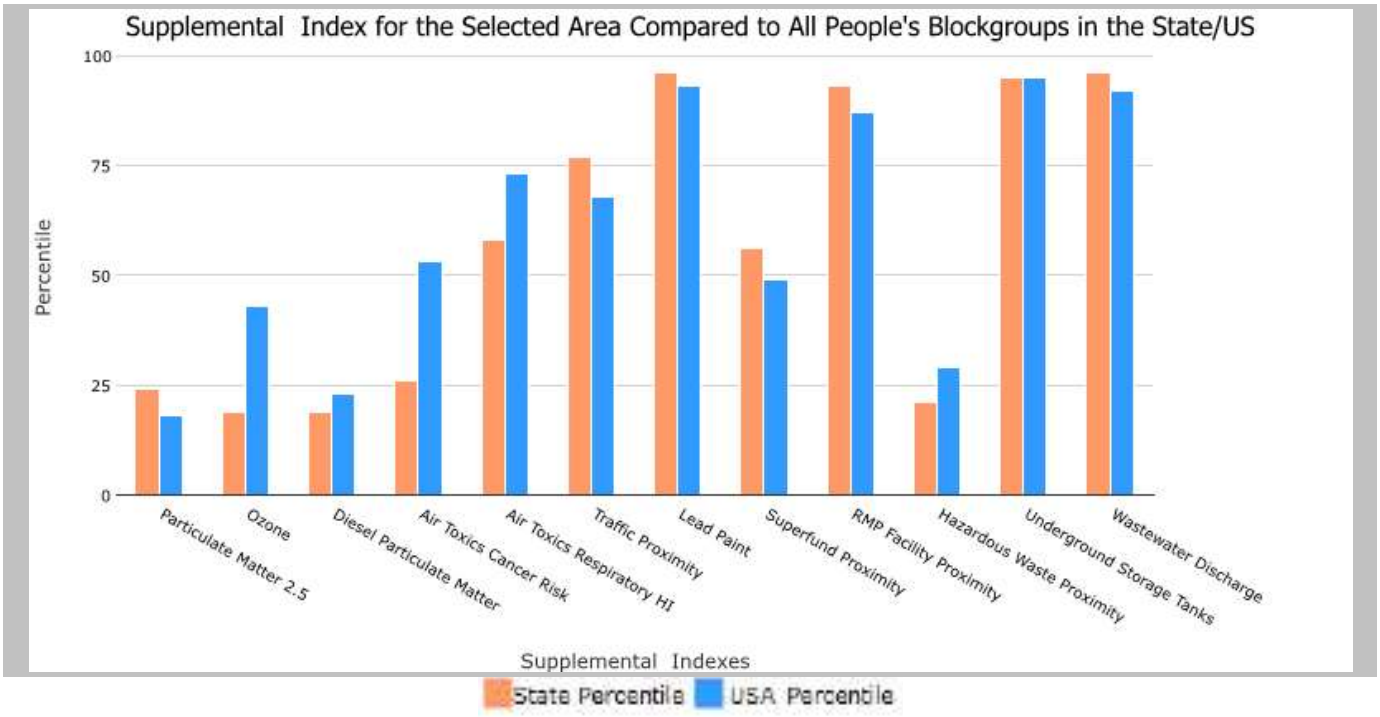
Blockgroup: 371879502013, NORTH CAROLINA, EPA Region 4

Approximate Population: 488

Input Area (sq. miles): 0.86

Selected Variables	State Percentile	USA Percentile
Supplemental Indexes		
Particulate Matter 2.5 Supplemental Index	24	18
Ozone Supplemental Index	19	43
Diesel Particulate Matter Supplemental Index*	19	23
Air Toxics Cancer Risk Supplemental Index*	26	53
Air Toxics Respiratory HI Supplemental Index*	58	73
Traffic Proximity Supplemental Index	77	68
Lead Paint Supplemental Index	96	93
Superfund Proximity Supplemental Index	56	49
RMP Facility Proximity Supplemental Index	93	87
Hazardous Waste Proximity Supplemental Index	21	29
Underground Storage Tanks Supplemental Index	95	95
Wastewater Discharge Supplemental Index	96	92

Supplemental Indexes - The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on low-income, limited English speaking, less than high school education, unemployed, and low life expectancy populations with a single environmental indicator.



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EJScreen Report (Version 2.11)

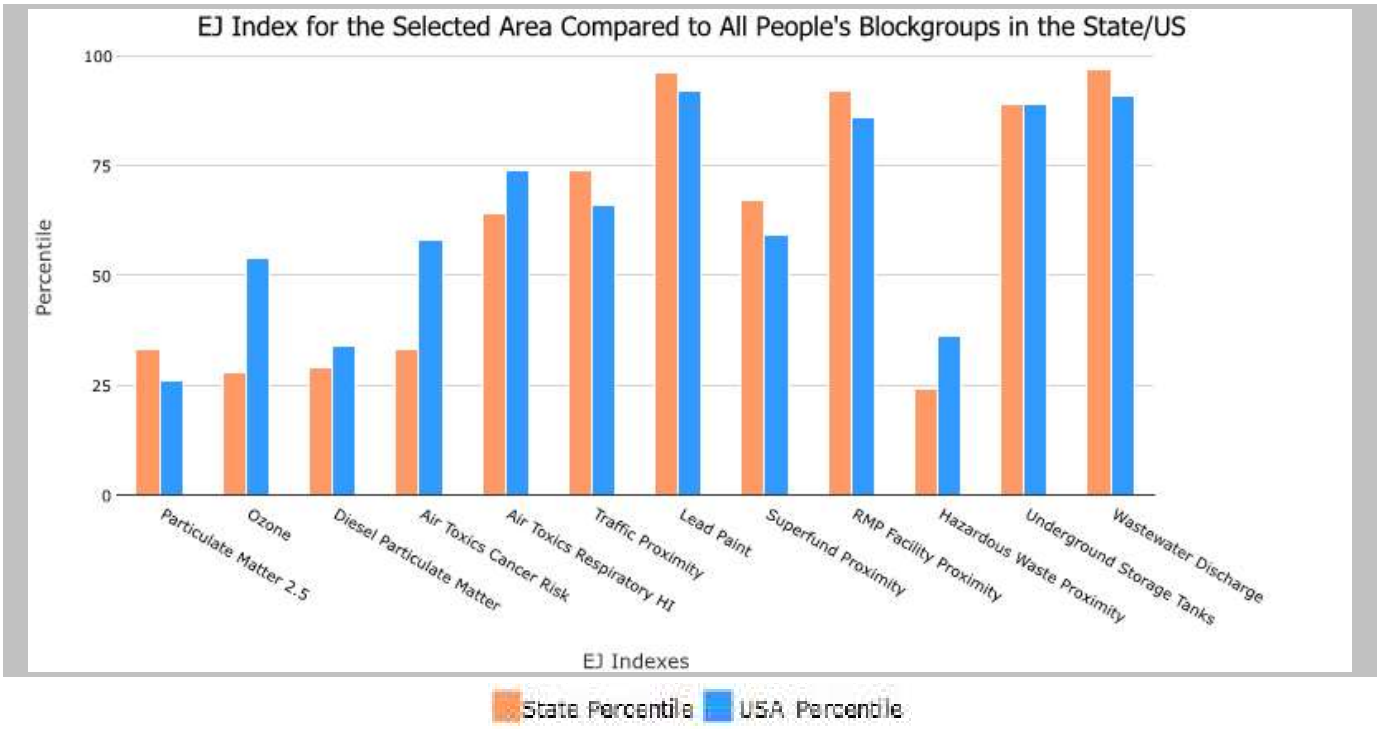
Blockgroup: 371879502021, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,323

Input Area (sq. miles): 2.85

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
Particulate Matter 2.5 EJ index	33	26
Ozone EJ index	28	54
Diesel Particulate Matter EJ index*	29	34
Air Toxics Cancer Risk EJ index*	33	58
Air Toxics Respiratory HI EJ index*	64	74
Traffic Proximity EJ index	74	66
Lead Paint EJ index	96	92
Superfund Proximity EJ index	67	59
RMP Facility Proximity EJ index	92	86
Hazardous Waste Proximity EJ index	24	36
Underground Storage Tanks EJ index	89	89
Wastewater Discharge EJ index	97	91

EJ Indexes - The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.



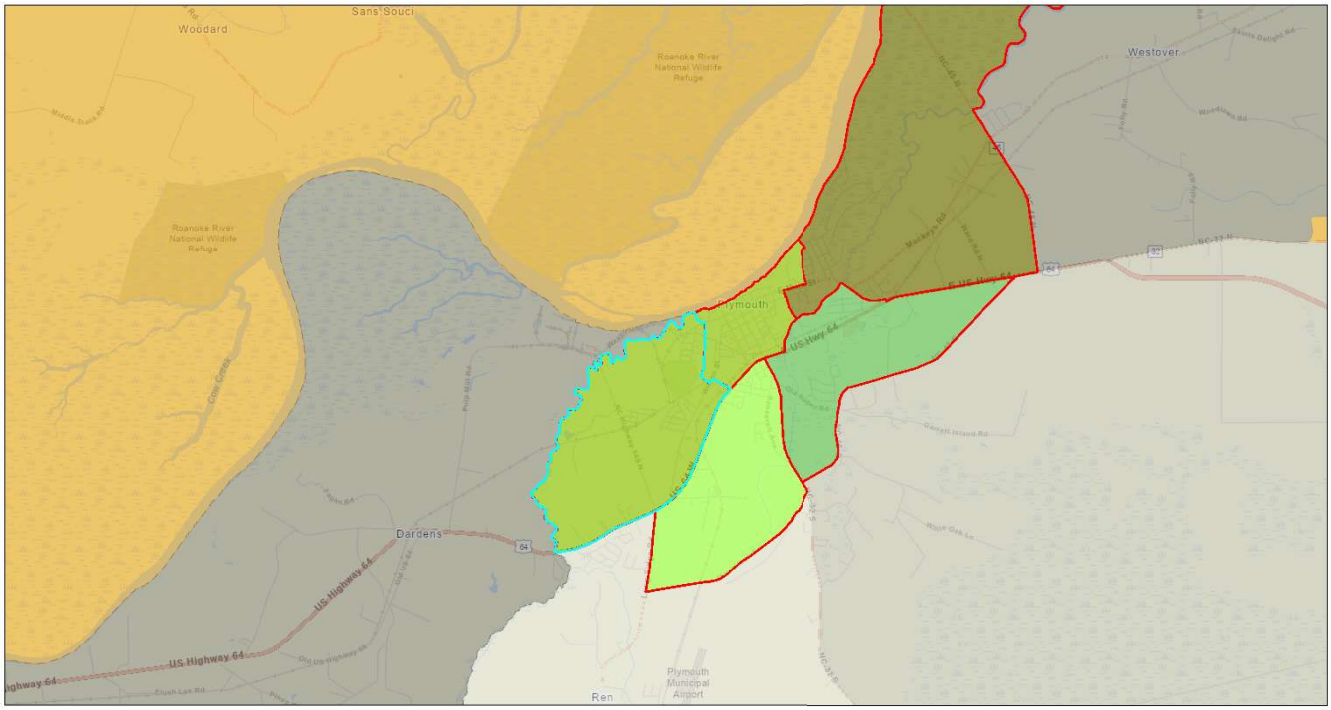
*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

EJScreen Report (Version 2.11)

Blockgroup: 371879502021, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,323

Input Area (sq. miles): 2.85



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.11)

Blockgroup: 371879502021, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,323

Input Area (sq. miles): 2.85

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	6.35	7.67	12	8.67	7
Ozone (ppb)	37.4	41.5	10	42.5	18
Diesel Particulate Matter* (µg/m^3)	0.082	0.178	9	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	20	28	21	28	<50th
Air Toxics Respiratory HI*	0.3	0.36	39	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	87	400	42	760	31
Lead Paint (% Pre-1960 Housing)	0.5	0.15	91	0.27	73
Superfund Proximity (site count/km distance)	0.023	0.08	27	0.13	22
RMP Facility Proximity (facility count/km distance)	0.55	0.41	78	0.77	61
Hazardous Waste Proximity (facility count/km distance)	0.057	0.83	7	2.2	10
Underground Storage Tanks (count/km^2)	3.4	3.9	69	3.9	69
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0074	0.28	79	12	66
Socioeconomic Indicators					
Demographic Index	71%	35%	91	35%	90
Supplemental Demographic Index	24%	15%	89	15%	87
People of Color	74%	37%	86	40%	80
Low Income	67%	33%	92	30%	92
Unemployment Rate	5%	5%	58	5%	58
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	27%	11%	90	12%	88
Under Age 5	1%	6%	15	6%	15
Over Age 64	13%	16%	38	16%	41
Low Life Expectancy	21%	21%	60	20%	70

EJScreen Report (Version 2.11)

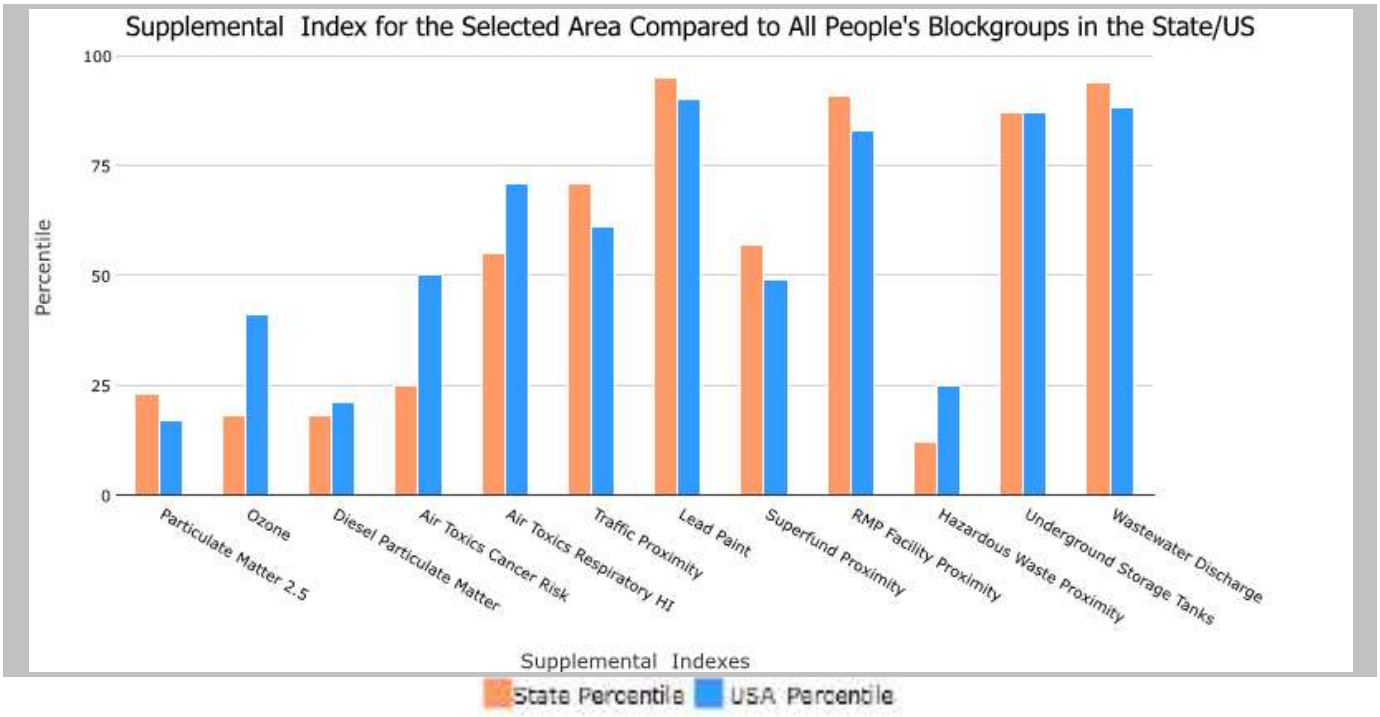
Blockgroup: 371879502021, NORTH CAROLINA, EPA Region 4

Approximate Population: 1,323

Input Area (sq. miles): 2.85

Selected Variables	State Percentile	USA Percentile
Supplemental Indexes		
Particulate Matter 2.5 Supplemental Index	23	17
Ozone Supplemental Index	18	41
Diesel Particulate Matter Supplemental Index*	18	21
Air Toxics Cancer Risk Supplemental Index*	25	50
Air Toxics Respiratory HI Supplemental Index*	55	71
Traffic Proximity Supplemental Index	71	61
Lead Paint Supplemental Index	95	90
Superfund Proximity Supplemental Index	57	49
RMP Facility Proximity Supplemental Index	91	83
Hazardous Waste Proximity Supplemental Index	12	25
Underground Storage Tanks Supplemental Index	87	87
Wastewater Discharge Supplemental Index	94	88

Supplemental Indexes - The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on low-income, limited English speaking, less than high school education, unemployed, and low life expectancy populations with a single environmental indicator.



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EJScreen Report (Version 2.11)

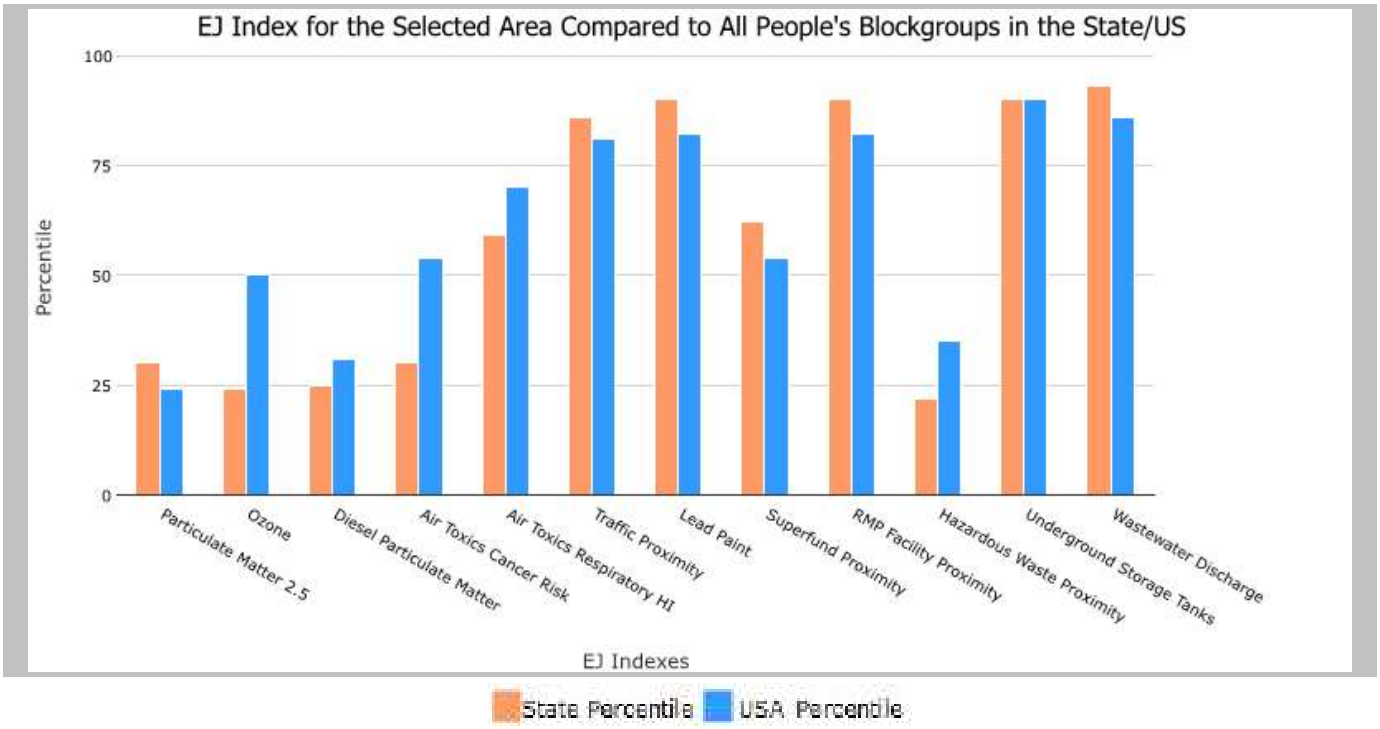
Blockgroup: 371879502022, NORTH CAROLINA, EPA Region 4

Approximate Population: 559

Input Area (sq. miles): 2.22

Selected Variables	State Percentile	USA Percentile
Environmental Justice Indexes		
Particulate Matter 2.5 EJ index	30	24
Ozone EJ index	24	50
Diesel Particulate Matter EJ index*	25	31
Air Toxics Cancer Risk EJ index*	30	54
Air Toxics Respiratory HI EJ index*	59	70
Traffic Proximity EJ index	86	81
Lead Paint EJ index	90	82
Superfund Proximity EJ index	62	54
RMP Facility Proximity EJ index	90	82
Hazardous Waste Proximity EJ index	22	35
Underground Storage Tanks EJ index	90	90
Wastewater Discharge EJ index	93	86

EJ Indexes - The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.



*Diesel particular matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

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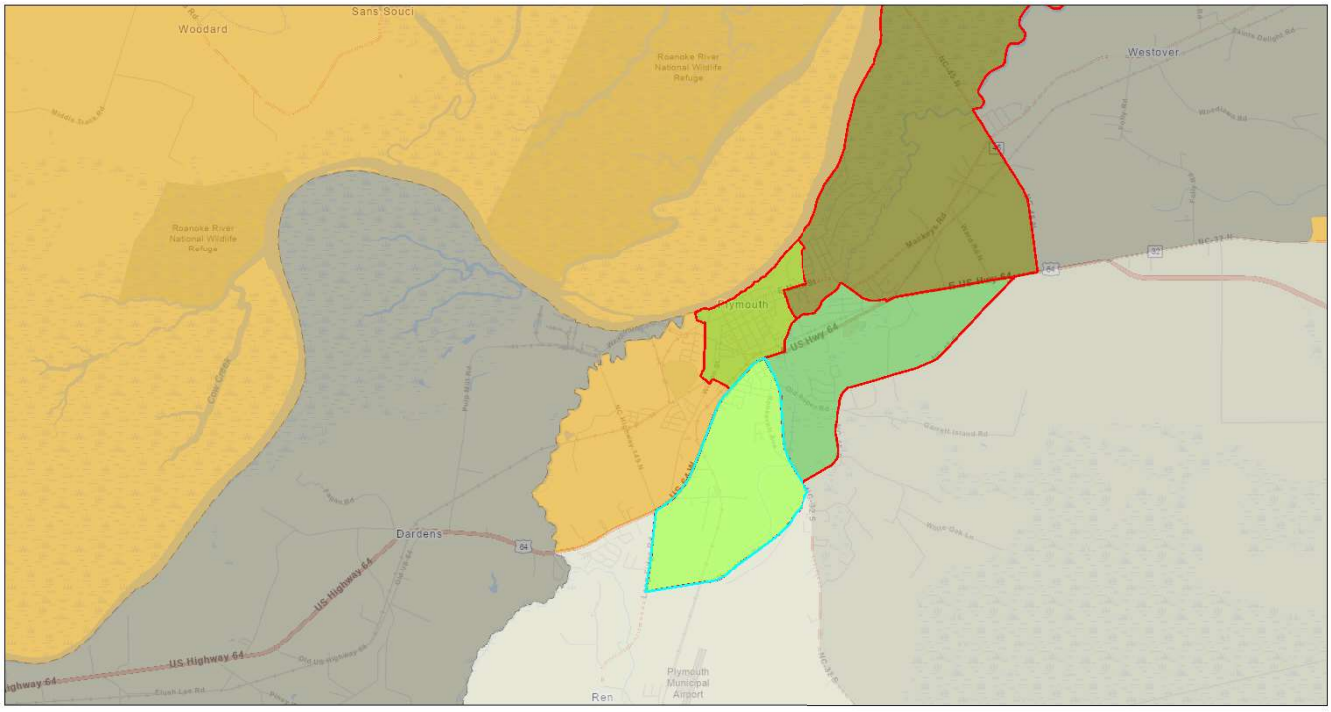


Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

EJScreen Report (Version 2.11)

Blockgroup: 371879502022, NORTH CAROLINA, EPA Region 4

Approximate Population: 559

Input Area (sq. miles): 2.22

Selected Variables	Value	State Avg.	%ile in State	USA Avg.	%ile in USA
Pollution and Sources					
Particulate Matter 2.5 (µg/m^3)	6.35	7.67	12	8.67	7
Ozone (ppb)	37.4	41.5	10	42.5	18
Diesel Particulate Matter* (µg/m^3)	0.082	0.178	9	0.294	<50th
Air Toxics Cancer Risk* (lifetime risk per million)	20	28	21	28	<50th
Air Toxics Respiratory HI*	0.3	0.36	39	0.36	<50th
Traffic Proximity (daily traffic count/distance to road)	340	400	69	760	57
Lead Paint (% Pre-1960 Housing)	0.25	0.15	74	0.27	53
Superfund Proximity (site count/km distance)	0.023	0.08	27	0.13	21
RMP Facility Proximity (facility count/km distance)	0.52	0.41	77	0.77	59
Hazardous Waste Proximity (facility count/km distance)	0.058	0.83	7	2.2	11
Underground Storage Tanks (count/km^2)	6.2	3.9	81	3.9	81
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.0037	0.28	74	12	61
Socioeconomic Indicators					
Demographic Index	63%	35%	87	35%	85
Supplemental Demographic Index	16%	15%	61	15%	66
People of Color	87%	37%	93	40%	87
Low Income	39%	33%	60	30%	67
Unemployment Rate	8%	5%	75	5%	75
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	13%	11%	61	12%	66
Under Age 5	2%	6%	22	6%	21
Over Age 64	18%	16%	57	16%	59
Low Life Expectancy	21%	21%	60	20%	70

EJScreen Report (Version 2.11)

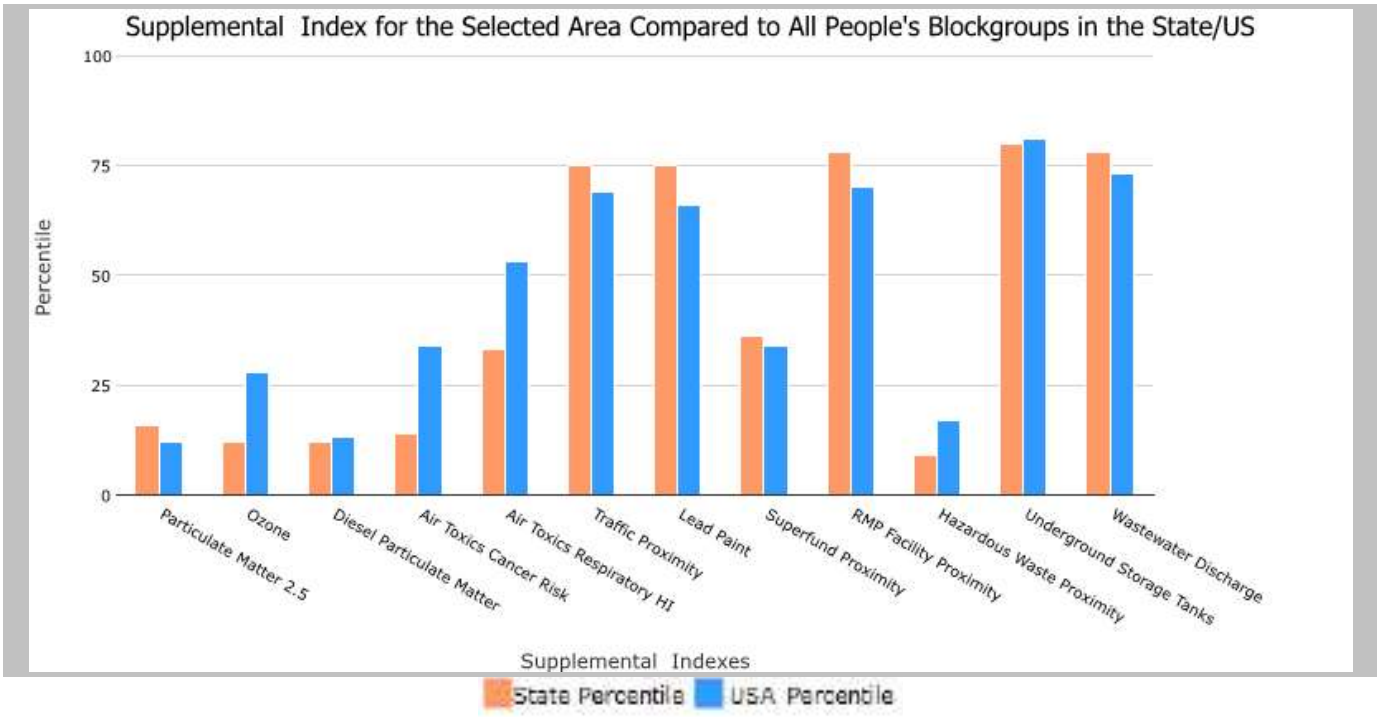
Blockgroup: 371879502022, NORTH CAROLINA, EPA Region 4

Approximate Population: 559

Input Area (sq. miles): 2.22

Selected Variables	State Percentile	USA Percentile
Supplemental Indexes		
Particulate Matter 2.5 Supplemental Index	16	12
Ozone Supplemental Index	12	28
Diesel Particulate Matter Supplemental Index*	12	13
Air Toxics Cancer Risk Supplemental Index*	14	34
Air Toxics Respiratory HI Supplemental Index*	33	53
Traffic Proximity Supplemental Index	75	69
Lead Paint Supplemental Index	75	66
Superfund Proximity Supplemental Index	36	34
RMP Facility Proximity Supplemental Index	78	70
Hazardous Waste Proximity Supplemental Index	9	17
Underground Storage Tanks Supplemental Index	80	81
Wastewater Discharge Supplemental Index	78	73

Supplemental Indexes - The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on low-income, limited English speaking, less than high school education, unemployed, and low life expectancy populations with a single environmental indicator.



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RCCP STAPLEE Criteria Worksheet
Plymouth

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
Considerations for Alternative Actions	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
POLICY																								
1. Develop a Responsible Development Policy **Comments:** Implement regulations for responsible and sustainable coastal development, considering factors such as setback requirements, building materials (fire and flood resistant), and energy efficiency.		1	0	1	1							1		0	1	1	1	1	1	0	0	1	1	11
2. Develop a Low-Impact Development Policy on government facilities **Comments:** Policy geared toward enforcing stormwater retention and infiltration through design		1	1	1	1							1		0	1	1	1	1	1	0	0	1	1	13
3. Feasibility study to raise the stormwater fee **Comments:** Policy to implement a stormwater fee to generate income for stormwater projects		0	0	1	1							1		0	1	0	1	1	1	0	0	0	1	8
4. Develop a Renewable energy policy **Comments:** Policy that addresses renewable energy development		1	0	1	1							1		0	1	1	0	1	1	0	0	0	1	9
5. Improve building codes **Comments:** Higher electrical outlet, elevation requirements, material requirements		0	1	1	1							1		0	1	0	1	1	0	0	0	0	1	8
6. Improve land use policies (including zoning code, subdivision code, floodplain development code) **Comments:** Stricter codes within flood and wildfire prone areas		0	0	1	1							1		0	1	0	1	1	1	0	0	1	1	9
PLANNING																								
7. Complete a grant analysis to assess future grant opportunities **Comments:**		1	1	1	1							1		1	1	1	1	0	1	1	1	1	1	14
8. Complete a hydro analysis for the town to assess the degree of flood prone areas and the impacts on assets. **Comments:** Assess drainage issues within the town. Could be combined with Stormwater assessment.		1	0	1	1							1		1	1	0	0	1	1	0	0	1	1	10
9. Develop a land management and stewardship plan **Comments:** List, define, and evaluate current property for potential environmental value		1	0	1	1							1		0	1	0	1	1	1	0	1	1	1	11
10. Develop Stormwater Maintenance Plan **Comments:** Includes ditches and tributaries		1	1	1	1							1		1	1	0	1	1	1	0	0	0	1	11

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11. Emergency Preparedness and Response plan **Comments:** Plan to address actions needed in case of a natural disaster		1	0	1	1							1		1	1	1	1	1	0	0	0	0	1	10
12. Develop Social Equity Resiliency Plan. **Comments:** Implement actions to remove lower-income from high flood prone areas or retrofit homes to accommodate		1	0	1	1							1		1	1	1	1	1	1	0	0	1	1	12
13. Complete a stormwater assessment Comments: Assess the vulnerability of the stormwater infrastructure and closing ditches		1	0	1	1							1		1	1	0	1	1	1	0	0	1	1	11
14. Develop a Stormwater personnel training guide Comments: train of erosion control, stormwater maintained, stormwater repair		1	1	1	1							1		1	1	1	1	1	1	0	0	0	1	12
15. Economic Development Plan Comments: There is a downtown revitalization effort in place through the DDA.		0	0	1	1							1		1	1	1	1	1	1	0	0	1	1	11
GREEN AND HYBRID INFRASTRUCTURE SOLUTIONS																								
16. Tributary restoration between Golf St. and W. Main St. **Comments:** This project would increase the sinuosity of the stream to slow down water and increase capacity.		1	0	1	1							1		0	1	0	0	1	1	0	0	1	1	9
17. Hybrid Drainage improvement project within Riverside community **Comments:** Increase dich capacity with incorporating bio retention areas		1	1	1	0							1		0	1	0	0	1	1	0	0	1	1	9
18. Hybrid drainage improvement project in Pine Forest Apts. **Comments:**		1	1	1	0							1		0	1	0	0	1	1	0	0	1	1	9
19. Public Housing Green Infrastructure project **Comments:** Implement green stormwater infrastructure along throughout the public housing permeable parking, stormwater infiltration medians, ext.		1	1	1	0							1		0	1	1	0	1	1	0	0	1	1	10
20. Downtown commercial district green infrastructure revitalization project using the Plymouth Streetscape & Riverfront Design **Comments:** Incorporate bioswales, stream restoration, floodplain restoration and/or wetland creation		1	1	1	1							1		0	1	0	1	1	1	0	0	1	1	11

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21. Install Stormwater wetland behind advanced auto to improve flooding issues for multiple businesses along that section of the US-64 business district. **Comments:** This will improve flooding within commercial business district and along rail line.		1	1	1	1							1		0	1	1	0	1	1	0	0	1	1	11
22. Implement strategically placed bioretention cells throughout highly flooded areas within town **Comments:**		1	0	1	1							1		0	1	0	0	1	1	0	0	1	1	9
23. Increase stormwater capacity along railroad using green stormwater techniques **Comments:**		1	0	1	1							0		0	1	0	0	1	1	0	0	1	1	8
24. Install permeable parking with commercial business district to reduce impervious surfaces **Comments:**		1	1	0	1							1		0	1	0	1	1	1	0	0	1	1	10
25. Incorporate floodplain pools along Conaby Creek. **Comments:**		1	0	1	1							1		0	1	0	0	1	1	0	0	1	1	9
26. Hybrid drainage improvement project in Jackson Heights area. **Comments:**		1	1	0	1							1		0	1	0	1	1	1	0	0	1	1	10
27. Improve the function of the constructed wetland behind the elderly public housing complex to address over street flooding of W Water St. **Comments:**		1	0	1	1							1		0	1	0	1	1	1	0	0	1	1	10
HARD/GREY INFRASTRUCTURE SOLUTIONS																								
28. Increase culvert sizes at highly flooded areas **Comments:** Implement a stormwater assessment		1	0	1	1							1		0	1	0	0	1	1	0	0	0	1	8
29. Increase catch-basin capacity at highly flooded areas **Comments:** Implement a stormwater assessment		1	0	1	1							1		0	1	0	0	1	1	0	0	0	1	8
30. Strategically install retention ponds to decrease holistic flooding **Comments:** Implement a plan to determine where to install retention ponds		1	0	1	1							1		0	1	0	0	1	1	0	0	0	1	8

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31. Upgrade storm water system capacity **Comments:** Implement a plan to determine weaknesses		1	0	1	1							1		0	1	0	0	1	1	0	0	0	1	8
32. Upgrade drainage system **Comments:** Complete overhaul of ditches and drainage pipes		1	0	1	1							1		0	1	0	0	1	1	0	0	0	1	8
33. Stormwater improvement project along Washington St **Comments:** Replace/upgrade stormwater system		1	1	1	0							1		1	1	1	0	1	1	0	0	0	1	10
34. Install retention pond in lot west of McDonalds to improve flooding issues for multiple businesses along that section of the US-64 business district. **Comments:**		1	1	1	1							1		0	1	1	0	1	1	0	0	0	1	10
35. Improve WWTP Access along Gauge Ln. during high flood event by increasing elevation of the road. **Comments:**		1	1	1	1							1		1	1	1	0	1	1	0	0	0	1	11
36. Retrofit / Relocate Lift Station on Water Street **Comments:**		1	1	1	0							1		1	1	1	0	1	0	0	0	0	1	9
37. Retrofit / relocate lift station on Johnson Ct. **Comments:**		1	1	1	0							1		1	1	1	0	1	0	0	0	0	1	9
38. Retrofit / relocate lift station on E Main St **Comments:**		1	1	1	0							1		1	1	1	0	1	0	0	0	0	1	9
39. Relocate or retrofit the elderly public housing complex on W Water St. **Comments:**		1	0	1	1							1		1	1	0	1	1	1	0	0	0	1	10
Northeastern NC Hazard Mitigation Plan																								
W1. Continue to seek funding for assistance in constructing a new dedicated EOC. The county's existing facility is adequate; however, there is a need for a new and dedicated facility.		1	1	0	1							1		1	1	1	0	1	0	0	0	0	1	9
W2. Continue to seek grant funding that will enable the removal of all critical infrastructure from the floodplain. This effort is currently underway; however, there is more to be accomplished. This effort will require assistance from the county Emergency Management Department.		1	1	0	1							1		1	1	1	0	1	0	0	0	0	1	9

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W3. Monitor all land development codes, including the county and town Flood Damage Prevention Ordinances, on an annual basis to ensure that they are up-to-date and address current issues and concerns. This review will also be conducted following substantial natural hazard events.		1	1	0	1							1		1	1	1	0	1	1	0	0	1	1	11
W4. Through implementation of this plan, consider increasing the County's required freeboard within the county's FDPO.		1	1	1	1							1		1	1	1	0	0	0	0	0	0	1	9
W5. Continue to work towards the development of a system to provide on-line offerings of permits, inspections, and taxes. This effort will streamline operations and provide for a more efficient flow of information.		1	1	0	1							1		1	1	1	0	0	0	0	0	0	1	8
W7. Mail a notice once annually to all property owners whose land is located within a special flood hazard area. The notice should clearly state that the recipient's property is susceptible to flooding and provide information pertinent to emergency evacuation and post-disaster recovery. Additionally, the county will notify all property owners once annually via mail, either through individual mailers or utility bill inserts, of the hazards associated with flooding and other hazards resulting from severe weather events.		1	1	0	1							1		1	1	1	0	1	0	0	0	0	1	9
W8. Maintain a map information service involving the following: • Provide information relating to Flood Insurance Rate Maps (FIRM) to all inquirers, including providing information on whether a given property is located within a flood hazard area. • Provide information regarding the flood insurance purchase requirement. • Maintain historical and current FIRMs. • Locally advertise once annually in the local newspaper. • Provide information to inquirers about local floodplain management requirements.		1	1	0	1							1		1	1	1	0	1	1	0	0	1	1	11
W9. Work with local real estate agencies to ensure that agents are informing clients when property for sale is located within an SFHA. The county will provide these agencies with brochures documenting the concerns relating to development located within flood-prone areas and ways that homeowners may make their homes more disaster-resistant to strong winds, lightning, and heavy rains.		1	1	0	1							1		1	1	1	0	1	0	0	0	1	1	10
W10. Make information regarding hazards and development regulations within floodplains available through the following for: • Ensure that the local library maintains information relating to flooding and flood protection. • Provide a link on county/town websites to FEMA resources addressing flooding and flood protection. • Maintain information pertinent to local development conditions and make this information readily available to the public, including being posted at the local library.		1	1	0	1							1		1	1	1	0	0	0	0	0	1	1	9

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W11. Provide comprehensive services regarding planning and development activities within the defined SFHA and issues relating to the construction of disaster-resistant structures. These services will include: • Provide site-specific flood and flood related information on an as-needed basis. • Maintain a list of contractors with experience in floodproofing and retrofit techniques. • Provide information on methods of wind proofing construction methods for new and renovated structures. • Maintain materials providing an overview of how to select a qualified contractor. • Make site visits upon request to review occurrences of flooding, drainage problems, and sewer problems. If applicable, the inspector should provide one-on-one advice to the property owner. • Provide advice and assistance regarding CRS Activity 530 (Flood Protection). • Advertise the availability of this service in the local newspaper once annually. • Maintain a log of all individuals assisted through this service, including all site visits.		1	1	1	1							1		1	1	0	0	1	1	0	0	1	1	11
W12. Maintain a comprehensive Geographic Information System (GIS) with current FIRM panels in an effort to make this information readily available to county citizens. In addition to this digital data, bound copies of all historical and current FIRM panels will be maintained within Planning and Building Inspections Department.		1	1	1	1							1		1	1	0	0	1	1	0	0	1	1	11
W13. Seek grant funding for mitigation opportunities eligible under the most current version of the UHMA guidance and Public Assistance 406 Mitigation Guidance at the time of application. Projects may include but are not limited to: acquisition/elevation, mitigation/reconstruction, and wet/dry floodproofing to residential and non-residential structures. Funding may also be utilized for redundant power to critical facilities, wind retrofits to critical facilities, storm shelters and other activities that reduce the loss of life and property.		1	1	1	1							1		1	1	1	0	0	1	0	0	1	1	11
W14. Work to implement all strategies and recommendations outlined within the Washington County Hurricane Matthew Resilient Redevelopment Plan.		1	1	1	1							1		0	1	0	0	0	1	0	1	1	1	10
W15. Promote and encourage the training of Community Emergency Response Teams (CERT) throughout the county.		1	1	1	1							1		1	1	1	0	1	0	0	0	0	1	10
W16. Work to develop continuity of operations plans (COOP) for county/town departments, assisted living facilities, long-term care facilities, day care centers, etc.		1	1	1	1							1		1	1	0	1	1	1	0	0	0	1	11
W17. Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available.		1	1	1	1							1		1	1	1	0	1	0	0	0	0	1	10
W18. Maintain a contract with a qualified post-disaster recovery service provider. This contract will include the provision of essential services and equipment, including generators, and will include documentation required for reimbursement from FEMA/NCEM.		1	1	1	1							1		1	1	1	0	1	0	0	0	0	1	10
W19. Annually review and update the County's Emergency Operations Plan (EOP) to ensure compliance with all NCEM and NCOEMS procedures and policies. Through these updates, the County will work closely with all participating municipalities to ensure that all jurisdictions continue to be educated and prepared for activation of the EOP in the event of a disaster event.		1	1	1	1							1		1	1	1	0	0	0	0	0	0	1	9

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Hurricane Matthew Resilient Redevelopment Plan - Washington County																								
Housing Action 1: Elevation Projects (Assistant living home on W Water ST.)		1	1	1	1							1		1	1	0	1	1	1	0	0	0	1	11
Infrastructure Action 6: Retrofit County Court House		1	1	0	1							1		1	1	1	1	1	1	0	0	0	1	11
Infrastructure Action 3: Lift Station Mitigation Study		1	1	0	1							1		1	1	1	1	1	1	0	0	0	1	11
Infrastructure Action 8: Generator Installation		1	1	0	1							1		1	1	1	0	1	0	0	0	0	1	9
Economic Development Action 3: Debris Removal from Drainage Corridor		1	1	0	1							1		1	1	0	0	1	1	0	0	1	1	10
Infrastructure Action 2: Elevate Treatment Plant Entry Road		1	1	1	1							1		1	1	0	1	1	1	0	0	0	1	11
Housing Action 2: Land Use Planning		1	1	1	1							1		1	1	1	1	1	1	0	1	1	1	14
Infrastructure Action 5: River Gauge Installation		1	1	0	1							1		1	1	1	0	1	0	0	0	1	1	10
Infrastructure Action 7: Weather Alert Radios		1	1	0	1							1		1	1	1	0	1	0	0	0	1	1	10
Infrastructure Action 1: Retrofit Roads and Bridges		1	1	1	1							0		1	1	0	1	1	1	0	0	0	1	10
Economic Development Action 4: Remove Abandoned Structures		1	1	0	1							1		1	1	0	0	1	1	0	0	0	1	9
Housing Action 4: Flood Insurance Education		1	1	0	1							1		1	1	1	0	1	0	0	0	1	1	10
Economic Development Action 2: Agricultural Risk Reduction Study		1	1	1	1							1		1	1	1	1	1	1	0	0	1	1	13
Economic Development Action 1: Business Owner Outreach		1	1	0	1							1		1	1	1	1	0	0	0	0	0	1	9
Housing Action 3: Relocate Elderly Housing Complex		1	0	1	1							1		1	1	0	1	1	1	0	0	0	1	10

Benefit-Cost Overview

The cost or the economic case for different strategies or actions must be considered when developing resilience strategies. An informal cost-benefit analysis should be used to review proposed adaptation actions. Ratings of high, medium, or low are assigned to the anticipated costs and the benefits associated with each action based on general criteria that are established by the community.

Make sure to explore and identify potential funding mechanisms for project or action item implementation.

	Benefit/cost ratings
	Benefit
HIGH	Action would have significant impact on risk reduction
MEDIUM	Action would have an impact on risk reduction
LOW	Long-term benefits are difficult to quantify in the short term
	Cost
HIGH	Cost of project is high and/or funding will be more difficult to acquire
MEDIUM	Cost of project is medium and/or funding will be easier to acquire
LOW	Cost of project is low and/or funding is available in existing budget

Strategy	Benefit	Cost
1. Develop a Stormwater Action Plan and assessment tool. This plan will complete a stormwater ground assessment and surface hydrology analysis that will be incorporated into an online mapping system that can submit real-time data to analyze, prioritize, and take action on potential problem areas. The plan will also incorporate a maintenance plan that will be tracked by the online tool. Comments: Assess drainage issues within the town. Could be combined with Stormwater assessment. Possible opportunity to coordinate with Washington County.	**HIGH**	**MEDIUM**
2. Develop a Public Information and Stormwater Responsibilities Plan. To educate the public on what is their responsibility related to stormwater and ditch maintenance and what is the town's responsibility. In addition to other types of stormwater and flood preparedness education.	**MEDIUM**	**LOW**
3. Work with NCDOT and the Albemarle RPO to prioritize needed retrofits to roads and bridges. Have these prioritized roads and bridges included in the Washington County Comprehensive Transportation Plan and submit the projects through the Albemarle RPO for a chance to be included in the State Transportation Improvement Plan (STIP funding document).	**MEDIUM**	**LOW**
4. Complete hybrid drainage improvement projects with priority areas at: 1. Riverside Plantation Community 2. the block of Patton Ct, Bradley and Gavin Rd's. 3. 4th Street Community 4. Madison St. Community . These projects could include increasing the ditch capacity, incorporating bio retention cells, and other green and hybrid solutions. These projects should also include a hydro analysis and education. Comments: If chosen, projects will be defined for future grant opportunities. Each priority area would be a separate project.	**HIGH**	**MEDIUM**
5. Implement 20 strategically placed bioretention cells throughout highly flooded areas within town. Comments: If chosen, project will be defined for future grant opportunities.	**HIGH**	**MEDIUM**
6. Design and construct a piped pump system from Conaby Creek to the Roanoke River to increase the discharge rate of the watershed.	**HIGH**	**HIGH**
7. Complete stream cleanouts (snag and drags) with a focus on 1. Conaby Creek from NC 32 to E Main St. 2. UT to Roanoke River Bateman St. and W. Main St. 3. tributary north of Plymouth High School (Roanoke Ave./Crescent Dr. area). These projects would remove debris from the channel to allow higher volumes of flow.	**HIGH**	**MEDIUM**

Benefit/Cost Ratings

Strategy	Benefit	Cost
Comments: Possible opportunity to coordinate with the County. Each priority area would be a separate project.		
8. Improve the function of the constructed wetland behind the elderly public housing complex to address over street flooding of W Water St.	**HIGH**	**LOW**
9. Strategically upgrade stormwater system through pipe replacements, increasing size and/or quantity of culverts and catch basins, redefining ditches, implementing backflow preventors, ext. Comments: The Stormwater Action Plan can be utilized to determine prioritization. If chosen, project will be defined for future grant opportunities. Possible opportunity to coordinate with Washington County.	**HIGH**	**HIGH**
10. Upgrade the Stormwater system along Washington St. Comments: If chosen, the project will be defined for future grant opportunities.	**HIGH**	**HIGH**
11. Improve WWTP access along Gage Ln. during high flood event by increasing elevation of the road. Comments: If chosen, project will be defined for future grant opportunities.	**HIGH**	**MEDIUM**
12. Relocate or retrofit lift stations on Water St., Johnson Ct. and E Main St.	**HIGH**	**HIGH**
13. Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available. Specially for the sewer lift stations, the Public Works building, Police Dept, and Town Hall. Comments: Possible opportunity to coordinate with Washington County.	**HIGH**	**MEDIUM**
14. Partner with Washington Co. and the State to Maintain Debris Removal and Monitoring Services Contracts for post-disaster response. These services should focus on preparing documentation necessary to ensure full reimbursement of cost associated with community cleanup and immediate infrastructure restoration.	**MEDIUM**	**MEDIUM**
15. Remove and adaptively reuse or redevelop abandoned structures/homes located in the 100yr floodplain including unanchored utilities and other debris. These location could be turned into green spaces or provide opportunity for other community resilience projects. Comments: Possible opportunity to coordinate with Washington County.	**HIGH**	**HIGH**

Benefit/Cost Ratings

RCCP STAPLEE Criteria Worksheet
Plymouth

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
Green = High (19-21) Orange = Med (17-18) Yellow = Low (15-16)	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
Considerations for Alternative Actions																								
PLANNING																								
1. Develop a Stormwater Action Plan and assessment tool. This plan will complete a stormwater ground assessment and surface hydrology analysis that will be incorporated into an online mapping system that can submit real-time data to analyze, prioritize, and take action on potential problem areas. The plan will also incorporate a maintenance plan that will be tracked by the online tool. **Comments:** Assess drainage issues within the town. Could be combined with Stormwater assessment. Possible opportunity to coordinate with Washington County.	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	20
2. Develop a Public Information and Stormwater Responsibilities Plan. To educate the public on what is their responsibility related to stormwater and ditch maintenance and what is the town's responsibility. In addition to other types of stormwater and flood preparedness education. Comments:	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	20
3. Work with NCDOT and the Albemarle RPO to prioritize needed retrofits to roads and bridges. Have these prioritized roads and bridges included in the Washington County Comprehensive Transportation Plan and submit the projects through the Albemarle RPO for a chance to be included in the State Transportation Improvement Plan (STIP funding document).	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	0	0	0	1	17
GREEN AND HYBRID INFRASTRUCTURE SOLUTIONS																								
4. Complete hybrid drainage improvement projects with priority areas at: 1. Riverside Plantation Community 2. the block of Patton Ct, Bradley and Gavin Rd's. 3. 4th Street Community 4. Madison St. Community . These projects could include increasing the ditch capacity, incorporating bio retention cells, and other green and hybrid solutions. These projects should also include a hydro analysis and education. **Comments:** If chosen, projects will be defined for future grant opportunities. Each priority area would be a separate project.	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	0	1	1	19
5. Implement 20 strategically placed bioretention cells throughout highly flooded areas within town. **Comments:** If chosen, project will be defined for future grant opportunities.	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	1	1	0	0	1	1	18
6. Design and construct a piped pump system from Conaby Creek to the Roanoke River to increase the discharge rate of the watershed. **Comments:**	1	1	0	1	1	1	0	0	1	1	1	0	1	0	1	0	1	1	1	0	0	1	1	15
7. Complete stream cleanouts (snag and drags) with a focus on 1. Conaby Creek from NC 32 to E Main St. 2. UT to Roanoke River Bateman St. and W. Main St. 3. tributary north of Plymouth High School (Roanoke Ave./Crescent Dr. area). These projects would remove debris from the channel to allow higher volumes of flow. **Comments:** Possible opportunity to coordinate with the County. Each priority area would be a separate project.	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	0	1	1	0	0	1	1	16
8. Improve the function of the constructed wetland behind the elderly public housing complex to address over street flooding of W Water St. **Comments:**	1	1	0	1	1	1	0	0	1	1	1	0	1	0	1	0	1	1	1	0	0	1	1	15

RCCP STAPLEE Criteria Worksheet
Plymouth

RK&K | MID-EAST Communications

STAPLEE Criteria >>	Social		Technical			Administrative			Political			Legal			Economic				Environmental					TOTAL
Green = High (19-21) Orange = Med (17-18) Yellow = Low (15-16)	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT Waste Sites	Consistent w/ Community Environmental Goals	Consistent w/ Federal Laws	
Considerations for Alternative Actions																								
HARD/GREY INFRASTRUCTURE SOLUTIONS																								
9. Strategically upgrade stormwater system through pipe replacements, increasing size and/or quantity of culverts and catch basins, redefining ditches, implementing backflow preventors, ext. **Comments:** The Stormwater Action Plan can be utilized to determined prioritization. If chosen, project will be defined for future grant opportunities. Possible opportunity to coordinate with Washington County.	1	1	0	1	1	1	0	1	1	1	1	1	1	0	1	0	1	1	1	0	0	0	1	16
10. Upgrade the Stormwater system along Washington St. **Comments:** If chosen, project will be defined for future grant opportunities.	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	18
11. Improve WWTP access along Gage Ln. during high flood event by increasing elevation of the road. **Comments:** If chosen, project will be defined for future grant opportunities.	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	18
12. Relocate or retrofit lift stations on Water St., Johnson Ct. and E Main St. **Comments:**	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	0	0	1	0	1	17
13. Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available. Specially for the sewer lift stations, the Public Works building, Police Dept, and Town Hall. **Comments:** Possible opportunity to coordinate with Washington County.	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	17
14. Partner with Washington Co. and the State to Maintain Debris Removal and Monitoring Services Contracts for post-disaster response. These services should focus on preparing documentation necessary to ensure full reimbursement of cost associated with community cleanup and immediate infrastructure restoration.	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	0	0	1	1	17
15. Remove and adaptively reuse or redevelop abandoned structures/homes located in the 100yr floodplain including unanchored utilities and other debris. These location could be turned into greenspaces or provide opportunity for other community resilience projects. **Comments:** Possible opportunity to coordinate with Washington County.	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	19

Appendix B

Stakeholder Engagement Materials

Please tell us about yourself.

Do you live and/or work in Plymouth? 30 responses

Yes (20 responses)
Both (5 responses)
work
I love in Plymouth.
I "work/play" in Plymouth occasionally
Live & Work
I live in Roper, where I also am a victim of flooding

If yes, how long have you lived and/or worked in Plymouth? 29 responses

1 year (3 responses)
1.5 years
2 years (3 responses)
4 years (2 responses)
5 years (3 responses)
6 years
7 years
8 years
17 years (2 responses)
20 years
22 years
23 years
33 years
35 years
58 years
64 years
75 years
81 years
2021
I have lived in Plymouth over 60 years.I own
Most of my life- 50+ years (except for college)

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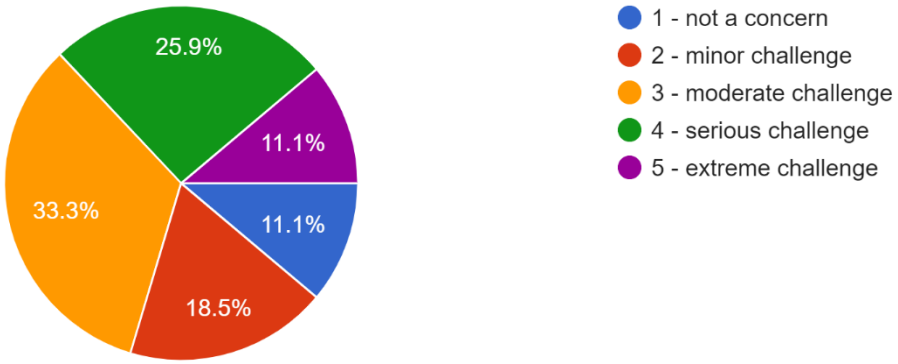
Do you own and/or rent your property (home, business, or both as applicable)?30 responses

Own (19 responses)
Rent (3 responses)
Yes (3 responses)
Own both (2 responses)
Own home (2 responses)

Please identify your zip code (home, work, or both as applicable).30 responses

27962 (26 responses)
27970 (2 responses)
27962 (home and work)
27846

On a scale of 1-5, how significant of a risk do you think coastal erosion poses to your community?
27 responses



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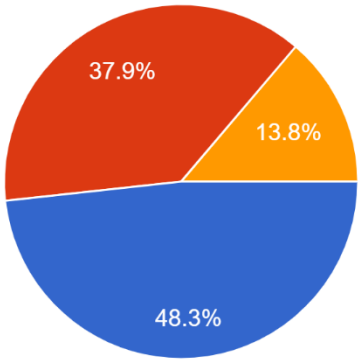
Which of the following statements about coastal storms do you most agree with?

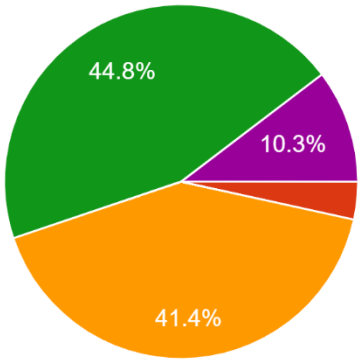
29 responses



- I am very worried about coastal storms in the future.
- I am slightly worried about coastal storms in the future.
- I am not worried about coastal storms in the future.

On a scale of 1-5, how significant of a risk do you think flooding currently poses to your community?

29 responses



- 1 - not a concern
- 2 - minor challenge
- 3 - moderate challenge
- 4 - serious challenge
- 5 - extreme challenge

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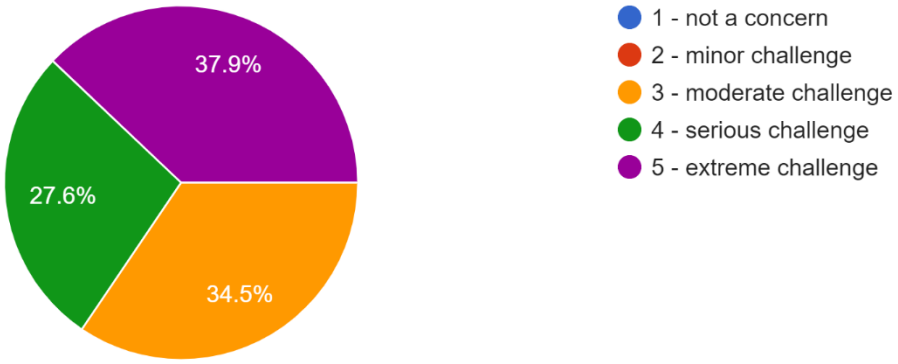
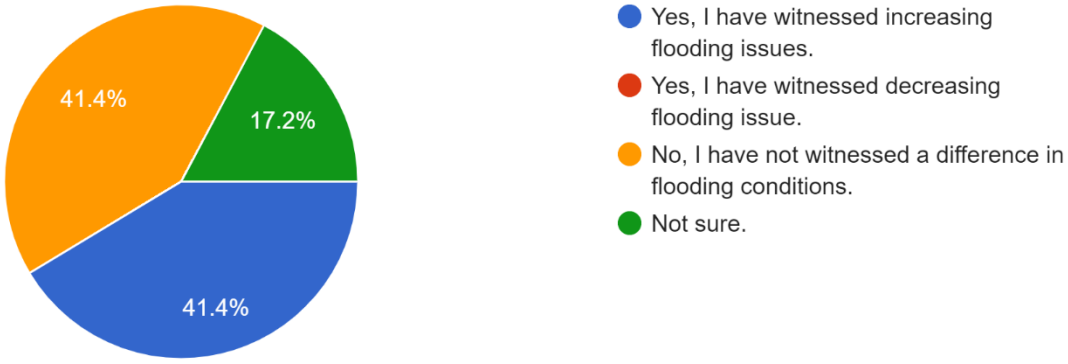
On a scale of 1-5, how significant of a risk do you think flooding will pose to your community in the next 20-40 years, given climate change and rising sea levels?

29 responses



Throughout your time living and/or working in Plymouth, has your experience with flooding changed?

29 responses

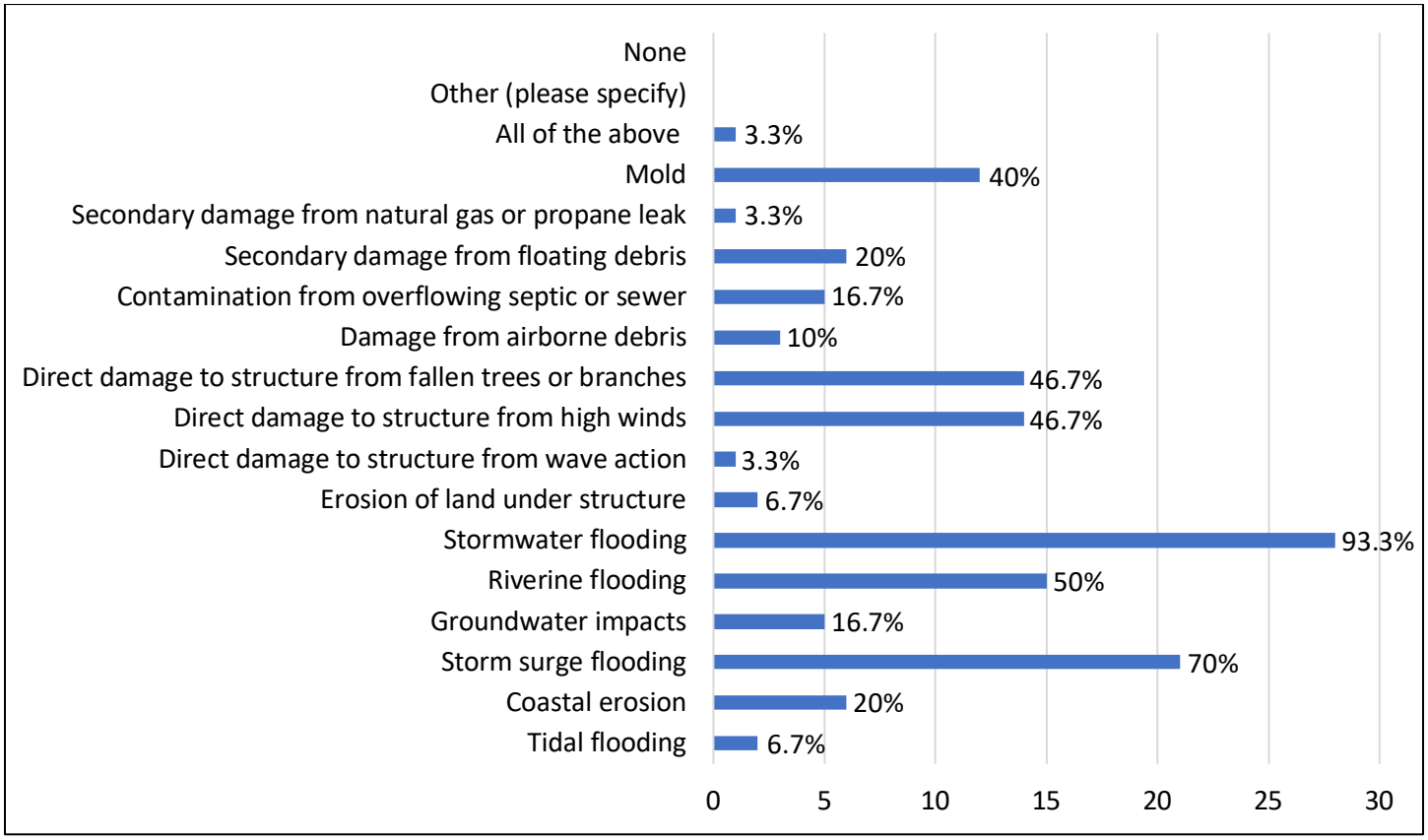


Comments on previous question (optional). 8 responses

- I am very new here and don't have alot to compare to
- We have only been here for a year
- On the future of coastal flooding, just this past I noticed a great deal of flooding. Actually, water is still standing. I know very soon it will definitely worsen. Really now is an excellent time to improve on flooding.
- I live in a "swamp". My property "floods" when there is a lot of rain
- I don't feel as if I have lived in Plymouth long enough to see if it has changed
- None at this time
- Both the river and the areas north of Hwy 64 flood.
- If you could keep all the ditches and waterways clear of debris and beavers that would help tremendously

Coastal Hazards and Impacts

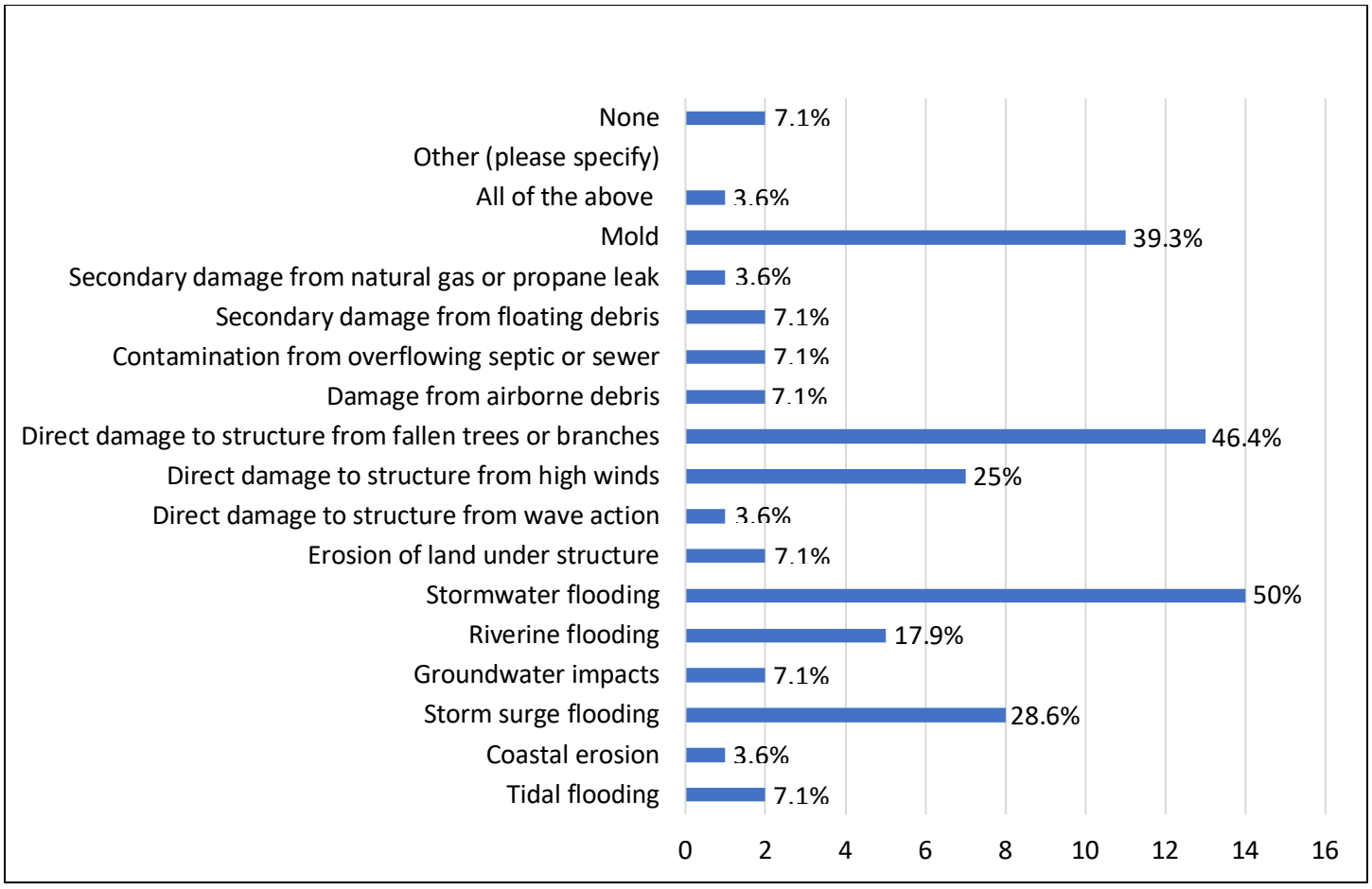
Which of the following coastal hazards have you witnessed in your community? Select all that apply. 28 responses



Comments on previous question (optional).2 responses

- ditches along roads need cleaning annually or bi-annually
- During times of flooding all this Have occurred.

Which of those same hazards have directly impacted your home or your business? Select all that apply.28 responses



Comments on previous question (optional).2 responses

- We had to clean out the culvert by our house because it appears it hadn't been done in years. The water was backing up into our yard.
- During hurricanes or high water events all of these have happened at my house.

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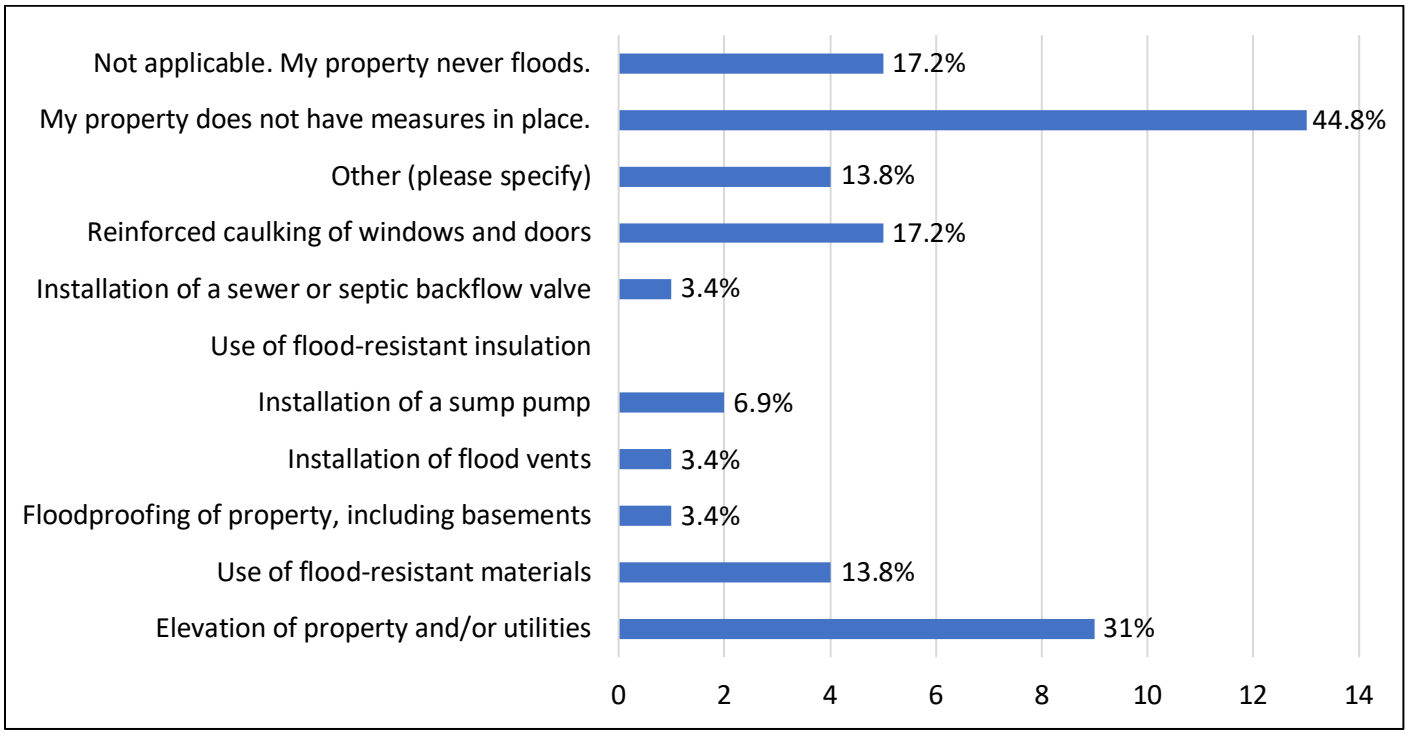
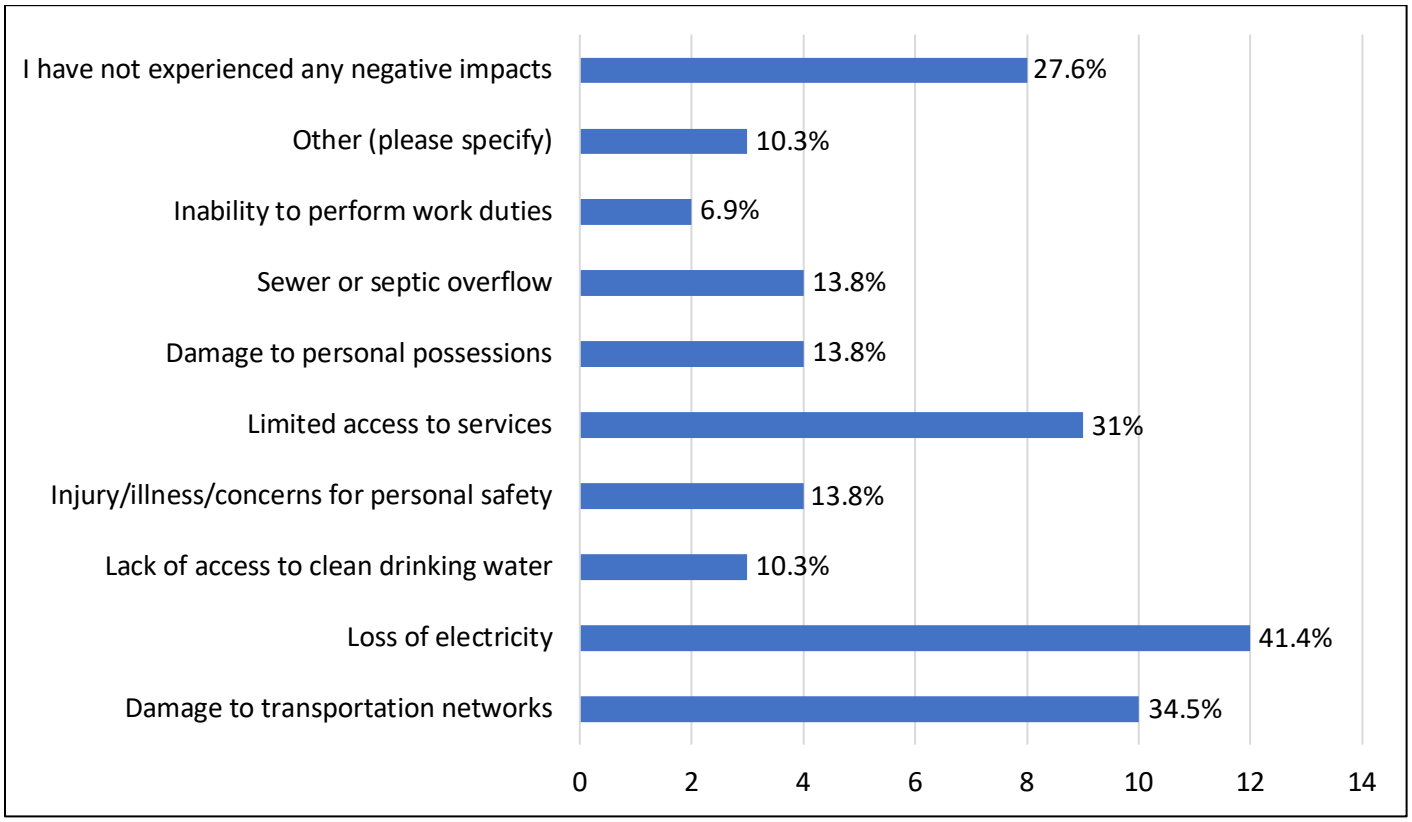
Do you have measures in place to prevent and/or reduce flooding or flood-related damages and losses to your property? If yes, what type of actions have you taken? Check all that apply.29 responses



Have you ever considered moving to another location (can be inside or outside of Plymouth) to avoid future flood losses, impacts, or damages?

29 responses

Aside from any impacts to your home or business, have you experienced any other negative impacts as a result of flooding events? Check all that apply.29 responses



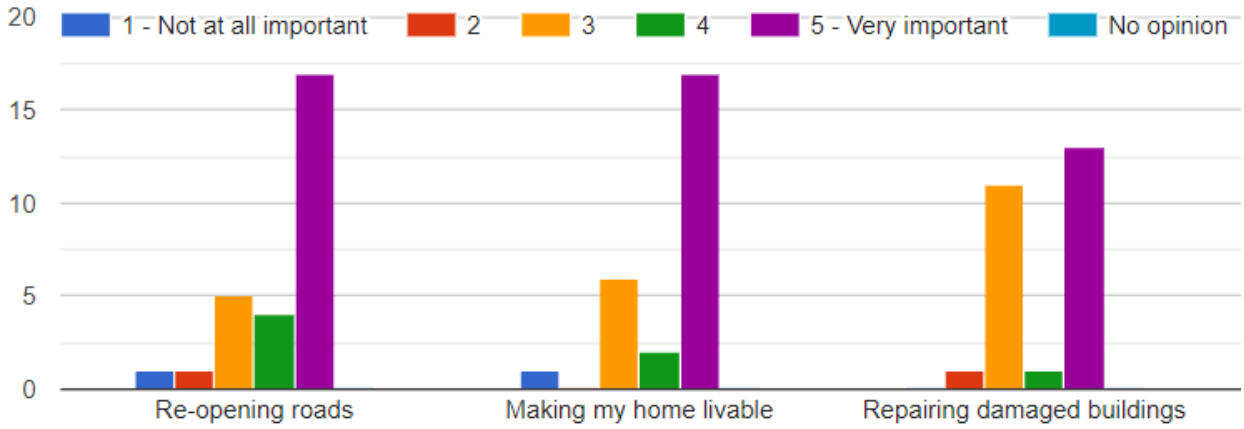
Comments on previous question (optional)6 responses

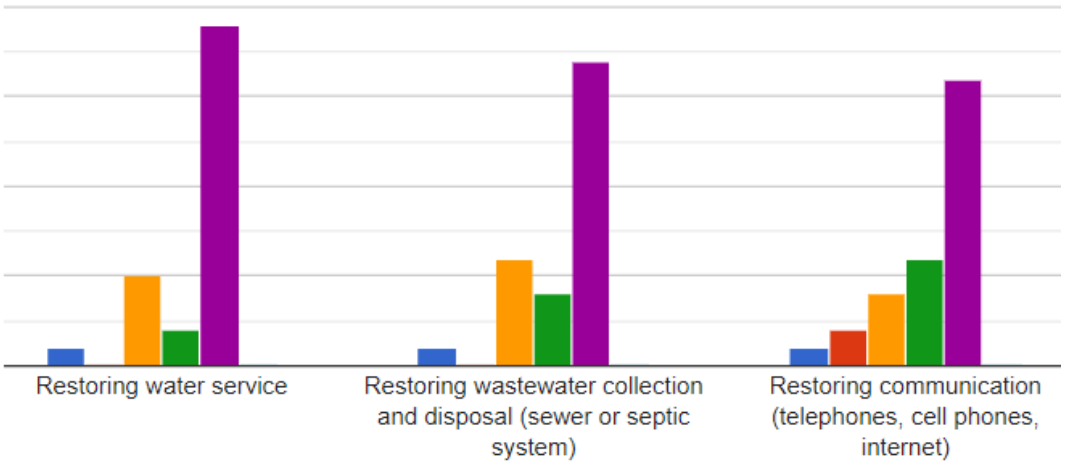
- Just alot of clean up and very a wet lawn for longer than normal
- Not yet, I take great measures to safeguard my belongings and way of exiting in the event evacuation is necessary.
- Years ago we moved to a higher location to avoid the yearly flooding from the canal that ran beside our property.
- Road closures
- lots of roads have standing water; particularly after substantial rain.
- Cleaning drains, gutters, ditches at my own expense.

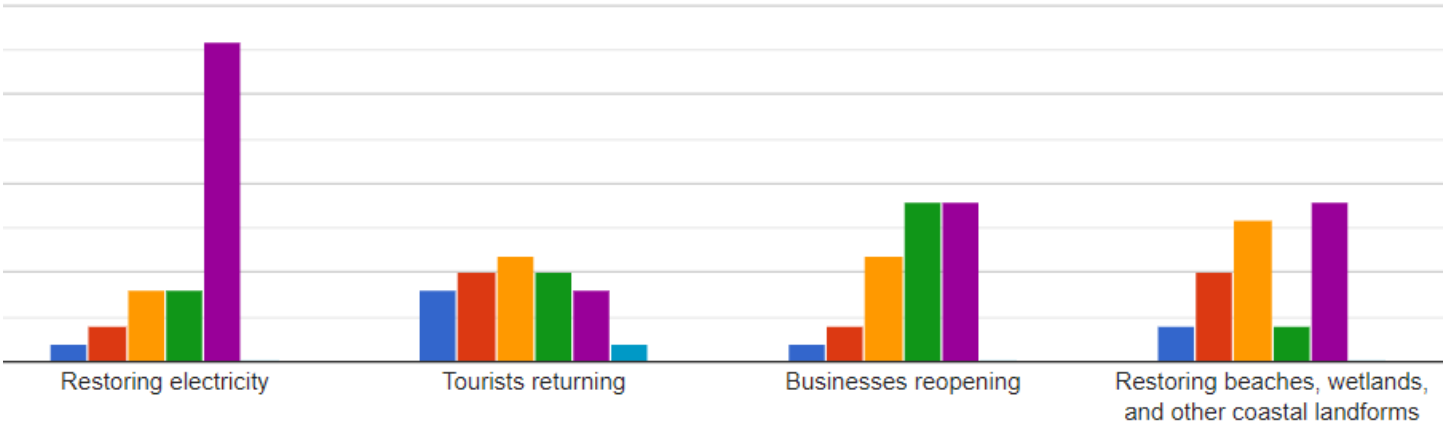
Are there any specific areas of your community vulnerable to coastal hazards? If so, please list them by location. Please use street intersections or landmarks to describe locations.10 responses

- Along the Roanoke River, the Conaby creek, Riverside Plantation neighborhood because of lack of maintenance/cleaning out of storm water drains
- Ridgewood area; Pettigrew area
- Gen. Matt Ransome Dr. (Canal), Ida Street (area that overflows into yards from creek)
- 4th Street in front of the old school, Madison Street in the bottom.
- Beech Bay, Roper
- West Main Street
- Yes. Along the river bank. Lots of standing water on access road behind Water Street Businesses. Next to the town square and down the hill, there is lots of water at times. People /workers parking on the grass has caused ruts in the grass and potholes that hold water. These businesses should be responsible for repairing to keep the water from standing. Dog walkers have issues with the water out back of the lawyers office.
- Storm water pooling Intersection East Main Street Creekside. Quail Drive median storm water pooling. Robin Drive storm water pooling
- The entire lower roanoke river floods excessively when Dams and Revetments upstream are open to keep flooding minimal north of williamston
- Rankin Main @ Conaby

Please rank the following activities, intended to restore daily life after a coastal storm.





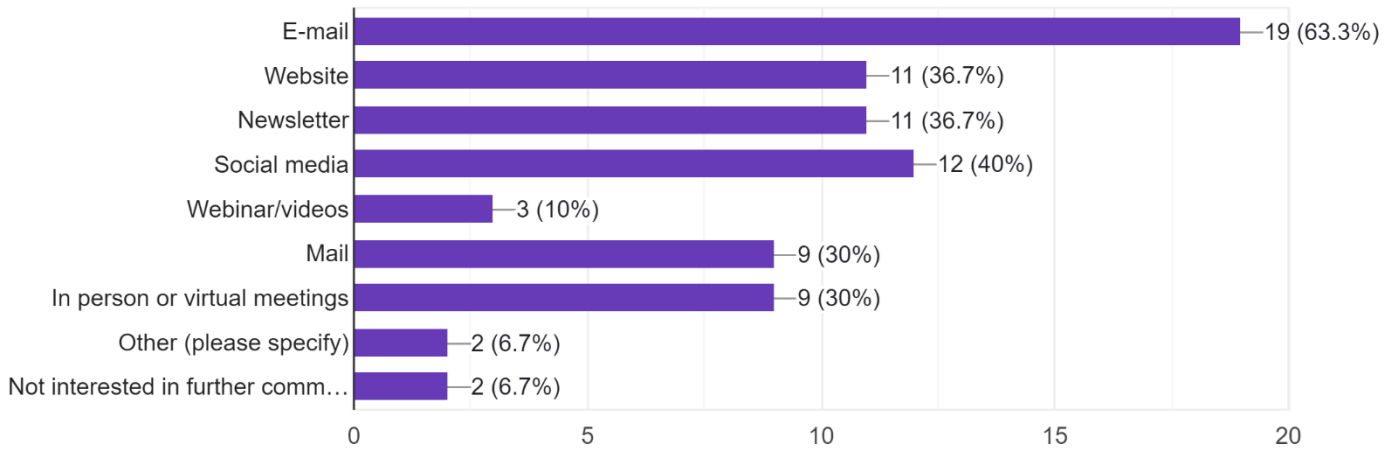


Is there anything else you would like to share with us regarding flooding and coastal resilience in Plymouth?
7 responses

- The town needs to be better about managing storm water run off, maintain culverts, clean debris, limit people throwing their grass cuttings and other debris into the road causing blockages
- I noticed now that after a flood, my car almost get out of control especially on 64 close to Advance Auto and the Roses shopping center is horrendous.
- Local flooding comes mostly from heavy rains that causes creek overflow from clogged stream flow
- no
- Locally, there are steps the town and county could take to help with some of the troubled water areas.
- Why is this only pertaining to Plymouth when there are many places in washington county that floods
- N/A

Stakeholder Engagement

How would you like the Town of Plymouth to communicate with you and/or your community regarding this program or on similar programs in the future?
30 responses



Comment field. Complete if "Other (please specify)" was checked in previous question.3 responses

- I would information to be placed in our water bill then everyone would see it.
- Community engagement outreach at supermarkets, library, schools, post office, town hall, senior center, festivals and various events around county
- text messages

Are there any local or community groups or organizations you feel we should coordinate with to create awareness of this program or similar programs in the future? If yes, please provide their name, website, and contact information if possible.10 responses

- Downtown Development Association
- Town of Plymouth: Town Manager; Mayor; Public Works Director
- I c
- From all the pulpits of the churches
- Law enforcement, county and city government
- Plymouth DDA
- The ROTC program at the high school often picks up debris from the roads and within neighborhoods. This is a fantastic awareness program and acknowledging it may inspire other groups to take to the streets for clean-up.
- Washington county commissioners. Town of plymouth representatives.
- N/A
- DDA / PDP

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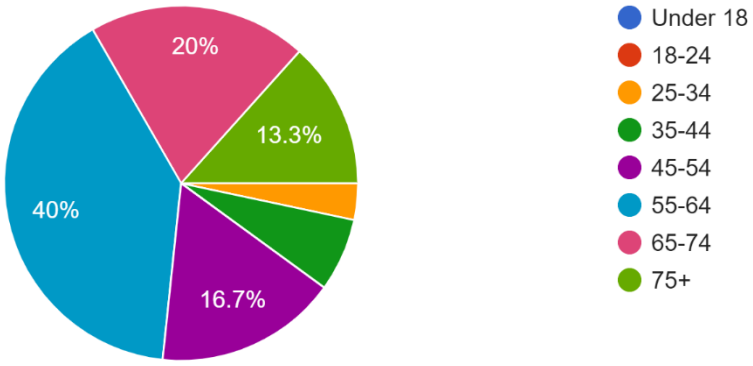
Demographic Information (optional)

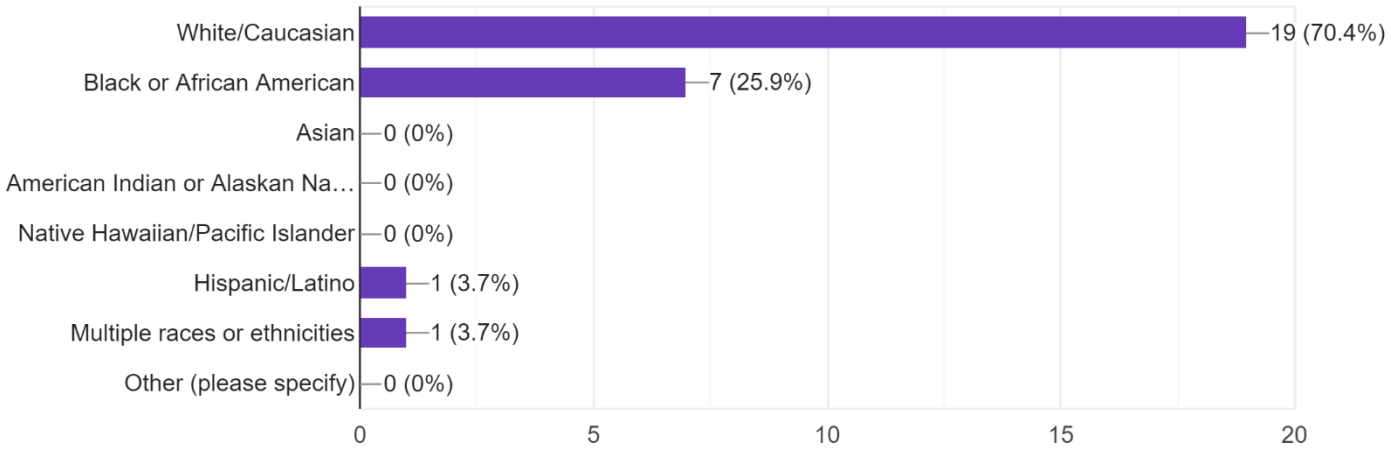
Tell us your age.

30 responses



What race/ethnicity best describes you? Check all that apply.

27 responses



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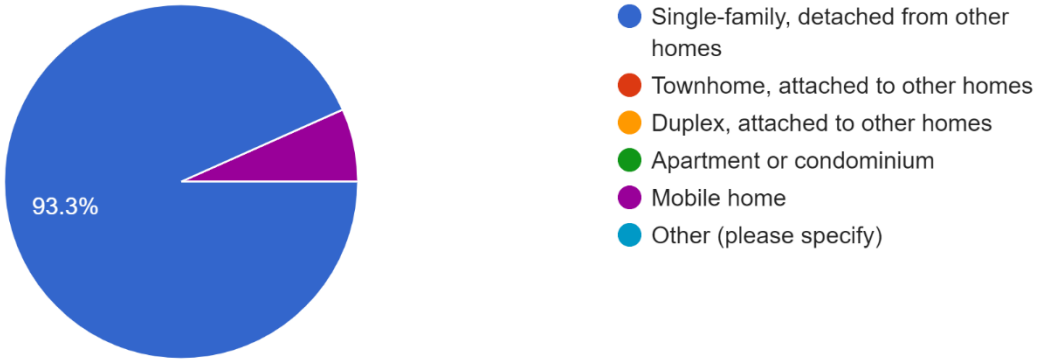
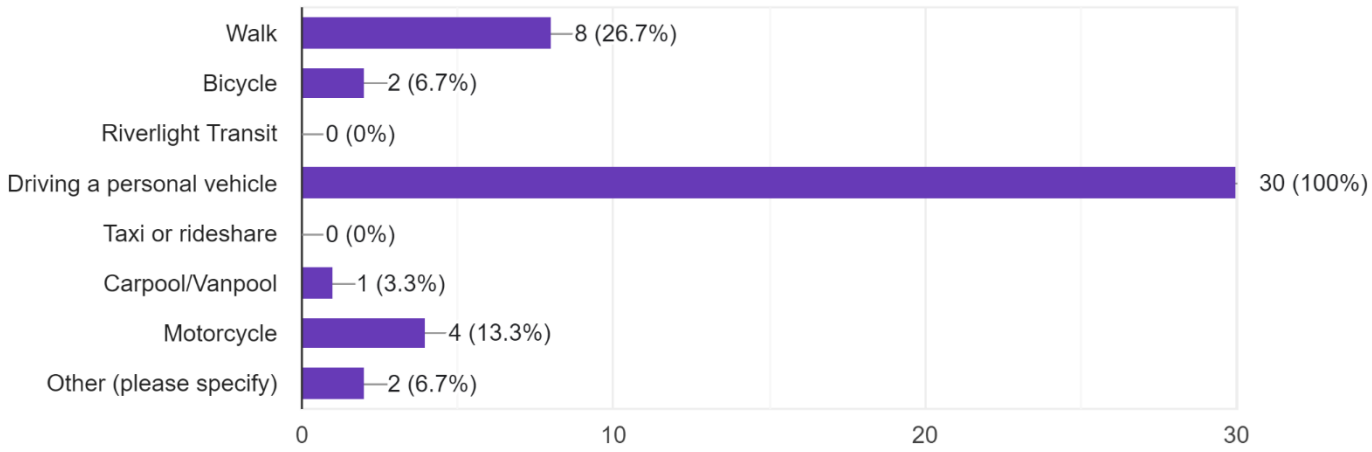
Which type of housing best describes your home?

30 responses



How do you travel in Plymouth? Select all that apply.

30 responses



Comment field. Complete if "Other (please specify)" was checked in previous question.2 responses

Golf cart (2 responses)

North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

PLYMOUTH

Phase 1 Open House Summary

PHASE 1 OPEN HOUSE

TUESDAY, DECEMBER 12, 2023, 4:00 PM – 6:30 PM, PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPARTMENT, 132 E WATER STREET, PLYMOUTH, NC 27962

Attendees:

- Shannon Sanderlin, Town of Plymouth Police Dept. Records Clerk
- Brian Roth, Town of Plymouth Mayor
- Mika Martinez, Town of Plymouth Police Officer
- Sarah Forner, resident and Downtown Development Association member
- Terrence Davis, Town of Plymouth Police Officer
- Donsenia Teel, Town of Plymouth Councilwoman Ward 1
- Mary Nixon, Town of Plymouth Councilwoman Ward 3
- Kim Williams, resident and former councilwoman
- Joanne Floyd, Town of Plymouth Manager
- Preston Moore, CAT and Town of Plymouth Planning Board Member

Meeting Purpose:

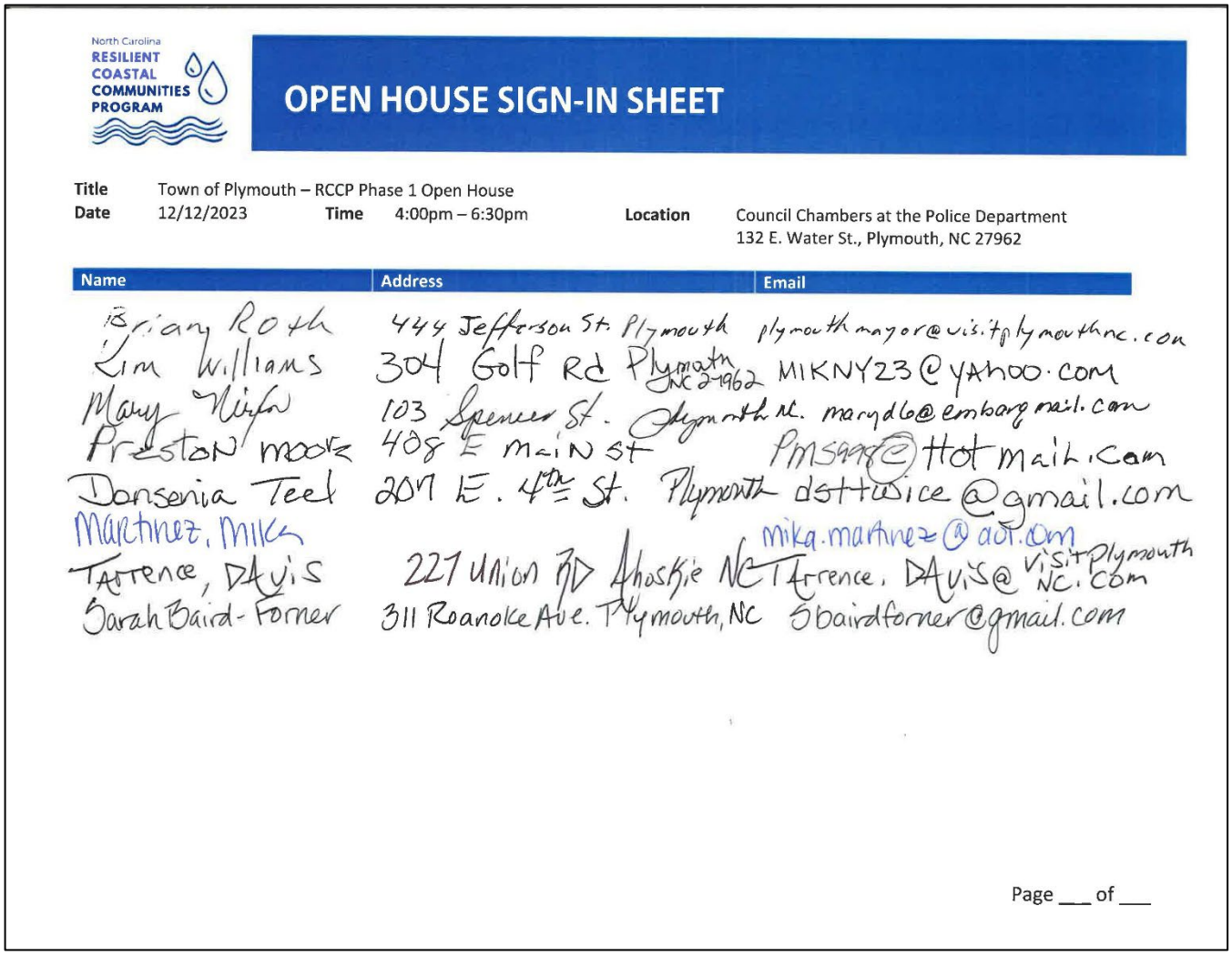
The Phase 1 Open House is the culmination of Phase 1 activities and was held to present information from the process to stakeholders such as critical asset and natural infrastructure inventories, defined community vision and goals, and risk and vulnerability assessment results, for additional comment and input. Hardcopies of the public surveys were made available and team members were there to answer questions. Open house materials also included various displays such as an overview of the RCCP and a board defining resiliency with Washington County/Plymouth flooding related facts and demographic data, existing hazard mapping, critical assets and natural infrastructure lists, and FEMA and DCM informational handouts. Stakeholders were asked to rank vision and goals on the displays from 'no support' (1) to 'fully support (5), identify additional hazards on displayed maps using stickers, and define what resilience means to them. A PowerPoint slide show was also prepared that contained additional information on the RCCP, the CDC SVI, and the risk and vulnerability assessment steps.

Notes:

- It was stated that the town infrastructure needs improvement in general and in particular the police building needs to improve security and ideally move the council chambers to another location
- A primary topic of conversation was flooding and the need for a functioning stormwater drainage system and particularly the need for ditch maintenance (access easements and the legal work needed to establish, past maintenance practices, the need to clear vegetation from the ditches, best methods and needed equipment, the presence of fences in ditches that impede flow, litter removal and prevention, resident education on the importance of maintaining ditches)
- The retention pond at the west end of Water Street near Main Street is a problem flooding area

- Mayor Roth stated a rough estimate of ditch length under the town's jurisdiction would be 26 miles of streets with ditches on both sides and mid-block pipes (that are in some cases blocked) that add up to over 100 miles; requests that when identifying ditches not to forget private property, swales, NC Highways and private drives
- The town has a new street sweeper that can clean catch basins but there is little time to use it due to competing priorities; secure grant funding for new equipment to help with ditch maintenance?
- Drinking water safety was discussed; town pumps water from the Castle Hayne aquifer and treats it with chlorides; money is in the CIP to fix dead end water lines
- 67% of homes in Plymouth are rentals; Town has a $3 per property stormwater fee
- Downtown revitalization was also a primary topic of discussion; RCCP money could be used to fund activities
- Mayor Roth asked when assessing ditches and tributaries that the team identify which way the ditches naturally flow in the Matt Ransom Street, Pettigrew Dr. and Roanoke Ave. area; there are N/S oriented streets and E/W oriented valleys
- New CAT member recruitment includes: Sarah Forner and Kim Williams and potentially Mary Nixon, Tom Harrison (Travel and Tourism Authority), and Bill Forner; project team to follow up, confirm membership, and share upcoming CAT meeting information

Copy of event sign-in sheet:



North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

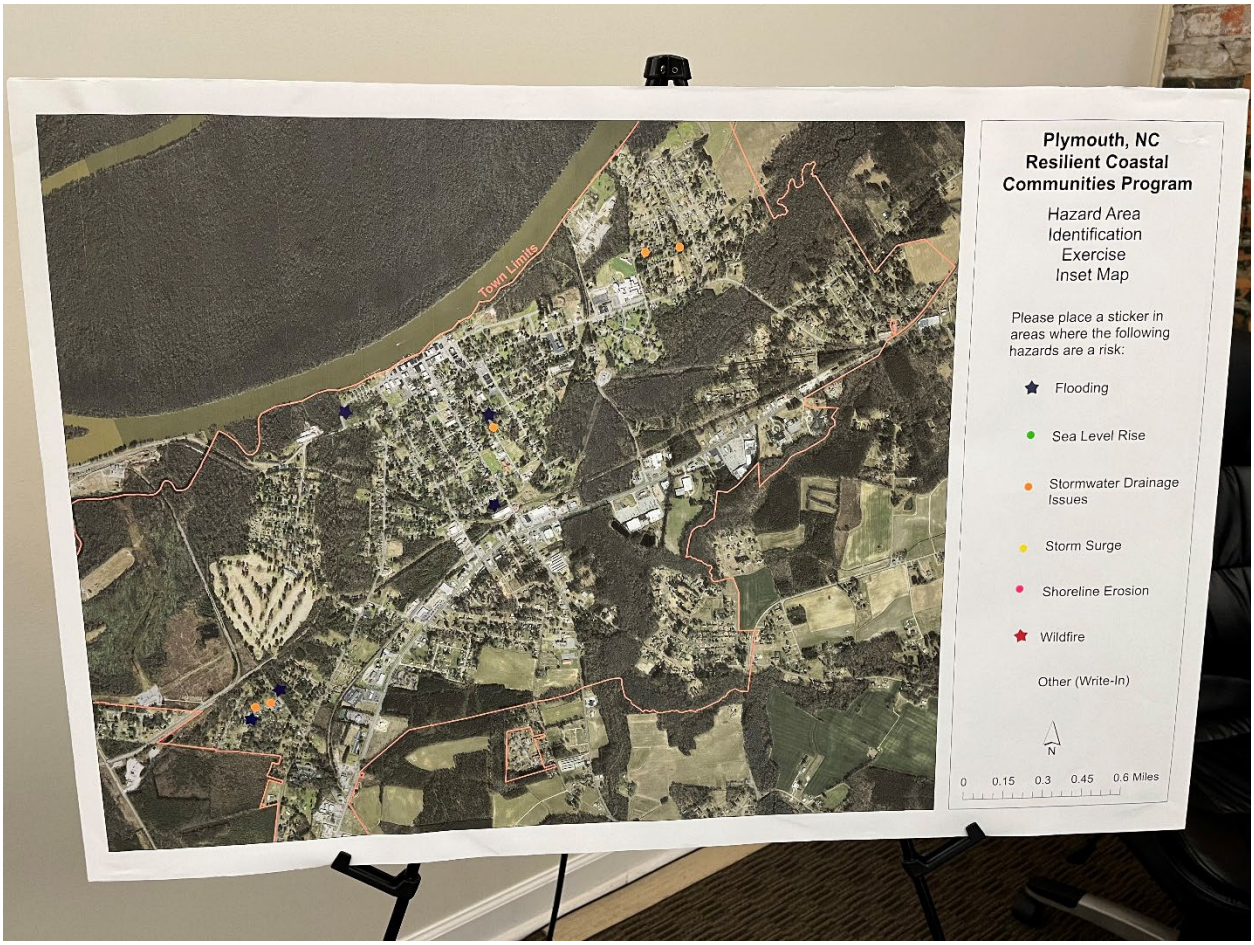
OPEN HOUSE SIGN-IN SHEET

Title Town of Plymouth – RCCP Phase 1 Open House
Date 12/12/2023 **Time** 4:00pm – 6:30pm **Location** Council Chambers at the Police Department, 132 E. Water St., Plymouth, NC 27962

Name	Address	Email
Brian Roth	444 Jefferson St. Plymouth	plymouthmayor@visitplymouthnc.com
Tim Williams	304 Golf Rd Plymouth NC 27962	MIKNY23@YAHOO.COM
Mary Miller	103 Spencer St. Plymouth NC.	marydb@embarqmail.com
Preston Moore	408 E Main St	PMS[illegible]@Hotmail.com
Donsenia Teel	207 E. 4th St. Plymouth	dsttwice@gmail.com
Martinez, Mika		mika.martinez@adr.com
Tarence, Davis	227 Union Rd Ahoskie NC	Tarence.Davis@VisitPlymouthNC.com
Sarah Baird-Forner	311 Roanoke Ave. Plymouth, NC	Sbairdforner@gmail.com

Page ___ of ___

Hazard area identification exercise results:

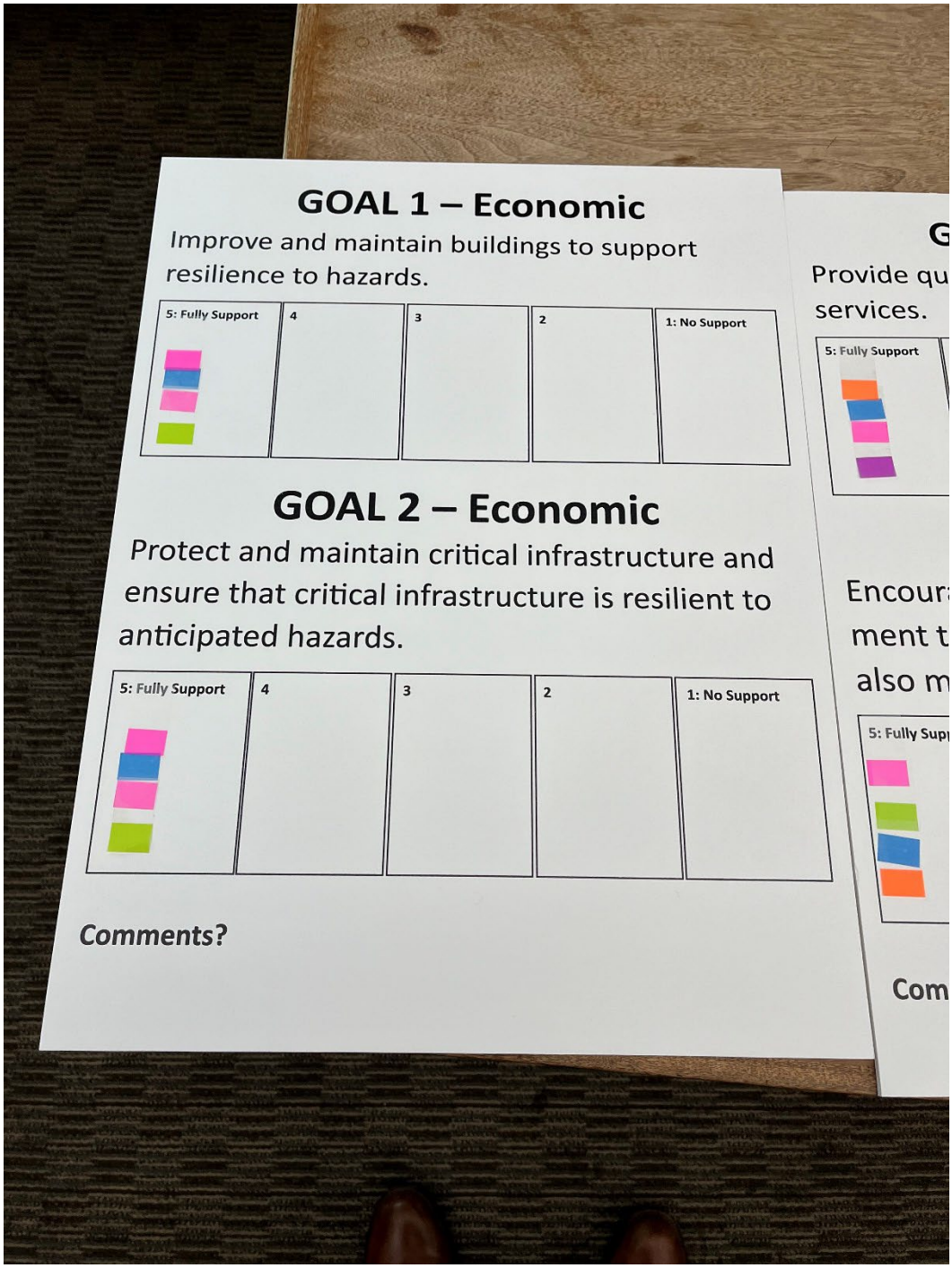


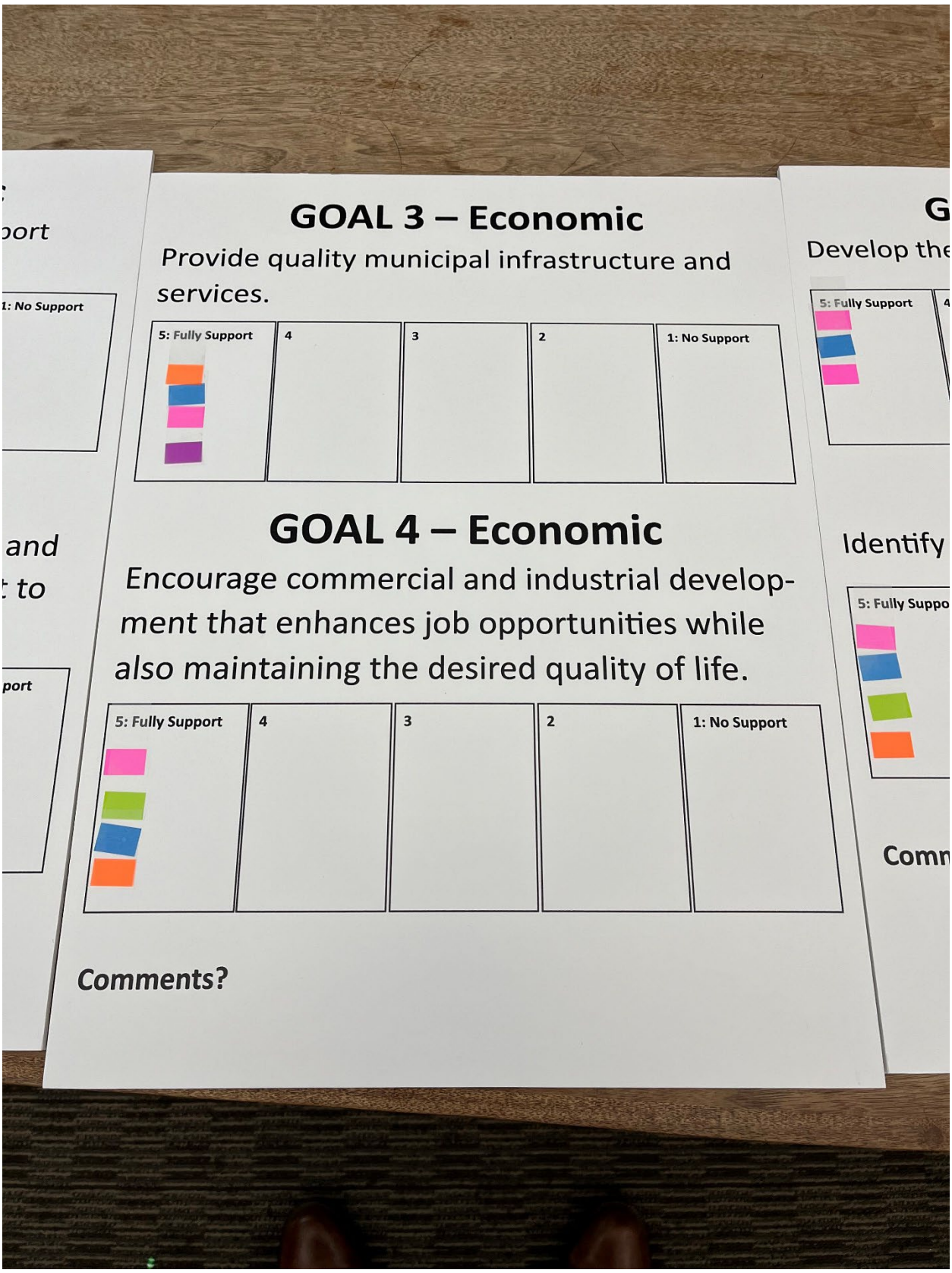
North Carolina
RESILIENT
COASTAL
COMMUNITIES
PROGRAM

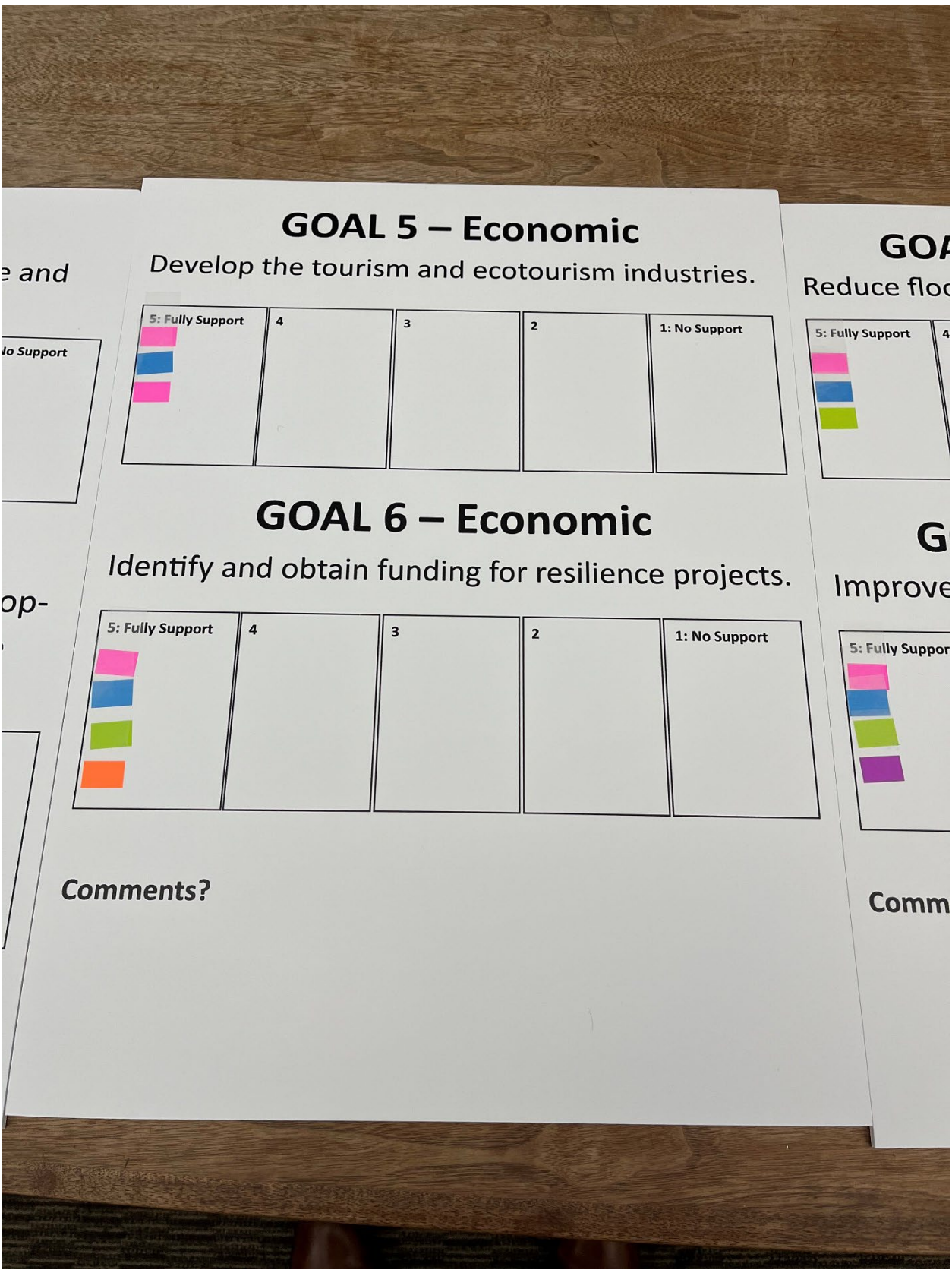
PLYMOUTH

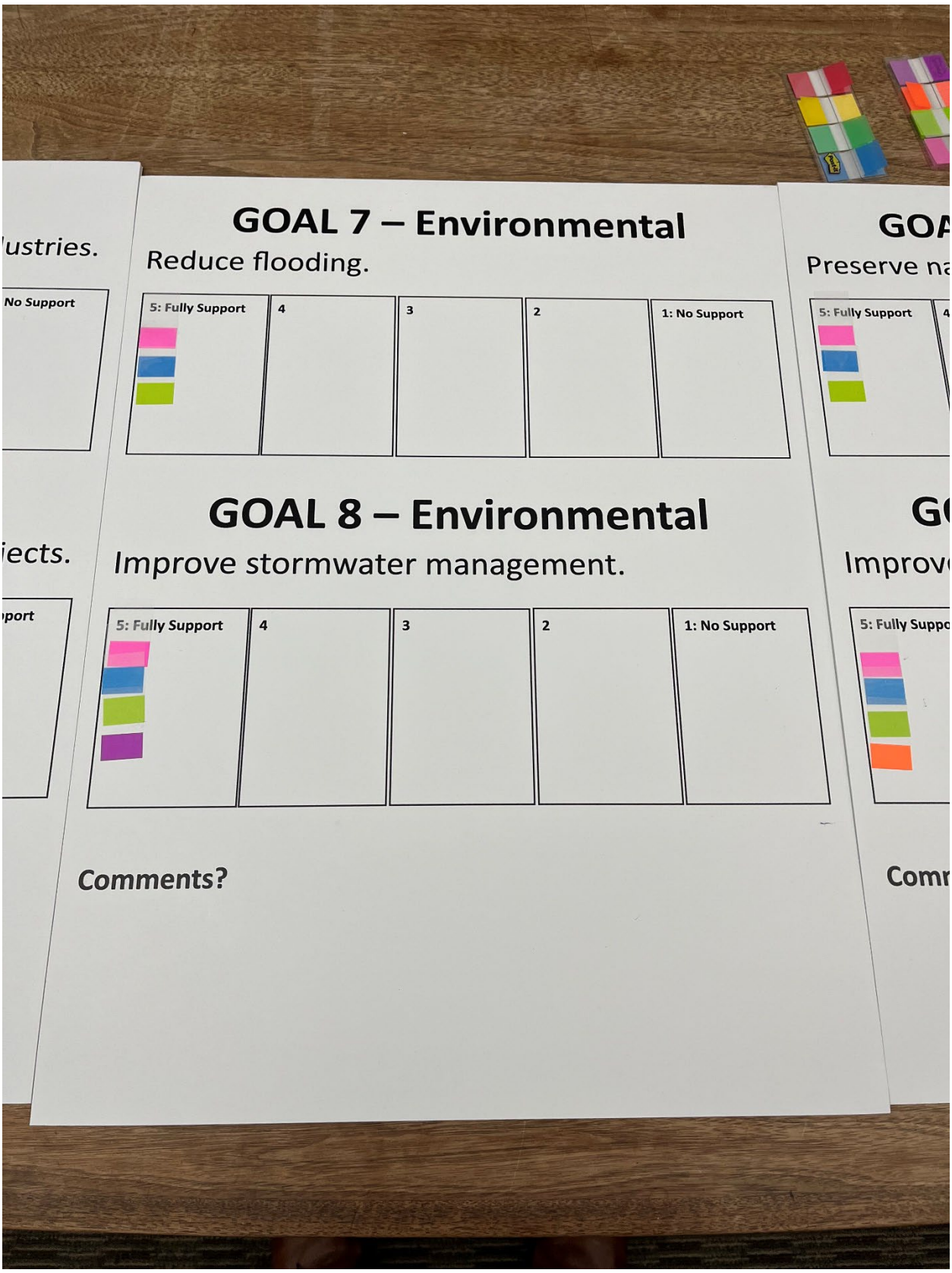
Phase 1 Open House Summary

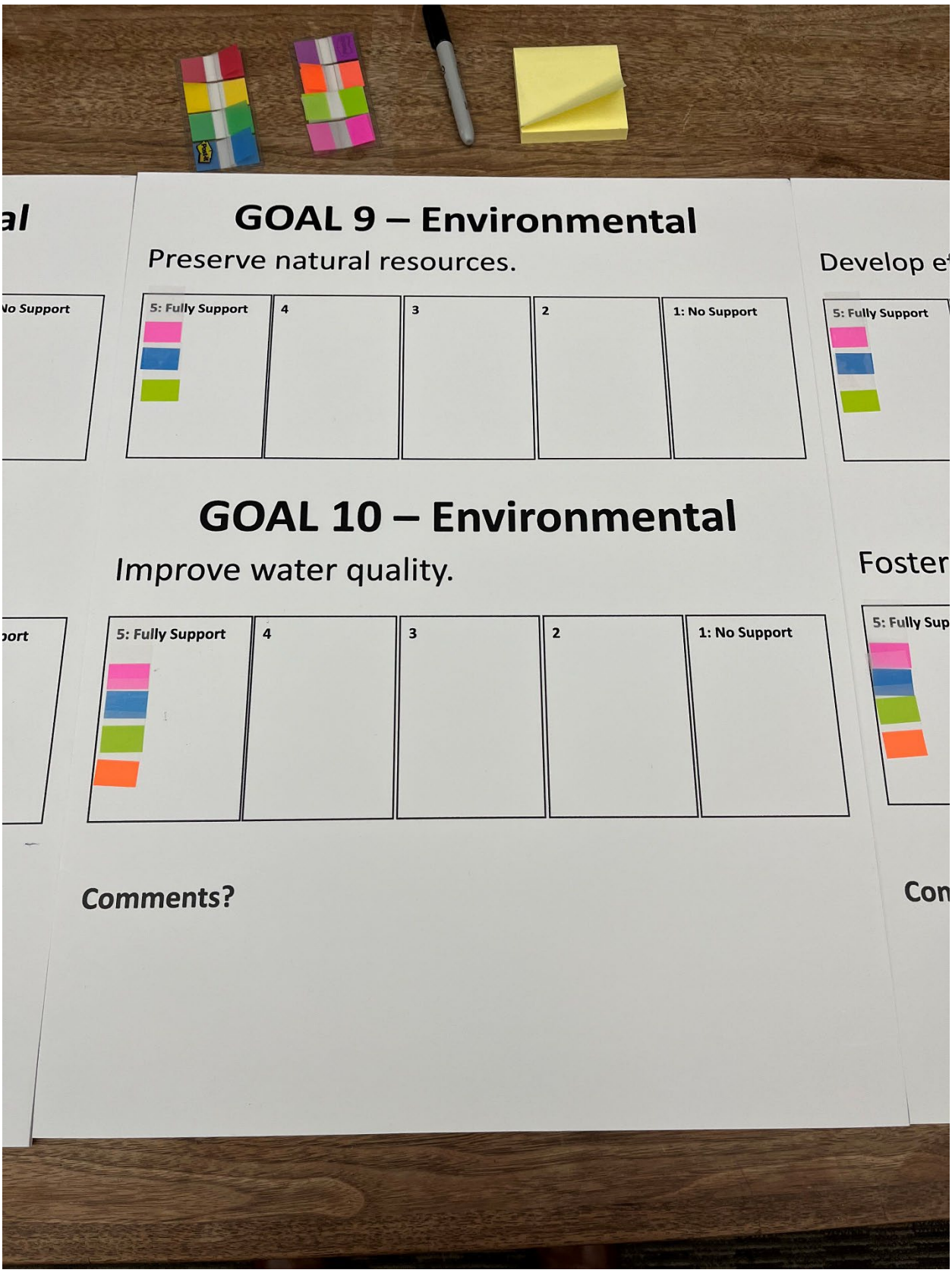
Vision and Goals Exercise Results

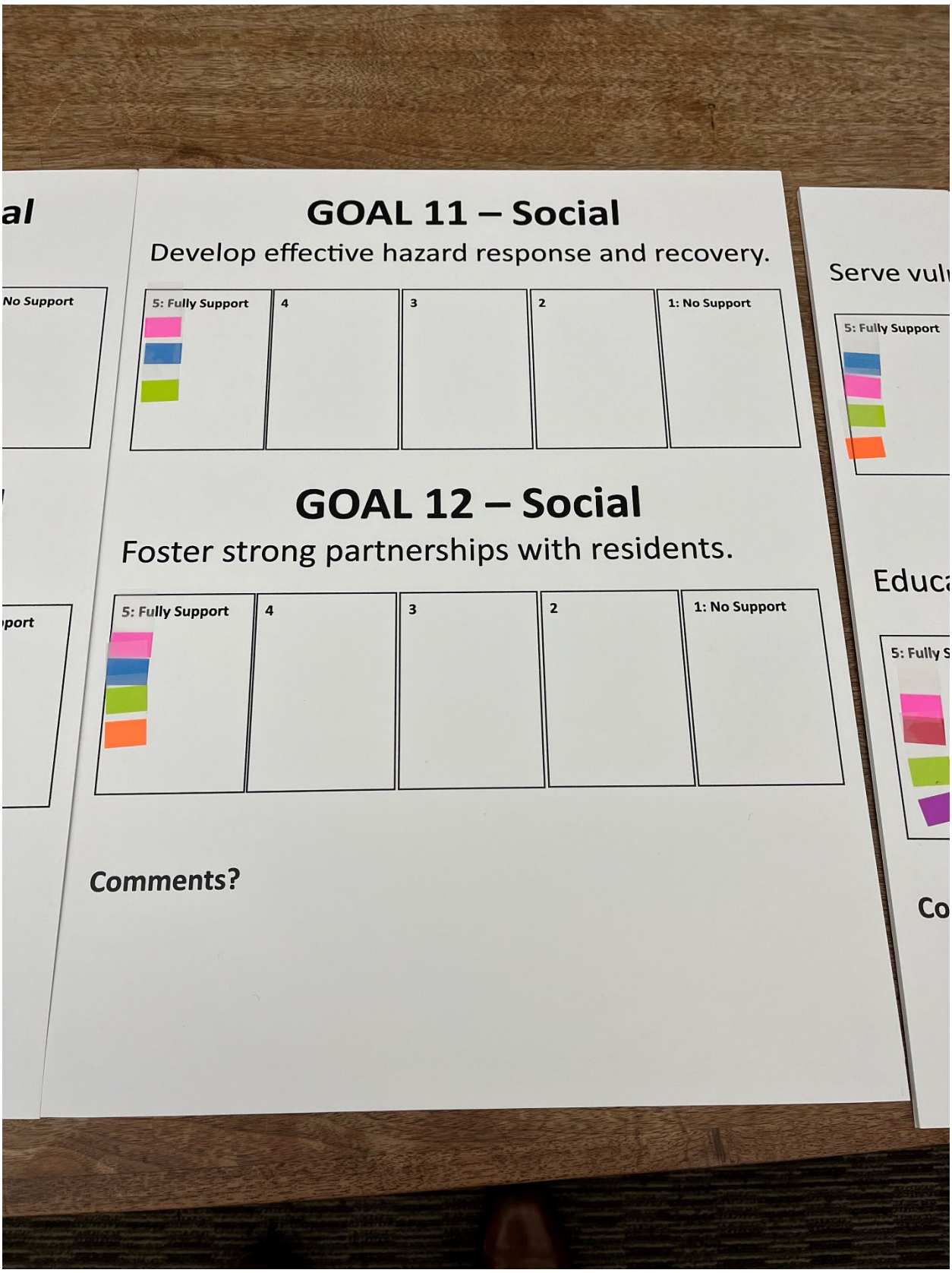


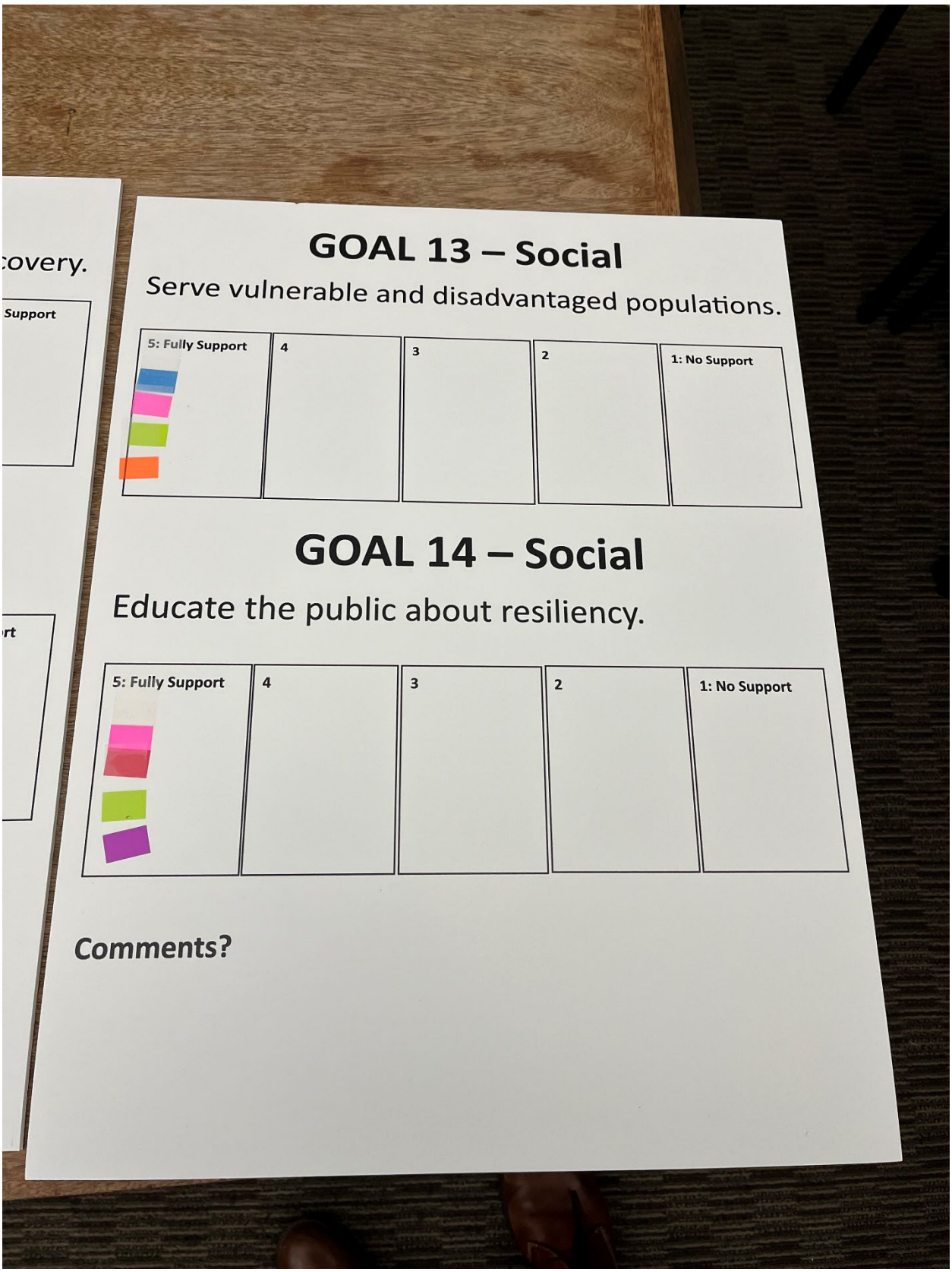

GOAL 3 – Economic
Provide quality municipal infrastructure and services.
5: Fully Support
4
3
2
1: No Support
GOAL 4 – Economic
Encourage commercial and industrial development that enhances job opportunities while also maintaining the desired quality of life.
5: Fully Support
4
3
2
1: No Support
Comments?


GOAL 5 – Economic
Develop the tourism and ecotourism industries.
5: Fully Support
4
3
2
1: No Support
GOAL 6 – Economic
Identify and obtain funding for resilience projects.
5: Fully Support
4
3
2
1: No Support
Comments?


ustries.
No Support
GOAL 7 – Environmental
Reduce flooding.
5: Fully Support
4
3
2
1: No Support
GOA
Preserve na
5: Fully Support
iects.
GOAL 8 – Environmental
Improve stormwater management.
5: Fully Support
4
3
2
1: No Support
G
Improv
5: Fully Suppo
Comments?
Comr


GOAL 9 – Environmental
Preserve natural resources.
5: Fully Support
4
3
2
1: No Support
GOAL 10 – Environmental
Improve water quality.
5: Fully Support
4
3
2
1: No Support
Comments?


GOAL 11 – Social
Develop effective hazard response and recovery.
5: Fully Support
4
3
2
1: No Support
GOAL 12 – Social
Foster strong partnerships with residents.
5: Fully Support
4
3
2
1: No Support
Comments?


GOAL 13 – Social
Serve vulnerable and disadvantaged populations.
5: Fully Support
4
3
2
1: No Support
GOAL 14 – Social
Educate the public about resiliency.
5: Fully Support
4
3
2
1: No Support
Comments?

Photos from event:

North Carolina
RESILIENT
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COMMUNITIES
PROGRAM

PLYMOUTH

Phase 1 Open House Summary

North Carolina
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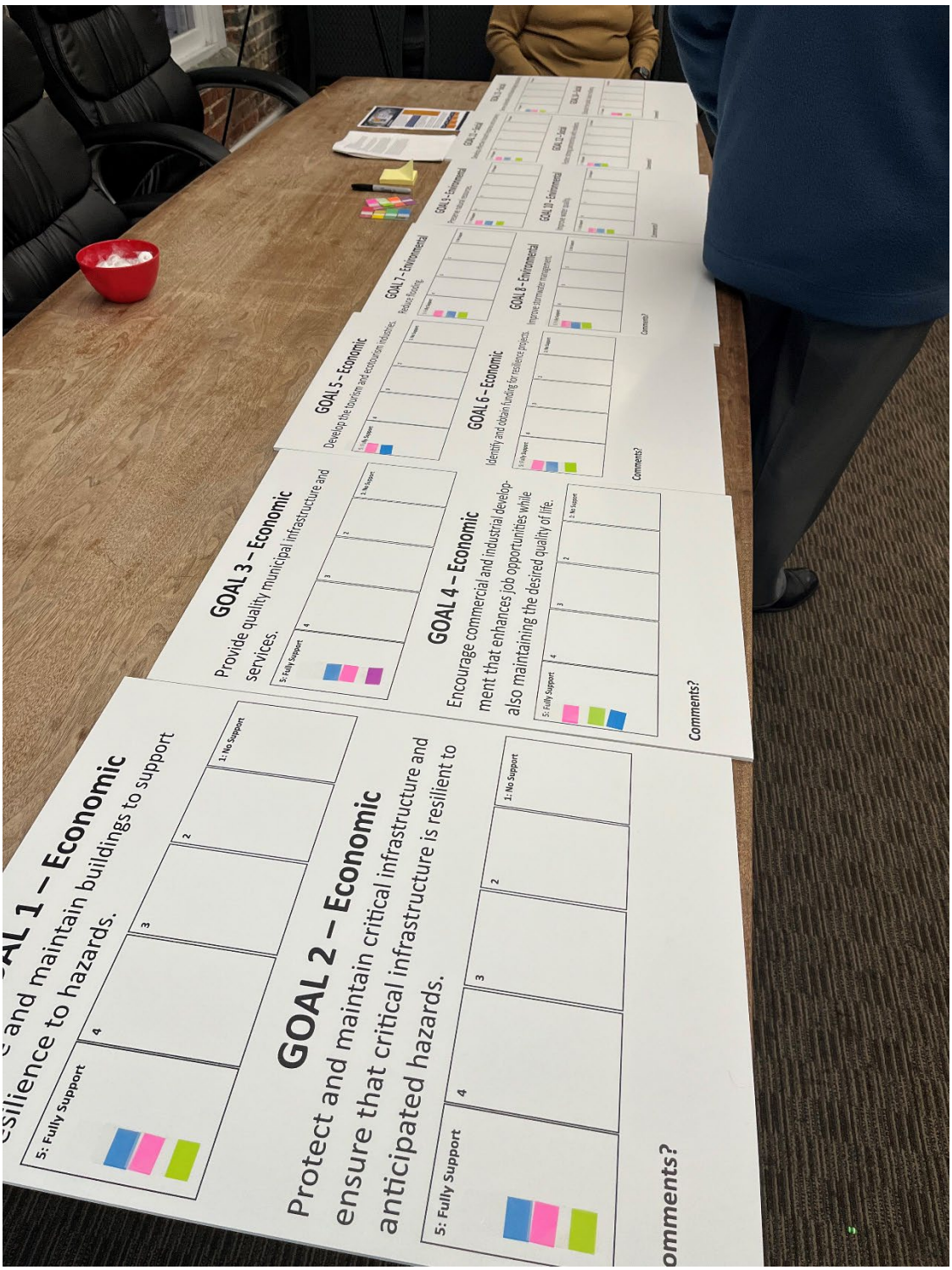
PROGRAM

PLYMOUTH

Phase 1 Open House Summary



North Carolina
RESILIENT
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COMMUNITIES
PROGRAM

PLYMOUTH

Phase 2 Open House Summary

PHASE 2 OPEN HOUSE

THURSDAY, MARCH 21, 2024, 4:00 PM – 6:30 PM; PLYMOUTH COUNCIL CHAMBERS AT PLYMOUTH POLICE DEPT.

Attendees:

- Jamie Heath, Mid-East Commission
- Gordon Marsh, RK&K
- Sarah Spiegler, NC Sea Grant
- Shannon Sanderlin, Plymouth Police Dept.
- Johnnie Boone, Plymouth resident
- Marty Brooks, Plymouth resident
- Chinta Crowder, Plymouth resident
- Randolph Crowder, Plymouth resident
- Keith Sawyer, Plymouth resident
- Sarah Baird-Forner, Plymouth resident
- Joanne Floyd, Plymouth CAT member and Town Manager
- Brian Roth, Plymouth CAT member and Mayor

Meeting Purpose:

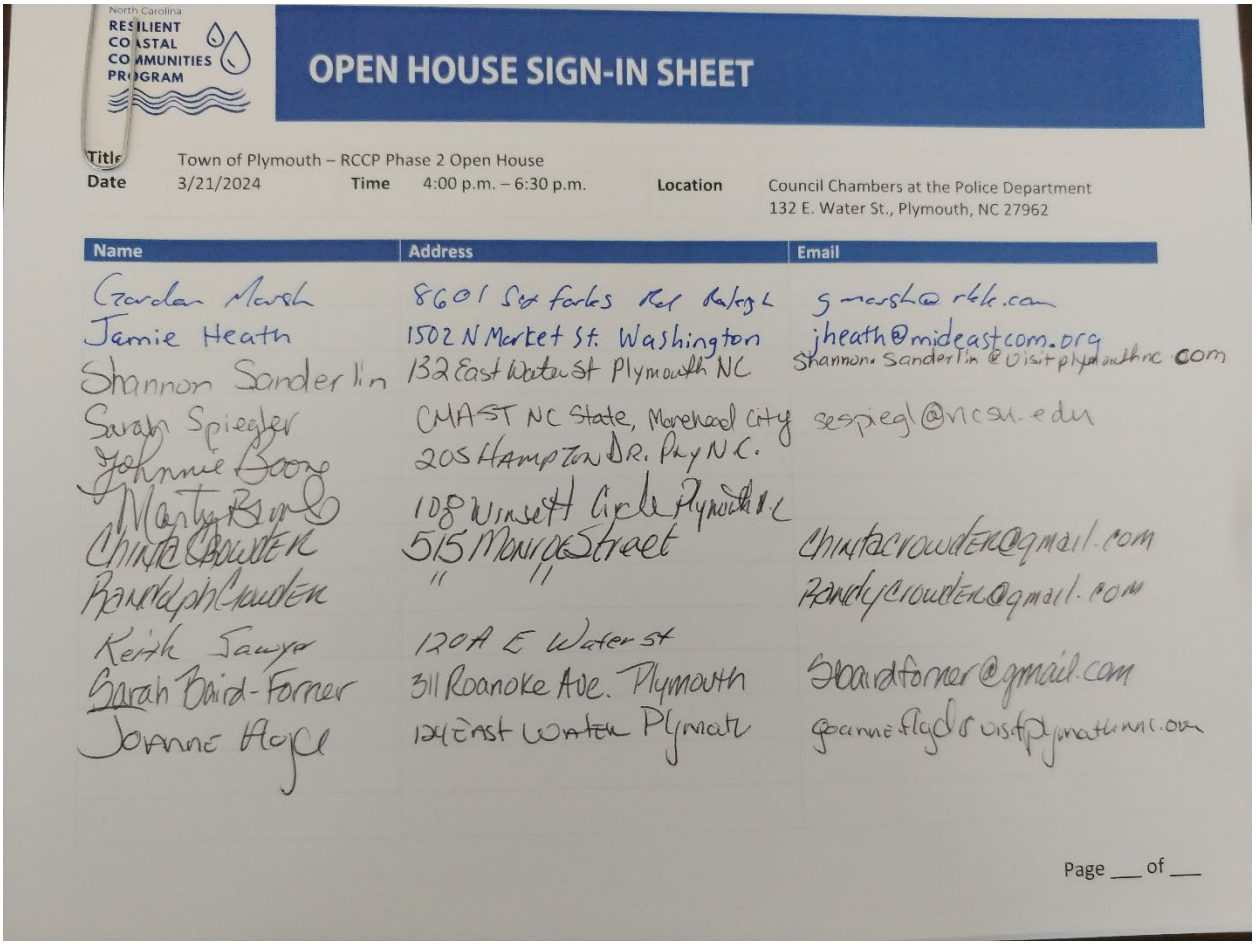
The Phase 2 Open House is the culmination of Phase 2 activities and was held to present draft projects to the community. Attendees were asked to vote on projects to determine community priorities and assist the Community Action Team with the final round of project prioritization. Voting was conducted by placing stickers on project posters. Participants were also able to suggest additional projects. Education on the RCCP and on the various project types were also presented through posters, handouts, and an online Story Map, including education on green/nature-based solutions.

Notes:

- In addition to contractors and Community Action Team members, resident stakeholders participated in the Phase 2 open house (at least 7 according to sign in sheet).
- Draft priority projects were presented on posters and participants placed stickers on the posters to vote for their favorite projects. Participants were given six stickers labeled 1-6 and instructed to prioritize projects with the #1 sticker being their top project.

- Draft projects received the following number of votes:
    - Stormwater Action Plan: 4 votes (Sticker numbers: 2, 3, 3, 3)
    - Public Information and Stormwater Responsibilities Plan: 2 votes (Sticker numbers: 6, 6)
    - Retrofits to Roads and Bridges: 0 votes
    - Back-up Generators for Critical Facilities: 0 votes
    - Post-Disaster Debris Removal Partnerships: 0 votes
    - Remove Dilapidated Abandoned Structures and Adaptively Reuse Properties: 1 vote (Sticker numbers: 4)
    - Stream Clean Outs: 5 votes (Sticker numbers: 2, 2, 3, 3, 4)
    - Improve W Water St. Constructed Wetland: 3 votes (Sticker numbers: 1, 6, 6)
    - Upgrade the Stormwater System: 2 votes (Sticker numbers: 4, 6)
    - Neighborhood Hybrid Drainage Improvement Projects: 9 votes (Sticker numbers: 1, 1, 1, 1, 1, 1, 1, 2, 4).
        - Note: The most popular neighborhood projects amongst attendees were the "4th St. Community" neighborhood (including streets off 4th St.) and the Riverside Plantation neighborhood.
    - Bioretention Cells at Highly Flooded Areas: 1 vote (Sticker numbers: 3)
    - Conaby Creek Pump System: 5 votes (Sticker numbers: 2, 2, 2, 2, 5)
    - Upgrade the Stormwater System Along Washington Street: 3 votes (Sticker numbers: 3, 4, 5)
    - Improve Wastewater Treatment Plant Access: 3 votes (Sticker numbers: 4, 4, 4)
    - Retrofit or Relocate Vulnerable Sewer Lift Stations: 3 votes (Sticker numbers: 5, 5, 5)
- Additional suggested projects include the following:
    - Kayak launch area W Main St. "Bear Track Landing"
    - Adams St. flooding, Winesset Cir. flooding. Both of these streets are off 4th St. Need to be sure they are included in "4th St. Community project".
    - Bridges over Conaby Creek, Rankin Ln. bridge and W. Main St. bridge. Spans are not big enough to let water through. Need to work with NCDOT.
    - 48" culvert pipe under W. Main St. near Conaby Creek is undersized, that is where problems start.
    - Behind Feyer Ford/US-64 near railroad, water tries to drain through to swamp but it gets plugged up.

Copy of event sign-in sheet:



North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

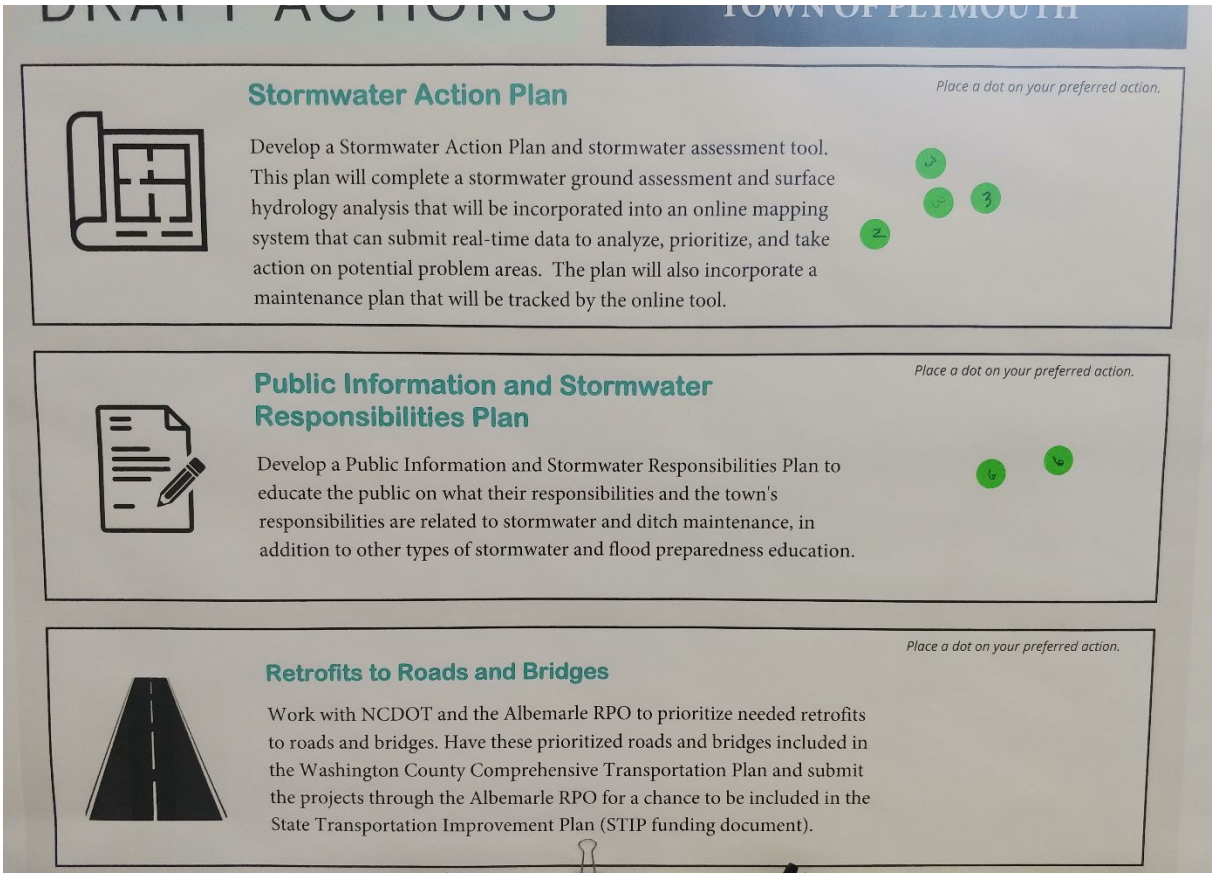
OPEN HOUSE SIGN-IN SHEET

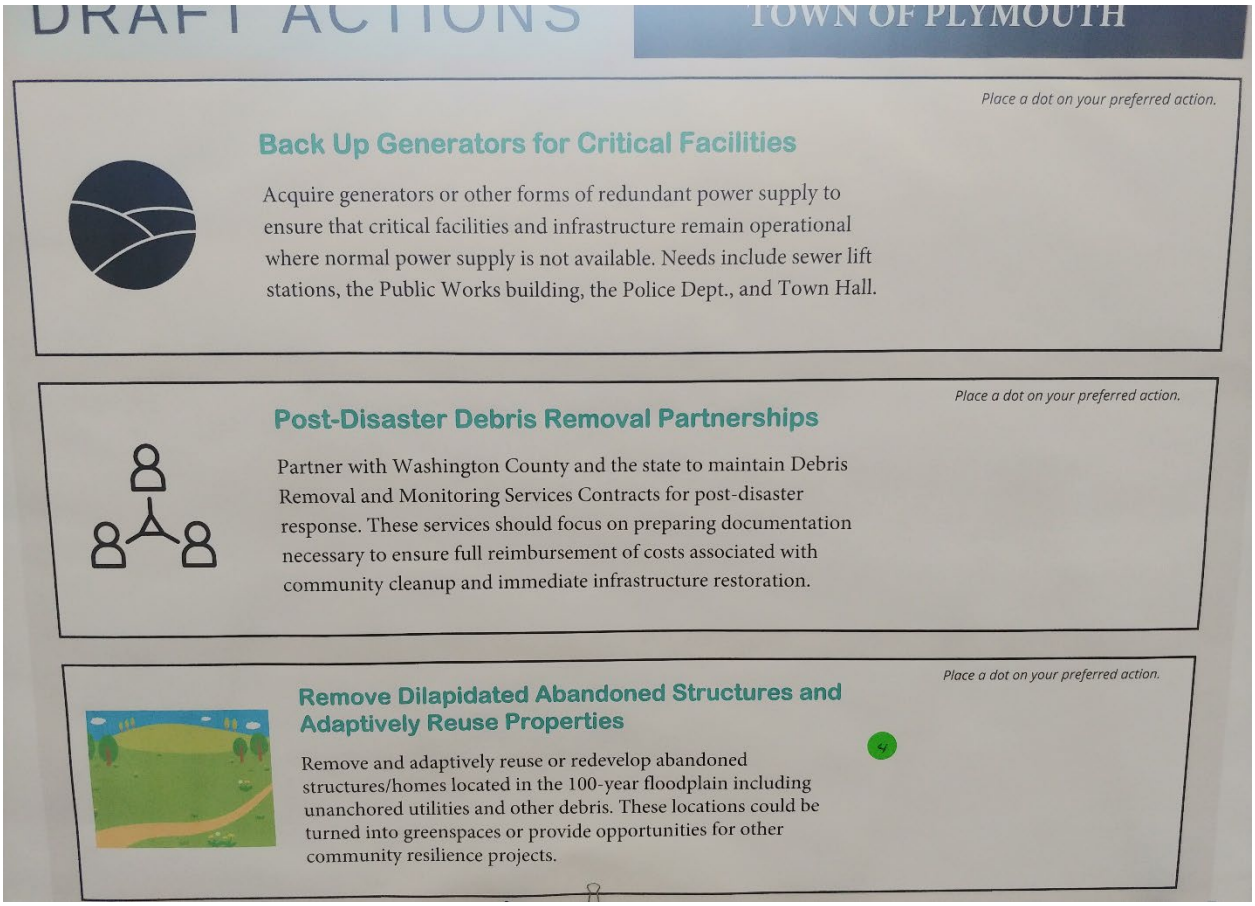
Title: Town of Plymouth – RCCP Phase 2 Open House
Date: 3/21/2024 Time: 4:00 p.m. – 6:30 p.m. Location: Council Chambers at the Police Department, 132 E. Water St., Plymouth, NC 27962

Name	Address	Email
Gordon Marsh	8601 Six Forks Rd Raleigh	gmarsh@rbh.com
Jamie Heath	1502 N Market St. Washington	jheath@mideastcom.org
Shannon Sanderlin	132 East Water St Plymouth NC	Shannon.Sanderlin@visitplymouthnc.com
Sarah Spiegler	CMAST NC State, Morehead City	sespiegl@ncsu.edu
Johnnie Boone	205 Hampton Dr. Ply N.C.	
Marty Boyd	108 Winsett Circle Plymouth N.C	
Christa Crowder	515 Monroe Street	Christacrowder@gmail.com
Randolph Crowder	" "	Randycrowder@gmail.com
Keith Sawyer	120A E Water St	
Sarah Baird-Forner	311 Roanoke Ave. Plymouth	Sbairdforner@gmail.com
Joanne Floyd	124 East Water Plymouth	joanne.floyd@visitplymouthnc.com

Page ___ of ___

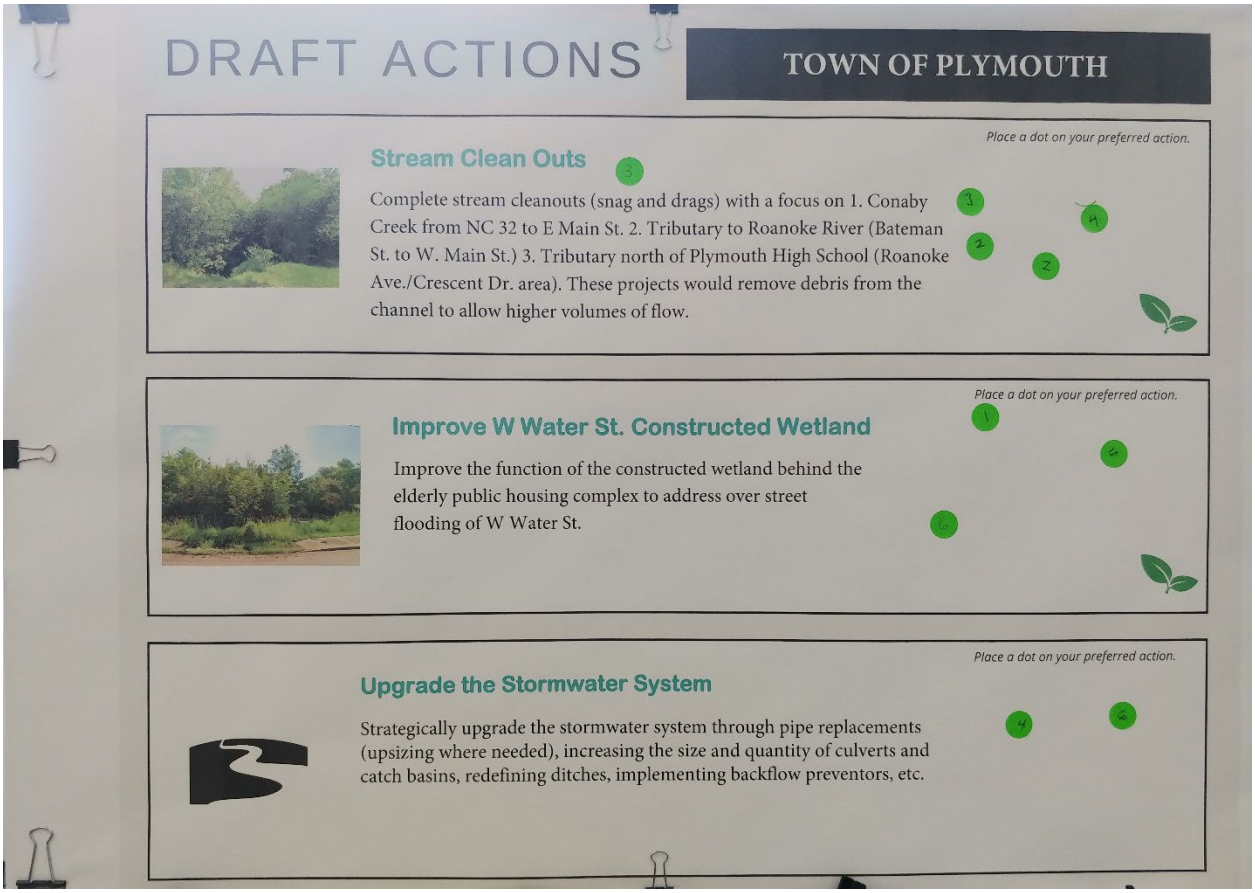
Project vote results:

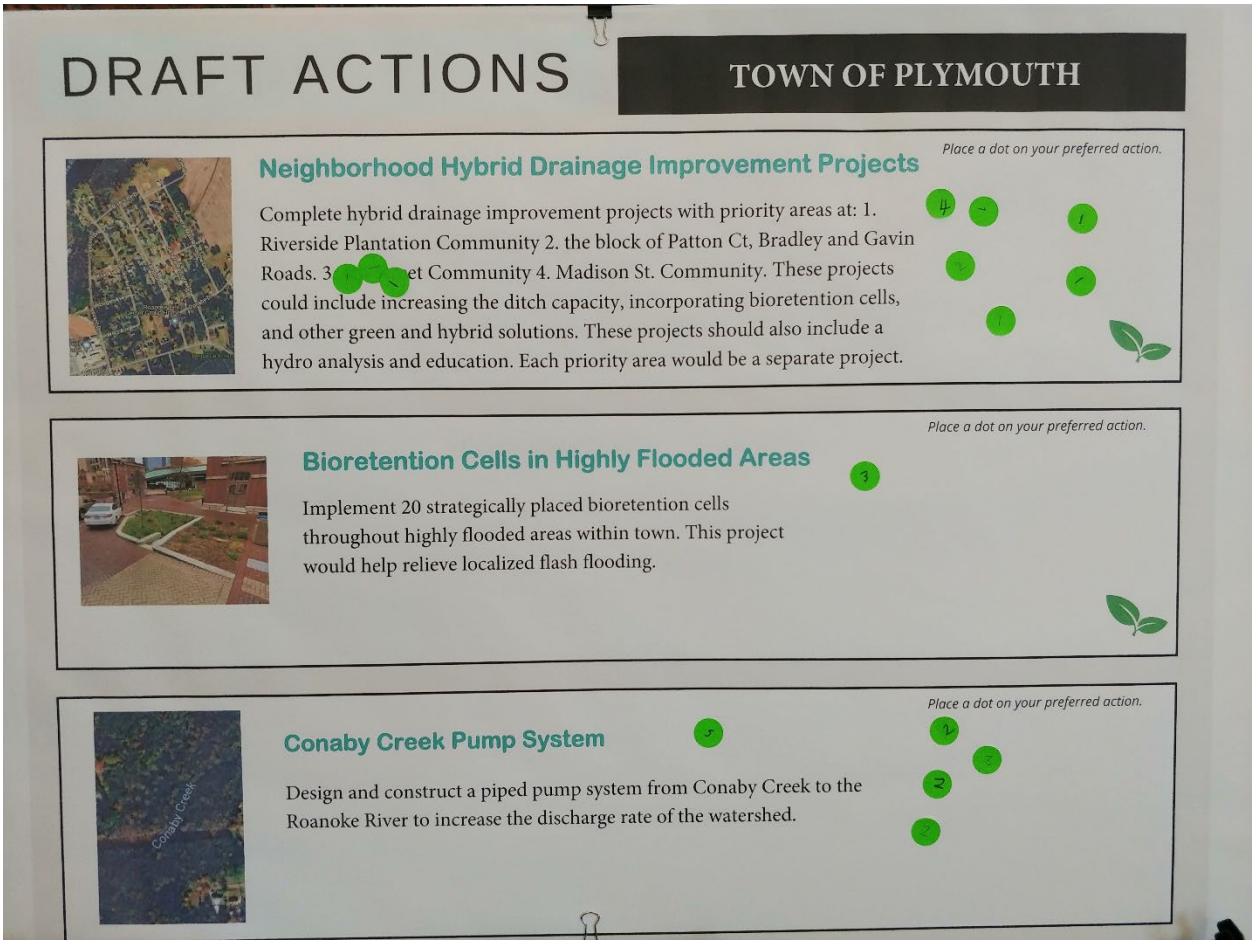


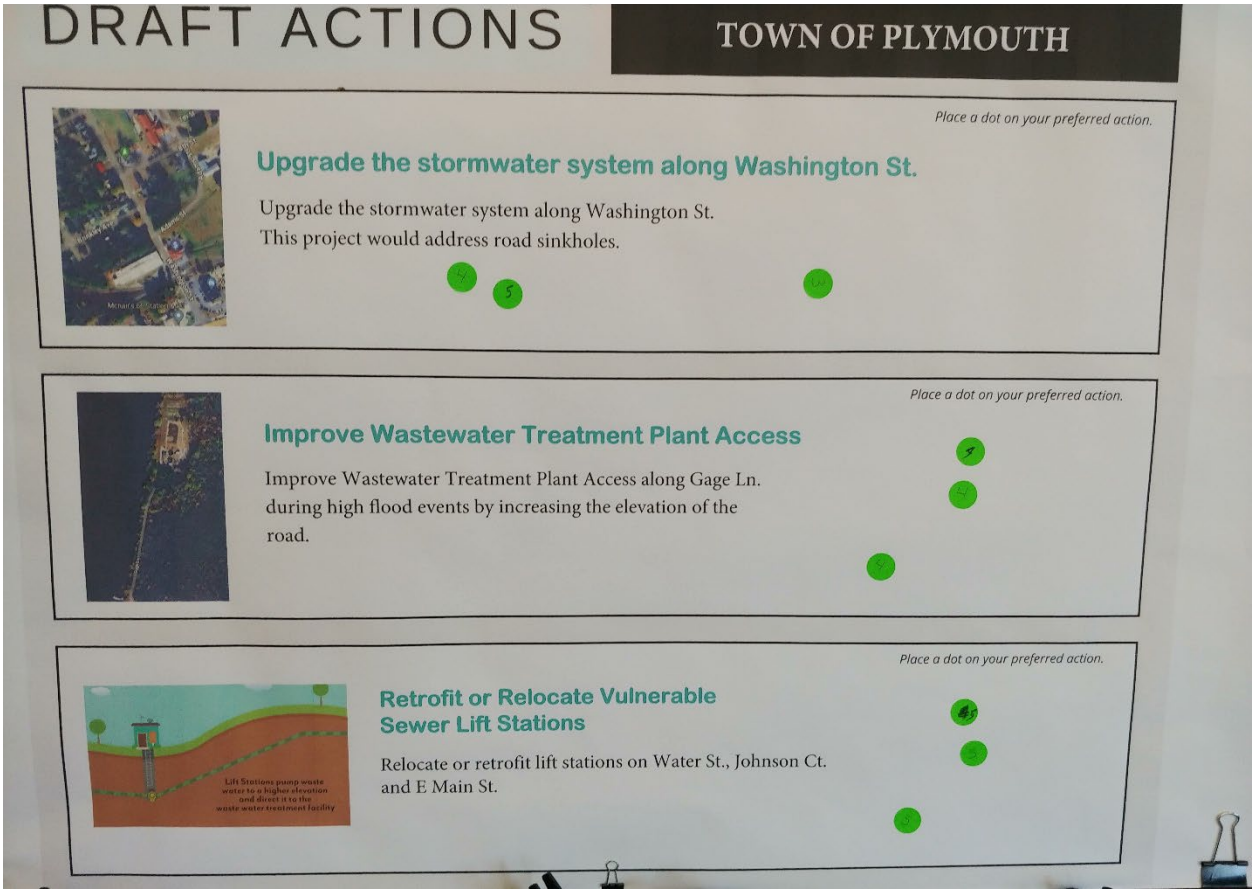

DRAFT ACTIONS
TOWN OF PLYMOUTH
Place a dot on your preferred action.
Back Up Generators for Critical Facilities
Acquire generators or other forms of redundant power supply to ensure that critical facilities and infrastructure remain operational where normal power supply is not available. Needs include sewer lift stations, the Public Works building, the Police Dept., and Town Hall.
Place a dot on your preferred action.
Post-Disaster Debris Removal Partnerships
Partner with Washington County and the state to maintain Debris Removal and Monitoring Services Contracts for post-disaster response. These services should focus on preparing documentation necessary to ensure full reimbursement of costs associated with community cleanup and immediate infrastructure restoration.
Place a dot on your preferred action.
Remove Dilapidated Abandoned Structures and Adaptively Reuse Properties
Remove and adaptively reuse or redevelop abandoned structures/homes located in the 100-year floodplain including unanchored utilities and other debris. These locations could be turned into greenspaces or provide opportunities for other community resilience projects.

PLYMOUTH

Phase 2 Open House Summary




DRAFT ACTIONS
TOWN OF PLYMOUTH
Neighborhood Hybrid Drainage Improvement Projects
Place a dot on your preferred action.
Complete hybrid drainage improvement projects with priority areas at: 1. Riverside Plantation Community 2. the block of Patton Ct, Bradley and Gavin Roads. 3 et Community 4. Madison St. Community. These projects could include increasing the ditch capacity, incorporating bioretention cells, and other green and hybrid solutions. These projects should also include a hydro analysis and education. Each priority area would be a separate project.
Bioretention Cells in Highly Flooded Areas
Place a dot on your preferred action.
Implement 20 strategically placed bioretention cells throughout highly flooded areas within town. This project would help relieve localized flash flooding.
Conaby Creek Pump System
Place a dot on your preferred action.
Design and construct a piped pump system from Conaby Creek to the Roanoke River to increase the discharge rate of the watershed.


DRAFT ACTIONS
TOWN OF PLYMOUTH
Place a dot on your preferred action.
Upgrade the stormwater system along Washington St.
Upgrade the stormwater system along Washington St.
This project would address road sinkholes.
Place a dot on your preferred action.
Improve Wastewater Treatment Plant Access
Improve Wastewater Treatment Plant Access along Gage Ln.
during high flood events by increasing the elevation of the
road.
Place a dot on your preferred action.
Retrofit or Relocate Vulnerable
Sewer Lift Stations
Relocate or retrofit lift stations on Water St., Johnson Ct.
and E Main St.

North Carolina
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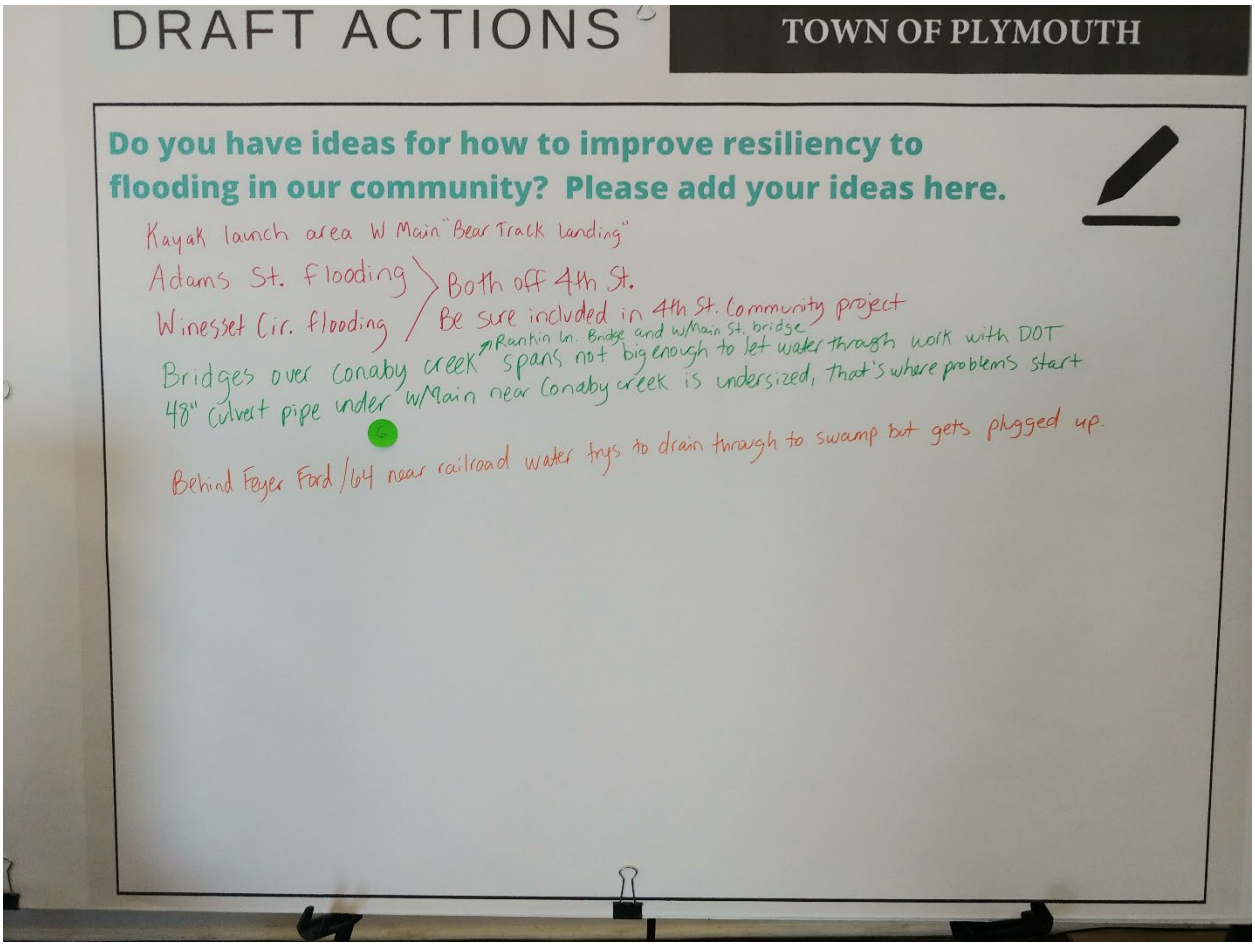
PLYMOUTH

Phase 2 Open House Summary



Photos from event:

North Carolina
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PLYMOUTH

Phase 2 Open House Summary

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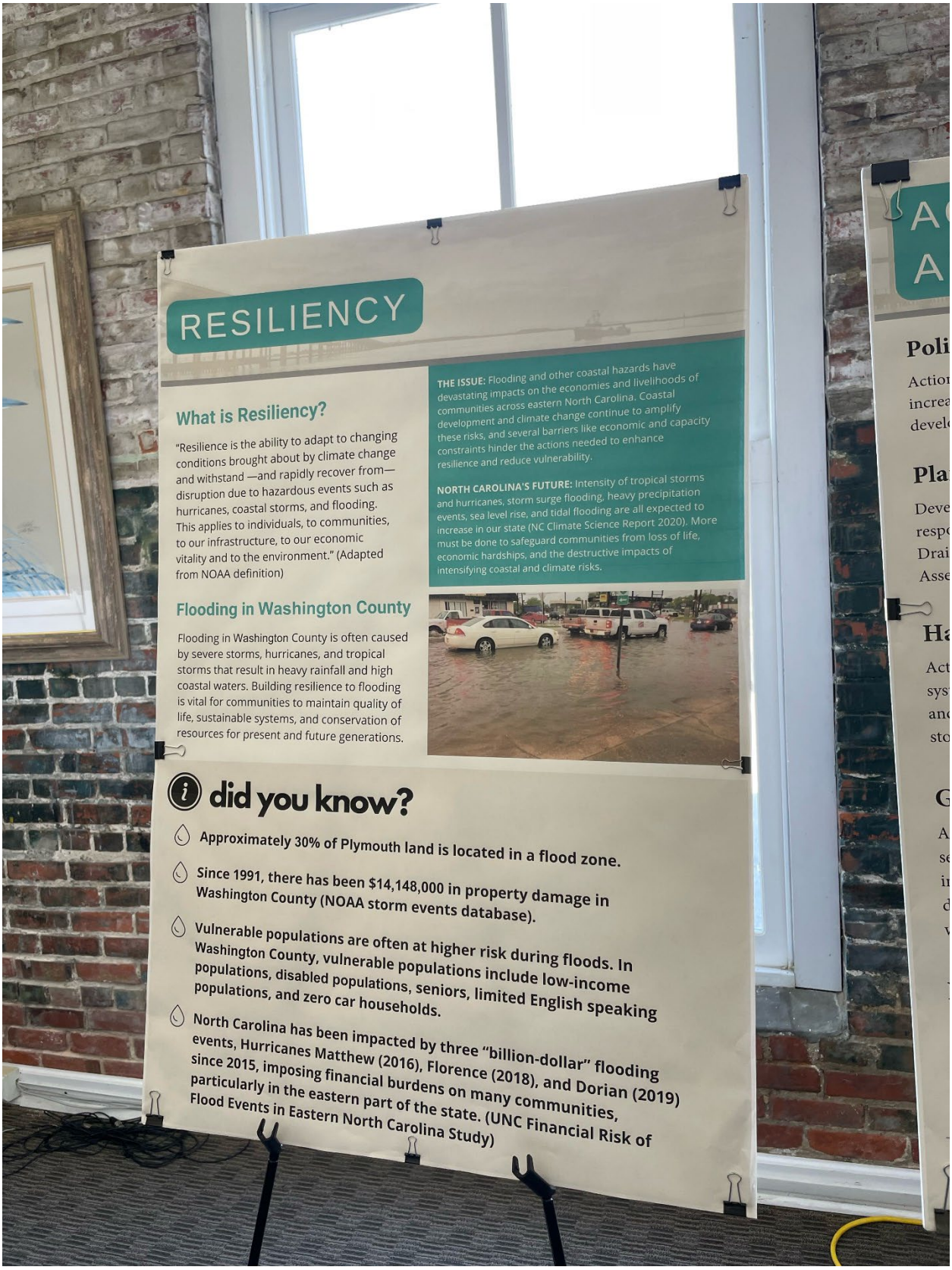
PLYMOUTH

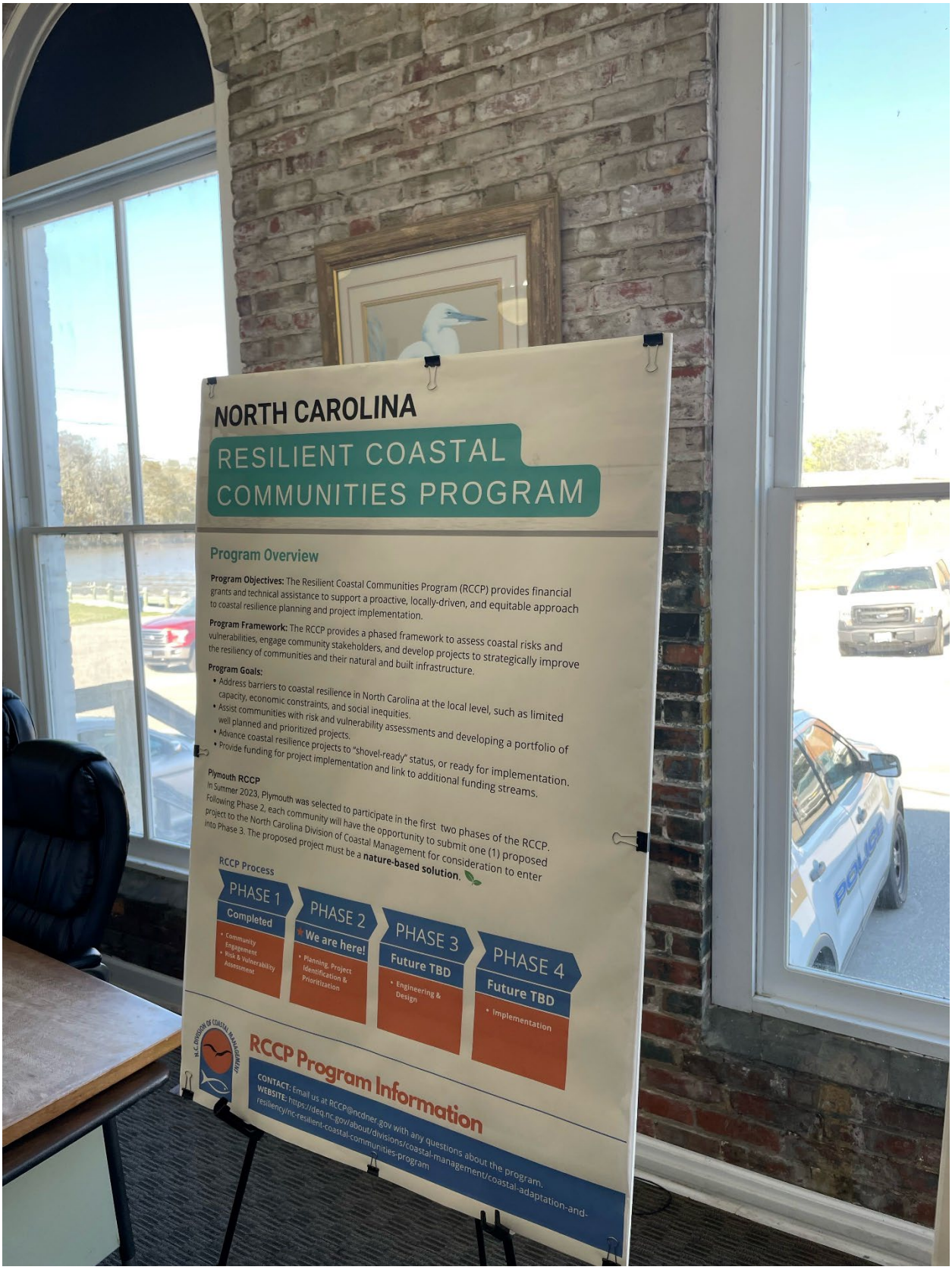
Phase 2 Open House Summary



North Carolina
RESILIENT COASTAL COMMUNITIES PROGRAM

PLYMOUTH

Phase 2 Open House Summary



North Carolina
RESILIENT
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PLYMOUTH

Phase 2 Open House Summary

Appendix C

Risk and Vulnerability Assessment Materials

Critical Assets

Emergency Management

- Washington County Emergency Operations Center
  116 Adams St.
  Plymouth, NC 27962

Law Enforcement

- Plymouth Police Department
  132 E Water St.
  Plymouth, NC 27962
- Washington County Sheriff's Office
  Located in Washington County Courthouse
  120 Adams St.
  Plymouth, NC 27962

Fire and EMS Stations

- Plymouth Volunteer Fire Department
  775 US Hwy 64
  Plymouth, NC 27962
- Washington County EMS
  128 E Water St.
  Plymouth, NC 27962

911 Dispatch

- Washington County Communications Center
  Located in Washington County Courthouse
  120 Adams St.
  Plymouth, NC 27962

Government Services

- Plymouth Town Hall
  124 E Water St.
  Plymouth, NC 27962
- Plymouth Public Works
  Andrew Jackson Ave.
  Plymouth, NC 27962
- Plymouth Housing Authority
  306 W Water St.
  Plymouth, NC 27962

- Washington County Travel and Tourism Authority
  111 W Water St.
  Plymouth, NC 27962
- Washington County Social Services
  209 E Main St.
  Plymouth, NC 27962
- Washington County Courthouse
  120 Adams St.
  Plymouth, NC 27962
- Washington County Government Offices
  116 Adams St.
  Plymouth, NC 27962
- US Post Office
  113 W Main St.
  Plymouth, NC 27962

Food

- Food Lion
  824 US-64
  Plymouth, NC 27962
- Piggly Wiggly
  444 US-64
  Plymouth, NC 27962
- Plymouth Food Pantry
  811 Washington St.
  Plymouth, NC 27962

Water/Wastewater

- Water service is provided by the town.
  - See water system map provided by public works.
  - The town is responsible for the operation and maintenance of the town's water treatment plant, six production wells, two elevated storage tanks and one ground storage tank.
  - Plymouth Water Treatment Plant
    809 Washington St.
    Plymouth, NC 27962
- Sewer service is provided by the town.
  - See sewer system map provided by public works.
  - The town uses a public sewer system (pump stations) and wastewater is treated in a single, centralized location.

- Plymouth Wastewater Treatment Plant
  Gage Ln.
  Plymouth, NC 27962

Electric Power Grid

- Electric service provided by Dominion Energy and Tideland Electric Membership Cooperative (EMC).

Propane Suppliers

- Tidewater Energy
  640 US-64
  Plymouth, NC 27962
- DS Swain Gas Company
  685 NC-32
  Plymouth, NC 27962

Transportation

- Road network (Washington County data)
  - US-64 is a NCDOT designated essential coastal evacuation route.
  - US-64 is a NCDOT designated Strategic Transportation Corridor (M)
- Bridges (NCDOT data)
  - 5 bridges maintained by NCDOT in Plymouth's jurisdiction.
- Rail (NCDOT data)
  - CSX operates a rail line bisecting Plymouth from east to west which runs along the north side of US-64.
  - The Carolina Coastal Railway operates a rail line running from north to south which bisects the western portion of the town's jurisdiction.
- Ferry terminals
  - No ferry terminals in town limits or ETJ.
- Public docks
  - CAMA public access docks along waterfront behind downtown buildings.
- Airports/Airfields
  - Plymouth Municipal Airport (PMZ) is a county owned airport serving commercial and private flights only. The Washington County Emergency Operations Plan lists the Plymouth Municipal Airport as a designated County Receiving and Distribution Center (CDRC).
  - Plymouth Municipal Airport (approximately one mile outside Plymouth's jurisdiction)
    1069 Plymouth Airport Rd.
    Plymouth, NC 27962

- Public transportation
    - Riverlight Transit
      Located in Washington County Social Services building
      209 E Main St.
      Plymouth, NC 27962

Medical

- Plymouth Family Care
  983 US-64
  Plymouth, NC 27962
- Plymouth Primary Care
  795 US-64
  Plymouth, NC 27962
- Agape Health Services
  115 Adams St.
  Plymouth, NC 27962
- Washington Regional Medical Center Hospital
  958 US-64
  Plymouth, NC 27962
- Martin-Tyrell-Washington District Health Dept. (located approximately 0.5 miles outside of Plymouth's jurisdiction)
  198 NC-45
  Plymouth, NC 27962
- Walgreens Pharmacy
  11 US-64
  Plymouth, NC 27962
- O'Neal's Drug Store & Inner Banks Doctor's Office
  454 US-64
  Plymouth, NC 27962
- Roanoke Therapy Services (located approximately 500 ft. outside of Plymouth's jurisdiction)
  2756 US-64
  Plymouth, NC 27962

Schools

- Washington County High School (will close after current school year)
  800 E Main St.
  Plymouth, NC 27962
- Future Washington County K-12 School Complex (located approximately 0.5 miles outside of Plymouth's jurisdiction)
  3117 US-64
  Plymouth, NC 27962

Libraries

- Washington County Library
  201 E 3rd St.
  Plymouth, NC 27962

Community Buildings and Museums

- Port o' Plymouth Museum
  302 E Water St.
  Plymouth, NC 27962
- Bear-o-logy Museum and God's Creation Wildlife Museum
  111 W Water St.
  Plymouth, NC 27962
- Roanoke River Lighthouse and Maritime Museum
  206 W Water St.
  Plymouth, NC 27962

Affordable Housing

- Plymouth Housing Authority (198 total units)
  Main St./Albemarle Dr./Commodore Dr./Somerset Dr./Crescent Dr. Neighborhood (114 units) and
  Southfield Dr./Daly Ct./Clark Ct./Nichols Ct. Neighborhood (52 units)
  and
  W Water St. Elderly Housing Complex (32 units)
  Plymouth, NC 27962
- See "Affordable Housing" map for approximate boundaries of other affordable neighborhoods.

Downtown Commercial District

- Plymouth Downtown Commercial District
  Water St. from Monroe St. to Adams St.
  Washington St. from Water St. to Main St.
  Plymouth, NC 27962

Highway Commercial District

- Plymouth Highway Commercial District
  US Highway 64
  Plymouth, NC 27962

Natural Infrastructure

Parks/Public Land

- Bulkhead Park (Behind Police Department at Gazebo)
  - 1.0 acres
- William Flower's Waterfront Park (Public Open Space around the Port o' Plymouth Museum, 302 E Water St.)
  - 3.3 acres
- Brickhouse Landing Park (Water St. downtown)
  - 0.2 acres
- Pete Bell Memorial Park (Corner of Adams and Fourth Street)
  - 0.3 acres
- Plumbee Park (Main Street past the High School)
  - 2.4 acres
- Public Open Space around the Roanoke River Lighthouse
  - 2.8 acres
- Melvin Cordon Park (Corner of Main and Monroe Streets)
  - 0.1 acre
- Wilson Street Ball Field
  - 2.0 acres
- Bear Track Landing (E Main St. on Conaby Creek)
  - 5.1 acres
- Adams Street Gym and Basketball Courts (603 Adams St., former school site)
  - 2.4 acres
- Washington Street Football Field (former school site)
  - 1.9 acres
- A. Lloyd Owens Sr. Memorial Park
  - 0.5 acres
- Nature Trail
  - 0.3 linear miles
  - There is a 0.3 mile walking trail available in Plymouth which begins at the Port O' Plymouth Museum on Water Street and runs near the Roanoke River on an abandoned rail bed. The trail ends on East Main Street near residential neighborhoods. In addition to recreation benefits, the trail offers an alternative pedestrian transportation route to the downtown district.

Public Boat Ramps

- NC Wildlife Commission Water Street Landing Boating Access Area
  205 W Water St.
  Plymouth, NC 27962
- NC Wildlife Commission Conaby Creek Boating Access Area (located approximately 1.1 miles outside the town's jurisdiction)
  161 Conaby Ln.
  Plymouth, NC 27962
- NC Wildlife Commission NC-42 Bridge Boating Access Area (located approximately 1.7 miles outside the town's jurisdiction)
  NC-42
  Plymouth, NC 27962
- Town of Plymouth Public Boat Ramp (next to Police Department)
  132 E Water St.
  Plymouth, NC 27962
- Bear Track Landing Kayak Launch
  1006 E Main St.
  Plymouth, NC 27962
- Roanoke River Lighthouse Kayak Launch
  215 W Water St.
  Plymouth, NC 27962

Wetlands

- Wetlands (NC CREWS data)
  - 1,503.9 acres identified in Plymouth's jurisdiction.

Forests

- Working forest lands (NC Natural Heritage Program data)
- Rural forest landscape (NC Natural Heritage Program data)
- Urban forest landscape (NC Natural Heritage Program data)
  - The majority of the town is identified as priority for conserving urban forests.

Floodplains

- Floodways (FEMA data)
  - 355.6 acres identified in Plymouth's jurisdiction.
- 100-year floodplain (FEMA data)
  - 1,625.1 acres identified in Plymouth's jurisdiction.
- 500-year floodplain (FEMA data)
  - 543.3 acres identified in Plymouth's jurisdiction.

Surface Water Hydrology

- Rivers and streams (NC DEQ data)
  - Roanoke River, Middle River, Conaby Creek, Welch Creek and their tributaries
- High Quality Waters (NC DEQ data)
  - None identified in the Plymouth area.
- 303(d) listed (impaired) waters (EPA data)
  - None identified in the Plymouth area.
- Fishery Nursery Areas (NC DEQ data)
  - Primary and secondary
  - None identified in the Plymouth area.

Natural Areas

- Managed Areas (NC Natural Heritage Program data)
  - Includes nature preserves, registered heritage areas, conservation easements, other protected areas, and lands under federal ownership, state ownership, or local government ownership
    - 27.7 acre wooded waterfront parcel adjacent to Port o' Plymouth Museum public open space.
- Natural Areas (NC Natural Heritage Program data)
  - Sites that are of special biodiversity significance. A natural area's significance may be due to the presence of rare species, exemplary natural communities, or important animal assemblages, referred to collectively as "elements" of biodiversity.
    - 143.6 total acres including Conaby Swamp Natural Area (adjacent to Conaby Creek, crossing over Rankin Lane, 95.2 acres), Roanoke River Delta – Conaby Creek (near River Road, 41.6 acres), and Lower Roanoke River Aquatic Habitat (buffer directly adjacent to river, 6.9 acres).

Biodiversity and Wildlife Habitat Assessment

- Biodiversity and Wildlife Habitat Assessment (NC Natural Heritage Program data)
  - The Biodiversity and Wildlife Habitat Assessment was developed by the N.C. Natural Heritage Program. It provides information about the relative priority of aquatic and terrestrial habitat, landscape function and connectivity.

ASSET NAME	EXPOSURE SCORE 0-3	SENSITIVITY SCORE 0-3	ADAPTATION SCORE 0-3	VULNERABLITY SCORE 0-6
Asset Name	*0 = no exposure* *1 = low* *2 = medium* *3 = high*	*0 = no sensitivity* *1 = low* *2 = medium* *3 = high*	*0 = no adaptaton* *1 = low* *2 = medium* *3 = high*	*0-2 = low* *3-4 = medium* *5-6 = high*
Emergency Management				
Washington County Emergency Managment	2	3	1	Med
Law Enforcement				
Plymouth Police Dept.	3	3	1	High
Washington County Sheriff's Office	2	2	2	Low
OVERALL	**3**	**3**	**2**	**Med**
Fire and EMS Stations				
Plymouth Volunteer Fire Dept.	2	3	1	Med
Washington County EMS	3	3	2	Med
OVERALL	**3**	**3**	**2**	**Med**
911 Dispatch				
Washington County Communications Center	2	3	1	Med
Government Services				
Plymouth Town Hall	3	2	2	Med
US Post Office	2	3	1	Med
Washington County Government Offices	2	3	1	Med
Washington County Courthouse	2	2	1	Med
Washington County Social Services	2	3	1	Med
Plymouth Public Works	2	3	1	Med
Plymouth Housing Authority	3	2	2	Med
Washington County Travel and Tourism Authority	3	1	3	Low
OVERALL	**3**	**3**	**2**	**Med**
Food				
Food Lion	2	3	2	Med
Piggly Wiggly	2	3	2	Med
Plymouth Food Pantry	2	3	2	Med
OVERALL	**2**	**3**	**2**	**Med**
Propane Suppliers				
Tidewater Energy	2	3	1	Med
DS Swain Gas Company	2	3	1	Med
OVERALL	**2**	**3**	**1**	**Med**

ASSET NAME	EXPOSURE SCORE	SENSITIVITY SCORE	ADAPTATION SCORE	VULNERABLITY SCORE
Medical				
O'Neal's Drug Store & Inner Banks Doctor's Office	2	2	2	Low
Walgreens	2	2	2	Low
Agape Health Services	2	2	2	Low
Plymouth Primary Care	2	3	1	Med
Plymouth Family Care	2	3	1	Med
Washington Regional Medical Center Hospital	2	3	1	Med
Roanoke Therapy Services	2	2	2	Low
OVERALL	**2**	**3**	**2**	**Med**
Schools				
Washington County High School (due to close in fall 2024)	2	3	1	Med
Libraries				
Washington County Library	2	1	1	Low
Community Buildings and Museums				
Roanoke River Lighthouse and Maritime Museum	3	1	1	Med
Bearology Museum and God's Creation Wildlife Museum	2	1	1	Low
Port o' Plymouth Museum	3	1	1	Med
OVERALL	**3**	**1**	**1**	**Med**
Low-Income Housing				
Gavin Rd, Jackson Heights	3	3	1	High
Albermale and Somerset DR	3	3	1	High
Downtown (Water to US 64)	2	3	1	Med
Roosevelt and Washington	3	3	1	High
West Ave., Pine Forest area.	3	3	1	High
Southfield Dr	2	3	1	Med
Sandhill, Cambell, Wilson, Pine	2	3	1	Med
OVERALL	**3**	**3**	**1**	**High**
Low-Income Housing				
Water St. Senior Housing	3	3	1	High
Albermale and Somerset DR	3	3	1	High
Southfield Dr	2	3	1	Med
OVERALL	**3**	**3**	**1**	**High**
Downtown Commercial District				
Downtown Commercial District	3	3	1	High
64 Business District	3	3	1	High

ASSET NAME	EXPOSURE SCORE	SENSITIVITY SCORE	ADAPTATION SCORE	VULNERABLITY SCORE
Water/Wastewater				
Water				
Plymouth Water Treatment Plant	3	3	1	High
Lift Stations	3	3	1	High
Water System	3	2	1	Med
OVERALL	**3**	**3**	**1**	**High**
Wastewater				
Plymouth Wastewater Treatment Plant	4	3	1	High
Wastewater System	3	2	1	Med
OVERALL	**3**	**3**	**1**	**High**
Transportation				
Bridges				
NC 45 over Conaby Creek	2	3	1	Med
Garrett Island Rd over UT	2	3	1	Med
Old Roper Rd over Conaby Creek	2	3	1	Med
East Main St. over Conaby Creek	3	3	1	High
Rankin Ln. over Conaby Creek	3	3	1	High
OVERALL	**3**	**3**	**1**	**High**
Rail				
CSX Transportation	3	1	2	Low
Carolina Coastal Railway	2	1	2	Low
OVERALL	**3**	**1**	**2**	**Low**
Transportation				
Most vulnerable Roads				
ADAMS ST	3	3	1	High
AMES TOWNE CTR	3	3	1	High
Bradley Rd.	3	3	1	High
CANAL ST	3	3	1	High
E JOHNSON LN	3	3	1	High
E MAIN ST	3	3	1	High
FREEMAN CT	3	3	1	High
GARRETT ISLAND RD	3	3	1	High
GUAGE LN	3	3	1	High
GAVIN RD.	3	3	1	High
GENERAL PETTIGREW DR	3	3	1	High
GOLF RD.	3	3	1	High
HAZEL ST	3	3	1	High
HILLY CIR	3	3	1	High
IDA ST	3	3	1	High
JOHNSON CT	3	3	1	High
MADISON ST	3	3	1	High
MONROE ST	3	3	1	High
MORATOC LN	3	3	1	High
NC HWY 149	3	3	1	High

ASSET NAME	EXPOSURE SCORE	SENSITIVITY SCORE	ADAPTATION SCORE	VULNERABLITY SCORE
Transportation				
Most vulnerable Roads				
NC HWY 32 S	3	3	1	High
NC HWY 45 S	3	3	1	High
NORTH RIVER RD	3	3	1	High
NORTHEAST DR	3	3	1	High
OLD ROPER RD	3	3	1	High
PEMBROKE DR.	3	3	1	High
PETTIFORD CT	3	3	1	High
QUAIL DR	3	3	1	High
RANKIN LN	3	3	1	High
ROANOKE AVE	3	3	1	High
ROBIN DR	3	3	1	High
SAMANTHA DR	3	3	1	High
SHELLY DR	3	3	1	High
SOUTH RIVER RD	3	3	1	High
TRUMAN AVE.	3	3	1	High
US HWY 64 EAST	3	3	1	High
W MAIN ST	3	3	1	High
W WATER ST	3	3	1	High
WASHINGTON ST	3	3	1	High
WEST AVE.	3	3	1	High
OVERALL (All Roads)	**3**	**2**	**1**	**Med**
Natural Resources				
Parks/Public Land				
Trail system	3	3	2	Med
Highly vulnerable Parks				
Bear Track Landing	3	3	2	Med
Public Open Space around Roanoke River Lighthouse	3	2	1	Med
Public Open Space around Roanoke River Lighthouse	3	2	1	Med
William Flower's Waterfront Park	3	2	1	Med
Bulkhead Park	3	2	1	Med
Bear Track Landing	4	3	2	High
OVERALL	**3**	**2**	**2**	**Med**

ASSET NAME	EXPOSURE SCORE	SENSITIVITY SCORE	ADAPTATION SCORE	VULNERABLITY SCORE
Public Boat Ramps				
Town of Plymouth Public Boat Ramp	3	2	2	Med
NC Wildlife Water Street Landing Boating Access Area	3	2	2	Med
Roanoke River Lighthouse Kayak Launch	3	2	2	Med
Bear Track Landing Kayak Launch	3	2	2	Med
OVERALL	**3**	**2**	**2**	**Med**
Wetlands				
Cleared Pine Flat	3	3	1	High
Cutover Headwater Swamp	3	3	1	High
Cutover Pine Flat	3	3	1	High
Cleared Bottomland Hardwood	2	3	1	Med
Cleared Depressional Swamp Forest	2	3	1	Med
Cleared Hardwood Flat	2	3	1	Med
Cleared Headwater Swamp	2	3	1	Med
Cleared Riverene Swamp Forest	2	3	1	Med
Cutover Bottomland Hardwood	2	3	1	Med
Wetlands				
Cutover Depressional Swamp Forest	2	3	1	Med
Cutover Hardwood Flat	2	3	1	Med
Cutover Riverene Swamp Forest	2	3	1	Med
Depressional Swamp Forest	3	3	2	Med
Hardwood Flat	3	2	2	Med
Headwater Swamp	3	2	2	Med
Human Impacted	3	2	2	Med
Managed Pineland	3	2	2	Med
Riverine Swamp Forest	4	1	3	Low
Bottomland Hardwood	3	1	3	Low
OVERALL	**3**	**3**	**2**	**Med**
Streams				
Roanoke River (Atlantic Stergeon record found on stream)	3	3	1	High
Conaby Creek	3	3	1	High
Tributaries to Roanoke River	3	2	2	Med
OVERALL	**3**	**3**	**1**	**High**

ASSET NAME	EXPOSURE SCORE	SENSITIVITY SCORE	ADAPTATION SCORE	VULNERABLITY SCORE
Natural Areas				
ROA/Lower Roanoke River Aquatic Habitat	3	2	2	Med
Roanoke River Delta--Conaby Creek	3	3	2	Med
Conaby Swamp Natural Area	3	2	2	Med
OVERALL	**3**	**3**	**2**	**Med**
Managed Areas				
NC Land and Water Fund Conservation Agreement	3	3	2	Med

Assess Vulnerability

This assessment explores the vulnerability of critical assets, natural infrastructure, and social systems. Use your team's

Critical Asset & Natural Infrastructure Vulnerability

Vulnerability of critical assets and natural infrastructure to a hazard is a function of the exposure, sensitivity, and adaptive

Exposure refers to the probability of physical contact between an asset and a hazard.

Sensitivity is the degree to which an asset is impacted by a hazard.

Adaptive Capacity is the ability of an asset to change its characterisCcs or behavior in response to a hazard.

Vulnerability = Exposure + Sensitivity - Adaptive Capacity

North Carolina Hurricane Evacuation Routes

Designated Evacuation Route

CRIME CONTROL & PUBLIC SAFETY
NORTH CAROLINA
Emergency Management

NORTH CAROLINA RAILROAD COMPANY

Freight Routes

- North Carolina Railroad Company
  *Norfolk Southern Class I Freight Service
- Norfolk Southern
- CSX Transportation
- Various Shortlines

Passenger Routes

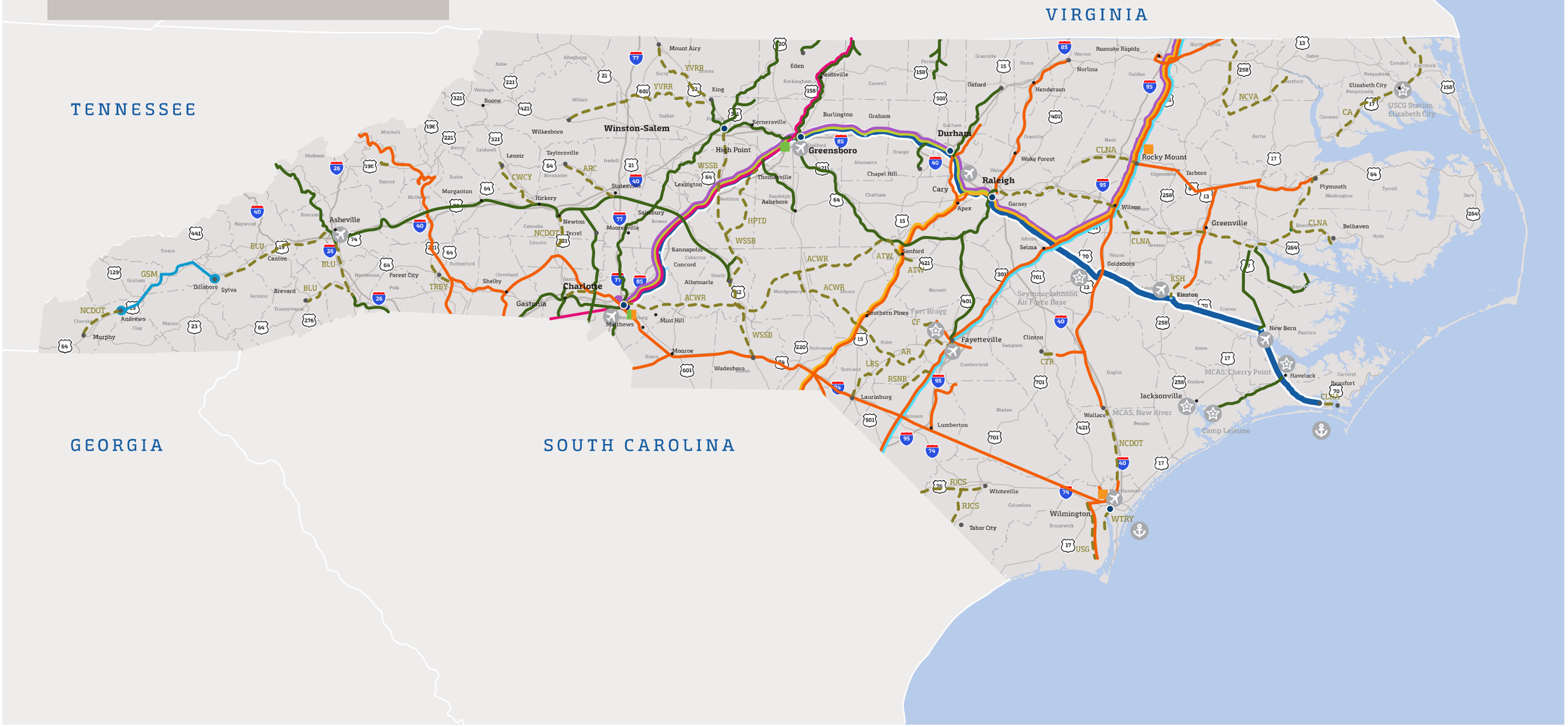
- Carolinian
- Crescent
- Piedmont
- Palmetto/Silver Meteor
- Silver Star
- Great Smoky Mountains Railroad

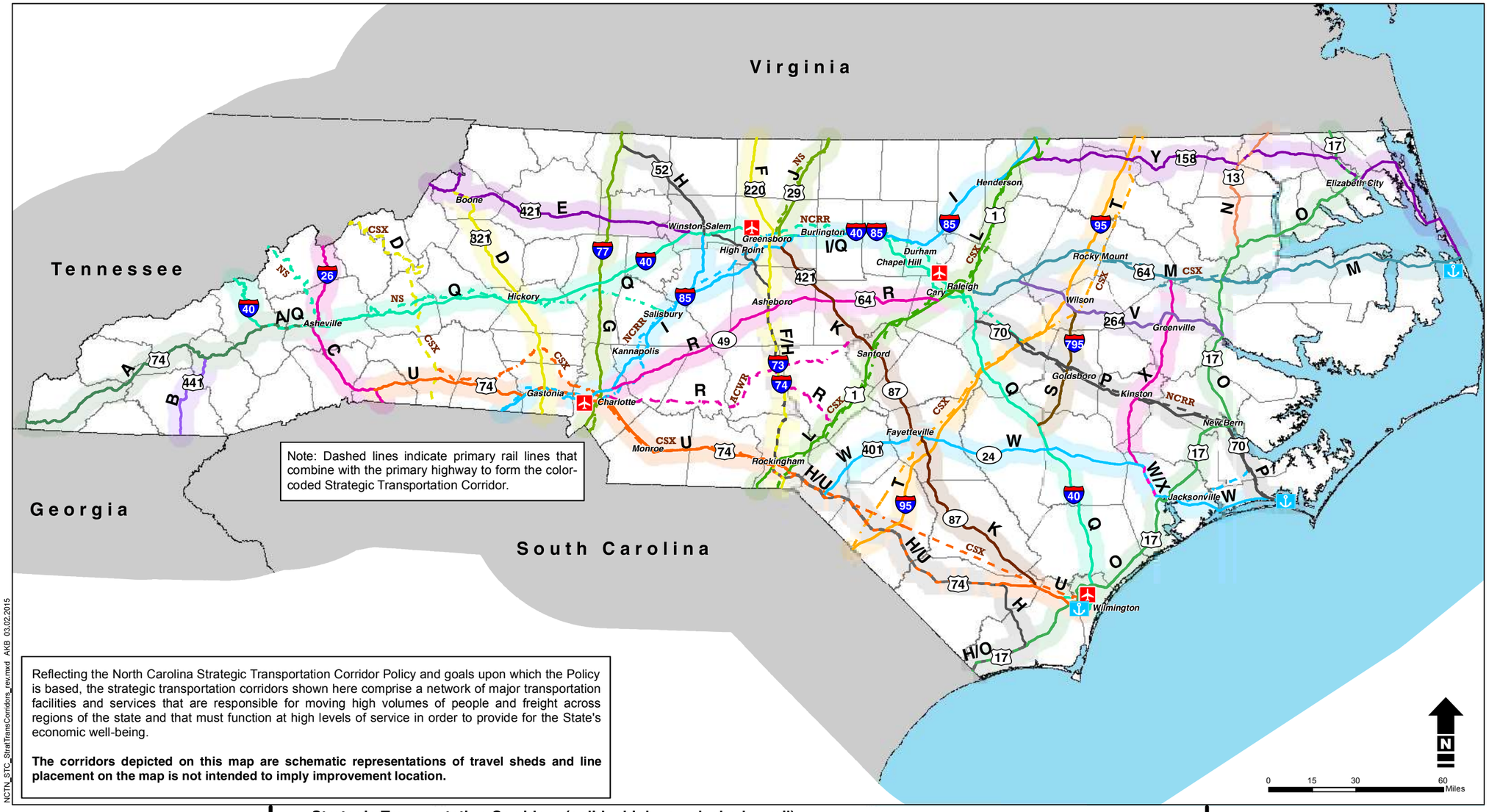
Intermodal Terminals

- Norfolk Southern
- CSX Transportation

Logistical Centers

- Military Bases
- Seaports
- Airports





NCTN_STC_StratTransCorridors_rev.mxd AKB 03.02.2015

NORTH CAROLINA TRANSPORTATION NETWORK

MARCH 2015

Source: NCOneMap, NCDOT GIS, ESRI

Legend

Strategic Transportation Corridors (solid = highway; dashed = rail)

- A (US74W)
- B (US441)
- C (I26/US23)
- D (US321/CSX)
- E (US421W)
- F (I73/Future I73)
- G (I77)
- H (I74/Future I74)
- I (I85)
- J (US29N/NS)
- K (US421/NC87)
- L (US1)
- M (I495/US64E)
- N (US13)
- O (US17)
- P (US70E/NCRR)
- Q (I40)
- R (US64W/NC49)
- S (I795/US117)
- T (I95/CSX)
- U (US74W/US74E)
- V (US264E)
- W (US401/NC24/US258)
- X (US258/NC11/US13)
- Y (US158)

- NC Seaports
- NC Int'l or Major Freight Airports

NORTH CAROLINA STRATEGIC TRANSPORTATION CORRIDORS NETWORK

Plymouth, NC Resilient Coastal Communities Program

Affordable Housing

Legend

- Railroad
- Public Housing
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Other Affordable Housing Areas
- Rivers

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Critical Assets

Legend

- 911 Dispatch
- Bridges
- Community Buildings and Museums
- Government Services
- Emergency Management
- Fire and EMS
- Food
- Libraries
- Medical
- Police
- Propane Suppliers
- Public Docks
- Schools
- Wastewater Treatment Plant
- Water Treatment Plant
- Downtown Commercial District
- Highway 64 Business District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

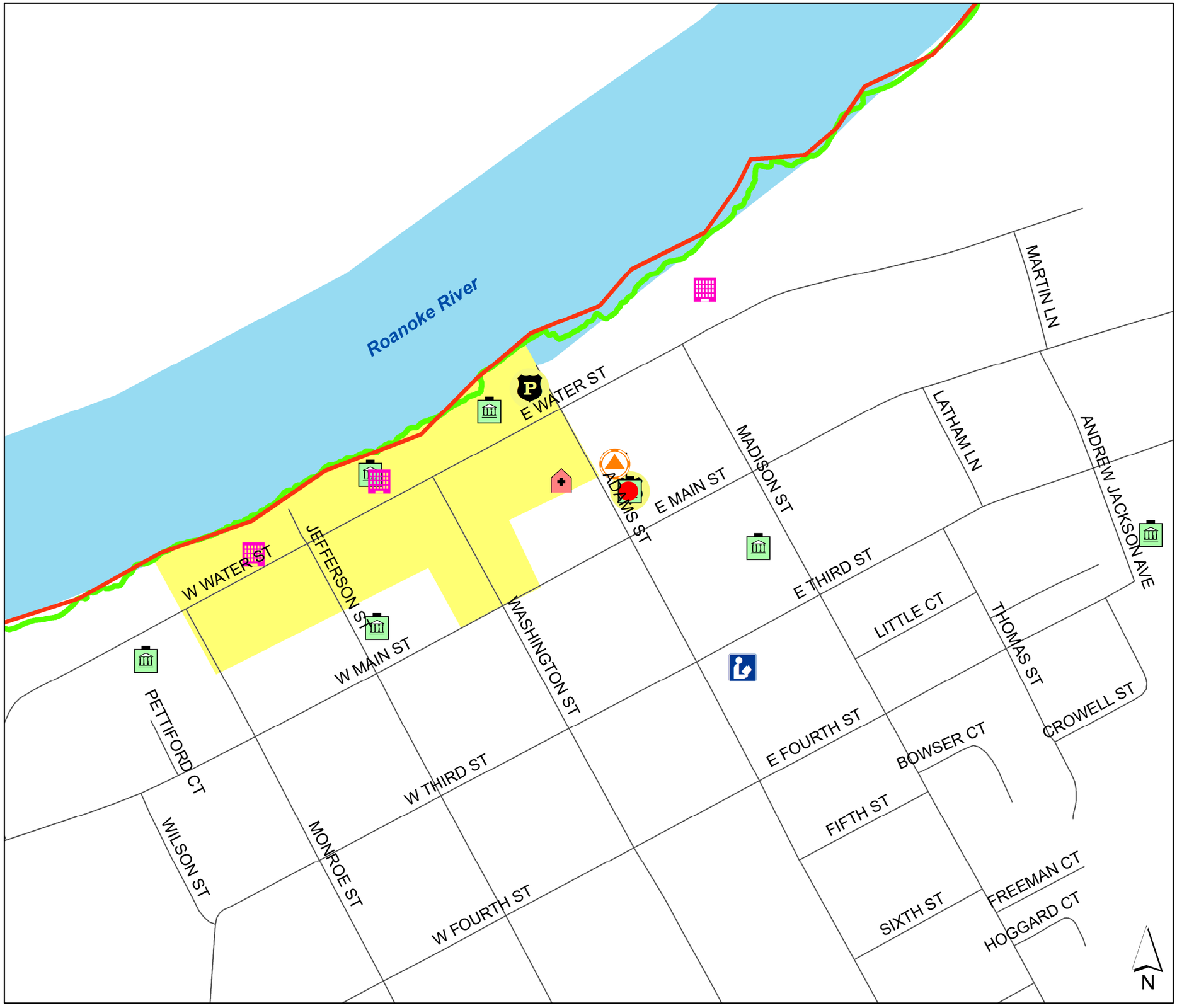
Middle River
Roanoke River
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
GENERAL PETTIGREW DR
HAMPTON DR
ROANOKE AVE
N CRESCENT DR
ANGE RD
MACKEYS RD
GAVIN RD
BRADLEY RD
US HWY 64 EAST
E MAIN ST
E THIRD ST
QUAIL DR
ROBIN DR
BRICK MILL LN
ROXIE REESE RD
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
NC HWY 45 S
FAIRLANE RD
GARRETT ISLAND RD
OLD ROPER RD
NC HWY 32 S
ROOSEVELT AVE
GEE ST
WHITE OAK RD
LYNN LN
WATER ST
WASHINGTON ST
MADISON ST
JEFFERSON ST
MONROE ST
RANKIN LN
BRINKLEY AVE
ALDEN RD
GOLF RD
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
WILSON ST
CAMPBELL ST
SAND HILL RD
PARK AVE
CENTER AVE
PINE ST
US HWY 64 WEST
WILSON ST EXT
GLEAVES RD
JACKSON ST
LOCUST DR
COOL SPRINGS RD
NC HWY 149
LONG RIDGE RD
WELCOME DR

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Critical Assets
Downtown Inset



Legend

- 911 Dispatch
- Community Buildings and Museums
- Emergency Management
- Government Services
- Libraries
- Medical
- Police
- Downtown Commercial District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

0 0.035 0.07 0.105 0.14 Miles

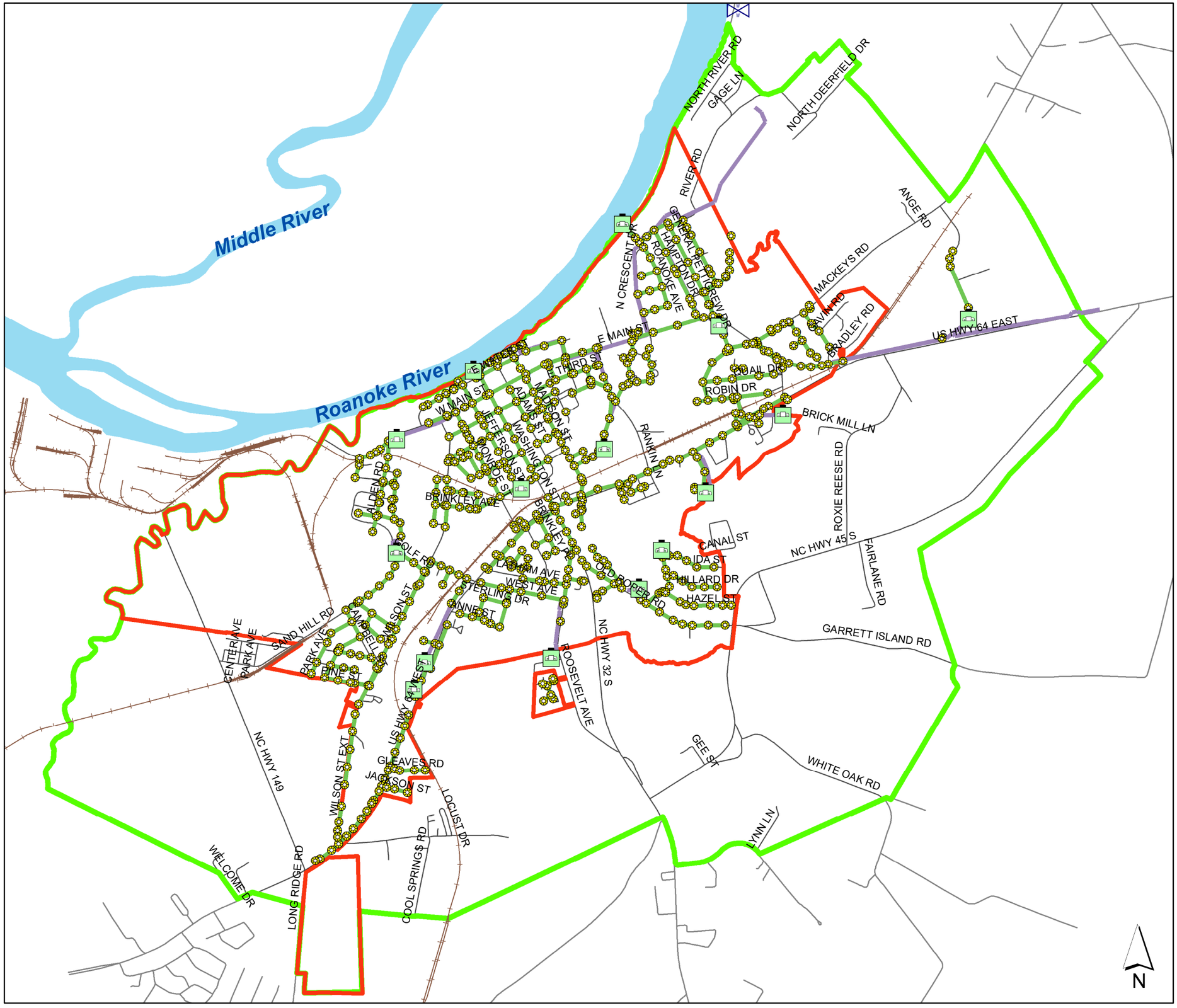
Plymouth, NC
Resilient Coastal Communities Program

Orthoimagery

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Sewer System



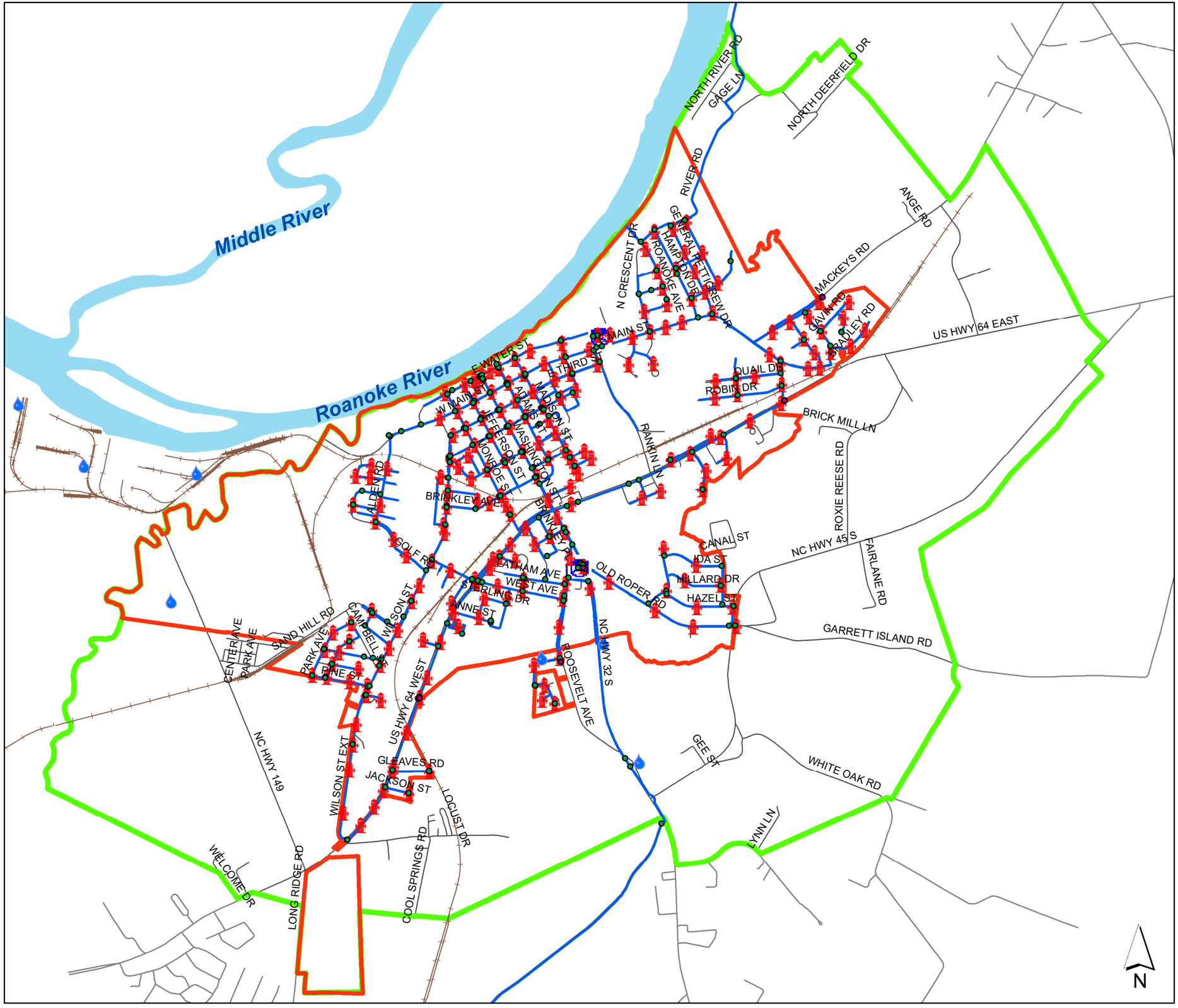
Legend

- Wastewater Treatment Plant
- Pump Stations
- Manholes
- Gravity Main
- Force Main
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Water System



Legend

- Master Meter
- Water Valves
- Fire Hydrants
- Elevated Water Storage Tanks
- Public Water Supply Wells
- Water Treatment Plant
- Water Pipes
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

0 0.25 0.5 0.75 1 Miles

Plymouth, NC Resilient Coastal Communities Program

Natural Infrastructure
Public Parks and
Open Spaces

Legend

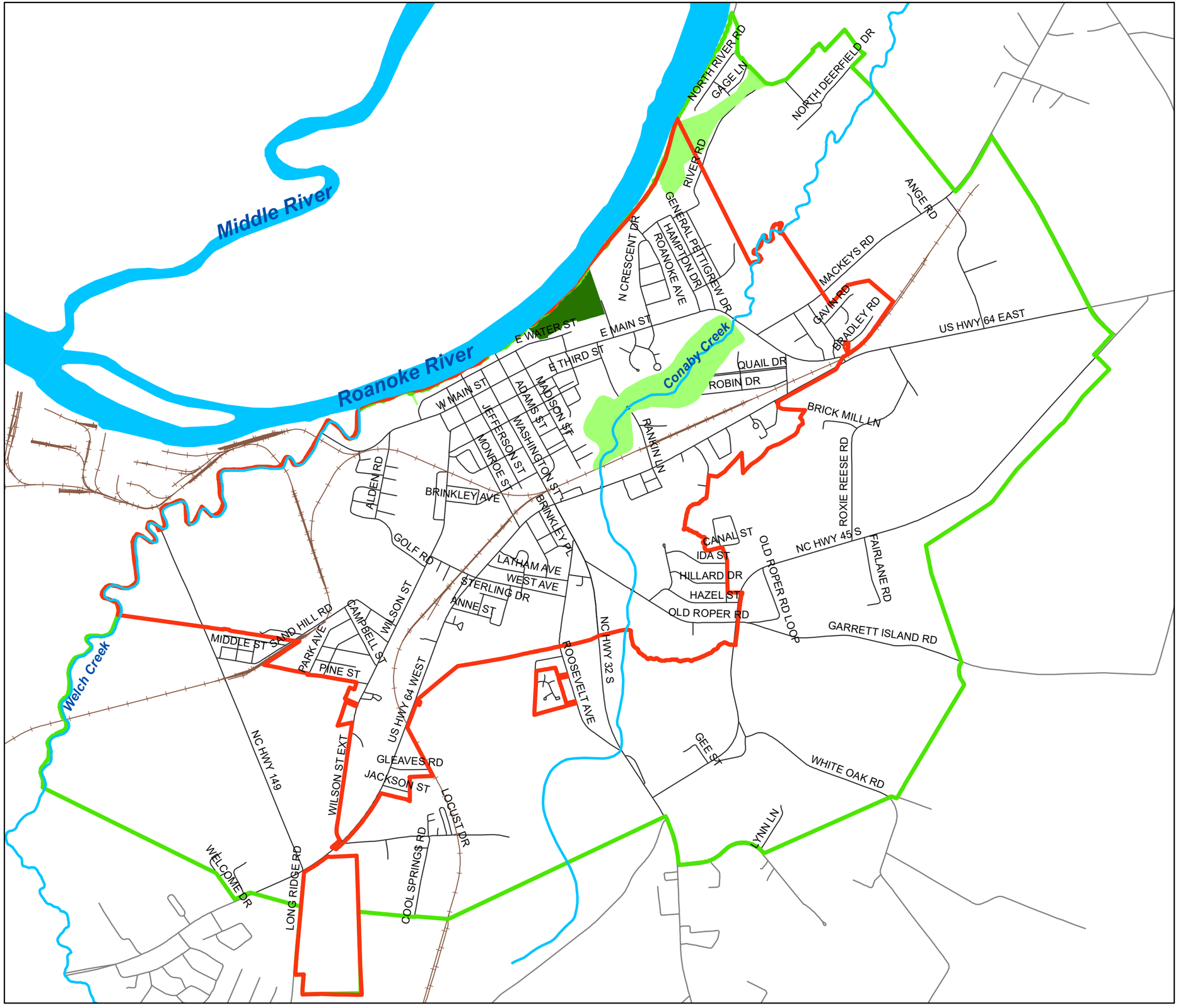
- Kayak Launches
- Public Boat Ramps
- Nature Trail
- Public Parks and Open Spaces
- Railroad
- Plymouth Roads
- Washington County Roads
- Rivers
- Creeks
- Town Limits
- ETJ

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC Resilient Coastal Communities Program

Natural Infrastructure Managed Areas and Natural Areas



Legend

- Surface Water
- Town Limits
- ETJ
- Managed Areas
- Natural Areas
- Railroad
- Plymouth Roads
- Washington County Roads

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Natural Infrastructure
Wetlands

Legend

- Surface Water
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Railroad

Wetland Type

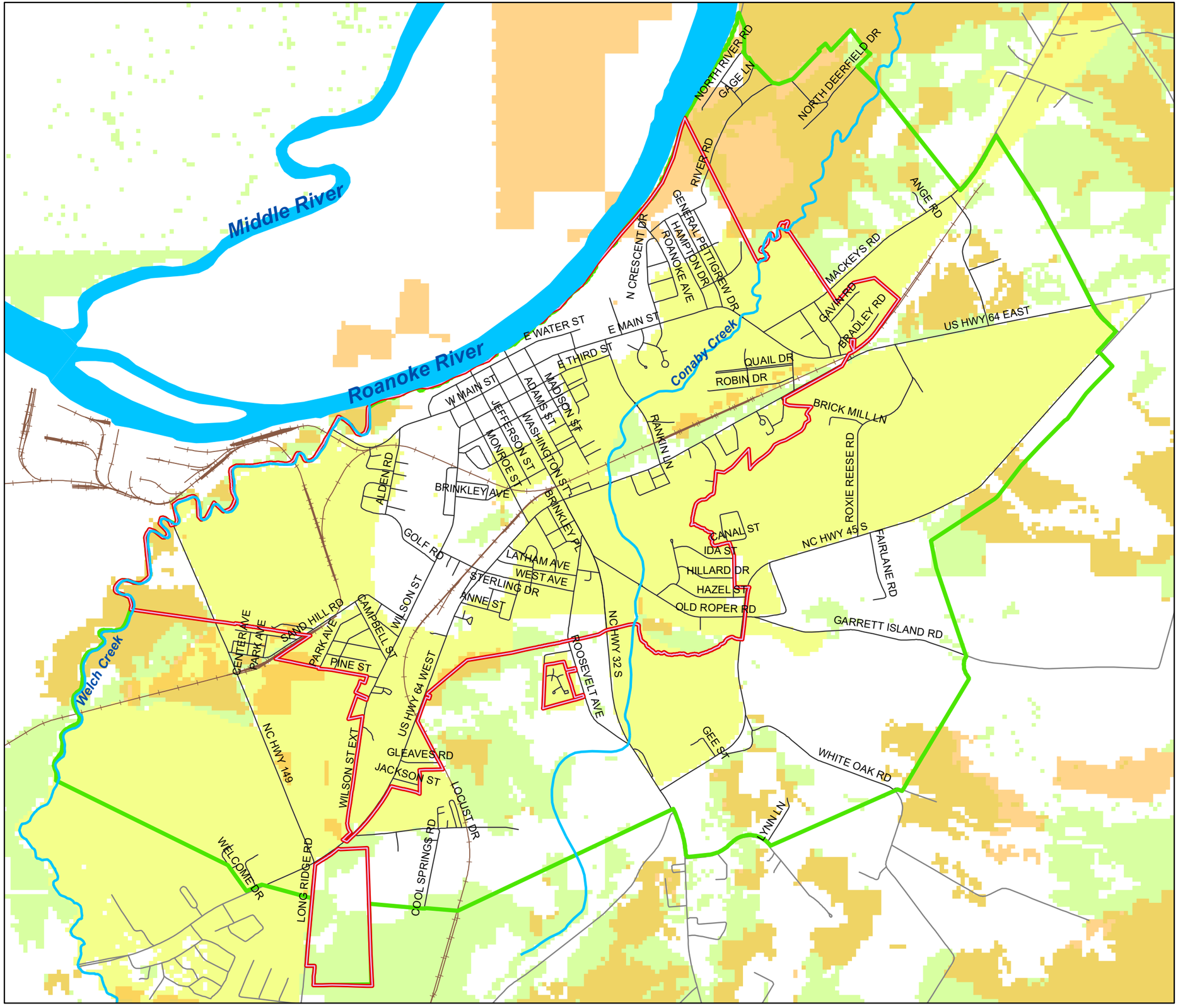
- Bottomland Hardwood or Riverine Swamp Forest
- Depressional Swamp Forest
- Hardwood Flat
- Managed Pinelands
- Headwater Swamps
- Human Impacted Wetlands
- Cleared Wetlands
- Cutover Wetlands

0 0.25 0.5 0.75 1 Miles

N

Plymouth, NC
Resilient Coastal Communities Program

Natural Infrastructure
Priority Forest Lands



Legend

- Priority Working Forests
- Priority Urban Forests
- Priority Rural Forests
- Plymouth Roads
- Washington County Roads
- Railroad
- Surface Water
- Town Limits
- ETJ

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Natural Infrastructure
FEMA Floodplain

Legend

- Floodway
- 100-year Floodplain
- 500-year Floodplain
- Surface Water
- Plymouth Roads
- Washington County Roads
- Railroad
- Town Limits
- ETJ

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC Resilient Coastal Communities Program

Natural Infrastructure Biodiversity and Wildlife Habitat Assessment

Legend

- Surface Water
- Plymouth Roads
- Washington County Roads
- Railroad
- Town Limits
- ETJ

Biodiversity/Wildlife Habitat

Relative Conservation Value

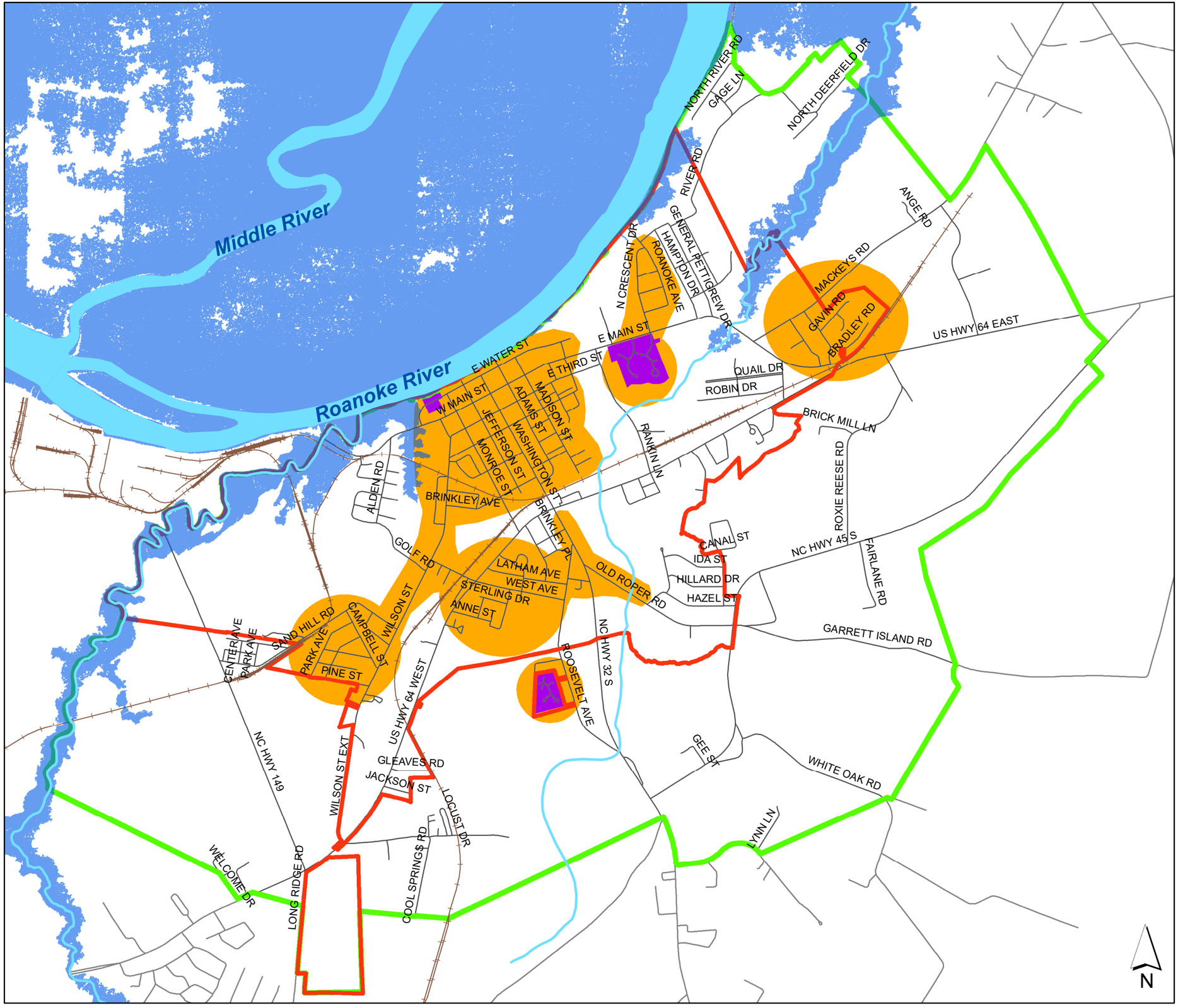
- 9-10 (Maximum)
- 8
- 7
- 6
- 5
- 2-4
- 1 (Moderate)
- 0 (Unrated)
- Impervious surface >20%

0 0.25 0.5 0.75 1 Miles

N

Plymouth, NC
Resilient Coastal Communities Program

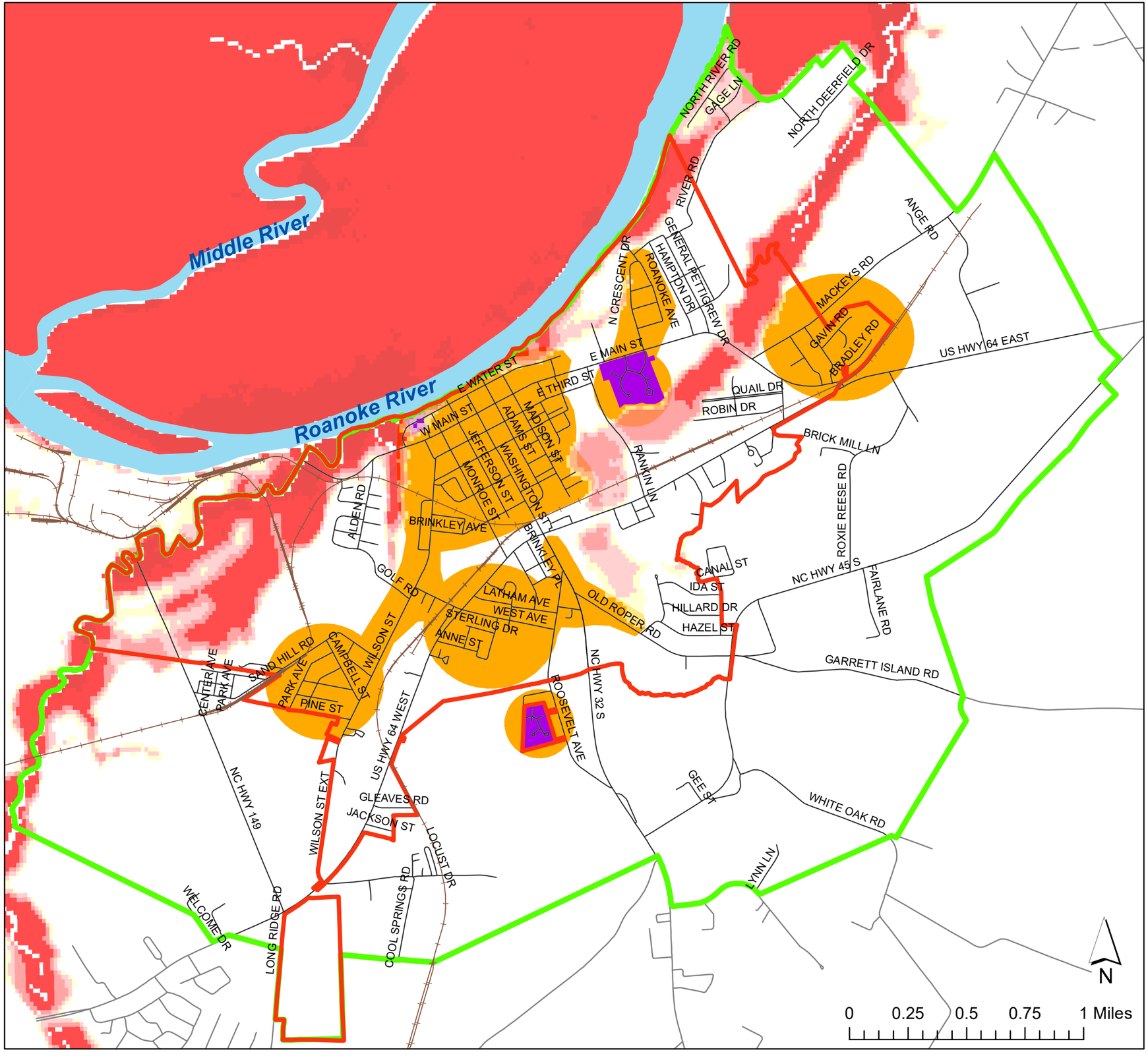
Affordable Housing
and 1 ft. Sea Level Rise
Scenario (30-year Projection)



Legend

- Rivers
- Creeks
- 1 ft. Sea Level Rise Scenario
- Public Housing
- Other Affordable Housing
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads

0 0.25 0.5 0.75 1 Miles



Plymouth, NC
Resilient Coastal Communities Program
Affordable Housing and Cat. 1 Hurricane Potential Storm Surge

Legend

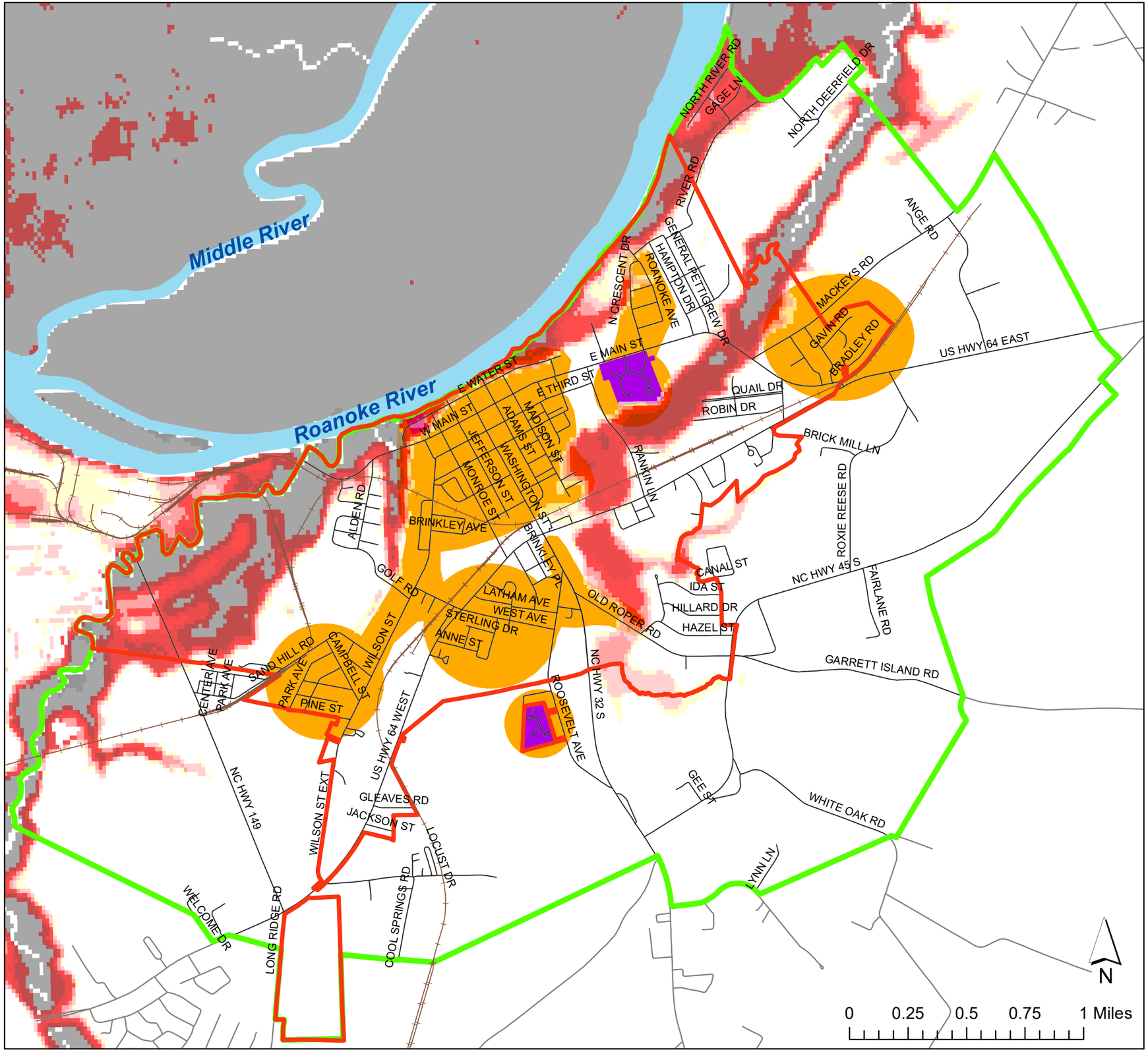
- Railroad
- Plymouth Roads
- Washington County Roads
- Rivers
- Town Limits
- ETJ
- Public Housing
- Other Affordable Housing Areas

Cat. 1 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.

Plymouth, NC
Resilient Coastal Communities Program
Affordable Housing and Cat. 2 Hurricane Potential Storm Surge



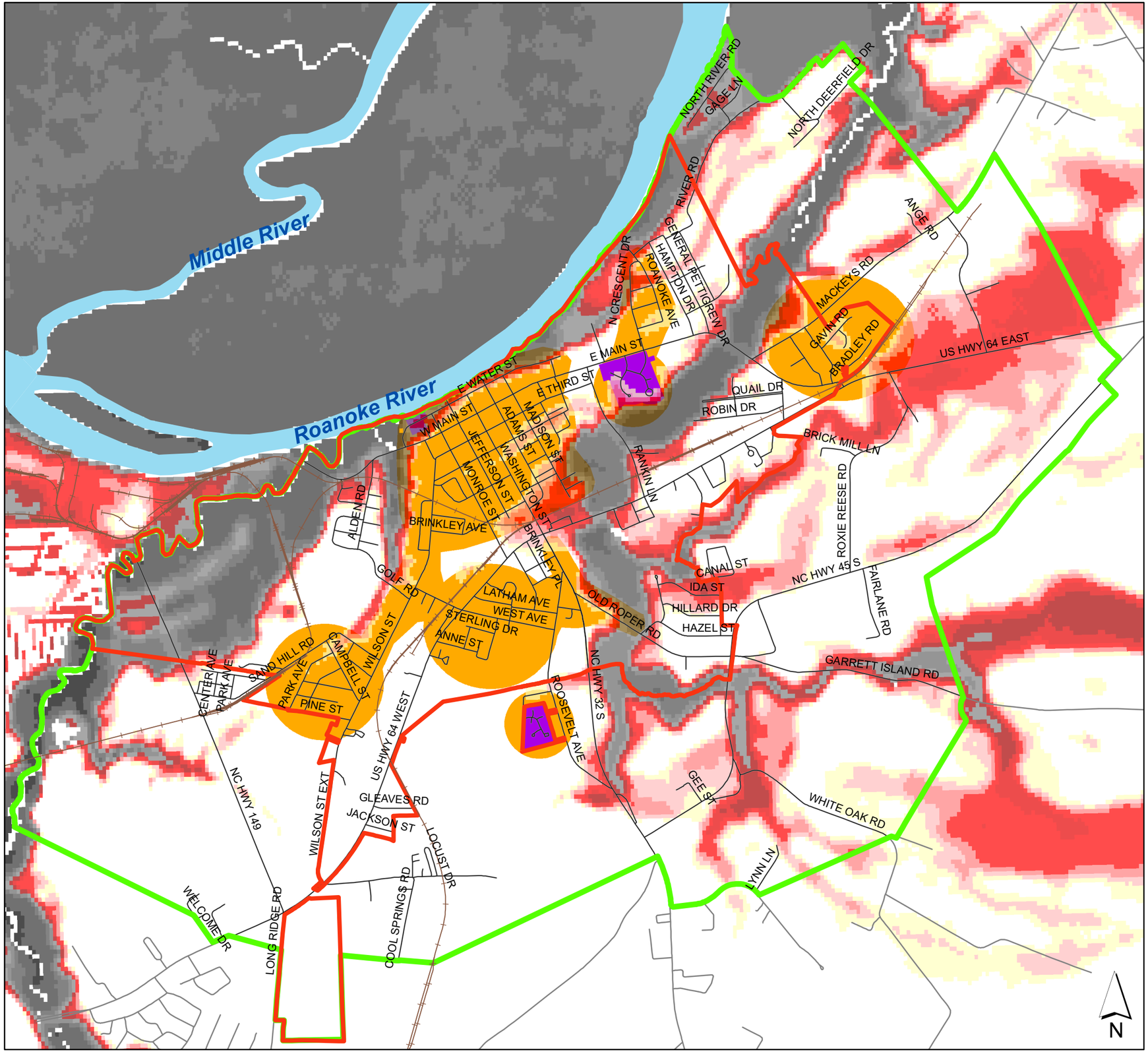
Legend

- Public Housing
- Other Affordable Housing
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Cat. 2 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.
- 5 to 6 ft.
- 6 to 7 ft.
- 7 to 8 ft.



Plymouth, NC
Resilient Coastal Communities Program
Affordable Housing and Cat. 3 Hurricane Potential Storm Surge

Legend

- Public Housing
- Other Affordable Housing Areas
- Railroad
- Plymouth Roads
- Washington County Roads
- Rivers
- Town Limits
- ETJ

Cat. 3 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.
- 5 to 6 ft.
- 6 to 7 ft.
- 7 to 8 ft.
- 8 to 9 ft.
- 9 to 10 ft.
- 10 to 11 ft.

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Affordable Housing and Floodplains

Middle River

Roanoke River

E WATER ST
W MAIN ST
E MAIN ST
E THIRD ST
QUAIL DR
ROBIN DR
BRICK MILL LN
RANKIN LN
ROXIE REESE RD
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
NC HWY 45 S
FAIRVIEW RD
ANGIE RD
MACKEYS RD
GAVIN RD
BRADLEY RD
US HWY 64 EAST
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
N CRESCENT DR
ROANOKE AVE
HAMPTON DR
GENERAL PETTIGREW DR
ALDEN RD
GOLF RD
BRINKLEY AVE
BRINKLEY PL
ADAMS ST
MADISON ST
JEFFERSON ST
MONROE ST
WASHINGTON ST
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
OLD ROPER RD
WILSON ST
CAMPBELL ST
SAND HILL RD
PARK AVE
CENTER AVE
PINE ST
US HWY 64 WEST
NC HWY 32 S
ROOSEVELT AVE
GEE ST
WHITE OAK RD
LYNN LN
GARRETT ISLAND RD
NC HWY 149
WILSON ST EXT
GLEAVES RD
JACKSON ST
LOCUST DR
COOL SPRINGS RD
LONG RIDGE RD
WELCOME DR

N

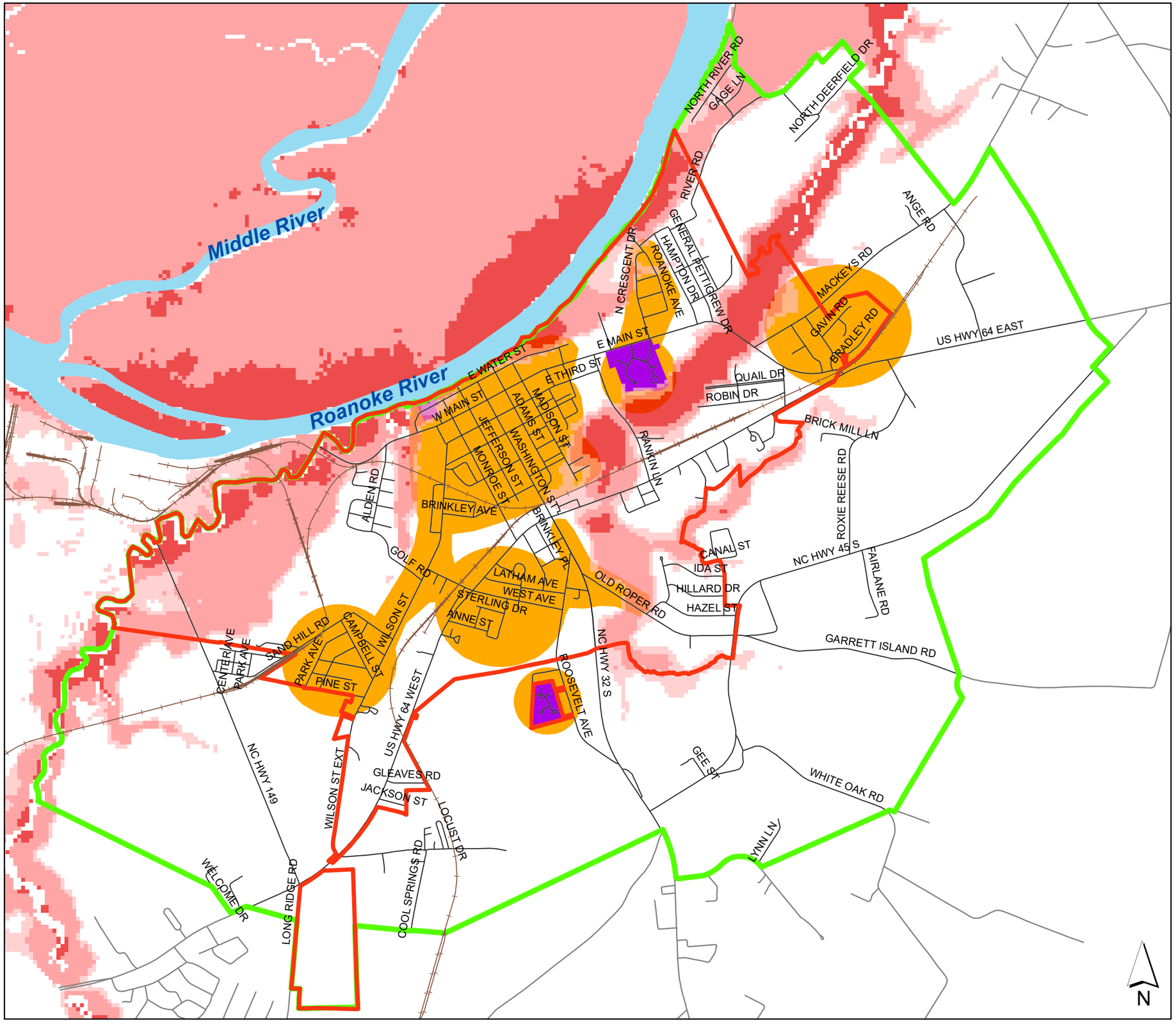
Legend

- 100-year Floodplain (1% annual chance flood)
- 500-year Floodplain (0.2% annual chance flood)
- Public Housing
- Other Affordable Housing Areas
- Railroad
- Plymouth Roads
- Washington County Roads
- Rivers
- Town Limits
- ETJ

0 0.25 0.5 0.75 1 Miles

Plymouth, NC Resilient Coastal Communities Program

Affordable Housing and Hurricane Florence Recorded Storm Surge



Legend

- Public Housing
- Other Affordable Housing
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Hurricane Florence Storm Surge, 2018

- Greater than 1 ft. above ground
- Greater than 3 ft. above ground
- Greater than 6 ft. above ground
- Greater than 9 ft. above ground

0 0.25 0.5 0.75 1 Miles

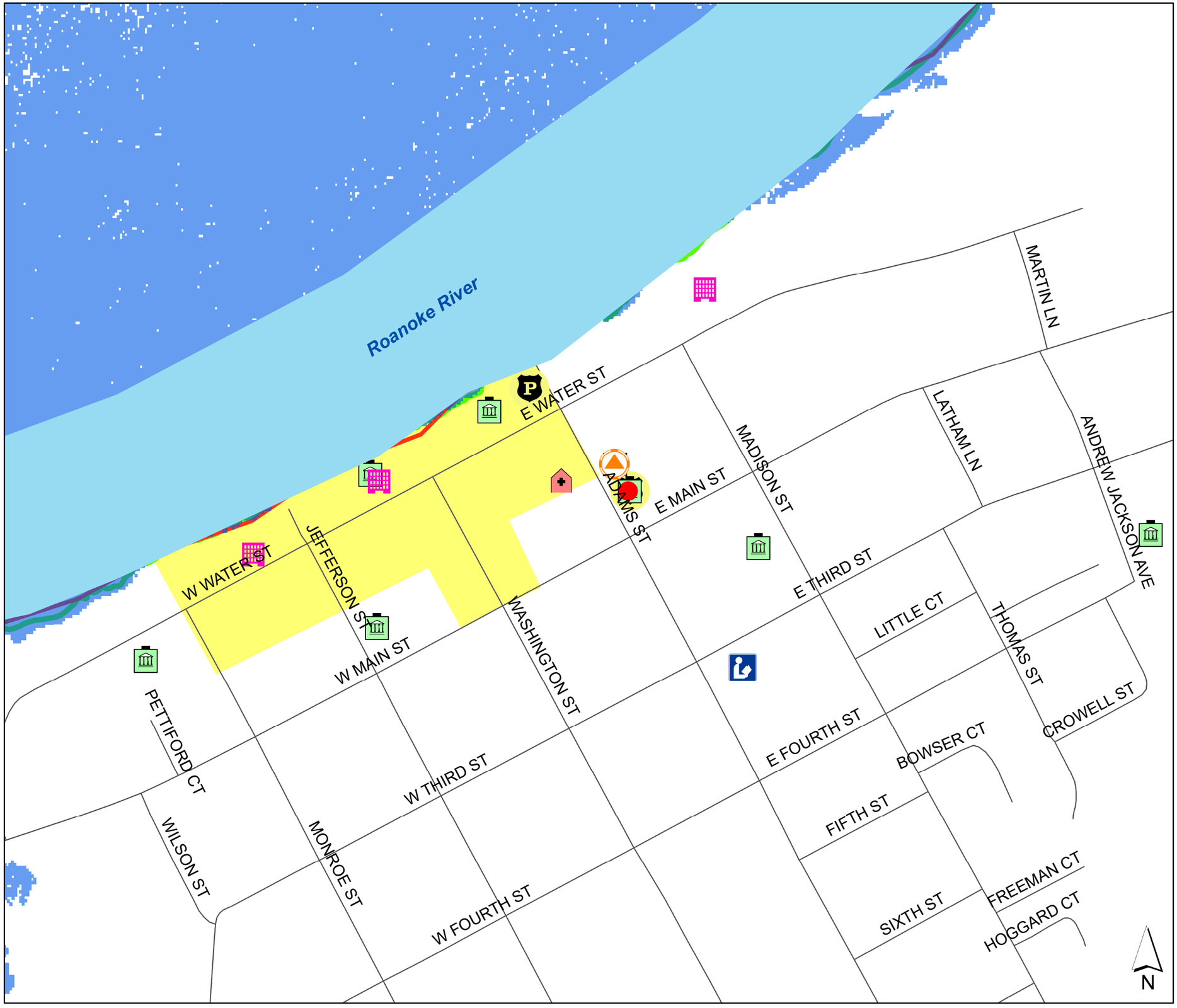
Plymouth, NC
Resilient Coastal Communities Program

Critical Assets and 1 ft. Sea Level Rise Scenario (30-year Projection)

Legend

- Creeks
- Rivers
- 1 ft. Sea Level Rise Scenario
- 911 Dispatch
- Bridges
- Community Buildings and Museums
- Government Services
- Emergency Management
- Fire and EMS
- Food
- Libraries
- Medical
- Police
- Propane Suppliers
- Public Docks
- Schools
- Wastewater Treatment Plant
- Water Treatment Plant
- Downtown Commercial District
- Highway 64 Business District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads

Middle River
Roanoke River
NORTH RIVER RD
GAGE LN
NORTH DEERFIELD DR
RIVER RD
GENERAL PETTIGREW DR
HAMPTON DR
ROANOKE AVE
N CRESCENT DR
ANGE RD
MACKEYS RD
GAVIN RD
BRADLEY RD
US HWY 64 EAST
E MAIN ST
E WATER ST
E THIRD ST
WMAIN ST
MADISON ST
JEFFERSON ST
WASHINGTON ST
MONROE ST
ROMIS ST
QUAIL DR
ROBIN DR
BRICK MILL LN
RANKIN LN
ROXIE REESE RD
ALDEN RD
BRINKLEY AVE
BRINKLEY PL
GOLF RD
LATHAM AVE
WEST AVE
STERLING DR
ANNE ST
OLD ROPER RD
CANAL ST
IDA ST
HILLARD DR
HAZEL ST
NC HWY 45 S
FAIRLANE RD
GARRETT ISLAND RD
SAND HILL RD
CAMPBELL ST
WILSON ST
CENTER AVE
PARK AVE
PINE ST
US HWY 64 WEST
NC HWY 32 S
ROOSEVELT AVE
GEE ST
WHITE OAK RD
LYNN LN
NC HWY 149
WILSON ST EXT
GLEAVES RD
JACKSON ST
LOCUST DR
COOL SPRINGS RD
WELCOME DR
LONG RIDGE RD
N
0 0.25 0.5 0.75 1 Miles



Plymouth, NC
Resilient Coastal Communities Program

Critical Assets and 1 ft. Sea Level Rise Scenario (30-year Projection)
Downtown Inset

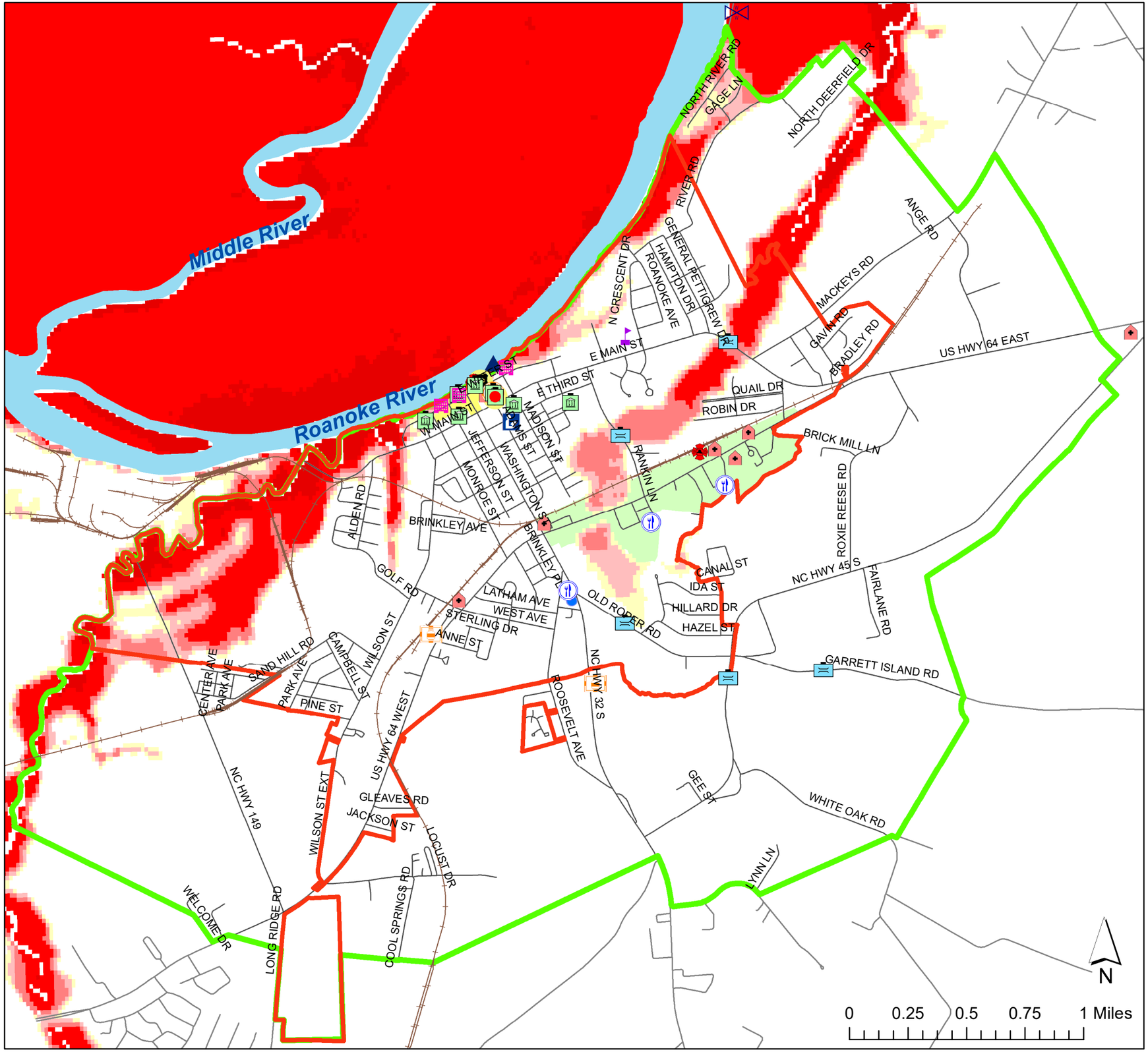
Legend

- Rivers
- 1 ft. Sea Level Rise Scenario
- 911 Dispatch
- Community Buildings and Museums
- Emergency Management
- Government Services
- Libraries
- Medical
- Police
- Downtown Commercial District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads

0 0.04 0.08 0.12 0.16 Miles

Plymouth, NC
Resilient Coastal Communities Program

Critical Assets and Cat. 1 Hurricane Potential Storm Surge



Legend

- 911 Dispatch
- Bridges
- Community Buildings and Museums
- Government Services
- Emergency Management
- Fire and EMS
- Food
- Libraries
- Medical
- Police
- Propane Suppliers
- Public Docks
- Schools
- Wastewater Treatment Plant
- Water Treatment Plant
- Downtown Commercial District
- Highway 64 Commercial District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Cat. 1 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.

Plymouth, NC
Resilient Coastal Communities Program

Critical Assets and Cat. 1 Hurricane Potential Storm Surge, Downtown Inset

Legend

- 911 Dispatch
- Community Buildings and Museums
- Emergency Management
- Government Services
- Libraries
- Medical
- Police
- Downtown Commercial District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Cat. 1 Hurricane Potential Storm Surge

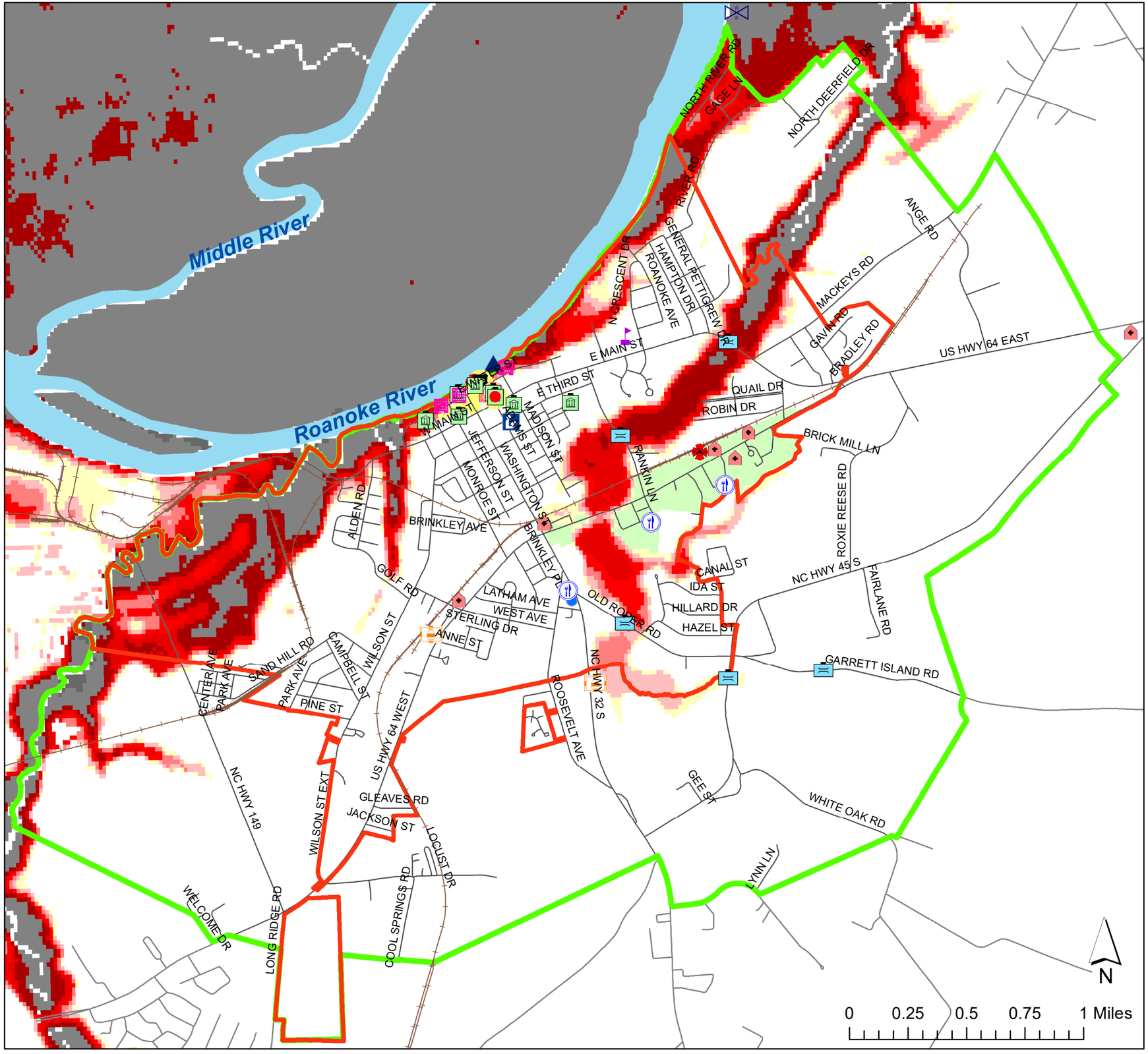
Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.

0 0.04 0.08 0.12 0.16 Miles

N

Plymouth, NC
Resilient Coastal Communities Program
Critical Assets and Cat. 2 Hurricane Potential Storm Surge



Legend

- 911 Dispatch
- Bridges
- Community Buildings and Museums
- Government Services
- Emergency Management
- Fire and EMS
- Food
- Libraries
- Medical
- Police
- Propane Suppliers
- Public Docks
- Schools
- Wastewater Treatment Plant
- Water Treatment Plant
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Cat. 2 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.
- 5 to 6 ft.
- 6 to 7 ft.
- 7 to 8 ft.
- Downtown Commercial District
- Highway 64 Business District

Plymouth, NC
Resilient Coastal Communities Program

Critical Assets and Cat. 2 Hurricane Potential Storm Surge, Downtown Inset

Legend

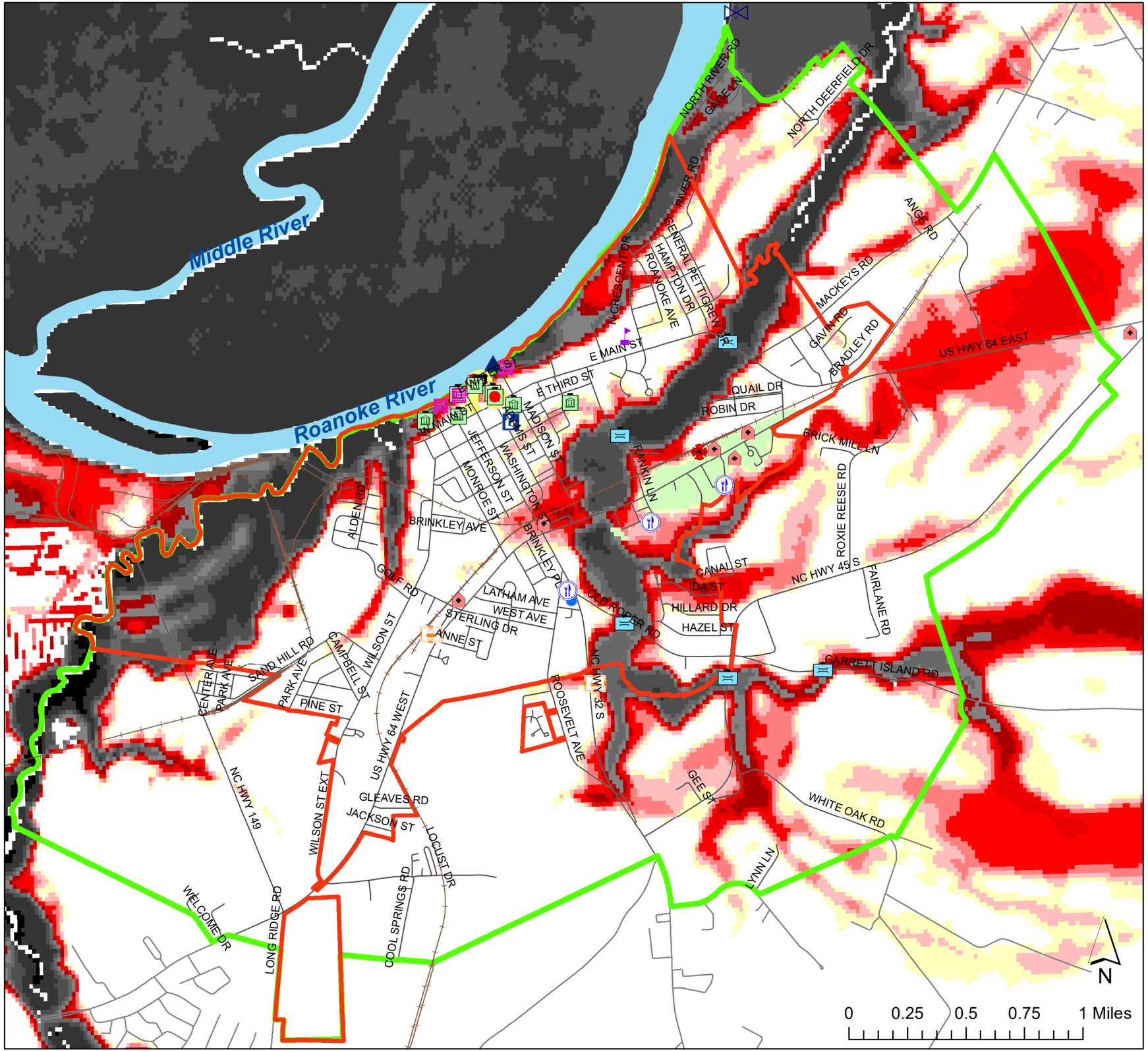
- 911 Dispatch
- Community Buildings and Museums
- Emergency Management
- Government Services
- Libraries
- Medical
- Police
- Downtown Commercial District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Cat. 2 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.
- 5 to 6 ft.
- 6 to 7 ft.
- 7 to 8 ft.

Plymouth, NC
Resilient Coastal Communities Program
Critical Assets and Cat. 3 Hurricane Potential Storm Surge



Legend

- 911 Dispatch
- Bridges
- Community Buildings and Museums
- Government Services
- Emergency Management
- Fire and EMS
- Food
- Libraries
- Medical
- Police
- Propane Suppliers
- Public Docks
- Schools
- Wastewater Treatment Plant
- Water Treatment Plant
- Downtown Commercial District
- Highway 64 Business District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Cat. 3 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft.
- 3 to 4 ft.
- 4 to 5 ft.
- 5 to 6 ft.
- 6 to 7 ft.
- 7 to 8 ft.
- 8 to 9 ft.
- 9 to 10 ft.
- 10 to 11 ft.

Plymouth, NC
Resilient Coastal Communities Program

Critical Assets and Cat. 3 Hurricane Potential Storm Surge, Downtown Inset

Legend

- 911 Dispatch
- Community Buildings and Museums
- Emergency Management
- Government Services
- Libraries
- Medical
- Police
- Downtown Commercial District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Cat. 3 Hurricane Potential Storm Surge

Feet Above Ground

- 0 to 1 ft.
- 1 to 2 ft.
- 2 to 3 ft
- 3 to 4 ft.
- 4 to 5 ft.
- 5 to 6 ft.
- 6 to 7 ft.
- 7 to 8 ft.
- 8 to 9 ft.
- 9 to 10 ft.
- 10 to 11 ft.

Plymouth, NC Resilient Coastal Communities Program

Critical Assets and Floodplains

Legend

- 100-year Floodplain (1% annual chance flood)
- 500-year Floodplain (0.2% annual chance flood)
- 911 Dispatch
- Bridges
- Community Buildings and Museums
- Government Services
- Emergency Management
- Fire and EMS
- Food
- Libraries
- Medical
- Police
- Propane Suppliers
- Public Docks
- Schools
- Wastewater Treatment Plant
- Water Treatment Plant
- Downtown Commercial District
- Highway 64 Business District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Middle River

Roanoke River

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Critical Assets and Floodplains
Downtown Inset

Legend

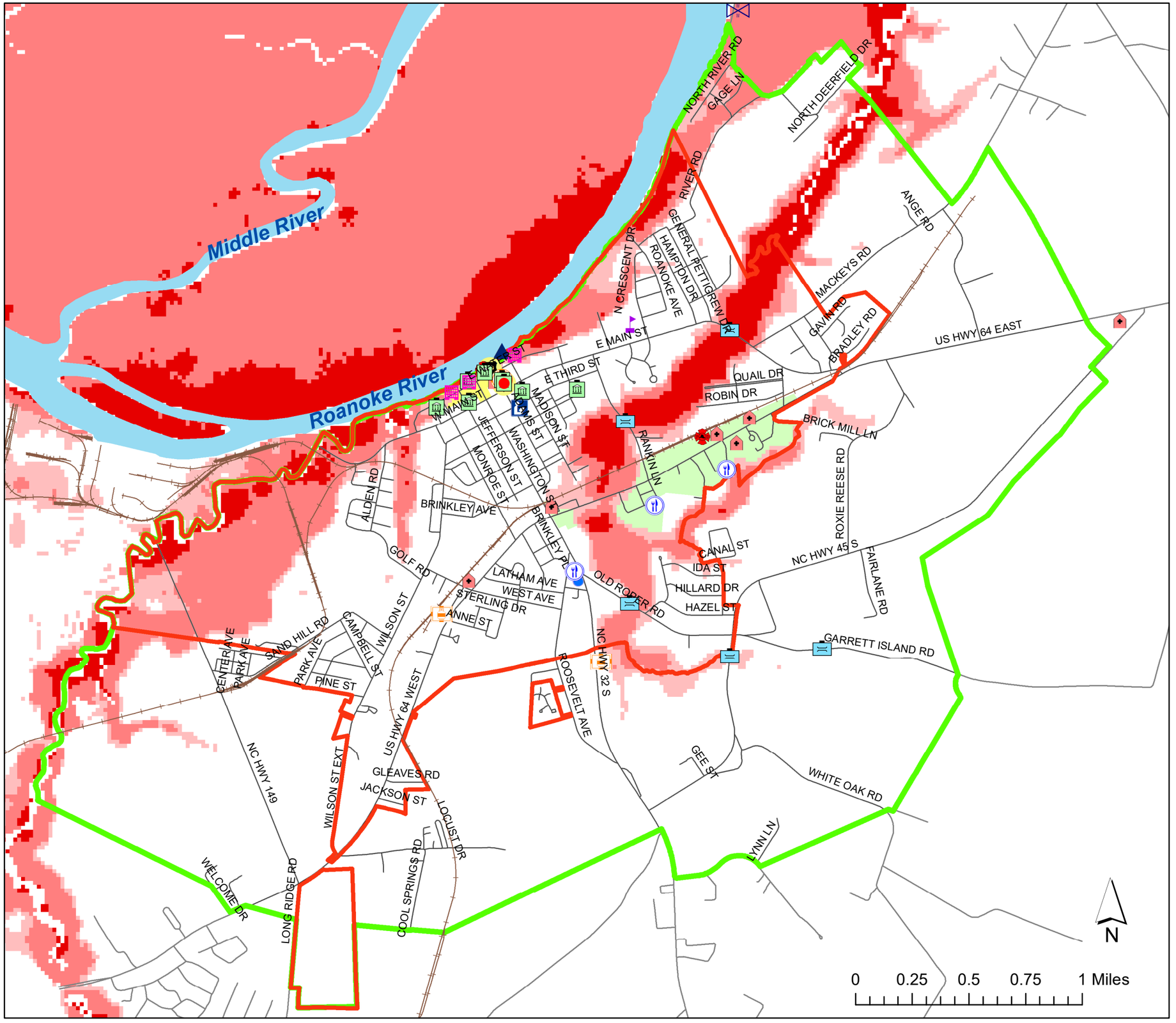
- 100-year Floodplain (1% annual chance flood)
- 500-year Floodplain (0.2% annual chance flood)
- 911 Dispatch
- Community Buildings and Museums
- Emergency Management
- Government Services
- Libraries
- Medical
- Police
- Downtown Commercial District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

0 0.04 0.08 0.12 0.16 Miles

N

Plymouth, NC Resilient Coastal Communities Program

Critical Assets and Hurricane Florence Recorded Storm Surge



Legend

- 911 Dispatch
- Bridges
- Community Buildings and Museums
- Government Services
- Emergency Management
- Fire and EMS
- Food
- Libraries
- Medical
- Police
- Propane Suppliers
- Public Docks
- Schools
- Wastewater Treatment Plant
- Water Treatment Plant
- Downtown Commercial District
- Highway 64 Business District
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers

Hurricane Florence Storm Surge, 2018

- Greater than 1 ft. above ground
- Greater than 3 ft. above ground
- Greater than 6 ft. above ground
- Greater than 9 ft. above ground

Plymouth, NC
Resilient Coastal Communities Program
Critical Assets and Hurricane Florence Storm Surge, Downtown Inset

Legend

- 911 Dispatch
- Community Buildings and Museums
- Emergency Management
- Government Services
- Libraries
- Medical
- Police
- Railroad
- Town Limits
- ETJ
- Plymouth Roads
- Washington County Roads
- Rivers
- Downtown Commercial District

Hurricane Florence Storm Surge, 2018

- Greater than 1 ft. above ground
- Greater than 3 ft. above ground
- Greater than 6 ft. above ground
- Greater than 9 ft. above ground

Roanoke River
E WATER ST
W WATER ST
E MAIN ST
W MAIN ST
E THIRD ST
W THIRD ST
E FOURTH ST
W FOURTH ST
FIFTH ST
SIXTH ST
ADAMS ST
MADISON ST
JEFFERSON ST
WASHINGTON ST
MONROE ST
WILSON ST
PETTIFORD CT
MARTIN LN
LATHAM LN
ANDREW JACKSON AVE
LITTLE CT
THOMAS ST
CROWELL ST
BOWSER CT
FREEMAN CT
HOGGARD CT

N

0 0.04 0.08 0.12 0.16 Miles

Plymouth, NC
Resilient Coastal Communities Program

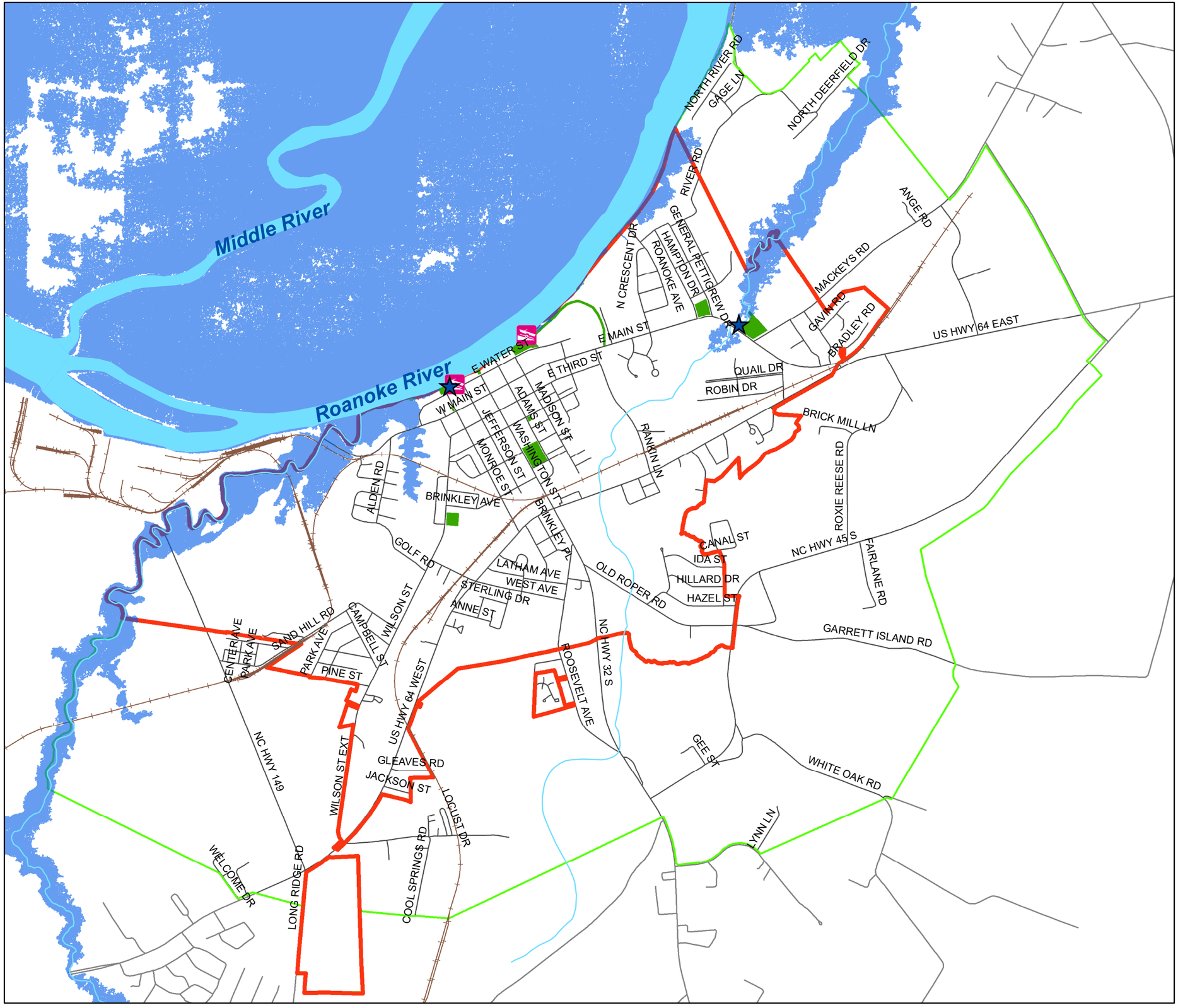
Managed Areas and Natural Areas and 1 ft. Sea Level Rise Scenario (30-year Projection)

Legend

- Rivers
- 1 ft. Sea Level Rise Scenario
- Town Limits
- ETJ
- Managed Areas
- Natural Areas
- Railroad
- Plymouth Roads
- Washington County Roads

N

0 0.25 0.5 0.75 1 Miles



Plymouth, NC Resilient Coastal Communities Program

Public Parks and Open Spaces and 1 ft. Sea Level Rise Scenario (30-year Projection)

Legend

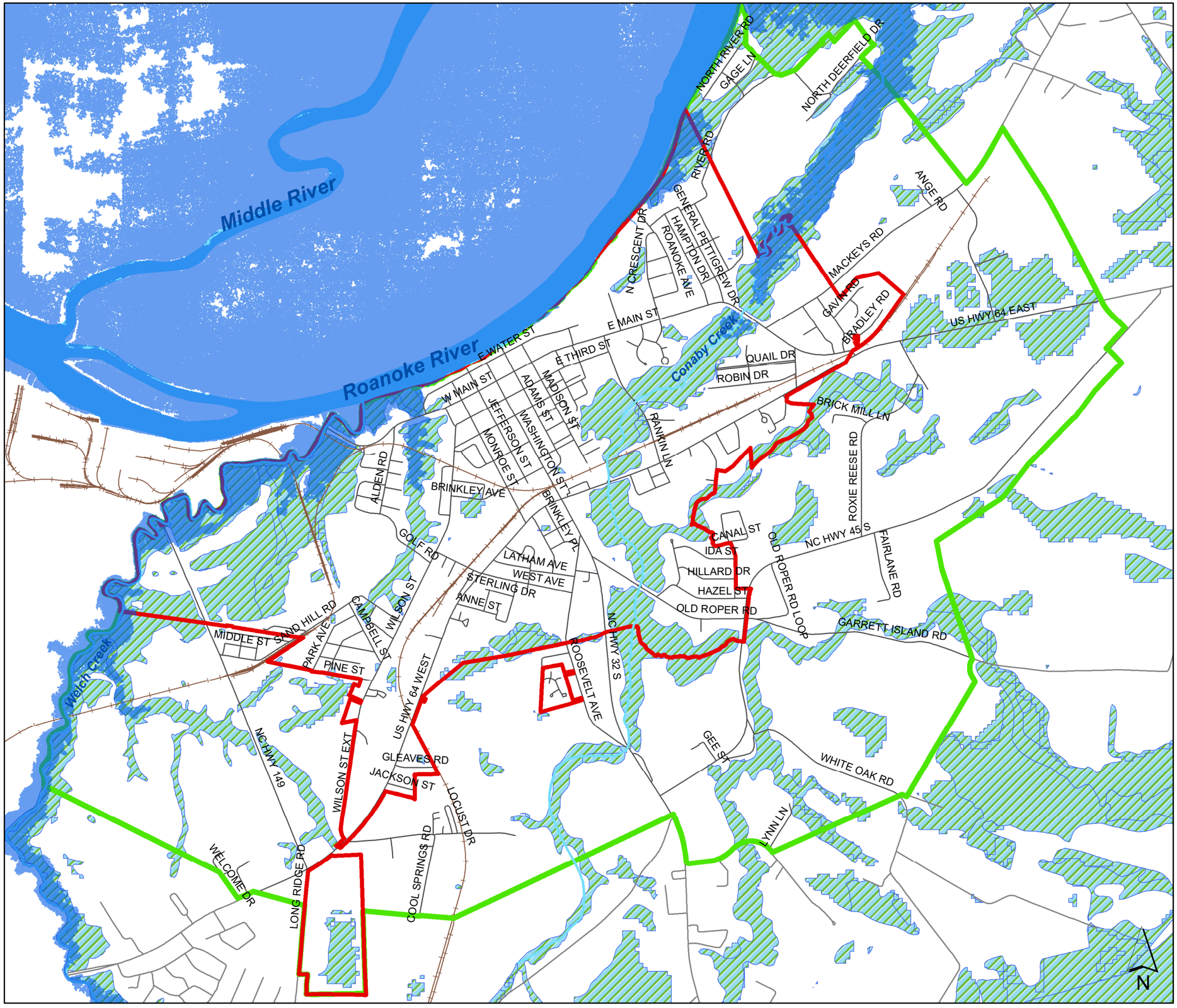
- Rivers
- Creeks
- 1 ft. Sea Level Rise Scenario
- Kayak Launches
- Public Boat Ramps
- Nature Trail
- Public Parks and Open Spaces
- Railroad
- Plymouth Roads
- Washington County Roads
- Town Limits
- ETJ

N

0 0.25 0.5 0.75 1 Miles

Plymouth, NC
Resilient Coastal Communities Program

Wetlands and 1 ft. Sea Level Rise Scenario (30-year Projection)



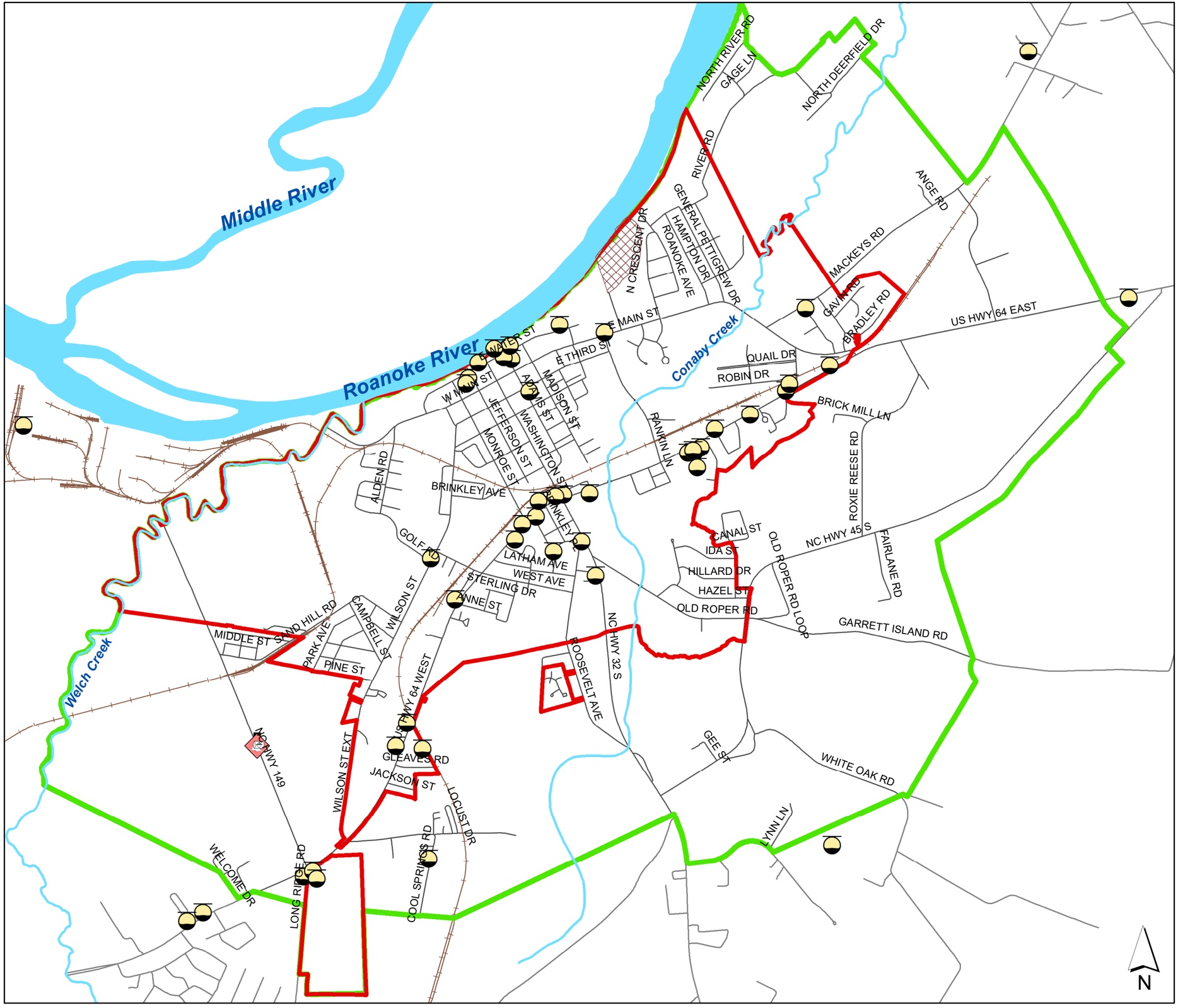
Legend

- 1 ft. Sea Level Rise Scenario
- Rivers
- Creeks
- Wetlands
- Town Limits
- ETJ
- Railroad
- Roads
- Washington County Roads

0 0.25 0.5 0.75 1 Miles

Plymouth, NC Resilient Coastal Communities Program

Potentially Hazardous Sites



Legend

- Permitted Hazardous Waste Sites
- Leaking Underground Storage Tanks
- Reported Brownfield Sites
- Rivers
- Creeks
- Town Limits
- ETJ
- Railroad
- Roads
- Washington County Roads

0 0.25 0.5 0.75 1 Miles