Hurricane Matthew Resilient Redevelopment Plan

Robeson County

May 2017

Version 1.2

Contents

Change Log

Version	Date	Summary of Changes
1.1	6/19/17	Minor Revisions
1.2	8/25/17	Labor and unemployment data updated

Executive Summary

In October 2016, Hurricane Matthew caused widespread destruction in the Caribbean and up the Eastern Seaboard of the United States. In North Carolina, at least 26 people lost their lives, and 100,000 homes, businesses, and government buildings sustained damage estimated at $4.8 billion.[1] At the storm's peak, 3,744 individuals fled to 109 shelters across the region. More than 800,000 households lost power and 635 roads were closed, including the major east-west and north-south corridors.

In December 2016, the North Carolina General Assembly established the North Carolina Resilient Redevelopment Planning (NCRRP) program as part of the 2016 Disaster Recovery Act (*Session Law 2016-124*). The purpose of the program 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 to allow each community not only to survive but also to thrive in an era when natural hazards are increasing in severity and frequency.

The NCRRP consists of planning and implementation phases and is managed through North Carolina Emergency Management.

Figure 1: NCRRP Counties

This document is a snapshot of the current needs of the County regarding holistic recovery and redevelopment. The plan will evolve as the county analyzes the risk to its assets, identifies needs and opportunities, determines the potential costs and benefits of projects, and prioritizes projects. As projects are more fully defined, the potential impact on neighboring communities and the region may lead to modifications.

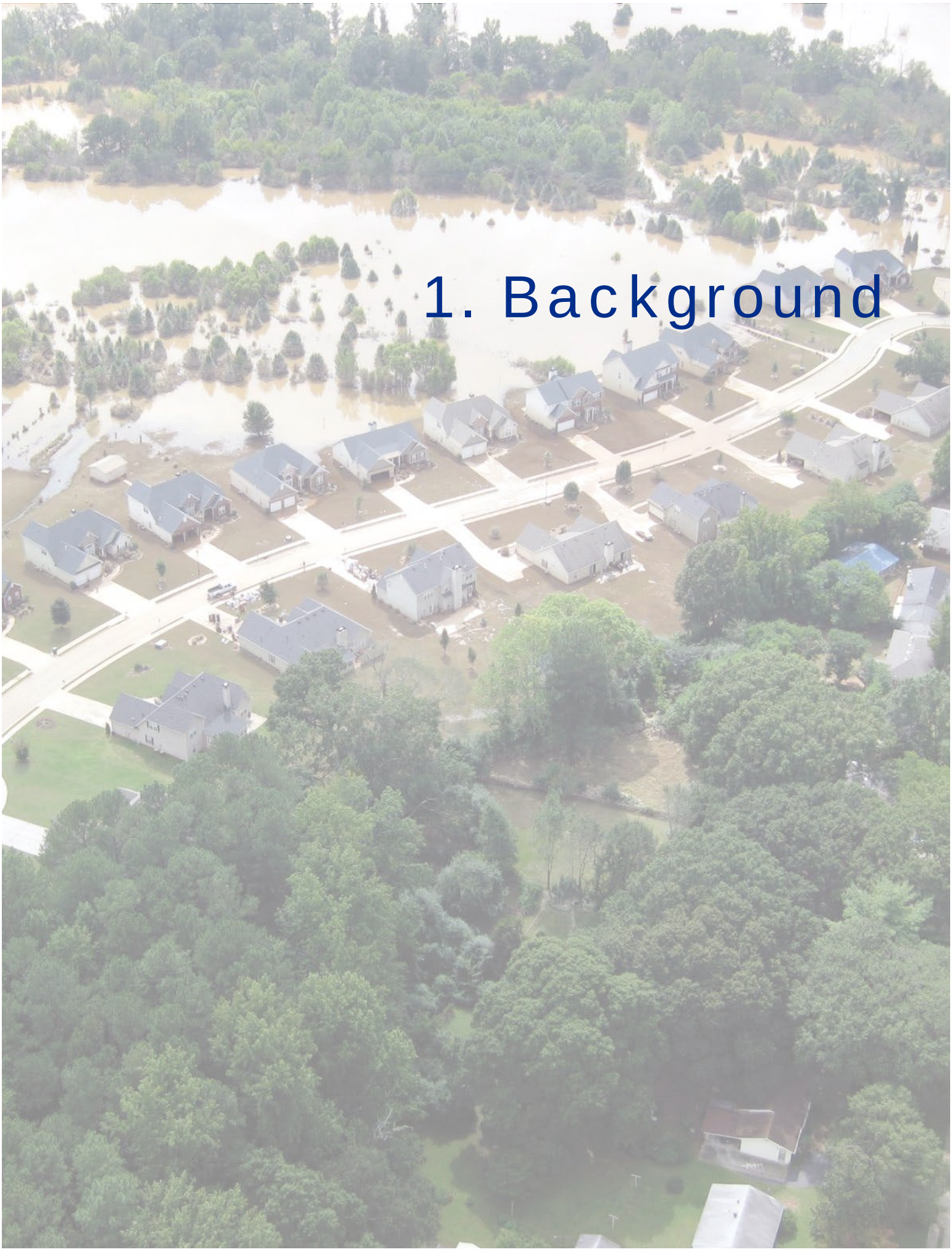
Implementation of the proposed projects and actions described in this plan is subject to applicable federal, state, and local laws and regulations. Proposed projects or actions may be eligible for state or federal funding, or could be accomplished with municipal, nonprofit, or private investments. However, inclusion of a project or action in this plan does not guarantee that it will be eligible for recovery funding.

[1] *State of North Carolina Supplemental Request for Federal Assistance Hurricane Matthew Recovery, https://governor-new.s3.amazonaws.com/s3fs-public/documents/files/Hurricane%20Matthew%20Relief--2017%20Federal%20Request%20%28002%29.pdf.*

After multiple public meetings, Robeson County has identified 47 projects in four pillars: Housing, Infrastructure, Economic Development, and Environmental. Details of these projects can be found in Section IV of this plan.

Pillar	Project/Action Count
Housing	7
Economic Development	4
Infrastructure	30
Environment	6
Grand Total	**47**

Table 1. Robeson County Summary of Projects by Pillar



1. Background

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Summary of Hurricane Matthew Storm Damage

Hurricane Matthew was an extraordinarily severe and sustained event that brought record-level flooding to many areas in eastern North Carolina's coastal plain, sound, and coastal communities. Hurricane Matthew hit North Carolina on October 8, 2016, as a Category 1 storm. Communities were devastated by this slow-moving storm primarily by widespread rainfall. During a 36-hour period, up to 18 inches of heavy rainfall inundated areas in central and eastern North Carolina.

Riverine flooding began several days after Hurricane Matthew passed and lasted for more than 2 weeks. New rainfall records were set in 17 counties in the Tar, Cape Fear, Cashie, Lumber, and Neuse River watersheds. Entire towns were flooded as water levels throughout eastern North Carolina crested well beyond previously seen stages.

During the peak of the hurricane, 800,000 households lost power and 635 roads were closed, including a section of I-40 West in Johnston County that was closed for 7 days, and sections of I-95 North and South in Robeson and Cumberland Counties that were closed for 10 days.

Approximately 88,000 homes were damaged and 4,424 were completely destroyed. Losses totaled more than $967 million, representing an economic loss as high as 68% of the damages, or $659 million, not expected to be covered by insurance or FEMA assistance.

North Carolina Governor McCrory requested FEMA assistance on October 9, 2016, and FEMA subsequently declared a major disaster (DR-4285) for North Carolina on October 10, 2016, for 48 counties encompassing approximately 325 cities, towns, townships, and villages.

Preliminary estimates indicate more than 30,000 businesses suffered physical or economic damage, and 400,000 employees were affected as a result. Hurricane Matthew also had a significant impact on the agriculture and agribusiness economy in eastern North Carolina. The nearly 33,000 agricultural workers and 5,000 agricultural-support workers hit by the storm account for more than half of the state's agriculture and agriculture-support workforce.

Initial economic analysis of the impacts of crop and livestock losses caused by Hurricane Matthew estimated the loss of more than 1,200 jobs and roughly $10 million in state and local income and sales tax revenue. 2.[2]

State / Legislative Response

North Carolina's response to Hurricane Matthew included 2,300 swift-water rescues using 79 boats and more than 90 air rescues. North Carolina also deployed over 1,000 National Guard and State Highway Patrol to assist with rescue and sheltering missions. There were 3,744 individuals transported to 109 shelters across central and eastern North Carolina during the storm's peak.

FEMA's disaster declaration made 50 counties eligible for FEMA assistance, 45 of which are eligible for Individual Assistance and Public Assistance and 5 of which are eligible for Public Assistance only.

[2] *Governors McCrory's Request for Federal Assistance for Hurricane Matthew Recovery, November 14, 2016*

- There were 81,832 individuals registered for FEMA/state assistance.
- Federal/state financial assistance in the amount of $92.5 million was approved to help flood survivors recover.
- Small Business Administration (SBA) loans approved for individuals after Hurricane Matthew totaled $65.6 million.
- SBA loans approved for businesses after Hurricane Matthew totaled $23.2 million.

After the immediate response period, North Carolina Governor McCrory and the North Carolina General Assembly took the steps summarized below to obtain and allocate long-term funding for Hurricane Matthew.

November 1: The Hurricane Matthew Recovery Committee is established. Preliminary damage assessments are completed, and the State Emergency Response Task Force continues to administer programs and identify needs unmet by existing federal programs.

November 14: Governor McCrory formally submits North Carolina's request for supplemental federal disaster assistance to the delegation as Congress returns to work.

Late November/Early December: Congress appropriates supplemental disaster assistance for North Carolina. After the supplemental federal disaster recovery assistance package is received, Governor McCrory submits a supplemental state disaster assistance package (House Bill 2) recommendations to the General Assembly and calls a special session. Governor McCrory then signs the Hurricane Matthew Recovery Act to fund disaster recovery efforts.

This supplemental federal assistance was to focus on housing, infrastructure, economic development, and the environment. These four pillars were to be funded through the following programs and agencies: The U.S. Department of Housing and Urban Development's Community Development Block Grant–Disaster Recovery (CDBG-DR) program, Army Corps of Engineers Operations and Maintenance, the FEMA National Dam Safety Program, the Federal Highway Administration's Emergency Highway Funding, and the U.S. Department of Agriculture's Emergency Conservation and Watershed Protection programs.

Resilient Redevelopment Planning

The purpose of the NCRRP program is to provide a roadmap for communities in eastern North Carolina to rebuild and revitalize after being damaged by Hurricane Matthew. The program empowers communities to prepare locally driven, resilient redevelopment plans to identify redevelopment strategies, innovative reconstruction projects, and other actions to allow each community not only to survive, but also to thrive in an era when natural hazards are increasing in severity and frequency.

The NCRRP process employs a holistic approach to planning that includes four pillars: housing, infrastructure, economic development, and the environment. Redevelopment strategies and reconstruction projects for each of the four pillars is included in each plan.

The NCRRP process consists of planning and implementation phases and is managed through North Carolina Emergency Management (NCEM).

Scope of the Plan

This document is a snapshot of the County's current needs for achieving holistic recovery and redevelopment. The plan will evolve as the County analyzes the risk to its assets, identifies needs and opportunities, determines the potential costs and benefits of projects, and prioritizes the projects. As projects are more fully defined, the potential impact on neighboring communities and the region may lead to modifications.

Planning objectives are to (1) develop strategic, resilient redevelopment plans and actions, and (2) to define any unmet funding needed to implement such actions after taking into account other funding sources.

The resulting resilient redevelopment plans will be the foundation for any supplemental funding received through Congress, the North Carolina General Assembly, and other funding sources. These plans will also be the basis for the state's Recovery Action Plan, which is required by the U.S. Department of Housing and Urban Development before the state can expend funds received from the CDBG-DR program.

Local Participation and Public Engagement

Stakeholder engagement and public involvement was an essential component of the NCRRP initiative. Three robust rounds of discovery, analysis, collaboration, and interaction were held with each affected county. Each meeting had two components: an in-depth working session with county officials, subject matter experts, and planners from the affective counties and municipalities; and a public open house. The purpose of each meeting was as follows:

Meeting 1 – Initiated the planning process and validated the existing data pertaining to damage and impacts.

Meeting 2 – NCEM presented draft documentation of resilient redevelopment strategies and received feedback from community leaders and the public.

Meeting 3 – NCEM presented refined resilient redevelopment strategies based on feedback from Meeting 2 and received additional feedback for finalization of the plan.

Each of the 50 counties that were declared a major disaster by the President of the United States as a result of Hurricane Matthew under the Stafford Act (P.L. 93-288) participated in the resilience redevelopment planning process. Each municipality in those counties, as well as the five economic development regions that sustained damage from Hurricane Matthew, were also invited to participate.

The counties impacted by the storm cover the eastern half of North Carolina and occupy parts of the piedmont, sand hills, and coastal areas of the state. A map depicting Robeson County and surrounding counties is shown below.

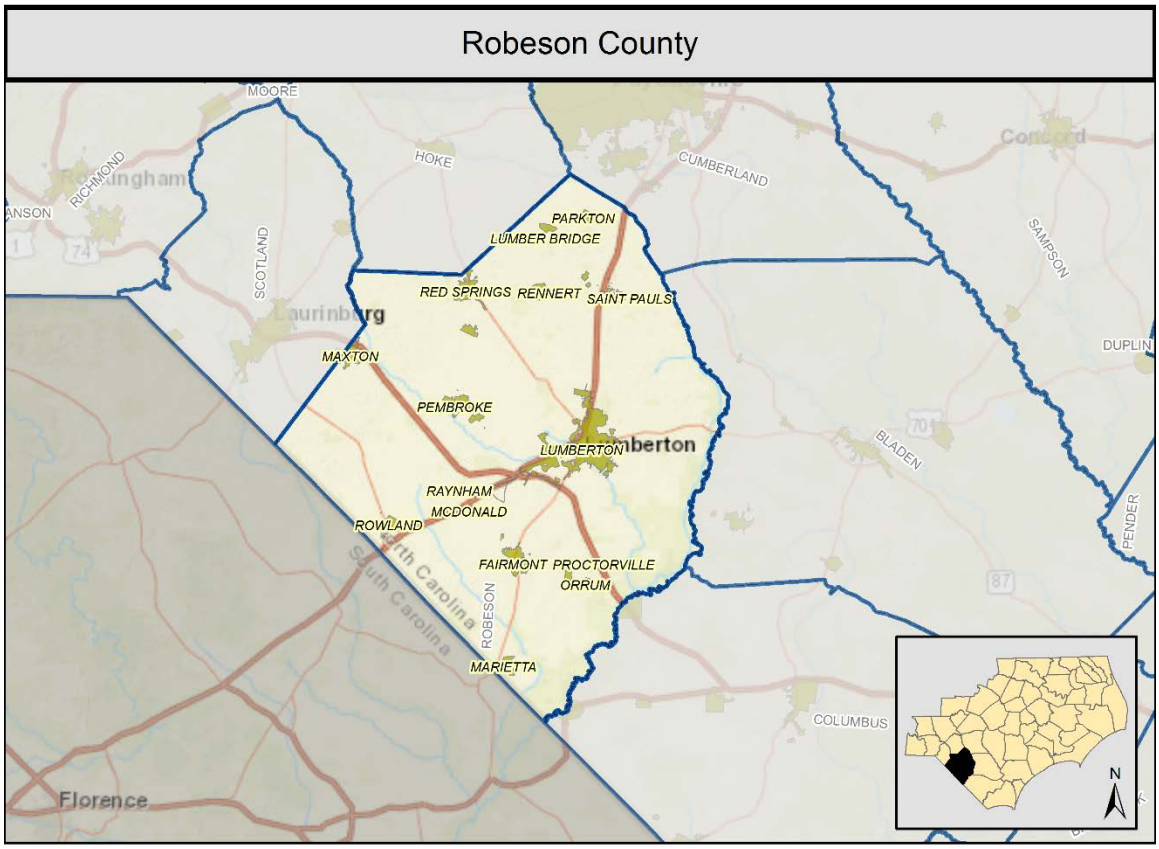
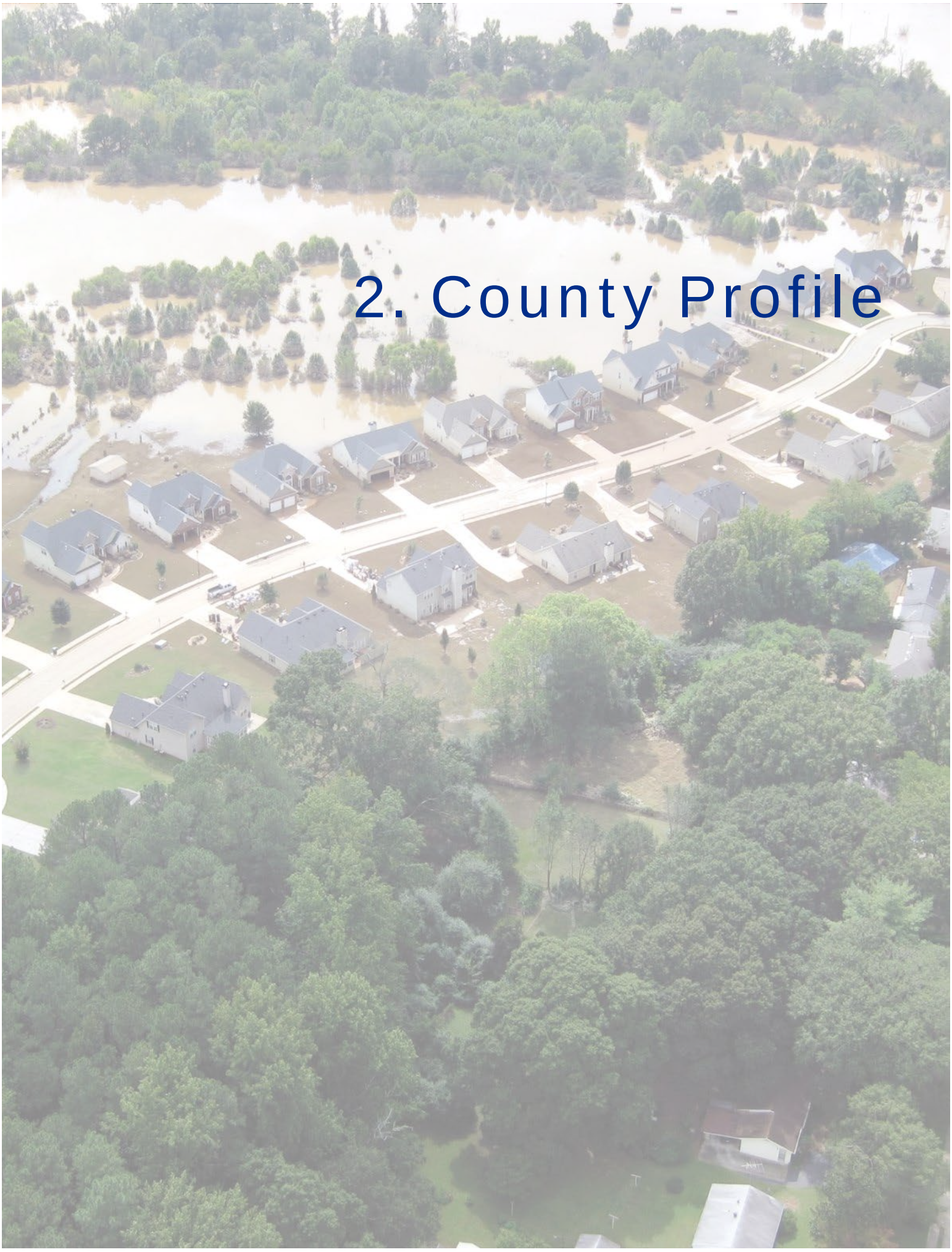


Figure 2: Robeson County and Neighboring Counties

Data, Assumptions, and Methodologies

NCEM has assembled a wealth of data, resources, and technical expertise from state agencies, the private sector, and the University of North Carolina system to support the development of innovative best practice strategies.

Implementation of the proposed projects and actions described in this plan is subject to applicable federal, state, and local laws and regulations. Inclusion of a project or action in this plan does not guarantee that it will be eligible for recovery funding. However, proposed projects or actions may be eligible for state or federal funding or could be accomplished with municipal, nonprofit, or private investment.



2. County Profile

2. County Profile

Robeson County is located in the Sandhill region of North Carolina in the south-central part of the state. It is comprised of twenty-two census-designated places: Elrod, Fairmont, McDonald, Marietta, Orrum, Proctorville, Raemon, Raynham, Rowland, Barker Ten Mile, Lumber Bridge, Maxton, Parkton, Pembroke, Prospect, Red Springs, Rennert, Rex, St. Pauls, Shannon, Wakulla, and Lumberton. Its current population is 134,871. This section provides a profile of housing, economics, infrastructure, environment, and administration within Robeson County.

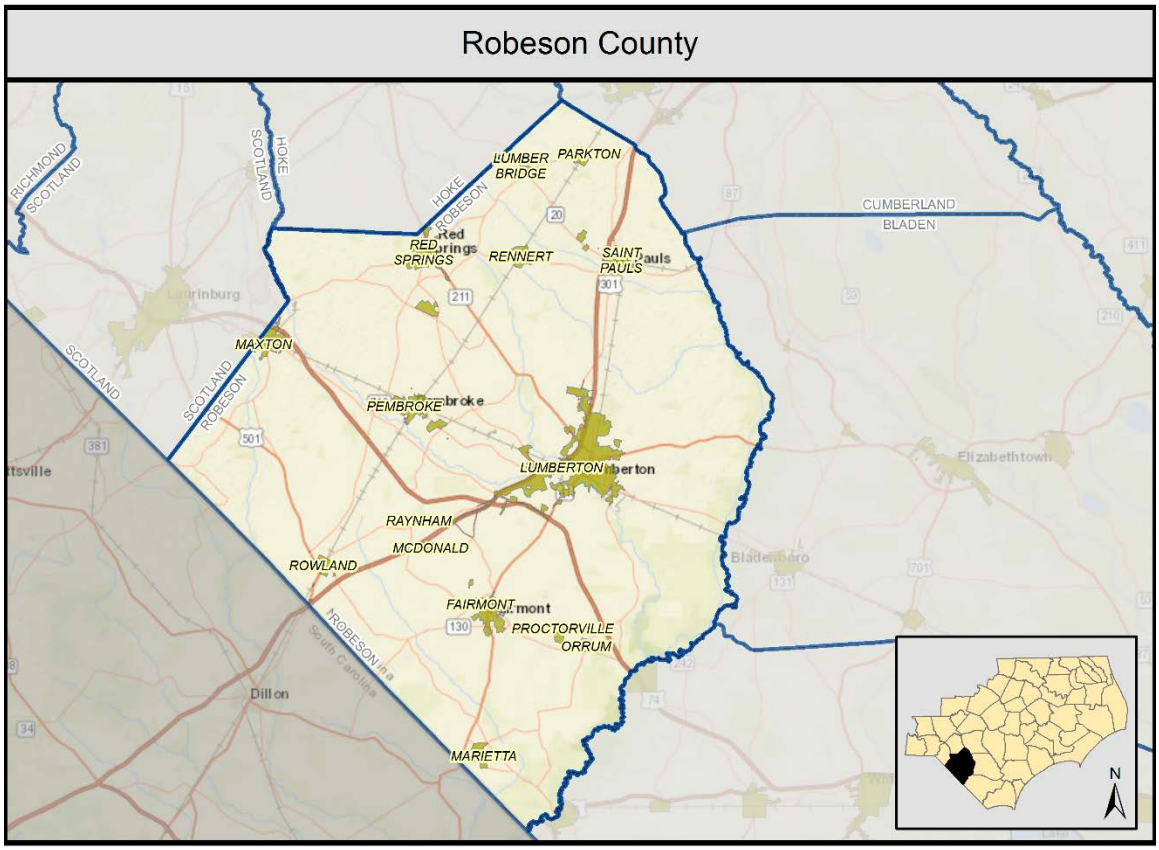


Figure 3: Robeson Base Map

Demographic Profile

Demographics for Robeson County and census-designated places within the county are summarized and compared to statewide averages in this profile. The demographic data is from the 2000 Census, 2010 Census, and 2011-2015 American Community Survey five-year estimates.

Population

Robeson County has a population of 134,871. Lumberton is the most populous place within Robeson County with a population of 21,721 and Orrum is the least populous place with a population of 52.[3]

[3] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B01001, "Sex by Age."*

Population Change (2000 to 2010)

The Robeson County population rose moderately between the 2000 and 2010 Census. In 2000, the population was 123,339 and in 2010 it was 134,168. The population increased by 10,829 people, or 8.8 percent. In comparison, North Carolina grew by 19 percent from 8,049,313 people in 2000 to 9,535,483 in 2010.[4]

Age

The median age in Robeson County is 35, which is below the North Carolina median of 42. Within Robeson County, the Rex population has the oldest median age, 64, and the Pembroke population has the youngest median age, 24.[5]

Race and Ethnicity

Robeson County is mostly White (30 percent), African American (24 percent), and American Indian and Alaska Native (38 percent), with other races constituting the remaining 8 percent. In comparison, North Carolina is 70 percent White, 22 percent African American, 1 percent American Indian and Alaska Native, 3 percent Asian, less than 1 percent Native Hawaiian/Pacific Islander, 3 percent Some Other Race, and 2 percent Two or More Races. Refer to the table below.

Within Robeson County, Rex, Proctorville, Raynham, Parkton, and St. Pauls are predominantly White. Fairmont, Roland, Maxton, and Red Springs are majority African American. Elrod, Raemon, Prospect, Shannon, and Wakulla are predominately American Indian and Alaska Native. In Lumberton, 8 percent of the population identifies as Some Other Race.

The Latino population in Robeson County is 8 percent compared to 9 percent for North Carolina. Shannon has the largest Latino population (37 percent) while Elrod, McDonald, Raemon, Raynham, Barker Ten Mile, Prospect, Rex, and Wakulla do not have Latino populations according to the census data.

Geography	White	Black or African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian/ Pacific Islander	Some Other Race	Two or More Races	Total Non-White
Elrod	17.1%	1.8%	72.1%	0.0%	0.0%	0.0%	9.0%	82.9%
Fairmont	35.6%	54.2%	6.3%	0.0%	0.0%	0.2%	3.6%	64.4%
McDonald	39.4%	13.1%	42.4%	0.0%	0.0%	0.0%	5.1%	60.6%
Marietta	56.7%	40.9%	2.4%	0.0%	0.0%	0.0%	0.0%	43.3%
Orrum	57.7%	19.2%	23.1%	0.0%	0.0%	0.0%	0.0%	42.3%
Proctorville	68.8%	23.3%	2.8%	2.3%	0.0%	0.0%	2.8%	31.3%
Raemon	20.7%	14.1%	65.2%	0.0%	0.0%	0.0%	0.0%	79.3%
Raynham	62.7%	1.7%	11.9%	0.0%	0.0%	0.0%	23.7%	37.3%
Rowland	15.6%	71.4%	11.5%	0.0%	0.0%	0.2%	1.3%	84.4%
Barker Ten Mile	66.7%	14.7%	18.6%	0.0%	0.0%	0.0%	0.0%	33.3%

[4] *Source: Minnesota Population Center. National Historical Geographic Information System: Version 11.0 [Database]. Minneapolis: University of Minnesota. 2016. http://doi.org/10.18128/D050.V11.0. Census 2000/Census 2010 Time Series Tables Geographically Standardized*

[5] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B01001, "Sex by Age."*

Lumber Bridge	56.1%	25.6%	6.1%	2.4%	0.0%	2.4%	7.3%	43.9%
Maxton	17.4%	71.1%	9.1%	0.2%	0.0%	0.5%	1.7%	82.6%
Parkton	67.3%	27.0%	1.4%	0.2%	0.0%	2.1%	2.0%	32.7%
Pembroke	15.2%	24.0%	53.1%	0.2%	0.0%	2.9%	4.5%	84.8%
Prospect	3.3%	0.0%	83.6%	3.6%	0.0%	4.1%	5.4%	96.7%
Red Springs	30.1%	56.5%	9.0%	1.3%	0.0%	1.3%	1.7%	69.9%
Rennert	13.8%	39.8%	43.4%	0.0%	0.0%	0.3%	2.7%	86.2%
Rex	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
St. Pauls	61.9%	19.4%	7.3%	0.6%	0.0%	8.3%	2.5%	38.1%
Shannon	43.5%	5.5%	51.0%	0.0%	0.0%	0.0%	0.0%	56.5%
Wakulla	20.0%	0.0%	56.5%	0.0%	0.0%	0.0%	23.5%	80.0%
Lumberton	42.5%	33.4%	11.5%	1.3%	0.2%	8.0%	3.0%	57.5%

Table 2: Robeson County Race and Ethnicity

Limited English Proficiency

Limited English Proficiency (LEP) is defined as populations 18 years or older that speak English less than very well. In Robeson County, most of individuals identified as LEP speak Spanish while others speak Indo-Euro, Asian/Pacific, or other languages. Similarly, the primary language group for LEP individuals in North Carolina is Spanish. Within Robeson County, Shannon has the largest LEP population. In Red Springs, the primary language group is Other Indo-Euro while multiple areas do not have a LEP populations according to census data.[6]

Poverty

In Robeson County, 31.6 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. In Pembroke, 60 percent of the population is below the poverty level, 58 percent in Red Springs, and 47 percent in Fairmont. In Rex, Wakulla and Barker Ten Mile, less than 1 percent of the populations are below the poverty level.[7]

Low and Moderate Income Individuals

In Robeson County, 52 percent of the population is classified as low and moderate income (LMI) individuals based on the US Department of Housing and Urban Development's definition. In comparison, 39 percent of the North Carolina population is classified as LMI.[8]

Median Household Income

The median household income of the population 25 to 64 years old is $33,000 in Robeson County and $53,000 in North Carolina. Barker Ten Mile as the highest median household income for this age group, $94,000, and Red Springs has the lowest: $25,000. Median household income was not available for Fairmont, McDonald, Marietta,

[6] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B16004, "Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over."*

[7] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months."*

[8] *Source: US Department of Housing and Urban Development, Estimate of Low and Moderate Income Individuals, https://www.hudexchange.info/programs/acs-low-mod-summary-data/acs-low-mod-summary-data-block-groups-places/*

Orrum, Raemon, Raynham, Rowland, Lumber Bridge, Maxton, Pembroke, Prospect, Rex, St. Pauls, Shannon, and Wakulla.[9]

[9] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B19094, "Median Household Income in the Past 12 Months."*

Zero Car Households

In Robeson County, 10 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Robeson County, Red Springs has the highest percentage of households without access to a vehicle, 30 percent, while McDonald, Proctorville, Lumber Bridge, Rex, Shannon, and Wakulla have the lowest percentage: 0 percent.[10]

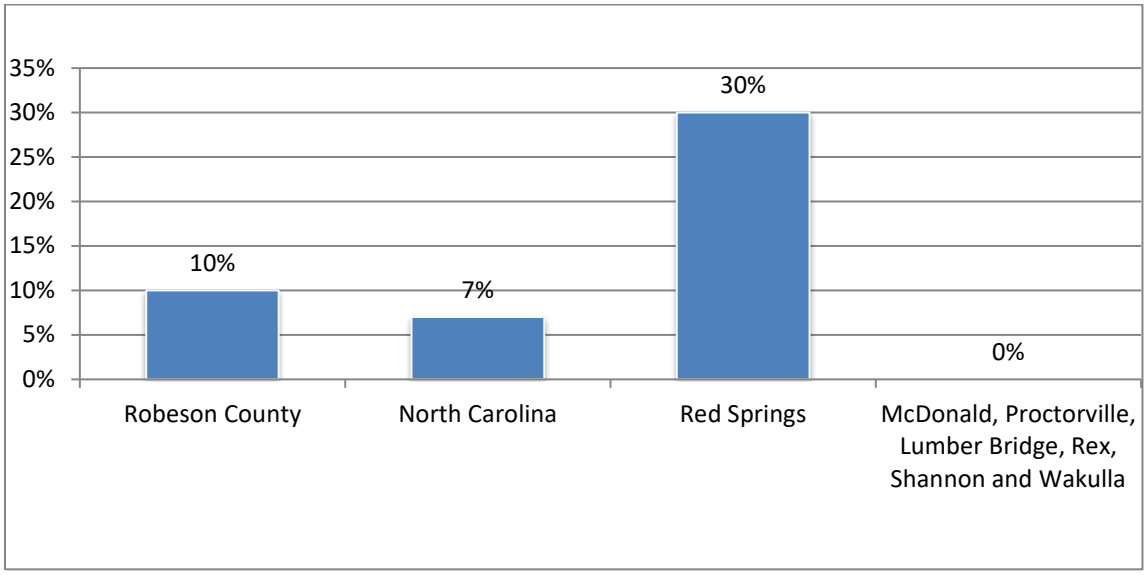


Figure 4. Zero Car Households by Percentage

Commuting: Travel Time to Work, Means of Transportation

The majority of Robeson County residents commute alone to work by vehicle, 85 percent, which is similar to North Carolina average of 81 percent. Within Robeson County, Prospect, Rex, and Wakulla have the largest percentage of commuters commuting alone, 100 percent, and Orrum has the least: 54 percent.

Elrod has the largest percentage of residents commuting by public transportation: 4 percent. In comparison, 1 percent of North Carolina commuters use public transportation. A greater percentage of Elrod, Fairmont, Proctorville, Rowland, Parkton, Pembroke, Red Springs and Rennert residents commute by walking, bike, or motorcycle than the North Carolina average of 2 percent.

The mean commute time to work for Robeson County residents is 23.4 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Within Robeson County, Prospect has the shortest mean commute time at 13 minutes while Elrod has the longest at 36 minutes.[11]

[10] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25044, "Tenure by Vehicles Available."*
[11] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B08301, "Means of Transportation to Work" and Table GCT0801, "Mean Travel Time to Work of Workers 16 Years and Over Who Did Not Work at Home (Minutes)."*

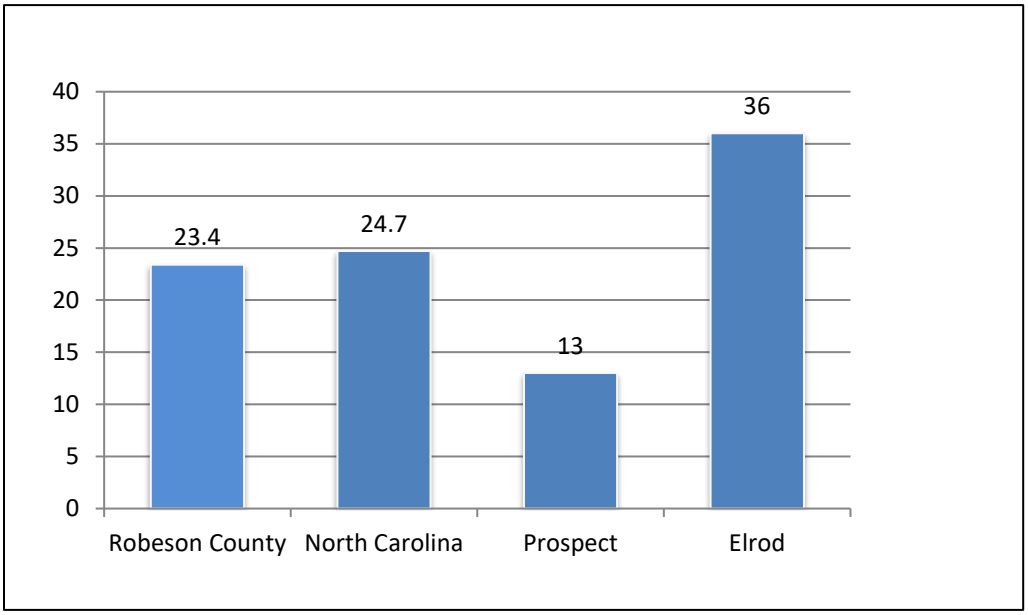


Figure 5. Mean Commute Time to Work in Minutes

Housing Profile

Robeson County has over 52,000 housing units, 51 percent of which are single-family homes, 11 percent multi-family units, and 38 percent manufactured housing.

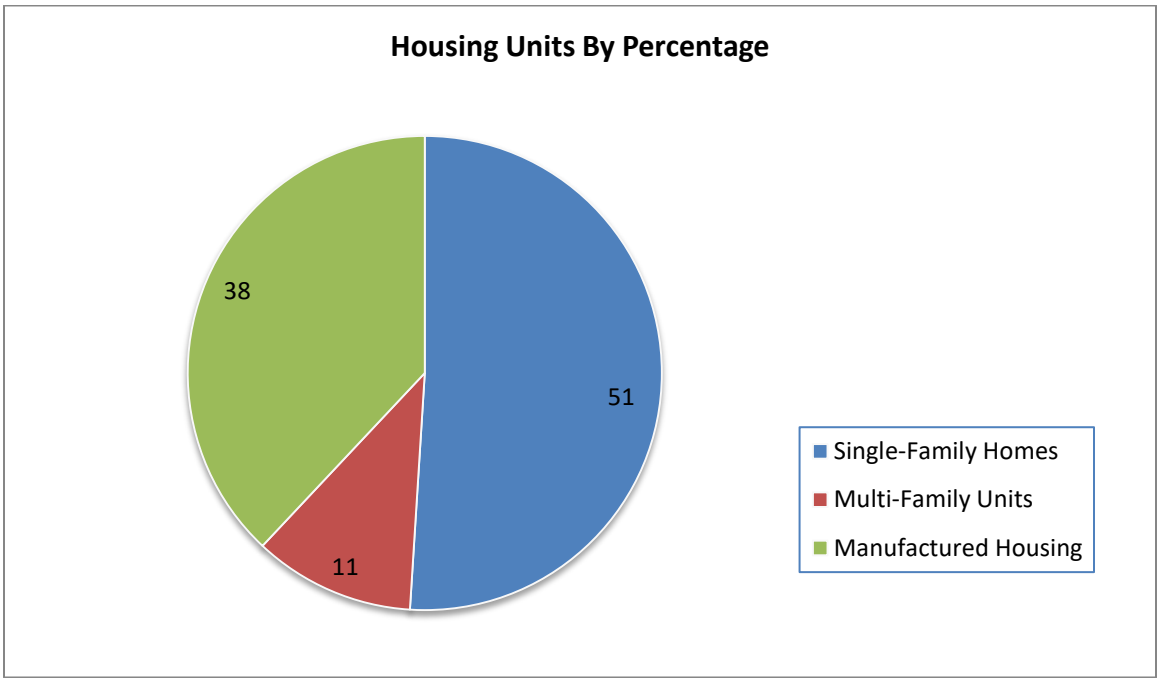


Figure 6. Housing Units by Percentage

In Robeson County, 13 percent of housing units are vacant, compare to 14.5 percent for North Carolina. Within Robeson County, Raemon has the largest percentage of vacant housing units, 52 percent, while Rex and Wakulla have the least: 0 percent.

Of the occupied housing units, 63 percent are owner-occupied compared to 65 percent in North Carolina; 37 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Robeson County is $70,000. In comparison, the median housing value in North Carolina is $140,000. Within Robeson County, Lumber Bridge has the highest median housing value: $131,000. Rowland has the lowest median housing value: $60,000.

According to the National Housing Preservation Database, Robeson County has 4,481 affordable housing units. Most of the affordable housing is located within Lumberton. Other units are located in near Maxton, Red Springs and Fairmont.[12]

Economic / Business Profile

Robeson County has a diverse array of industries from healthcare and educational services, manufacturing, and retail trade. According to the US Census Bureau's Longitudinal-Employer Household Dynamics Program, the largest concentrations of jobs within Robeson County are in downtown Lumberton, in Pembroke, and outside Lumber Bridge.[13]

Labor Force

According to the local area unemployment statistics (LAUS) from the Labor and Economic Analysis Division (LEAD) for the unadjusted data for all periods in 2016, the civilian labor force population of Robeson County is 50,767.[14] Within Robeson County, Wakulla has the largest percentage of residents in the labor force, 100 percent, while Raemon has the smallest: 27 percent.

The civilian unemployment rate in Robeson County is 7.9 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.[14] Within Robeson County, Raemon, Rex and Wakulla have the smallest civilian unemployment rate at 0 percent while Rowland has the largest: 26 percent.[15]

Major Employers

The top ten employers in Robeson County[16] represent the manufacturing, public administration, education and health service industries, and are listed in order of total employees.

[12] *Sources: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25002, "Occupancy Status"; Table B25003, "Tenure"; Table B25024 "Units in Structure"; Table B25077, "Median Value (Dollars)." National Housing Preservation Database*

[13] *Source: US Census Bureau Longitudinal-Employer Household Dynamics Program*

[14] *Source: Civilian Population and Unemployment Rate - Labor and Economic Division (LEAD) of North Carolina Department of Commerce – Local Area Unemployment Statistics http://d4.nccommerce.com/LausSelection.aspx*

[15] *Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B23025, "Employment Status For The Population 16 Years And Over."*

[16] *Sources: NC Department of Commerce*

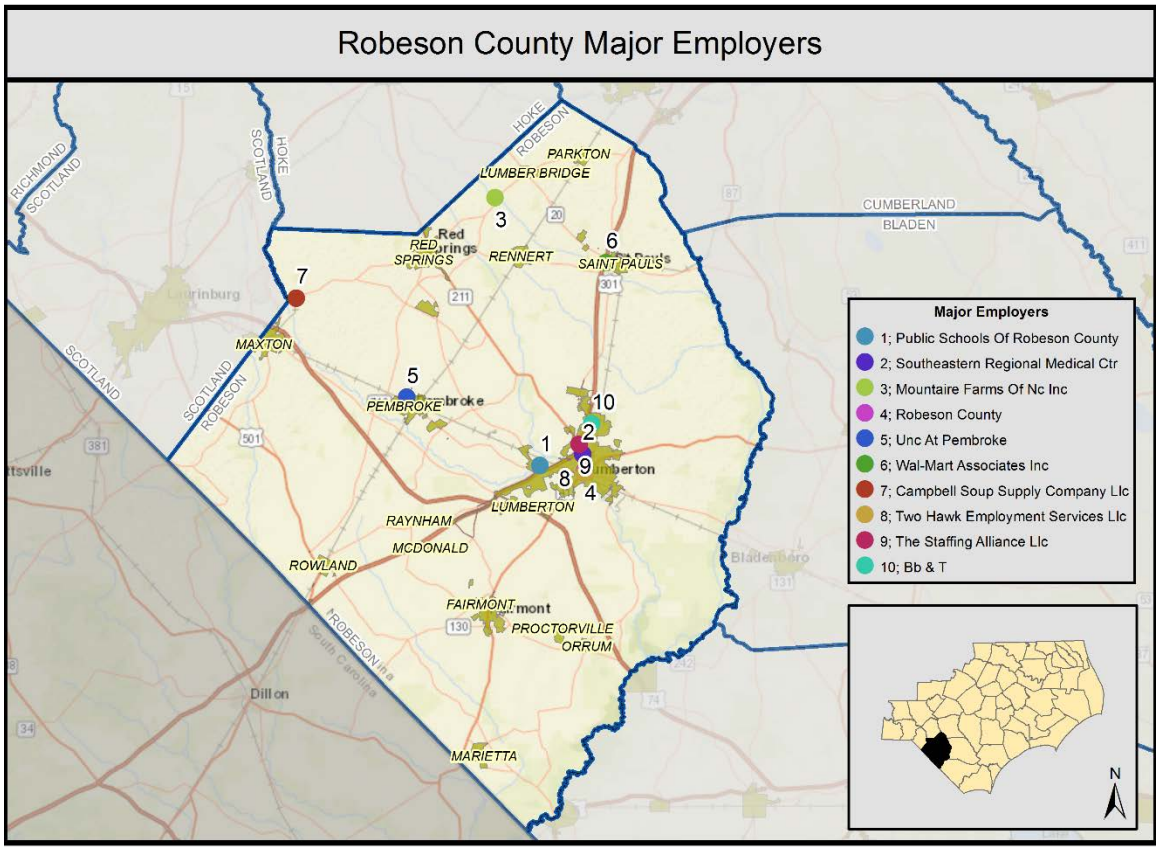


Figure 7: Major Employers by Number of Employees

Economic Development

Robeson County Economic Development is an organization aimed at "promoting the County's economic wellbeing." Through the Robeson County Business Retention & Expansion Program, the Commission works to "facilitate the growth of new and existing industries and to recognize their achievements and contributions to our community." The organization has established goals, which include attracting additional industry.[17]

[17] *Sources: Robeson County Economic Development*

Infrastructure Profile

Transportation, health, education, water, and power infrastructure are summarized for Robeson County in the sections that follow.

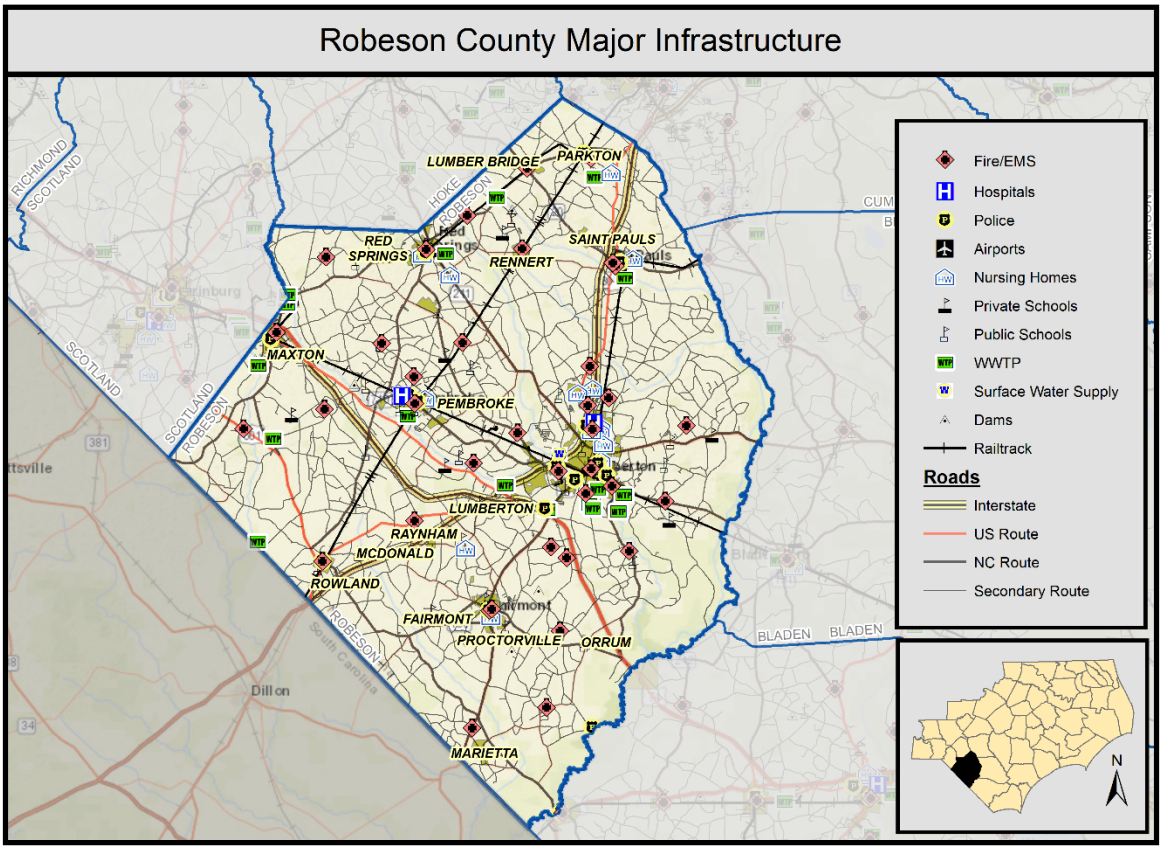


Figure 8: Robeson County Major Infrastructure

Transportation

Robeson County is connected to the region by I 74 and I 95. I 74 is a major east-west highway that provides Robeson County with access to Charlotte to the west, and Wilmington and deep water ports to the east. I 95 is a north-south highway connecting the county with Savannah to the south and Richmond to the north. Robeson County is also served by rail from CSX, and smaller regional operators. The Lumberton Regional Airport has a 5,510-foot runway capable of handling large aircraft.

Health

Southeastern Regional Medical Center is the only hospital located in Robeson County. It is located in Lumberton off of I 95.

Education

Robeson County Public Schools administers 22 elementary, 10 middle, and eight high schools. UNC at Pembroke is located in Pembroke and is a member of the University of North Carolina system.[18]

Water

The Robeson County Water Department operates the water supply plan for different municipalities in Fairmont, Lumberton, Maxton, Pembroke, Rowland, and St. Pauls, which provide drinking water to residents. Municipal wastewater is treated at the Maxton, Red Springs, Lumber Bridge, Parkton, Pembroke, Lumberton, Fairmont, Rowland, Raemond Well, St. Pauls, and Fair Bluff Waste Water Treatment Plants.[19]

Power

There are several solar farms located within Robeson County along I 74 and in Fairmont. These power plants have a net summer capacity of 5 megawatts each. There is also a biomass plant in Lumberton with a net summer capacity of 34.7 MW.[20]

Environmental Profile

Water resources, natural areas, managed areas, biodiversity, wildlife habitat, and recreation are summarized for Robeson County in the sections that follow.

Water Resources

The Lumber River flows east-west through the middle of Robeson County. Wetlands and swamplands are present along the Lumber River and its tributaries. The most common wetland type in Robeson County is freshwater forested/shrub wetland.[21]

Natural and Managed Areas

According to the NC Natural Heritage Program, there are several areas of high, very high, or exceptional value in Robeson County. These areas are located along the Lumber River along the southeastern border with Columbus County and along the Lumber River toward the center of the county.

There are several managed areas under state ownership within Robeson County. Managed areas are properties and easements where natural resource conservation is one of the current primary management goals, or are of conservation interest. These areas in Robeson County include: Lumber River State Park, the Gum Swamp, and NC Department of Transportation mitigation sites throughout the county.[22]

Biodiversity and Wildlife Habitat

The NC Natural Heritage Program produces a biodiversity and wildlife habitat assessment for the state. According to this assessment, areas with the highest rating for biodiversity and wildlife habitat are along the

[18] *Sources: Robeson County Public Schools and UNC Pembroke*
[19] *Sources: NC Division of Water Resources, Local Water Supply Plans; and Robeson County Economic Development*
[20] *Source: US Department of Energy, US Energy Mapping System*
[21] *Source: NC Natural Heritage Program*
[22] *Source: NC Natural Heritage Program*

Lumber River and its tributaries. These areas rank between a 7 and 10, with 10 being the highest possible score. Other areas of the county rank 5 to 6. Most of the county is unrated.[23]

Parks and Recreation

The Robeson County Parks and Recreation Department maintains twenty-seven parks and facilities in Robeson County. There is also the Lumber River State Park located in southeast Robeson County. The park has boating, fishing, campgrounds, and hiking trails.[24]

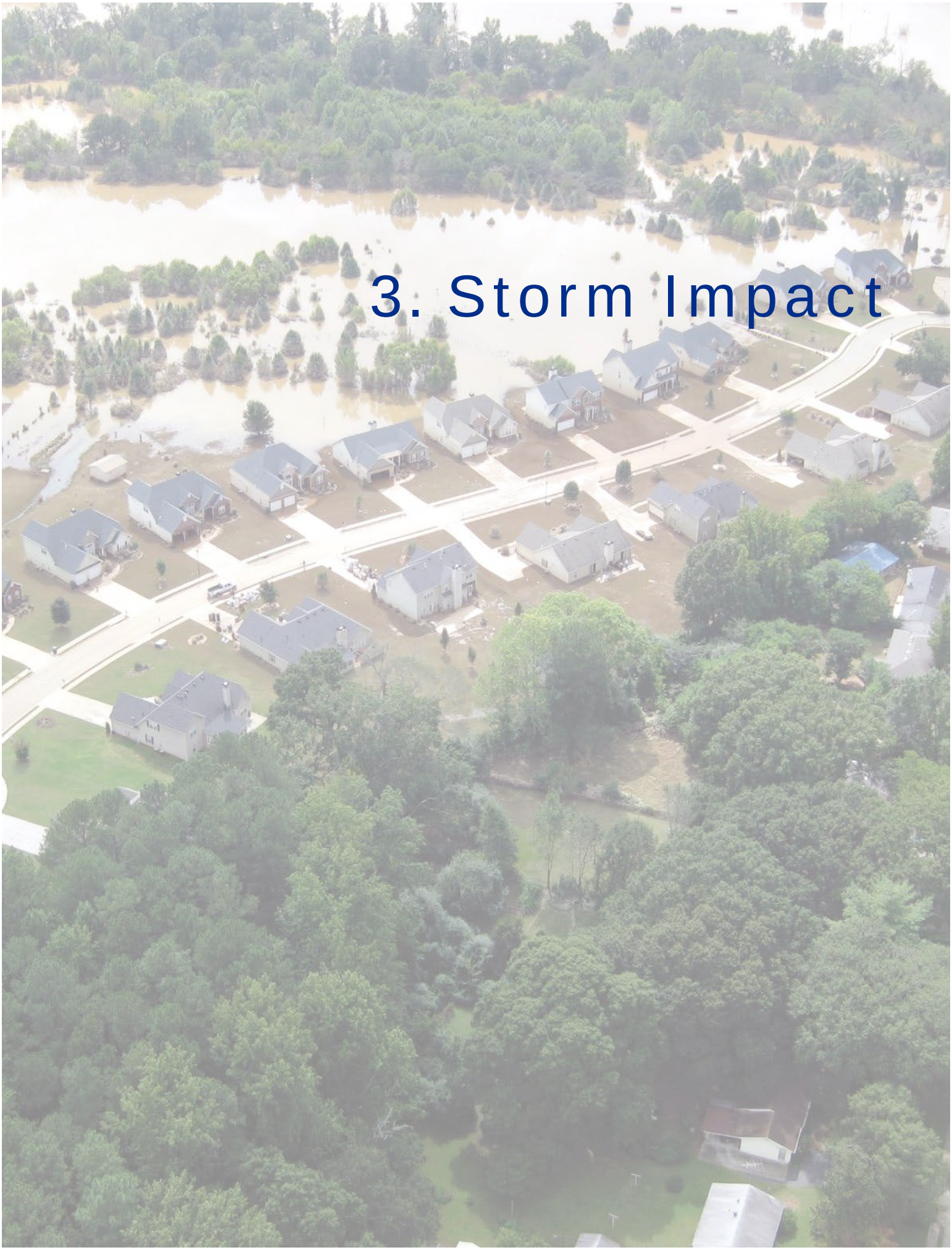
Administrative Profile

The administrative capabilities of Robeson County and the municipalities within the County are discussed in great detail within Section 7 of the Robeson County Multi-Jurisdictional Hazard Mitigation Plan (2017). The assessment evaluates the capabilities of the County and municipalities to implement mitigation actions across the areas of planning and regulatory capabilities, administrative and technical capabilities, fiscal capabilities, and political capabilities. Many more details about the capabilities of Robeson County and the municipalities can be found in that document.

In terms of administrative capabilities, the County has many of the staff and the necessary plans, policies and procedures in place that are found in communities with "high" capabilities. Robeson County has Emergency Management and Planning departments with the capacities to assist in implementing the resilience strategies proposed in this plan. Some of the other indicators of capability for the County include the following: Comprehensive Land Use Plan, a Zoning Ordinance for portions of the County, Subdivision Regulations, and Floodplain Management Ordinance. These plans, policies and procedures help ensure that new development in the County will be managed in a responsible manner and will take place in non-hazardous areas.

Lumberton, Parkton, Pembroke, and Red Springs also have "high" and "moderate" capabilities. They all have administrative resources that would likely be able to assist with implementing the strategies in this plan. In addition, they have the plans, policies and procedures in place that indicate higher capability. The Towns of Fairmont, Lumber Bridge, Marietta, Maxton, McDonald, Orrum, Proctorville, Raynham, Rennert, Rowland and St. Pauls may need assistance from other agencies in order to implement the strategies in this plan as a result of limited administrative resources.

[23] *Source: NC Natural Heritage Program*
[24] *Sources: NC Natural Heritage Program, Robeson County Parks and Recreation Department, Lumber River State Park*



3. Storm Impact

3. Storm Impact

Rainfall Summary

Hurricane Matthew officially made landfall as a Category 1 storm southeast of McClellanville, South Carolina early on October 8, 2016. The track and speed of the storm resulted in nearly two days of heavy precipitation over much of North Carolina that caused major flooding in parts of the eastern Piedmont and Coastal Plain. The storm produced widespread rainfall of 3-8 inches in the central regions of North Carolina and 8 to more than 15 inches in parts of eastern North Carolina. A number of locations received all-time record, one-day rainfall amounts. Many locations in the Coastal Plain of North Carolina had received above normal rainfall in the month of September leading to wet antecedent conditions prior to Hurricane Matthew. In Robeson County, Lumberton received 12.53 inches of rain surpassing the previous record of 7.62-inches set during Hurricane Floyd in 1999. Total rainfall depth for Robeson county is highlighted graphically in the figure below.

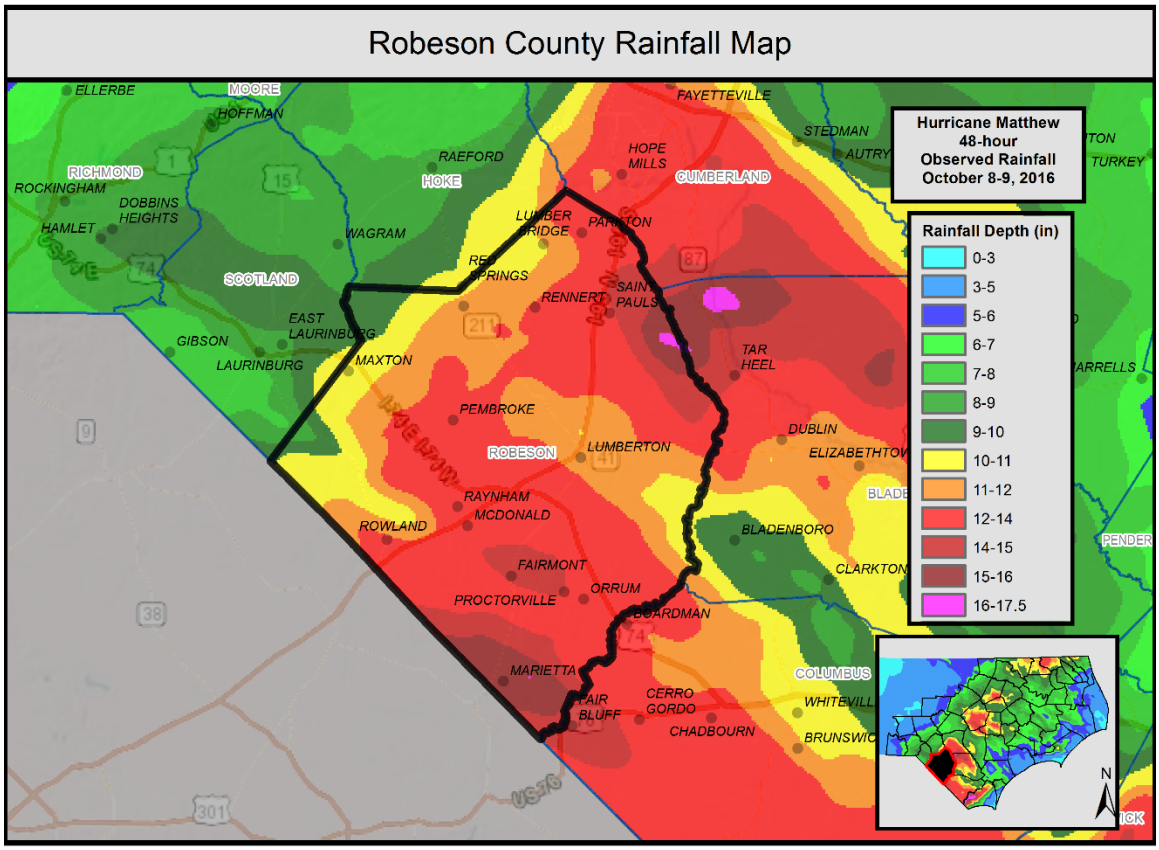


Figure 9: 48-hour Observed Rainfall Depth (October 8-9, 2016)

Riverine Flooding Summary

The effects of Hurricane Matthew on Robeson County riverine flooding were high especially along the Lumber River and in Lumberton where several major streams converge with the Lumber River. USGS documented stream gage data in the report “Preliminary Peak Stage and Streamflow Data at Selected Streamgaging Stations in North Carolina and South Carolina for Flooding Following Hurricane Matthew, October 2016”. Stream gage data from the USGS report for Robeson County and nearby gages is summarized in the table below.

USGS Gage	County	River Name and Location	Drainage Area (sq. mi)	Peak Matthew Elevation (ft.)	Previous Record (ft.)
02132320	Scotland	Big Shoe Heel Creek near Laurinburg, NC	83.3	6.24	5.52
02133624	Robeson	Lumber River near Maxton, NC	365.0	15.49	13.52
02134170	Robeson	Lumber River at Lumberton, NC	708.0	21.77	18.29
02134480	Robeson	Big Swamp near Tarheel, NC	229.0	18.72	14.34

Table 3: Robeson County USGS Stream Gage Data

Housing Impacts

According to FEMA Individual Assistance claims as of March 30, 2017, there were 18,482 registrations for Individual Assistance in Robeson County as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew may still be pending, so this number may not reflect the final claims data from the event. This also does not take into account other historic impacts to the county or other areas of concern for flooding that may not have occurred during this storm. With that in mind, the planning team attempted to take a comprehensive look at both Hurricane Matthew impacts and any historic impacts that local officials felt would validate areas that should be considered at high risk to future flooding.

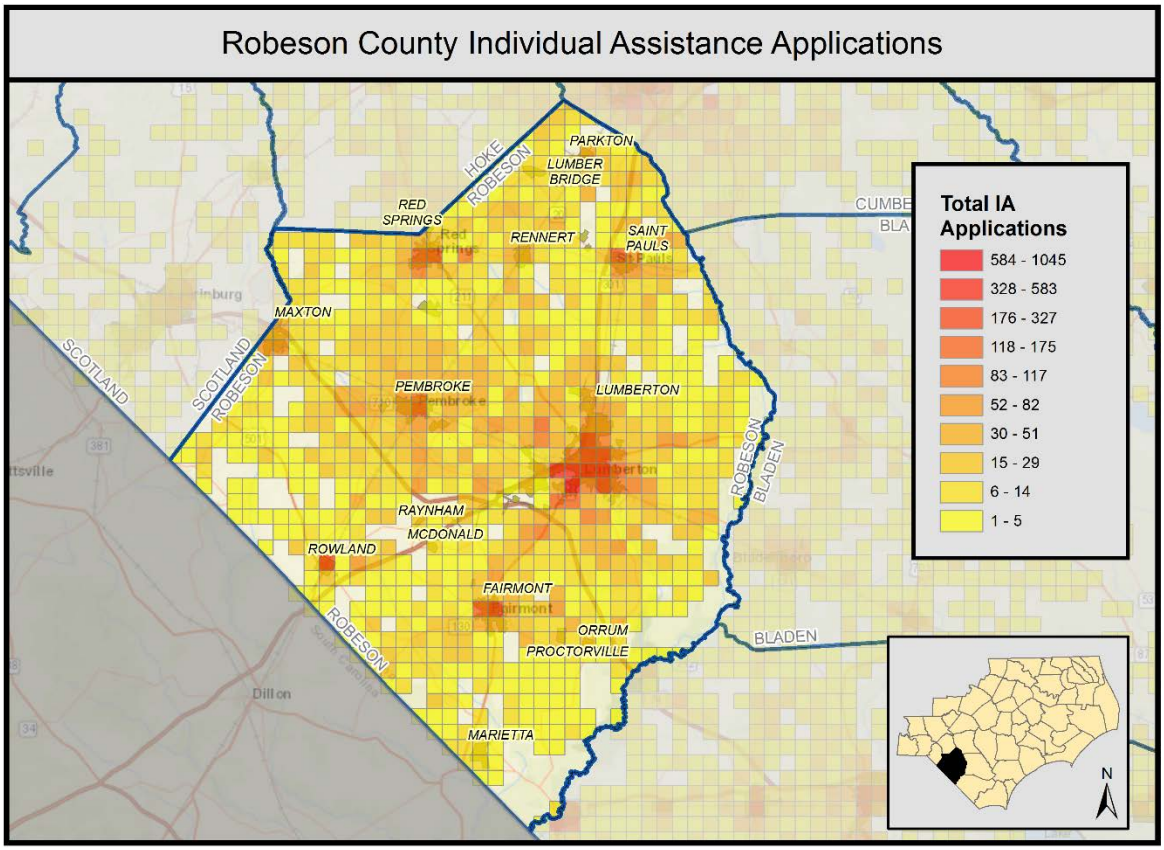


Figure 10: Robeson County IA Applications by Area

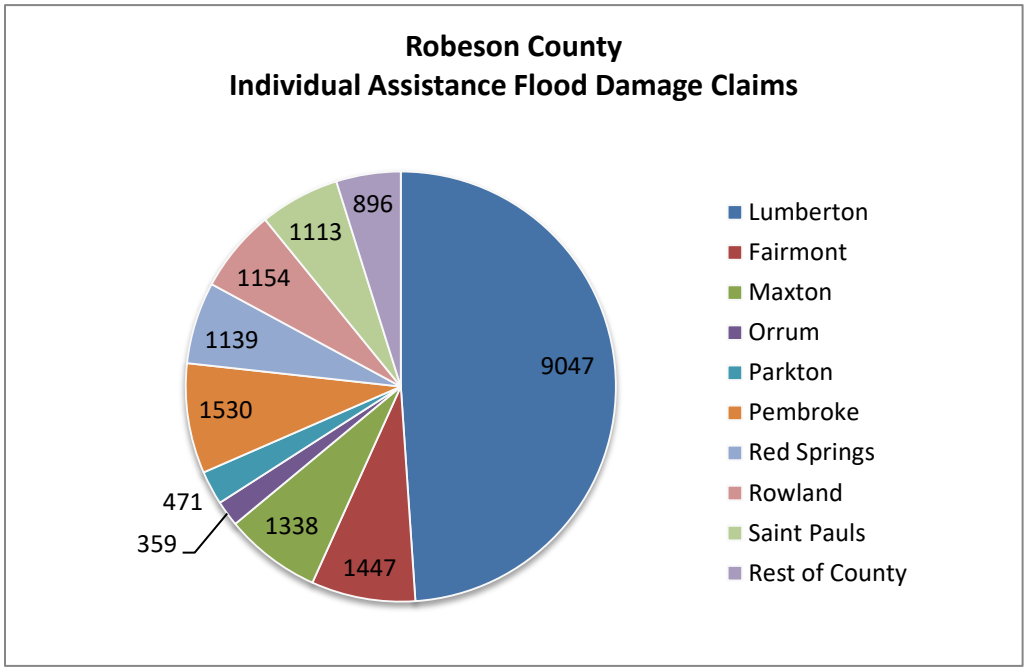


Figure 11: Number of IA Flood Damage Claims by Area

The bullets below summarize some of the major impacts to housing that were identified by local officials from the event.

- **Homes Flooded from Hurricane Matthew:** Robeson community officials identified many areas throughout the county that had been flooded. These areas included:
    - In almost every city and town there were large areas of flooding caused by overflowing rivers and streams and drainage systems inadequate to handle the record amount of rainfall. The Towns of Fairmont, Parkton, Pembroke, Red Springs, Rennet, St. Paul's and the City of Lumberton had significant amount of wide spread flooding effecting homes.
    - Large Areas of home flooding in County:
        - South of Lumberton in the headwaters of Hog Swamp and Old Field Swamp.
        - Near the confluence of Jacob Swamp (crossing Old Waterville Road) and the Lumber River.
        - East of Lumberton in the headwaters of Jackson Swamp.
        - Northeast of Lumberton in areas between Raft Swamp, Saddletree Swamp and Little Tenmile Swamp.
        - East of the Town of Rowland between Ashpole Swamp and Scotts Mil Branch
    - **Extreme Flooding:** West and South Lumberton, a majority of the homes were flooded with water from the Lumber River overtopping I-95 and running through the VFW road / CSX underpass of I-95, plus runoff from Jacob Swamp and its tributaries. Historically these areas are prone to flooding from Gum Branch, Cotton Mill Branch, Jacob Swamp and the Lumber River. In the 1970s, the U.S. Soil Conservation Service (SCS) developed the Jacob Swamp Watershed Plan and with Congressional authorization built the Lumber Levee and performed channel

improvements to reduce flooding and provide a 100-year level of protection. Since then the level of protection has eroded and the area is seeing more frequent and severe flooding.

- **Homes At-Risk of Future Flooding:** In Robeson county, there is significant development in the floodplain. Since Hurricane Matthew the Hazard Mitigation Grant Program has had 558 application for home acquisition and elevation in Robeson County. The communities at the most risk of continued flooding are:
    - East edge of Red Springs near the Little Raft Swamp
    - Trailer Park Community east of Red Springs between the Little Raft Swamp and Raft Swamp.
    - Town of Rennet along the banks of Big Marsh Tributary 2.
    - City of Lumberton
        - West & South Lumberton Communities in the Jacob Swamp Watershed.
        - West Lumberton North of I-95

Economics / Business / Jobs

There were significant impacts to the economy in Robeson County from Hurricane Matthew. The bullets below summarize some of the impacts to the economy/businesses/jobs that were identified by local officials from the event.

- **Downtown Areas Impacted:** Due to the extreme rainfall amounts most downtown area in the County had significant flooding that just could not be cleared by existing drainage system. This caused business disruptions for days due to loss of power, flooding of roads and business. In many areas, even after the flood receded, a mess of sand and debris still clogs the streams and drainage systems causing lesser rain events to flood and impact business.
- In several communities in which significant flooding accrued, there are still businesses that have not recovered. They include City of Lumberton, Town of Fairmont and Pembroke.
- **Employment:** According to the North Carolina Department of Commerce, the unemployment rate in Robeson County before Matthew (in September of 2016) was 6.8%. The North Carolina average was 5.0%. In January of 2017, the rate in Robeson County had increased to 8.2%.

Infrastructure

According to Public Assistance claims, which are often closely tied to infrastructure, as of March 20, 2017 there were $3,720,324 of claims in Robeson County as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew may still be pending, so this number may not reflect the final claims data from the event.

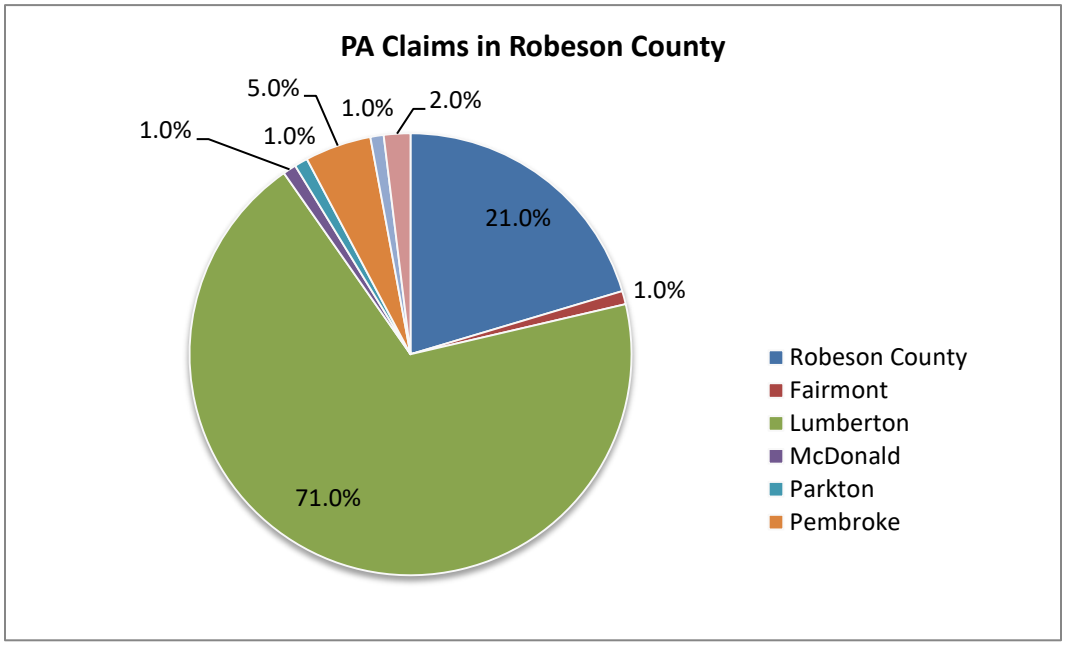


Figure 12. Robeson County PA Claims by Area and Percentage

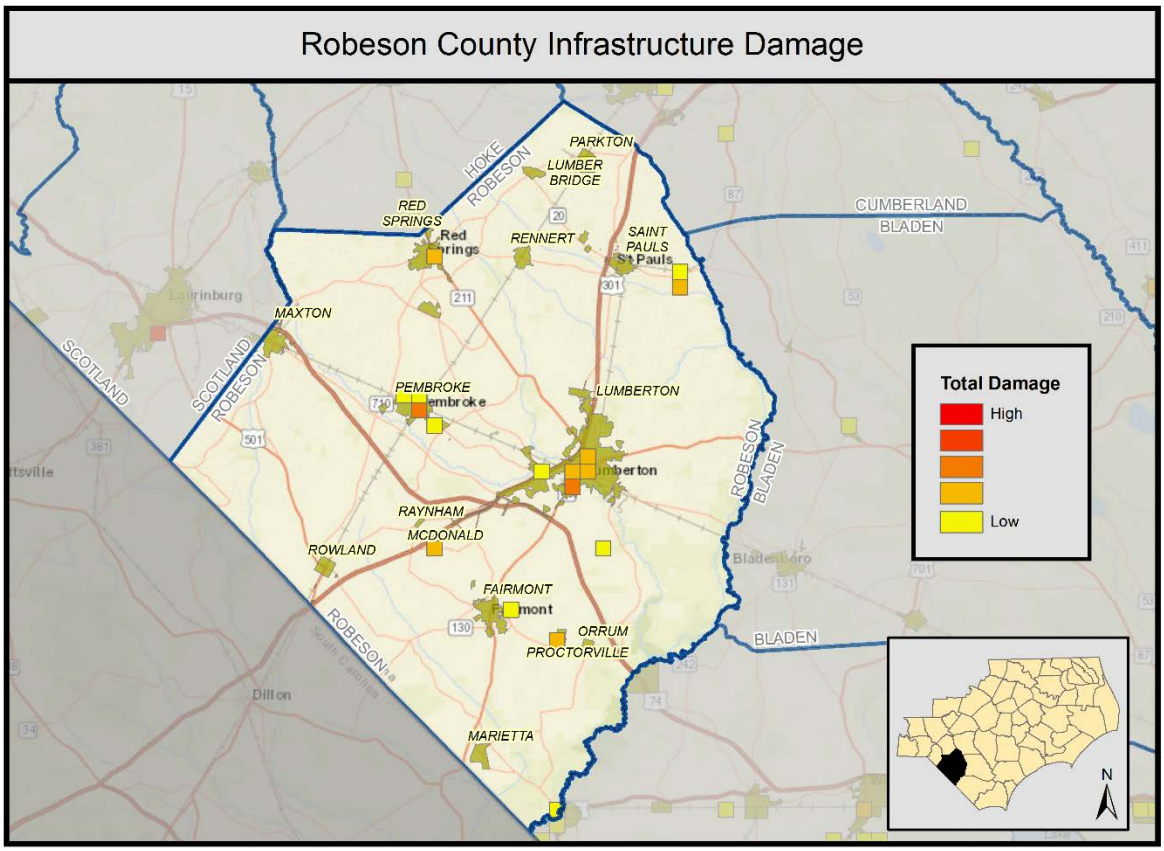


Figure 13: Roberson County Infrastructure Damage

County infrastructure was one of the greatest areas of concern in the wake of Hurricane Matthew as there were several types of infrastructure that were damaged in multiple locations. The bullets below summarize some of the major impacts to infrastructure that were identified by local officials from the event.

- **Dam Issues:** Robeson County has small number of hazardous dams, most of them being privately-owned. During Hurricane Matthew, two dams were noted as overtopping and having issues, but not with the dam itself. The flood waters washed out the roads just downstream of each dam. The two dams identified were:
    - Dogwood Drive Dam on Fairmont
    - Dam off of 72 on Richard Swamp, just outside Red Springs
- **Road/Bridge Flooding:** Roads and bridges overtopping are common occurrences in Robeson County and impacted a number of different locations during Hurricane Matthew. The sheer volume of rainfall caused the overtopping of roads and structures that had not been seen historically. For example:
    - NCDOT identified 65 location throughout the county where roads were closed due to high water or washout of road or structure. This included several locations along I-95 that were blocked due to water overtopping the road.
    - As mention above almost all communities had roads overtopping. In several communities like Fairmont, Pembroke, Red Springs and Lumberton the severity of flooding significantly limited travel. At the height of the flooding, residents of South Lumberton needed to be rescued by boat and helicopter since the road were impassable even by the most robust of vehicles.

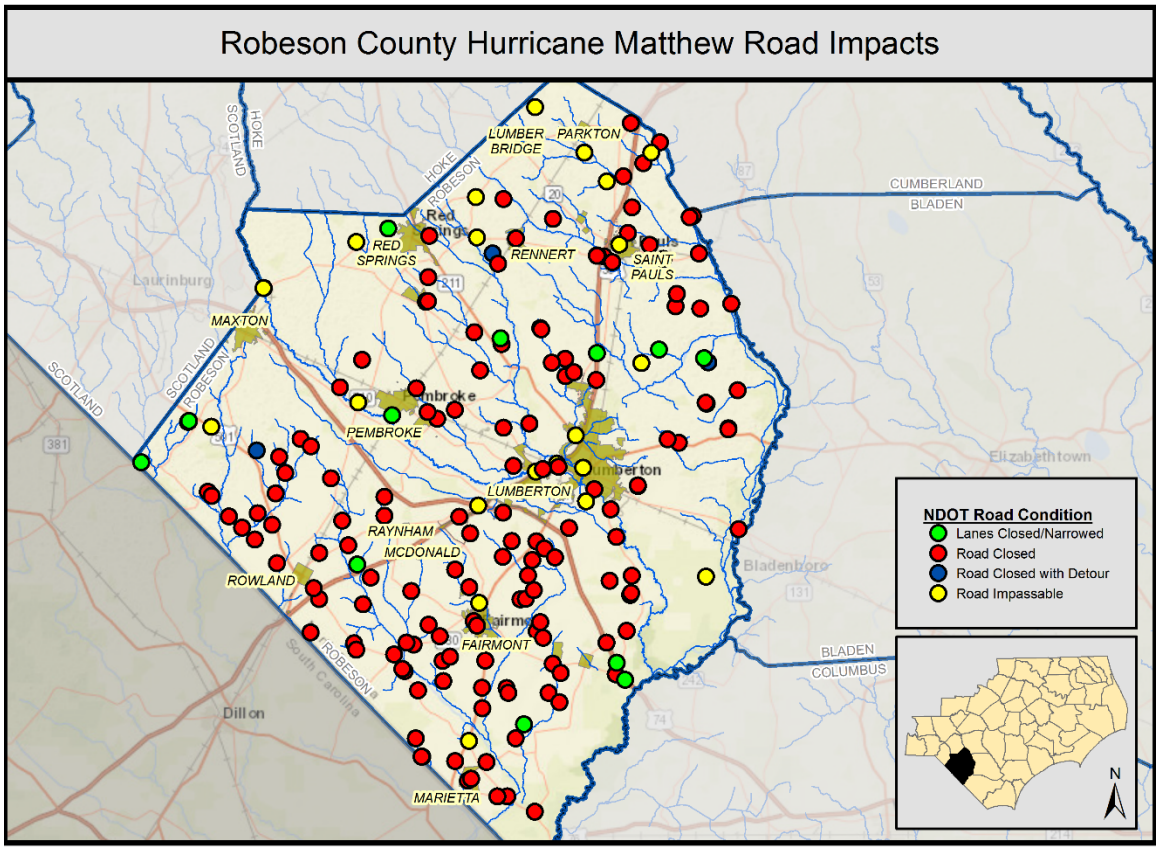


Figure 14: Impacted NCDOT Structures in Robeson County

- **Water/Wastewater Infrastructure:** Water and wastewater infrastructure is critical to maintaining health and well-being of the public in the wake of a storm event. Often this infrastructure is threatened due to the necessity of placing it near water bodies, which naturally increased the risk of flooding. During

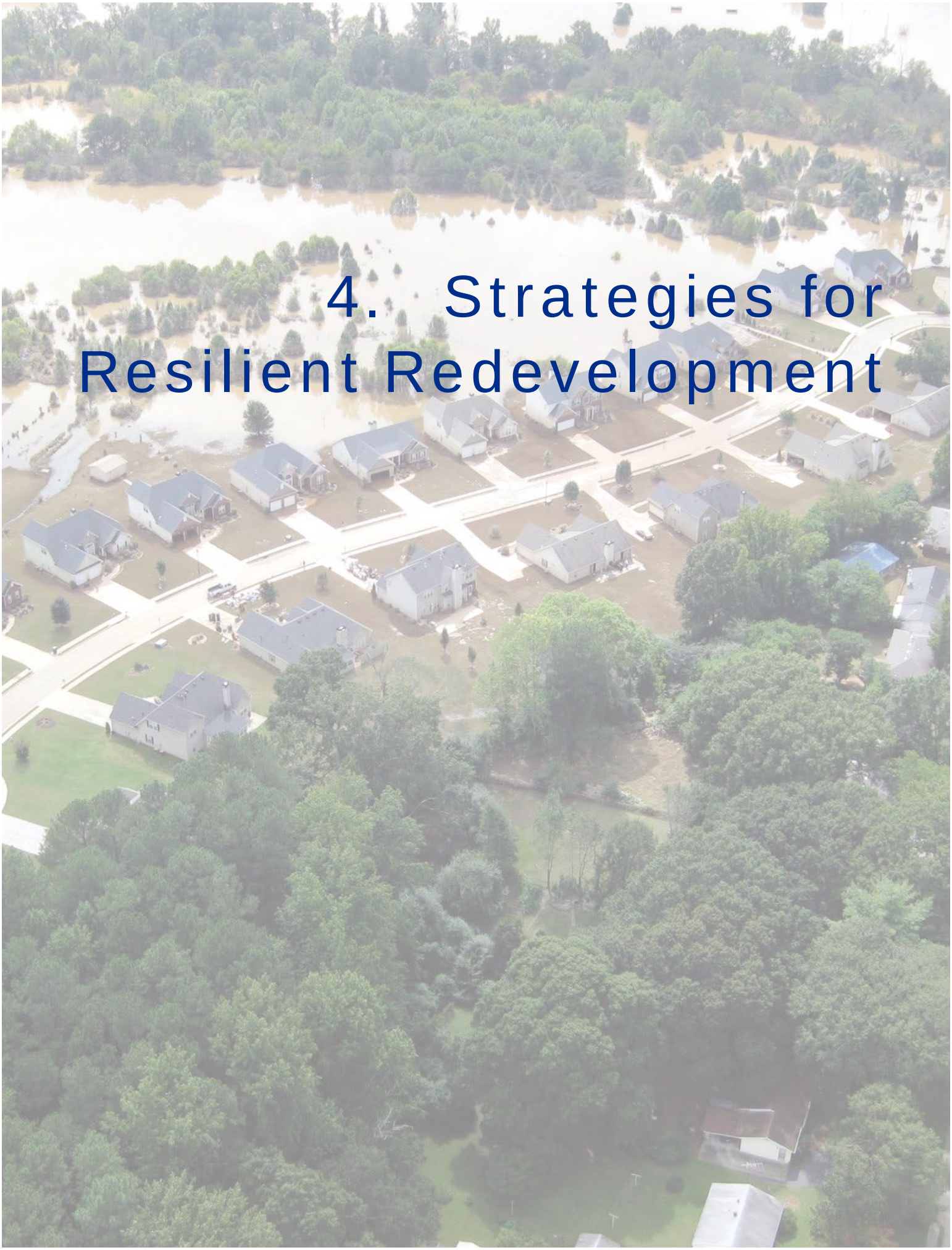
Hurricane Matthew, a number of water/wastewater facilities were impacted in Robeson County. Two examples:

- In the City of Lumberton, the city's water plant was completely inundated by Lumber River flood waters coming through 1-95 at VFW Road. The resulted in a complete loss of potable water for the city.
- In the Town of St. Paul, the sewer plant was flooded by water coming from Big Marsh Swamp. This resulted in the loss of service to community and system overflows.
- Robeson County's water system had nine sections of water main washed away by floodwaters washing out roads and stream beds at pipe crossings. These breaks in the water system hinder operations for weeks until all the line could be capped off.

Ecosystems / Environment

Overall, environmental impacts in Robeson County as a result of Hurricane Matthew were relatively minimal. However, there were some noteworthy incidents that may not have explicitly impacted the environment and ecosystems, but which brought to light some underlying issues related to maintenance of environmental features that the county faces recurrently.

- **Natural Debris Buildup Causing Flooding:** Throughout the county there are drainage ditches and streams that have been filled with silt and debris limiting the natural flow of water. This debris is frequently in the form of downed trees and other buildup of natural remains. This debris is also caught underneath bridges and in culverts, causing a jam which backs up water upstream and results in flooding.
- **Natural Debris Needing to be Removed:** Since the storm a considerable amount of debris (trees, brush, silt and sand) has been removed from roads, parking lots and public and private property. But there is still a lot of cleanup to do. One example of this is along W 5th Street in West Lumberton where tons of sand flowed through the I-95 underpass and was deposited throughout the area.
- **Spills and Overflows:** As mentioned above, the Town of St. Paul's experienced sewer overflows that can pollute the immediate environment with untreated sewage. There was also an incident where Robeson Public Schools' fuel tank was damaged in the storm and fuel spilled into the flood water of the Lumber River. In both situations, the issue was address and mitigated.



4. Strategies for Resilient Redevelopment

4. Strategies for Resilient Redevelopment

This section introduces the resilience and revitalization needs and opportunities in Robeson County that were identified during meetings with local officials on March 2, March 23, and April 17, 2017. The public engagement events, stakeholder meetings, and interviews were also held on those same days. The identified needs are based on Robeson County's observations of Hurricane Matthew's impacts on its housing stock, infrastructure, economy, and environment that were identified during these meetings and in comments posted on the North Carolina Emergency Management website. The identification of opportunities was based on information from the public gathered at the three meetings, frequent coordination calls with County and local officials and from many state agencies and organizations.

Draft resilience strategies and actions were first presented at Meeting 2 of the planning process. This was done to garner general buy-in on the draft strategies and actions from the County level planning teams. More details on the strategies and actions were collected between Meetings 2 and 3 through research and follow-up phone calls and emails with the primary points of contact assigned to each strategy or action. The purpose of Meeting 3 was to collect and finalize details for the draft strategies and actions. Meeting 4 allowed the county to rank the identified actions, group them into High, Medium, and Low Priorities, and to approve their inclusion in the plan.

Pillar	Project/Action Count
Housing	7
Economic Development	4
Infrastructure	30
Environment	6
Grand Total	**47**

Table 4. Robeson County Summary of Projects by Pillar

The following table lists the actions and strategies identified by Robeson County during Meeting 4. The county ranked actions 1-10, with the remaining strategies ordered by priority set during Meeting 4, sorted alphabetically.

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	City of Lumberton Water Plant Enhancements	**High**	**1**
Infrastructure	City of Lumberton Secondary Water Supply	**High**	**1**
Infrastructure	Robeson County Water System Improvements	**High**	**1**
Infrastructure	Robeson County Water System, add Elevated Water Tank	**High**	**1**
Infrastructure	Implement Lumberton Levee Enhancements	**High**	**2**
Infrastructure	Jacob Swamp Watershed Plan Restoration	**High**	**3**
Infrastructure	Upgrade Vulnerable Roads and Bridges	**High**	**4**
Infrastructure	Robeson County Schools, Central Office Restoration and Resiliency	**High**	**5**
Infrastructure	Robeson County Schools, School Buildings Restoration and Resiliency	**High**	**6**
Housing	Housing Authority of the City of Lumberton, Housing Restoration	**High**	**7**
Housing	Provide Affordable Housing	**High**	**7**
Housing	Provide Rental Assistance	**High**	**7**
Infrastructure	Robeson County Restore Pine Terrace Fire Station	**High**	**8**
Infrastructure	UNC Pembroke Backup Power Generation and Microgrid	**High**	**9**
Housing	Acquisition or Elevation of Flood-Prone Properties	**High**	**10**
Infrastructure	Enhance Flood Warning Systems	**High**	**N/A**
Environmental	Mitigate Hazard Impacts on Vulnerable Dams	**High**	**N/A**
Economic Development	Provide Assistance Programs for Businesses Impacted by Matthew with Little or No Insurance	**High**	**N/A**

Pillar	Action Name	Priority	Overall Ranking
Housing	Provide Assistance Programs for Residents Impacted by Matthew with Little or No Insurance	**High**	**N/A**
Infrastructure	Robeson County & Town of Pembroke Water Supply Interconnect	**High**	**N/A**
Infrastructure	Town of Pembroke Sewer System Enhancements	**High**	**N/A**
Infrastructure	Town of Pembroke Stormwater Enhancements	**High**	**N/A**
Infrastructure	Town of St. Paul's Sewer Plant Enhancements	**High**	**N/A**
Infrastructure	UNC Pembroke Stormwater Enhancements	**High**	**N/A**
Infrastructure	City of Lumberton, Stormwater Enhancements for Hospital	**Medium**	**N/A**
Environmental	Floodway Restoration on Meadow Branch	**Medium**	**N/A**
Economic Development	Implement Downtown Rehabilitation/Revitalization Projects	**Medium**	**N/A**
Infrastructure	Implement Stormwater Improvements	**Medium**	**N/A**
Housing	Provide Additional Case Management	**Medium**	**N/A**
Infrastructure	Provide Backup Power or Microgrid	**Medium**	**N/A**
Infrastructure	Restoration and Implement Mitigation of Public Facilities	**Medium**	**N/A**
Infrastructure	Robeson County Community College Stormwater Enhancements	**Medium**	**N/A**
Infrastructure	Robeson County Schools, Equipment Restoration	**Medium**	**N/A**
Infrastructure	Storm System Cleaning and Restoration Projects	**Medium**	**N/A**
Infrastructure	Town of Pembroke Drainage System Enhancements	**Medium**	**N/A**
Infrastructure	Town of St. Paul's Stormwater System Enhancements	**Medium**	**N/A**
Infrastructure	UNC Pembroke Roadway Restoration	**Medium**	**N/A**
Environmental	Environmental Cleanup of Public & Private Property	**Low**	**N/A**
Environmental	Expand Recreational Lands & Preserve Floodplain	**Low**	**N/A**
Economic Development	Long Term Recovery Planning	**Low**	**N/A**
Environmental	Perform Detailed Studies of Unmapped Flood Sources	**Low**	**N/A**
Infrastructure	Town of Pembroke Sewer Plant Enhancements	**Low**	**N/A**
Infrastructure	Town of St. Paul's Secondary Water Supply	**Low**	**N/A**
Economic Development	UNC Pembroke Business Incubator Restoration	**Low**	**N/A**
Housing	UNC Pembroke Elevate Chancellor's Residence	**Low**	**N/A**
Infrastructure	UNC Pembroke EOC Enhancements	**Low**	**N/A**
Infrastructure	UNC Pembroke Gas Line Repairs	**N/A**	**N/A**

Table 5. Strategies by Rank and Priority

On the following pages, we have organized the projects and actions by pillar. Within each pillar, the projects are grouped by county priority. Please note that maps are provided for all projects that have a specific location within the county. Projects without maps are county-wide projects that will benefit citizens throughout the county.

Housing Strategies

High Priority Housing Strategies

Pillar	Strategy/Action Name	Priority	Overall Ranking
Housing	Housing Authority of the City of Lumberton, Housing Restoration	**High**	**7**
Housing	Provide Affordable Housing	**High**	**7**
Housing	Provide Rental Assistance	**High**	**7**
Housing	Acquisition or Elevation of Flood-Prone Properties	**High**	**10**
Housing	Provide Assistance Programs for Residents Impacted by Matthew with Little or No Insurance	**High**	**N/A**

Table 6. Robeson High Priority Housing Summary

These four housing strategies that Robeson County indicated are the highest priority to address. Additional detail on the projects can be found below:

- **Housing Authority of the City of Lumberton, Housing Restoration:** The Housing Authority of the City of Lumberton suffered significant flood damage during Hurricane Matthew. They experienced damage to their office complex and several of their housing complexes. The authority needs support restoring their units so residents can return to their homes.
- **This is a county-wide project, so no project area map has been included.**

Housing Authority of the City of Lumberton, Housing Restoration

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 7

Project Timeframe: ongoing

Location: Lumberton, NC

Project Summary: The Housing Authority of the City of Lumberton suffer significant flood damage during Hurricane Matthew. They experienced damage to their Office complex and several of their housing complexes. It was recently reported that 5 of the 7 complexes they own were damaged and 270 home are still in need of repair.

Financial support is needed to restore housing.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This will support the substantial need for housing in the community.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Restore much needed housing to the community and allow working families to return to a more normal life of working and being secure in their community.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

-

- **Provide Affordable Housing:** Many of the homes impacted by flooding fell into the category of affordable housing. There is a need to provide additional units of affordable housing for purchase. Affordable housing is needed throughout the county, but the recommendation is to focus efforts on areas of lost housing, such as Lumberton, Red Springs and Unincorporated area.
- **This is a county-wide project, so no project area map has been included.**

Provide Affordable Housing

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 7

Project Timeframe: 1-3 years

Location: Robeson County, North Carolina

Project Summary: Provide Affordable Housing
Build additional units of affordable housing to be sold.
Details- Affordable housing priorities will focus on added units in areas of Lumberton, Red Springs, and other areas of the county where loss of homes is identifies with IA and HMGP applications.
Other area in need of affordable housing are Pembroke and St. Paul's
Resiliency- Help to relocate residents out of areas at-risk of flooding

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	There is and has been a significant shortage of affordable housing and rental property in Robeson County. Hurricane Matthew exacerbated the problem by damaging or destroying a large amount on this limited resource. This project directly addresses this unmet need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	New affordable housing will support the growth of community directly.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	This action is not expected to negatively affect the environment.	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Provide Rental Assistance:** Affordable housing for rent is limited in Robeson County. This strategy would help provide area residents displaced by Hurricane Matthew assistance in finding an affordable home to rent. It is assumed that most of the rental units would be new construction, but there may be some opportunity to refurbish and flood-proof properties that were damaged in the storm. Care should be made to help to ensure fewer residents are living in areas at-risk of flooding and that new homes are built outside of the special food hazard area.
- **This is a county-wide project, so no project area map has been included.**

Provide Rental Assistance

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 7

Project Timeframe: 1-3 years

Location: Robeson County, North Carolina

Project Summary: Provide rental assistance to residents permanently displaced by storm
Details
- Build additional rental units.
- Areas of Lumberton
- Areas of Red Springs
- Area of home losses define with Acquisition data (Needed, Map/Description of Project Area)
- Restore rental units
- Location in Lumberton Needed

Resiliency
- Provide much needed housing for displaced.
- Help to have less residents living in areas at-risk of flooding

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	There is and has been a significant shortage of affordable housing and rental property in Robeson County. Hurricane Matthew exacerbated the problem by damaging or destroying a large amount on this limited resource. This project directly addresses this unmet need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The addition of affordable rental housing will support the growth of community directly.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Unknown until we know specific sites	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Acquisition/Elevation of Damaged Homes:** This strategy aims to provide funding for programs to assess and identify best solutions for widespread repetitive flooding of homes and continual flood risk in residential communities. The county would like to include the options of elevation, reconstruction, and/or acquisition as a part of this program. This strategy would fund the Hazard Mitigation Grant Program (HMGP) which has received the follow quantity of applications in the county.
    - Unincorporated Robeson County - 159 applications
    - City of Lumberton - 387 applications
    - Town of Red Springs - 12 applications
- **This is a county-wide project, so no project area map has been included.**

Acquisition or Elevation of Flood-Prone Properties

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 10

Project Timeframe: 1-3 years

Location: Lumberton, Red Springs, and other areas of Robeson County

Project Summary: Use voluntary acquisition or elevation of homes as a strategy to remove or reduce flood risk to structures in high-risk areas. Several property owners affected by Hurricane Matthew have expressed interest in participating in acquisition/demolition or elevation activities. Robeson County maintains a list of these properties and continues to gather information for use in future grant applications for these activities. 558 (HMGP apps) households interested in these types of mitigations.

This strategy would also provide gap funding for homeowners who have had their home bought-out but still cannot afford the average cost of another home in the area.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The projects that are funded will be removed from the unmet needs list. Those that go unfunded or do not qualify will remain unmet needs.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This project will stabilize a significant amount of housing and mitigate damage for future events.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	Increased green space	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Provide Assistance Programs for Residents Impacted by Matthew with Little or No Insurance:** Establish a grant program for residents of the county to assist with offsetting the financial burden of getting back into their homes.
- **This is a county-wide project, so no project area map has been included.**

Provide Assistance Programs for Residents Impacted by Matthew with Little or No Insurance

County: Robeson

Priority Grouping: High Priority

Priority Ranking: N/A

Project Timeframe: 1 year

Location: Robeson County, North Carolina

Project Summary: Establish a grant for residents of the County to assist with offsetting the financial burden of getting back into their homes.
Details
Residents impact by the storm, that have exhausted FEMA IA request and insurance but are still in need of building supplies or big ticket items such as furniture, appliances and necessary Items to return to their homes.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Project directly addresses an unmet need identified post Hurricane Matthew. This program would directly support residents getting back into their homes and back to living/working in their community.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This program would directly support residents getting back into their homes and back to living/working in their community.	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	Minimum	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Medium Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Provide Additional Case Management	**Medium**	**N/A**

Table 7. Robeson Medium Priority Housing Summary

Robeson County indicated this strategy as medium priority to address. Additional detail on the strategy can be found below:

- **Provide Additional Case Management:** Additional case managers are need to handle the caseload of all the residents that were displaced. Currently there are six case managers to provide service for the 18,000 request of assistance in the county. This strategy would support resident's recovery and help them move back into their homes more quickly.
- **This is a county-wide project, so no project area map has been included.**

Provide Additional Case Management

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: Needed Now

Location: Robeson County, North Carolina

Project Summary: As a result of Hurricane Matthew there were over 1800 people who have requested assistance from FEMA and the State. A large group of these request were made by residents of LMI and limited education. But currently (6 months later) there are only 6 case managers and working on a maximum case load of 35 people. This has resulted in a significant concern that there was not enough assistance being provided with case managers. Residents provided specific instances where a personally assigned case manager could have a significant impact on the challenge of coordinating agencies and recovery activities. It was recommended that case manager could be organized to work with specific type of cases (renters, home owners, businesses, etc..) and that this would help streamline processes and eliminate duplicate effort.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	As a result of Hurricane Matthew there were over 1800 people who have requested assistance from FEMA and the State. A large group of these request were made by residents of LMI and limited education. But currently (6 months later) there are only 6 case managers and working on a maximum case load of 35 people. This has resulted in a significant concern that there was not enough assistance being provided with case managers.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This will help families return to their homes and work quicker and more efficiently than the would otherwise. Improving and stabilizing the local economy quicker.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	Minimum	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Low Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	UNC Pembroke Elevate Chancellor's Residence	**Low**	**N/A**

Table 8. Robeson Low Priority Housing Summary

Robeson County indicated this strategy as a lower priority to address. Additional detail on the strategy can be found below:

- **UNC-Pembroke Chancellor's Residence:** Provide funds needed to elevate the UNC-Pembroke Chancellor's residence and guest cottage located behind the residence.

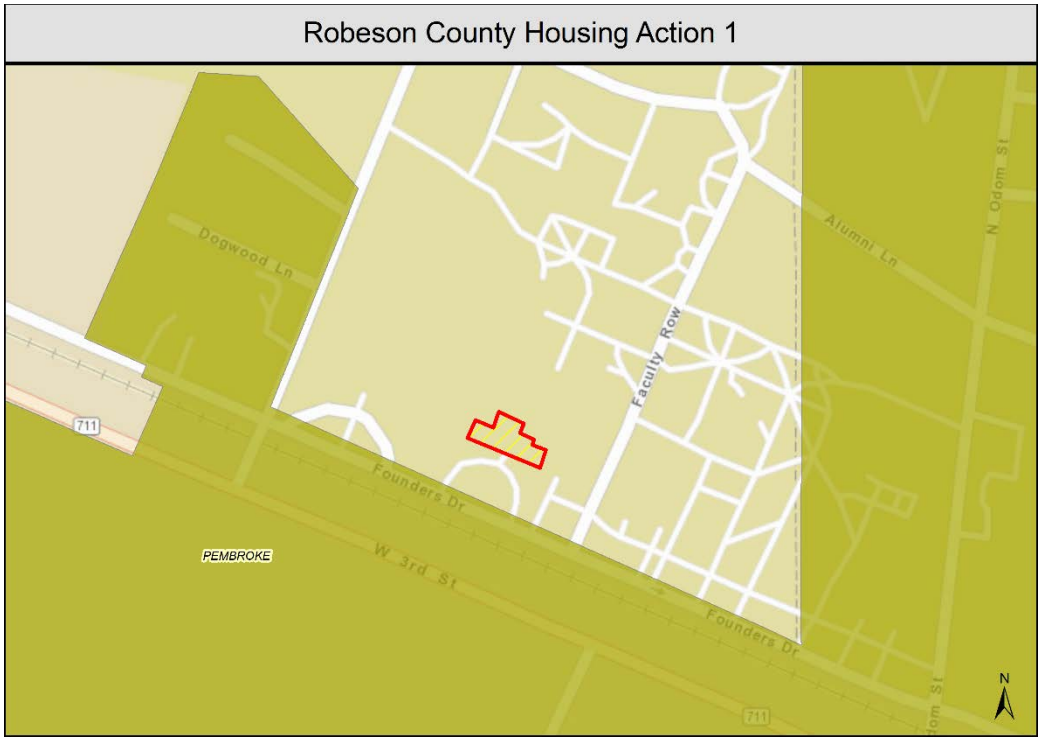


Figure 15. Housing Action 1 - UNC Pembroke Elevate Chancellor's Residence

UNC Pembroke Elevate Chancellor's Residence

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: N/A

Project Timeframe: 1 year

Location: Pembroke, NC

Project Summary: UNC Pembroke Chancellor's residence and guess house were flooded during Hurricane Matthew. During the storm there was more than a foot of water in the guest house, located behind the main residence.

In this project both buildings will be elevated to above the 0.02% BFE.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Elevate builds to mitigate flood damage during next storm event	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	None	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$101K - $250K	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

Economic Development Strategies

High Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Provide Assistance Programs for Businesses Impacted by Matthew with Little or No Insurance	**High**	**N/A**

Table 9. Robeson High Priority Economic Development Summary

This is economic development strategy that Robeson County indicated is of the highest priority to address. Additional detail on the projects can be found below:

- **Provide Assistance Programs for Businesses Impacted by Matthew with Little or No Insurance:** Establish a grant programs for small businesses/churches to assist with the financial burden of returning to operation and preparing for next event. These programs would provide funding for recovery assistance to businesses that did not qualify for Small Business Association (SBA) loans or other recovery programs for non-residential uses. There are many small businesses in Robeson County, and because of the lower-income profile of households, many of these businesses do not have the excess capital to bear the impacts of the storm. Impacts to small businesses included damaged infrastructure, damaged capital investments—both real and other property, lost inventory, lost revenues from both displaced customers and business disruption, payments to employees who were not able to work, and disrupted operations from employees being unable to get to work. Businesses identified as “in need” are located across the county.
- **This is a county-wide project, so no project area map has been included.**

Provide Assistance Programs for Businesses Impacted by Matthew with Little or No Insurance

County: Robeson

Priority Grouping: High Priority

Priority Ranking: N/A

Project Timeframe: 1 year

Location: Lumberton, NC

Project Summary: Many small businesses in the economically distressed areas are locally owned "mom and pop" establishments. The businesses that have begun the rebuild process are attempting to use cash on hand to avoid a Small Business Association loan. This approach has been taken to avoid a potential hardship a loan may produce. Much like the individual owned real property, business owners did not have flood insurance nor did they qualify for FEMA funding. Therefore, the City would like to establish a grant for those "mom and pop" businesses and area churches to assist with offsetting the financial burden of getting the businesses and churches operating. Currently there are fifty businesses not in operation and ten churches.

Potential Pros/Cons of this Project
+ Help the Mom & Pop Businesses
+ Increase jobs in county
+ Impacts entire region
- Unknown funding source

Business Detail:

Below is a short list of business impact by Hurricane Matthew. This list will provide examples of unmet needs, but it is not a complete list of businesses that need support.

Thomas Auto Repair, 5773 NC-41, Fairmont, NC 28340; Timothy Thomas 910-618-8818, Business was inundated with a few feet of water damaging the building, equipment and cars at that location awaiting repair. Several pieces of electronic equipment were destroyed and the office building itself had to be rebuilt.

C & M Barber Shop and Hair Supplies, 105 East Main Street, Rowland, NC 28383; Connie Baker 910-422-8550. During the storm, her roof caved in, which flooded her business out. It destroyed all of her supplies, damaged the floors and walls. She is in need of supplies and repairs to roof, floors, walls, etc.

Rock Hill Missionary Baptist Church, 3698 Pine Log Rd. Lumberton, NC 2836; Bishop George Matthews 910-739-0205; Flooded - Floors and Pews Ruined; Not operational, under repair; Replacement of equipment, gap funding to restore business, cleanup of debris

Divine Barbershop; 1306-A E. 5th St. Lumberton, NC; Johnny McNair; Flooded - 2ft of water; Temporarily relocated, not repaired; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair

Parkview Terrace Recreation Center; 204 Inman St. Lumberton, NC; Lori Washington, 910-671-3873; Flooded; Not operational; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair, cleanup of debris, utilities entering building

Faith Community Church; 1220 Alamc Rd. Lumberton, NC; Pastor Leo Barnwell 910-671-0339; Flooded - 3ft of water destroying content within church; Under repair, not yet restored; Funding and help

Big Wayne Towing; W. 5th St. Lumberton, NC; Wayne Robinson 910-671-0088; Vehicles with water damage, building had water inside, roof damage; Not operational; New building, plank parking accessibility

Matthews - Strip Mall; 1900 MLK Jr. Dr. Lumberton, NC; Paul Matthews; Buildings were flooded (1-2ft of water), flooring, carpet, walls; Closed - all vendors have closed. Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair, cleanup of debris, utilities entering building

Sunset Heights- Rental Property; 2141 Nevada St. Lumberton, NC; Ursula Howard 919-641-5899; Flooded - 2ft of water; Not currently inhabited; Mitigation to prevent future flooding, gap funding to restore business, cleanup of debris

Agape Child Development Center; 211 Prevatte St. Lumberton, NC; Linda Bostic; Walls/flooring destroyed, Lost all daycare equipment Temporarily relocated, not repaired; Would like to restore building; Mitigation to prevent future flooding, gap funding to restore business, cleanup of debris, sidewalk repair

First Baptist Church; 504 W. 2nd St. Lumberton, NC 28358; Wixie Stephens 910-739-3939; Roof leaking, steeple fell, Walls and furinture within destroyed, mold damage. Parsonage also damaged from flooding; Under repair, not yet restored; Mitigation to prevent future flooding,

replacement of equipment, gap funding to restore business

Worley's & Central Mortuary; 200 Sandy St. Fairmont, NC 28340; Ricky Worley 910-734-4426; All walls ripped out, flooring, ceiling damage; Temporarily relocated; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair, cleanup of debris, utilities entering building

Cromartie Temple; 107 Lessane St. Lumberton, NC; Linda Bostic 733-0384; Flooded - 2ft for 5 days, roof damage, church van destroyed by fallen tree, furniture destroyed, 4 ft to muck out; Not operational - SBA loan obtained but does not fully meet needs; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair, cleanup of debris, utilities entering building

New Light Apostic Church of Jesus;19 Allen St. Lumberton, NC; Michael Todd; 910-740-1653; All furniture, equipment, computers lost, 4ft to muck out - est. $60K damage to building; Not operational; Mitigation to prevent future flooding, replacement of equipment, cleanup of debris

Lumber River Baptist Association Assembly Building; 155 Plainview Dr. Lumberton, NC 28358; Thurman Everette, 910-739-3999; water damage inside, furniture destroyed, mucked out 4ft of debris inside; In operation, replaced/repaired on own; Mitigation to prevent future flooding, replacement of equipment, cleanup of debris, sidewalk repair; Ramp installation, shed for disaster kits

Little's Garage; MLK Jr. Dr. Lumberton, NC; Elijiah Little 910-738-2321; store was flooded, cars/vehicles damaged; Not operational; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair, cleanup of debris, utilities entering building

God's Gift Daycare; 4 McCollum St. Lumberton, NC; Betty McArthur 910-785-2492; daycare business was damaged by water; In operation; Seeking reimbursement of material; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair, cleanup of debris, utilities entering building

Smith Chapel Bible of God Church; 380 W. 5th St. Lumberton, NC; Pastor G.W. Winston Jr., 910-671-0947; church located behind the dike and was flooded; Under repair, not yet restored; Seeking reimbursement of material; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, sidewalk repair, cleanup of debris, utilities entering building

Nanny's Corner Daycare;1503 MLK Jr. Dr. Lumberton, NC; Ms. Cromartie 910-618-9911; daycare had entire dwelling flooding with 2-3ft of water as some parts of the business are low foundation, toys, equipment, material damaged Under repair, not yet restored Seeking reimbursement of material; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, cleanup of debris, utilities entering building

Rental Properties; 250 Main St. Lumberton, NC; Andrew McCall 910-391-1225; homes flooded and completely mucked out; Under repair, not yet restored; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, cleanup of debris

Hunt's Tire; 3280 MLK Jr. Dr. Lumberton, NC; Linwood Hunt 910-738-7197; Property located along ditch/bank, flooding caused damage to outside equipment and appliances; In operation; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, cleanup of debris

Kash & Karry Supermarket; 1218 MLK Jr. Dr. Lumberton, NC 910-739-9446; Flooding; In operation; Mitigation to prevent future flooding, replacement of equipment, gap funding to restore business, cleanup of debris

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Many businesses impacted by Hurricane Matthew were small local business. Many were un-insured or under-insured and do not have adequate cash to rebuild their businesses. Direct assistance programs other than SBA loans are needed to reopen these businesses and/or to help them recoup losses.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This will help restore business in local community. Many projects should include mitigation actions that will protect business during next event.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A

How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	Minimum	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Medium Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Implement Downtown Rehabilitation/Revitalization Projects	**Medium**	**13**

Table 10. Robeson Medium Priority Economic Development Summary

This is the economic development strategy that Robeson County indicated is of a medium priority to address. Additional detail on the projects can be found below:

- **Implement Downtown Rehabilitation/Revitalization Projects:** Address physical components like infrastructure and buildings to make structures "move-in ready" with façade and basement foundation improvements as well as modern utilities. This strategy involves providing additional public amenities and improvements to infrastructure and buildings to make them more flood-resistant. One area for economic development was identified in the Town of Pembroke and is shown in the figure below.

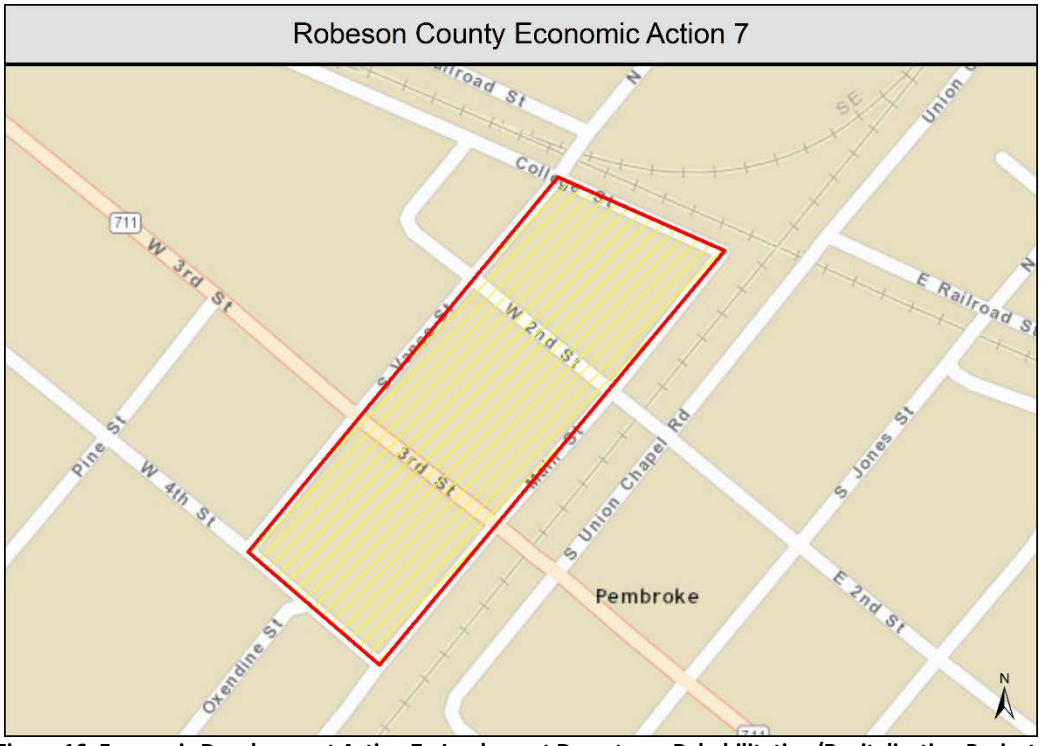


Figure 16. Economic Development Action 7 - Implement Downtown Rehabilitation/Revitalization Projects

Implement Downtown Rehabilitation/Revitalization Projects

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: As funding is available

Location: Lumber Bridge, Parkton, Pembroke, Red Springs, etc.

Project Summary: Details - Address physical components like infrastructure and buildings to make structures 'move-in ready' with façade and basement foundation improvements as well as modern utilities
Public amenities - wayfinding, sidewalks, bicycle, transit stops and street furniture
Sites:- Town of Pembroke, along HWY 711 (from Vanceto Jones Streets) and along Main St. / Union Chapel Road from HWY 711 to Second Street.
Resiliency- Providing additional public amenities and providing improvements to infrastructure and buildings to make them more flood-resistant.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Downtowns significantly impacted by Hurricane Matthew are struggling to recover. If this project is not funded it will remain an unmet need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Downtown revitalization project that will help spur economic development increase transportation options for residents and improve the overall image of downtown.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	<50 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

Low Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Long Term Recovery Planning	**Low**	**N/A**
Economic Development	UNC Pembroke Business Incubator Restoration	**Low**	**N/A**

Table 11. Robeson Low Priority Economic Development Summary

- **Long Term Recovery Planning**: Implement plans to provide long term support for recovery effort.
- **This is a county-wide project, so no project area map has been included.**

- **UNC Pembroke Business Incubator Restoration:** The UNC Pembroke Foundation owns an Entrepreneurial Business Incubator that was significantly impacted by flooding during Hurricane Matthew. This strategy would grant then funding to restore property and make improvements so building is more resistant to flooding. Building is located at 202 Main St in Pembroke, NC (shown below).

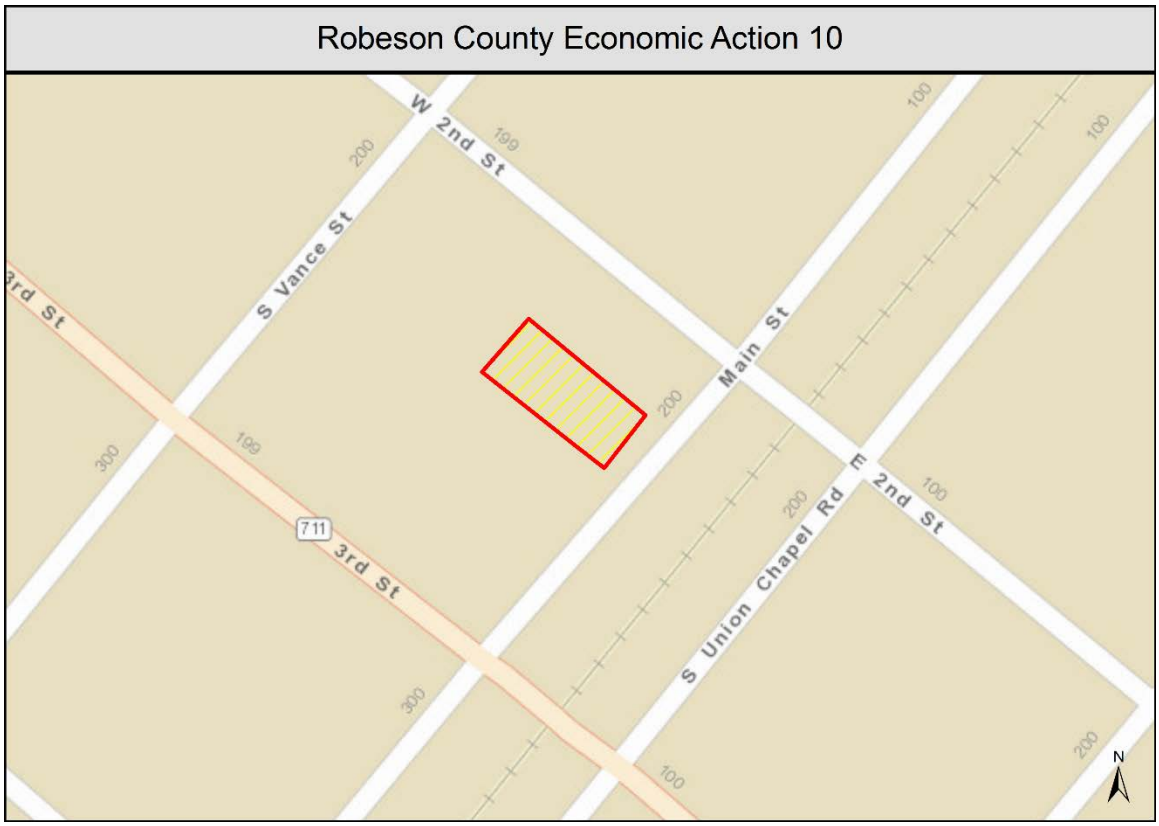


Figure 17. Economic Development Action 10 - UNC Pembroke Business Incubator Restoration

UNC Pembroke Business Incubator Restoration

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: 0

Project Timeframe: Ongoing

Location: 202 Main St. Pembroke, North Carolina

Project Summary: The University of North Carolina Pembroke Foundation owns an Entrepreneurial Business Incubator, located at 202 Main Street in Pembroke, NC that was significantly impacted by flooding during Hurricane Matthew. During the storm there was about 6 inches of water in the building, which led to drywall damage, and equipment damage including the data network entrenched in the floor. The building was closed for about a month, but is currently open after about $80 thousand in repairs. While the facility has been made operational again, this project would restore the building and add flood proofing to prevent future damage.
The Business Incubator serves approximately 40 jobs and currently 8 companies (expected to expand to 16), completing $20 million in contracts last year.
The UNCP Foundation submitted a request for assistance to FEMA that was denied on January 24, 2017.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Restore building to house Business Incubator that serves approximately 40 jobs and 8 companies (expected to expand to 16) completing $20 million in contracts last year.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The building was closed for about a month but is currently open after about $80 thousand in repairs. The Business Incubator serves approximately 40 jobs and currently 8 companies (expected to expand to 16) completing $20 million in contracts last year.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$51K - $100K	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

Infrastructure Strategies

High Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	City of Lumberton Secondary Water Supply	**High**	**1**
Infrastructure	City of Lumberton Water Plant Enhancements	**High**	**1**
Infrastructure	Robeson County Water System Improvements	**High**	**1**
Infrastructure	Robeson County Water System, add Elevated Water Tank	**High**	**1**
Infrastructure	Implement Lumberton Levee Enhancements	**High**	**2**
Infrastructure	Jacob Swamp Watershed Plan Restoration	**High**	**3**
Infrastructure	Upgrade Vulnerable Roads and Bridges	**High**	**4**
Infrastructure	Robeson County Schools, Central Office Restoration and Resiliency	**High**	**5**
Infrastructure	Robeson County Schools, School Buildings Restoration and Resiliency	**High**	**6**
Infrastructure	Robeson County Restore Pine Terrace Fire Station	**High**	**8**
Infrastructure	UNC Pembroke Backup Power Generation and Microgrid	**High**	**9**
Infrastructure	Enhance Flood Warning Systems	**High**	**N/A**
Infrastructure	Robeson County & Town of Pembroke Water Supply Interconnect	**High**	**N/A**
Infrastructure	Town of Pembroke Sewer System Enhancements	**High**	**N/A**
Infrastructure	Town of Pembroke Stormwater Enhancements	**High**	**N/A**
Infrastructure	Town of St. Paul's Sewer Plant Enhancements	**High**	**N/A**
Infrastructure	UNC Pembroke Stormwater Enhancements	**High**	**N/A**

Table 12. Robeson High Priority Infrastructure Summary

These are the infrastructure strategies that Robeson County indicated are the highest priority to address. Additional detail can be found below:

- **City of Lumberton Secondary Water Supply:** Lumberton has the need to create a secondary water supply with additional generators/tanks. This would provide backup water supply source in the event of shutdown due to flooding. This strategy would fund construction of two small treatment plants with wells and backup power which would be activated in the event of another disaster.

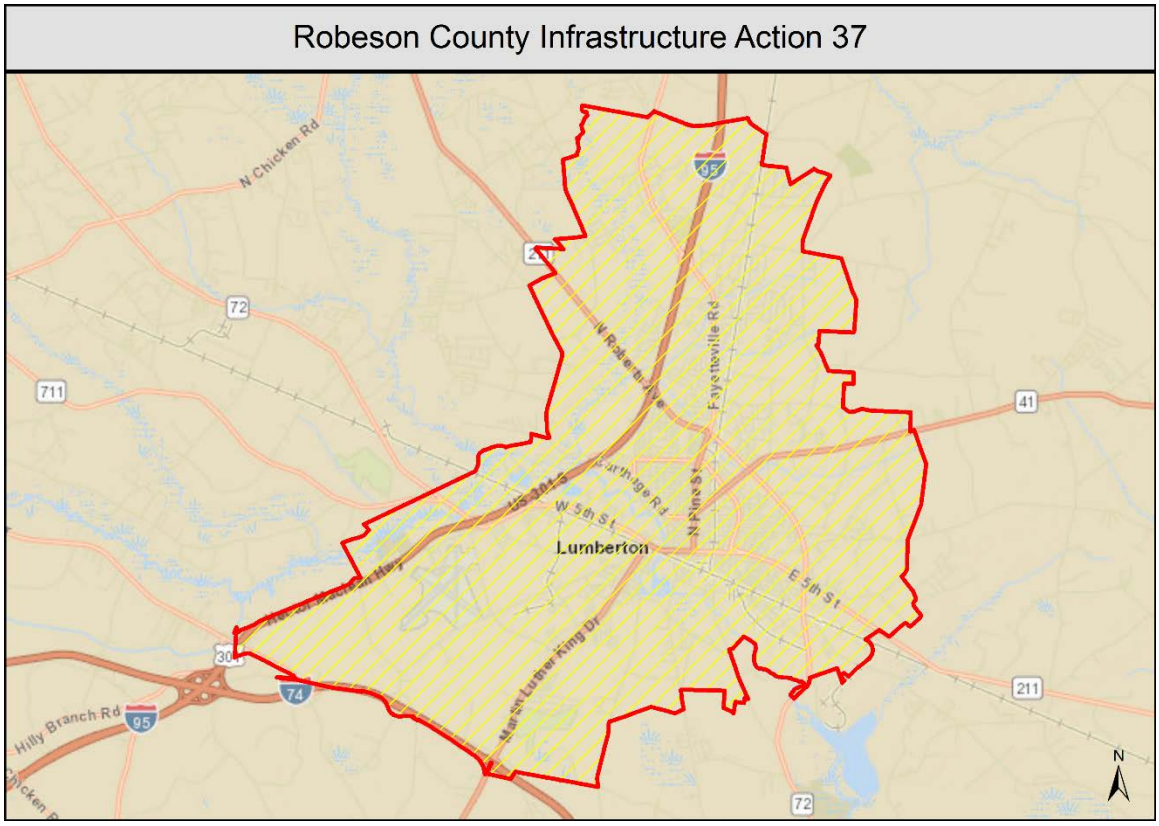


Figure 18. Infrastructure Action 37 - City of Lumberton Secondary Water Supply

City of Lumberton Secondary Water Supply

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: 1 - 2 Years

Location: City of Lumberton, 2 Locations

Project Summary: Currently, there is no backup facility to be able to provide water should the water treatment plant be disabled. The City believes that constructing two small treatment plants which would be activated in the event of another disaster would satisfactorily address this concern.
The project would include the instillation of two water plants with generator for backup power, the drilling of 2 deep wells and the instillation of associated pipe and pumping infrastructure to transport water to system.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Currently there is no backup facility to be able to provide water should the water treatment plant be disabled. The City believes that constructing two small treatment plants which would be activated in the event of another disaster would satisfactorily address this concern.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This will stabilize the City of Lumberton's water supply which will support economical development.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **City of Lumberton Water Plant Enhancements:** Enhance the City of Lumberton water system to allow for plant flooding without a complete loss of water to the city. This strategy would fund repairs made to facility and equipment damaged during Matthew flooding, as well as flood protection with a berm system.

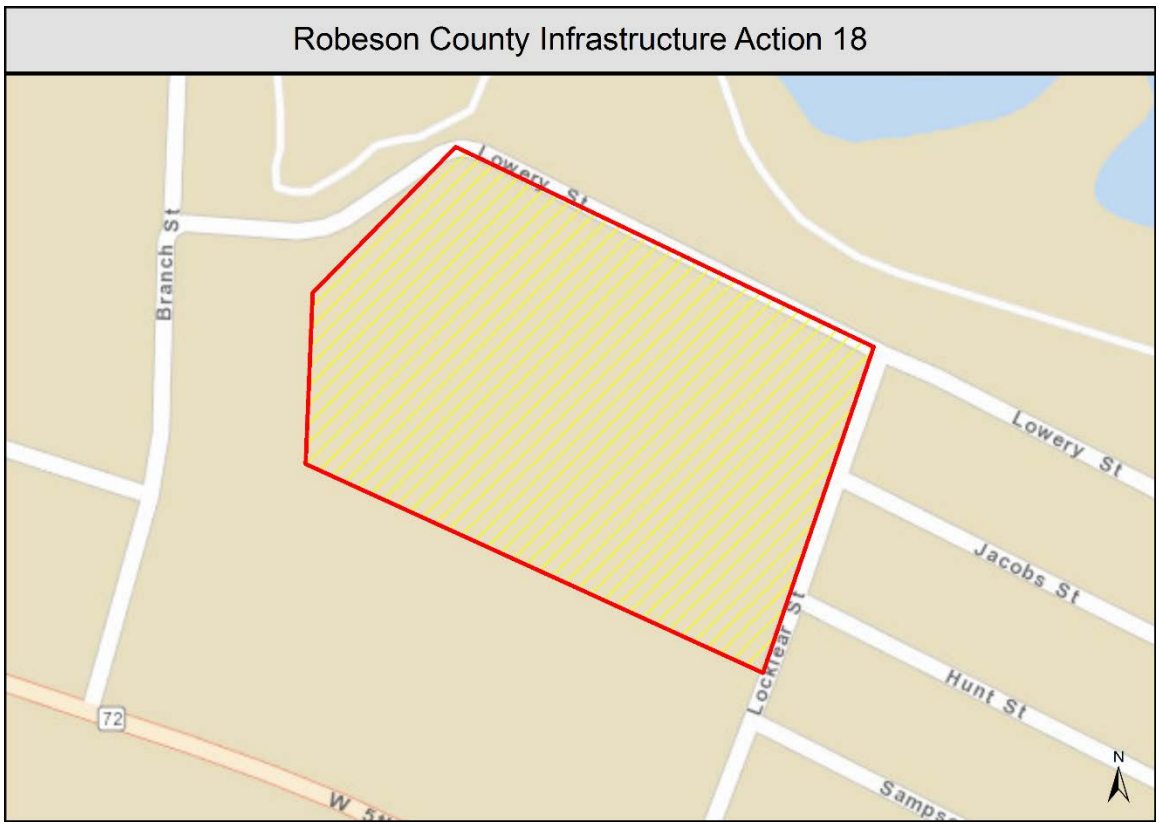


Figure 19. Infrastructure Action 18 - City of Lumberton Water Plant Enhancements

City of Lumberton Water Plant Enhancements

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: In progress

Location: Lumberton, NC

Project Summary: City of Lumberton water plant was inundated with water and damage occurred to structural components impacting overall integrity of the plant. These issues occurred due to high rains during Hurricane Matthew, but these infrastructure elements are also impacted during more frequent (yearly) significant rain events.

Enhance City water system to allow for plant flooding without a complete loss of water to the City.
Enhancements may include:
- Repair of facility and equipment damaged during Matthew flooding
- Flood protecting with berm system

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project will support the restoration of the City's water supply while enhancing it's resiliency to flooding.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This project will help stabilize the Citiy's water supply and work to support economic growth.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Robeson County Water System Improvements:** This strategy funds restoration of water mains damaged during event and the relocation (drilling them deeper) of other water mains at stream crossing currently at risk. All water mains restored or moved as part of this strategy will be put deeper under stream crossing to make them more resilient against washout during the next event.

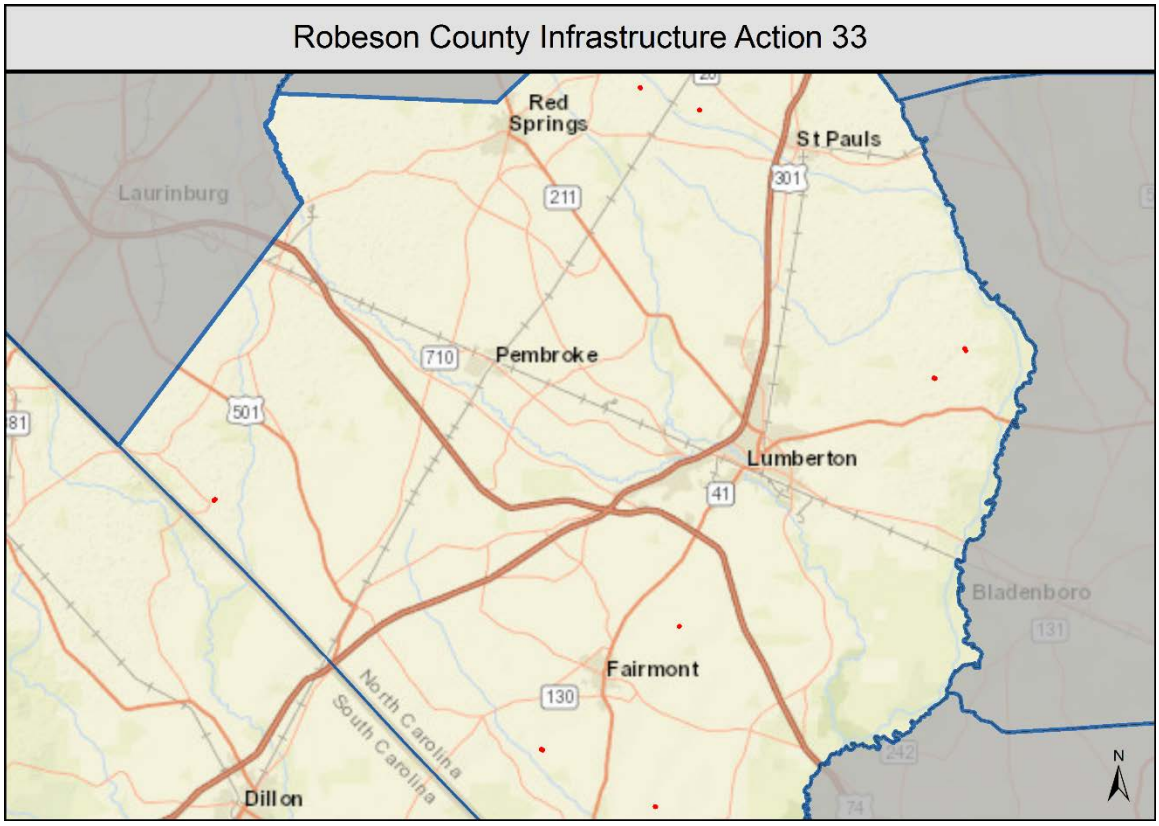


Figure 20. Infrastructure Action 33 - Robeson County Water System Improvements

Robeson County Water System Improvements

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: next 6 months

Location: Robeson County, North Carolina

Project Summary: During Hurricane Matthew Robeson County lost 9 water mains destroyed by flood waters. The county is looking to repair these section of pipe and add resiliency by burying them deep into the ground, under stream or pipe crossings.

See attached drawing for location and repair detail.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.		N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	During Hurricane Matthew businesses were shutdown for 1 to 3 week do to lack of water. These repair and improvements will insure these pipe will not washout again in the next event allowing may business to stay open or open sooner.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?		N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Robeson County Water System, add Elevated Water Tank:** This strategy would fund the installation of a water tank to provide an additional source of water during the next event. This would help mitigate the impact of a water supply failure and improve availability of resources during a disaster event.

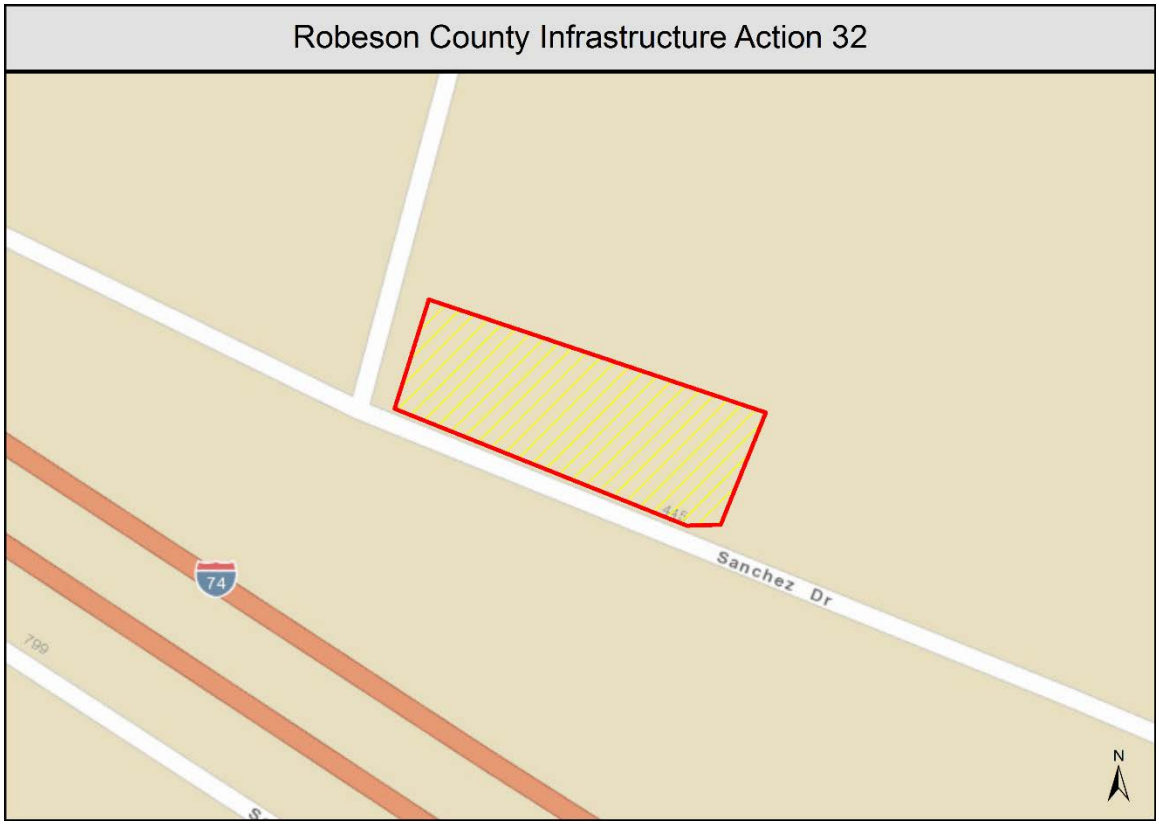


Figure 21. Infrastructure Action 32 - Robeson County Water System, add Elevated Water Tank

Robeson County Water System, add Elevated Water Tank

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: 1-2 years

Location: Robeson County, North Carolina

Project Summary: Install a water tank to provide backup source of water during disaster events
Details
National Guard/first responders use EOC as a base during disaster operations
Would help to provide they County a days worth of water in case of system failure
Resiliency
Would help mitigate the impact of a water supply failure and improve availability of resources during a disaster event

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project is not a direct unmet need from Matthew but could help mitigate against loss of water (as was experienced during Matthew) during future events.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Will allow for increased capacity in system and resiliency against flood drought and other events. All of which will support communities to grow and economic development.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Unknown until a site is finalized	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Implement Lumberton Levee Enhancements:** Installation of flood gates and reinforcements that will prevent the 500-year flood from flowing through the I-95 overpass opening at VFW Road and CXS crossing. Also, rebuilding and reinforcing I-95 bridge abutments to minimize opening and protect from scour during flooding.

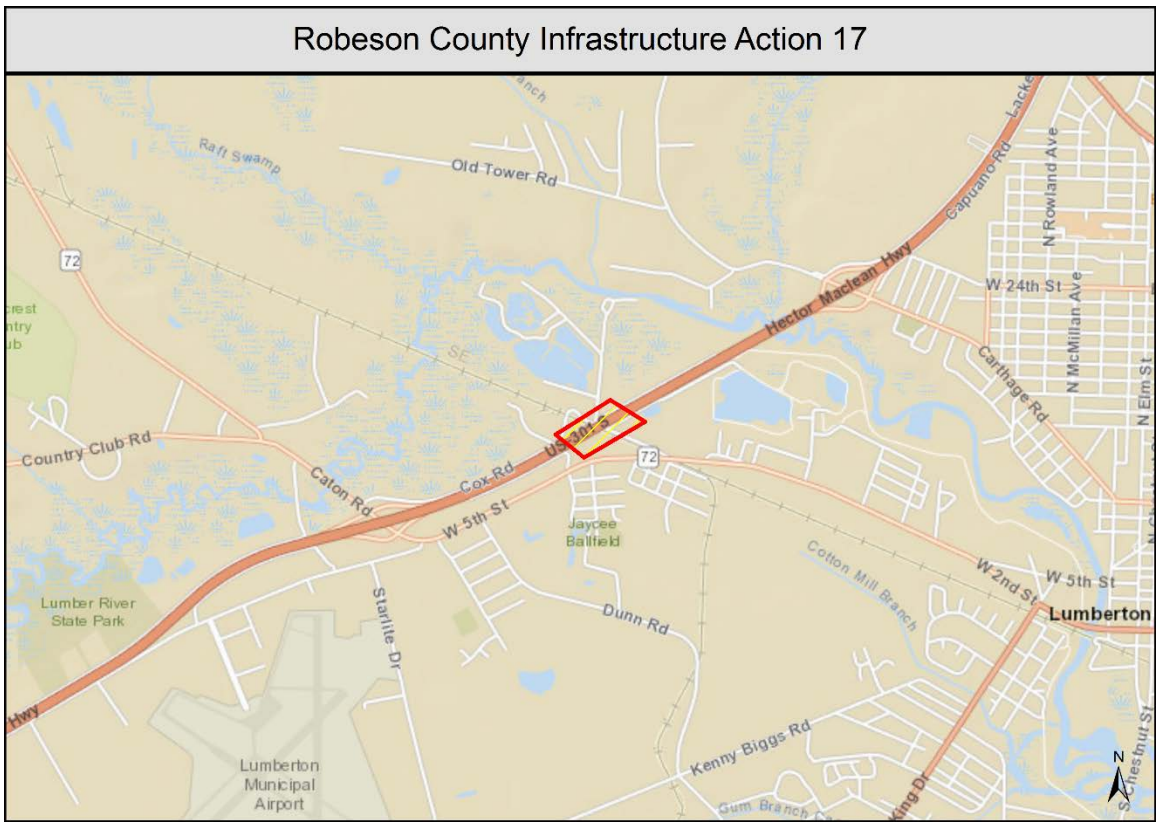


Figure 22. Infrastructure Action 17 - Lumberton Levee Enhancements

Implement Lumberton Levee Enhancements

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 2

Project Timeframe: 3-7 years

Location: Lumberton, NC

Project Summary: During Hurricane Matthew, floodwaters poured though the opening in the levee where VFW road and CSX Railroad pass through. This flow inundated the city's water plant and caused excessive flooding in the areas behind the levee.
Implement actions that will prevent the 500-yr flood from flowing through the levee opening at VFW Road and CXS crossing
Details-Rebuilding and reinforcing I-95 bridge abutments to minimize opening and protect from scour.
Installing flood gate on road. Installing flood gate on railroad.
Install floodwall from gates to road embankments.
Resiliency- Help to mitigate flooding in future events in West and South Lumberton.
Contact: Brandon Love; City of Lumberton, Needed - NCDOT, Needed - CSX.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If this project is not completed future flooding similar to what occurred could be experienced again in the future.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Reduced future flooding will have a tremendous impact on the economy by preventing shutdowns as those seen following Matthew.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Higher than 75%	N/A
What impacts to the environment of the county will result from this project?	Minimal environmental impacts	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Jacob Swamp Watershed Plan Restoration:** This strategy would fund improvements to restore the 1% flood protection level for South and West Lumberton. Improvements need to be made to the ditches, channels, streams and structure crossings to restore 1% flood level of protection. Additionally, pump stations could be installed to draw down collection canal and provide additional capacity for storage and flow when the next event happens.

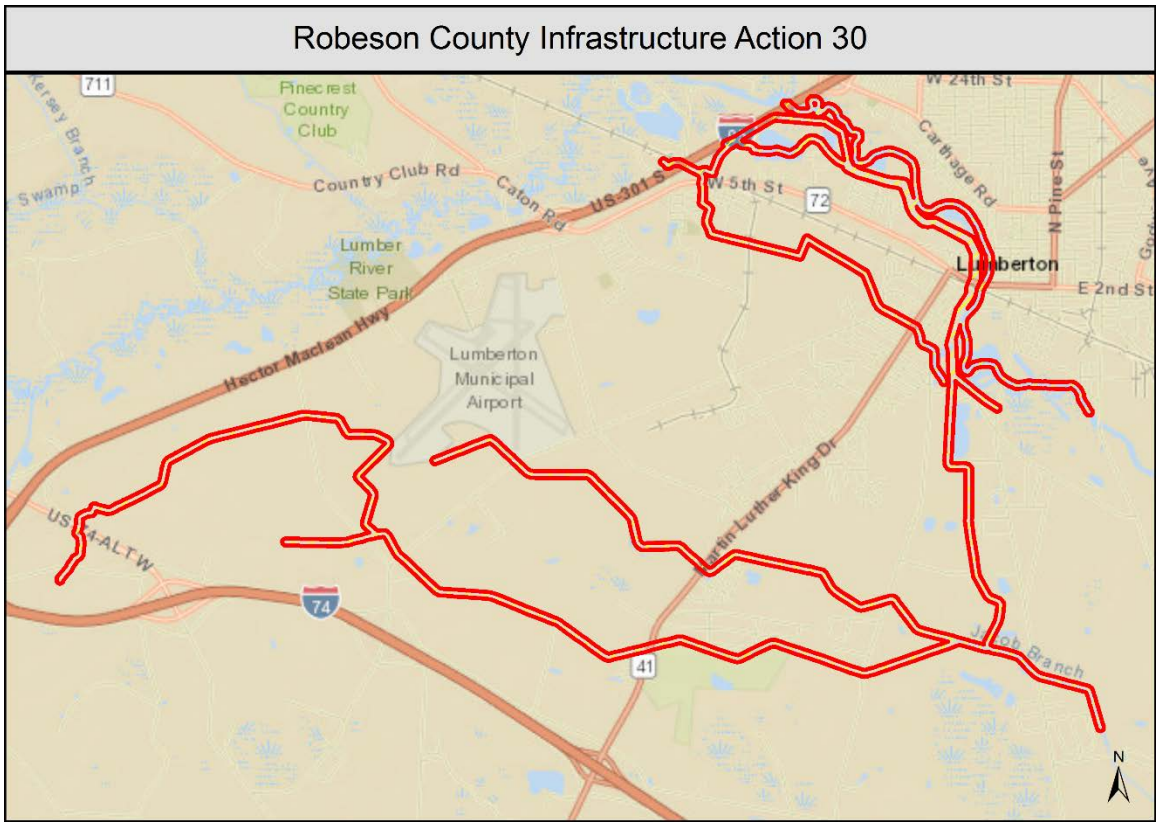


Figure 23. Infrastructure Action 30 - Jacob Swamp Watershed Plan Restoration

Jacob Swamp Watershed Plan Restoration

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 3

Project Timeframe: 1-3 years

Location: South & West Lumberton, NC

Project Summary: Project Description from Robeson County FIS, Dated July 7, 2014
In the mid-1960's, the residents of the City of Lumberton living in the Jacob Swamp drainage basin requested assistance from Robeson County, the City of Lumberton, and the Robeson County Soil and Water Conservation District (RCSWCD) to reduce flooding from Jacob Swamp and its tributary streams. The RCSWCD, with the assistance of the U.S. Department of Agriculture, Soil Conservation Service (now the NRCS), developed a watershed plan for Jacob Swamp. With Robeson County, the City of Lumberton and the RCSWCD as sponsors, the NRCS developed a watershed plan. This plan was submitted to Congress for authorization and funding. Once authorization was received, NRCS designed the Jacob Swamp project to meet the requirements of the approved watershed plan.

The project included improvements to the existing Jacob Swamp, Little Jacob Swamp, Gum Branch, and Cotton Mill Branch channels in order to increase their ability to remove flood water from the area. The project also included a levee along the Lumber River to prevent flooding from the Lumber River. This project was designed to prevent damage predicted by the 1% (100-year) annual chance flood, as determined using data available at that time. In order to provide this level of protection, the existing channels needed to be enlarged, and a levee needed to be installed along the Lumber River. This levee consisted of a combination of the I-95 embankment and a constructed levee from I-95 to Alamac Road.

During the construction of the channel improvement portion of the project, the channel work in the upper end of the Jacob Swamp main canal was modified to divert the portion of Jacob Swamp west of the Lumberton Municipal Airport from Jacob Swamp into Little Jacob Swamp. This allowed the airport to extend their runway without Jacob Swamp passing under the proposed runway extension. Construction of this project was completed in September 1974 and turned over to the City for maintenance. This project would revisit the Jacob Swamp Watershed Plan, making improvements to the ditches, channels, streams and structure crossing to restore the 1% flood protection level to South and West Lumberton.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Flooding from Jacob swamp can be expected again in the future if this project is not implemented.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Reduced flooding benefits the local economy.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	100-200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Limited environmental benefits can be expected for this project.	N/A

What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Upgrade Vulnerable Roads and Bridges**: Make road system improvements that would increase access to and evacuation of communities during an event. Areas have been identified by public officials and the public are:
  - Bonnie Road (2400’ of roadway) in Pembroke
  - Union Chapel is (1000’ of roadway) in Pembroke
  - I-95 In (3.6 Miles) in Lumberton
  - NCDOT structures (66) identified as closed or washed during Hurricane Matthew

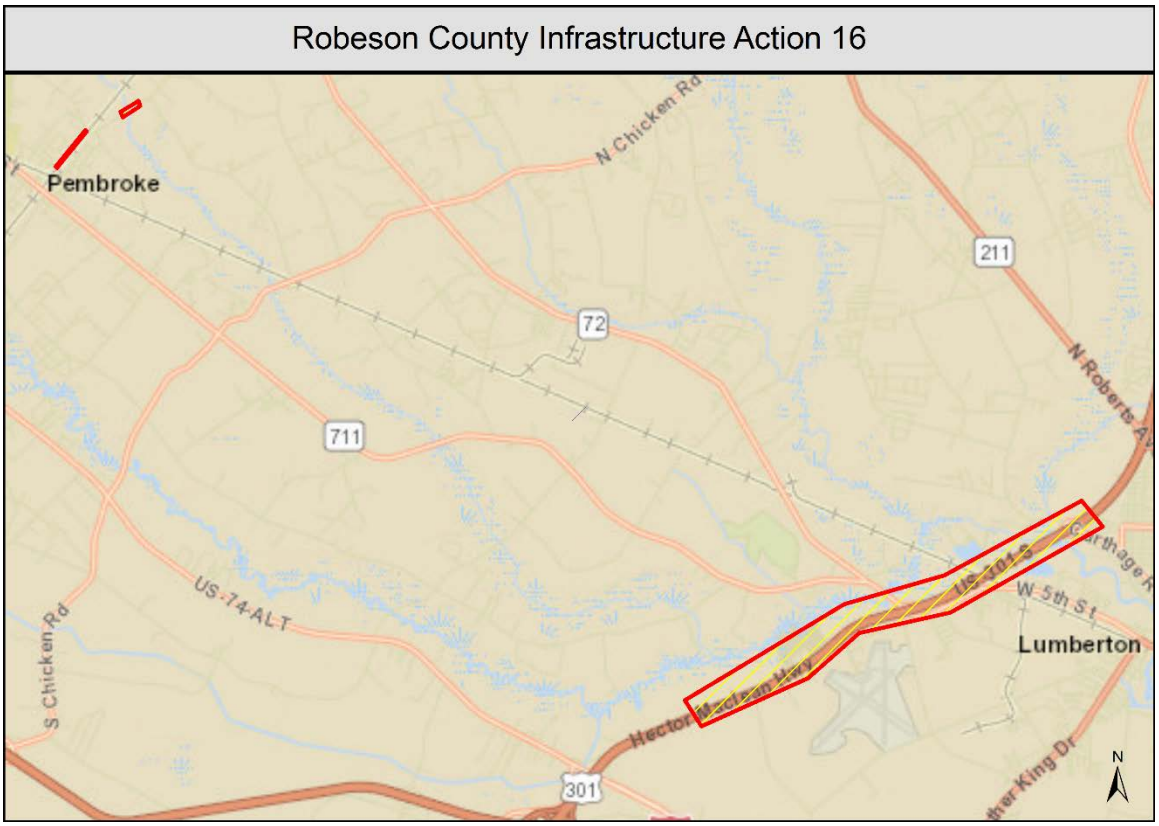


Figure 24. Infrastructure Action 16 - Upgrade Vulnerable Roads and Bridges

Upgrade Vulnerable Roads and Bridges

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 4

Project Timeframe: 1-7 years

Location: Robeson County, North Carolina

Project Summary: Make road system improvements that would ensure access to and evacuation of communities during an event.
Details
Bonnie Road (2400’ of roadway). Pembroke
Union Chapel is (1000’ of roadway) Pembroke
I-95 In (3.6 Miles) Lumberton
NCDOT flooded roads & structures (66)
Resiliency- Communities will not be cut off from support during an event

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Elevate roads to keep them open and not flooded throughout the next storm event. This will allow for access in and out of community and to better access to essential facilities.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Enhanced roadways will keep them open through a disaster and allow commerce to resume as soon as event has past.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

- **Robeson County Schools Central Office Restoration and Resiliency:** Robeson County School's Central Office sits deep inside the floodplain and during Matthew was fully inundated by floodwaters. Since the facilities were damaged significantly, the school system plans to relocate the facility out of the floodplain to lower the likelihood of this level of damage again. This strategy would fund the relocation and reconstruction of the central office, bus garage, freezer/cooler, fueling station and maintenance office.

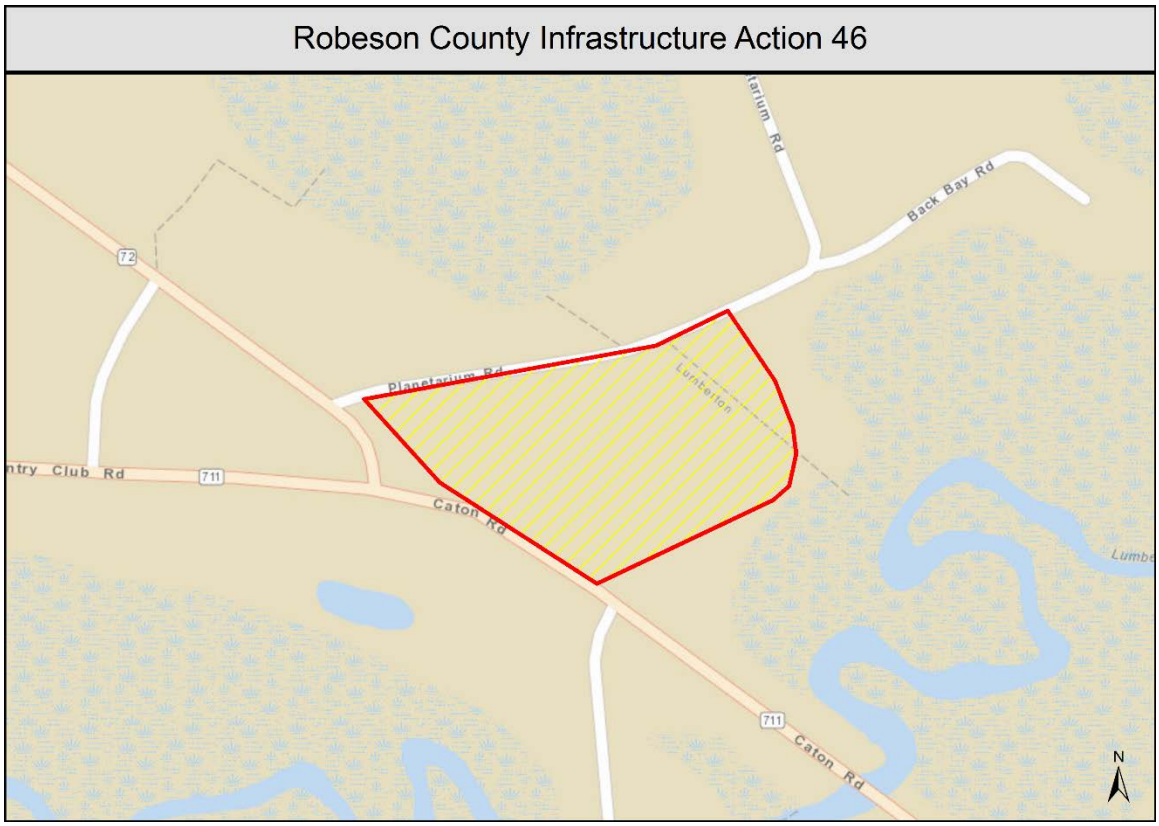


Figure 25. Infrastructure Action 46 - Robeson County Schools, Central Office Restoration and Resiliency

Robeson County Schools Central Office Restoration and Resiliency

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 5

Project Timeframe: 1-3 years

Location: Robeson County, North Carolina

Project Summary: Robeson County School's Central Office sits deep inside the floodplain and during Matthew was fully inundated by floodwaters. Since the facilities were damaged significantly, the school system plans to relocate the facility out of the floodplain to insure this level of damage does not happen again.

Detail of Plan and Events:

Secure new property to build central office complex.

Central Office
The Central Office serves as headquarters for the Public Schools of Robeson County (PSRC) and home to the administrative functions. The site contains 14 buildings 10 of which will be without insurance coverage.The central office was inundated with up to 5.5' of water. Current administrative operations are occurring from temporary locations in Pembroke. Primary network infrastructure is not operating at 100% and needs to be relocated out of the flood zone.

Bus Garage
At the bus garage, located beside the Lumber River, the Transportation, Power School, Testing and Technology Dept. are all housed in one building. The building took on about 2-3 feet of water. The building has been repaired and back in operation. Just waiting to finalize the content. Building will be rebuilt on new site to move essential services out of the flood zone.

Freezer/Cooler
Located at the central office, the approximate 2,200 sq ft Freezer/Cooler took on water. The walls are insulated and would have to be replaced in order to safely store food. The freezer also has a loading dock and 7 cooling units for freezing that were completely submerged under water for days and any warranties on the units are not in affect because of water. Items are currently being stored at a rented space at the US Cold Storage and a 53’ semi-trailer. A critical component to feeding students breakfast and lunch the life of the freezer has been dramatically reduced due to water damage and relocation serves as the best option.

Fueling Station
During the storm flood waters lifted bulk tanks, containing diesel and gasoline, causing fuel to disperse into the surrounding area. The fuel system is located in the flood zone and moving and replacing the system would remove possible environmental impacts.

Maintenance Warehouse
The warehouse was used as housing for surplus furniture and equipment. It is currently being used to house maintenance staff, the purchasing department, print shop, book room, dry goods storage and warehousing. The building was inundated with over 5 feet of water. Relocation to a central complex will reduce flooding risk and help reduce future costs.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project directly addresses the school system unmet needs.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The restoration and fortification of the school system in the county will support economic growth.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A

Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	The facility had a large fuel spill as a result of the flooding. Moving the facility out of the floodplain will removed hazardous material and chemicals (work shop and fueling station) from flood risk.	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Robeson County Schools, School Buildings Restoration and Resiliency:** This strategy would fund repairs to buildings and facilities that were impacted by flooding, clean debris from school campuses, and provide flood-proofing measures to help reduce water damage during future events. Schools to be restored:
  - Old School House (Historical Site)
  - W.H. Knuckles Elementary
  - West Lumberton Elementary
  - Robeson County School's Planetarium
  - Lumberton Jr. High
  - Red Springs High
  - Red Springs Middle School
  - Fairmont High
  - Rosen Wald Elementary
  - Carroll Middle School
  - St. Paul's High and Elementary

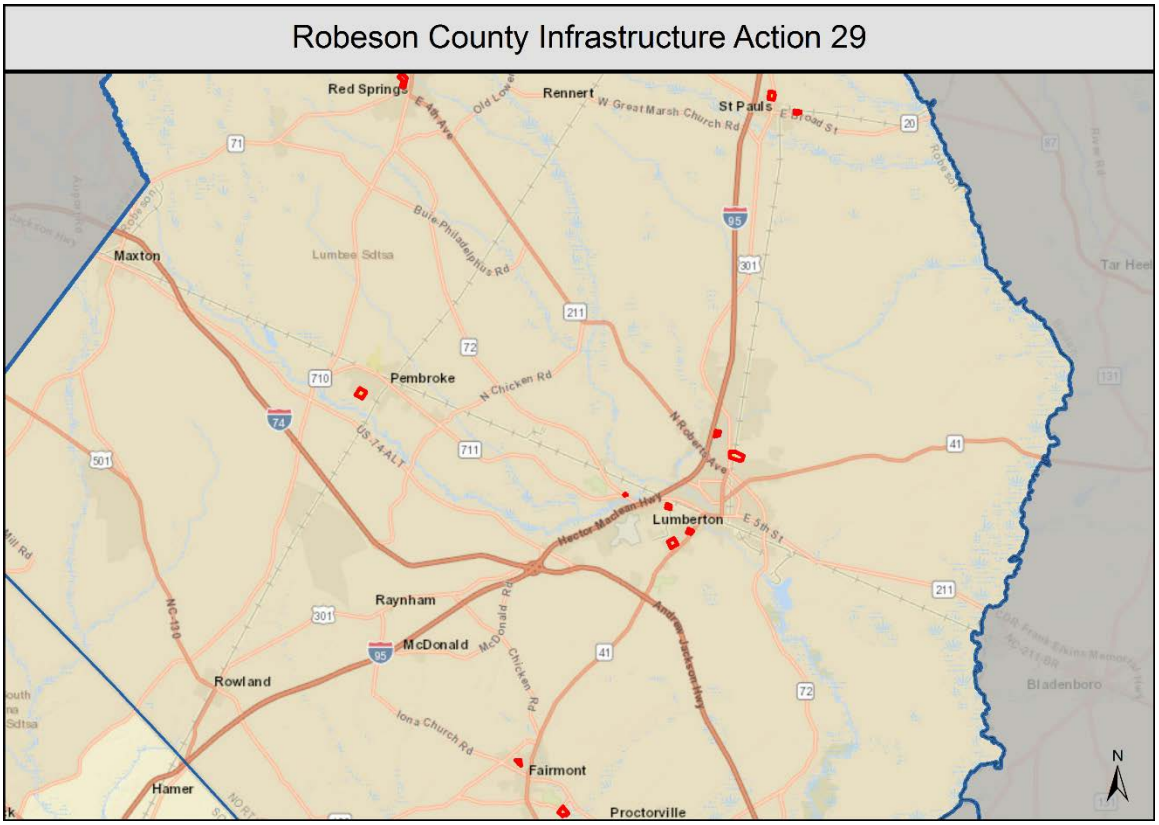


Figure 26. Infrastructure Action 46 - Robeson County Schools, School Buildings Restoration and Resiliency

Robeson County Schools, School Buildings Restoration and Resiliency

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 6

Project Timeframe: 1-5 years

Location: Robeson County, North Carolina

Project Summary: Details
Make repairs to buildings and facilities that were impacted by flooding
Clean debris from school campuses
Provide flood-proofing measures to help reduce water damage during future events

Old School House
The Public Schools of Robeson County (PSRC) historic old school house is a 1 room school building that was flooded with close to 4 feet of water. The building serves as a history lesson for students and residents. A historic contractor is needed to to conduct the necessary repairs.

WH Knuckles Elementary
Both the Cafeteria and primary buildings were flooded during the storm. Students are currently being served meals prepared at other locations and attending classes in another building on the main campus. In addition the playground held contaminated water and it is not sure if the soil and playground surface are safe. Testing and possible replacement are necessary.

West Lumberton Elementary
The school was inundated with water and students are attending classes at Lumberton Jr High. The school is in a flood zone and will be relocated out of the flood zone.

Planetarium
The planetarium is the fifth oldest in the state. It provides educational resources to Robeson County students and students from surrounding counties. The projection system is original to the building (1968) and was severely damaged by flooding. Moving the planetarium out of the flood zone is recommended.

Elevation Certificates
Elevation certificates from a professional land surveyor are needed to acquire flood insurance.

Other Schools that received flood damage during Matthew and needed of repair:
Lumberton Jr. High, Red Springs High, Red Springs Middle School, Fairmont High, Rosenwald Elementary Carroll Middle School, St. Pauls High and Elementary

Resiliency
Help to improve resiliency of buildings and facilities by adding measures to keep water out of buildings

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project directly addresses the school system unmet needs.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The restoration and fortification of the school system in the county will support economic growth.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A

Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Robeson County, Restore Pine Terrace Fire Station**: This strategy would fund the restoration of the fire station located along Alamac Road in Lumberton. This will involve the replacement of structure and equipment in order to restore critical infrastructure. The county also wants to flood proof (elevate) the structure and drive to help maintain access to this critical facility during the next event.

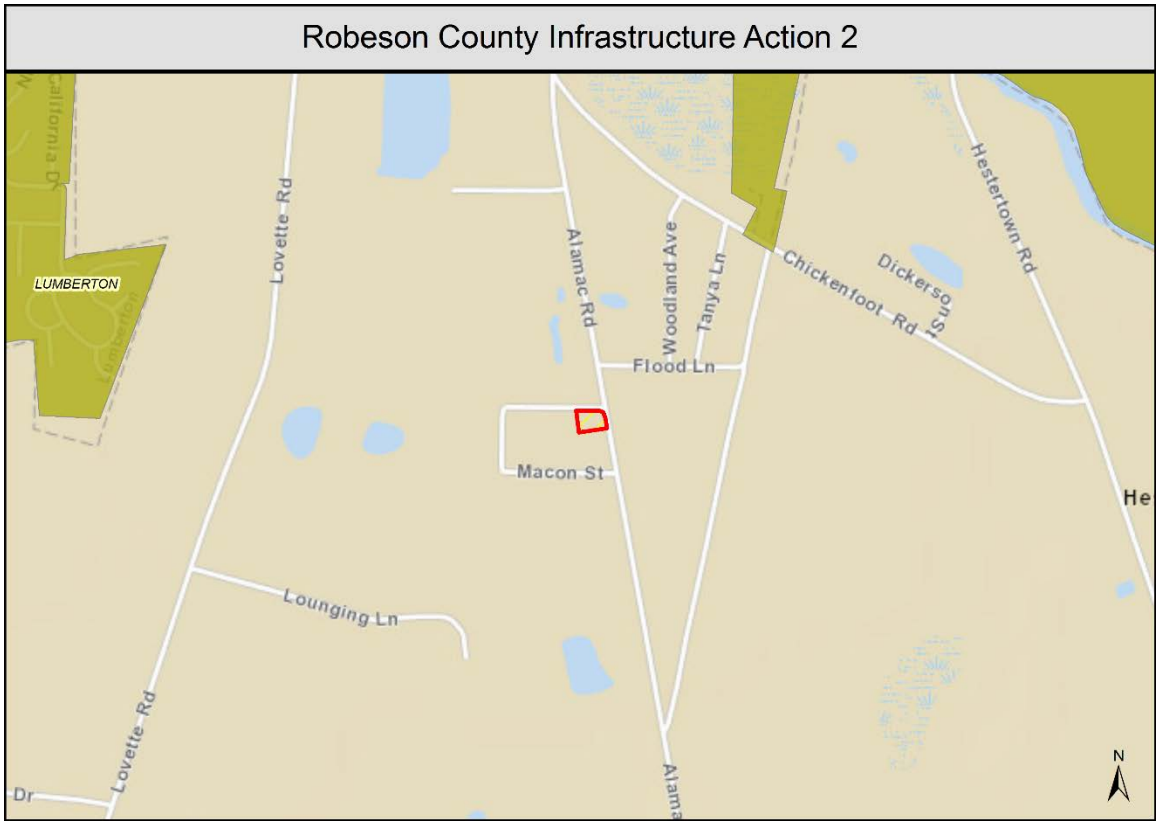


Figure 27. Infrastructure Action 6 - Robeson County, Restore Pine Terrace Fire Station

Robeson County Restore Pine Terrace Fire Station

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 8

Project Timeframe: As soon as funding to rebuild can be secured.

Location: 1292 Alamac Rd, Lumberton, NC 28358

Project Summary: - The Pine Terrace Volunteer Fire Department located on Alamac Road in Lumberton North Carolina lost all four of their fire engines in the flooding that occurred following Hurricane Matthew. Due to the flooding, the fire station received damage to the foundation and flooring of the structure deeming it condemned.
- Structure needs to be torn down and replaced.
- Equipment (4 fire engines, equipment on engines, turn out gear, air packs, office equipment, etc.) lost during flood that needs to be replaced.
- Entire station and most of fire district is in 1% flood zone. New station will be protected from the 1% flood by elevating or flood proofing new structure.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If not funded this project will remain an unmet need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Limited benefits/impacts to the economy other than those related to fire protection services in the area.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	n/a	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **UNC Pembroke, Backup Power Generation and Microgrid:** During Hurricane Mathew, students and staff lived and worked on campus without power. The cafeteria operated by providing primarily cold meals and only cooked what they could prepare on an outside grill. A generator and micro grid will provide for the health and welfare to students that cannot return home during an event either because of their special needs and/or international status. Additionally, the university provides shelter and services for first responders who are housed on campus during natural disasters and response. This system would provide power for housing and cafeteria.

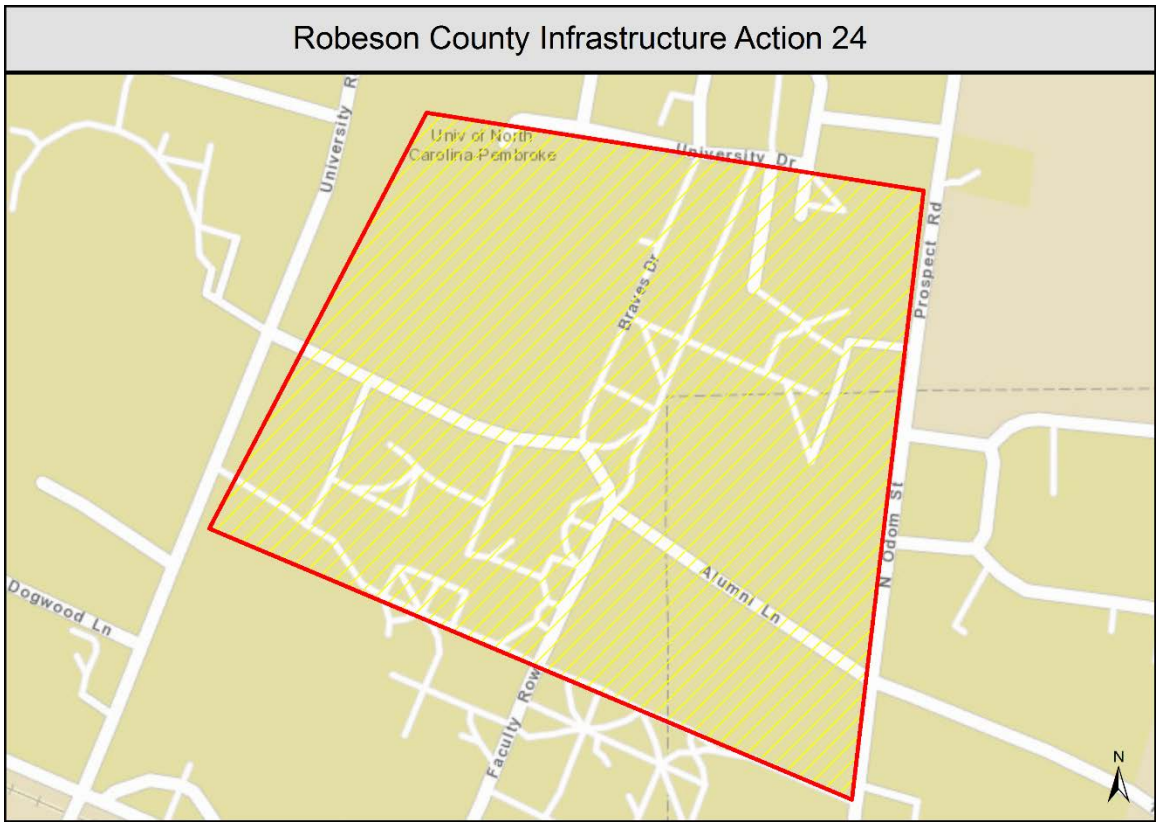


Figure 28. Infrastructure Action 24 - UNC Pembroke Backup Power Generation and Microgrid

UNC Pembroke Backup Power Generation and Microgrid

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 9

Project Timeframe: 1-2 years

Location: Pembroke, North Carolina

Project Summary: University of North Carolina at Pembroke -During Hurricane Mathew student and staff live and work on campus without power. The cafeteria operated by providing primarily cold meals and only cooked what they could prepare on an outside grill. A generator and micro grid will provide for the health and welfare to students that can not return home during an event either because of their special needs and international status. Additionally, the university provides shelter and services for first responders who are housed on campus during natural disasters and response. This system would provide power for housing and cafeteria.
Project will include: Installation of 150KW generator to provide overall, backup, supplemental and redundant power as needed to create better energy assurance post-disaster and to make sure that critical facilities have power to maintain operations. A micro-grid to connect generator to builds to protect.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Generator and microgrid install will ensure critical facilities have power thoughtout the next disaster.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Consistent power benefits economy of the county	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Enhance Flood Warning Systems:** Install new gauges at nine different locations to improve flood warning capabilities of both the county and state. This will facilitate quicker response of first responders and earlier communication of the risk to the community during the next flood events. Install gages on:
  - Ashpole Swamp
  - Bear Swamp
  - Big Marsh Swamp
  - Five Mile Branch
  - Jacob Swamp (2)
  - Raft Swamp
  - Lumber River (2)

- **This is a county-wide project, so no project area map has been included.**

Enhance Flood Warning Systems

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 0

Project Timeframe: 1-2 Years

Location: Robeson County, North Carolina

Project Summary: Install new gages on Ashpole Swamp, Bear Swamp, Big Marsh Swamp, Five Mile Branch, Jacob Swamp (2), Raft Swamp, and the Lumber River (2) to improve flood warning capabilities of both the County and the State.
- Gage site to be defined considering proximity to communities and mapping
- Install 9 Gages and link them to NC FIMAN (Flood Inundation Mapping and Alert Network) System.
- Improve flood warning capabilities
- Improves emergency management operational capabilities (identify travel restriction and support emergency service and evacuation decisions)

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Improves flood warning capabilities that were not as robust during Matthew. Will help improve emergency management operational capabilities.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Better flood warning capabilities will help with preparation activities for local businesses. This can help get these businesses back up and running more quickly following a flood.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Between 51 and 75%	N/A
What impacts to the environment of the county will result from this project?	Better flood warning capabilities helps predict what environmental concerns may be expected during an event and helps with preparation.	N/A
What is the capability of the local government to administer this project?	Minimum	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

- **Robeson County and Town of Pembroke Water Supply Interconnect:** Install water system interconnect between the Town of Pembroke and Robeson County at the North-West end of town. This would add redundancy to water system to help provide water supply to critical facilities.

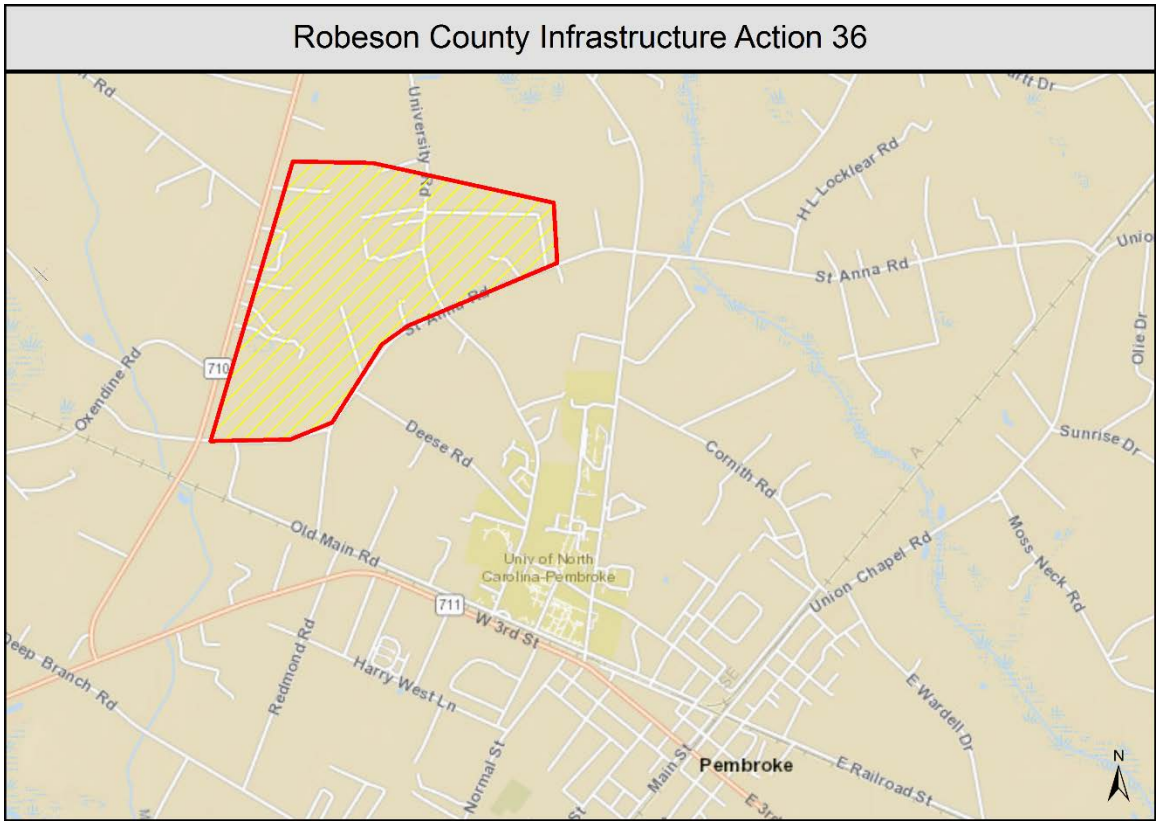


Figure 29. Infrastructure Action 36 - Robeson County and Town of Pembroke Water Supply Interconnect

Robeson County & Town of Pembroke Water Supply Interconnect

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 0

Project Timeframe: 1-2 years

Location: Pembroke, North Carolina

Project Summary: Interconnect Plus 1-million-gallon elevated tank to provide addition storage and buffer for any event.

Add a water interconnection with Robeson County on the Western / Northern end of Town. A single water transmission line serves this area and in the event this line ruptured, (thankfully it did not during the storm) service to the Western and Northern part of Town and the University of North Carolina at Pembroke would be interrupted. The county has infrastructure along Prospect Road that could tie in to the current water system. A meter vault is needed to connect that line with existing infrastructure.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project does not address an unmet need from Matthew but could be an issue in future disasters if not addressed.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Will allow for increased capacity in system and resiliency against flood drought and other events. All of which will support communities to grow and economic development.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Town of Pembroke Sewer System Enhancements:** Increase main pipe size between Blaine and S. Jones Street to replace aging and damaged infrastructure that is overwhelmed by ground water infiltration. System improvements would increase the likelihood that the system remains functioning through the next storm event and eliminate the possibility of sanitary overflows.

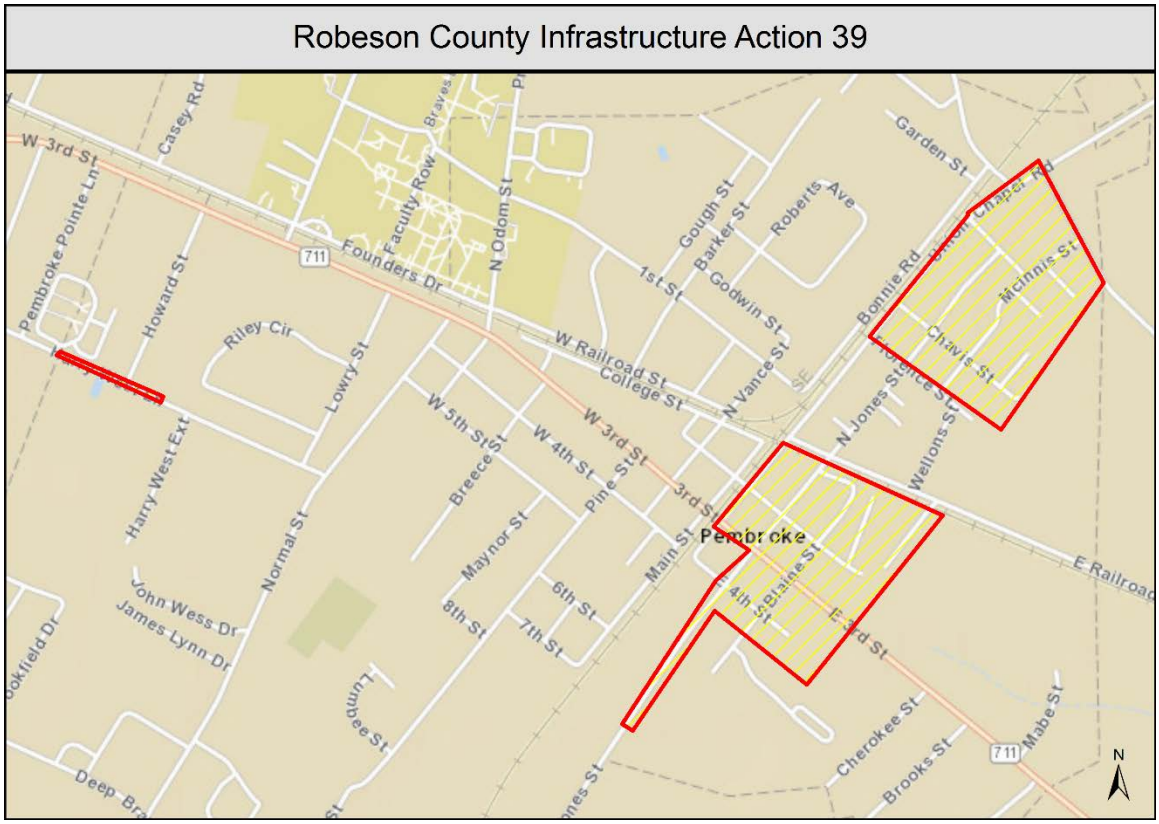


Figure 30. Infrastructure Action 39 - Town of Pembroke Sewer System Enhancements

Town of Pembroke Sewer System Enhancements

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 0

Project Timeframe: 1-5 years

Location: Pembroke, North Carolina

Project Summary: Upgrades are needed on the line along Blaine St (currently 10 inch) and along S Jones St (currently 15 inch) all the way to E Fourth Street.

Multiple areas have confirmed inflow / infiltration issues during high water events that contribute to sewer overflow and flooding.

The wastewater treatment plant requires upgrade to reduce future loss as well.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	not a direct impact from Matthew but if not implemented future losses could be expected	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Properly functioning sewer system is certainly an economic benefit for the Town.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Unknown	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Unknown	N/A
Who will administer this project?	Local	N/A

- **Town of Pembroke Stormwater Enhancements:** Make stormwater improvements to safely detain water, increase capacity, and reduce flooding. This strategy would fund the following stormwater system enhancements:
    - Detention pond to protect US Post Office from being flooded by runoff from the Local Piggly Wiggly.
    - Improve stormwater system near high-water lift stations (3) to protect them against flooding. Also, fund repairs to lift station caused by flooding during Hurricane Matthew.

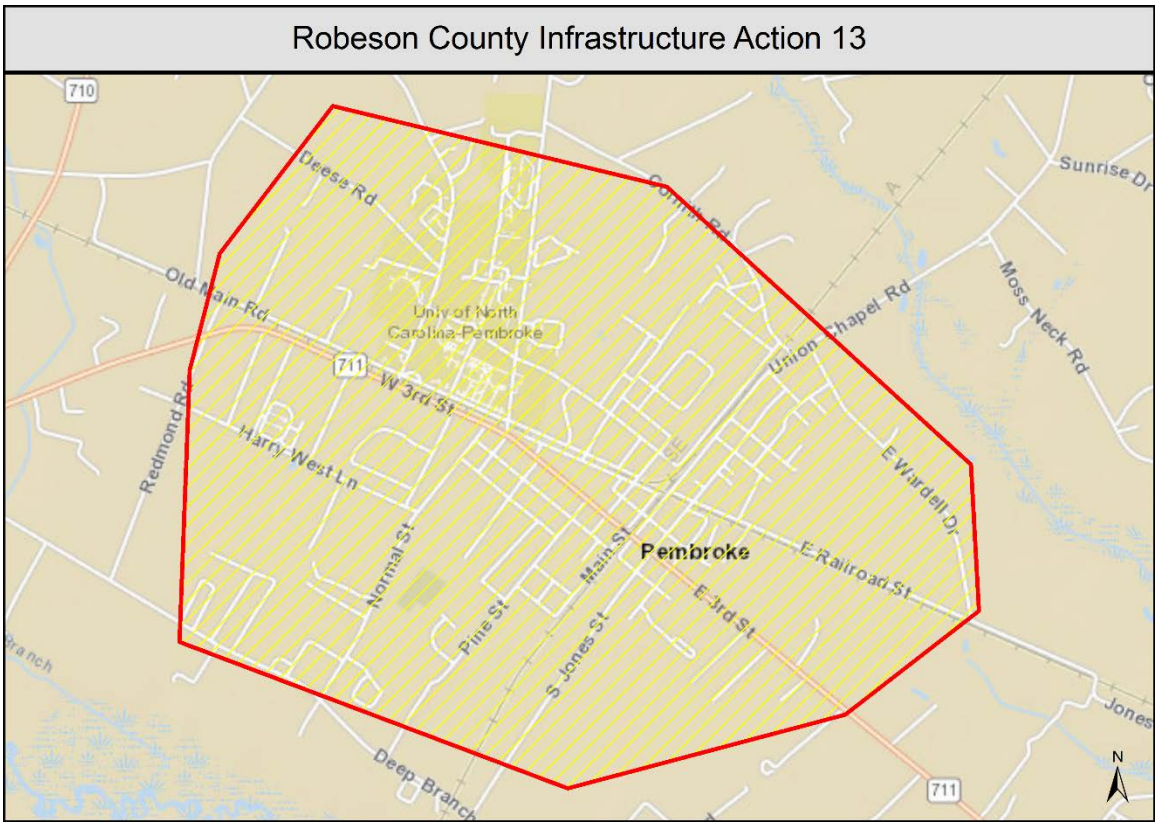


Figure 31. Infrastructure Action 13 - Town of Pembroke Stormwater Enhancements

Town of Pembroke Stormwater Enhancements

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 0

Project Timeframe: 1-2 years

Location: Pembroke, North Carolina

Project Summary: Make stormwater improvements to safely detain water, increase capacity and reduce flooding
Details - Piggly Wiggly detention pond/protect post office
Enhance 3 high-water lift stations
Storm drain mitigation measures need to be installed at 3 high water lift stations. Lift station equipment was damaged during the storm.
Harry West Lane before and after Howard Street
Resiliency- Improvements will help to mitigate flooding in at-risk areas
Contact: Tyler Thomas; Town of Pembroke, Town Manager

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If not implemented future flooding will occur.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Properly functioning storm water system does provide economic benefits.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Town of St. Pauls Sewer Plant Enhancements:** Implement structural improvements on the sewer plant to raise pumps and manholes above flood stage. This would help the system be better equipped to handle future flood events. This strategy would fund raising pumps and manholes above flood stage, build new administrative offices above flood stage, enhance onsite drainage system, and replace/re-line sewer line that allows significant infiltration into sewer plant.

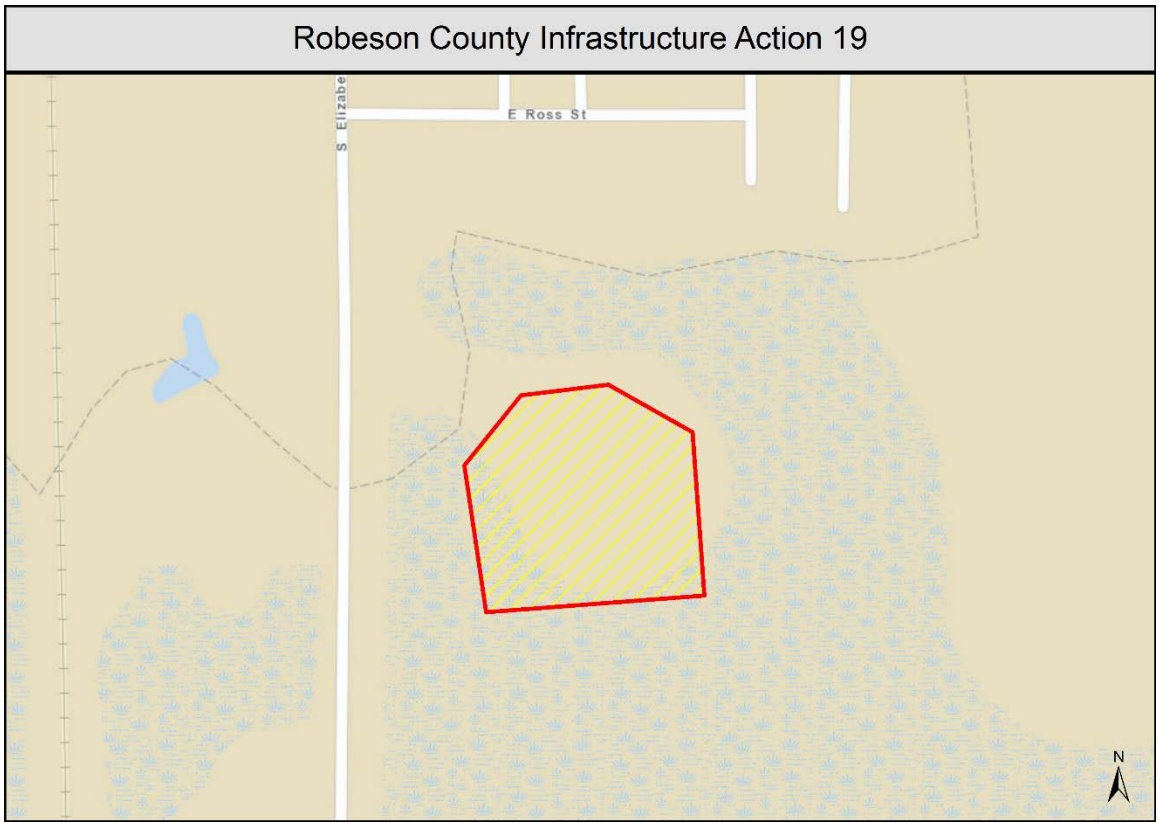


Figure 32. Infrastructure Action 19 - Town of St. Pauls Sewer Plant Enhancements

Town of St. Pauls Sewer Plant Enhancements

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 0

Project Timeframe: 3-10 years

Location: St. Pauls, North Carolina

Project Summary: St. Pauls Sewer plant was inundated with water and damage occurred to structural components impacting overall integrity of the plant. These issues occurred due to high rains during Hurricane Matthew, but these infrastructure elements are also impacted during more frequent (yearly) significant rain events.
Implement structural improvements on the plant:
- Raise pumps above flood stage - Raise manhole coming into plant above flood stage
- Build new administrative offices to house controls for SCADA above flood stage - Enhance onsite drainage system to removed surface water
- Replace or re-line sewer lines that allow significant infiltration into sewer treatment plant
Potential Pros/Cons of this Project + Help prevent sewer overflows that could damage the environment

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project directly address unmet needs for the town caused by Hurricane Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The project will add resiliency to the sewer plant allowing it to continue to run though next storm event and keep businesses open.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	100-200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	The project will add resiliency to the sewer plant and help prevent overflows during future storm events.	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **UNC Pembroke Stormwater Enhancements:** Implement drainage improvements to better convey and detain water. This strategy would fund the development of two detention ponds, retrofitting a third pond for detention and enhancing part of their existing storm drainage system. UNC's proposed stormwater improvements will safely detain water, increase storm system capacity and reduce flooding on campus and in the Town of Pembroke.

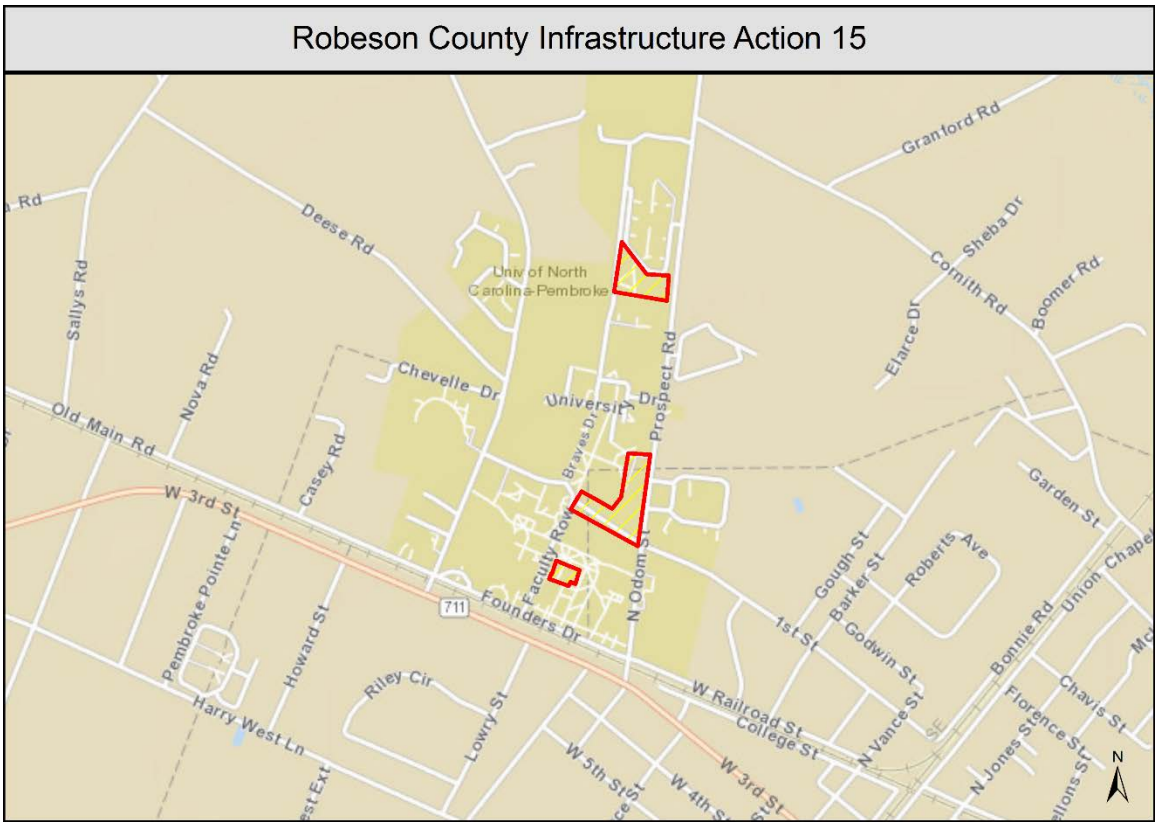


Figure 33. Infrastructure Action 15 - UNC Pembroke Stormwater Enhancements

UNC Pembroke Stormwater Enhancements

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 0

Project Timeframe: 1-3 years

Location: Pembroke, North Carolina

Project Summary: A large portion of damage experienced during Hurricane Matthew resulted from inadequate stormwater system. On the UNCP campus the storm system was overwhelmed and the result was over a foot or more of water covering much of campus. This water did eventually ran off, flowing from campus in to the Town of Pembroke. UNC has proposed stormwater improvements to safely detain water, increase storm system capacity and reduce flooding on campus and for the Town of Pembroke. These improvements include: o Building stormwater detention pond in SE area of Campus. o Building stormwater detention pond in NE area of Campus. o Install 24" RCP storm drain from existing drop inlet at NE of Mary Livermore Library to existing connection S of pond bridge. Upgrade water feature at Mary Livermore Library to serve as a detention pond. Resiliency - Reduce future flooding impacts on campus and downstream in the Town of Pembroke. Contact: David Hatch; UNC-P, Facilities Coordinator

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Enhance storm system to detain and convey flood water as to protect campus and the Town of Pembroke from flooding.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Properly functioning stormwater systems help the economy by reducing flooding of roads and businesses.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Properly functioning stormwater systems help the County's environment by reducing flooding of environmentally sensitive areas.	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

Medium Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	City of Lumberton, Stormwater Enhancements for Hospital	**Medium**	**N/A**
Infrastructure	Implement Stormwater Improvements	**Medium**	**N/A**
Infrastructure	Provide Backup Power or Microgrid	**Medium**	**N/A**
Infrastructure	Restoration and Implement Mitigation of Public Facilities	**Medium**	**N/A**
Infrastructure	Robeson County Community College Stormwater Enhancements	**Medium**	**N/A**
Infrastructure	Robeson County Schools, Equipment Restoration	**Medium**	**N/A**
Infrastructure	Storm System Cleaning and Restoration Projects	**Medium**	**N/A**
Infrastructure	Town of Pembroke Drainage System Enhancements	**Medium**	**N/A**
Infrastructure	Town of St. Paul's Stormwater System Enhancements	**Medium**	**N/A**
Infrastructure	UNC Pembroke Roadway Restoration	**Medium**	**N/A**

Table 13. Robeson Medium Priority Infrastructure Summary

These infrastructure strategies have been identified by Robeson County as a medium priority to address. Additional detail can be found below:

- **City of Lumberton, Stormwater Enhancements for Hospital:** During Hurricane Matthew, flood waters blocked the entrance to the emergency room of the regional hospital. This issue is the result of inadequate drainage system on West 29th Street in front of the hospital. The strategy is to upgrade the drainage system to alleviate flooding in front of hospital or to a minimum of a 500-year level of service.

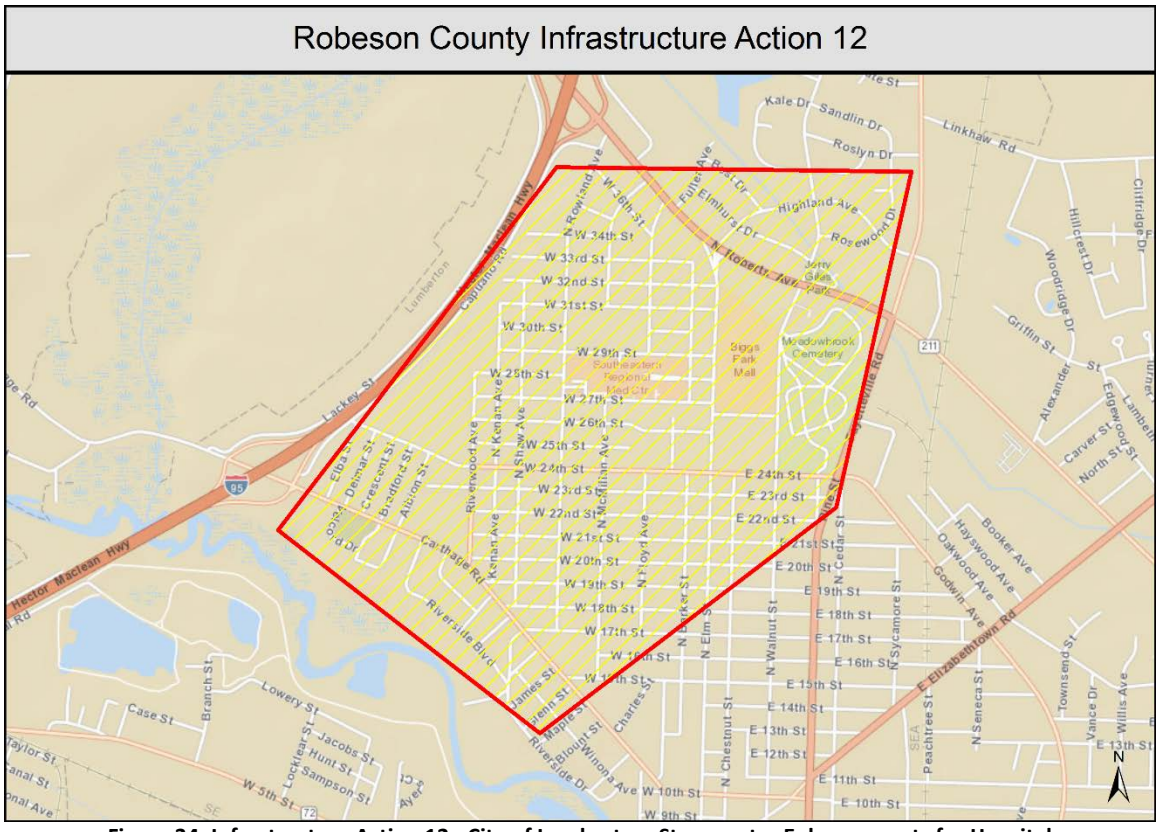


Figure 34. Infrastructure Action 12 - City of Lumberton, Stormwater Enhancements for Hospital

City of Lumberton, Stormwater Enhancements for Hospital

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: Ongoing

Location: Lumberton, North Carolina

Project Summary: During Hurricane Matthew, flood waters blocked the entrance to the emergency room of the regional hospital. This issue is the result of inadequate drainage system on West 29th Street in front of the hospital.
Details - Upgrade Drainage System to alleviate flooding in front of hospital or to a minimum of a 50-year level of service.
Resiliency
Less potential impact of flooding in future storm events
Provides for better access to emergency services.
Contact: Brandon Love; City of Lumberton, Planning & Neighborhood Services Director Funded by Golden LEAF Grant

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Project directly addresses an unmet need identified during Hurricane Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This project improves access to emergency service for the county and region. Improved access to emergency services supports economic development.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Implement Stormwater Improvements:** A large portion of damage experienced during Hurricane Matthew resulted from stormwater system failures. System owners do not have a current assessment of stormwater systems throughout the county and inspections are needed to determine if infrastructure is functioning properly/as designed and how the systems should be repaired to function properly. This strategy would target areas of frequent shallow flooding in the county. System improvement are focused on keeping roads open and buildings from flooding.
- **This is a county-wide project, so no project area map has been included.**

Implement Stormwater Improvements

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 1-5 years

Location: Throughout Robeson County

Project Summary: Localized flooding as a result of stormwater management problems. A large portion of damage experienced during Hurricane Matthew resulted from stormwater system failures. System owners do not have a current assessment of stormwater systems throughout the county and inspections are needed to determine if infrastructure is functioning properly/as designed and how the systems should be repaired to function properly. Target areas of frequent shallow flooding in the county. System improvement are focused on keeping roads open and buildings from flooding. Improve storm system to service 50-yr event.
Details- City of Lumberton, Tanglewood Community
City of Lumberton, NE ; Town of Parkton; Area just east of Town of Red Springs; Robeson Community Collage
Contact: Brandon Love - City of Lumberton, Al McMillan Town of Parkton, Needed - Town of Red Springs

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Stormwater projects are still a need in Robeson County to help improve resiliency of the County and municipalities and to help reduce future damages.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Improved stormwater systems will benefit the economy by reducing flood occurrences that impact local businesses	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	<50 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	N/A
What impacts to the environment of the county will result from this project?	Improved stormwater systems could minimally benefit the environment in the County	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Provide Backup Power or Microgrid:** Provide generator or microgrid to provide essential facilities and services are available during the next event. This strategy would impact facilities for the City of Lumberton by replacing generators lost during the hurricane at fire stations, as well as Robeson Community College by adding generators to buildings designated as an evacuation facility.

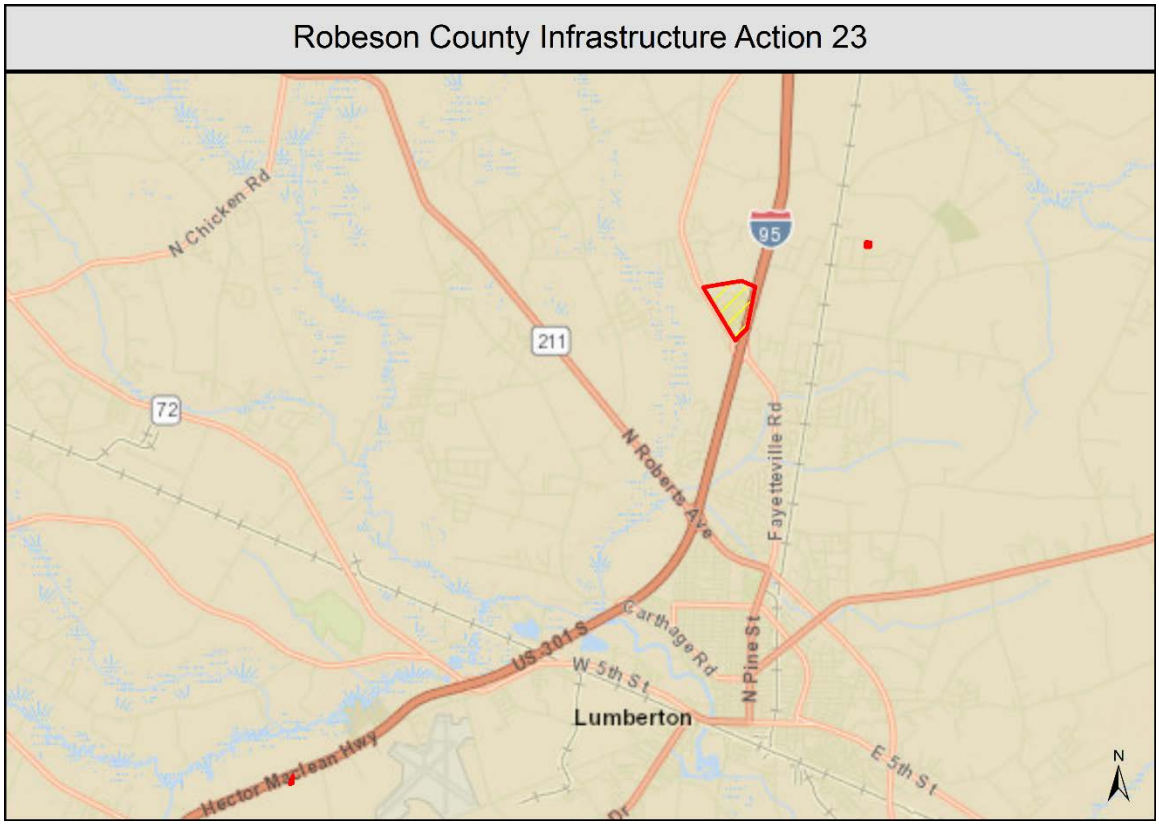


Figure 35. Infrastructure Action 23 - Provide Backup Power or Microgrid

Provide Backup Power or Microgrid

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 1 year

Location: Robeson County, North Carolina

Project Summary: Generator or micro grid ensure essential facilities and services are available during the next event.
Details
City of Lumberton: Replace generators lost during hurricane. 60WK generator with fuel tank installed above BFE plus freeboard.
Fire Station 2 & 3
Ensures power supply during next event that is protected from flood.
Robeson Community College: Add generators to power the Health Sciences building and the adjacent Workforce Development building. These generators would provide power for the building designated as an evacuation site for assisted living facilities as well as providing space for the administrative functions needed to serve the evacuation facility.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Replacing these backup generators will ensure fire stations remain open and function through next flood event and that generators are protected from flood.	N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Replacing these backup generators will ensure fire stations remain open and function through next flood event	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?		N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Restoration and Implement Mitigation of Public Facilities:** There are several dozen public facilities impacted by Hurricane Matthew that have no flood insurance coverage. Many of these facilities belong to the City of Lumberton, UNC Pembroke, and Robeson Community College. This strategy would fund projects ranging from clean and restoring public facilities with erosion and debris to the relocation and restoration of The City of Lumberton's Public Works and Electric Utility Facility out of the floodplain.
- **This is a county-wide project, so no project area map has been included.**

Restoration and Implement Mitigation of Public Facilities

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: As soon as fund become available.

Location: Robeson, North Carolina

Project Summary: City of Lumberton:

City facilities at the following locations were flooded and damaged but have no insurance coverage. The facilities are:
- 1451 Lowry St. – Water Treatment Plant
- 169 Bullard Ave – Electrical Utilities Facility
- 204 Inman St – Parkview Activity Center
- 420 Halsey St – Electric Utilities Facility
- 801 Dunn St. – Lumberton Fire Station #3
- 2411 Buchanan St- Jaycee Hut Recreation Center

These include public works/water plant facilities, community resource facilities, electrical utilities facilities, police and recreation facilities.

University of North Carolina, Pembroke

University would like to Elevate or flood proofing as needed.
International Programs building- office space devoted to International Students on campus
Dogwood Ln
Ranch style house - could potentially be raised
Dogwood Building - distance education
Dogwood Ln
Ranch style house - could potentially be raised
Business Services Building
Has a warehouse with lots of supplies
Campus Police
Bookstore/post office/print services
Curtain-wall building - way to waterproof building
Interest in flood proofing
Belk Building
Electrical/mechanical room
If we were to build an area way around that it would help manage flooding
Elevate or flood proofing needed
Electrical Trench connected to building would needs to be flood proofed
Locklear Hall
Where the School of Art is - gallery below-grade
Damage to some art due to flooding
2 foot of water in Paint Studio - photo
Jacobs Hall
Magnolia House

Robeson Community College

Restore running track damaged by stormwater runoff

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If these projects aren't funded or reimbursed they will remain unmet needs for issues directly caused by Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A

Explain any benefits or impacts to the economy of the county from this project.	Restoring a community's infrastructure to full health will allow it to concentrate on running and improving the community instead of recovery. This will help to restore the community's economy.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	100-200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Robeson County Community College Stormwater Enhancements:** Robeson Community College has experienced several drainage related issues during and after Hurricane Matthew, including standing water in walkways between classroom buildings and in parking areas. These problems have continued to occur in the months after Hurricane Matthew during periods of normal rainfall. The college plans to clean, repair, and restore drainage system and ponds. These efforts will reduce and eliminate standing water on campus, prevent erosion, and enable students to access classrooms and restrooms.

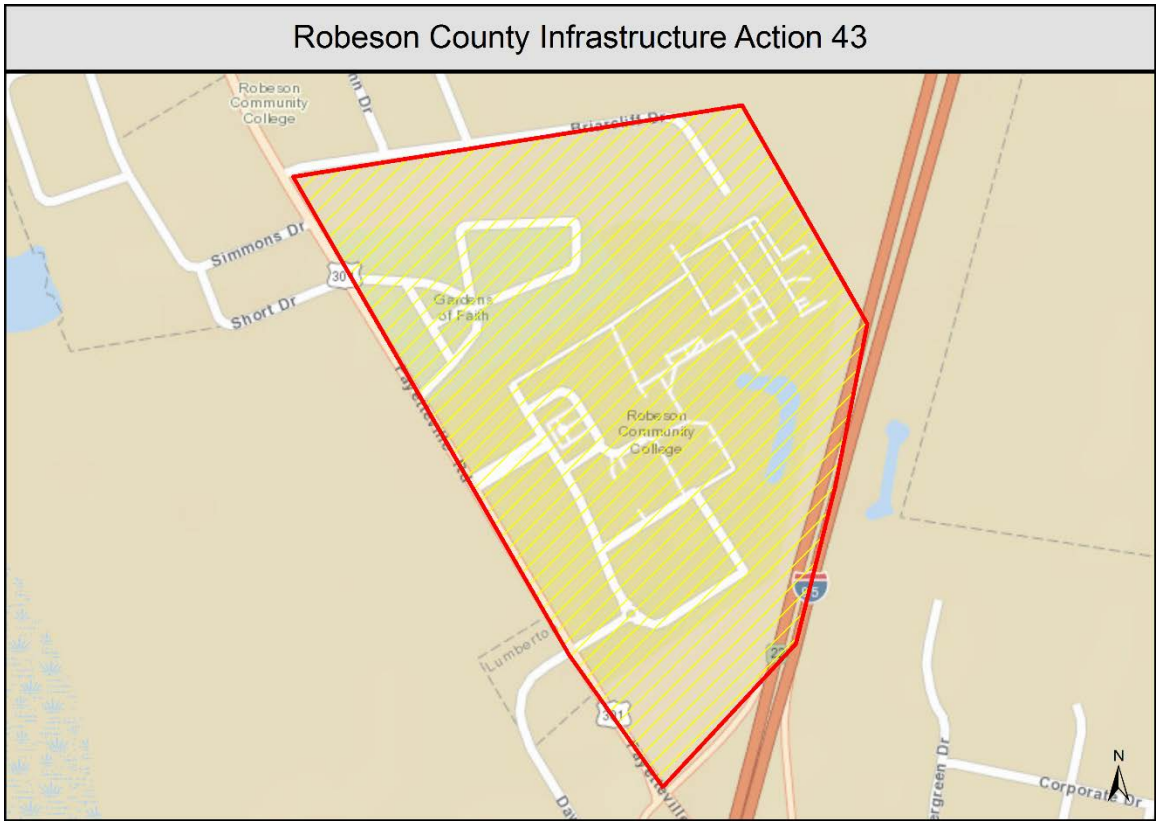


Figure 36. Infrastructure Action 33 - Robeson County Community College Stormwater Enhancements

Robeson County Community College Stormwater Enhancements

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 1 year

Location: Lumberton, North Carolina

Project Summary: Robeson Community College has experienced several drainage related issues during and after Hurricane Matthew. The primary issues include standing water and erosion. The problems experienced include standing water in walkways between classroom buildings and in parking areas. Although these problems were experienced during the hurricane, they have continued to occur in the months after hurricane Matthew even during periods of normal rainfall. The retention ponds and culverts that surround the campus have experienced erosion between the primary drain and the ponds. Each of these ponds and culverts have also experienced decreased capacity due to the collection of dirt and debris.
The college plan clean, repair and restore drainage system and ponds. These efforts will reduce and eliminate standing water on campus, prevent erosion, and enable students to access classrooms and restrooms.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.		N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	N/A	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?		N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$101K - $250K	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Robeson County Schools, Equipment Restoration:** Robeson County School's Central Office sits deep inside the floodplain and during Matthew was fully inundated by floodwaters. Since the facilities were damaged significantly, the school system plans to relocate the facility out of the floodplain to insure this level of damage does not happen again. These system damages were not just limited to facilities but also equipment. The equipment list includes tractors and backhoes, generators, almost 100 vehicles, and various tools and equipment that needs to be replaced before the system can become fully operational again.

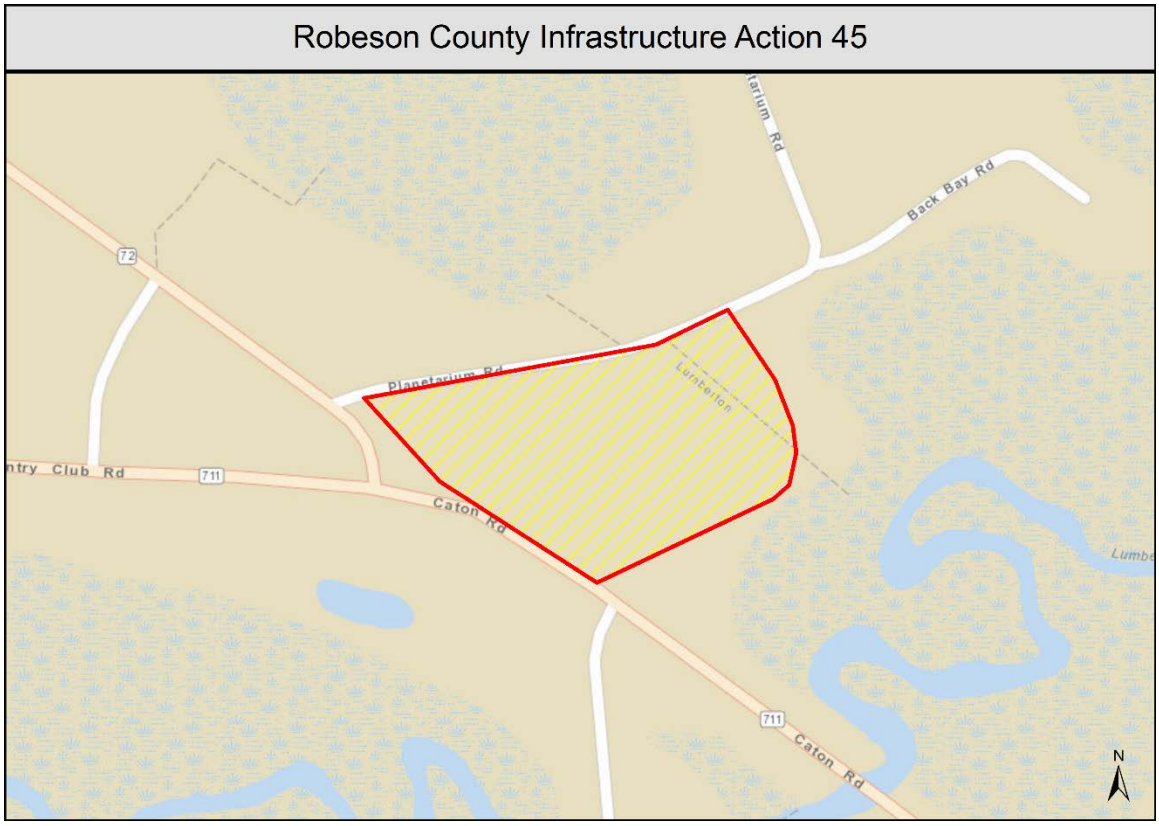


Figure 37. Infrastructure Action 45 - Robeson County Schools, Equipment Restoration

Robeson County Schools Equipment Restoration

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 1-3 years

Location: Robeson County, North Carolina

Project Summary: Robeson County School's Central Office sits deep inside the floodplain and during Matthew was fully inundated by floodwaters. Since the facilities were damaged significantly, the school system plans to relocate the facility out of the floodplain to insure this level of damage does not happen again. These system damages were not just limited to facilities but also equipment. The following equipment needs to be replaced before the system can become fully operational again. Public Schools of Robeson County (PSRC) lost 2 backhoes, 2 tractors with implements, 8 generators and various other tools in flooded vehicles. PSRC lost a total of 96 vehicles including cars, trucks, vans, activity buses, mini buses, 14' box trucks, 24' box trucks, a refrigerated truck and dump trucks. Items and vehicles were located at the Central Office Complex. Equipment is used for maintaining grounds of the schools while vehicles were used for transporting students and employees for activities and school maintenance. Generators (7) were used for schools which also served as emergency shelters.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Equipment losses were direct impact of Matthew. If unfunded this will remain an unmet need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The restoration and fortification of the school system in the county will support economic growth.	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	The facility had a large fuel spill from flooding. Moving the facility and this equipment out of the floodplain will removed hazardous material and chemicals from flood risk.	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Storm System Cleaning and Restoration Projects:** As a result of Hurricane Matthew, many trees and other debris litter waterways across the County. During heavy rains, this debris will continue to dam up water and impede flows. These unnatural changes in the water flow puts more properties at risk to future flooding. In many cases, the stream's natural channel has been degraded and is in need of restoration. This would be a countywide effort to restore and remove debris from streams, channels and closed storm systems. Stream restoration will also improve ecosystem quality.
- **This is a county-wide project, so no project area map has been included.**

Storm System Cleaning and Restoration Projects

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 2 years

Location: Robeson County, North Carolina

Project Summary: Impaired stream system causing flooding. As a result of Hurricane Matthew, many trees and other debris litter waterways across the County. During heavy rains, this debris will continue to dam up water and alter flows. These unnatural changes in the water flow puts more properties at risk to future flooding. In many cases, the stream's natural channel has been degraded and is in need of restoration. This would be a countywide effort to restore and remove debris from streams, channels and closed storm systems. Stream restoration will also improve ecosystem quality.
Details - Provide support and funding for easement acquisition. 250 stream & channels miles will be restored in Robeson County.
100 miles of closed system will be cleaned, Provide equipment to communities so they can restore and maintain their storm systems.
Resiliency- Streams will have a greater capacity to remove water during flooding events

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If this project is not implemented future flooding would likely reoccur.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Reduced flooding would certainly be a benefit to the local economy.	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Improved systems would certainly benefit the County's environment	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Town of Pembroke Drainage System Enhancements:** During Hurricane Matthew, the southeast portion of the Town of Pembroke received stormwater runoff from the UNCP campus, extending the impact to additional public and private property. This strategy will focus on cleaning and reshaping channels and culverts that carry stormwater away from the campus and town to the larger tributary areas of Watering Hole and Bear Swamp.

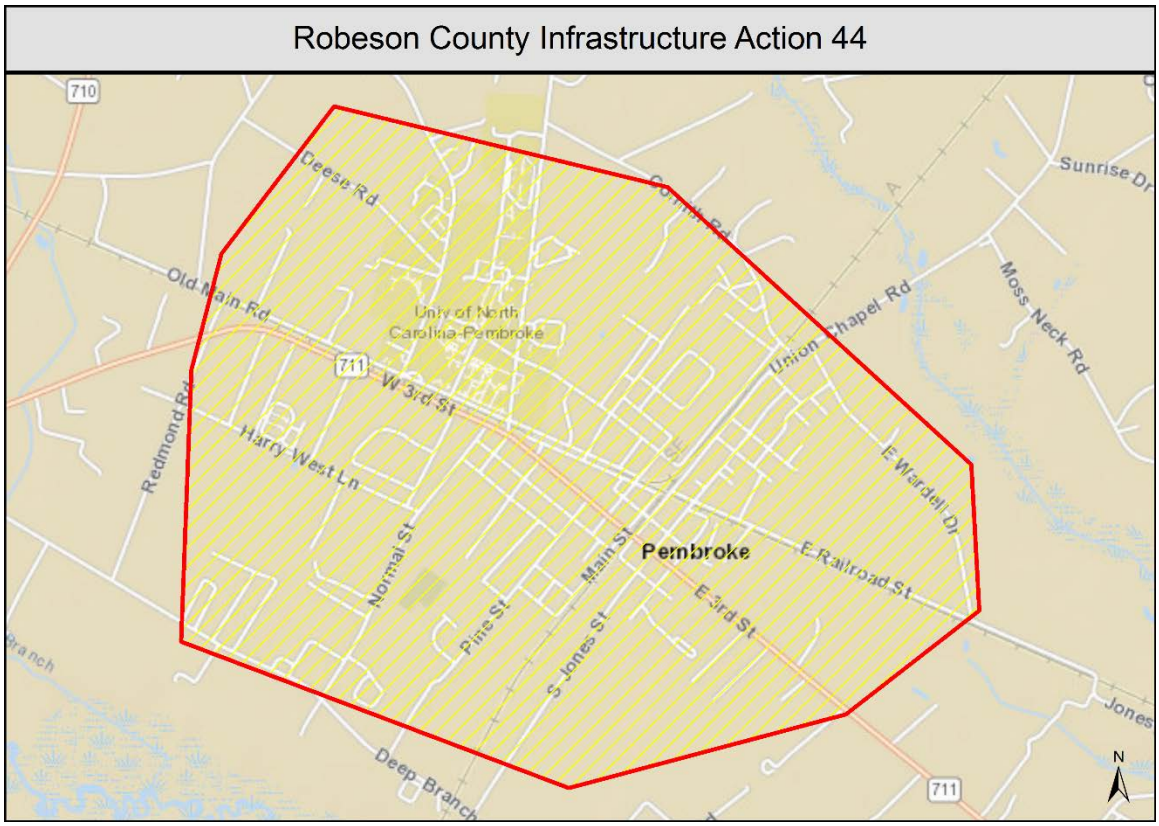


Figure 38. Infrastructure Action 44 - Town of Pembroke Drainage System Enhancements

Town of Pembroke Drainage System Enhancements

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 1-2 Years

Location: Pembroke, North Carolina

Project Summary: During Hurricane Matthew, the southeast portion of the Town of Pembroke collects the brunt of stormwater runoff from the UNCP campus extending the damage and impact to encompass public and private property owned by the Town and its citizens. For example, Pembroke rescue squad conducted 46 water rescues within the Town limits, including boat crews in Strickland Heights and Maynor Manor both of which are public housing developments.

In a collective effort, the Town of Pembroke has taken the lead and teamed up with UNCP to submit an application for grant funding to help with these concerns. This project will affect not only the approximately 3000 residents in the Town of Pembroke but also over 7000 students, faculty and staff at the University of North Carolina at Pembroke.

The proposed scope of this project is twofold, long-term and short-term. The short-term scope will focus on cleaning and reshaping the main stormwater discharging channels and culverts that carry stormwater away from the campus and portions of the Town area to a larger tributary area of Watering Hole and Bear Swamp. These channels and culverts have been in service for several decades. Efforts toward proper maintenance have not been optimal due to limited resources. The floodwaters from Hurricane Matthew exacerbated the blockage, damage and sediment deposits to the point that some of the storm culverts have become blocked and/or impassible due to failing members or debris blockages. The channel corridors that will be part of this short-term effort include:
1. Corridor along 1st Street from N. Odum Street to the west side of railroad track and northeast until Bear Swamp (approximately 7,910 ft)
2. Corridor from 1st Street crossing Union Chapel Road to Jones Street and then across railroad to E. 3rd Street, releasing into Watering Hole Swamp (approximately 2,902 ft)
3. Corridor from Jones Street to northeast adjacent to a residential area and agricultural area and releasing into Bear Swamp (approximately 3,265 ft).

The long-term scope of this project on consists of having a Hydrology Analysis performed to help pinpoint and understand any additional issues that are causing the stormwater buildup. This will hopefully lead to viable solutions to address/mitigate these issues.

Storm drain mitigation measures need to be installed at 3 high water lift stations. Lift station equipment was damaged during the storm. Harry West Lane before and after Howard Street

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If not implemented future flooding will likely occur.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Reduce flooding downtown and in university will support community grow and stability.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A

What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Limited based on what specific projects are needed	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Town of St. Paul's Stormwater System Enhancements:** The Town of St. Paul experience localized flooding as a result of stormwater management problems. A large portion of damage experienced during Hurricane Matthew resulted from stormwater system failures. This strategy would fund the upgrading of undersized system at several locations, building of a new detention pond and the restoration of stream and system ditch to pre-storm conveyance levels.

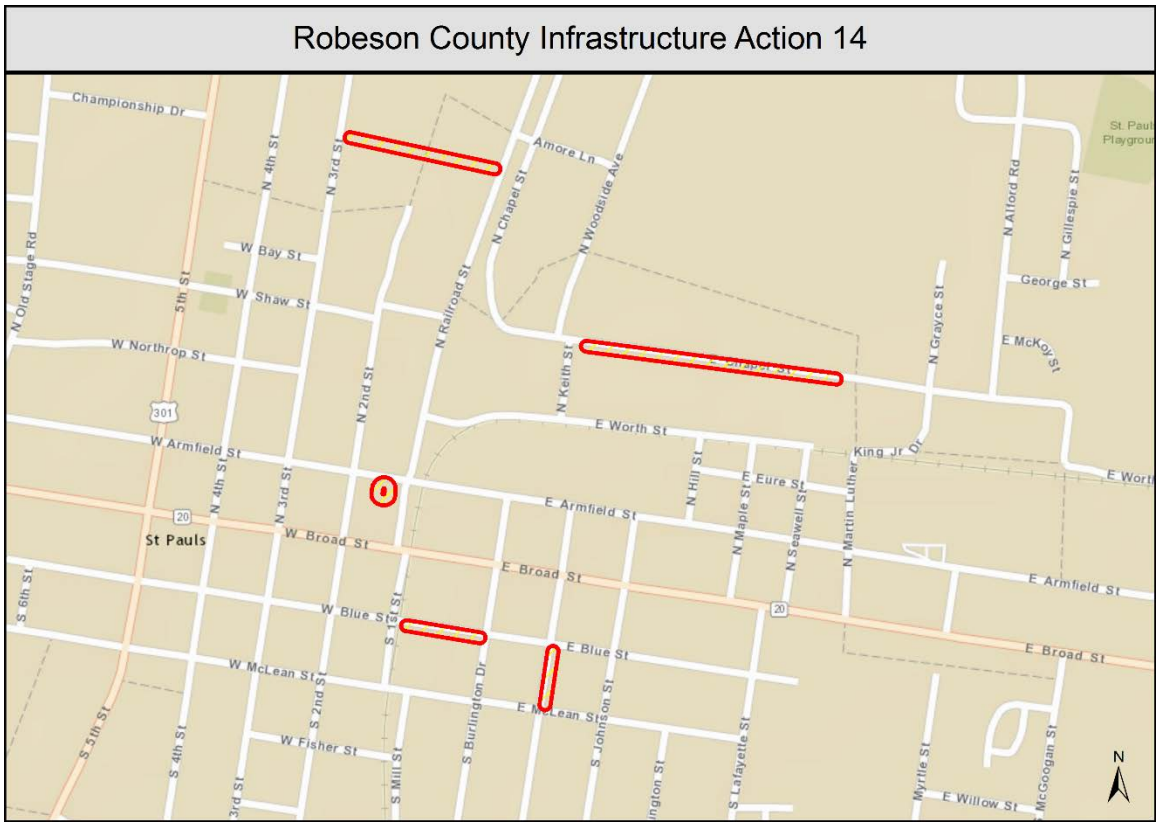


Figure 39. Infrastructure Action 14 - Town of St. Paul's Stormwater System Enhancements

Town of St. Pauls Stormwater System Enhancements

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 3 years

Location: St. Pauls, North Carolina

Project Summary: Localized flooding as a result of stormwater management problems. A large portion of damage experienced during Hurricane Matthew resulted from stormwater system failures. System owners do not have a current assessment of stormwater systems throughout the county and inspections are needed to determine if infrastructure is functioning properly/as designed and how the systems should be repaired to function properly.

Restore storm system to pre-flood condition and add resiliency with system improvements.
- Restore conveyance level of stream and channels (Gumbo Branch and 5 storm system channels)
- Construct detention/retention pond upstream of 100 West Broad Street

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Enhancements to infrastructure will reduce flooding and damages in next storm event.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Enhancements to infrastructure will reduce flooding and damages in next storm event.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Unknown	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **UNC Pembroke Roadway Restoration:** At UNC Pembroke, Hurricane Matthew flooding undermined roadbed and weakened pavement on University Drive, Faculty Row, Braves Drive, Dogwood Lane and under several parking areas. This strategy would fund the repair and rebuilding of these roadways and parking areas.

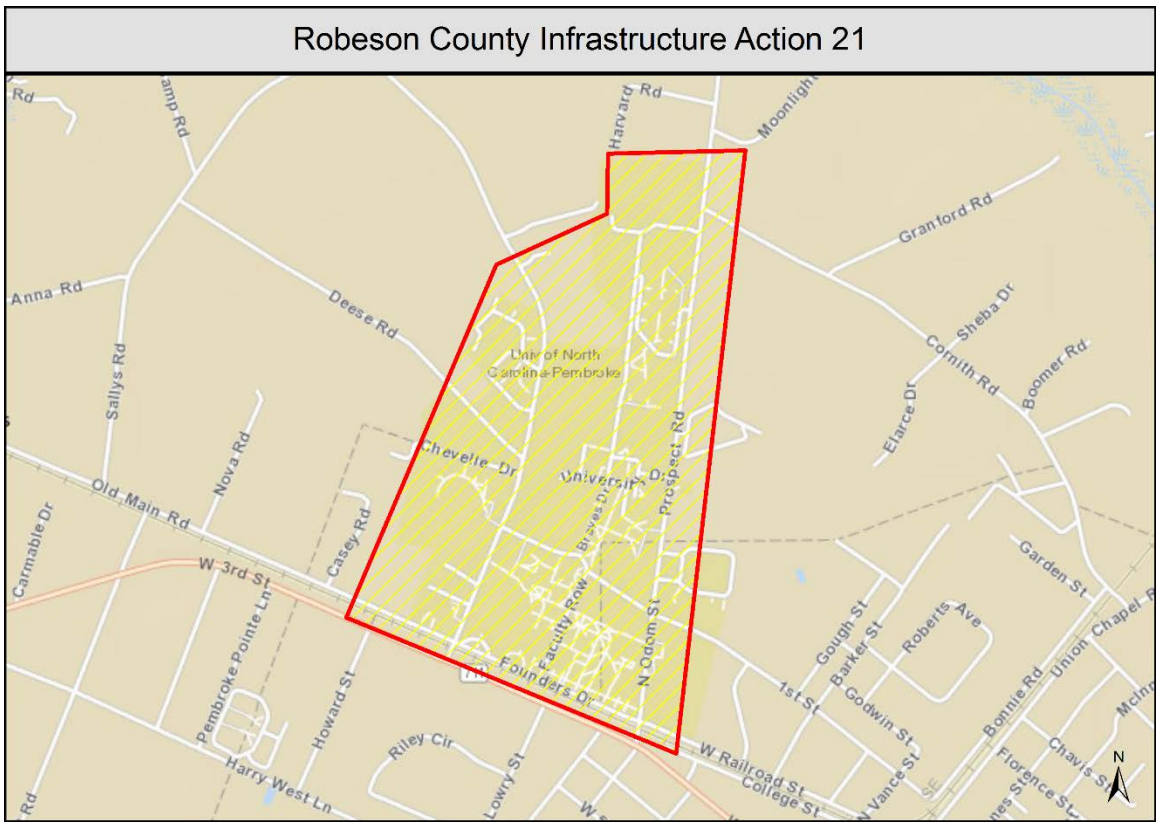


Figure 40. Infrastructure Action 21 - UNC Pembroke Roadway Restoration

UNC Pembroke Roadway Restoration

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 1-year

Location: Pembroke, North Carolina

Project Summary: Roadways and road crossings (bridges and culverts) were inundated with water and damage occurred to structural components impacting overall integrity of the structures. These issues occurred due to high rains during Hurricane Matthew, but these infrastructure elements are also impacted during more frequent (yearly) significant rain events.
At UNC-P, Hurricane Matthew flooding undermined roadbed and weakened paving on University Drive, Faculty Row, Braves Drive and Dogwood Lane.
- Carry out structural improvements to roadways providing spot repairs to undermined pavement.
- Mill and repave approximately 8,000 sy of roadway.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project will repair roads damaged during Hurricane Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Mitigated roadways benefit the local economy by reducing flooding	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	$251K - $500K	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

Low Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Town of Pembroke Sewer Plant Enhancements	**Low**	N/A
Infrastructure	Town of St. Paul's Secondary Water Supply	**Low**	N/A
Infrastructure	UNC Pembroke EOC Enhancements	**Low**	N/A

Table 14. Robeson Low Priority Infrastructure Summary

These infrastructure strategies have been indicated by Robeson County as a lower priority to address. Additional detail can be found below:

- **Town of Pembroke Sewer Plant Enhancements:** Expansion of the Town of Pembroke's waste water treatment plant (WWTP) will increase capacity from an estimated 1.33 million gallons a day to an anticipated 2 million gallons per day. This expansion will help provide the Town of Pembroke with WWTP capacity for future residential, commercial and UNC-P growth spurring economic development.

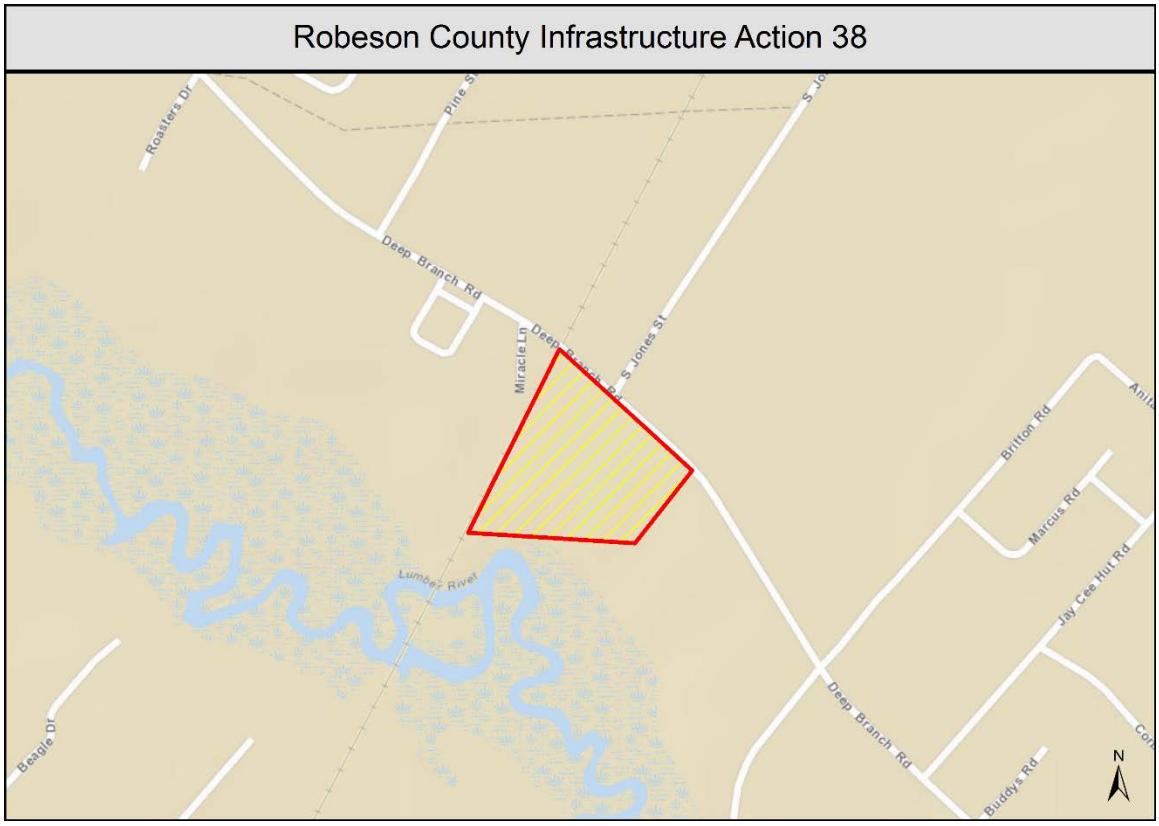


Figure 41. Infrastructure Action 38 - Town of Pembroke Sewer Plant Enhancements

Town of Pembroke Sewer Plant Enhancements

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: 0

Project Timeframe: 1-3 years

Location: Pembroke, North Carolina

Project Summary: Currently the Wastewater Treatment Facility has a permitted capacity of 1.330 million gallons per day (MGD). For the year ending December 2014, the facility treated an average of 0.90 MGD, an increase from the average daily flow of 0.83 MGD for the year ending December 2010. Expansion of the Town of Pembroke's WWTP will increase capacity of the Town of Pembroke WWTP from an estimated 1.33 million gallons a day to an anticipated 2,000,000 gallons per day. This project will also evaluate the town's sanitary sewer system and make corrections depending upon grant funding. This will ensure the Town of Pembroke has WWTP capacity for future residential, commercial and UNC-P growth.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If not implemented there will be similar issues in future events.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	This upgrade will provide The Town of Pembroke the capacity need for plan expansion of residential commercial and UNC-P growth plus growth of affordable housing targeted as part of this Resilient Redevelopment Planning	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Unknown	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Town of St. Paul's Secondary Water Supply:** St. Paul's water plant was inundated and inadequate during Hurricane Matthew. This strategy would fund the construction of a small treatment plant with a well, storage tank, and backup power to add redundancy to Town's water system. It would also fund improvements to the system including upsizing water lines and adding a secondary loop of piping to provide for redundant delivery paths in the system. The new well would be brought online when completed to add resiliency to system and help support growth and economic development.

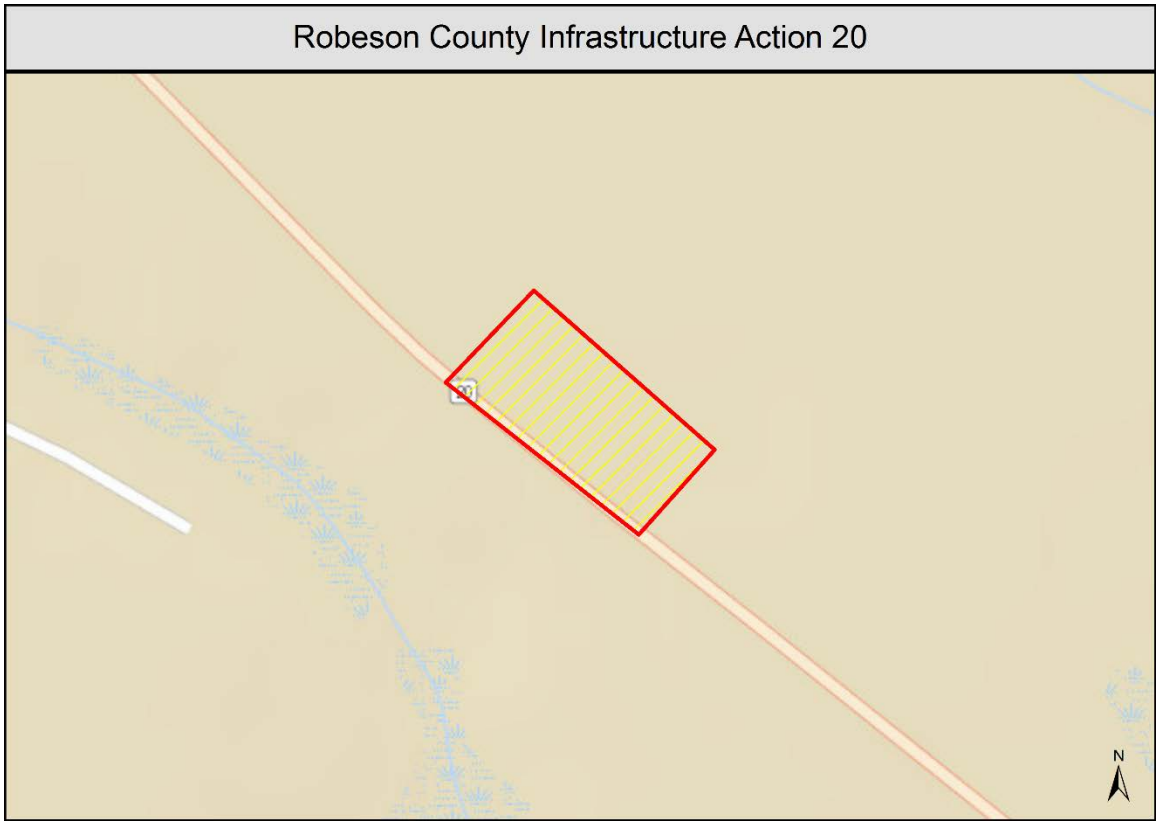


Figure 42. Infrastructure Action 20 - Town of St. Paul's Secondary Water Supply

Town of St. Pauls Secondary Water Supply

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: 0

Project Timeframe: 1-2 years

Location: St. Pauls, North Carolina

Project Summary: Make structural improvements to water system
Details - Building Elevated Storage Tank supplied by new well, Improve system capacity by replacing 4" lines with 8" lines
Add secondary piping, looping current system to add redundant flow paths and resiliency
Resiliency - Restore system to pre-storm condition and improve system's ability to operate during disaster events
Increase system ability to provide fire protection
Contact: J.R. Steigerwald; Town of St. Pauls, Town Administrator

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The secondary water supply will add capacity and resiliency need to support additional affordable housing as targeted as part of this Resilient Redevelopment Planning.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	The secondary water supply will add capacity and resiliency need to support additional affordable housing as targeted as part of this Resilient Redevelopment Planning.	N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **UNC Pembroke EOC Enhancements:** Equip UNC-Pembroke Emergency Operations Center to better serve campus, local community and first responders. The strategy would support moving to a larger space in Pinch Brick Building, up-fit building the space with intelligence and communication equipment for all natural disaster support (permanent installation). Also, provide backup power with generator to provide cooling and power to university telecom and network infrastructure.

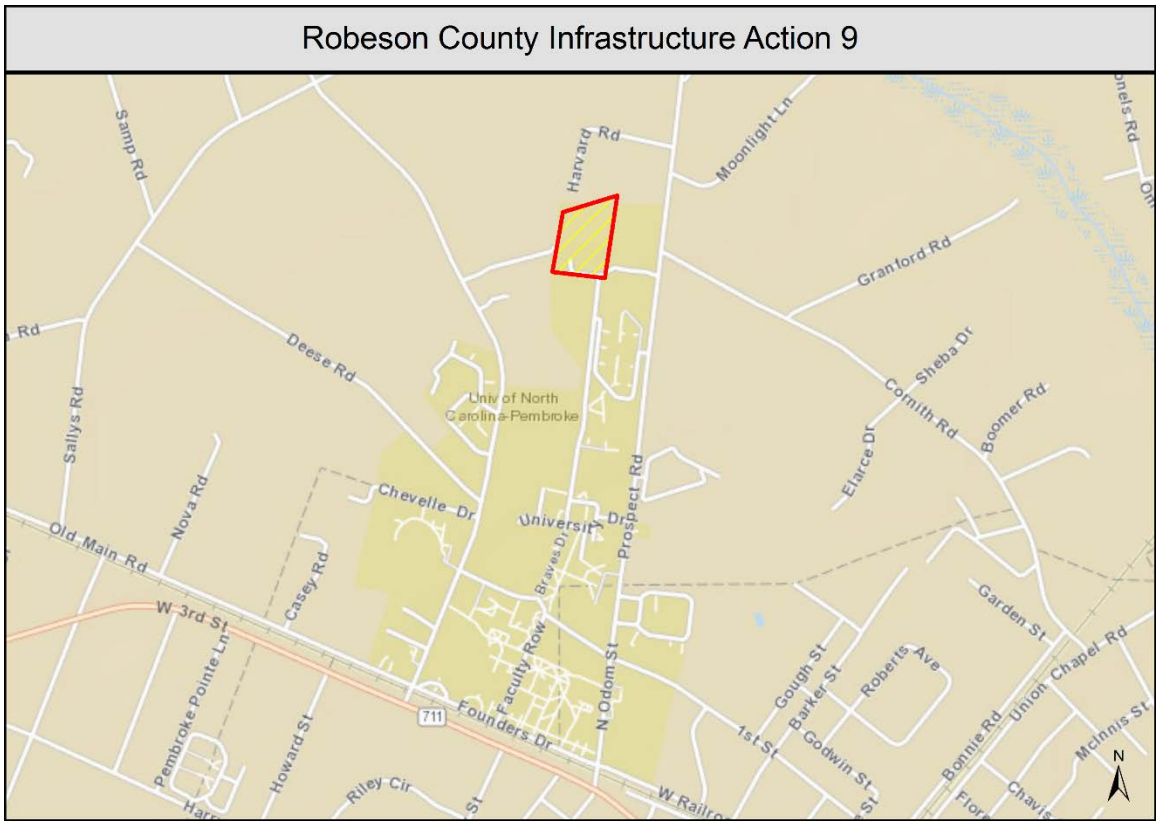


Figure 43. Infrastructure Action 9 - UNC Pembroke EOC Enhancements

UNC Pembroke EOC Enhancements

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: 0

Project Timeframe: 1-2 years

Location: Pembroke, North Carolina

Project Summary: Equip UNC-Pembroke Emergency Operations Center to better serve campus, local community and first responders. Details: Move to larger space in Pinch Brick Building, Room 101, Up-fit building space with intelligence and communication equipment for all natural disaster support (permanent installation), Provide backup power with a 100 kw natural gas powered standby generator, Provide cooling and power to university telecom and network infrastructure, Equip with trailer-mounted 6" discharge, 1000 gpm pump, Equip with mobile light tower and power generator
Resiliency- Better equipped to handle future storm events Contact: David Hatch; UNC-P, Facilities Coordinator

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The project would improve UNC's capability to serve its community during a disaster. It will also provide the necessary equipment to protect health and well being of residents during next flood event.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	None	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

Un-Prioritized Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	UNC Pembroke Gas Line Repairs	**N/A**	N/A

Table 15. Robeson Un-Prioritized Infrastructure Summary

This infrastructure strategy was developed after meeting 4 was held and the County has not had an opportunity to priorities it. Additional detail can be found below:

- **UNC Pembroke Gas Line Repairs:** During Hurricane Matthew, the UNC Campus at Pembroke was covered by flood water that took weeks to completely recede. During this time, areas of the campus were saturated with water which damaged gas lines buried in the ground. Since the hurricane, the university has had several gas leaks that needed to be repaired. This strategy would fund the repair of all gas lines damaged on campus.

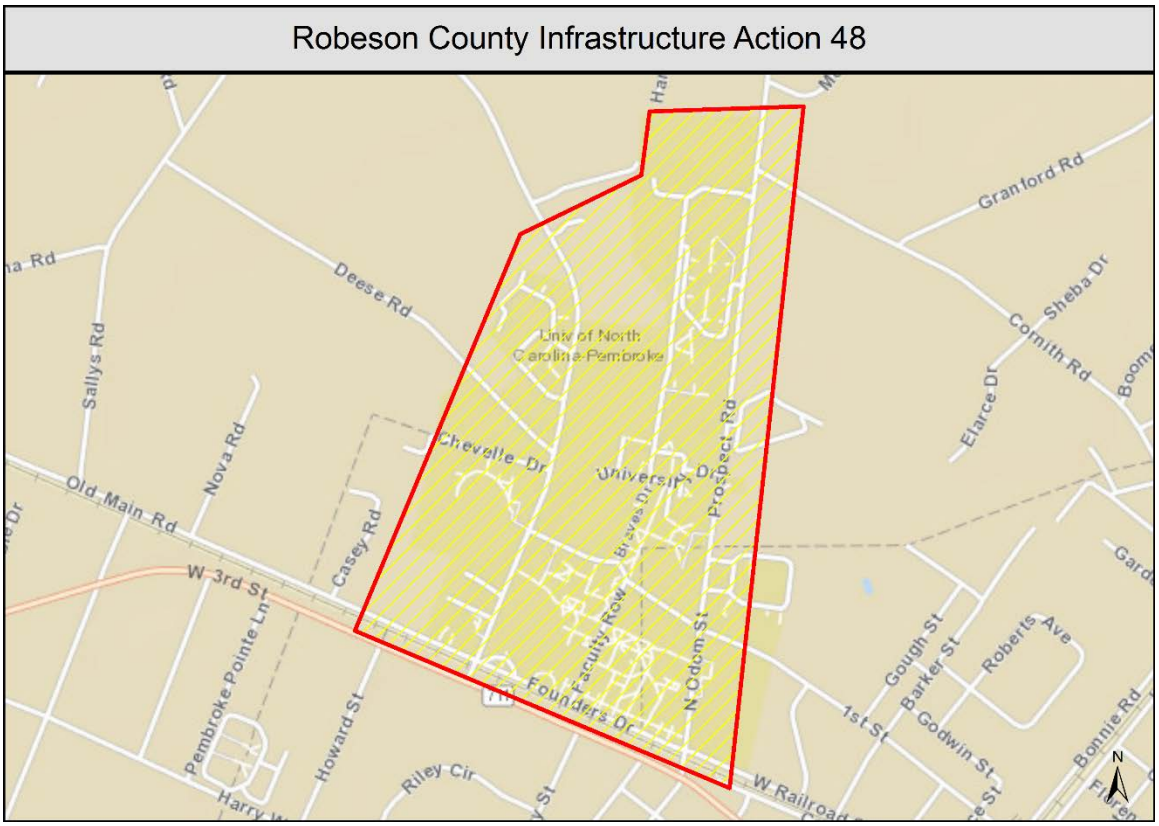


Figure 44. Infrastructure Action 48 - UNC Pembroke Gas Line Repairs

UNC Pembroke Gas Line Repairs

County: Robeson

Priority Grouping:

Priority Ranking: 0

Project Timeframe: 1 year

Location: UNC Pembroke Campus

Project Summary: During Hurricane Matthew the UNC Campus at Pembroke was covered by flood water that took weeks to completely recede and dissipated. During this time areas of the campus grounds were saturated which damaged gas lines buried within. Since the hurricane the university has had several gas leaks that needed to be repaired.

This project would repair all gas lines damaged on campus.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.		N/A
Consistent with existing plans (describe points of intersection/departure)		N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.		N/A
For how long will this solution be effective?	Between 31 and 50 years	N/A
How effective is the risk reduction?		N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?		N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$251K - $500K	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Environmental, Ecosystem and Agricultural Strategies

High Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environmental	Mitigate Hazard Impacts on Vulnerable Dams	**High**	**N/A**

Table 16. Robeson High Priority Environmental Summary

This strategy has been identified by Robeson County as the highest priority to address. Additional detail can be found below:

- **Mitigate Hazard Impacts on Vulnerable Dams:** In Robeson County, two dams were overtopped and sustained minimal damage during the event; however, they did fail to protect the roads just downstream that were washed out by the flood waters overtopping them. This strategy would support the need for a comprehensive dam safety program to help address small dams owned by neighborhood associations, farmers, utilities, or other private owners. Funds and technical assistance will be made available to develop engineering designs for dams needing retrofit, repair and/or rebuild. Also, there is a need for local community based warning systems based on dam water levels or breaches to help responsible owners make timely decisions on drawdowns and to warn downstream owners. The FIMAN network is one avenue to add dam inundation modeling and monitoring by gages that could feed water level information to an early warning network.

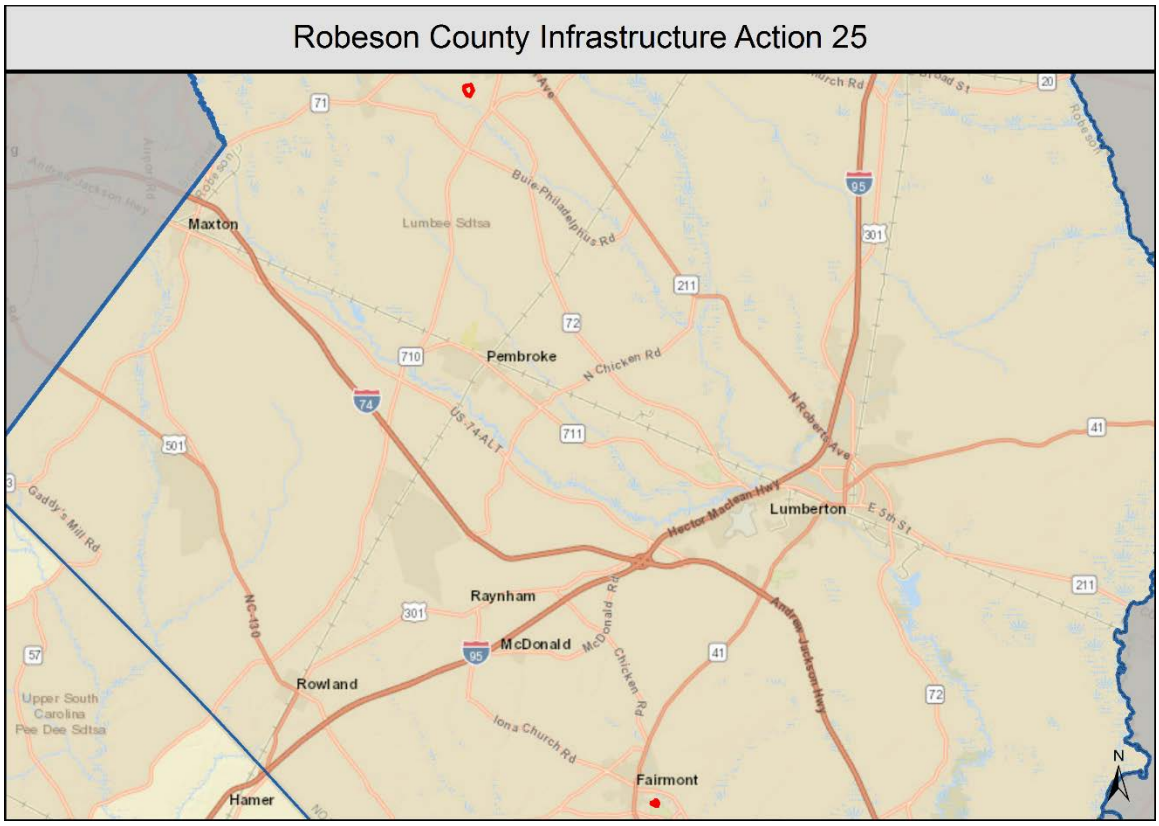


Figure 45. Environment Action 26 - Mitigate Hazard Impacts on Vulnerable Dams

Mitigate Hazard Impacts on Vulnerable Dams

County: Robeson

Priority Grouping: High Priority

Priority Ranking: 0

Project Timeframe: 1-2 years

Location: Robeson County, North Carolina

Project Summary: Inconsistent construction and maintenance of small earthen dams that are generally surrounded by suburban development led to dam failures. In some cases, dam failure was caused by an upstream dam failure. Also, there is a need for local community based warning systems based on dam water levels or breaches to help responsible owners make timely decisions on drawdowns and to warn downstream owners. Comprehensive dam safety program, which help address small dams generally owned by neighborhood associations, farmers, utilities, or other private owners. The State should establish minimum standards for owners to follow. Funds and technical assistance will be made available to develop engineering designs for dams needing retrofit, repair and/or rebuild. Additional funds in the form of revolving loans will be made available to dam owners for construction. In exchange, dam owners will agree to comply with annual maintenance standards and set aside funds for it. The FIMAN network is one avenue to add dam inundation modelling and monitoring by gauges that could feed water level information to an early warning network.
Details - Dam off Rt-72 in Red Springs, Dam off Dogwood Drive in Fairmont Resiliency: Improves understanding of true flood risk

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Matthew.	If this project is not implemented future impacts from vulnerable dams can be expected.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Limited economic benefits/impacts.	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	100-200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	N/A
What impacts to the environment of the county will result from this project?	Minimal environmental impacts	N/A
What is the capability of the local government to administer this project?	Minimum	N/A
What is the financial range of this project?	$101K - $250K	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Medium Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Floodway Restoration on Meadow Branch	**Medium**	**N/A**

Table 17. Robeson Medium Priority Environmental Summary

This environmental strategy has been identified by Robeson County as a medium priority to address. Additional detail can be found below:

- **Floodway Restoration on Meadow Branch:** Most of the homes along Best Drive in Lumberton were flooded during Hurricane Matthew and most of the homes that were flooded are in the FEMA regulated floodway of Meadow Branch. Being in the floodway, these properties are exposed to high velocity flows of water and debris. They are also routinely flooded and sustain damage from smaller rainfall events. This strategy would fund the purchase and removal of homes (approximately 16 buy-outs) in the Meadow Branch floodway and the subsequent development of a linear park along its banks. This would help eliminate the flood risk to people living in these homes, eliminate of flood damage, improve conveyance along Meadow Branch and reduce flood risk for remaining residences. Additionally, it would offer improved quality of life for residents with access to the park.

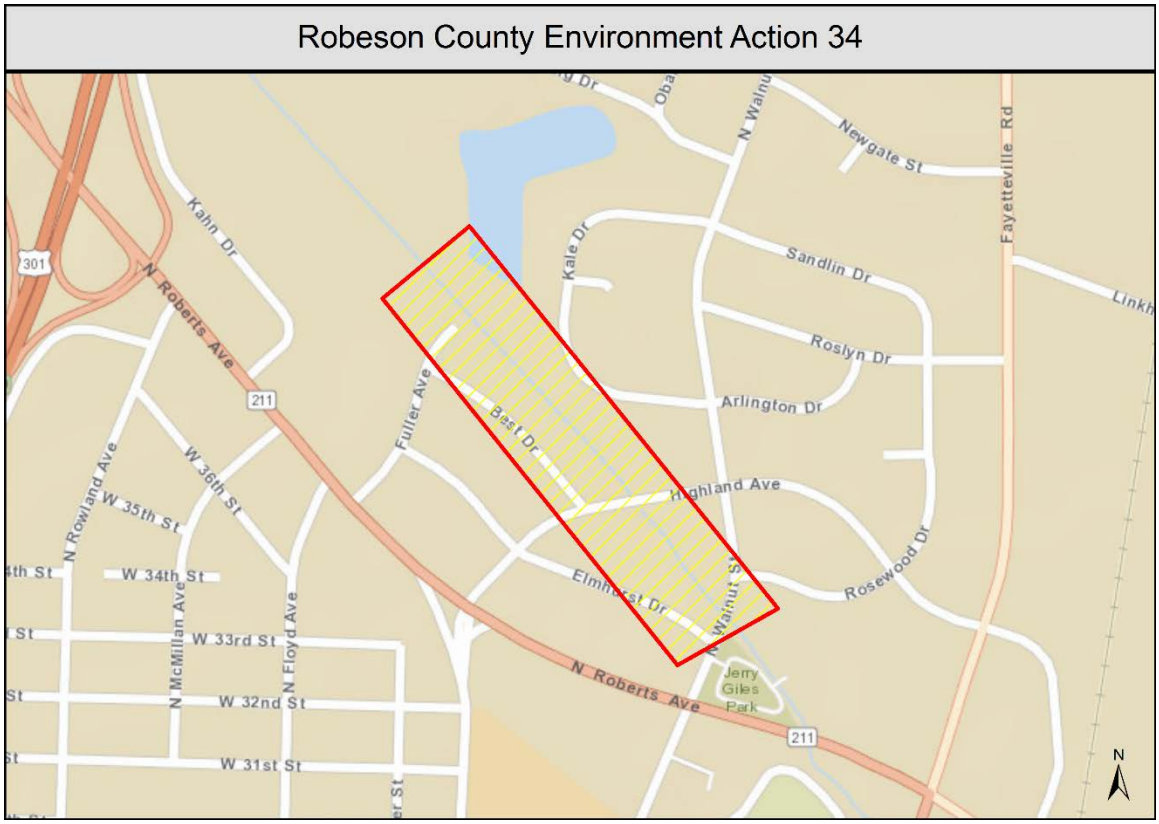


Figure 46. Environment Action 34 - Floodway Restoration on Meadow Branch

Floodway Restoration on Meadow Branch

County: Robeson

Priority Grouping: Medium Priority

Priority Ranking: 0

Project Timeframe: 1-2 years

Location: Lumberton NC, Area along Best Drive

Project Summary: Most of the homes along Best Drive in Lumberton were flooded during Hurricane Matthew and most of the homes that were flooded are in the floodway of Meadow Branch. Being in the floodway these properties are exposed to high velocity flows of water and debris. They are also routinely flooded and sustain damage form smaller rainfall events.
This project would include the purchase and removal of homes (Approximately 16 Buy Outs) in the Meadow Branch Floodway and then development of a linear park along the banks of Meadow Branch.
The result of this project would be the elimination of flood risk to people living in these homes, elimination of flood damage, improved conveyance along Meadow Branch and reduced flood risk for remaining residences. Additionally, improved quality of life for residents who are able to access the park.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	If this project is funded it will not be an unmet need. If it is not funded it will remain an unmet need.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Limited economic benefits	N/A
For how long will this solution be effective?	More than 50 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Limited impacts to the environment	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

Low Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Environmental Cleanup of Public & Private Property	Low	N/A
Environment	Expand Recreational Lands & Preserve Floodplain	Low	N/A
Environment	Perform Detailed Studies of Unmapped Flood Sources	Low	N/A

Table 18. Robeson Low Priority Environmental Summary

These environmental strategies have been identified by Robeson County as a lower priority to address. Additional detail can be found below:

- **Environmental Cleanup of Public & Private Property:** Flooding and wind damage from Hurricane Matthew caused debris and hazards to fall onto public and private property. This strategy includes removal of this debris from areas outside the right-of-way, including cleanup and remove trees, sand and other debris from public and private land, as well as remnants of fuel or waste spills.
- **This is a county-wide project, so no project area map has been included.**

Environmental Cleanup of Public and Private Property

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: 0

Project Timeframe: ongoing

Location: Robeson County, North Carolina

Project Summary: Cleanup debris and hazards from areas outside the right-of-way.
Details
Cleanup and remove trees, sand and other debris from public and private land.
City of Lumberton currently has a list of 130 downed trees to be removed on private property.
City of Lumberton cleanup of sand in areas near and around 5th street.
Cleanup remnants of fuel or waste spills.
Resiliency
Remove hazards from environment and eliminate risk to public

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	There is still a need for cleanup of debris and hazards from areas outside the right-of-way.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Limited benefits but a clean community can help improve appearance and potentially have economic benefits.	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	Unknown	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	4-6	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Removed hazard from environment.	N/A
What is the capability of the local government to administer this project?	Medium	N/A
What is the financial range of this project?	$501K - $1M	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	Local	N/A

- **Expand Recreational Lands & Preserve Floodplain:** Increase the amount of land in the floodplain that is used for recreational purposes. Provide trail access to community along easements obtained for ditch and stream restoration. Mark trails and maintain trails. This would help to maintain floodway along ditches and streams.
- **This is a county-wide project, so no project area map has been included.**

Expand Recreational Lands and Preserve Floodplain

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: 0

Project Timeframe: 1-5 years

Location: Robeson County, North Carolina

Project Summary: Increase the amount of land in floodplain that is used for recreational purposes

Details
Provide trail access to community along easements obtained for ditch and stream restoration.
Mark trails and maintain trails.
Resiliency
Help maintain floodway along ditches and streams.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Directly support unmet need of maintaining access to ditches and stream so they can be maintained.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	Green space has positive benefits on the local economy.	N/A
For how long will this solution be effective?	Between 11 and 30 years	N/A
How effective is the risk reduction?	50-100 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	0	N/A
Is coordination with other communities/counties needed to complete this project?	No	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Improved green space enhances the County's environmental resources.	N/A
What is the capability of the local government to administer this project?	High	N/A
What is the financial range of this project?	$51K - $100K	N/A
What is the level of public support for this project?	Medium	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	County	N/A

- **Perform Detailed Studies of Unmapped Flood Sources:** A need for an updated analysis of flood risk has been identified by the county for specified frequent flooding areas. The instances of repeated inundation outside the current SFHA provides a basis for re-evaluation of risk, which may have changed since the most recent FIRMs were approved. Localized analysis should assist the community in better planning and mitigation of future damages.
- **This is a county-wide project, so no project area map has been included.**

Perform Detailed Studies of Unmapped Flood Sources

County: Robeson

Priority Grouping: Low Priority

Priority Ranking: 0

Project Timeframe: 1-3 years

Location: Robeson County, North Carolina

Project Summary: Actual Flood Risk Unknown or Inaccurate. There is a need for better identification of Flood Risk Areas –updated flood profiles and mapping in areas of frequent and nuisance flooding to better understand overall risk of future events.
A need for an updated analysis of flood risk has been identified by the county for specified frequent flooding areas. The instances of repeated inundation outside the current SFHA provides a basis for re-evaluation of risk, which may have changed since the most recent FIRMs were approved. Localized analysis should assist the community in better planning and mitigation of future damages.
- Hydrologic and Hydraulic Studies - Floodplain Mapping
- Limited Detailed Studies - Additional Modeling
Approximate 270 miles of stream need to be studied as identified by NCEM Risk Management.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project will address directly the identification of flood prone areas. It will also support flood warning efforts.	N/A
Consistent with existing plans (describe points of intersection/departure)	No known inconsistencies with existing plans.	N/A
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	N/A
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	N/A
Explain any benefits or impacts to the economy of the county from this project.	better floodplain mapping can be a benefit to the County's economy.	N/A
For how long will this solution be effective?	Less than 10 years	N/A
How effective is the risk reduction?	>200 year event	N/A
How many public facilities are involved in this project (buildings and infrastructure)?	>6	N/A
Is coordination with other communities/counties needed to complete this project?	Yes	N/A
Is this project consistent with Federal Laws	Yes	N/A
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	N/A
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	N/A
What impacts to the environment of the county will result from this project?	Improved flood mapping could provide environmental benefits for the County in the form of larger areas protected through floodplain management regulation.	N/A
What is the capability of the local government to administer this project?	Minimum	N/A
What is the financial range of this project?	$1M+	N/A
What is the level of public support for this project?	High	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Summary

Implementation has already begun for some of these actions but for those that have not already been funded, the State of North Carolina will begin a process of prioritizing the actions and seeking to match a funding stream to each action. Those that are not matched with a funding source will be added to the State's Unmet Needs Report. Funding for Unmet Needs will be sought through additional funding from Congress and from the North Carolina General Assembly. Any action that cannot be matched to a funding source should be incorporated into the County's Hazard Mitigation Plan for consideration for future funding. It is important to seek to implement as many of these actions as feasible. Doing so will significantly contribute to helping improve the resiliency of North Carolina's communities.