

A photograph of a flooded street in a residential area. In the foreground, a small boat is partially visible on the left. In the middle ground, two people are in a small boat on the water. The background shows a street with cars and houses, all under a blue overlay. The text 'Hurricane Matthew Resilient Redevelopment Plan' is centered over the image.

Hurricane Matthew Resilient Redevelopment Plan

Southeast Region

August 2017

Version 1.0

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Change Log

Version	Date	Summary of Changes

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

As part of the NCRRP, NCEM facilitated development of regional resilient redevelopment plans for four “prosperity zones” as identified by the North Carolina Department of Commerce. Prosperity zones were created by the North Carolina General Assembly in 2015 for the following purposes:

- 1) Facilitate collaborative and coordinated planning and use of resources,
- 2) Improve cooperation with other governmental and nonprofit entities at the local and regional level,
- 3) Facilitate administrative efficiencies within State government,
- 4) Receive advice on economic development issues by local boards established by a North Carolina nonprofit corporation with which the Department of Commerce contracts, and
- 5) To the extent feasible, establish one-stop sources in each region for citizens and businesses seeking State services at the regional level.

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>.

All of the impacted counties² fall into one of the following four economic prosperity zones:

- North Central Region
- Northeast Region
- Southeast Region
- Sandhills Region

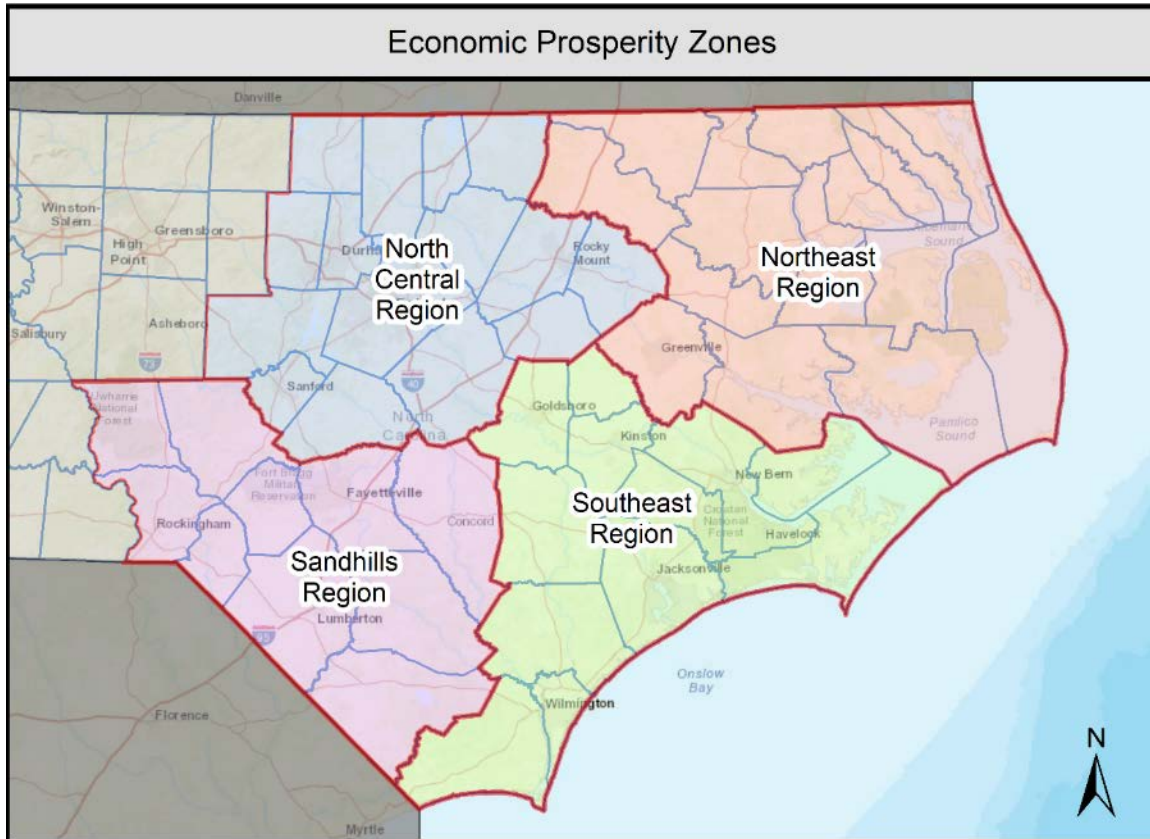


Figure 2. North Carolina Prosperity Zones

This document has been developed to provide summary information for the counties located in the Southeast Region. These summary documents provide a snapshot of the current needs of the counties located in these regions regarding holistic recovery and redevelopment. The plan will evolve as the counties analyze their risk to their assets, identify needs and opportunities, determine 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.

² Except for Anson County. Anson County is located in the Southwest Region Prosperity Zone but for the purposes of these reports has been included in the Sandhills Region.

This regional RRP covers the following counties:

- Brunswick
- Carteret
- Craven
- Duplin
- Greene
- Jones
- Lenoir
- New Hanover
- Onslow
- Pamlico
- Pender
- Wayne

After multiple public meetings, the counties in this region identified 346 projects in four pillars: Housing, Infrastructure, Economic Development, and Environmental. Details of these projects can be found in Section 4 of this plan.

Table 1. Regional Summary of Projects

County	Housing Pillar	Economic Development Pillar	Infrastructure Pillar	Environment Pillar	Total Project/Action Count in Northeast Region
Brunswick	1	0	19	2	22
Carteret	6	8	9	5	28
Craven	5	2	29	1	38
Duplin	3	5	3	4	15
Greene	6	5	18	5	34
Jones	6	3	12	1	22
Lenoir	5	3	12	5	25
New Hanover	1	1	10	4	16
Onslow	9	0	18	1	28
Pamlico	4	2	28	1	35
Pender	6	3	5	3	17
Wayne	5	26	29	6	66
TOTAL	57	58	192	38	346

An aerial photograph showing a residential neighborhood severely affected by flooding. The water is a murky brown color, inundating the yards and streets between the houses. The houses are mostly two-story structures with light-colored siding and dark roofs. Some trees are partially submerged, with only their tops visible above the water. The overall scene depicts a significant natural disaster impact on a community.

1. Background

1. Background

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.³

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.

³ Governor 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) recommendation 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

This document is a snapshot of the Southeast Economic Property Zone's current needs for achieving holistic recovery and redevelopment. The plan will evolve as the Counties in the region analyze the risk to their assets, identify needs and opportunities, determine the potential costs and benefits of projects, and prioritize 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 considering 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. In each participating County, four rounds of discovery, analysis, collaboration, and interaction were held. Each meeting had two components: an in-depth working session with county officials, subject matter experts, and planners from the affected 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.

Meeting 4 – NCEM presented actions developed during the course of the planning process and allowed the county to rank actions; apply High, Medium, or Low Prioritization; and approve inclusion of the actions in the final 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 four 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.

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 pro 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.

An aerial photograph showing a residential neighborhood severely affected by flooding. The water is a murky, brownish-yellow color, submerging lawns, streets, and parts of the houses. Numerous trees are isolated in the water, some with only their tops visible. The houses are mostly two-story structures with light-colored siding and dark roofs. The overall scene depicts significant environmental damage and displacement.

2. Regional Profile

2. Regional Profile

The Southeast Economic Prosperity Zone is comprised of the counties of Brunswick, Carteret, Craven, Duplin, Greene, Jones, Lenoir, New Hanover, Onslow, Pamlico, Pender, and Wayne. All of these 12 counties were part of the Presidential disaster declaration. This section provides a summary of demographics, income, housing, economy, infrastructure and environment of the impacted counties within this region. The County level plans have more detailed information.

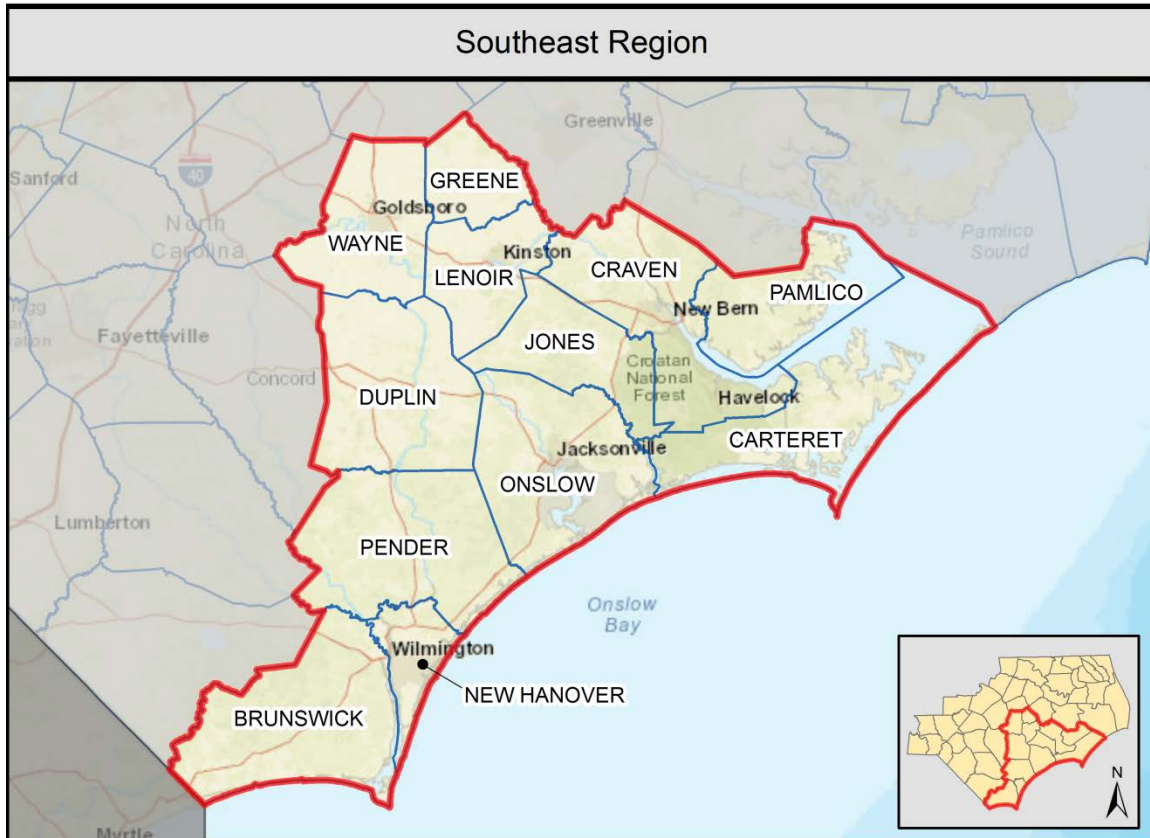


Figure 3. Southeast Prosperity Zone

Demographics, Income and Housing

Demographic, income and housing information for the region is summarized by county in Table 2. The data is from the 2000 Census, 2010 Census, and 2011-2015 American Community Survey five-year estimates.

Table 2. County Summary of Demographics, Income and Housing

County	Population (2010)	Population Change in between 2000 & 2010 (%)	Median Age (5-year estimate 2011-2015)	Low, Moderate and Medium Income (% of population (2006-2010))	Affordable Housing Units (#) (2016)	Zero-Car Households (% of households 5-year estimate 2011-2015)
Brunswick	107,431	46.9%	50	41.2%	641	4.2%
Carteret	66,469	11.9%	46.4	34.9%	1,218	5.5%
Craven	103,505	13.2%	35.9	38.7%	2,207	7.6%
Duplin	58,505	19.2%	38.8	47.2%	1,578	9.1%
Greene	21,362	12.6%	39	36.8%	408	7.9%
Jones	10,153	-1.8%	45.2	37.1%	192	7.0%
Lenoir	59,495	-0.3%	42.1	41.9%	1,252	11.4%
New Hanover	202,667	26.4%	37.8	39.4%	3,570	6.6%
Onslow	177,772	18.2%	26.1	32.0%	1,999	5.1%
Pamlico	13,144	1.6%	49.8	38.1%	118	5.3%
Pender	52,217	27.1%	42.1	38.3%	494	6.1%
Wayne	122,623	8.2%	36.7	41.7%	2,749	8.6%
Region	995,343	15.3%	40.8	38.9%	16426	6.7%
North Carolina	9,535,483	18.5%	42	55%	156,964	8.2%

Sources : Population - 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

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

LMI based on the 2006-2010 American Community Survey (ACS) - <https://www.hudexchange.info/programs/acs-low-mod-summary-data/acs-low-mod-summary-data-block-groups-places/>

Affordable Housing - Public and Affordable Housing Research Corporation and National Low Income Housing Coalition, National Housing Preservation Database, 2016. <http://www.preservationdatabase.org/>

Zero-Car Households - US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25044, "Tenure by Vehicles Available."

In terms of population, the region is growing at a lower rate (15.3%) than the State (18.5%). Brunswick, Pender, and New Hanover counties have the highest growth rate, while population is declining in Jones and Lenoir counties. Median age of the region (40.8) is comparable to the State (42).

The American Community Survey 5-year 2006-2010 Low and Moderate Income Summary Data from the Housing and Urban Development Exchange (HUD Exchange) shows that the region has a lower Low, Moderate, and Medium Income (LMMI) population proportion (38.9%) than the State (55%).

According to the National Housing Preservation Database, Pamlico and Jones counties have the lowest number of affordable housing units (118 and 192% respectively). Census data on zero-car households shows that Lenoir county have a high percentage of households that do not have a car (11.4%), relative to the rest of the region, and would need assistance in case of evacuation.

Economy and Labor Force

Table 3 shows each county's civilian population in the labor force and the proportion of that population that is unemployed. According to the local area unemployment statistics (LAUS) from the Labor and Economic Analysis Division for the unadjusted data for all periods in 2016, the Southeast region has a higher average annual unemployment rate (5.4%) than the State's (5.1%), with Brunswick, Lenoir, and Wayne being the counties with the highest unemployment rates in the region.

Table 3. County Summary of Unemployment and Top Employers

County	Civilian Population in Labor Force	Civilian Unemployment Rate	Top Employer	Top Employer's Industry
Brunswick	49,758	6.4%	Brunswick County Board of Education	Education and Health Services
Carteret	31,737	5.2%	Carteret County Board of Education	Education and Health Services
Craven	41,857	5.3%	Department of Defense	Public Administration
Duplin	26,718	5.4%	Butterball LLC	Manufacturing
Greene	9,574	5.2%	NC Dept. of Public Safety	Public Administration
Jones	4,602	5.3%	Jones County Board of Education	Education and Health Services
Lenoir	27,855	5.9%	Sanderson Farms Inc	Manufacturing
New Hanover	116,676	4.7%	New Hanover Regional Medical Center	Education and Health Services
Onslow	63,729	5.5%	Department of Defense	Public Administration
Pamlico	5,404	5.3%	YMCA	Leisure & Hospitality
Pender	26,687	5.3%	Pender County Schools	Education and Health Services
Wayne	53,697	5.8%	Wayne County Board of Education	Education and Health Services
Region	458,294	5.4%		
North Carolina	4,875,702	5.1%		

Sources: Civilian Population and Unemployment Rate - Labor and Economic Division of North Carolina Department of Commerce – Local Area Unemployment Statistics <http://d4.nccommerce.com/LausSelection.aspx>

Top Employer - Labor and Economic Division of North Carolina Department of Commerce – Quarterly Census of Employment and Wages (QCEW) Largest Employers <http://d4.nccommerce.com/QCEWLargestEmployers.aspx>

The table also includes the largest employer in each county, with the corresponding industry, which shows that education and health services, public administration, manufacturing, and leisure and hospitality are the major industries in the region. The source of employer data is the Labor and Economic Analysis Division of the North Carolina Department of Commerce.

Infrastructure and Environment

Major transportation infrastructure includes I-795, which cuts across Wayne County. US 70 is a major east-west highway that runs from the Tennessee border to the Atlantic Ocean connecting major cities in the southeast region. I-40 is a major east-west interstate that runs from Arizona to North Carolina. In the southeast region, it runs north-south cutting across Duplin, Pender, and New Hanover counties. U.S. 17 and U.S. 258 US are also significant transportation corridors.

There are several small local airports in Brunswick, Craven, Duplin, Jones, and Wayne counties. The Wilmington International Airport is located in Cape Fear Township in New Hanover County.

Power supply to the region is through major utility companies, and supplemented by solar farms located in several counties in the region (Craven, Duplin, Greene, Lenoir, Pender, and Wayne). Brunswick County has a nuclear plant operated by Duke Energy.

Several water and wastewater facilities are managed by public water and sewer districts. Most rural and coastal wastewater is handled by septic systems. Wayne County residents are served by several providers of water and wastewater treatment depending on location. Greene, Jones, and Onslow counties use well water.

Educational and medical facilities are spread throughout the region. Notable important educational facility is the University of North Carolina Wilmington, which is the largest in the region, is in New Hanover County.

Duplin General Hospital is one of two hospitals located in Duplin County. It is part of the University Health Systems of Eastern Carolina; the other, Vidant Duplin Hospital. Pamlico County Health Department does not have county hospitals. The rest of the region has local hospitals serving the community.

Figures 4 and 5 show the major infrastructure in the region.

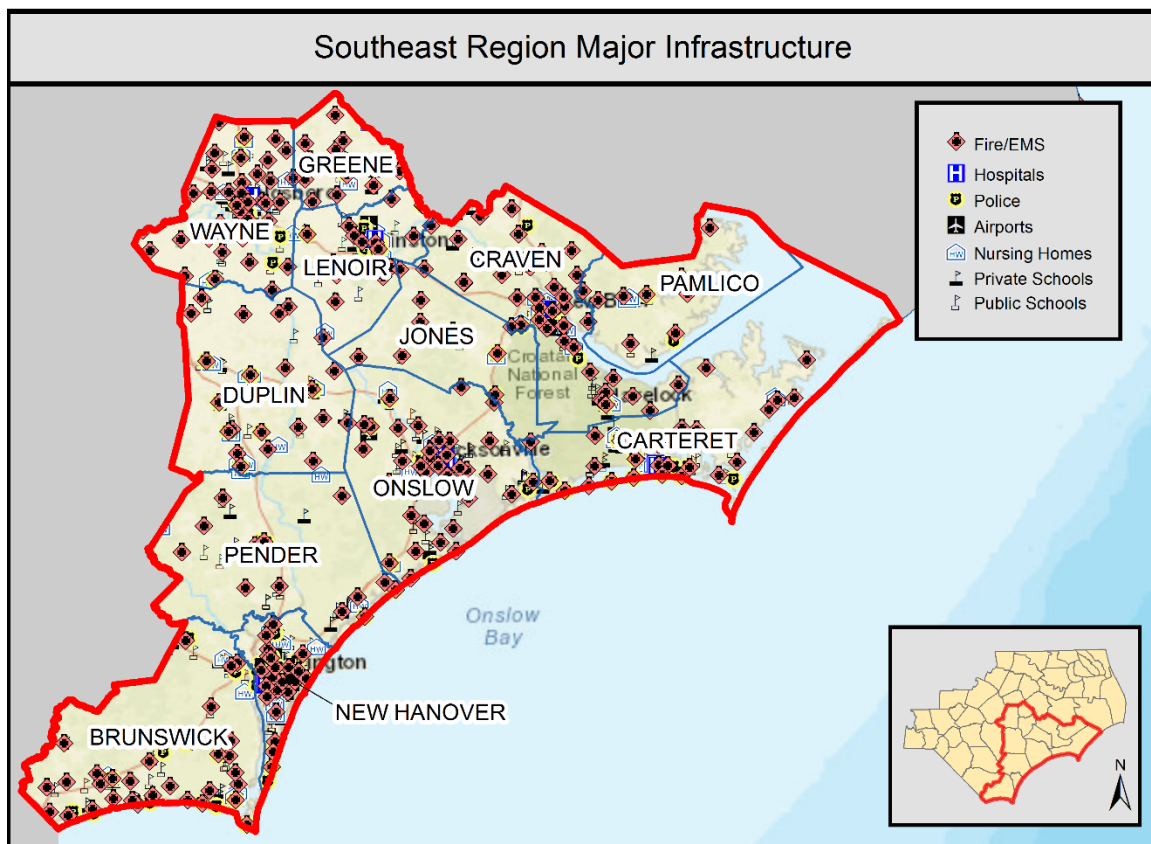


Figure 4. Major Infrastructure in the Southeast Region – 1 of 2 maps

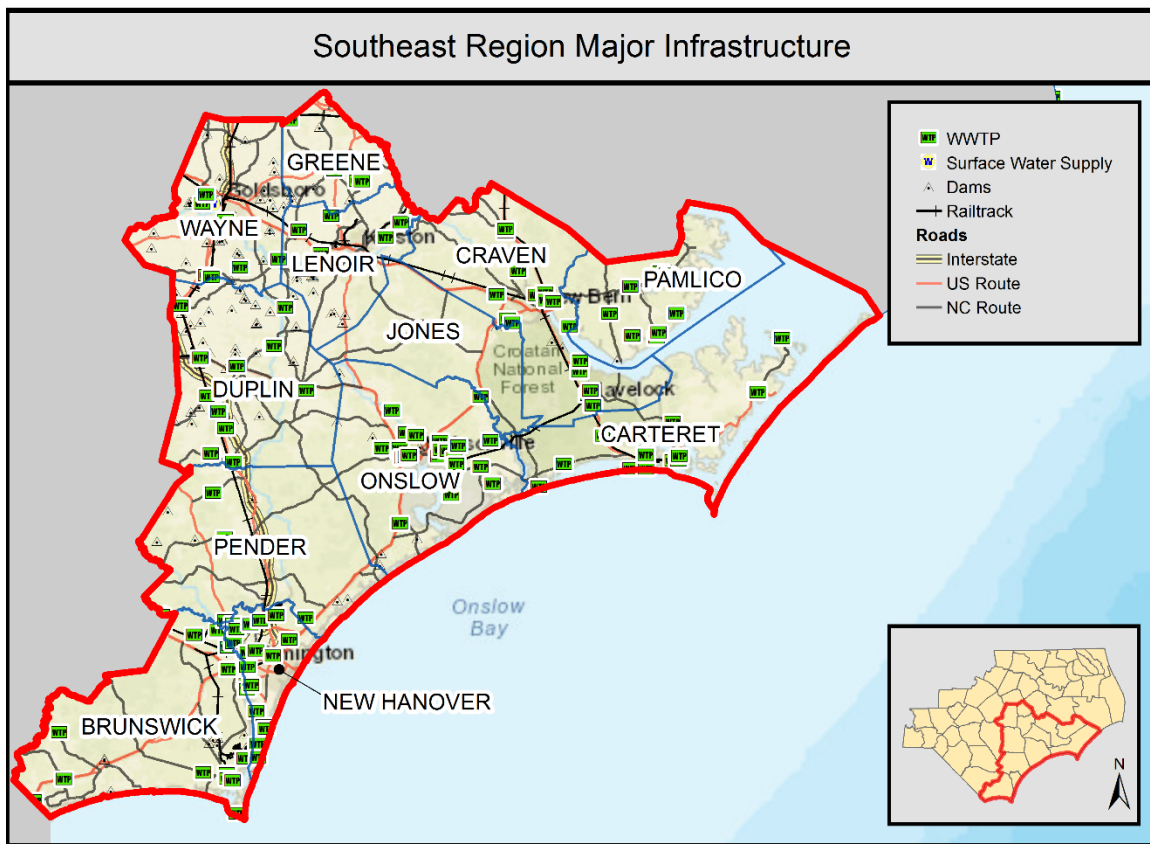


Figure 5. Major Infrastructure in the Southeast Region – 2 of 2 maps

The region is home to Cape Lookout National Seashore, one of America's few remaining undeveloped coastal barrier island systems. It encompasses about 29,000 acres of islands, most of which runs roughly parallel to the eastern shores of Carteret County. The system is bounded on the north by Ocracoke Inlet and on the south by Beaufort Inlet. Three islands make up the 56-mile seashore: North Core Banks, also known as Portsmouth Island; South Core Banks (including Cape Lookout); and Shackleford Banks.

Fort Macon State Park is one of the most complete forts of the Civil War era in the United States.

According to the NC Natural Heritage Program, there are a number of natural areas of high, very high, or exceptional value in the region, and are designated as protected lands and natural heritage areas. The Cliffs of the Neuse, the Neu/Little Aquatic Habitat, and the Richardson Bridge Bottomlands (Wayne County); Little Lake/Long Lake/Sheep Ridge Wilderness, Great Lake/Pond Pine Wilderness, and Catfish Lake in the Croatan National Forest; Sweetwater Creek/Trent River Natural Area; and the Little Road Longleaf Pine Savannas north of Sheep Ridge Wilderness (Craven County); and the Holly Shelter Game Land, Angola Bay Game Land, Bellhammon Tract, and areas along the Northeast Cape Fear River (Pender County).



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. Total rainfall depth for Wake County is highlighted graphically in the figure below.

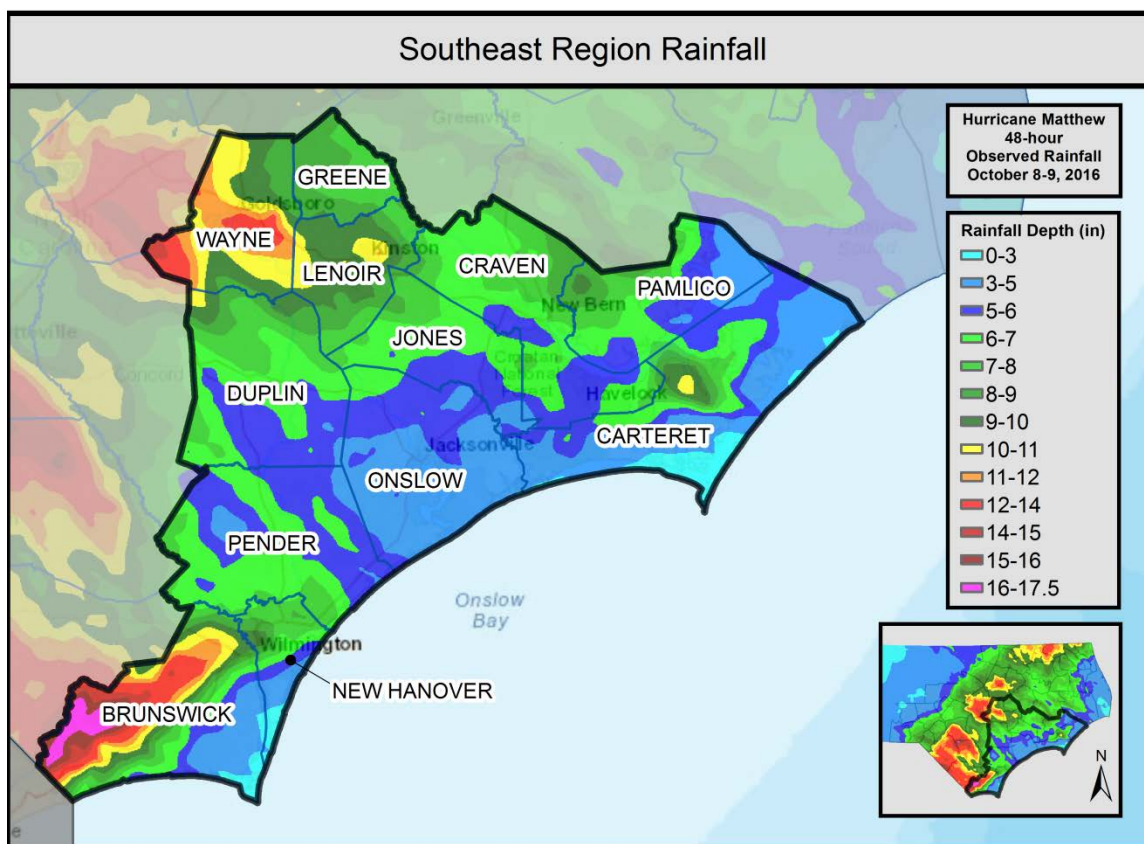


Figure 6. 48-hour Observed Rainfall Depth (October 8-9, 2016)

Housing and Infrastructure Impacts

According to Individual Assistance (IA) claims information as of July 2017, there were 15,040 impacted houses in the Southeast region because of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew might still be pending, so this number may not reflect the final claims data from the event.

According to Public Assistance (PA) claims information, which are often closely tied to infrastructure, as of May 2017, there were 219 submitted projects and \$20,153,645 of federal share obligated in the Southeast region as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew might still be pending, so this number may not reflect the final claims data from the event.

Table 4 lists IA and PA claims as of July 2017.

	Individual Assistance		Public Assistance	
	Total Registrations	Total Individual & Households Program (IHP) \$ Approved	Submitted Projects	Federal Shares Obligated
Brunswick	800	\$338,795	41	\$7,674,661
Carteret	49	\$65,941	14	\$1,023,503
Craven	624	\$673,198	11	\$414,219
Duplin	1,331	\$1,196,679	49	\$1,609,163
Greene	583	\$656,097	4	\$139,605
Jones	226	\$384,890	3	\$78,672
Lenoir	3,301	\$4,212,756	7	\$345,213
New Hanover	-	-	24	\$2,587,677
Onslow	442	\$209,493	20	\$2,050,948
Pamlico	-	-	2	\$7,106
Pender	962	\$2,131,626	10	\$2,355,005
Wayne	6,722	\$9,870,263	34	\$1,867,873
Region	15,040	\$19,739,738	219	\$20,153,645
North Carolina	81,498	\$97,585,240	718	\$62,663,672

Table 4. County Summary of IA and PA Claims

The highest number of IA claims in the region is for Wayne County with 6,722 claims. The highest number of PA submitted projects is for Duplin County with 49 projects; however, the largest federal share obligated is for Brunswick County with \$7,674,661.

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. Road closures were the major impacts identified by local officials; a map of road impacts in the region is included.

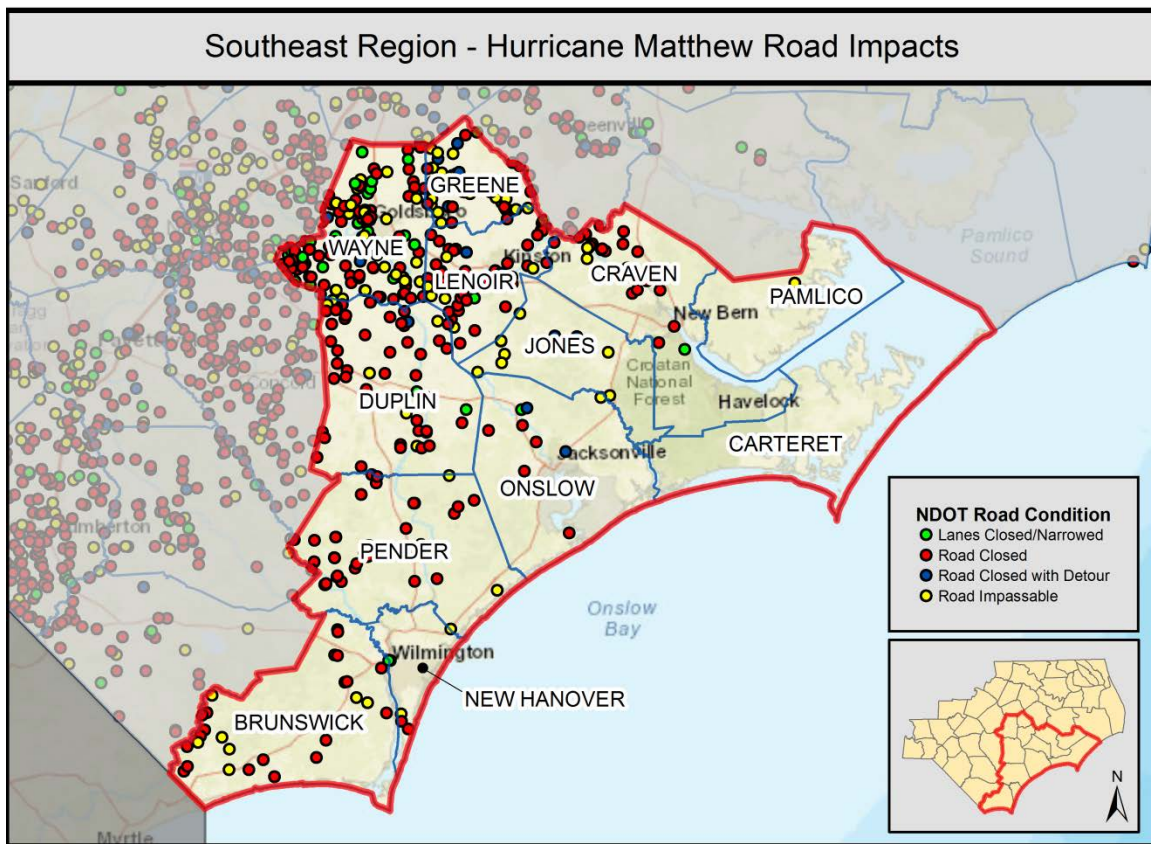


Figure 7. Regional Road Closures

The County level plans have more detailed information about impacts to the local economy and environment.



4. Strategies for Resilient Redevelopment

4. Strategies for Resilient Redevelopment

This section provides details about the resilience and revitalization strategies and actions identified in the Southeast Prosperity Zone that are regional in nature or that require coordination across jurisdictional boundaries. These actions were identified and refined during four public meetings with local officials and county residents held in March and April 2017. The actions are tied to impacts from Hurricane Matthew and organized by the pillars of housing, economic development, infrastructure, and environment. In addition to the public meetings, frequent coordination calls with County officials and data gathered from state agencies and organizations were utilized to formulate the actions listed below.

The table below provides the total number of regional resilience strategies that have been developed in the Southeast Region under each pillar.

Pillar	Number of Projects in the Region	Number of Regional Projects
Housing	57	3
Economic Development	58	2
Infrastructure	192	9
Environment	38	3
Grand Total	345	17

Table 5. Summary of Regional Projects by Pillar

The following table lists all the regional actions for the Southeast Prosperity Zone organized by project type.

Project Type	Number of Projects in the Region	Number of Regional Projects	Regional Project Name(s)
Agriculture related facilities and infrastructure	6	-	
All other non-hazard mitigation/recovery projects	40	4	<ul style="list-style-type: none"> • Implement Stream Restoration Projects (Pender County) • Wayne County Infrastructure Action 11: New/Replacement EOC • Wayne County Economic Development Action 3: Neuse River Trail and Park Development • Greene County Infrastructure Action 3: Implement Flood Warning System on Contentnea Creek
Dams and Levee Repairs and Improvement	2	-	
Economic Development/Environment/Energy (3Es)	63	2	<ul style="list-style-type: none"> • Greene County Economic Development Action 5: Establish Jobs Training Program • 16-Install flood depth warning signs at low water priority locations throughout the county (Onslow County)
Mitigation for Damaged Homes-Acquisition/Reloc	10	-	
Mitigation for Damaged Homes-Elevation/Recon	10	-	
Mitigation for Damaged Homes-Minor Repairs	2	-	

Project Type	Number of Projects in the Region	Number of Regional Projects	Regional Project Name(s)
Mitigation for Public/Business Buildings	42	-	
Stormwater Management/Other Flood Mitigation	33	2	<ul style="list-style-type: none"> • 06 - Adams Creek Rd (Craven County) • Duplin County Environment Action 3: Countywide Stream and Drainage Cleanup
Studies and all other recovery activities	56	3	<ul style="list-style-type: none"> • 14 - Development of Insurance Education Materials to Provide Property Owners and Renters with Accurate Knowledge on Available Insurance Coverage (Jones County) • Lenoir County Environment Action 1: Neuse River Regional Plan • 04-Strengthen legislative requirements for real estate disclosure and hazard vulnerability (Onslow County)
Temp/Affordable Housing Construction outside SFHA	12	-	
Transportation Infrastructure	51	6	<ul style="list-style-type: none"> • Greene County Infrastructure Action 18: Widen NC 13 to 4 Lanes from Snow Hill to Greenville • 04 - Enhance non-state maintained road drainage in priority high-water areas which impedes public safety first responders requiring emergency swift water rescues (Jones County) • 17 - Road Drainage Enhancement (Jones County) • Lenoir County Infrastructure Action 9: Kinston Bypass Project • Lenoir County Infrastructure Action 11: GTP Rail Spur Project • 23-Create an outreach program on proper private road and lane maintenance (Onslow County)
Waste Water & Water System Repairs & Hardening	18	-	
TOTAL	345	17	

Table 6. Regional Projects

Detailed information about the regional projects listed above is included on the following pages.

Implement Stream Restoration Projects

County: Pender

Priority Grouping:

Priority Ranking: 0

Project Timeframe: 1-3 years

Location: Northeast Cape Fear River, Angola Creek, Rock Fish Creek

Project Summary: Implement stream restoration projects within Angola Creek, Northeast Cape Fear River, and Rockfish Creek to address issues identified in Cape Fear River Basin Restoration Priorities Report (NCDEQ, 2009).

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Potentially reduce future flooding in areas affected by Hurricane Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	Cape Fear River Basin Restoration Priorities Report (NCDEQ 2009)	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?	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?	Stream restoration will improve channel stability address water quality issues and potentially provide flood reduction	N/A
What is the capability of the local government to administer this project?	Unknown	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?	Unknown	N/A
Who will administer this project?	County	N/A

Wayne Infrastructure Action 11: New/Replacement EOC

County: Wayne

Priority Grouping:

Priority Ranking: 0

Project Timeframe: Unknown

Location: Wayne County

Project Summary: 911 telecommunications and emergency operations center to improve resources to handle disasters by having better E-911 infrastructure in place. Improved Emergency Operations center that is more accessible.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Need for improved emergency response in natural hazard/disaster situations.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Unknown	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
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	Agree
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	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Unknown	Agree
Who will administer this project?	County	Agree

Question	Response	Disposition
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Wayne Economic Development Action 3: Neuse River Trail and Park Development

County: Wayne

Priority Grouping:

Priority Ranking:

Project Timeframe: Unknown

Location: Neuse River/Goldsboro/Seven Springs

Project Summary: Ecotourism development—River Trail and regional park development. Regional development of river park. Countywide, with express interest with City of Goldsboro and Seven Springs. City of Goldsboro submitted the following request: "Project Description: Old Waynesborough Park (former Waynesborough State Park), sustained significant damage to its office and historic village due to Hurricane Matthew. Its proximity to the Neuse almost guarantees that will happen again. Redevelopment as a passive recreation space with 'river proof' offerings like camping and trails are the amenities many citizens and visitors are seeking. One of Waynesborough's challenges has been their 150 acre size is not sufficient enough to provide a trail system larger than the 4 miles they offer, making them 'too small' to be a destination. Additionally, the park does not offer a boat ramp or camping other than primitive group camping.

Needs: The adjacent 267 acres is currently on the market for \$400,000 and it adjoins a current Parks and Recreation Department partner's land from whom an easement or purchase is likely. The next property is the NC Wildlife Resources Commission's boat ramp at 117 South. The next property is the former Whiskey Dick's Saloon, which also sustained significant damage from flood waters. Whiskey Dicks, although not publicly listed 'for sale' has a tax value of \$70,000.

It is extremely likely with investment to purchase; Waynesborough Park could be expanded to 500+ acres, including 2 miles of river frontage. A 500 acre regional park offering river accessed camping, traditional car/rv camping, space for 15+ miles of trails, multiple ponds, a NCWRC boat ramp and river park visitor center (former Whiskey Dicks) would not only attract visitors from across the region but from other states. The protection of the land through preservation would serve as an educational tool as well as protector of water quality. The visitor center offering boat rentals and services/supplies desired by visitors would anchor this amazing reimagined park. Partners could include NCWRC, NC State Parks, the Waynesborough Park's board (501c3), City of Goldsboro and Bevell's Fish and Tackle to start."

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Goldsboro seeks to acquire for this park areas impacted by the flood. This would also enhance tourism which is important to boosting revenues for areas impacted by loss of residents such as Seven Springs where half of the pre-flood population has left.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	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.	Would attract additional tourism and its associated economic benefits to the county. For the portion submitted by Goldsboro (\$3.5 million cost) the city estimated impacts of \$2.5 million and 126 jobs plus increased travel and tourism and increased hotel occupancy.	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?	Has potential to improve riparian areas and decrease development in floodplain	N/A
What is the capability of the local government to administer this project?	Unknown	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	Unknown	N/A
What is the technical feasibility of this project?	Unknown	N/A
Who will administer this project?	Unknown	N/A

Infrastructure Action 3: Implement Flood Warning System on Contentnea Creek

County: Greene

Priority Grouping: High Priority

Priority Ranking: 3

Project Timeframe: 1 year

Location: Countywide

Project Summary: Implement Flood Warning System on Contentnea Creek. Three additional flood monitoring/warning stations are needed.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	It will help the emergency management notify residents when flood waters are rising to allow people more time to protect their property and evacuate if needed.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
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?	No Impact	Agree
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?	Medium	Agree
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

Economic Development Action 5: Establish Jobs Training Program

County: Greene

Priority Grouping: Low Priority

Priority Ranking: 32

Project Timeframe: 1-5 years

Location: Countywide

Project Summary: Establish a jobs training program for unemployed residents in skills like construction, HVAC, electrical, and plumbing. This project would include working with the Greene County Center that is a part of the Lenoir County Community College.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project will help retain residents in the county by providing them skills that will allow them to be employed.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	This project would help retrain workers with skills that will help them find jobs or start their own small businesses.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
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?	No Impact	Agree
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?	Low	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

16-Install flood depth warning signs at low water priority locations throughout the county.

County: Onslow

Priority Grouping: High Priority

Priority Ranking: 2

Project Timeframe: 1 - 3 years

Location: Countywide

Project Summary: Road blockages are prevalent due to numerous drainage and siting issues on county roads. Inadequate signage often gives residents confidence that they can safely continue on a road which is actually flooded to an impassible level. This creates an unsafe situation where drivers can be stranded in their vehicles, requiring swift water rescues posing risk to the driver, passengers and first responders.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Road blockages and persistent swift water vehicle rescues were an issue throughout eastern NC during Mathew and most other significant coastal storms.	N/A
Consistent with existing plans (describe points of intersection/departure)	General compliance with Onslow County Hazard Mitigation Plan mitigation strategies	
	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?	<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?	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?	No Impact	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?	\$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

06 - Adams Creek Rd

County: Craven

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: Approx. 1-3 years

Location: Adams Creek Rd

Project Summary: This 14-mile stretch of road floods and cuts off access to the community. It also has multiple dead-end turn-offs that can become inaccessible due to flooding. Drainage ditches become blocked. Localized flooding occurred throughout the Adams Creek Area during Hurricane Matthew. Portions of the roadway that are below the 100-year flood elevation should be raised above this level. Drainage ditches should be cleared and maintained. Culverts should be upsized to accommodate 100-year flood flows.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	People who are cut off from the rest of the county will continue to have access so that they require fewer emergency services related to flooding and they can return to work faster.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with the hazard mitigation plan.	
	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 decrease the number of people requiring emergency services since they will have access to the community. People will be able to return to work faster.	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?	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?	Unknown	N/A
What is the capability of the local government to administer this project?	Unknown	N/A
What is the financial range of this project?	\$1M+	N/A
What is the level of public support for this project?	Unknown	N/A
What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Duplin Environmental Action 3: Countywide Stream and Drainage Cleanup

County: Duplin

Priority Grouping: High Priority

Priority Ranking: 2

Project Timeframe: 6-12 months

Location: County-Wide

Project Summary: Stream and Drainage Cleanup of county waterways. Partnering with the North Carolina Department of Agriculture Division of Soil and Water Conservation's Stream Debris Removal Project to remove obstructions from drainage systems

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Demand for this project has been voiced by many county stakeholders as a result of Hurricane Matthew. Many streams within the county do not have regular debris cleanups and require the Army Corps of Engineers to perform this action. Stakeholders indicate that lack of regular stream cleanup led to many of the county's flooding issues.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with the goals of the Sampson/Duplin HM Plan.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Benefits to the economy would be residual as flooding risk should markedly decrease for many businesses	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	<50 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	Agree
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	Agree
What impacts to the environment of the county will result from this project?	Ancillary negative impacts to the environment will be present as many streambeds will be disturbed through the cleanup process. Overall stream and riverbed quality will be positive however.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

14 - Development of Insurance Education Materials to Provide Property Owners and Renters with Accurate Knowledge on Available Insurance Coverage

County: Jones

Priority Grouping: Low Priority

Priority Ranking: 19

Project Timeframe: 2 years

Location: Countywide

Project Summary: Confusion on available property and contents insurance for homeowners, businesses, government facilities and renters (contents only) remains a national challenge and was expressed in many communities after Mathew. Materials customized to eastern North Carolina Hazards to include flood, fire, wind, land subsidence and other hazards is necessary along with standard messaging which can be deployed on local websites, through social media and in local preparedness workshops and events.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Confusion persists on how insurance works especially hazard insurance for coverage of flood or wind damage. Many property owners without mortgages or those outside of the regulated floodplain are unaware that flood insurance is available to them often at a very low premium. Renters are generally unaware that insurance is available to cover their contents. This includes non-residential renters who can replace business goods and furnishings fixtures and equipment damaged by floods if insured.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with Neuse River Regional Mitigation Plan principles and Strategies J18; J22; J23; J24	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Businesses and residents will potentially have adequate insurance coverage for property and contents. This will hasten recovery and allow uninterrupted agricultural operations if damaged equipment can be repaired or replaced quickly.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	High confidence	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
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	Unknown	Agree

administer this project?		
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

Environment Action 1: Neuse River Regional Plan

County: Lenoir

Priority Grouping: High Priority

Priority Ranking: 6

Project Timeframe: >5 years

Location: Lenoir County

Project Summary: Prepare a Neuse River Basin Regional Plan to identify the causes of flooding and to identify preventive measures for flood prevention. The county recognizes that flooding in the area has increased over the last decade and there are likely many causes that need to be addressed regionally.

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

04-Strengthen legislative requirements for real estate disclosure and hazard vulnerability.

County: Onslow

Priority Grouping: Low Priority

Priority Ranking: 24

Project Timeframe: 2 years

Location: Countywide

Project Summary: NC does not presently require flood zone disclosure on real estate rental advertising, contracts or other related documents. Many renters learn of a flood or coastal hazard when their personal property is damaged by a flood or coastal storm and if they do not have renter's insurance they are not covered. As with traditional insurance, personal property coverage for flood damages is required as a separate policy consistent with the National Flood Insurance Program. This project requires legislative action at the state level. A "local" bill through the legislature may be quicker and easier to obtain.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Understanding of flood and coastal hazards remains low especially in economically thriving areas with a significant influx of military and retired residents. Flood insurance and other hazard insurance is available to renters within the regulated floodplain as well as outside of the floodplain to cover renters' belongings. Most renters are unaware that contents coverage is available through the NFIP to renters.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with Onslow County Hazard Mitigation Plan Outreach goals	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.	People would be fully informed of flood risk when renting property. Out of area military families would not have to bear the costs of replacing their belongings after a flood therefore injecting disposable income back into the area's economy.	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)?	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?	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?	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?	Minimum	N/A
What is the financial range of this project?	\$0- \$50K	N/A
What is the level of public support for this project?	Unknown	N/A

What is the technical feasibility of this project?	Higher than 75%	N/A
Who will administer this project?	State	N/A

Infrastructure Action 18: Widen NC 13 to 4 Lanes from Snow Hill to Greenville

County: Greene

Priority Grouping: Low Priority

Priority Ranking: 33

Project Timeframe: 15-20 years

Location: County

Project Summary: Widen NC 13 to four lanes from Snow Hill to Greenville. This project would improve connectivity to food, shelter, and medical facilities located outside of the county. This road was closed after Hurricane Matthew and hampered the ability for supplies and emergency support to get to the county.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Helps to alleviate issues related to residents being able to reach goods and services as well as emergency responders	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Improved highway infrastructure will decrease travel times and make Greene County more attractive to new and expanding businesses.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
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	Agree
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	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

04 - Enhance non-state maintained road drainage in priority high-water areas which impedes public safety first responders requiring emergency swift water rescues.

County: Jones

Priority Grouping: Medium Priority

Priority Ranking: 15

Project Timeframe: unknown

Location: Countywide

Project Summary: Many rural "lanes" and access roads are not state or county maintained and are included in property deeds. Many lead to single residences or clusters of homes which become isolated during floods and coastal events, impeding access by public safety first responders during medical emergencies and structure fires. Improved drainage could mean mitigation of culverts, ditch expansion and maintenance, etc. State created "best management practices" are needed for local landowners, many of whom have equipment and could better maintain their roads and lanes with technical support. This project would support rural road maintenance materials which could be available online, and potentially a field demonstration day.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Road drainage and access has been a long-standing challenge in Jones County. At a minimum commuting and student transportation is disrupted. During storms like Hurricane Mathew large areas of the county become isolated first responders cannot respond to medical emergencies or fires and swift water rescues by volunteers become necessary putting first responders and victims at great peril.	N/A
Consistent with existing plans (describe points of intersection/departure)	Neuse River Basin Regional Hazard Mitigation Plan Mitigation Strategy J19.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Impacts to residents during emergency flood events or just during short-term storms with high precipitation will be reduced. Poor road drainage results in lack of access to homes businesses and infrastructure impedes first responders in medical fire or other emergencies sometimes requiring swift water rescues by boat which puts first responders and victims at risk. Risk due to vehicular accidents in high waters is increased if road drainage is not addressed.	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	<50 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	Agree
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	Agree
What impacts to the environment of the county will	Minimal short-term impacts to drainage ditches and stream	N/A

result from this project?	crossings.	
What is the capability of the local government to administer this project?	Unknown	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

17 - Road Drainage Enhancement

County: Jones

Priority Grouping: Medium Priority

Priority Ranking: 11

Project Timeframe: 5 years

Location: Countywide - total length of county roads not available and specific locations were not provided. The issue is pervasive.

Project Summary: Low lying roads throughout the county isolate settlement areas in this rural community preventing access by first responders during medical emergencies, structure fires, floods and coastal storms. Risk of vehicular accidents and even fatalities is high and requests for aid strains limited volunteer first responders. This is a pervasive issue throughout eastern NC and would require state NCDOT financial and technical resources coordinated with local DOT staff. Priority areas require technical evaluation by a transpiration engineer and in some cases a hydrologist, development and design of a preferred solution, and implementation and maintenance. Some areas will require proper sizing and replacement of culverts, others drainage ditch maintenance, road elevation and bridge elevation.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Mathew like most coastal storms negatively impacted road and highway drainage systems with debris which clogged drainage systems and culverts causing backup of flood and regular rainwater. While FEMA Public Assistance funds supported some debris removal coordinated through NC DOT in many areas of the county this was inadequate and remains an unmet need.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with Neuse River Regional Mitigation Plan principles and Strategies J4; J13.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Poor inadequately maintained and drained roads can impede economic development because infrastructure is a key component in attracting new employers and development.	Agree
For how long will this solution be effective?	Less than 10 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	High confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	Generally positive with drainage restored and reduced mosquito or other vermin. Need to be cautious that endangered species or habitat won't be impacted.	N/A
What is the capability of the local government to administer this project?	Minimum	Agree
What is the financial range of this project?	\$1M+	Agree

What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

Infrastructure Action 9: Kinston Bypass Project

County: Lenoir

Priority Grouping: Low Priority

Priority Ranking: 22

Project Timeframe: 5-7 years

Location: Lenoir County

Project Summary: US 70/Kinston Bypass Project: Following Hurricane Matthew, US 70 was closed for over two weeks from US 258 North to NC 58 South. This project would construct the planned Kinston Bypass (STIP No. R-2553), which would be constructed outside of or above flood levels so that roadway would not have to be closed during future flooding events.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The closure of US 70 due to flood waters for over two weeks was one of the biggest issues that faced Eastern North Carolina following Hurricane Matthew. Keeping this facility operational during future flood events is critical to the health safety and welfare of the citizens as well as to the local and regional economy.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes the project is included in the Kinston Comprehensive Transportation Plan.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	US 70 is a major thoroughfare that both local and regional residents and businesses depend on to obtain goods or services and/or to travel within the eastern region of the state and the Port of Moorehead City. The closure of this road caused many businesses to operate at reduced levels and to be unable to operate at full capacity. Farmers were unable to transport harvested crops to distributors. Residents were unable to reach their places of employment.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	Agree
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?	Between 26 and 50%	Agree
What impacts to the environment of the county will result from this project?	There will be some effects on the environment.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree

What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

Infrastructure Action 11: GTP Rail Spur Project

County: Lenoir

Priority Grouping: Low Priority

Priority Ranking: 24

Project Timeframe: 3-5 years

Location: Lenoir County

Project Summary: GTP Rail Spur from GTP to CSX line (near NC 11): Following Hurricane Matthew, the NC Railroad line operated by Norfolk Southern that runs parallel to US 70 near Kinston was closed for several weeks due to the floodwaters. This project would involve the construction of a new rail spur to the CSX line. This project would provide alternative access to a Class I railroad for the businesses in Lenoir County and the greater region.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Businesses that rely on the existing NC Railroad to transport their goods were unable to do so for the several weeks that this railroad was closed during the storm. This project would provide alternative access to rail during future flooding events.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes this project has been included in the plans for Global TransPark and in the Kinston Comprehensive Transportation Plan.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The project would enhance the economic competitiveness of the Global TransPark by providing access to a second Class I railroad. In addition it would create alternative access to markets for existing businesses and/or potential new businesses for their goods or services.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Unknown	Agree
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?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	There would be some environmental impacts from this transportation project.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree

Who will administer this project?	State	Agree
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23-Create an outreach program on proper private road and lane maintenance.

County: Onslow

Priority Grouping: Low Priority

Priority Ranking: 23

Project Timeframe: 1 - 3 years

Location: Countywide

Project Summary: Create an outreach program on private road and “lane” maintenance for property owners emphasizing maintenance responsibilities, culvert sizing and replacement, grading, ditch maintenance, use of stone, etc. Disperse information through appropriate multi-media measures.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Private road access due in great part to inadequate maintenance by private owners. The lack of knowledge on what is necessary to maintain a private road is endemic across eastern NC. During emergencies and disasters this issue arises in most eastern NC communities.	N/A
Consistent with existing plans (describe points of intersection/departure)	General compliance with Onslow County Hazard Mitigation Plan mitigation strategies	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.	Road closures area exacerbated by residential isolation of residents whose road or access lane is deeded to them sometimes by the developer and goes unmaintained. Inadequate drainage maintenance clogged or inadequate culverts and other areas make roads impassable both isolating residents and preventing public safety personnel from responding to fires and medical emergencies.	
	N/A	
For how long will this solution be effective?	Between 11 and 30 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?	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?	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?	N/A	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?	\$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?	State	N/A

Potential Innovative Regional Resilience Strategies

In addition to the regional resilience projects, other innovative regional resilience strategies were developed by discussing the findings, issues, and potential solutions identified by the planners leading the development of the County-level RRP. Regional resilience strategies could achieve economies of scale and benefit several counties dealing with issues that are cost-prohibitive for individual counties to take on. These regional strategies may also help undertake projects that need a comprehensive, long-term view e.g. stormwater management or transportation projects, and therefore help improve the overall resilience of the state in the areas of housing, economic development, infrastructure and environment. The additional potential innovative resilience strategies possible to implement at the regional level are as follows:

Potential Regional Economic Development Resilience Strategies

- **Low-impact development** – For growing urban areas, low-impact development techniques employed at the lot and subdivision level reduce stormwater runoff and downstream flooding.
- **Agricultural Alternative Power Supply** – Backup power needed for large-scale agricultural operations can be provided using animal waste to power a microgrid, or for electrical co-generation. These may be helpful in helping maintain regional economic vitality following a disaster.
- **Qualified local contractor program for reconstruction** – the State can coordinate with local governments and other local and regional stakeholder groups to identify local workforces that might be available to assist with recovery efforts. This provides multiple benefits to all involved through employment opportunities for those that might have lost their jobs as a result of Hurricane Matthew and in keeping resources local, benefitting the local economy.

Potential Regional Infrastructure Resilience Strategies

- **Comprehensive shelter occupant inventorying** - Coordination needed between DSS, Red Cross, FEMA and local EM to understand who is in which shelters and when they leave, because a lot of time was wasted by local EM officials trying to locate people who were already safe.
- **Road closure tracking and real-time rerouting** – Develop a system for real-time rerouting as many people had trouble understanding how to get around with all the road closures.
- **Creation of Comprehensive Transportation Mitigation Program** – Develop programs so that people are prepared and understand what to do when encountered with flooded roads, e.g. better dissemination of information on re-routing, shelter locations, signage, etc.
- **Wide-Area Flood Alert Sensor Network** – Install affordable flood sensors across entire watersheds for cloud-hosted data and GIS information accessible by desktop and mobile phones. The sensors are being developed by DHS Science and Technology Directorate.
- **Regional retention, detention and all-in-one basins** – Reduce stormwater runoff by creating a system of retention basins (permanent pools) and detention basins (dry areas that can collect water and have an outlet for slowly releasing the water; the areas can be used as parking lots, recreation areas, etc.). A detention basin can be an all-in-one that has a permanent pool (retention basin) with an infiltration/filtering bottom.

- **Labeling and inventory of natural and manmade water and stormwater channels** – To support regular inspection and maintenance of the channels, an inventory is essential. A regional system would be consistent and convenient to for multiple counties to use, and can aid in responding to problem sites. Communities participating in the Community Rating System can get credit for this activity.
- **Micro loans and/or grants for private dam owners** – State could help private dam owners (HOAs, community associations) pay to rebuild their dams with conditions that dam owners provide measures to ensure safety in future events (POC for State to identify as a manager, lake level gauge to help State make decisions about releases)
- **Solutions to reduce flooding of I-95** – Identify the hot-spots on this region, major highway through the state and work with NCDOT to mitigate them using a combination of solutions like enlarging culverts, creating detention basins, etc.

Potential Regional Environmental Resilience Strategies

- **Centralized debris/silt traps** – ongoing stream maintenance to reduce clogging of streams and rivers. Debris/silt traps can serve to collect catch debris and sediment in centralized locations making maintenance easier.

At this point, the strategies listed above are to identify potential regional resilience issues and possible solutions to those issues. They currently are not specific resilience strategies identified through the County-level planning processes, but may be considered for implementation at a larger, regional or statewide scale.

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 each 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.