

Hurricane Matthew Resilient Redevelopment Plan

Duplin County



May 2017

Version 1.2

CAUTION

CAUTION

CAUTION

CAUTION

CAUTION

Contents

Change Log	iii
Executive Summary	iv
1. Background	1-1
Summary of Hurricane Matthew Storm Damage	1-1
State/Legislative Response	1-1
Resilient Redevelopment Planning	1-2
Scope of the Plan	1-2
Local Participation and Public Engagement	1-3
Data, Assumptions, and Methodologies	1-4
Data, Assumptions, and Methodologies	1-5
2. County Profile.....	2-1
Demographic Profile	2-1
Population	2-1
Population Change (2000 to 2010)	2-1
Age	2-2
Race and Ethnicity	2-2
Limited English Proficiency	2-2
Poverty	2-3
Low and Moderate Income Individuals	2-3
Median Household Income	2-3
Zero Car Households	2-3
Commuting: Travel Time to Work, Means of Transportation	2-4
Economic/Business Profile	2-6
Labor Force	2-6
Major Employers	2-7
Economic Development	2-7
Infrastructure Profile	2-8
Transportation	2-8
Health	2-8
Education	2-8
Water	2-9
Power	2-9
Environmental Profile	2-9
Water Resources	2-9
Natural and Managed Areas	2-9
Biodiversity and Wildlife Habitat	2-9
Administrative Profile	2-9
3. Storm Impact	3-1
Rainfall Summary	3-1

Riverine Flooding Summary..... 3-1

Housing 3-2

Economics / Business / Jobs 3-4

Infrastructure 3-4

Ecosystems / Environment 3-6

4. Strategies for Resilient Redevelopment..... 4-1

 Housing Strategies..... 4-3

 High Priority Housing Strategies 4-3

 Medium Priority Housing Strategies..... 4-7

 Economic Development Strategies..... 4-9

 Medium Priority Economic Development Strategies..... 4-9

 Low Priority Economic Development Strategies..... 4-13

 Infrastructure Strategies..... 4-19

 Low Priority Infrastructure Strategies..... 4-23

 Environmental, Ecosystem and Agricultural Strategies 4-25

 High Priority Environmental Strategies 4-25

 Medium Priority Environmental Strategies..... 4-29

 Low Priority Environmental Strategies 4-31

 Summary..... 4-33

Change Log

Version	Date	Summary of Changes
1.1	6/15/17	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 25 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) initiative 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, Duplin County has identified 15 projects in four pillars: Housing, Economic Development, Infrastructure, and Environment. Details of these projects can be found in Section 4 of this plan.

Pillar	Project/Action Count
Housing	3
Economic Development	5
Infrastructure	3
Environment	4
Grand Total	15

Table 1. Duplin County Summary of Projects by Pillar



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. 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.

- There were 81,832 individuals registered for FEMA/state assistance.

² Governor McCrory's Request for Federal Assistance for Hurricane Matthew Recovery, November 14, 2016

- 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 initiative 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 initiative 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 initiative 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. Four 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 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.

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 resilient 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.

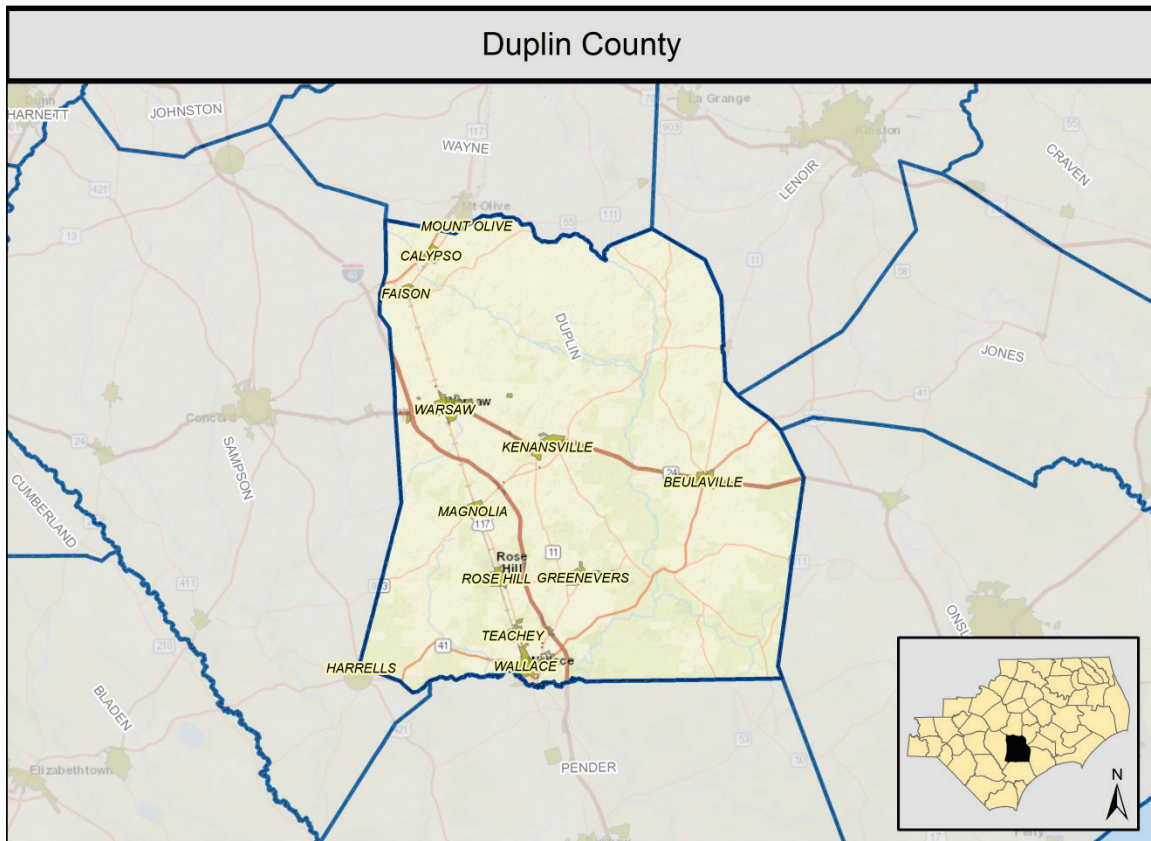


Figure 2. Duplin County and Neighboring Counties

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.

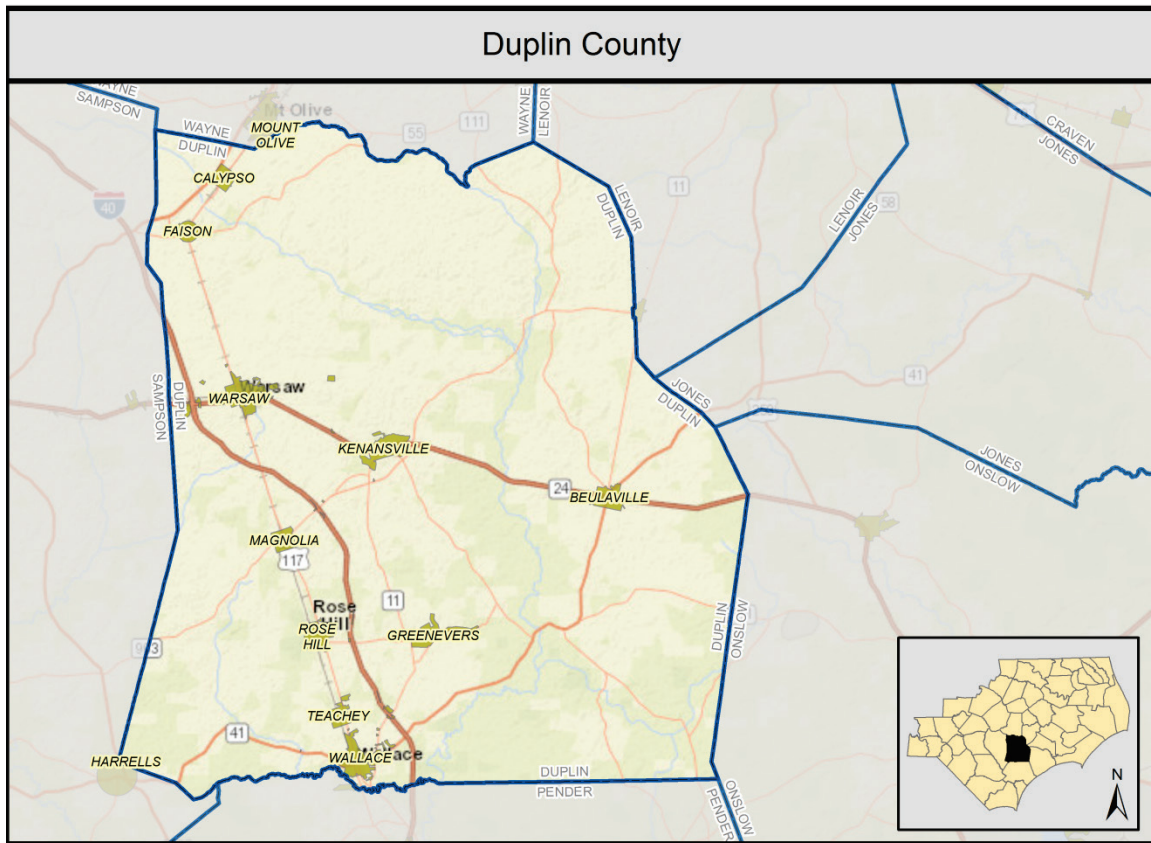


Figure 3. Duplin County and Neighboring Counties

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.

An aerial photograph showing a residential area severely affected by flooding. In the foreground, a dense forest of green trees covers a hillside. Beyond the trees, a cluster of houses with grey roofs and light-colored siding is visible. The surrounding landscape is inundated with muddy, brown floodwater that has reached the roofs of some trees and partially submerged the houses. A network of roads and paths crisscrosses the flooded area. The text "2. County Profile" is overlaid in the center of the image in a bold, dark blue font.

2. County Profile

2. County Profile

Duplin County is located in eastern North Carolina between Raleigh and New Bern. It is comprised of eleven census-designated places: Beulaville, Calypso, Faison, Greenevers, Kenansville, Magnolia, Potters Hill, Rose Hill, Teachey, Wallace, and Warsaw. Its current population is 59,453. This section provides a profile of housing, economics, infrastructure, environment, and administration within Duplin County.

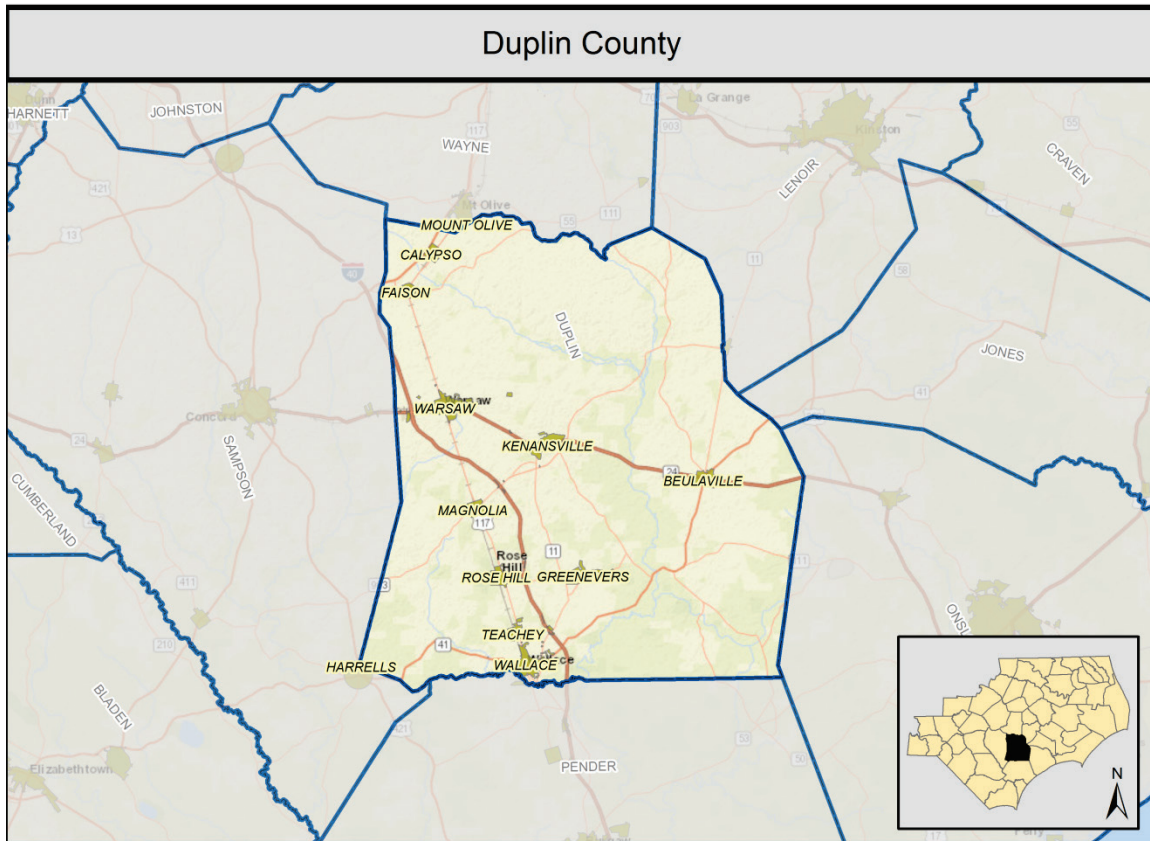


Figure 4. Duplin Base Map

Demographic Profile

Demographics for Duplin 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

Duplin County has a population of 59,453. Wallace is the most populous place within Duplin County with 3,168 residents and Teachey is the least populous place with a population of 345.³

Population Change (2000 to 2010)

The Duplin County population slightly increased between the 2000 and 2010 Census. In 2000 the population was 49,069 and in 2010 it was 58,505. The population increased by 9,436 people, or 19% percent. This percentage is

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

equivalent to the state average growth as 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 Duplin County is 39, which is the slightly less than the North Carolina median of 42. Within Duplin County, the Wallace population has the oldest median age, 52, and the Potters Hill population has the youngest median age, 27.³

Race and Ethnicity

Duplin County is mostly White (61 percent) and African American (25 percent) with other races constituting the remaining 14 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.

Within Duplin County, Potters Hill and Wallace are predominantly White while Greenevers and Warsaw are majority African American. In Calypso, 31 percent of the population identifies as Some Other Race.

The Latino population in Duplin County is 21 percent compared to 9 percent for North Carolina. Magnolia has the largest Latino population (41 percent) while Potters Hill, Kenansville, and Beulaville each have Latino populations less than 6% according to the census data. Wallace has a Latino population of 16 percent.⁵

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
Beulaville town	76.6%	18.5%	1.7%	0.0%	0.0%	1.9%	1.3%	23.4%
Calypso town	52.5%	15.2%	0.0%	0.0%	0.0%	31.0%	1.3%	47.5%
Faison town	64.8%	16.0%	0.0%	0.0%	0.0%	17.3%	2.0%	35.2%
Greenevers town	10.5%	75.7%	0.9%	0.0%	0.0%	12.9%	0.0%	89.5%
Kenansville town	49.4%	41.1%	0.0%	2.2%	0.0%	2.8%	4.5%	50.6%
Magnolia town	43.4%	33.8%	0.0%	1.4%	0.0%	15.0%	6.4%	56.6%
Potters Hill CDP	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rose Hill town	42.7%	36.2%	0.7%	3.7%	0.0%	17.3%	0.0%	57.3%
Teachey town	61.7%	38.3%	0.0%	0.0%	0.0%	0.0%	0.0%	38.3%
Wallace town	75.0%	12.2%	0.0%	0.0%	0.0%	12.7%	0.0%	25.0%
Warsaw town	33.7%	57.8%	0.0%	0.0%	0.0%	5.0%	3.5%	66.3%
Duplin County	61.9%	25.0%	0.3%	0.5%	0.0%	11.1%	1.3%	38.1%
North Carolina	69.5%	21.5%	1.2%	2.5%	0.1%	3.0%	2.4%	30.5%

Table 2. Duplin 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 Duplin County, most of the individuals identified with LEP speak Spanish while others speak Indo-Euro,

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 B02001, Race and Table B03002, Hispanic or Latino Origin by Race

or Asian/Pacific languages. Similarly, the primary language group for LEP individuals in North Carolina is Spanish. Within Duplin County, Magnolia has the largest LEP population. The primary language group for LEP populations in Magnolia and Faison is Spanish. In Kenansville, the primary language group is Asian/Pacific while Potters Hill does not have a LEP population according to census data.⁶

Poverty

In Duplin County, 26 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. In Warsaw and Greenevers, populations below the poverty level are 46 and 39 percent respectively. Potters Hill has the lowest poverty level in Duplin County at 10 percent.⁷

Low and Moderate Income Individuals

In Duplin County, 47 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 \$39,146 in Duplin County and \$53,000 in North Carolina. Faison has the highest median household income for this age group, \$40,029, and Greenevers has the lowest: \$27,000. Median household income was not available for Pink Hill.⁹

Zero Car Households

In Duplin County, 9 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Duplin County, Warsaw has the highest percentage of households without access to a vehicle, 30 percent, while Calypso has the lowest percentage: 2 percent.¹⁰

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 Estimate (2001-2015), 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>

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

10 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25044 Tenure by Vehicles Available.

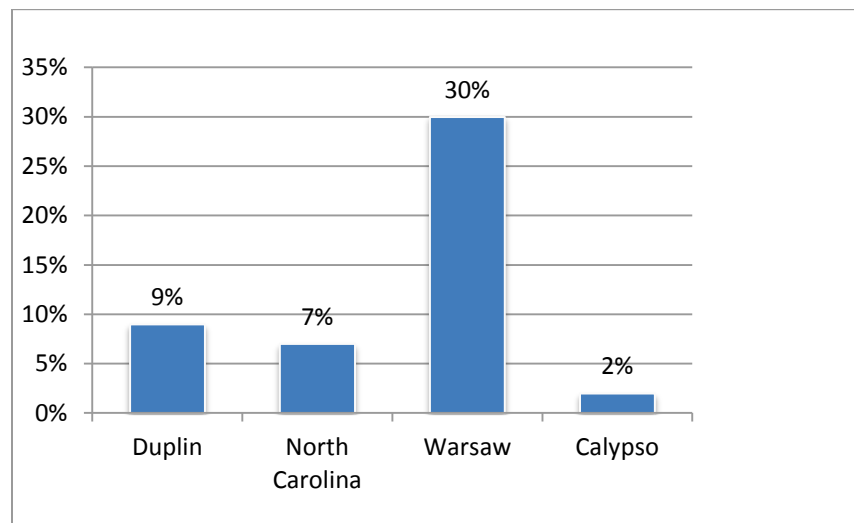


Figure 5. Zero Car Households by Percentage

Commuting: Travel Time to Work, Means of Transportation¹¹

The majority of Duplin County residents commute alone to work by vehicle, 77 percent, which is similar to North Carolina average of 81 percent. Within Duplin County, Potters Hill has the largest percentage of commuters commuting alone, 100 percent, and Warsaw has the least at 50 percent.

Magnolia has the largest percentage of residents commuting by public transportation: 1 percent. In comparison, 1 percent of North Carolina commuters use public transportation. A greater percentage of Wallace, Beulaville, Warsaw, Rose Hill, Faison, and Kenansville residents commute by walking, bike, or motorcycle more than the North Carolina average of 2 percent.

The mean commute time to work for Duplin County residents is 25.3 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Within Duplin County, Rose Hill has the shortest mean commute time at 18.4 minutes while Magnolia has the longest at 24.2 minutes.

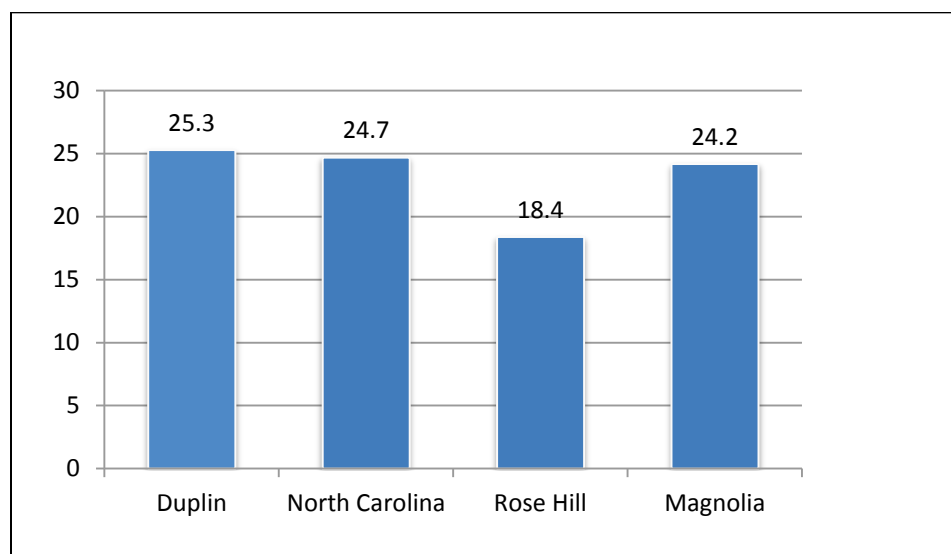


Figure 6. Mean Commute Time to Work in Minutes

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).

Housing Profile¹²

Duplin County has 25,584 housing units, 57 percent of which are single-family homes, 6 percent multi-family units, and 36 percent manufactured housing.

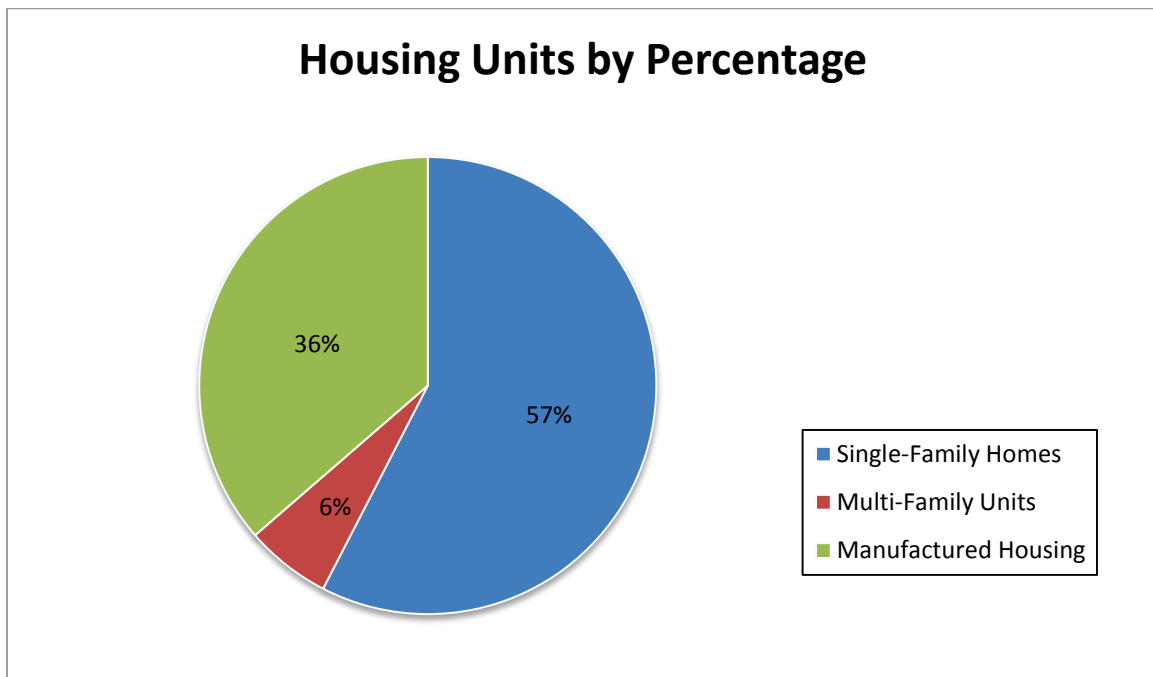


Figure 7. Housing Units by Percentage

In Duplin County 14 percent of housing units are vacant, which is slightly less than the percentage for North Carolina. Within Duplin County, Potters Hill has the largest percentage of vacant housing units, 31 percent, while Faison has the least: 7 percent.

Of the occupied housing units, 67 percent are owner-occupied compared to 65 percent in North Carolina; 32 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Duplin County \$87,900. In comparison, the median housing value in North Carolina is \$140,000. Within Duplin County, Beulaville has the highest median housing value: \$130,700. Calypso has the lowest median housing value: \$62,200.

According to the National Housing Preservation Database, Duplin County has 1,578 affordable housing units. Most of the affordable housing is located within Warsaw.

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.

Economic/Business Profile

Duplin County is home to a diverse array of businesses from manufacturing to healthcare and agricultural companies.¹³ According to the US Census Bureau’s Longitudinal-Employer Household Dynamics Program, the largest concentrations of jobs within Duplin County are clustered around and in Kenansville, situated along NC 24.¹⁴

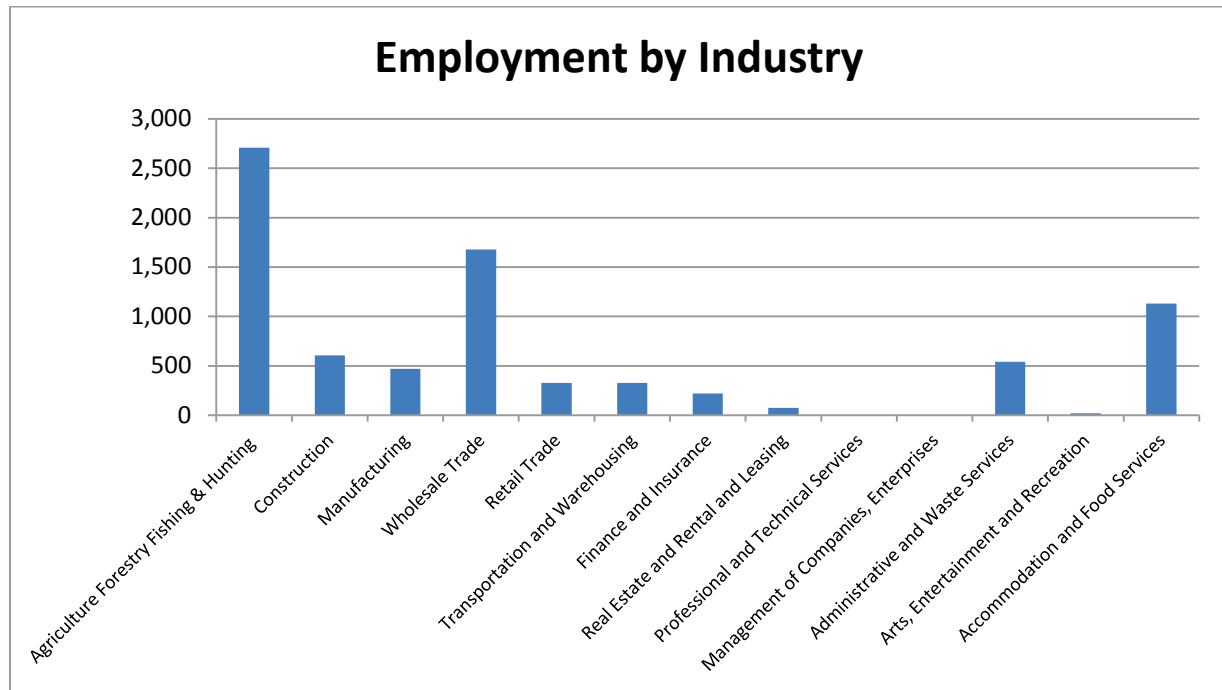


Figure 8. Employment by Industry

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 Duplin County is 26,718.¹⁵ Within Duplin County, Teachey has the largest percentage of residents 16 years or over in the labor force, 72 percent, while Rose Hill Heights has the smallest: 50 percent.¹⁶

The civilian unemployment rate in Duplin County is 5.4 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.¹⁵ Within Duplin County, Potters Hill has the smallest civilian unemployment rate at 0 percent while Greenevers has the largest: 23 percent.¹⁶

13 Source: AccessNC – North Carolina Department of Commerce, April 2017:
<http://accessnc.nccommerce.com/DemoGraphicsReports/pdfs/countyProfile/NC/37061.pdf>

14 Source: US Census Bureau Longitudinal-Employer Household Dynamics Program

15 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>

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

Major Employers

The top ten employers in Duplin County¹⁷ represent the manufacturing, public administration, education and health service industries, and are listed in order of total employees.

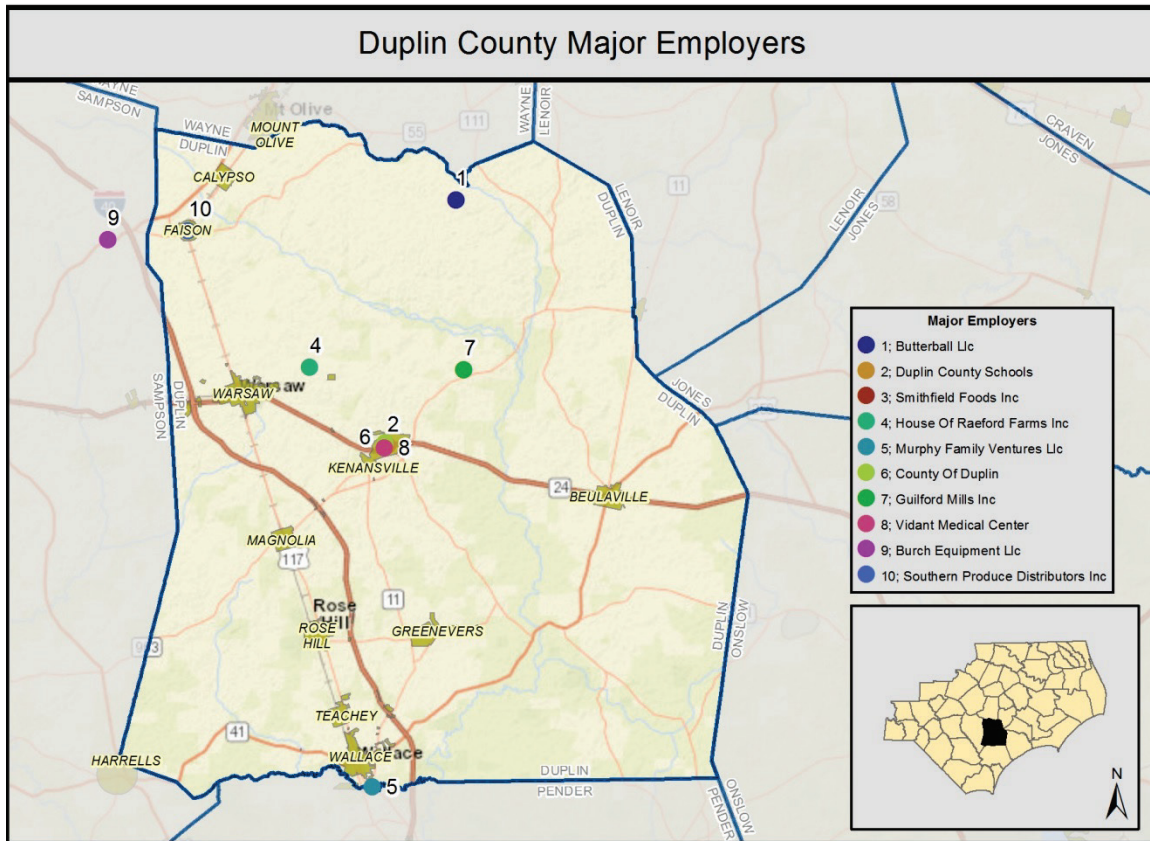


Figure 9. Major Employers by Number of Employees

Economic Development¹⁸

Duplin County offers four distinct business and industry centers, South Park, WestPark, EastPark, and AirPark, which are geographically spread across the county to provide strategic opportunities for industrial, port, and rail development. These parks were developed to better attract industries to an agriculturally diverse state.

Duplin County Economic Development Commission is an organization aimed at “improving the economy of Duplin County by attracting or creating investment to expand the tax base; and by creating jobs, wages and personal incomes.” The organization has established goals, which include working with the GTP to attract additional industry.

James Sprunt Community College in Kenansville offers a comprehensive array of customized training programs, support services and business resources to Duplin County companies. One particular program offered is Career Readiness Certificates (CRC). CRC is a credential that gives employers a snapshot view of skills a potential employee has to offer. A portion of Duplin County employers are currently utilizing CRC as a basis for hiring and many more are expected to join. Testing for the CRC is offered at James Sprunt Community College.

¹⁷ Source: NC Department of Commerce

¹⁸ Sources: Duplin County Economic Development Commission, James Sprunt Community College

Infrastructure Profile

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

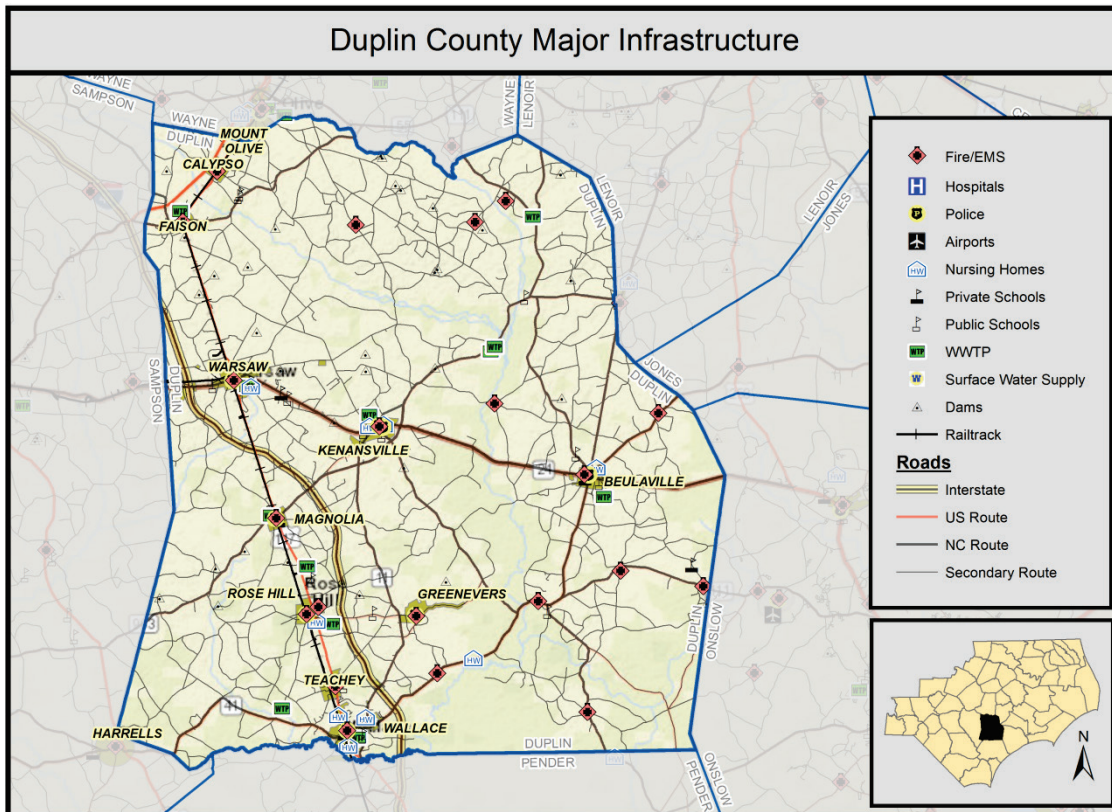


Figure 10. Duplin County Major Infrastructure

Transportation

Duplin County is connected by Interstate 40, U.S. Highway 117, NC Highways 11, 24, 50, 403, and 903. Rail service is available through CSX Rail Service and the Duplin County Airport. The Duplin County Airport (DPL) near Kenansville is a modern facility that gives private aircraft fast access to eastern U.S. destinations. The airport features a 6,000 ft. lighted runway with instrument landing capabilities, a terminal with conference facilities, corporate hangars and state-of-the-art above ground fueling stations.

Health

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, is a 101-bed, not for profit hospital also located in Kenansville.

Education¹⁹

The Duplin County Public School System administers eight elementary, 3 middle, and four high schools and an early college high school. James Sprunt Community College is located in Kenansville and is a member of the North Carolina Community College System.

¹⁹ Sources: Duplin County Public Schools, James Sprunt Community College

Water

Duplin County Water operates provides drinking water to Duplin County. Its finished water storage capacity is 5.7 million gallons per day. Municipal wastewater is treated at the Albertson Wastewater and Sewage District.²⁰

Power

There are several solar farms located within Duplin County along the Interstate 40 corridor. These power plants have a net summer capacity of 5 megawatts each.²¹

Environmental Profile

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

Water Resources

The Northeast Cape Fear River flows Northwest to Southeast through Duplin County. Wetlands are present along the Cape Fear River Basin and its tributaries. The most common wetland type in Duplin County is freshwater forested/shrub wetland. The greater portion of the County is drained by the Northeast Cape Fear River. Its main tributaries include Goshen Swamp and Rockfish, Cypress, Maxwell, Muddy, Limestone and Grove Creeks. A small area west of Warsaw is drained by Stewarts and Turkey Creeks, which are both tributaries of the Black River in Sampson County.

Natural and Managed Areas

According to the NC Natural Heritage Program, there are two managed areas of exceptional and moderate value in Duplin County. These two areas are found within the Goshen Swamp and Northeast Cape Fear River streambeds.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 Cape Fear River Basin 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.

The Duplin County Parks and Recreation Department maintains several parks and facilities in Duplin County. The Parks & Recreation Department operates Cabin Lake County Park which is located at 220 Cabin Lake Rd. in Pink Hill, NC. Duplin County's Cabin Lake is located approximately five miles north of Beulaville on Highway 111. The park offers camping, hiking, fishing, boating, picnicking and swimming.²³

Administrative Profile

The administrative capabilities of Duplin County and the municipalities within the County are discussed in great detail within Section 4 of the Sampson-Duplin Regional Hazard Mitigation Plan 2016-2021. The assessment

²⁰ Sources: NC Division of Water Resources, Local Water Supply Plans

²¹ Sources: US Department of Energy, US Energy Mapping System

²² Source: NC Natural Heritage Program

²³ Source: Duplin County Parks and Recreation Department

evaluates the capabilities of the County and municipalities to implement mitigation actions across the areas of administrative and technical capabilities, planning and regulatory capabilities, financial capabilities, educational and outreach capabilities and legal and political capabilities. Many more details about the capabilities of Duplin 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. Duplin County has Emergency Services 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, Zoning Ordinance, Subdivision Regulations, Floodplain Management Ordinance, Stormwater Management Plan. These plans, policies and procedures help ensure that new development in the County will be done in a responsible manner and in non-hazardous areas.

The Town of Kenansville has a Planning Department that would likely be able to assist with implementing the strategies in this plan as well. Smaller communities and towns within Duplin County have what would be considered “limited” capabilities and will likely need additional assistance in the administration and implementation of projects due to their limited staff capacity.



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 Duplin County is highlighted graphically in the figure below.

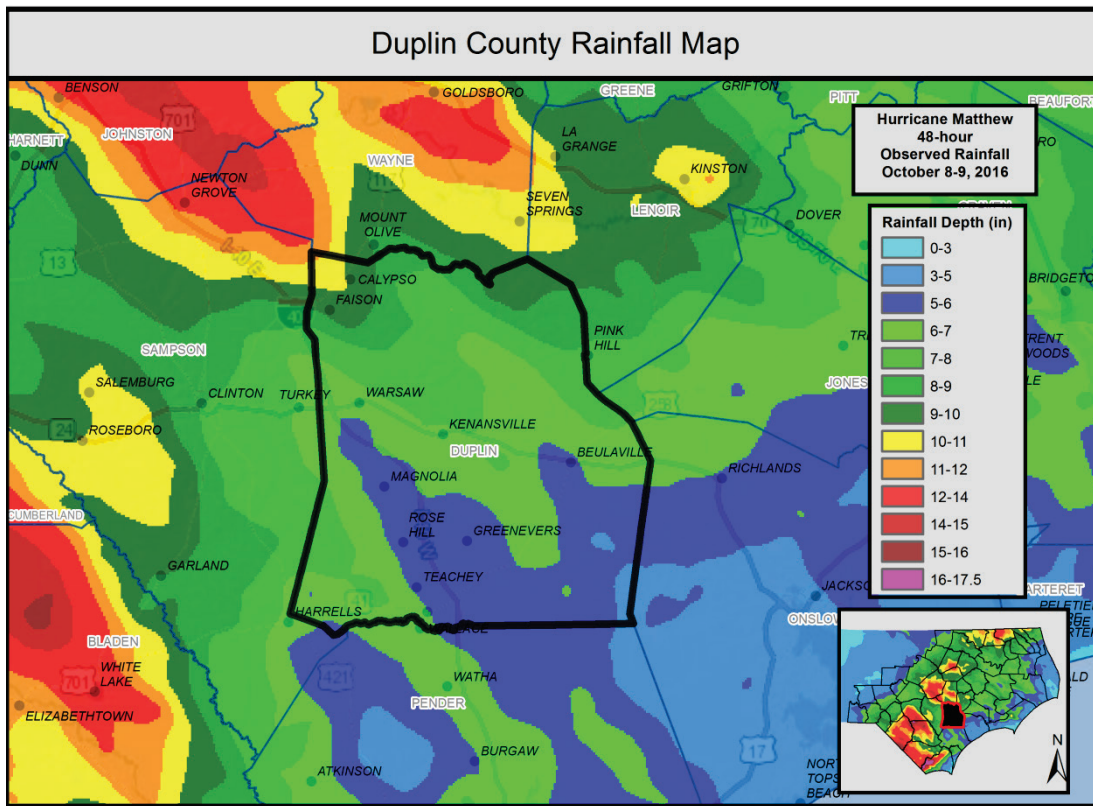


Figure 11. 48-hour Observed Rainfall Depth (October 8-9, 2016)

Riverine Flooding Summary

USGS documented streamgage 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”. Streamgage data from the USGS report for Duplin County and nearby gages is summarized below.

USGS Gage	County	River Name and Location	Drainage Area (sq mi)	Peak Matthew Elevation (ft)	Previous Record (ft)
02108000	Duplin	Northeast Cape Fear River near Chinquapin, NC	599	19.98	23.51

Table 3. Duplin County USGS Stream gage Data

The USGS data validates what was experienced in the county. Details of impacts categorized under housing, economic, infrastructure, and environment are included in the following sub-sections.

Housing

According to Individual Assistance claims as of March 21, 2017, there were 1,322 impacted houses in Duplin 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 indicate that areas are at a high risk to future flooding.

Housing in Duplin County was certainly impacted by Hurricane Matthew, particularly because a shortage of existing housing stock in the County means there is limited temporary housing for those displaced by storm events. The bullets below summarize some of the event's major impacts to housing, as identified by local officials.

- **Shortage of Resilient Affordable Housing Units:** As described above, there is a shortage of affordable housing in Duplin County, which means county residents have no means of moving from disaster sheltering until federal assistance is provided. County residents with low to moderate income may also face challenges in relocating after storm-induced flooding, as there is additional incentive to ensure their homes are resilient against future events.
- **Homes Flooded from Hurricane Matthew:** There are many properties throughout the county that are located in flood-prone areas and have flooded both during Hurricane Matthew and previous storm events. Based on historic flooding information, these communities include a significant amount of repetitive loss properties. Acquisition of these properties would be beneficial to reducing strain on response workers.

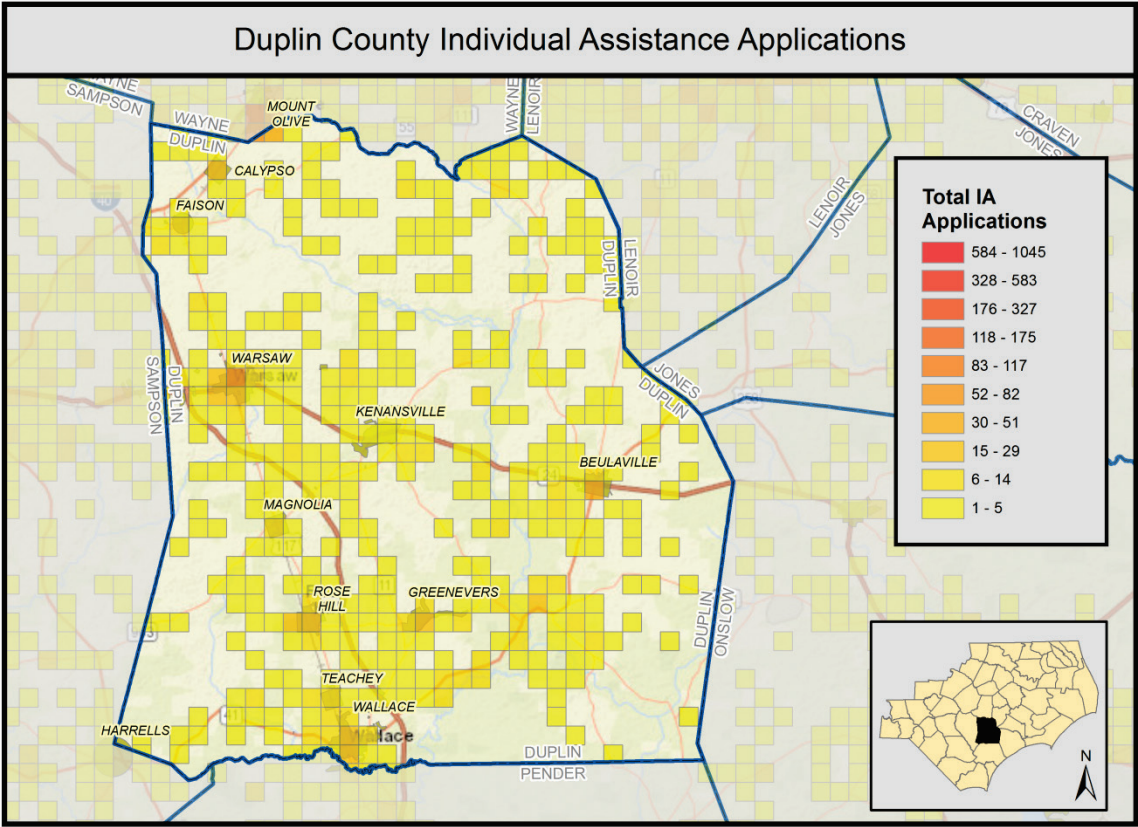


Figure 12. Duplin County IA Applications by Area

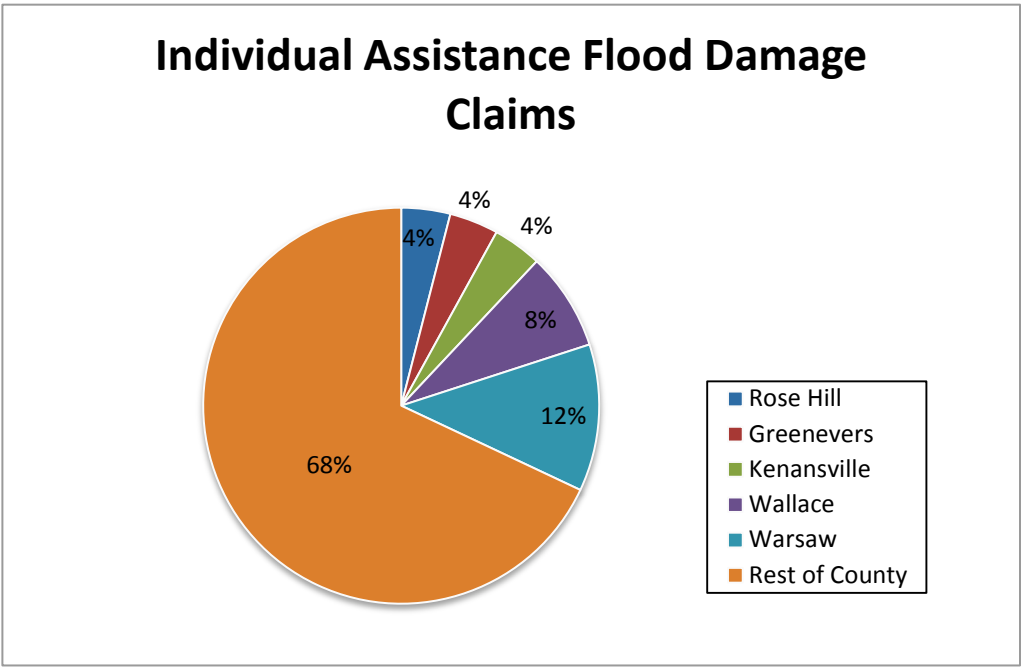


Figure 13. IA Flood Damage Claims by Area

Economics / Business / Jobs

Hurricane Matthew resulted in economic impacts throughout the county. The bullets below summarize some of the impacts to the economy/businesses/jobs that local officials identified.

- **Direct Impacts to Businesses:** Several businesses in Duplin County were damaged during Hurricane Matthew and were unable to operate for a time thereafter. Many businesses could not operate for some time due to road access being limited, specifically Highway 403, which was inundated for over a month. This major thoroughfare is frequently used by large trucks and school traffic, creating traffic situations in other roadways.
- **Indirect Impacts to Businesses:** A number of downtown areas, particularly in northern Kenansville, are struggling to attract new businesses. This challenge is due in part to residual damage to the area from Hurricane Matthew, as well as reluctance on the part of businesses to move into such a flood-prone area. Officials stated that this area could benefit from programs to increase commercial and industrial development and create job opportunities.
- **Community Hazard Outreach:** County administrators requested an educational component to inform the community about the dangers of inclement weather, particularly hurricanes. Despite the road closures and evacuations, residents continued to drive through barricades and became entrapped by the floodwaters; others did not leave their homes, ultimately putting emergency response workers at risk.

Infrastructure

According to Public Assistance claims, which are often closely tied to infrastructure, as of March, 21st, 2017 there were \$292,271 of claims in Duplin County 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.

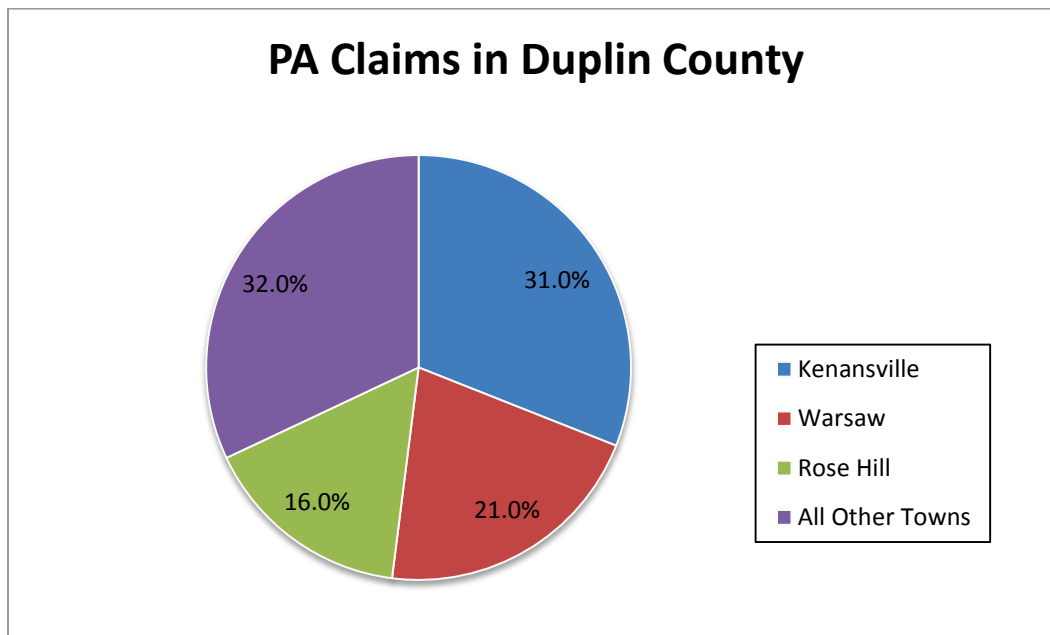


Figure 14. Duplin County PA Claims by Area and Percentage

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 from Hurricane Matthew identified by local officials.

- **Lack of Central Emergency Shelter:** Local officials expressed widespread agreement that the current emergency shelter system in the County is inadequate. Currently, Duplin County Emergency Services utilizes 16 schools to provide sheltering. While functional, this arrangement is suboptimal because of the challenges inherent in mixing the general population with the student population.
- **Town of Wallace Wastewater Treatment Plant:** Provides wastewater service to the Town of Wallace. During Hurricane Matthew, the berm protecting the plant overtopped. This inundation resulted in erosion of this protective barrier and at least 30,000 gallons of untreated wastewater escaped from a sewer line in Forest Hills. This breach in the barrier resulted in interruptions to wastewater service and numerous potential public health issues.
- **Water, Wastewater and Power:** Both electric substations and transmission equipment experienced flooding, which could have caused widespread power outages. Officials expressed a need for reinforcement of existing infrastructure and the purchase of additional equipment to create redundancy, specifically wet flood-proofed generators. Several remote pump stations exceeded their operational capacity during Hurricane Matthew, limiting their ability to control flows and threatening their operations.

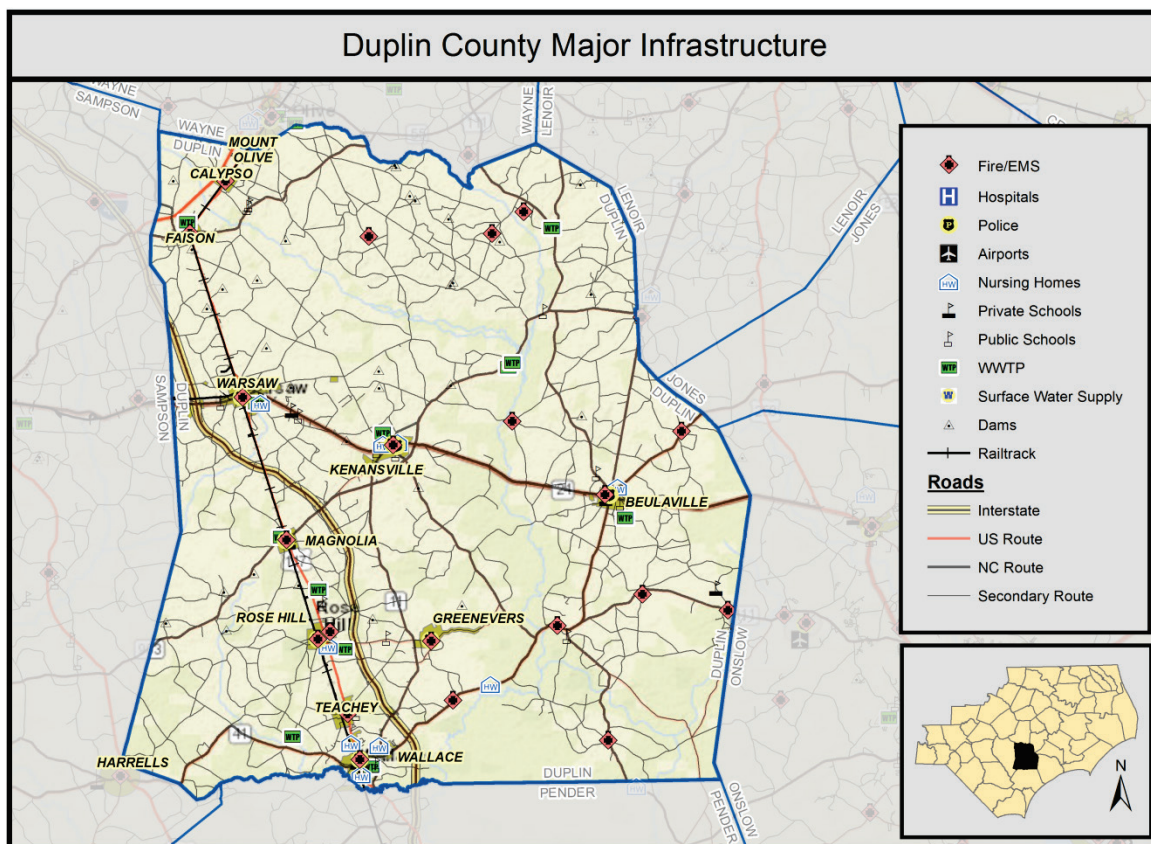


Figure 15. Duplin County Infrastructure Damage

- **Transportation Infrastructure:** A number of roads and bridges were flooded/overtopped during Hurricane Matthew, specifically near Warsaw and Hwy 403. In some places, water rose so quickly that motorists were stranded and needed police rescue.

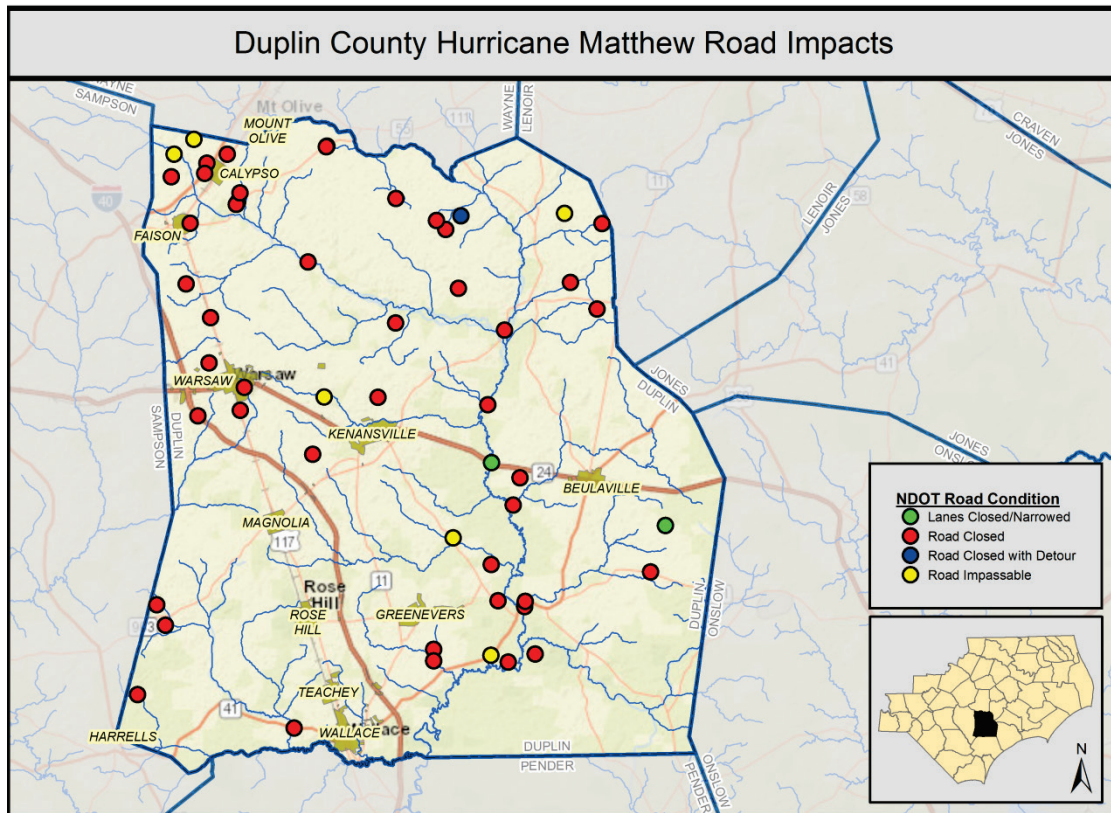


Figure 16. Impacted NCDOT Structures in Duplin County

Ecosystems / Environment

Environmental impacts in Duplin County as a result of Hurricane Matthew link to other impacts in housing, economic development, and infrastructure and are broad in nature. In some cases, preexisting damage or lack of attention to forests, wetlands, and natural systems created new impacts during Hurricane Matthew. These impacts likely will recur for future storm and flood events.

- **Natural Debris Buildup:** Several low-water bridges across the county experienced a significant amount of debris buildup in streams. This debris was often comprised of downed trees and other organic material. This debris was then trapped underneath bridges and in culverts, inhibiting the flow of the river and resulting in flooding. Many of these debris pileups were created from beavers, which are imposing a burden on local officials in an effort to minimize population growth.
- **Town of Beulaville Outfall:** During Hurricane Matthew, a ditch eroded approximately four feet towards a residential structure, threatening the integrity of the foundation of the structure. County officials are concerned about outfalls and waterways not being properly maintained, thus restricting water flow. This is creating unnecessary scour and erosion in ditches making structures along river basins unstable.
- **Health Vulnerability in Environmental Justice Communities:** Residents and officials have expressed concern for impacts from storm and flood events, such as Hurricane Matthew, include the recurring and cumulative effects of disasters on the community's mental and physical health. Recovery and prevention

from hurricane and flood impacts tends to be more difficult in these communities. Over time, recurring impacts strain the mental and physical capabilities of residents and further damage communities.

- **Potential Undetected Toxins and Mold:** Residents have expressed concern over lack of home inspections of self-repaired homes that may have resulted in indoor air and toxin releases and mold problems.

An aerial photograph showing a residential neighborhood partially submerged in floodwater. The water is a murky, brownish-yellow color, covering large areas of the landscape, including lawns and some trees. Several houses with grey roofs are visible, some with their lower levels underwater. A network of roads and paths crisscrosses the area, some of which are also flooded. In the foreground, there is a large, dense area of green trees. The overall scene depicts the impact of flooding on a community.

4. Strategies for Resilient Redevelopment

4. Strategies for Resilient Redevelopment

This section provides details about the resilience and revitalization strategies and actions identified in Duplin County. These actions were identified and refined during three 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.

Meeting 1 was designed to introduce the community and County points of contact to the Resilient Redevelopment Planning process and goals. This meeting allowed the planning team to capture areas within the county that were damaged during Hurricane Matthew and to hear what potential mitigation actions had already been considered. Draft resilience actions were then presented at Meeting 2 of the planning process. This was done to garner general buy-in on the draft actions from the County-level planning teams and residents. More details on the actions were collected between Meetings 2 and 3 through research and follow-up phone calls and emails with the primary points of contact. Meeting 3 provided the opportunity to collect and finalize details for the draft actions. Meeting 4, scheduled in early May 2017, allowed the County points of contact 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	3
Economic Development	5
Infrastructure	3
Environment	4
Grand Total	15

Table 4. Duplin County Summary of Projects by Pillar

The following table is ordered by the rankings and priorities provided by Duplin County during Meeting 4:

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 1: Acquisition and Elevation of Damaged Homes	High	1
Environmental	Environmental Action 3: Countywide Stream and Drainage Cleanup	High	2
Housing	Housing Action 3: Beulaville and Wallace Residential Relocations	High	3
Environmental	Environmental Action 2: Assessment and Study of Vulnerable Disaster-Impacted Citizens	High	4
Environmental	Environmental Action 4: Groundwater and Soil Testing for Potential Flood Contamination	Medium	5
Infrastructure	Infrastructure Action 2: Town of Wallace Wastewater Treatment Plant Waterproofing	Medium	6
Infrastructure	Infrastructure Action 1: Countywide Water and Sewer Systems Consolidation	Medium	7
Economic Development	Economic Development Action 4: Development of Workforce Training Programs	Medium	8
Economic Development	Economic Development Action 3: Small Business Readiness Site Program	Medium	9

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 2: Low Interest Funding Program Development for Residential Floodproofing Programs	Medium	10
Economic Development	Economic Development Action 5: Non-Profit Disaster Response Assistance	Low	11
Infrastructure	Infrastructure Action 3: Assessment and Study of Countywide Stormwater Utility	Low	12
Economic Development	Economic Development Action 1: Small Farm Program Initiatives and Support	Low	13
Economic Development	Economic Development Action 2: Tourism Plan Update and Implementation	Low	14
Environmental	Environmental Action 1: Open Space Plan Development	Low	15

Table 5. Projects by Rank

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	Action Name	Priority	Overall Ranking
Housing	Housing Action 1: Acquisition and Elevation of Damaged Homes	High	1
Housing	Housing Action 3: Beulaville and Wallace Residential Relocations	High	3

Table 6. Duplin High Priority Housing Summary

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

- Acquisition/Elevation of Damaged Homes:** Continual assessment of FEMA Hazard Mitigation, Department of Housing and Urban Development Community Development Block Grant (HUD CDBG) program, and National Nonstructural Floodproofing Committee Program (NFPC) opportunities to acquire and elevate widespread repetitive flooding of homes with high flood risk. This project would provide direct assistance in the form of grants, loans or other incentives to enable families and property owners in high risk areas to relocate to flood safe locations. The Countywide Residential Floodproofing Program targets flood prone areas that are subject to repetitive loss, which would be applied to residential areas throughout the county as they are identified. Additionally, community education for traditional residential assistance methods, floodproofing techniques, and reexamining zoning and building codes to manage development in the floodplain can be further developed.

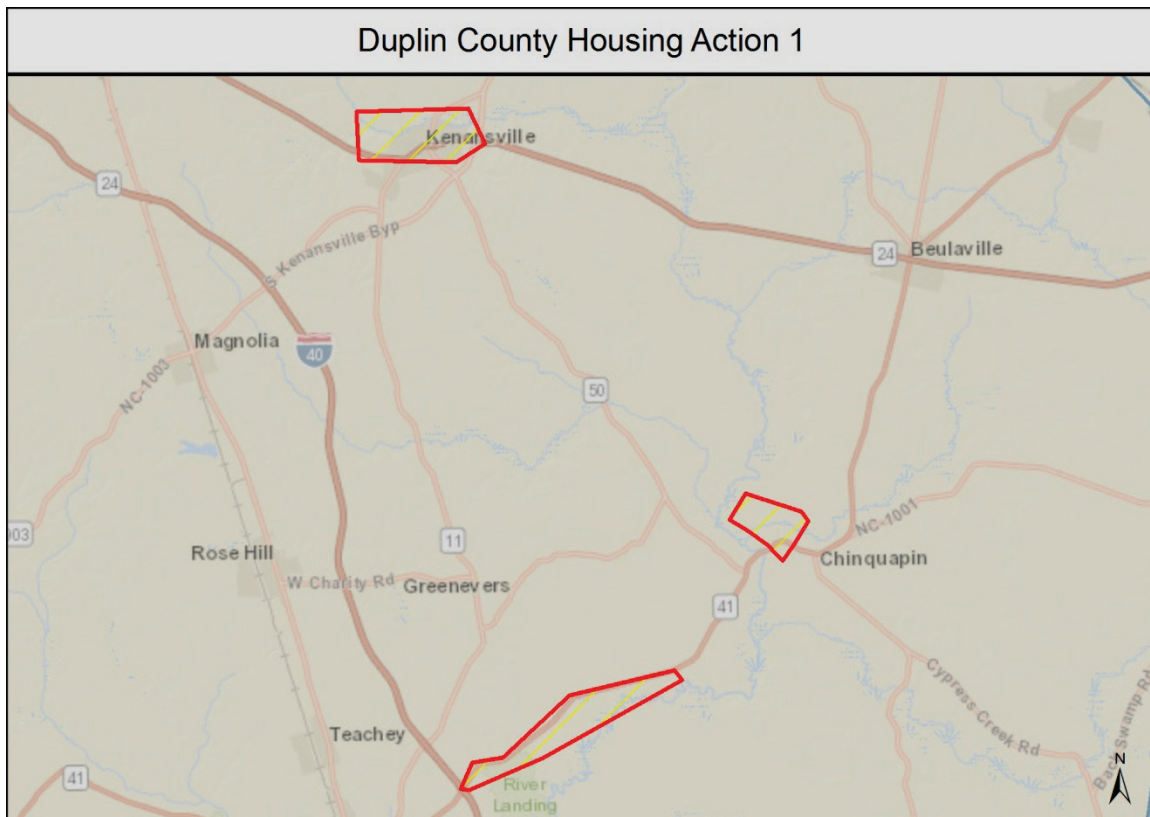


Figure 16. Housing Action 1: Acquisition and Elevation of Damaged Homes

Duplin Housing Action 1: Acquisition and Elevation of Damaged Homes

County: Duplin

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: 12-18 Months

Location: North Kenansville

Project Summary: Acquire and elevate widespread repetitive flooding of homes with high flood risk. Elevation of at-risk homes will exponentially reduce building exposure to floodwaters and acquisition removes the threat all-together. Together, this programs benefits the county and/or municipality through reduction of at risk home sites in their area.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Duplin County as a whole suffered only moderate impacts with respect to housing from Hurricane Matthew but the rural areas north of Kenansville experienced a hard hit. Acquiring or elevating homes would prevent future damages. Elevation of at-risk homes will exponentially reduce building exposure to floodwaters and acquisition removes the threat all-together.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with 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.	Providing sustainable housing options during and after disasters helps to retain tax base in the county	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)?	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?	Higher than 75%	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?	None	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?	County	Agree

- **Beulaville and Wallace Residential Relocations:** Although Duplin County as a whole suffered only moderate impacts with respect to housing from Hurricane Matthew, the Beulaville and Wallace residential communities experienced a hard hit. In addition to these areas, it was identified that the rural areas north of Kenansville, were impacted as well.

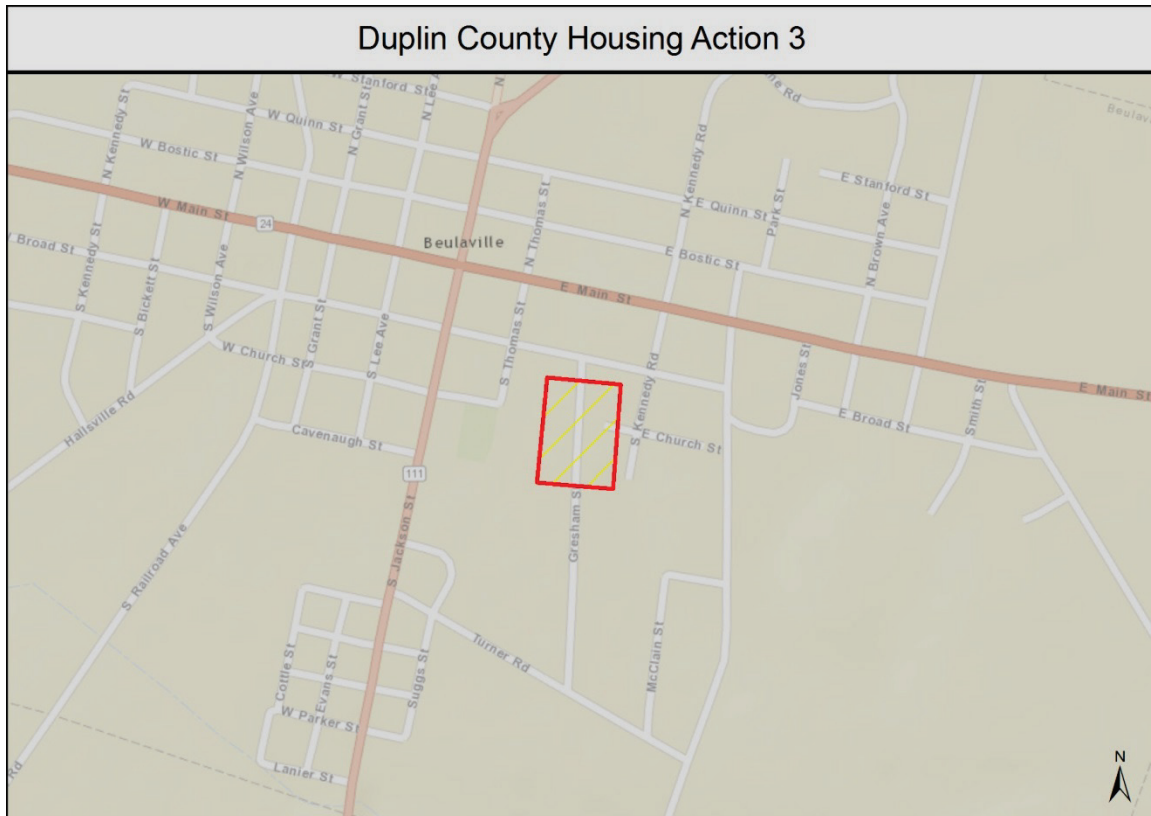


Figure 17. Housing Action 3: Beulaville and Wallace Residential Relocations

Duplin Housing Action 3: Beulaville and Wallace Residential Relocations

County: Duplin

Priority Grouping: High Priority

Priority Ranking: 3

Project Timeframe: 12-18 Months

Location: County-Wide

Project Summary: Relocation of multiple homes across higher-flood prone areas in the county. Specific areas include west of Wallace and more vulnerable Beulaville residents.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This projects highlights at risk and repetitively flooded homes that are impacted by hurricanes and floods. Many homeowners are seeking a governmental mechanism to be bought out or relocated from the persistent risk of flood damage.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with 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.	No immediate economic impacts will result from this project	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	100-200 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?	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?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	No immediate environmental impacts will result from this 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?	County	Agree

Medium Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Duplin Housing Action 2: Low Interest Funding Program Development for Residential Floodproofing Programs	Medium	10

Table 7. Duplin Medium Priority Housing Summary

This project represents the housing strategy that Duplin County indicates is a medium priority to address. Additional detail on the projects can be found below:

- Low Interest Funding Program Development for Residential Floodproofing Programs:** Continual assessment of FEMA Hazard Mitigation , Department of Housing and Urban Development Community Development Block Grant (HUD CDBG) program, and National Nonstructural Floodproofing Committee Program (NFPC) opportunities to acquire and elevate widespread repetitive flooding of homes with high flood risk. This project would provide direct assistance in the form of grants, loans or other incentives to enable families and property owners in high risk areas to relocate to flood safe locations. The Countywide Residential Floodproofing Program targets flood prone areas that are subject to repetitive loss, which would be applied to residential areas throughout the county as they are identified. Additionally, community education for traditional residential assistance methods, floodproofing techniques, and reexamining zoning and building codes to manage development in the floodplain can be further developed.
- This is a county-wide project, so no project area map has been included.**

Duplin Housing Action 2: Low Interest Funding Program Development for Residential Floodproofing Programs

County: Duplin

Priority Grouping: Medium Priority

Priority Ranking: 10

Project Timeframe: 1-2 years

Location: County-Wide

Project Summary: Initiate study to consider options for floodproofing, including elevation, and provide matching funds/low-interest loan programs to assist homeowners in executing recommended measures

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Retaining more resilient housing inventory is critical to long-term economic stability in the county. At risk homeowners will no longer need to move into other counties after disasters to obtain housing.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with Sampson/Duplin Hazard Mitigation 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.	Retaining more resilient housing inventory is critical to long-term economic stability in the county. At risk homeowners will no longer need to move into other counties after disasters to obtain housing.	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	100-200 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?	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?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	No specific environmental impacts should result from this 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?	Low	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

Economic Development Strategies

Medium Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Duplin Economic Development Action 4: Development of Workforce Training Programs	Medium	8
Economic Development	Duplin Economic Development Action 3: Small Business Readiness Site Program	Medium	9

Table 8. Duplin Medium Priority Economic Development Summary

These two projects represent the economic development strategies that Duplin County indicated are of a medium priority to address. Additional detail on the projects can be found below:

- **Development of technical workforce training and farming operations:** This project would encourage small-scale agricultural operations throughout Duplin and Sampson Counties in conjunction with NC State University and NC A&T State University Cooperative Extension to provide training through a Small Farms Agent.
- **This is a county-wide project, so no project area map has been included.**

Duplin Economic Development Action 4: Development of Workforce Training Programs

County: Duplin

Priority Grouping: Medium Priority

Priority Ranking: 8

Project Timeframe: Present

Location: County-Wide

Project Summary: Develop new workforce training programs, focused on job skills such as construction, HVAC, electrical and plumbing and transfer these programs to high school technical programs to provide a steady workforce without college

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Job skills training is an economic development need to enable the community to recover over the long term from this hurricane	N/A
Consistent with existing plans (describe points of intersection/departure)	None noted	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.	A workforce development program will improve the job skills of the incoming workforce for the County. This will lower the corporate training costs of new employees and improve their productivity from the beginning of their 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)?	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?	Unknown	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?	Between 26 and 50%	Agree
What impacts to the environment of the county will result from this project?	No impacts noted	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	County	Agree

- **Small Business Readiness Site Program:** This strategy enhances economic development recovery by adopting flood protection measures to protect underdeveloped economic assets in the community and spur re-development. At-risk sites include properties along existing creeks or streams that might be subject to frequent erosion or abandoned industrial sites with buildings that could be retrofitted for new uses. GIS analysis of underdeveloped parcels with sewer and water access are necessary to target for future growth and development. Data integration of local floodplains, historical flood levels, combined storm and sanitary sewer outfalls and sewer sheds, can be used to identify underdeveloped parcels in sewer and water districts that have a higher risk for flooding.
- **This is a county-wide project, so no project area map has been included.**

Duplin Economic Development Action 3: Small Business Readiness Site Program

County: Duplin

Priority Grouping: Medium Priority

Priority Ranking: 9

Project Timeframe: 6-12 months

Location: County-Wide

Project Summary: Develop a "business ready" site program for small businesses

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This project would provide businesses damaged from the Hurricane within the flood plain developable sites OUTSIDE the flood plain that they could relocate and redevelop on	N/A
Consistent with existing plans (describe points of intersection/departure)	This would be part of any update to long range or economic development plans	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 could provide small businesses looking to relocate in Sampson County with affordable and development ready sites thereby improving the County's chances of attracting business.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	100-200 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?	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?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	No impacts noted	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	Low	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Local	Agree

Low Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Duplin Economic Development Action 5: Non-Profit Disaster Response Assistance	Low	11
Economic Development	Duplin Economic Development Action 1: Small Farm Program Initiatives and Support	Low	13
Economic Development	Duplin Economic Development Action 2: Tourism Plan Update and Implementation	Low	14

Table 9. Duplin Low Priority Economic Development Summary

These three projects represent the economic development strategies that Duplin County indicated are of low priority to address. Additional detail on the projects can be found below:

- **Non-Profit Disaster Response Assistance:** The program will assist local non-profit relief agencies in applying for additional grants and funding to expand their educational programs and relief activities in the event of a disaster.
- **This is a county-wide project, so no project area map has been included.**

Duplin Economic Development Action 5: Non-Profit Disaster Response Assistance

County: Duplin

Priority Grouping: Low Priority

Priority Ranking: 11

Project Timeframe: 6-12 months

Location: County-Wide

Project Summary: Assist local non-profit relief agencies in applying for additional grants and funding to expand their educational programs and relief activities in the event of a disaster

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Gaps in immediate disaster response occur and additional (non-governmental) resources can be tapped to assist both in short term and long term recovery	N/A
Consistent with existing plans (describe points of intersection/departure)	Not mentioned in any plans to this point; should be part of any long range plan update	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.	No direct economic impact however better resource capacity at levels will result in better preparation which will result in lower losses	Agree
For how long will this solution be effective?	Less than 10 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?	Unknown	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?	No impacts	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?	Medium	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Small Farms Developmental Programs:** Agriculture is the leading industry in Duplin County. The National Agricultural Statistics Service’s 2012 Census of Agriculture shows that small-scale farms make up 88% of all farms nationwide and 87% in North Carolina. Many of these farms consist of small-scale agriculture including fruit and vegetable production, small-scale livestock production including goats, pork, poultry, and forestry production. Continue relationship with the County Cooperative Extension and Chamber of Commerce to promote and conduct training to educate farmers and landowners on a variety of topics related to tax credits and receiving certification to open additional market share. The Cooperative also provides training to educate landowners and potential farmers on topics related to taxes, farm transition, and other available agricultural agency programs.
- **This is a county-wide project, so no project area map has been included.**

Duplin Economic Development Action 1: Small Farm Program Initiatives and Support

County: Duplin

Priority Grouping: Low Priority

Priority Ranking: 13

Project Timeframe: 6-12 months

Location: County-Wide

Project Summary: Establishment of a program to develop small farms to include technical training, marketing programs, and administrative support.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Enhancing and providing more opportunities to the county workforce creates a more resilient subset of residents that have stable jobs and better housing options.	N/A
Consistent with existing plans (describe points of intersection/departure)	Duplin County Agricultural Protection Plan highlights this project in its six (6) agricultural needs summary	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.	Local farmers view labor as one of the most pressing management concerns and a primary limiting factor in farm business expansion. Increasing and enhancing the labor pool can expand the reaches of current agricultural extent and provide numerous positive economic benefits.	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?	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?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	Impacts to the environment will be residual as funding devoted to farming programs are likely to convert open space into suitable agricultural area through enhancements of labor force	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

- **Tourism Plan Update and Implementation:** This project would fund a targeted tourism study update to identify key projects from the existing tourism plan—or new projects—to prioritize for future funding and a marketing strategy. This project will fund an initial marketing campaign to highlight existing tourism assets and events with billboards on major thoroughfares, targeted features in local media, and a heritage brochure.
- **This is a county-wide project, so no project area map has been included.**

Duplin Economic Development Action 2: Tourism Plan Update and Implementation

County: Duplin

Priority Grouping: Low Priority

Priority Ranking: 14

Project Timeframe: Present-24 months

Location: County-Wide

Project Summary: Continuation of a tourism plan: study needs , develop an action plan, and provide funds to begin implementation of top priorities

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Providing economic resiliency through tourism expansion allows for county residents to be better positioned during times of duress through disasters	N/A
Consistent with existing plans (describe points of intersection/departure)	Duplin County Tourism Department	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 development of a tourism industry contributes to improved socioeconomic conditions including higher employment rates and economy diversification	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?	Unknown	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?	No immediate impacts	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?	Minimum	Agree
What is the technical feasibility of this project?	Unknown	Agree
Who will administer this project?	County	Agree

Infrastructure Strategies

Medium Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Duplin Infrastructure Action 2: Town of Wallace Wastewater Treatment Plant Waterproofing	Medium	6
Infrastructure	Duplin Infrastructure Action 1: Countywide Water and Sewer Systems Consolidation	Medium	7

Table 10. Duplin Medium Priority Infrastructure Summary

These two projects represent the infrastructure strategies that Duplin County indicated are of a medium priority to address. Additional detail on the projects can be found below:

- Town of Wallace Wastewater Treatment Plant Waterproofing:** Centralization and consolidation of smaller independent water boards and authorities would result in many more residents receiving water from the combined service area. Pump stations, wastewater plants, and operational assets under the control of a single entity can provide long-term costs savings and efficiencies for the entire county.

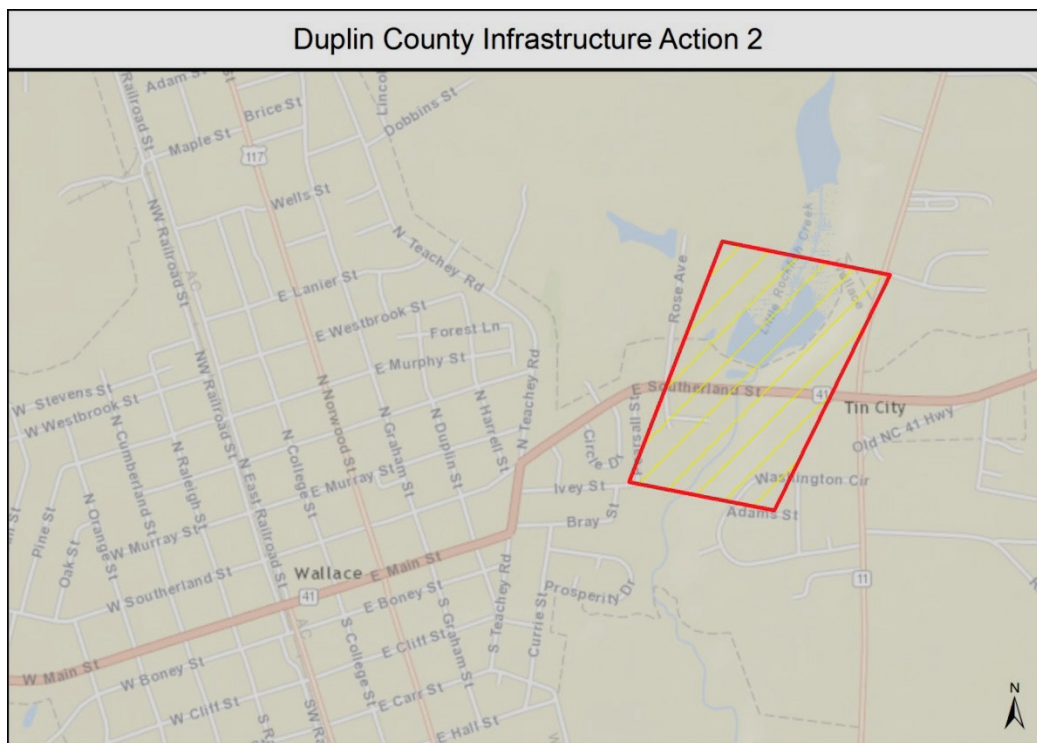


Figure 18. Infrastructure Action 2: Town of Wallace Wastewater Treatment Plant Waterproofing

Duplin Infrastructure Action 2: Town of Wallace Wastewater Treatment Plant Waterproofing

County: Duplin

Priority Grouping: Medium Priority

Priority Ranking: 6

Project Timeframe: 12-18 months

Location: Wallace, NC

Project Summary: Fortification and waterproofing of the wastewater treatment plant location near Wallace, NC

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This will repair and harden the principle water treatment facility for the City and County mitigating the effects of damage from Matthew and making it better able to withstand future events	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with 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.	No benefits or impacts to the county should be faced	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	100-200 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?		Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?		Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?		N/A
What impact will this action have on the local economy/tax base?		Agree
What impacts to the environment of the county will result from this project?	No immediate impacts to environmental impacts	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?		Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Less than 25%	Agree
Who will administer this project?	County	Agree

- **Countywide Water and Sewer Systems Consolidation:** The Town of Wallace’s Wastewater Treatment plant was identified by local county officials as requiring power redundancy and dry floodproofing . Damage reduction to this plant is crucial in order to maintain function during and after a hazard event. Actions to reduce damage can include, but are not limited to:
 - Burying utility lines underground
 - Provide frangible links/break away connections on utility poles
 - Harden utility poles by converting from wood to concrete or metal utility poles
 - Increasing the easement area/clearance of utility lines/poles from trees lines
- **This is a county-wide project, so no project area map has been included.**

Duplin Infrastructure Action 1: Countywide Water and Sewer Systems Consolidation

County: Duplin

Priority Grouping: Medium Priority

Priority Ranking: 7

Project Timeframe: 12-24 months

Location: County-Wide

Project Summary: Assessing the feasibility of sewer and water consolidation between in community systems in Duplin County

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)	No existing plans to delineate	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.	Tax and millage increases are likely through infrastructure buildouts. These would be viewed negatively by most residents. Consolidation however reduces strain on existing systems and allows for additional commercial/residential development in previously untapped areas.	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?	Less than 25%	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?	Higher than 75%	Agree
What impacts to the environment of the county will result from this project?	Consolidation of systems will require heavy culvert and piping efforts across agricultural fields and watersheds	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?	Low	Agree
What is the technical feasibility of this project?	Less than 25%	Agree
Who will administer this project?	Regional	Agree

Low Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Duplin Infrastructure Action 3: Assessment and Study of Countywide Stormwater Utility	Low	12

Table 11. Duplin Low Priority Infrastructure Summary

This project represents the infrastructure strategy that Duplin County indicated is of a lower priority to address. Additional detail can be found below:

- Assessment and Study of Countywide Stormwater Utility:** Infrastructure repair and improvement is one of the most cost beneficial investments entities will make following a major disaster. Rebuilding infrastructure in a way that is more resilient is integral to ensuring community-wide resiliency for future storms. The stakeholders meetings identified the need to repair and protect many critical infrastructures. Performing storm water management improvements such as retention projects, and consideration of floodproofing of at-risk water control structures located in the floodplain. Stream Restoration projects will also address localized flooding by restoring natural drainage patterns to streams and creeks that have been channelized, buried or otherwise impaired. Benefits include improved volume capacity, water quality, in-stream and riparian habitat, as well as improved downstream watershed water quality.
- This is a county-wide project, so no project area map has been included.**

Duplin Infrastructure Action 3: Assessment and Study of Countywide Stormwater Utility

County: Duplin

Priority Grouping: Low Priority

Priority Ranking: 12

Project Timeframe: 12-24 months

Location: County-Wide

Project Summary: Assessment and study on a county-wide storm water utility to enhance drainage and water quality. This utility can provide funding for a number of culvert repairs and retrofits.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This will repair and harden the principle water treatment facility for the City and County mitigating the effects of damage from Matthew and making it better able to withstand future events	N/A
Consistent with existing plans (describe points of intersection/departure)	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.	Increased sewerage and water capacity provides for a more resilient housing stock through mitigation of floodwaters. Retainage of tax base becomes a residual impact	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	>200 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?	Between 51 and 75%	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?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	No environmental impacts noted other than immediate ground disturbance of localized culvert and drainage upgrades	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$501K - \$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

Environmental, Ecosystem and Agricultural Strategies

High Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Duplin Environmental Action 3: Countywide Stream and Drainage Cleanup	High	2
Environment	Duplin Environmental Action 2: Assessment and Study of Vulnerable Disaster-Impacted Citizens	High	4

Table 12. Duplin High Priority Environmental Summary

These projects represent the environmental strategies that Duplin County indicated are the highest priority to address. Additional detail can be found below:

- Countywide Stream and Drainage Cleanup:** Development and the prevalence of impervious surfaces within the floodplain inhibit water storage and absorption, tunneling water further away from the source. Undersized infrastructure within the floodway and the furious rate of water flow causes massive stream bank erosion throughout the watershed leaving massive debris in its wake. When the water eventually recedes, it takes with it bacteria, roadway spills and other contaminants, with potential significant environmental consequences to riverine ecosystems. Better protection for these natural resources is critical. Many bridges and roadways were comprised by compromised stream quality. In high volume storm events, stormwater can and will overwhelm local collection systems leading to flooding.
- This is a county-wide project, so no project area map has been included.**

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

- **Assessment and Study of Vulnerable Disaster-Impacted Citizens:** Disasters and floods continue to be a major social concern as they can cause deaths, injuries, mental health effects, property damage, and immense disruptions in day-to-day life. The adverse impacts of these disruptive floods are unevenly distributed across geographies and county residents. Environmental justice is defined as equitable environmental quality for all social groups, with specific consideration that socially vulnerable groups are not disproportionately exposed to environmental hazards. Research on flooding focuses on identifying whether socially vulnerable groups such as racial/ethnic minorities and individuals of lower socioeconomic status are disproportionately exposed to flood risk and ensuring equitable management of flood hazards. As a result, racial/ethnic minority and low-income residents.
- **This is a county-wide project, so no project area map has been included.**

Duplin Environmental Action 2: Assessment and Study of Vulnerable Disaster-Impacted Citizens

County: Duplin

Priority Grouping: High Priority

Priority Ranking: 4

Project Timeframe: 12-18 months

Location: County-Wide

Project Summary: Conduct a study to assess and mitigate against the cumulative effects of flooding and disaster on the community's health with a focus on vulnerable populations

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Flooding from Hurricane Matthew lasted several days and may have caused health issues that have not been identified yet.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with overall goal of the hazard mitigation plan to mitigate effects of natural hazards on the community.	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.	None	Agree
For how long will this solution be effective?	Less than 10 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?	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?	Understanding the resources necessary to better assist county residents in times of crisis should allow county stakeholders to hone in on these gaps before other disasters occur	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	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?	Unknown	Agree

Medium Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Duplin Environmental Action 4: Groundwater and Soil Testing for Potential Flood Contamination	Medium	5

Table 13. Duplin Medium Priority Environmental Summary

This project represents the environmental strategy that Duplin County indicated is a medium priority to address. Additional detail can be found below:

- Groundwater, Air, and Soil Contamination Testing:** As floodwaters encumbered swine lagoons, industrial sites, farms, and wastewater treatment plants, contaminations of soil and groundwater can be immense. Many commercial establishments, such as gas stations and pest control businesses may have released potentially hazardous chemicals into the floodwaters. Varied environmental impacts caused by flooding can include human and animal health, impacts on aquatic life, surface and groundwater, pollution, and agriculture comprisal. An opportunity exists to study both short-term and long-term environmental impacts from Hurricane Matthew.
- This is a county-wide project, so no project area map has been included.**

Duplin Environmental Action 4: Groundwater and Soil Testing for Potential Flood Contamination

County: Duplin

Priority Grouping: Medium Priority

Priority Ranking: 5

Project Timeframe: 6-12 months

Location: County-Wide

Project Summary: Testing of groundwater/soil. Investigate the potential for toxin and indoor air quality issues within homes and businesses, particularly where repairs were made. Providing a funding mechanism to those that require remediation

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Many homes and to a lesser extent businesses were flooded and required quick repair work to be functional. There may be many instances where mold and other toxins could have become entrenched into building materials during this time creating health concerns.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with Duplin County Agricultural Protection 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.	No immediate economic benefits or impacts are noted in this project.	Agree
For how long will this solution be effective?	Less than 10 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?	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?	Minimal to low 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?	Many homes and to a lesser extent businesses were flooded and required quick work to be functional. There may be many instances where mold and other toxins could have become entrenched into building materials during this time creating health concerns.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	State	Agree

Low Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Duplin Environmental Action 1: Open Space and Park System Master Plan	Low	15

Table 14. Duplin Low Priority Environmental Summary

This project represents the environmental strategy that Duplin County indicated is of a lower priority to address. Additional detail can be found below:

- Open Space and Park System Master Plan:** Duplin County currently does not have any county parks, or a park plan. Duplin County has buyout properties that cannot be used for occupied structures, and lacks a comprehensive strategy to determine a) if parcels could be combined for future use, open space, and parks; b) if there are economically viable uses for these parcels; c) if certain parcels could be used by the community for community gardens, farmers markets, or economically viable use; and d) a strategy for ongoing maintenance including funding sources. The county has properties attained from buyouts during Hurricane Floyd and will have property that it attains from buyouts during Hurricane Matthew. Many of these properties have dilapidated structures because of a lack of funds to demolish them. Funds are needed to bring each parcel to a clean and stable state.
- This is a county-wide project, so no project area map has been included.**

Duplin Environmental Action 1: Open Space and Park System Master Plan

County: Duplin

Priority Grouping: Low Priority

Priority Ranking: 15

Project Timeframe: 1-2 years

Location: County-Wide

Project Summary: Develop an open space plan for park and recreational areas within the county. This plan would include strategically selecting acquired or abandoned areas for reuse in public spaces, parks, and passive recreational areas.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Development of a land use plan and/or open space inventory has become necessary after the flooding from Hurricane Matthew and subsequent buyouts.	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with the goals of 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.	Development of a land use plan and/or open space inventory will allow for private entities to better evaluate local of businesses and infrastructure	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?	Less than 25%	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?	No impacts are known to this point	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	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?	Local	Agree

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.