

# **Hurricane Matthew Resilient Redevelopment Plan**

## **Camden County**



May 2017

Version 1.2

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## Contents

<b>Change Log .....</b>	<b>iii</b>
<b>Executive Summary .....</b>	<b>iv</b>
<b>1. Background .....</b>	<b>1-1</b>
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
<b>2. County Profile.....</b>	<b>2-1</b>
Demographic Profile .....	2-1
Population .....	2-1
Population Change (2000 to 2010) .....	2-2
Age .....	2-2
Race and Ethnicity .....	2-2
Limited English Proficiency .....	2-2
Poverty .....	2-2
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 .....	2-3
Housing Profile .....	2-4
Economic/Business Profile .....	2-5
Labor Force .....	2-5
Major Employers .....	2-6
Economic Development .....	2-6
Infrastructure Profile .....	2-7
Transportation .....	2-7
Health .....	2-7
Education .....	2-8
Water .....	2-8
Power .....	2-8
Environmental Profile .....	2-8
Water Resources .....	2-8
Natural and Managed Areas .....	2-9
Biodiversity and Wildlife Habitat .....	2-9
Parks and Recreation .....	2-9
Administrative Profile .....	2-10

<b>3. Storm Impact .....</b>	<b>3-1</b>
Rainfall Summary.....	3-1
Riverine Flooding Summary.....	3-1
Housing .....	3-2
Economics / Business / Jobs .....	3-4
Infrastructure .....	3-4
Ecosystems / Environment .....	3-5
<b>4. Strategies for Resilient Redevelopment.....</b>	<b>4-1</b>
Housing Strategies.....	4-2
High Priority Housing Strategies.....	4-2
Medium Priority Housing Strategies.....	4-9
Low Priority Housing Strategies.....	4-13
Economic Development Strategies.....	4-18
Low Priority Economic Development Strategies.....	4-18
Infrastructure Strategies.....	4-22
High Priority Infrastructure Strategies.....	4-22
Medium Priority Infrastructure Strategies .....	4-24
Environmental, Ecosystem and Agricultural Strategies.....	4-30
High Priority Environmental Strategies .....	4-30
Low Priority Environmental Strategies .....	4-39
Summary.....	4-41

## 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.<sup>1</sup> 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.

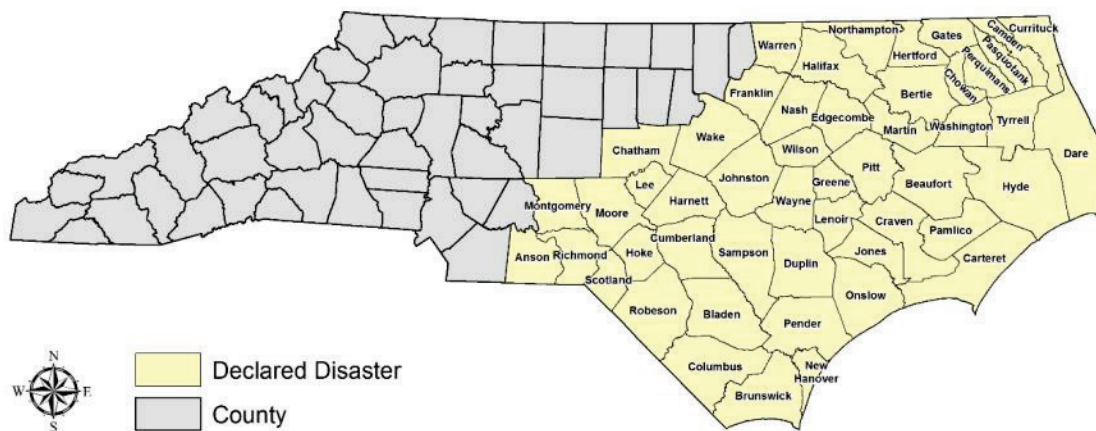


Figure 1. NCRRP Counties

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.

<sup>1</sup> 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, Camden County has identified 20 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	8
Economic Development	2
Infrastructure	4
Environment	6
<b>Grand Total</b>	<b>20</b>

**Table 1. Camden County Summary of Projects by Pillar**





# 1. Background

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## Summary of Hurricane Matthew Storm Damage

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

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

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

Approximately 88,000 homes were damaged and 4,424 were completely destroyed. Losses totaled more than \$967 million, representing an economic loss as high as 68 percent 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.<sup>2</sup>

## 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.

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<sup>2</sup> 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 are 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:

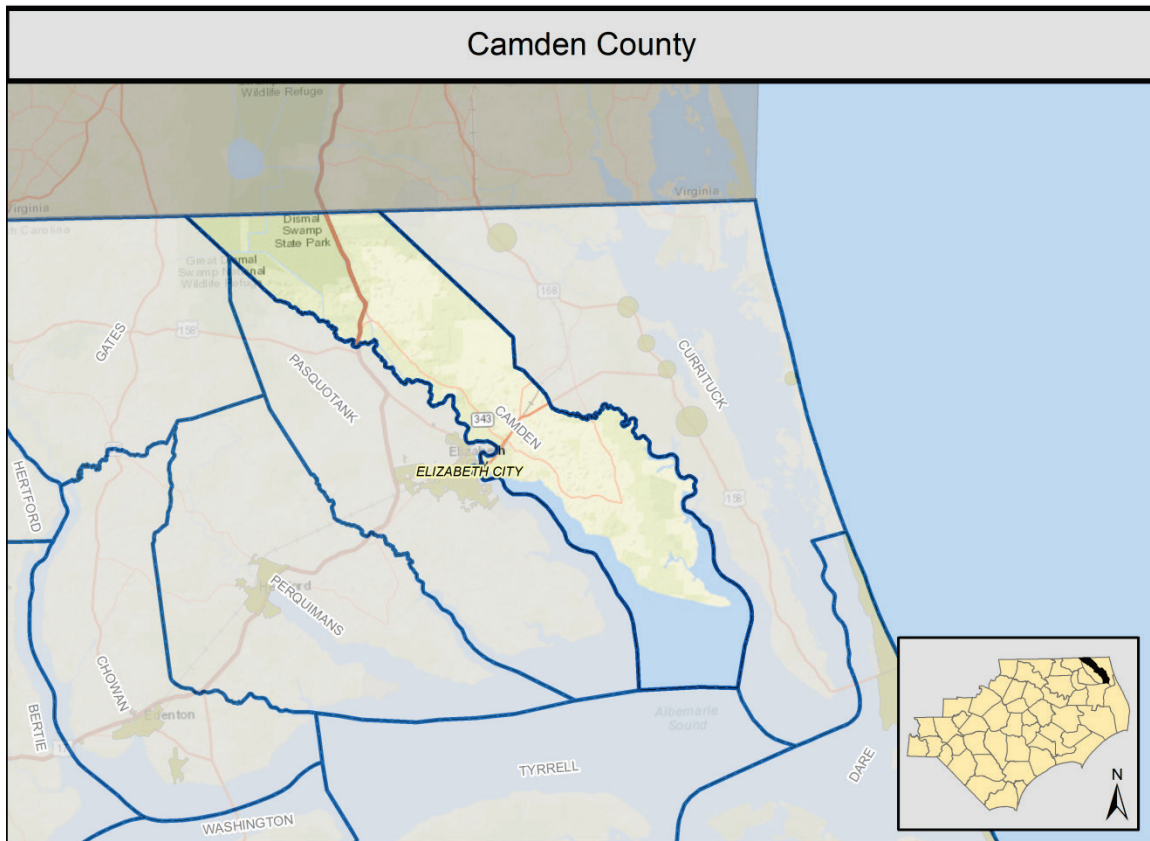
**Meeting 1** – Initiated the planning process and validated the existing data pertaining to damage and impacts.

**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. Camden 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 neighborhood severely affected by flooding. The water is a murky, brownish-yellow color, submerging large areas of the landscape. Numerous houses with grey and brown roofs are visible, some with water reaching their windows. A network of roads and paths crisscrosses the area, with some sections completely underwater. Dense green trees are scattered throughout, many of which are partially submerged. The overall scene depicts a significant natural disaster impact on a community.

## 2. County Profile



## 2. County Profile

Camden County is located in northeastern North Carolina and is bordered by the state of Virginia to the north, Currituck County to the east, the Albemarle Sound to the south, and the Pasquotank River and Pasquotank and Gates counties to the west. Camden County consists of 150,557 acres, or approximately 242 square miles, with no formally incorporated municipalities. Two census-designated places are within the county: South Mills in the north, and Camden in the center of the county. The Great Dismal Swamp, the largest swamp in the nation, covers the northern section of the county.

Camden County's current population is 10,161. This section provides a profile of housing, economics, infrastructure, environment, and administration within Camden County.

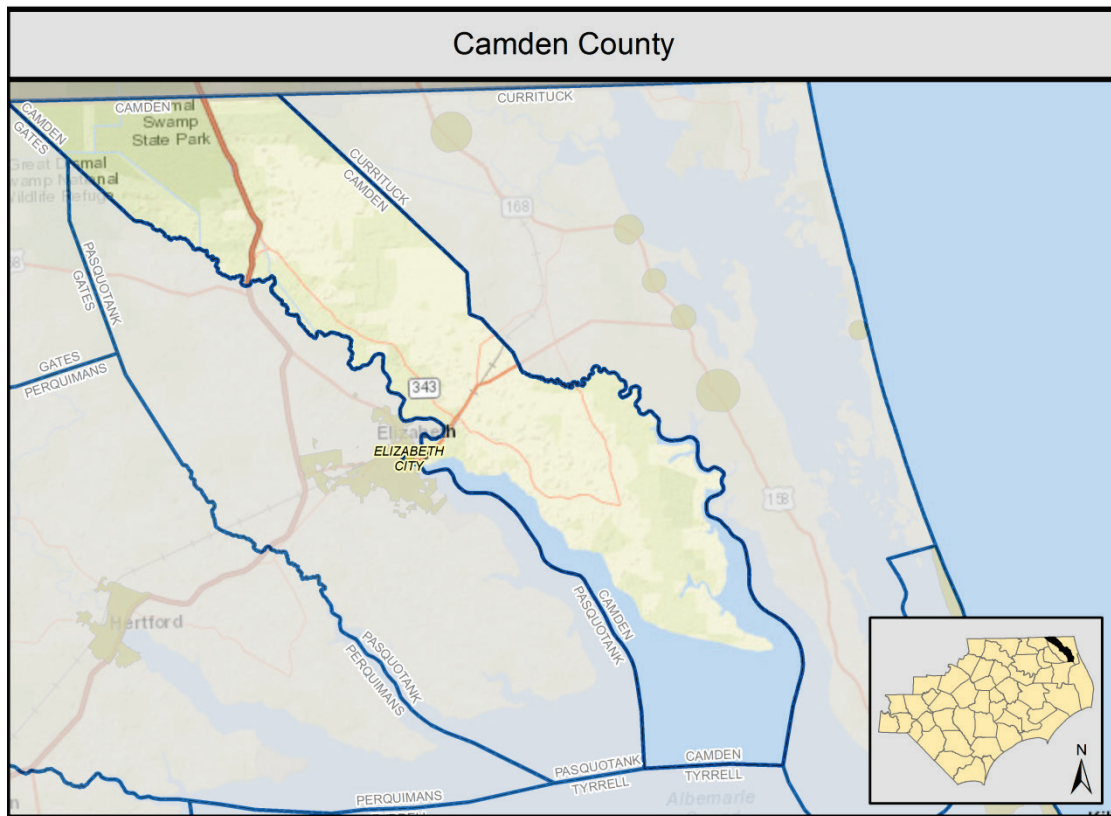


Figure 3. Camden Base Map

### Demographic Profile

Demographics for Camden 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

Camden County has a population of 10,161. Camden has a population of 577, and South Mills has a population of 196. The remainder of the population lives outside of a census-designated place.<sup>3</sup>

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

## Population Change (2000 to 2010)

The Camden County population grew by 45 percent between the 2000 and 2010 Census. In 2000 the population was 6,885 and in 2010 it was 9,980. In comparison, North Carolina grew by 19 percent from 8,049,313 people in 2000 to 9,535,483 in 2010.<sup>4</sup>

## Age

The median age in Camden County is 42, which is the same for North Carolina. Within Camden County, the South Mills population has an older median age, 61, and the Camden population has a younger median age, 25.<sup>5</sup>

## Race and Ethnicity

Camden County is mostly White (82.5 percent) and African American (13.8 percent) with other races constituting the remaining 4 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.

The Latino population in Camden County is 2.6 percent compared to 9 percent for North Carolina. Camden and South Mills do not have Latino populations according to the census data.

Geography	White	Black or African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian/ Pacific Islander	Some Other Race	Two or More Races	Total Non-White
Camden CDP	90.8%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%	9.2%
South Mills CDP	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Camden County</b>	<b>82.5%</b>	<b>13.8%</b>	<b>0.6%</b>	<b>2.2%</b>	<b>0.0%</b>	<b>0.3%</b>	<b>0.5%</b>	<b>17.5%</b>
<b>North Carolina</b>	<b>69.5%</b>	<b>21.5%</b>	<b>1.2%</b>	<b>2.5%</b>	<b>0.1%</b>	<b>3.0%</b>	<b>2.4%</b>	<b>30.5%</b>

Table 2. Camden 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 Camden County, approximately 3 percent of the adult population speaks English less than very well. These individuals speak Spanish (1.5 percent) or Asian/Pacific languages (1.5 percent). The primary language group for LEP individuals in North Carolina is Spanish. Camden has a small Spanish-speaking population (approximately 15 individuals).<sup>5</sup>

<sup>4</sup> 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

<sup>5</sup> 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."

## Poverty

In Camden County, about 8 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. In Camden, 9.4 percent of the population is below the poverty level. South Mills does not have a low-income population according to census data.<sup>6</sup>

## Low and Moderate Income Individuals

In Camden County, 30 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.<sup>7</sup>

## Median Household Income

The median household income of the population 25 to 64 years old is \$71,000 in Camden County, which is substantially higher than the North Carolina median household income of \$53,000.<sup>8</sup>

## Zero Car Households<sup>9</sup>

In Camden County, 2.7 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. In South Mills, approximately 17.5 percent of households do not have access to a vehicle.

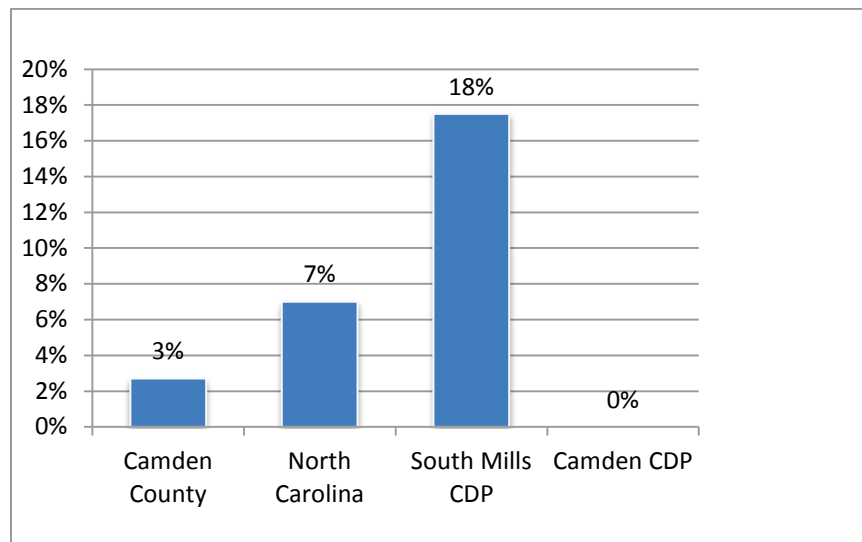


Figure 4. Zero Car Households by Percentage

## Commuting: Travel Time to Work, Means of Transportation<sup>10</sup>

The majority of Camden County residents commute alone to work by vehicle, 87 percent, which is higher than the North Carolina average of 81 percent.

<sup>6</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months."

<sup>7</sup> 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/>

<sup>8</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B19094, Median Household Income in the Past 12 Months.

<sup>9</sup> Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B25044, Tenure by Vehicles Available.

<sup>10</sup> 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).

The mean commute time to work for Camden County residents is 35.7 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Approximately 37 percent of county residents commute between 15 and 30 minutes, while 32 percent of residents commute 30 to 60 minutes.

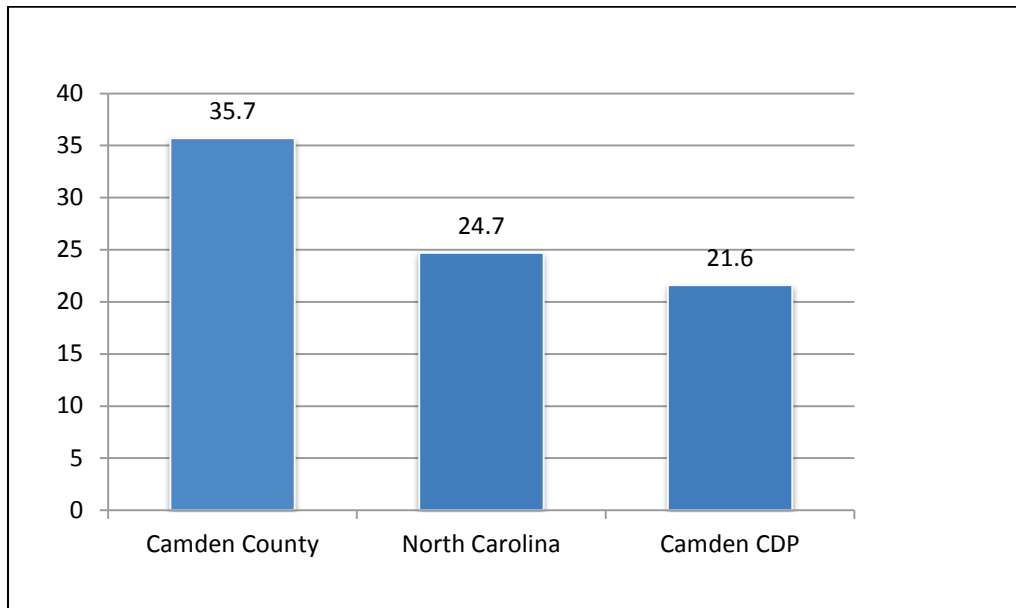


Figure 5. Mean Commute Time to Work in Minutes

### Housing Profile<sup>11</sup>

Camden County has 4,129 housing units, 84 percent of which are single-family homes, 4 percent multi-family units, and 12 percent manufactured housing.

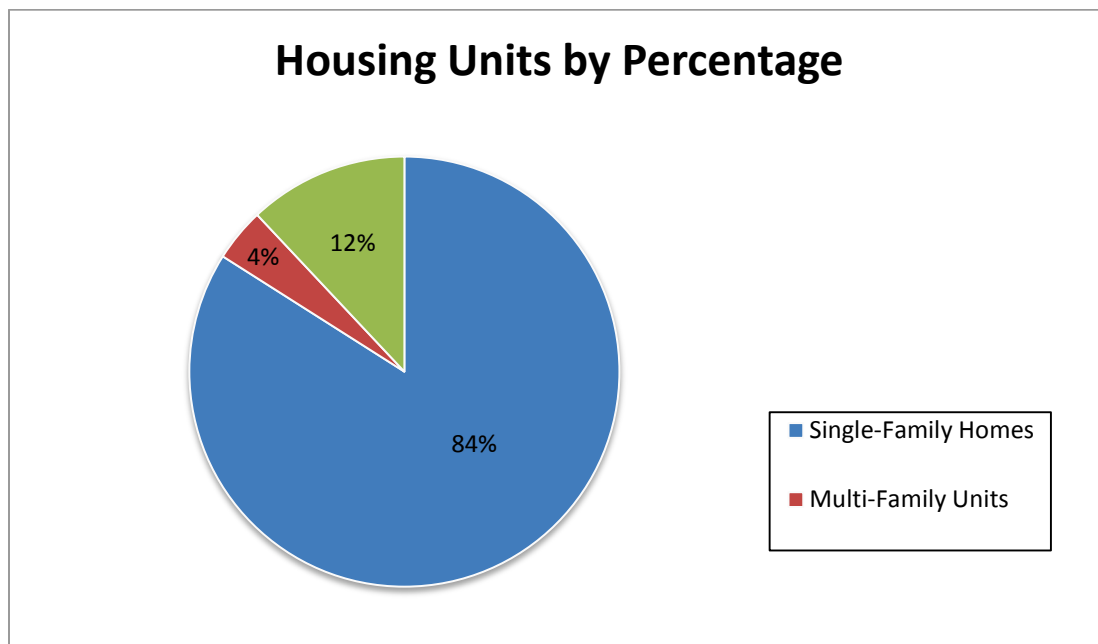


Figure 6. Housing Units by Percentage

11 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.

In Camden County 8 percent of housing units are vacant, compared to 14.5 percent for North Carolina. Of the occupied housing units, 84 percent are owner-occupied compared to 65 percent in North Carolina; 16 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Camden County is \$210,000. In comparison, the median housing value in North Carolina is \$140,000. Within Camden County, Camden has a substantially higher median housing value (\$213,000) than South Mills (\$126,000).

According to the National Housing Preservation Database, Camden County has 7 affordable housing units. They are located in the Shiloh area of the county.

### Economic/Business Profile

According to the *Camden County 2035 Comprehensive Plan*, employment opportunities in the county are limited, with employment in the county representing only about half of the jobs needed to employ the local workforce. Although there are diverse industries offering employment<sup>12</sup>, more county residents travel to neighboring Pasquotank County to work than stay in Camden County. The jobs that do exist in the county are concentrated in Camden, where the county offices and schools are located, and in South Mills near the NC 343 and US 17 intersection.<sup>13</sup>

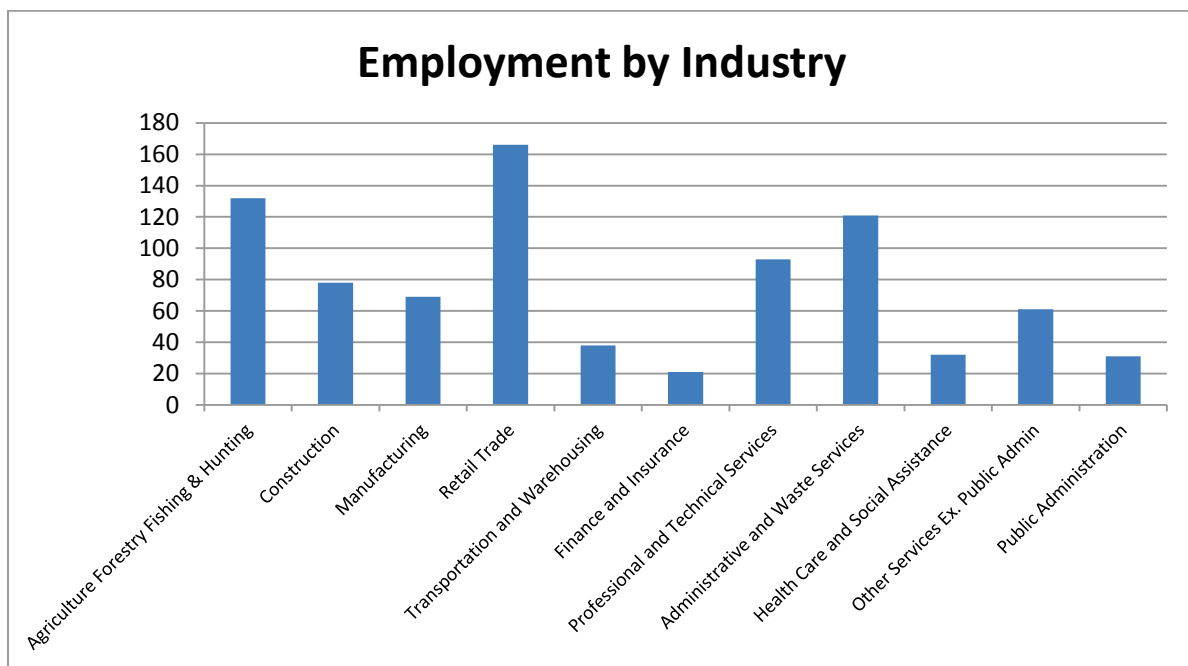


Figure 7. Employment by Industry

### 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 Camden County is 4,636.<sup>14</sup>

12 Source: AccessNC – North Carolina Department of Commerce, April 2017:  
<http://accessnc.nccommerce.com/DemoGraphicsReports/pdfs/countyProfile/NC/37029.pdf>

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

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

The civilian unemployment rate in Camden County is 5.3 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.<sup>14</sup>

## Major Employers

The top ten employers in Camden County<sup>15</sup> range from education and health service, public administration, professional and business services to natural resources and mining, construction, and manufacturing, and are listed in order of total employees.

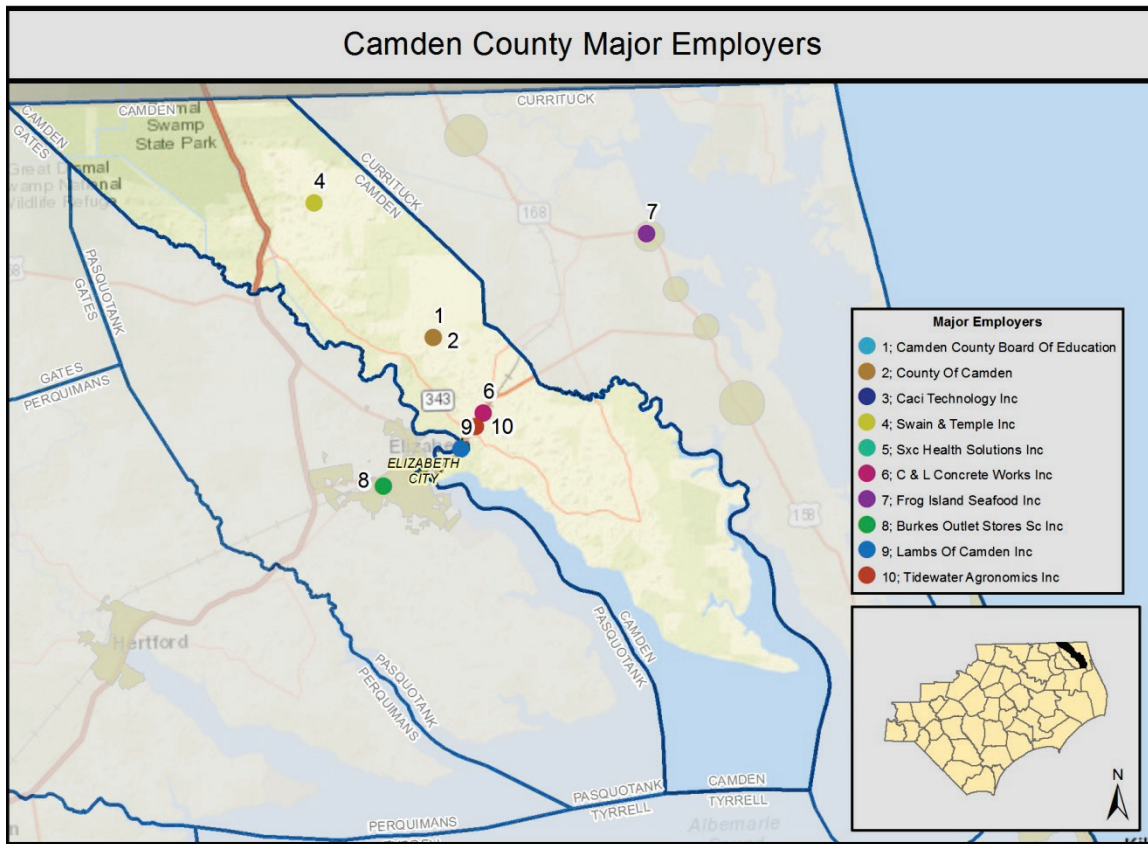


Figure 8. Major Employers by Number of Employees

## Economic Development<sup>16</sup>

Camden County's economy draws from the Hampton Roads region of Virginia (Chesapeake, Norfolk, Virginia Beach), and the growth of the Hampton Roads metropolitan area has had an increasing impact on Camden County as a rural bedroom community and provider of goods and services to the metro area.

Economic development efforts have focused on creating synergy around the northern portion of the county to take advantage of proximity to the Hampton Roads area and connectivity and accessibility provided by US 17. These developments have been strategically designed to maximize the use of existing infrastructure, to offer new housing choices and commercial shopping opportunities, and will provide more recreational opportunities in the form of trails and park spaces for future residents.

Camden County has invested in site planning and infrastructure improvements to establish the Eco Industrial Park on US 17 in the northern end of the county for new industrial and business park development. Other economic development opportunities include development of core village areas, bringing more retail and visitor

<sup>15</sup> Source: NC Department of Commerce

<sup>16</sup> Sources: Camden County Economic Development; Camden County 2035 Comprehensive Plan



services to South Mills and Camden, and capitalizing on natural resources amenities and recreational opportunities in the county.

### Infrastructure Profile

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

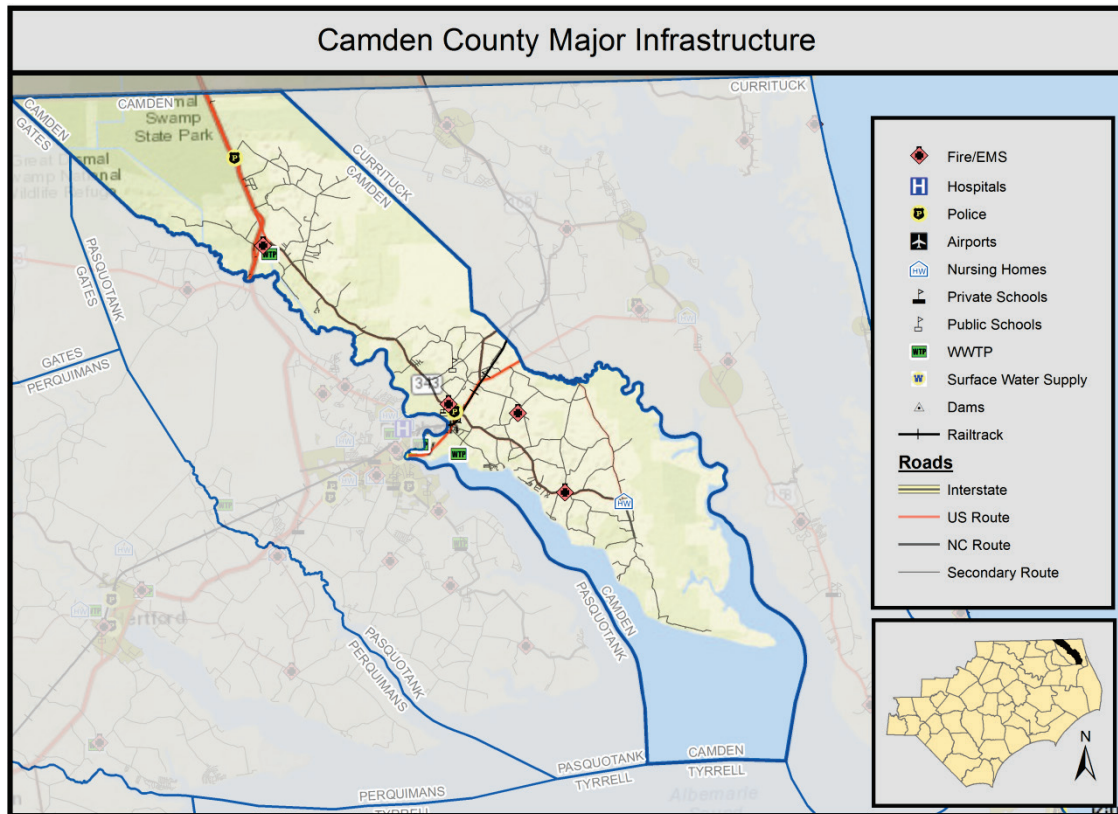


Figure 9. Camden County Major Infrastructure

### Transportation

Camden County is connected to the region by US 17 and US 158. US 158 is a major east-west highway that cuts through the center of the county connecting Pasquotank and Currituck Counties. It provides access to Elizabeth City across the Camden Causeway to the west and to the Outer Banks to the east. US 17 is a four-lane divided, north-south highway connecting the northern end of Camden County to the Hampton Roads metropolitan area. NC 343 provides north-south access through the length of the county, connecting US 158 near Camden to US 17 near South Mills.

### Health

The nearest medical facilities to Camden County are located in Elizabeth City to the west or in Chesapeake, Virginia, to the north.



## Education<sup>17</sup>

Camden County Public Schools administers five schools in Camden County: Grandy Primary, Camden Intermediate, Camden Middle, Camden High, and Camden Early College High School. All of the schools are located in the Camden community in the central portion of the county.

## Water

Potable water in Camden County is provided by two public systems: South Mills Water Association (SMWA) and the South Camden Water and Sewer District (SCWSD). Approximately two-thirds of county residents are on county water; however, some residents have wells.

The county-owned SCWSD also provides sewer service to the Camden area with more than 1,800 connections. SCWSD operates a reverse osmosis plant and maintains two elevated water tanks (250,000 and 300,000 gallons).

The South Mills Water Association is an independent entity that supplies water to the South Mills area in Camden County, as well as a portion of Pasquotank County. The South Mills Water Association operates a water treatment plant and has three elevated tanks; one 100,000 gallon servicing the South Mills Township, one servicing Pasquotank County, and the third providing redundancy and pressure improvements in the South Mills area to the northern portion of the County. Water used by this system is ground water that comes from nineteen wells. There is an emergency hook-up to Pasquotank County and to SCWSD for more ground water, if ever needed.<sup>18</sup>

## Power

The southern half of Camden County is within the service area of Dominion NC Power, an operating unit of Dominion Resources. The northern half of the county is served by Albemarle Electric Membership Corporation, a rural cooperative.

The Hale's Lake Wind Farm project proposes to build 188 large wind turbines on 20,000 acres of air space above open spaces and farmland in northeastern Camden County. These turbines would generate renewable energy that can be sold back to utilities in North Carolina.<sup>19</sup>

## Environmental Profile

The majority of land in Camden County is either in a natural state, used for agricultural purposes, or as low-density single family development on lots that are one acre or greater. Development potential is limited by the presence of wetlands, floodplains, and other areas of environmental concern. Water resources, natural areas, managed areas, biodiversity, wildlife habitat, and recreation are summarized for Camden County in the sections that follow.

## Water Resources

Camden County is bordered on the east by the North River, Northwest River, and Indiantown Creek and on the west by the Pasquotank River. Wetlands comprise more than 60 percent of Camden County's land area. Northern Camden County is occupied by the Great Dismal Swamp. The Great Dismal Swamp canal parallels US 17 between the Virginia state line and the Pasquotank River south of South Mills. Joyce Creek is a large creek

<sup>17</sup> Sources: Camden County Public Schools

<sup>18</sup> Sources: NC Division of Water Resources, Local Water Supply Plans and Camden County 2035 Comprehensive Plan

<sup>19</sup> Source: US Department of Energy, US Energy Mapping System; North Carolina Utilities Commission

east of South Mills. The southernmost end of the county borders the Albemarle Sound. Other manmade canals are located throughout the county to drain agricultural lands.<sup>20</sup>

### **Natural and Managed Areas**

More than 39,000 acres of natural heritage areas lie within Camden County, more than 26 percent of the total land area of the county. Portions of the Great Dismal Swamp National Wildlife Refuge and the Great Dismal Swamp State Park are located in Camden County and are designated as protected lands and natural heritage areas. The North River Gameland, the Dismal Swamp Natural Area, Shipyard Landing Natural Area, Whitehall Shores Hardwood Forest, Broad Creek Marshes, and the North River Cypress Forest are also designated protected or natural heritage areas in Camden County.<sup>20</sup>

Other managed areas including NC Clean Water Management Trust Fund easements, North Carolina Coastal Land Trust properties, and North Carolina Department of Transportation (NCDOT) mitigation sites are scattered throughout the county.

### **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 in the Dismal Swamp and North River Game Land. These areas rank between a 7 and 10, with 10 being the highest possible score. Other areas of the county rank 2 to 4 and 5 to 6.<sup>20</sup>

### **Parks and Recreation**

Key recreational offerings provided in Camden County include:<sup>21</sup>

- Camden Community Park
- Treasure Point 4-H Park
- Old Trap Community Center
- Camden Senior Center (managed by Camden County)
- Great Dismal Swamp National Wildlife Refuge and Visitor Center
- Great Dismal Swamp State Park and Trail
- Proximity to Intracoastal Waterway
- North River Game Land
- Canal and water access at Sawyers Creek and Shiloh Landing

Although the lands are state owned, the Dismal Swamp Canal Welcome Center is operated by the county. There are 6 miles of Dismal Swamp Biking and Hiking Trail heading south from the Welcome Center to South Mills, with additional trails planned from the Welcome Center to the Virginia line (about 3 miles).

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<sup>20</sup> Source: NC Natural Heritage Program

<sup>21</sup> Sources: Camden County Parks and Recreation Department; Dismal Swamp Canal Welcome Center

## **Administrative Profile**

The administrative capabilities of Camden County are discussed in detail in Section 6 of the Albemarle Regional Hazard Mitigation Plan. The assessment evaluates the capabilities of the County 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.

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. Camden County has emergency management, 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. In addition, the County recently joined the National Flood Insurance Program (NFIP) Community Rating System as a Class 7 participant.



An aerial photograph showing a residential neighborhood severely impacted by flooding. The water is a murky, brownish-yellow color, submerging large areas of the landscape. Numerous houses with grey and blue roofs are visible, some partially submerged. A network of roads crisscrosses the area, with some sections completely underwater. Dense green trees are scattered throughout, many of which are isolated in the floodwater. The overall scene depicts significant storm damage and inundation.

# **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 Camden County is highlighted graphically in the figure below.

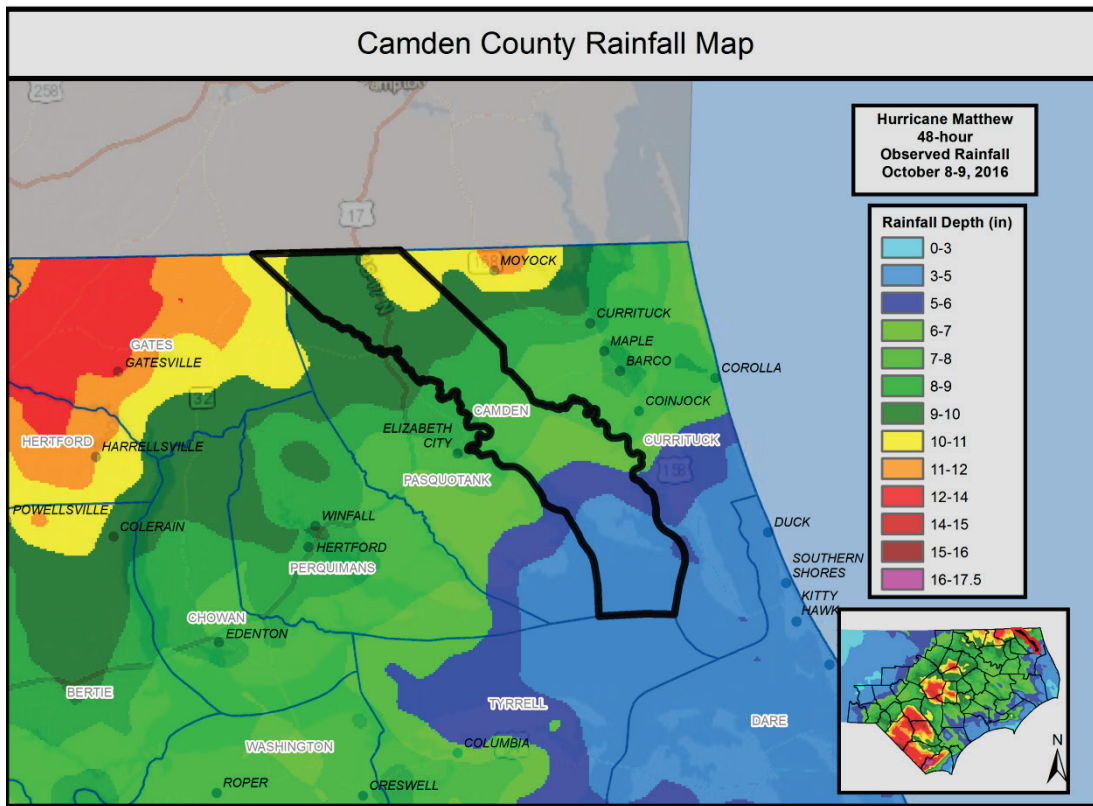


Figure 10. 48-hour Observed Rainfall Depth (October 8-9, 2016)

#### Riverine Flooding Summary

USGS documented stream gage data in the report “Preliminary Peak Stage and Streamflow Data at Selected Stream gaging Stations in North Carolina and South Carolina for Flooding Following Hurricane Matthew, October 2016”. Stream gage data from the USGS report for Camden County and nearby gages is summarized in Table 3.

USGS Gage	County	River Name and Location	Drainage Area (sq mi)	Peak Matthew Elevation (ft)	Previous Record (ft)
0204382800	Camden	Pasquotank River near South Mills, NC	64.0	11.39	9.85

Table 3. Camden County USGS Stream gage Data

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

## Housing

According to Individual Assistance claims, there were 200 impacted houses in Camden County as a result of Hurricane Matthew. In addition, there have been 128 claims filed through the National Flood Insurance Program (NFIP). 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.

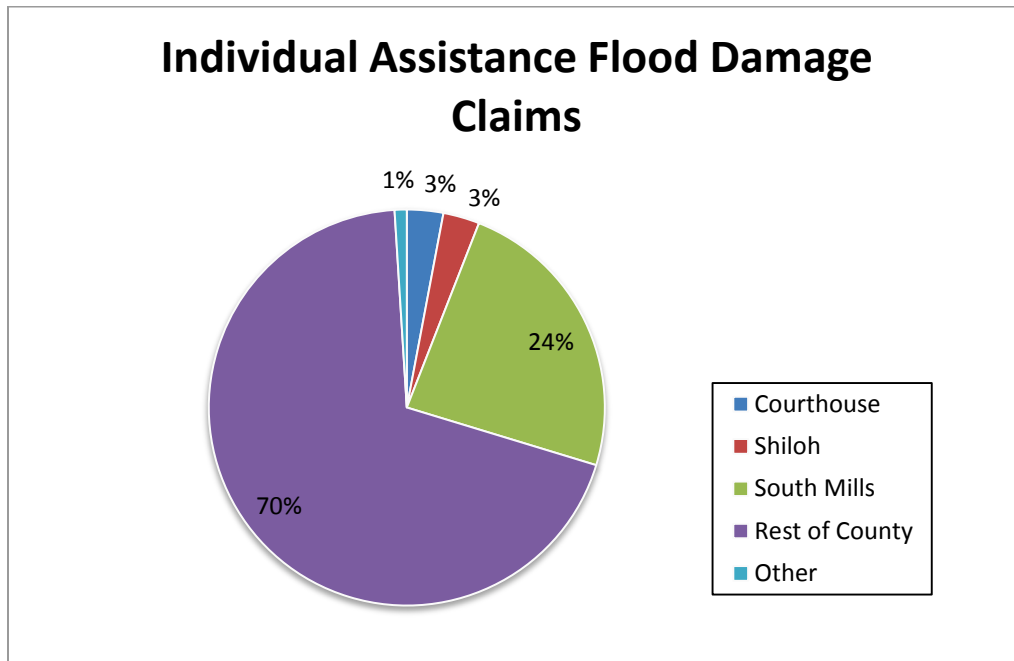


Figure 11: IA Flood Damage Claims by Area

More than half of the impacted homes (approximately 120 Individual Assistance claims and 50 NFIP claims) are located in the South Mills community. Many of these homes are older and do not meet current building standards. East of South Mills, impacts are concentrated around Joyce Creek along Old Swamp Road, Bunker Hill Road, Muddy Road, Country Meadows Drive, Stiles Lane, and Carolina Road. In the South Mills area west of NC 343, homes along Elliott Drive, McBride Street, Main Street, and Horseshoe Road were impacted by flooding from the Dismal Swamp Canal and Pasquotank River. In addition, access to several residential areas was cut off for several days due to roads being inundated.

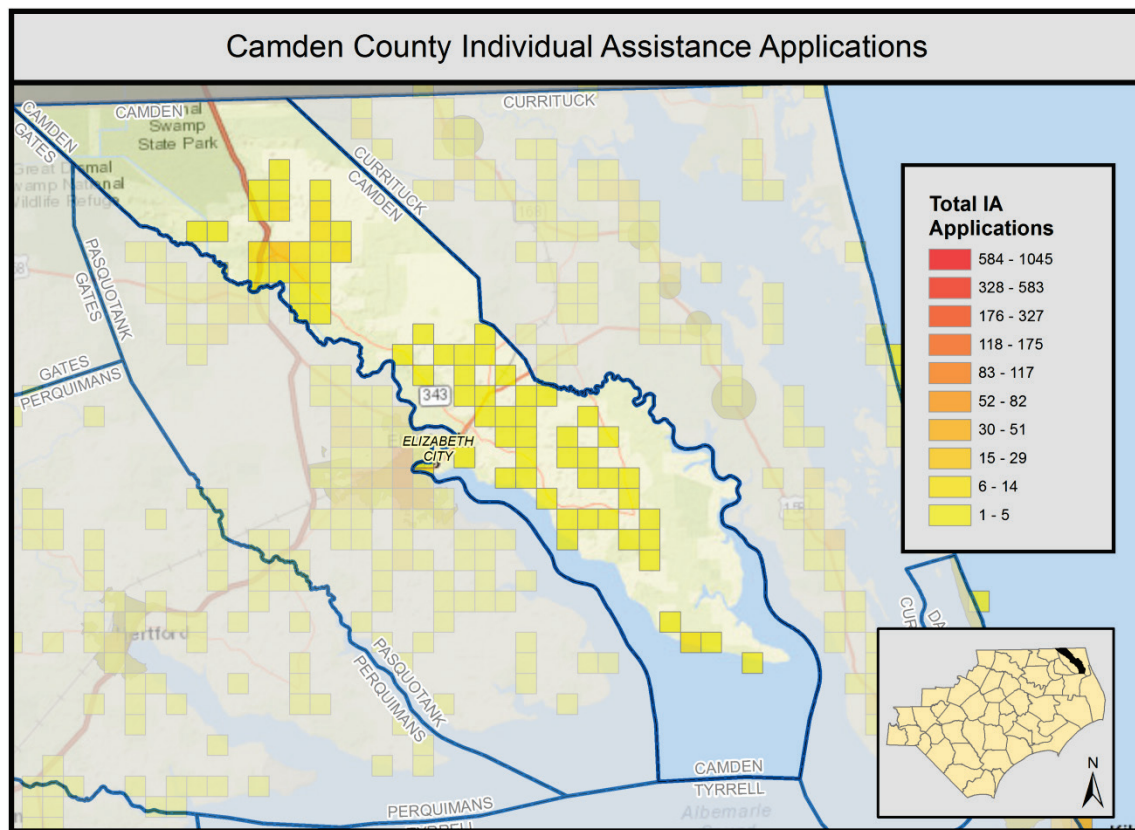


Figure 12. Camden County IA Applications by Area

Housing was impacted at other areas throughout the county as well. The bullets below summarize some of the other impacts to housing that were identified by local officials from the event.

- East of US 17 in the Wharf's Landing subdivision five homes were impacted by overflow from the Dismal Swamp.
- Approximately 15 homes in the Sanders Crossing subdivision north of South Mills were impacted.
- Approximately 20 homes were impacted by flooding along Sawyers Creek, including 11 homes on Lambs Road in the Camden community.
- Seven homes were affected in the Mill Dam Creek watershed near the township of Courthouse.
- Six homes were impacted in the Areneuse Creek area north of the Shiloh community.
- Eight homes in the Shiloh community along Milltown Road and Wickham Road were affected.
- 18 homes in the southern tip of the county along Texas Road, Edgewater Drive, and Sailboat Road sustained damage.
- Other roads with multiple homes affected include:
  - North River Road
  - Pinch Gut Road
  - Trotman Road
  - Ivy Neck Road

- Sandy Hook Road
- Pond Road

County officials noted that they are preparing seven applications for FEMA buyout. Three of these are on Stiles Lane in the Joyce Creek watershed.

### Economics / Business / Jobs

Although there were some impacts to the economy in Camden County from Hurricane Matthew these were generally minor compared to some of the other impacts the county experienced. The bullets below summarize some of the impacts to the economy/businesses/jobs that were identified from the event.

- **Downtown Areas Impacted:** Downtown South Mills contains several structures, including both commercial and residential, located adjacent to the Great Dismal Swamp and in the flood zone. Commercial parking lots flooded during Hurricane Matthew. Businesses, including the post office, a small grocery store, gas station, and the ABC store, experienced some flooding and were closed for a period of days following the event. No businesses were permanently impacted and all have reopened.
- **Small Business Loans:** Approximately 35 applications have been submitted through the US Small Business Administration (SBA) Disaster Assistance loan program. At least 20 of these represent commercial fisherman/crabbers that operate from the southern end of the county. Others are in South Mills and scattered throughout the county.
- **Agricultural Impacts:** County officials estimate that approximately 3,000 acres of farmland were flooded in the northwestern portion of the county. They noted that much of the soybean crop was a total loss.

### Infrastructure

There have been no Public Assistance claims in Camden 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. The bullets below summarize some of the impacts to infrastructure that were identified by local officials from the event.

- **Road/Bridge Flooding:** Road and bridge overtopping are common occurrences in Camden County as a result of low elevations and general lack of topography. A number of different locations were impacted during Hurricane Matthew. Many of these locations have been historical hotspots in the county and are affected even during rainfall events that are not as extreme as hurricane/tropical storm events. For example:
  - As mentioned above, there was substantial flooding in the Joyce Creek watershed, and several roads in this area were inundated for multiple days, including Old Swamp Road, Muddy Road, Carolina Road, Bunker Hill Road, Stiles Road. County officials reported that the National Guard was called in to provide food to residents in this area whose access was cut off.
  - In South Mills, Main Street and Horseshoe Road were flooded.
  - North River Road was cut off for 3-4 days.
  - Flooding at the southern end of the county resulted in Texas Road being severed, with access to Camden Point being cut off.



- Although it did not flood during this event, the Camden Causeway (US 158) has historically flooded during storm events, cutting off access between Camden and Pasquotank counties and eliminating access to emergency medical services, employment centers, and other services in Elizabeth City. The detour route is more than 30 miles long and is often impacted by flooding as well.

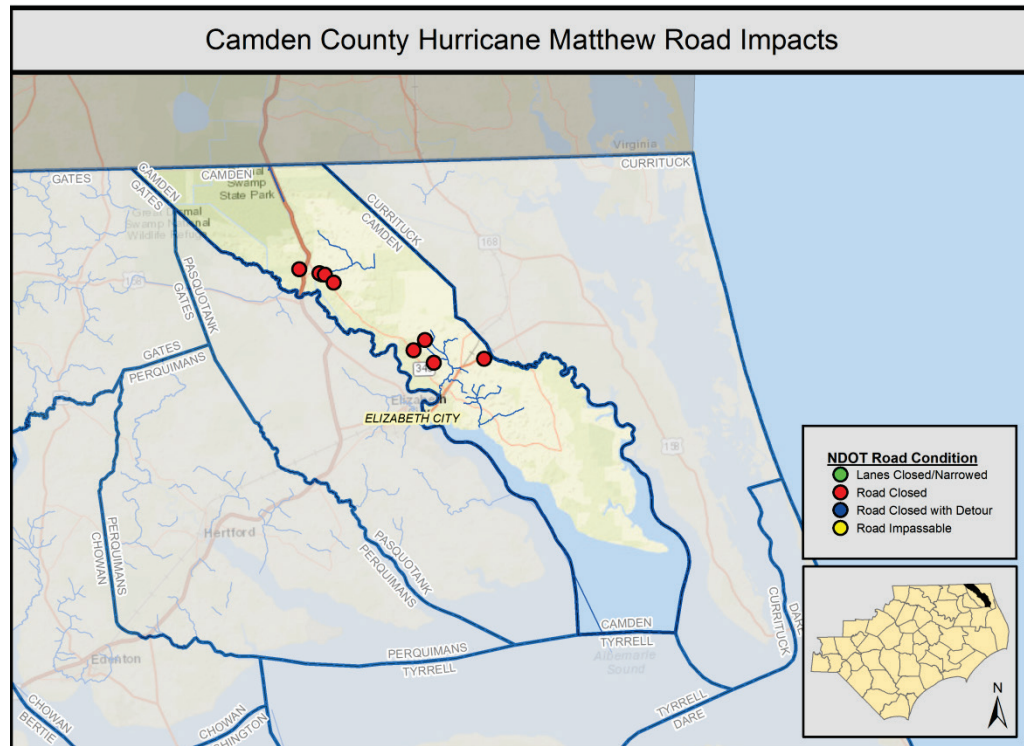


Figure 13. Impacted NCDOT Structures in Camden County

- **Water/Wastewater Infrastructure:** Water and wastewater infrastructure is critical to maintaining health and well-being of the public in the wake of a storm event. Often this infrastructure is threatened due to the necessity of placing it near water bodies, which naturally causes the risk to flooding. No county-owned facilities were impacted; however, there were impacts to private water/wastewater facilities:
  - South Mills Water Association sustained damage at its water treatment plant and is seeking FEMA grant funding to complete repairs.
  - Power loss at the sanitary sewer pump station at River Bridge Apartments, an apartment complex with more than 80 units, resulted in loss of wastewater service to apartment residents.

## Ecosystems / Environment

As noted in Section 2, wetlands comprise more than 60 percent of the County's land area, and more than 26 percent of the County lies within a managed or natural area, including the Great Dismal Swamp National Wildlife Refuge, Great Dismal Swamp State Park, and North River Gameland. Overall, environmental impacts in Camden County as a result of Hurricane Matthew were substantial, resulting from heavy rains, stormwater runoff, downed trees, and other debris. The following impacts resulted from the event:

- Camden County is pursuing FEMA funding for a walking trail that was washed out during the storm.
- The Great Dismal Swamp Canal remains closed to boaters as the US Army Corps of Engineers works to remove debris and repair damage caused by the storm.
- Debris from downed trees and other natural remains has blocked the natural flow of many canals and streams throughout the county, which contributes to flooding. Major outfalls that need to be cleaned of debris include: Joyce Creek, Mill Run Swamp, Potohonk Creel, Areneuse Creek, Goose Creek, Mansfield Ditch, Garrington Island, and Indian Town Creek.
- Camping platforms along a paddle trail were inaccessible due to downed trees.



An aerial photograph showing a residential neighborhood partially submerged in floodwater. The water is a murky brown color, surrounding several houses and large green trees. The houses have grey roofs and are situated on elevated lots. The trees are dense and green, providing a stark contrast to the brown water. 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 Camden 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	8
Economic Development	2
Infrastructure	4
Environment	6
<b>Grand Total</b>	<b>20</b>

**Table 4. Camden County Summary of Projects by Pillar**

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

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 1: Mitigation for Repetitive Loss Properties (Acquisitions)	High	1
Housing	Housing Action 3: Mitigation for Repetitive Loss Properties (Mitigation Reconstruction)	High	2
Housing	Housing Action 2: Mitigation for Repetitive Loss Properties (Elevations)	High	3
Infrastructure	Infrastructure Action 2: US 17 Culvert Flapper Valves	High	4
Environment	Environmental Action 3: Reestablish Hydrologic Connection to Perquimans River from Great Dismal Swamp	High	5
Environment	Environmental Action 4: Funding for Stormwater Management/Debris Cleanup	High	6
Environment	Environmental Action 5: Roadside Ditch Maintenance	High	7
Environment	Environmental Action 1: US 158 Drainage Study (Phase I)	High	8
Environment	Environmental Action 2: US 158 Drainage Study (Phase II)	High	9

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 7: River Bridge Apartments On-site Generator	Medium	10
Infrastructure	Infrastructure Action 4: Roadway Delineators	Medium	11
Infrastructure	Infrastructure Action 3: Portable Generators for Critical Facilities	Medium	12
Infrastructure	Infrastructure Action 1: Camden Causeway/US 158 Feasibility Study	Medium	13
Housing	Housing Action 8: FIRM Education & Outreach	Medium	14
Economic Development	Economic Development Action 1: Business Floodproofing Assistance	Low	15
Housing	Housing Action 5: Diversify Housing Stock (Phase I)	Low	16
Housing	Housing Action 6: Diversify Housing Stock (Phase II)	Low	17
Environment	Environmental Action 6: Mosquito Abatement Program	Low	18
Housing	Housing Action 4: Prepare Management Plan for County-owned Mitigation Properties	Low	19
Economic Development	Economic Development Action 2: Develop Camden County Tourism Plan	Low	20

**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

Although Camden County as a whole suffered only moderate impacts with respect to housing from Hurricane Matthew, as noted in Section III several areas of homes were impacted by flooding and roadway flooding introduced access issues for a number of homes and residents. As a result, in development of Camden County's housing strategies, the planning team put their focus into the redevelopment of these specific areas, as well as in longer-term projects to increase the county's resiliency.

### High Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 1: Mitigation for Repetitive Loss Properties (Acquisitions)	High	1
Housing	Housing Action 3: Mitigation for Repetitive Loss Properties (Mitigation Reconstruction)	High	2
Housing	Housing Action 2: Mitigation for Repetitive Loss Properties (Elevations)	High	3

**Table 6. Camden High Priority Housing Summary**

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

- **Mitigation for Repetitive Loss Properties:** Several applications have been or are being submitted to FEMA for mitigation for repetitive loss properties following Hurricane Matthew:
  - **Acquisition of Damaged Homes:** This project includes funding for ten applications for acquisition of repetitive loss properties.

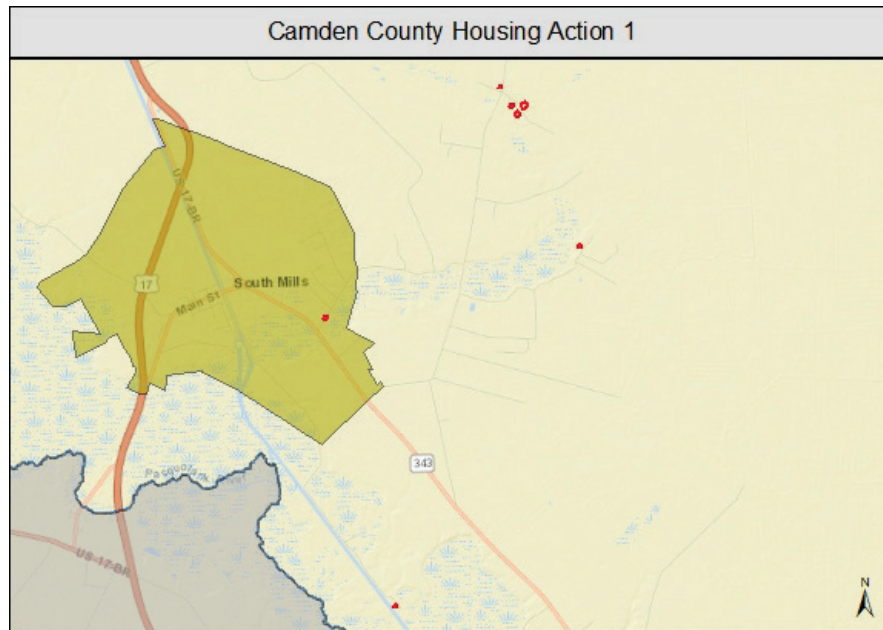


Figure 14. Housing Action 1: Mitigation for Repetitive Loss Properties (Acquisitions)

## Housing Action 1: Mitigation for Repetitive Loss Properties (Acquisitions)

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 1

**Project Timeframe:** 2-3 years

**Location:** Various

**Project Summary:** Mitigation for Repetitive Loss Properties (Acquisitions): This project includes funding for ten applications for acquisition of repetitive loss properties.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Ten applications for buyout have been submitted by repetitive loss properties in Camden County following Hurricane Matthew. This project would allow for those buyouts to be completed.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region (REG4: Pursue mitigation of repetitive loss properties throughout the Region) and Camden County (CAM12: As funding allows reduce flood-related damage to repetitive flood loss properties and structures through the buyout program).	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	Agree
For how long will this solution be effective?	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)?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Mitigation Reconstruction:** This project includes funding for three applications to demolish and reconstruct repetitive loss homes.

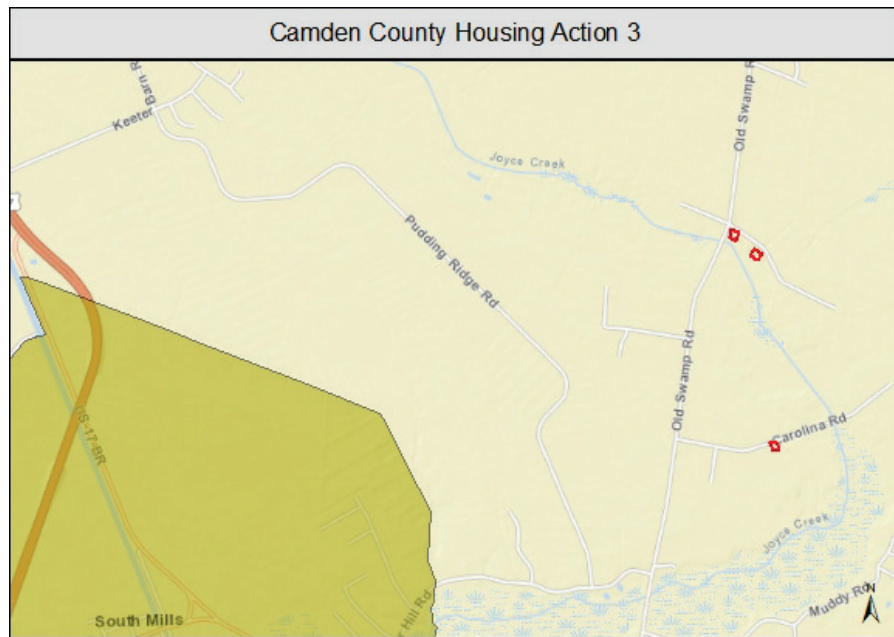


Figure 15. Housing Action 3: Mitigation for Repetitive Loss Properties (Mitigation Reconstruction)



## Housing Action 3: Mitigation for Repetitive Loss Properties (Mitigation Reconstruction)

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 2

**Project Timeframe:** 18 months

**Location:** Various

**Project Summary:** Mitigation for Repetitive Loss Properties (Mitigation Reconstruction): This project includes funding for three applications to demolish and reconstruct repetitive loss homes.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Three applications for demolition and reconstruction have been submitted by repetitive loss properties in Camden County following Hurricane Matthew. This project would allow for those mitigation reconstructions to be completed.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region (REG4: Pursue mitigation of repetitive loss properties throughout the Region) and Camden County (CAM12: As funding allows reduce flood-related damage to repetitive flood loss properties).	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 contractors would likely be hired to complete the construction projects.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>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?	Unknown	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$251K - \$500K	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

- **Elevation of Damaged Homes:** This project includes funding for three applications to elevate repetitive loss homes.

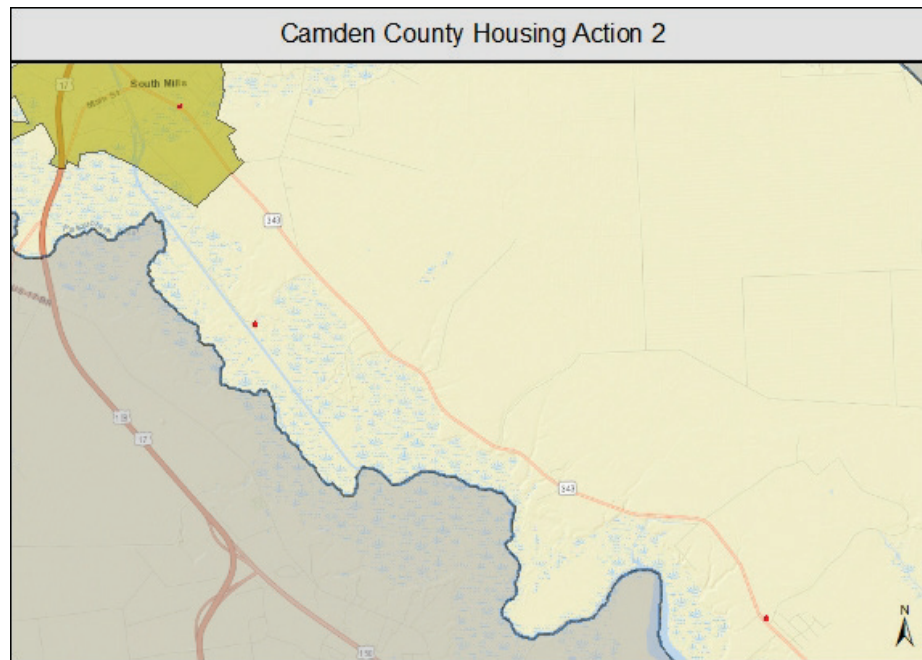


Figure 16. Housing Action 2: Mitigation for Repetitive Loss Properties (Elevations)

## Housing Action 2: Mitigation for Repetitive Loss Properties (Elevations)

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 3

**Project Timeframe:** 18 months

**Location:** South Mills

**Project Summary:** Mitigation for Repetitive Loss Properties (Elevations): This project includes funding for three applications to elevate repetitive loss homes.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Three applications for elevation have been submitted by repetitive loss properties in Camden County following Hurricane Matthew. This project would allow for those elevations to be completed.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region (REG4: Pursue mitigation of repetitive loss properties throughout the Region) and Camden County (CAM12: As funding allows reduce flood-related damage to repetitive flood loss properties and structures through the buyout program).	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 contractors would likely be hired to complete elevation projects.	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)?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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

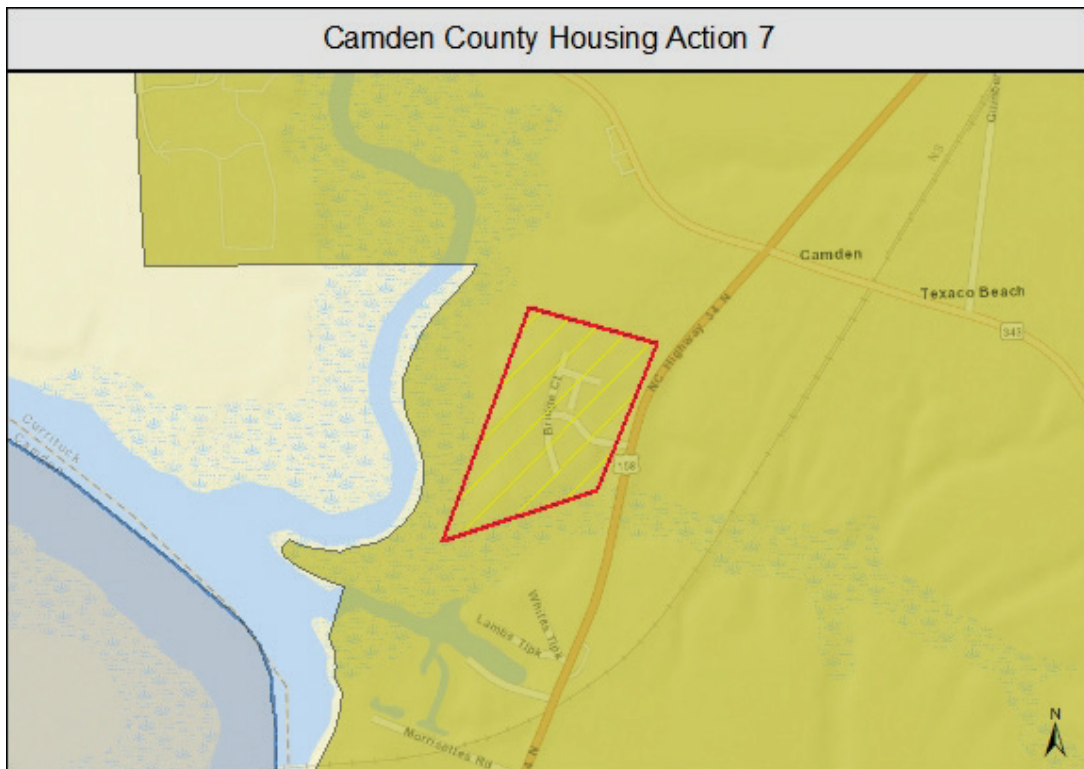
## Medium Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 7: River Bridge Apartments On-site Generator	Medium	10
Housing	Housing Action 8: FIRM Education & Outreach	Medium	14

**Table 7. Camden Medium Priority Housing Summary**

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

- River Bridge Apartments Backup Generator:** River Bridge Apartments has 80+ units and is Camden County's only multi-family apartment complex. The complex has an onsite pump station; however, there is no generator for backup power in the event electric service is disrupted, as it was for several days following Hurricane Matthew. This project is to acquire and install an onsite generator for River Bridge Apartments.



**Figure 17. Housing Action 7: River Bridge Apartments On-site Generator**

## Housing Action 7: River Bridge Apartments On-site Generator

**County:** Camden

**Priority Grouping:** Medium Priority

**Priority Ranking:** 10

**Project Timeframe:** 12 months

**Location:** Camden

**Project Summary:** River Bridge Apartments On-site Generator: River Bridge Apartments is Camden County's only multi-family apartment complex with 80+ units. The complex has an on-site pump station; however, there is no generator for back-up power in the event electric service is disrupted. This project is to acquire and install an on-site generator for River Bridge Apartments.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	As a result of Hurricane Matthew power service to River Bridge Apartments was disrupted for several days. The on-site pump station at the complex does not have a generator so water and wastewater service to the residents was also disrupted.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for Camden County (CAM15: Acquire generators or other forms of redundant power supply to ensure critical facilities and infrastructure remain operational where normal power supply is not available).	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree



- **Flood Insurance Rate Map (FIRM) Education & Outreach:** Draft FIRMs show substantial changes in flood zones, particularly in the center of the county. Approximately 75 properties previously within a flood zone are no longer included in a flood zone. This project is to develop property owner outreach materials to explain the changes between the previous and draft FIRMs to encourage property owners to maintain flood insurance.
- **This is a county-wide project, so no project area map has been included.**

## Housing Action 8: FIRM Education & Outreach

**County:** Camden

**Priority Grouping:** Medium Priority

**Priority Ranking:** 14

**Project Timeframe:** 12 months

**Location:** Countywide

**Project Summary:** FIRM Education & Outreach: Draft FIRMs show substantial changes in flood zones, particularly in the center of the county. Approximately 75 properties previously within a flood zone are no longer included in a flood zone. This project will develop property owner outreach materials to explain the changes between the previous and draft FIRMs to encourage property owners to maintain flood insurance.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Draft FIRMs show substantial changes in flood zones particularly in the center of the county. Approximately 75 properties previously within a flood zone are no longer included in a flood zone; however some of these areas experienced flooding during Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region (REG3: Implement a public outreach campaign to increase awareness about the natural and man-made hazards that can impact the region) and Camden County (CAM8: Minimize economic and property losses due to flooding through continued compliance in the NFIP).	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.	Education on flood map changes and hazard risks and encouraging residents to maintain flood insurance could result in fewer 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?	Medium to high confidence	N/A
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

## Low Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 5: Diversify Housing Stock (Phase I)	Low	16
Housing	Housing Action 6: Diversify Housing Stock (Phase II)	Low	17
Housing	Housing Action 4: Prepare Management Plan for County-owned Mitigation Properties	Low	19

**Table 8. Camden Low Priority Housing Summary**

These three projects represent the housing strategies that Camden County indicated are of a lower priority to address. Additional detail on the projects can be found below:

- Diversify the County’s Housing Stock:** Much of the population affected by flooding in Camden County has been lower income residents and homeowners with substandard housing. Currently, 85 percent of housing units in the county are single-family residential, and there are less than ten affordable housing units in the county. The need for more diversified housing in the county has been identified in the county’s comprehensive plan.
  - Phase I of this project would provide funding for the county to look at the need for some different housing options, particularly for relocations after buyouts, and to identify potential partnering options to develop housing.
  - Phase II would provide funding for the county to purchase property, partner with a developer, and subsidize construction of housing units.
- This is a county-wide project, so no project area map has been included.**

## Housing Action 5: Diversify Housing Stock (Phase I)

**County:** Camden

**Priority Grouping:** Low Priority

**Priority Ranking:** 16

**Project Timeframe:** 1-2 years

**Location:** Countywide

**Project Summary:** Diversity Housing Stock Phase I: funding for the county to look at the need for some different housing options, particularly for buyout relocatees, and to identify potential partnering options to develop housing.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Many homes damaged by Hurricane Matthew are older and do not meet current building standards; however residents do not want to apply for buyouts because they can not afford to relocate within Camden County due to the lack of housing options.	N/A
Consistent with existing plans (describe points of intersection/departure)	Camden County's 2035 Comprehensive Plan includes an objective of providing new housing choices for current and future residents.	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 additional potentially affordable housing options in the county will allow lower income and/or older residents to continue to live within the county and outside of floodprone areas.	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)?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree



## Housing Action 6: Diversify Housing Stock (Phase II)

**County:** Camden

**Priority Grouping:** Low Priority

**Priority Ranking:** 17

**Project Timeframe:** 2-3 years

**Location:** Countywide

**Project Summary:** Diversify Housing Stock Phase II: funding to purchase property, partner with a developer, and subsidize construction of housing options.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Many homes damaged by Hurricane Matthew are older and do not meet current building standards; however residents do not want to apply for buyouts because they cannot afford to relocate within Camden County due to the lack of housing options.	N/A
Consistent with existing plans (describe points of intersection/departure)	Camden County's 2035 Comprehensive Plan includes an objective of providing new housing choices for current and future residents.	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 additional potentially affordable housing options in the county will allow lower income and/or older residents to continue to live within the county and outside of floodprone areas.	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)?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Management Plan for County-owned Mitigation Properties:** Camden County is responsible for maintaining vacant properties acquired through the FEMA Hazard Mitigation Grant Program. The county currently maintains seven such properties, and applications have been submitted for ten additional buyouts. The county is seeking funding to complete a management plan to evaluate potential uses for these vacant properties, particularly to implement stormwater BMPs and further hazard mitigation for neighboring areas.
- **This is a county-wide project, so no project area map has been included.**

## Housing Action 4: Prepare Management Plan for County-owned Mitigation Properties

**County:** Camden

**Priority Grouping:** Low Priority

**Priority Ranking:** 19

**Project Timeframe:** 12 months

**Location:** Countywide

**Project Summary:** Camden County is responsible for maintaining vacant properties acquired through the FEMA Hazard Mitigation Grant Program. The county is seeking funding to complete a management plan for these vacant properties.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	After Hurricane Matthew there are ten applications for acquisition in Camden County. The county will be responsible for maintaining these properties once the buyout is complete in addition to seven properties the county currently maintains.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region and Camden County (CAM11: Seek/encourage the development and implementation of long-term cost-effective and environmentally sound mitigation projects).	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	The plan could identify hazard mitigation or best management practices to be implemented that could allow for increased flood storage potential, decreased stormwater runoff and reduced flooding to adjacent properties.	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

## Economic Development Strategies

Due to relatively minor Hurricane Matthew impacts to Camden County in terms of economic development, the planning team worked with local county officials to examine ways to increase resiliency for future storm events and encourage economic growth. Two economic development strategies were identified as low priority for the county.

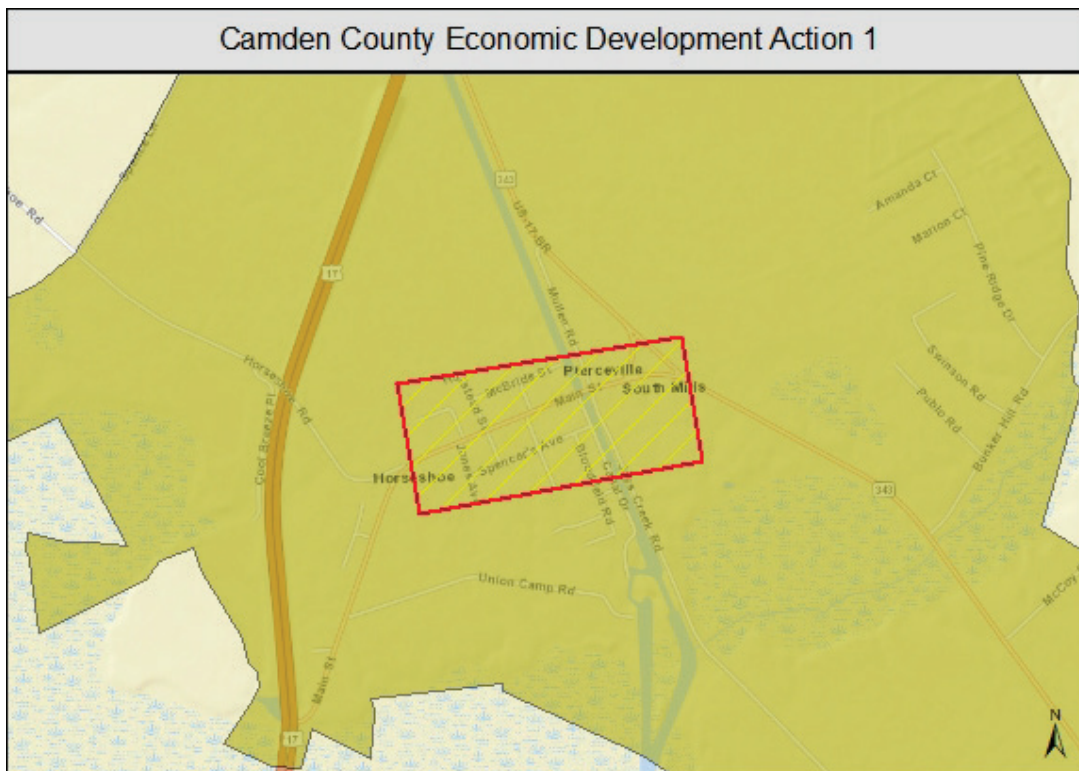
### Low Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Economic Development Action 1: Business Floodproofing Assistance	Low	15
Economic Development	Economic Development Action 2: Develop Camden County Tourism Plan	Low	20

**Table 9. Camden Low Priority Economic Development Summary**

These two projects represent the economic development strategies that Camden County indicated could support resiliency in the county. Additional detail on the projects can be found below:

- South Mills Business Floodproofing:** Numerous businesses in South Mills experienced flooding and were temporarily closed. FEMA P-936, Floodproofing Non-Residential Buildings (2013), provides guidance for determining the best options for floodproofing. This project is to provide funding to allow Camden County to provide financial assistance to businesses in South Mills wishing to implement floodproofing measures.



**Figure 18. Economic Development Action 1: Business Floodproofing Assistance**



## Economic Development Action 1: Business Floodproofing Assistance

**County:** Camden

**Priority Grouping:** Low Priority

**Priority Ranking:** 15

**Project Timeframe:** 1-2 years

**Location:** South Mills

**Project Summary:** Business Floodproofing Assistance: Numerous businesses in South Mills experienced flooding and were temporarily closed. FEMA P-936, Floodproofing Non-Residential Buildings (2013), provides guidance for determining the best options for floodproofing. This project is to provide funding to allow Camden County to provide financial assistance to businesses in South Mills wishing to implement floodproofing measures.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Businesses in South Mills were flooded by Hurricane Matthew and many were closed for several days following the event.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for Camden County (CAM21: Educate home and property owners about flood-proofing and wind-proofing measures).	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 proposed project would reduce potential impacts to businesses in the South Mills community from future flooding events.	Agree
For how long will this solution be effective?	Between 11 and 30 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?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Camden County Tourism Plan:** This project, aimed at economic development through ecotourism, will take advantage of the significant natural resources in Camden County.
- **This is a county-wide project, so no project area map has been included.**

## Economic Development Action 2: Develop Camden County Tourism Plan

**County:** Camden

**Priority Grouping:** Low Priority

**Priority Ranking:** 20

**Project Timeframe:** 1-2 years

**Location:** Countywide

**Project Summary:** Develop Camden County Tourism Plan

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The project contributes to Camden County's resiliency by providing the foundation for a new tourism economy to support the county.	N/A
Consistent with existing plans (describe points of intersection/departure)	Camden County's 2035 Comprehensive Plan includes a goal of expanding tourism and recreation so that Camden County will become a destination for outdoor and recreational enthusiasts and will offer recreational amenities and visitor services to support a new tourism economy.	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.	While Camden County has an abundance of natural resources it currently has very little in the way of services and facilities to offer potential tourists. The proposed project will support development of a new economic source that takes advantage of Camden County's natural resources.	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

## Infrastructure Strategies

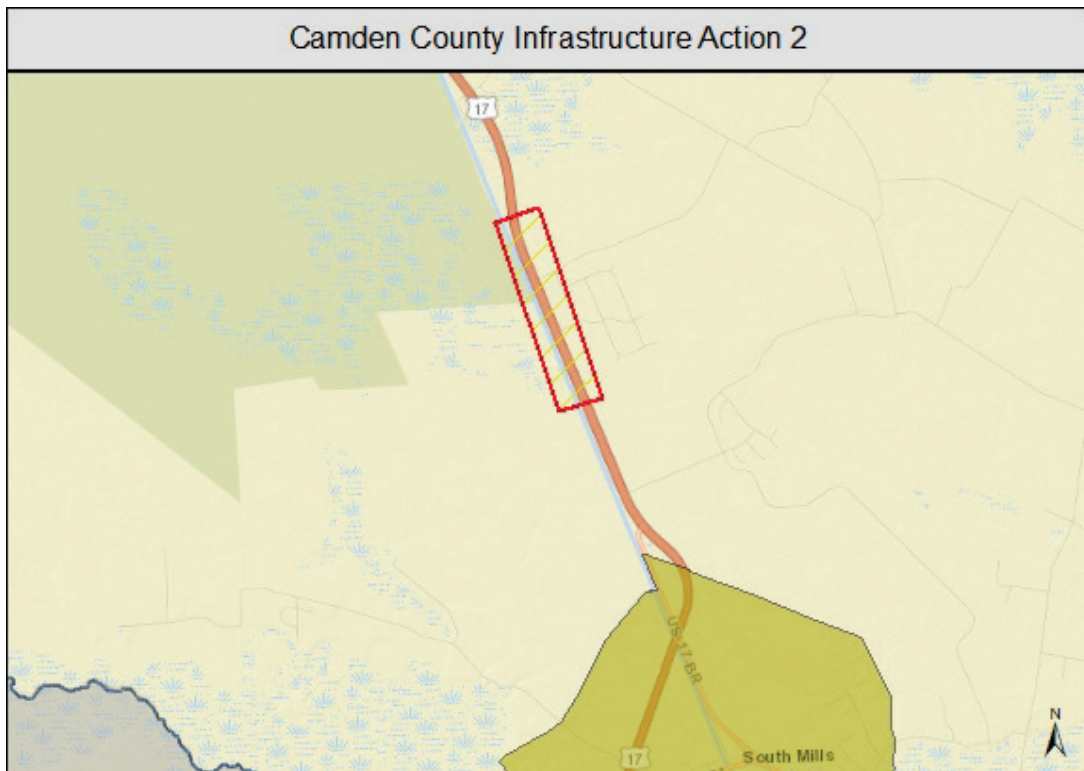
### High Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Action 2: US 17 Culvert Flapper Valves	High	4

**Table 10. Camden High Priority Infrastructure Summary**

Camden County officials identified one high priority infrastructure project:

- US 17 Culvert Flapper Valves:** During flood events, water flows through the culvert(s) from the Great Dismal Swamp to a residential area (Wharf's Landing) east of US 17. This project is to evaluate and install flapper valves on the existing culvert(s) to prevent backflow of floodwaters to residential area of 100+ homes east of US 17.



**Figure 19. Infrastructure Action 2: US 17 Culvert Flapper Valves**



## Infrastructure Action 2: US 17 Culvert Flapper Valves

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 4

**Project Timeframe:** 12 months

**Location:** South Mills

**Project Summary:** This project is to evaluate and install flapper valves on the existing culvert(s) to prevent backflow of floodwaters to residential area of 100+ homes east of US 17.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	During Hurricane Matthew water flowed through the culvert(s) from the Great Dismal Swamp to a residential area (Wharf's Landing) east of US 17 resulting in damage to several homes as well as surrounding farmland.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region (REG5: Identify and implement mitigation projects that are cost effective and will help reduce the effects of natural and man-made hazards) and Camden County (CAM11: Seek/encourage the development and implementation of long-term cost-effective and environmentally sound mitigation projects).	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 proposed project would result in reduced flooding and damage to residential areas east of US 17.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

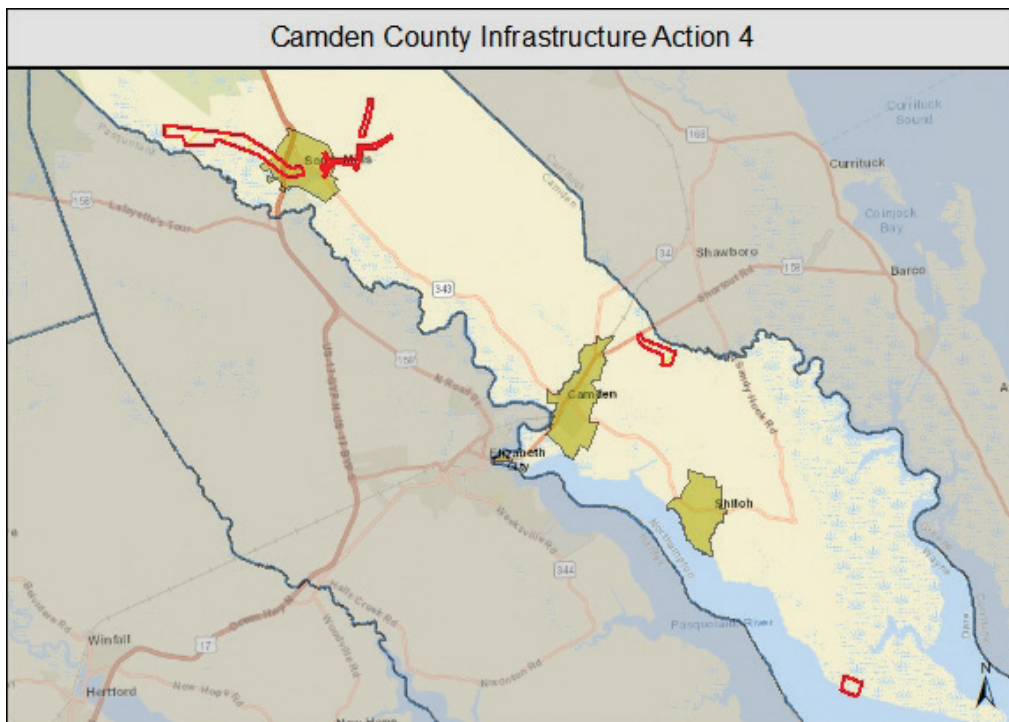
## Medium Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Action 4: Roadway Delineators	Medium	11
Infrastructure	Infrastructure Action 3: Portable Generators for Critical Facilities	Medium	12
Infrastructure	Infrastructure Action 1: Camden Causeway/US 158 Feasibility Study	Medium	13

**Table 11. Camden Low Priority Infrastructure Summary**

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

- Roadway Delineators:** During storm events it becomes difficult for drivers to see the edge of the pavement resulting in cars leaving the roadway. It also causes issues for emergency vehicles trying to serve flooded areas. This project is to reduce the risk to drivers by evaluating locations for installing roadway markers to increase visibility of pavement during flood events (e.g., Bunker Hill Road, Texas Road, etc.) and to purchase and install roadway delineators as determined.



**Figure 20. Infrastructure Action 4: Roadway Delineators**

## Infrastructure Action 4: Roadway Delineators

**County:** Camden

**Priority Grouping:** Medium Priority

**Priority Ranking:** 11

**Project Timeframe:** 12 months

**Location:** Countywide

**Project Summary:** This project is to evaluate locations for installing roadway markers to increase visibility of pavement during flood events and reduce risk to drivers (e.g., Bunker Hill Road), and to purchase and install roadway delineators as determined.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Floodwaters from Hurricane Matthew covered many roads in the county for several days after the storm making it difficult to determine the edge of pavement for drivers and emergency responders.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region (REG2: Maintain and/or improve existing transportation infrastructure throughout the Region to enhance response times and aid in evacuations) and Camden County (CAM66: Improve road visibility by adding reflector tape paint etc. on all major roads throughout the county).	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	Agree
For how long will this solution be effective?	Less than 10 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?	Low to moderate confidence	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	N/A	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$0- \$50K	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Portable Generators for Critical Facilities:** According to the Camden County Hazard Mitigation Plan, there are many critical facilities that do not have generators or backup power sources in the event of disruption in electric service during storm events. This project is to acquire up to three portable generators for use at critical facilities to support emergency operations and minimize disruptions in service to area residents.

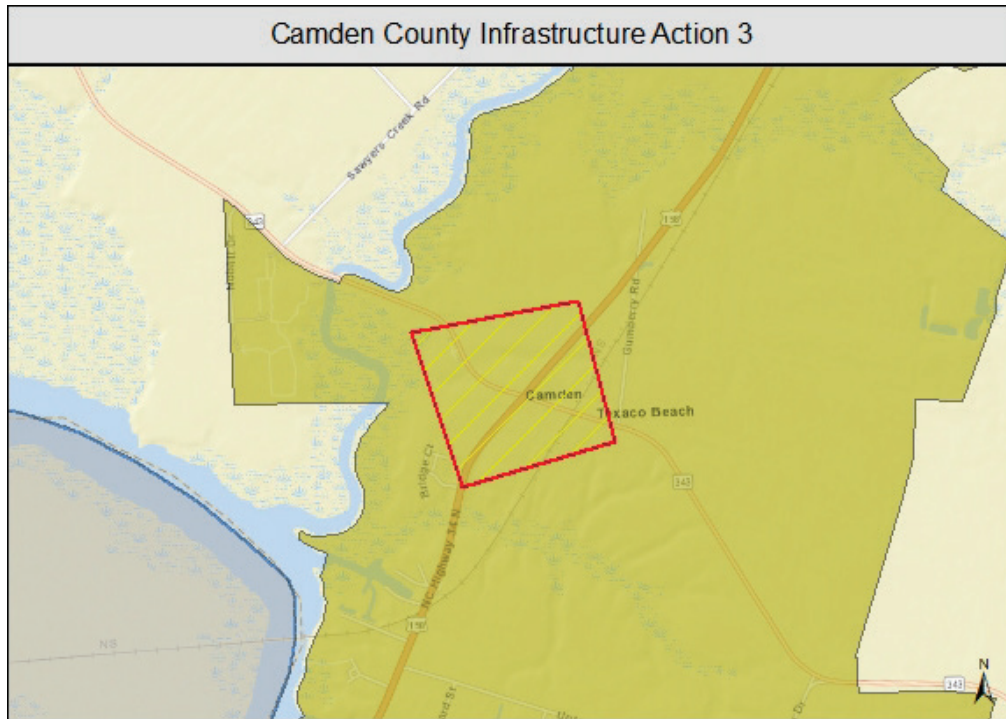


Figure 21. Infrastructure Action 3: Portable Generators for Critical Facilities



## Infrastructure Action 3: Portable Generators for Critical Facilities

**County:** Camden

**Priority Grouping:** Medium Priority

**Priority Ranking:** 12

**Project Timeframe:** 12 months

**Location:** Camden

**Project Summary:** Portable Generators for Critical Facilities: According to the Camden County Hazard Mitigation Plan, there are many critical facilities that do not have generators or back-up power sources in the event of disruption in electric service during storm events. This project is to acquire up to three portable generators for use at critical facilities to support emergency operations and minimize disruptions in service to area residents.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	As a result of Hurricane Matthew power service was disrupted for several days and many of Camden County's critical facilities do not have generators for backup power.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for Camden County (CAM15: Acquire generators or other forms of redundant power supply to ensure critical facilities and infrastructure remain operational where normal power supply is not available).	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>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?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	N/A	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- Camden Causeway/US 158 Feasibility Study:** Camden Causeway (US 158) is the major east-west route through Camden County and the primary connection to medical facilities in Elizabeth City. Camden Causeway can be closed during flood events, and the detour route to services in Elizabeth City is 30+ miles. This project is to provide funding for a feasibility study to improve or relocate US 158 to reduce the risk of this important connection being cut off during an emergency.

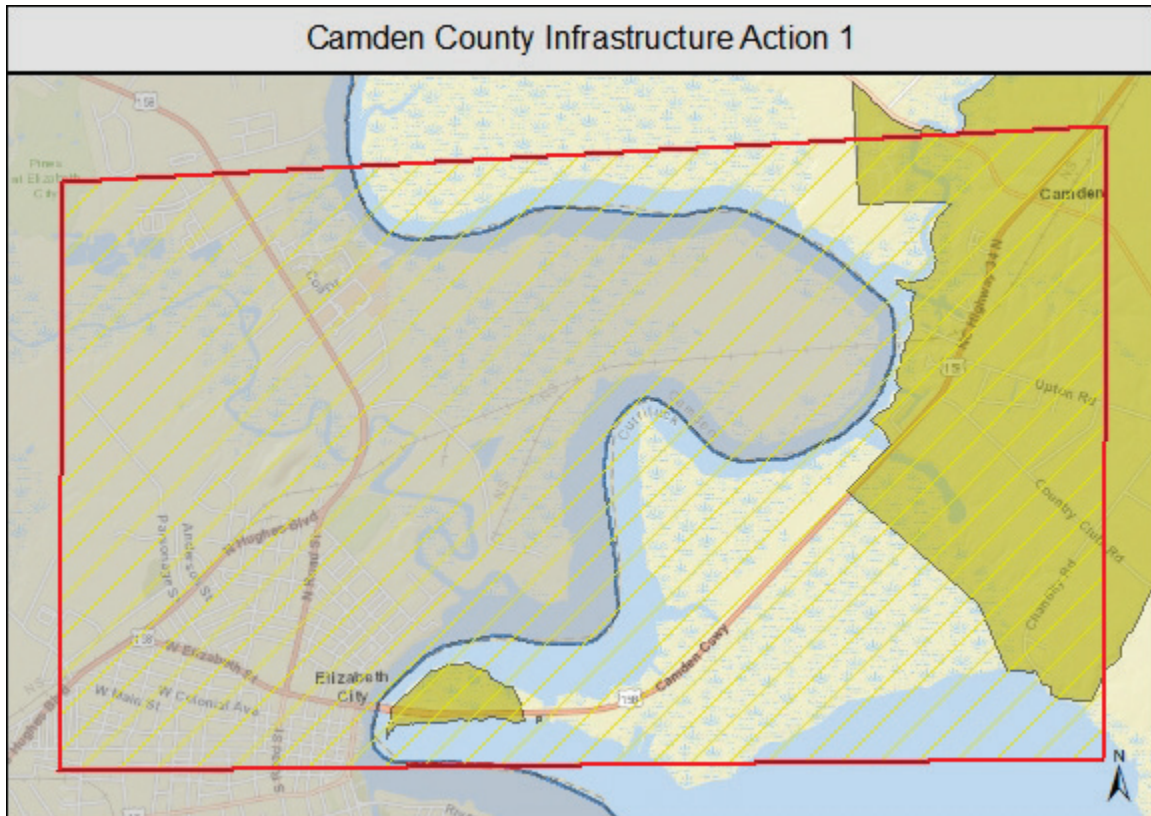


Figure 22. Infrastructure Action 1: Camden Causeway/US 158 Feasibility Study

## Infrastructure Action 1: Camden Causeway/US 158 Feasibility Study

**County:** Camden

**Priority Grouping:** Medium Priority

**Priority Ranking:** 13

**Project Timeframe:** 1-2 years

**Location:** Camden

**Project Summary:** This project is to provide funding for a feasibility study to improve or relocate US 158 to reduce the risk of this important connection being cut off during an emergency.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Camden Causeway (US 158) is the major east-west route through Camden County and the primary connection to medical facilities in Elizabeth City. Camden Causeway has been closed during flood events and the detour route to services in Elizabeth City is 30+ miles.	N/A
Consistent with existing plans (describe points of intersection/departure)	The proposed project is consistent with goals stated in the Albemarle Regional Hazard Mitigation Plan for the region (REG2: Maintain and/or improve existing transportation infrastructure throughout the Region to enhance response times and aid in evacuations) and Camden County (CAM52: Maintain evacuation routes and disseminate information to the public).	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 feasibility study would identify options and cost estimates for improvements to US 158/Camden Causeway that would reduce the risk of the route being flooded.	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)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	No direct 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?	\$101K - \$250K	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Regional	Agree

## Environmental, Ecosystem and Agricultural Strategies

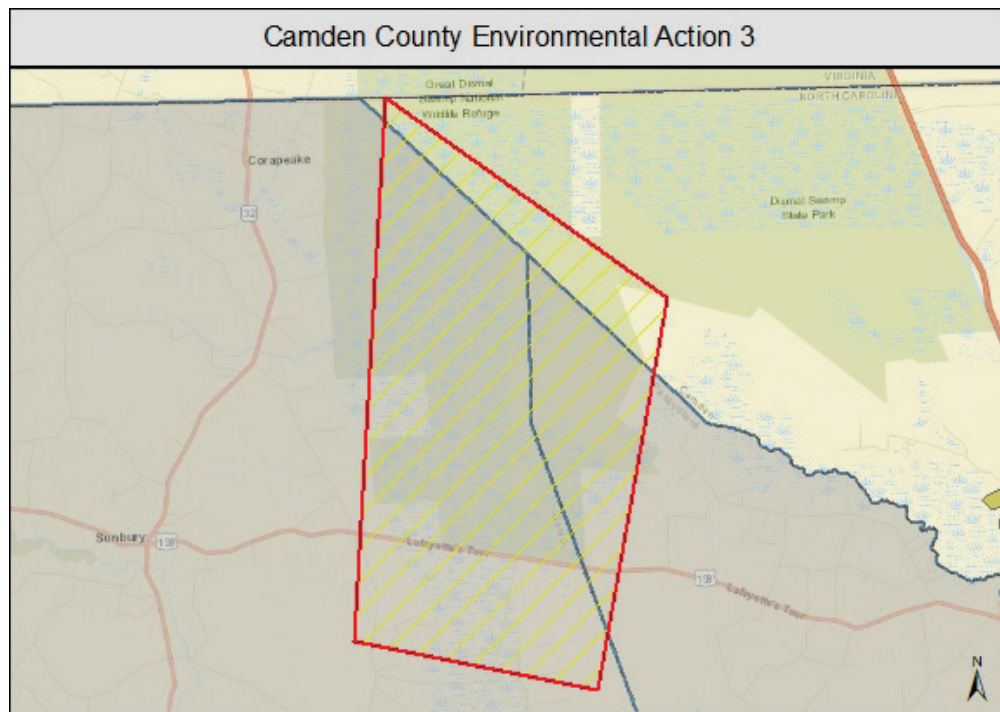
### High Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Environmental Action 3: Reestablish Hydrologic Connection to Perquimans River from Great Dismal Swamp	High	5
Environment	Environmental Action 4: Funding for Stormwater Management/Debris Cleanup	High	6
Environment	Environmental Action 5: Roadside Ditch Maintenance	High	7
Environment	Environmental Action 1: US 158 Drainage Study (Phase I)	High	8
Environment	Environmental Action 2: US 158 Drainage Study (Phase II)	High	9

**Table 12. Camden High Priority Environmental Summary**

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

- Re-establish Hydrologic Connection to Perquimans River from Great Dismal Swamp:** A hydrologic connection from the Great Dismal Swamp to the Perquimans River was closed when US 158 was constructed (ca. 1930s-1940s). As a result, floodwaters back up on the north side of US 158. This project is to partner with U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), North Carolina Department of Transportation (NCDOT), and others to determine the feasibility of re-establishing hydrologic connection between Great Dismal Swamp and Perquimans River, and construct this connection if feasible.



**Figure 23. Environmental Action 3: Re-establish Hydrologic Connection to Perquimans River**

## Environmental Action 3: Reestablish Hydrologic Connection to Perquimans River from Great Dismal Swamp

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 5

**Project Timeframe:** 5 years

**Location:** South Mills

**Project Summary:** A hydrologic connection from the Great Dismal Swamp to the Perquimans River was closed when US 158 was constructed (ca. 1930s-1940s). This project is to partner with USACE, USFWS, NCDOT, and others to determine the feasibility of reestablishing hydrologic connection between Great Dismal Swamp and Perquimans River, and construct this connection if feasible.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Hurricane Matthew resulted in substantial flooding in Camden County in the Great Dismal Swamp and surrounding canals due to stormwater and lack of outlets for stormwater. Reestablishing a connection between Great Dismal Swamp and Perquimans River would provide another outlet for water that could reduce flooding in this area.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The project could reduce flood risk to roads homes businesses and farmland by providing an additional outlet for water.	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)?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	Agree
What impacts to the environment of the county will result from this project?	The project would reestablish a natural hydrologic connection that was cut off allowing additional outlet for floodwaters.	N/A
What is the capability of the local government to administer this project?	Low	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Between 51 and 75%	Agree
Who will administer this project?	Unknown	Agree



- **Stormwater Management/Debris Removal:** Camden County has established stormwater districts, including a list of prioritized watersheds/waterbodies for debris removal. This project would provide funding for Camden County to remove vegetative waterway debris that accumulated from Hurricane Matthew and previous events. The debris includes trees, tree and bush branches, and small bushes that break off or get uprooted during high flows and then get hung up on overhanging and better anchored bank vegetation. The debris restricts flow, increases local flooding, forces road closures, and impacts navigation in some waterways. In addition, debris that remains in-place could be loosened and carried downstream during future flood events and block culverts and bridge openings. The following areas within Camden County have repetitive debris build-up due to flooding during tropical storms and hurricanes:
  - Joyce Creek,
  - Mill Run Swamp,
  - Potohonk,
  - Areneuse Creek,
  - Goose Creek,
  - Mansfield Ditch,
  - Garrington Island, and
  - Indian Town Creek.
- **This is a county-wide project, so no project area map has been included.**

## Environmental Action 4: Funding for Stormwater Management/Debris Cleanup

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 6

**Project Timeframe:** 1-2 years

**Location:** Countywide

**Project Summary:** Camden County has established stormwater districts, including a list of 8 prioritized watersheds/waterbodies for debris removal.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The culverts erosion control and debris removal will increase the flow and stabilize the banks of local waterways to reduce sediment transport and flow restrictions. There has been a build-up of debris from Hurricane Matthew and previous heavy rain and runoff events.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The project could reduce flood risk to roads homes businesses and farmland.	Agree
For how long will this solution be effective?	Less than 10 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)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The project would increase drainage capacity of streams and outfalls and reduce stormwater flooding of adjacent areas.	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Roadside Ditch Maintenance:** As a result of budget and staffing constraints, roadside ditches and drainage structures are not regularly maintained. Lack of maintenance is contributing to flooding of adjacent properties during storm events. This project would provide funding to identify priority roadside ditches and drainage structures for maintenance and work with NCDOT to implement a maintenance program.
- **This is a county-wide project, so no project area map has been included.**

## Environmental Action 5: Roadside Ditch Maintenance

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 7

**Project Timeframe:** 1-2 years

**Location:** Countywide

**Project Summary:** Roadside Ditch Maintenance: As a result of budget and staffing constraints, roadside ditches and drainage structures are not regularly maintained. Lack of maintenance is contributing to flooding of adjacent properties during storm events. This project would provide funding to identify priority roadside ditches and drainage structures for maintenance and work with NCDOT to implement a maintenance program.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Unmaintained ditches contributed to stormwater flooding during Hurricane Matthew.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The project could reduce flood risk to roads homes businesses and farmland by increasing drainage capacity of roadside ditches.	Agree
For how long will this solution be effective?	Less than 10 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)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The project would increase drainage capacity of roadside ditches and reduce stormwater flooding of adjacent areas.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **US 158 Drainage Improvements:** Water cannot flow across US 158 and thereby floods roads, homes, swampland, and farms in Camden and neighboring Gates and Pasquotank Counties.
  - Phase I of this project would include coordination with adjacent counties and NCDOT to complete a drainage study for the US 158 corridor to identify improvements that would reduce flood damage to surrounding areas.
  - Phase II of this project would implement drainage improvements identified in Phase I to reduce flooding of residences, swampland, roads, and farmland in the US 158 area of Camden, Pasquotank, and Gates Counties.

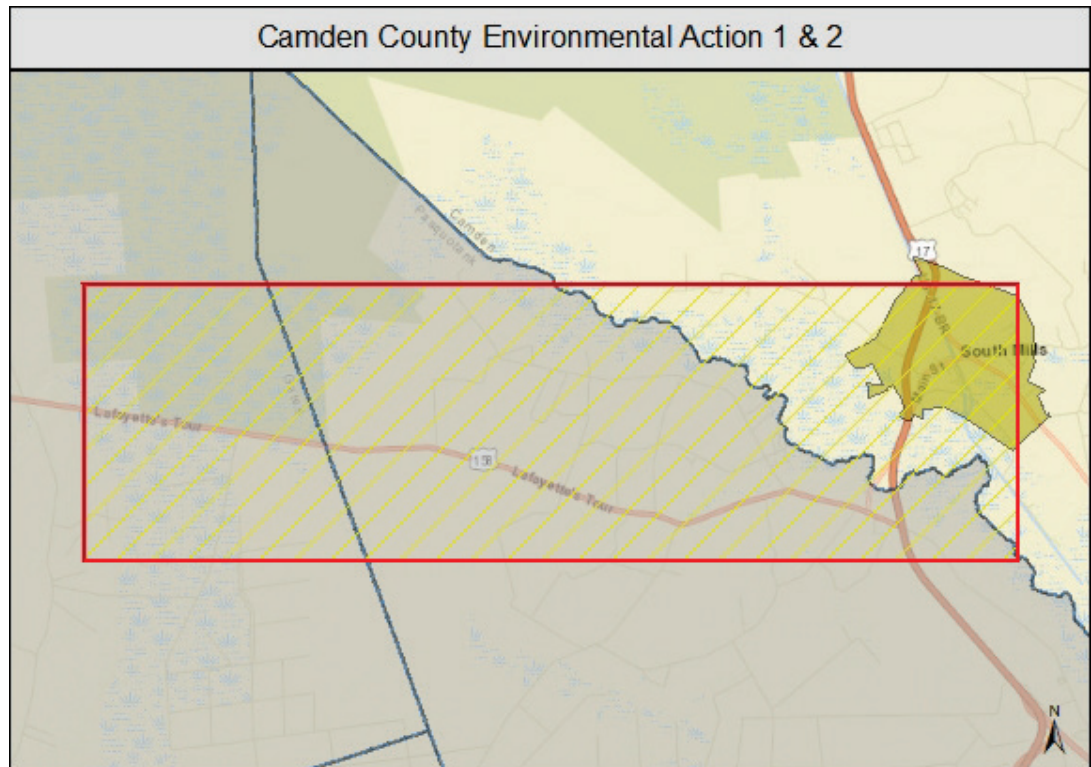


Figure 24. Environmental Actions 1 & 2: US 158 drainage improvements



## Environmental Action 1: US 158 Drainage Study (Phase I)

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 8

**Project Timeframe:** 1-2 years

**Location:** South Mills

**Project Summary:** US 158 Drainage Study Phase I: Water cannot flow across US 158 flooding roads, homes, swampland, and farms in Gates, Pasquotank, and Camden Counties. In coordination with adjacent counties and NCDOT, this project would provide funding for a drainage study for the US 158 corridor to identify improvements that could reduce flood damage to surrounding areas.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Hurricane Matthew resulted in flooding along US 158 to roads homes swampland and farms in Gates Pasquotank and Camden Counties including more than 3000 acres of farmland.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The project would identify improvements that could reduce flood risk to roads homes businesses and farmland.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The project would identify solutions that could improve water flow and stormwater runoff.	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?	Higher than 75%	Agree
Who will administer this project?	Regional	Agree

## Environmental Action 2: US 158 Drainage Improvements (Phase II)

**County:** Camden

**Priority Grouping:** High Priority

**Priority Ranking:** 9

**Project Timeframe:** 2-5 years

**Location:** South Mills

**Project Summary:** US 158 Drainage Improvements Phase II: This project would implement drainage improvements identified in Phase I (Camden Environmental Action 1) to reduce flooding of residences, swampland, roads, and farmland in the US 158 area of Camden, Pasquotank, and Gates Counties.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Hurricane Matthew resulted in flooding along US 158 to roads homes swampland and farms in Gates Pasquotank and Camden Counties including more than 3000 acres of farmland.	N/A
Consistent with existing plans (describe points of intersection/departure)	Yes	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	The project would implement improvements that could reduce flood risk to roads homes businesses and farmland.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>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?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	The project would implement solutions that could improve water flow and stormwater runoff.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	Regional	Agree

### Low Priority Environmental Strategies

Pillar	Action Name	Priority	Overall Ranking
Environment	Environmental Action 6: Mosquito Abatement Program	Low	18

**Table 13. Camden Low Priority Environmental Summary**

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

- **Mosquito Abatement Program:** The proposed program would be used on an as-needed basis around the County after heavy rains due to the proliferation of standing water. Depending on the extent of the standing water, the program could involve either aerial or truck-based spraying or both. The objective of the program is to eliminate or impede the growth of mosquito populations and therefore reduce the potential for the transmission of mosquito-borne diseases.
- **This is a county-wide project, so no project area map has been included.**

## Environmental Action 6: Mosquito Management Program

**County:** Camden

**Priority Grouping:** Low Priority

**Priority Ranking:** 18

**Project Timeframe:** 12 months

**Location:** Countywide

**Project Summary:** Mosquito Management Program: This project is funding to continue a mosquito management program throughout the county.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Standing water following Hurricane Matthew contributed to countywide mosquito populations.	N/A
Consistent with existing plans (describe points of intersection/departure)	Camden County has a mosquito control program in place; however funding for the program is insufficient to meet demand.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	N/A	Agree
For how long will this solution be effective?	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?	Medium to high confidence	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	The proposed project would reduce mosquito populations in Camden County as well as reduce the chance of mosquito-borne diseases being transmitted to the county residents.	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?	Unknown	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	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.