

# **Hurricane Matthew Resilient Redevelopment Plan**

## **Hertford County**



May 2017

Version 1.2

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## 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.

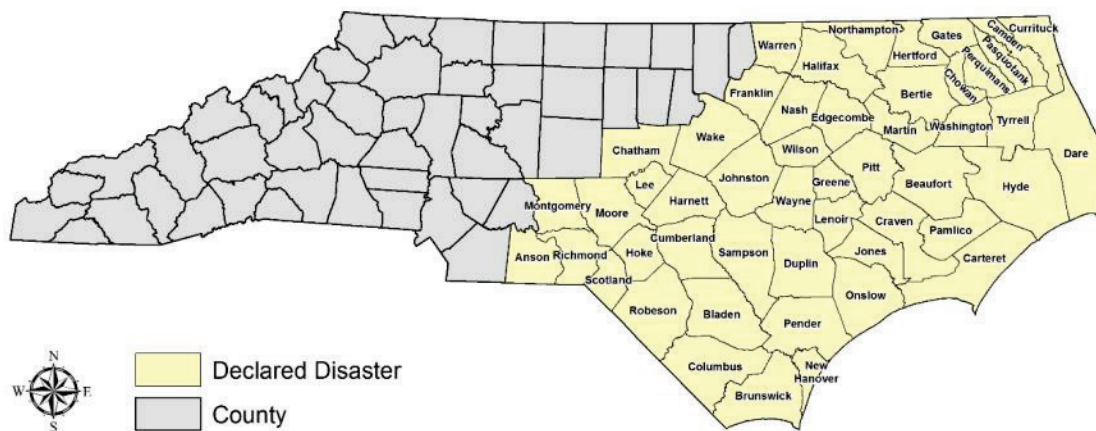


Figure 1. NCRRP Counties

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, Hertford County has identified 12 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	1
Economic Development	2
Infrastructure	9
Environment	0
<b>Grand Total</b>	<b>12</b>

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



An aerial photograph showing a residential neighborhood severely affected by flooding. The water is a murky brown color, submerging many trees and parts of the houses. The houses are mostly two-story structures with grey roofs. The flooding is extensive, covering a large portion of the landscape. The text "1. Background" is overlaid in the upper right quadrant of the image.

# 1. Background

# 1. Background

## Summary of Hurricane Matthew Storm Damage

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

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

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

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

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

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

Initial economic analysis of the impacts of crop and livestock losses caused by Hurricane Matthew estimated the loss of more than 1,200 jobs and roughly \$10 million in state and local income and sales tax revenue. <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 is included in each plan.

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

## Scope of the Plan

This document is a snapshot of the County’s current needs for achieving holistic recovery and redevelopment. The plan will evolve as the County analyzes the risk to its assets, identifies needs and opportunities, determines

the potential costs and benefits of projects, and prioritizes the projects. As projects are more fully defined, the potential impact on neighboring communities and the region may lead to modifications.

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

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

### **Local Participation and Public Engagement**

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

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

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

**Meeting 3** – NCEM presented refined resilient redevelopment strategies based on feedback from Meeting 2 and received additional feedback.

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

Each of the 50 counties that were declared a major disaster by the President of the United States as a result of Hurricane Matthew under the Stafford Act (P.L. 93-288) participated in the resilient redevelopment planning process. Each municipality in those counties, as well as the five economic development regions that sustained damage from Hurricane Matthew, were also invited to participate. The counties impacted by the storm cover the eastern half of North Carolina and occupy parts of the piedmont, sand hills, and coastal areas of the state.

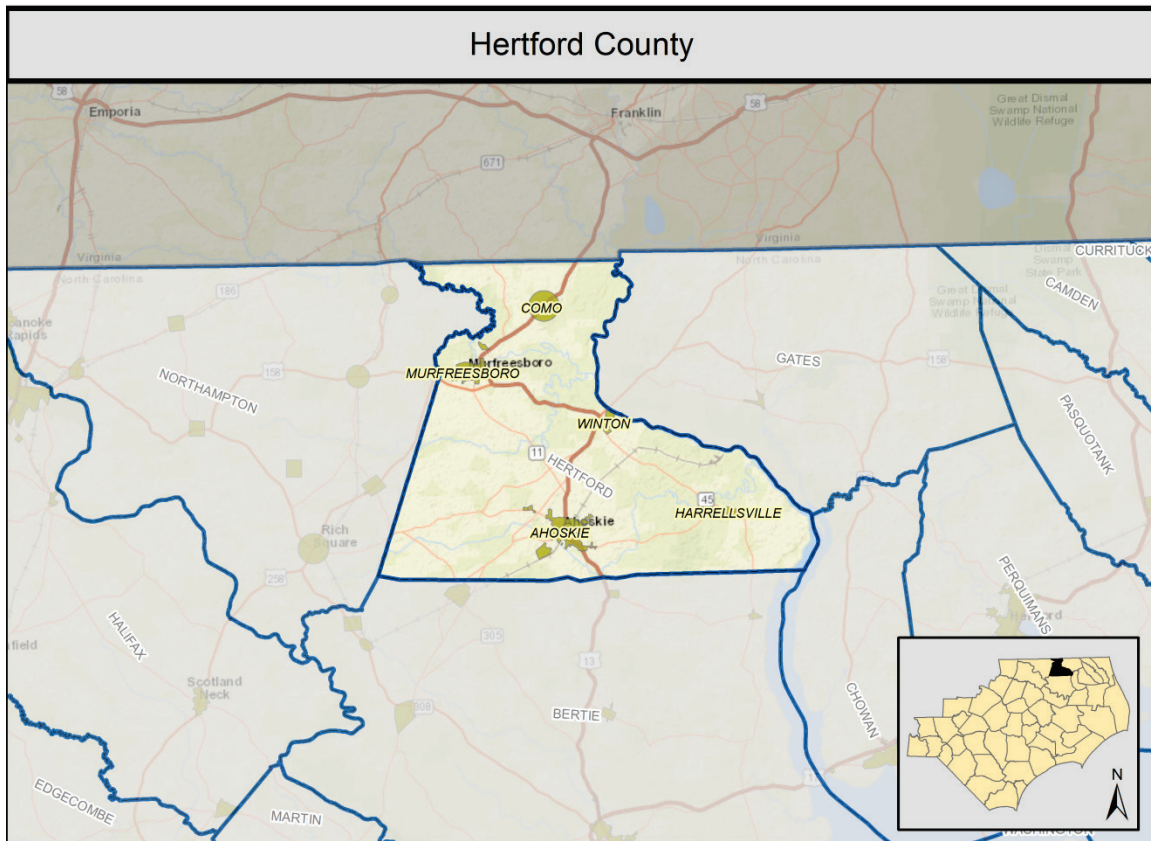


Figure 2. Hertford County and Neighboring Counties

### Data, Assumptions, and Methodologies

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

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





## 2. County Profile



## 2. County Profile

Hertford County is located in northeastern North Carolina along the border with Virginia. It is comprised of a number of municipalities: the Town of Ahoskie, the Village of Cofield, the Town of Como, the Town of Harrellsville, the Town of Murfreesboro, and the Town of Winton. The population of Hertford County is 24,368. This section provides a profile of housing, economics, infrastructure, environment, and administration within Hertford County.

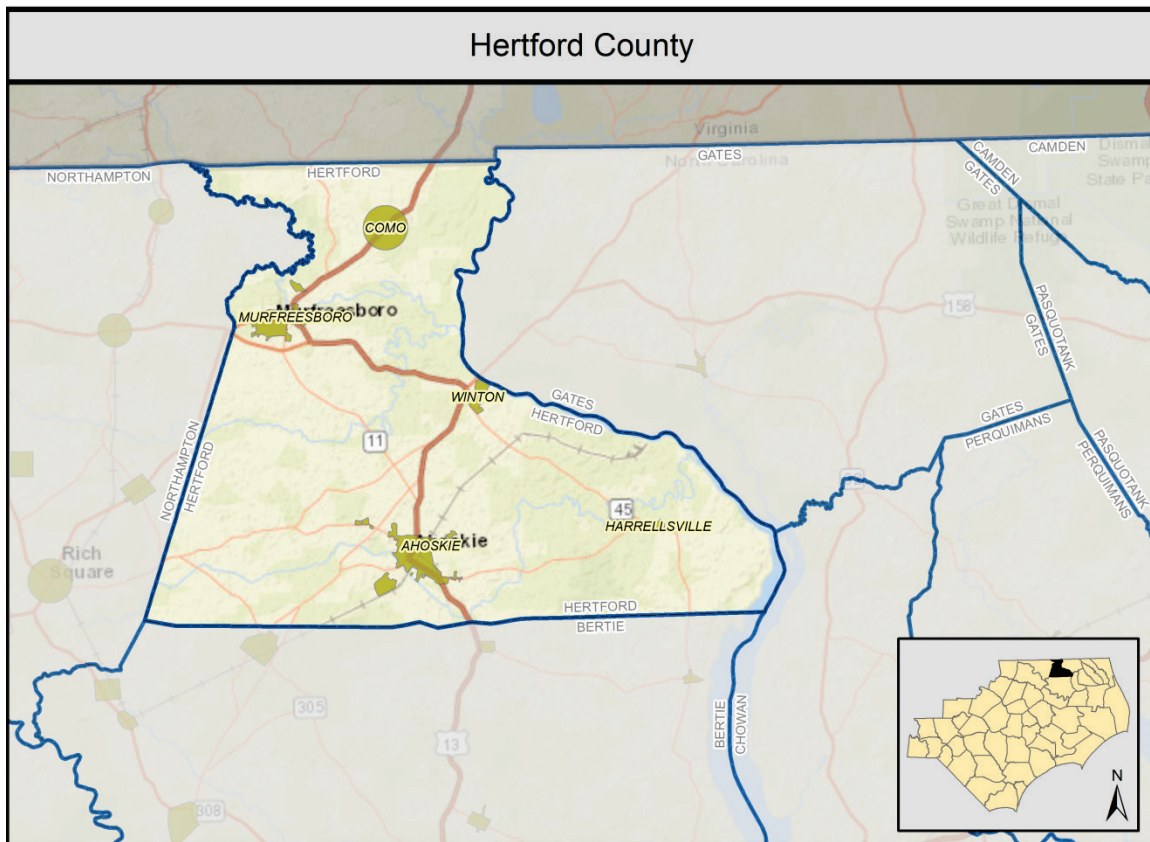


Figure 3. Hertford Base Map

### Demographic Profile

Demographics for Hertford 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

Hertford County has a population of 24,669. Ahoskie is the most populous place within Hertford County, with 4,976 residents, and Como is the least populous with a population of 82.<sup>3</sup>

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

## Population Change (2000 to 2010)

Hertford County's population has increased slowly since 2000. In 2000, the population was 22,601 and in 2010 it was 24,669, an increase of 9 percent. 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 Hertford County is 42, the same as the North Carolina median age.. Within Hertford County, the Cofield population has the oldest median age, 52, and the Murfreesboro population has the youngest median age, 27.<sup>3</sup>

## Race and Ethnicity

Hertford County is mostly African American (58 percent) and White (35 percent) with other races constituting the remaining 7 percent. In comparison, North Carolina is 70 percent White, 22 percent African American, 1 percent American Indian and Alaska Native, 3 percent Asian, less than 1 percent Native Hawaiian/Pacific Islander, 3 percent Some Other Race, and 2 percent Two or More Races. Refer to the table below<sup>5</sup>

Within Hertford County, the populations of Ahoskie, Cofield, Murfreesboro and Winton are predominantly Black or African American. The populations of Como and Harrellsville are predominantly White.

The Latino population in Hertford County is 3 percent compared to 9 percent for North Carolina. Ahoskie has the largest Latino population (4 percent) while Cofield and Como 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
Ahoskie town	31.1%	62.2%	1.6%	0.9%	0.0%	2.6%	1.6%	68.9%
Cofield village	14.6%	81.4%	1.3%	0.0%	0.0%	0.0%	2.7%	85.4%
Como town	73.2%	20.7%	0.0%	0.0%	0.0%	0.0%	6.1%	26.8%
Harrellsville town	71.8%	26.6%	0.0%	0.0%	0.0%	0.0%	1.7%	28.2%
Murfreesboro town	41.5%	56.3%	0.0%	1.4%	0.0%	0.0%	0.8%	58.5%
Winton town	23.6%	72.0%	1.0%	0.0%	0.0%	0.0%	3.4%	76.4%
<b>Hertford County</b>	<b>35.6%</b>	<b>60.5%</b>	<b>1.1%</b>	<b>0.5%</b>	<b>0.0%</b>	<b>1.0%</b>	<b>1.2%</b>	<b>64.4%</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. Hertford 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 Hertford County, most of individuals identified as LEP speak Spanish while others speak Indo-Euro, Asian/Pacific, or other languages. Similarly, the primary language group for LEP individuals in North Carolina is

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

5 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B02001, "Race" and Table B03002, "Hispanic or Latino Origin by Race."

Spanish. Within Hertford County, Ahoskie has the largest LEP population. Como and Harrellsville do not have a LEP population according to census data.<sup>6</sup>

### Poverty

In Hertford County, 26 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. The highest level of poverty within Hertford County occurs in Winton, where 38 percent of the population is below the poverty level. The lowest level of poverty occurs in Como, where 7 percent of the population is below the poverty level.<sup>7</sup>

### Low and Moderate Income Individuals

In Hertford County, 47 percent of the population is classified as low and moderate income (LMI) individuals based on the US Department of Housing and Urban Development's definition. In comparison, 39 percent of the North Carolina population is classified as LMI.<sup>8</sup>

### Median Household Income

The median household income of the population 25 to 64 years old is \$37,000 in Hertford County and \$53,000 in North Carolina. Murfreesboro has the highest reported median income, \$52,415, and Winton has the lowest, \$21,721. Median household income was not available for a number of locations in Hertford County (Cofield, Como, Harrellsville).<sup>9</sup>

### Zero Car Households<sup>10</sup>

In Hertford County, 11 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Hertford County, Ahoskie has the highest percentage of households without access to a vehicle, 19 percent, while Como and Harrellsville the lowest percentage, 0 percent.

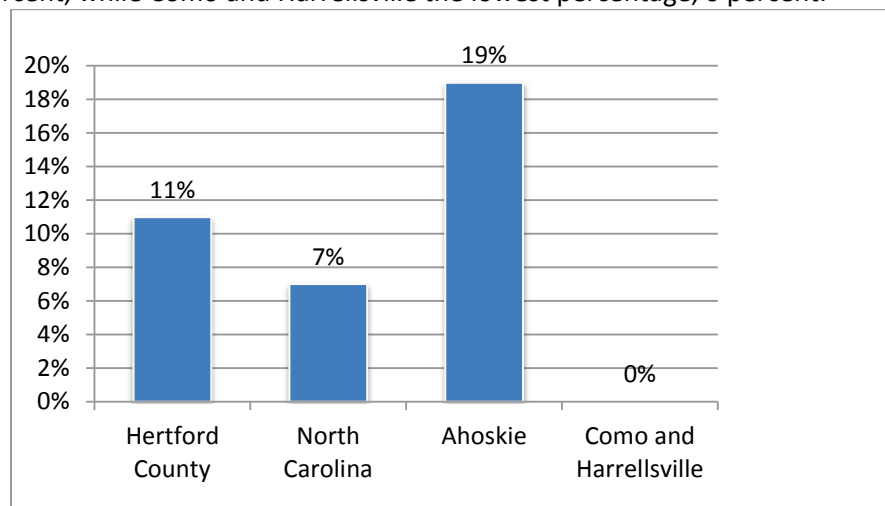


Figure 4. Zero Car Households by Percentage

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

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

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

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

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

### Commuting: Travel Time to Work, Means of Transportation<sup>11</sup>

The majority of Hertford County residents (86 percent) commute alone to work by vehicle. This is slightly higher than the North Carolina average of 81 percent. Within Hertford County, Como has the largest percentage of commuters commuting alone, 84 percent, and Winton has the least, 76 percent.

Ahoskie is the only town where residents report commuting by public transit (1 percent). In comparison, 1 percent of North Carolina commuters use public transportation. Murfreesboro has the highest percentage of residents commuting by walking, bike, or motorcycle, 12 percent. The percentage of residents commuting by these methods in Ahoskie and Harrellsville also exceeds the North Carolina average of 2 percent.

The mean commute time to work for Hertford County residents is 23.6 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Within Hertford County, Ahoskie has the shortest mean commute time at 19.7 minutes while Como has the longest at 48.6 minutes.

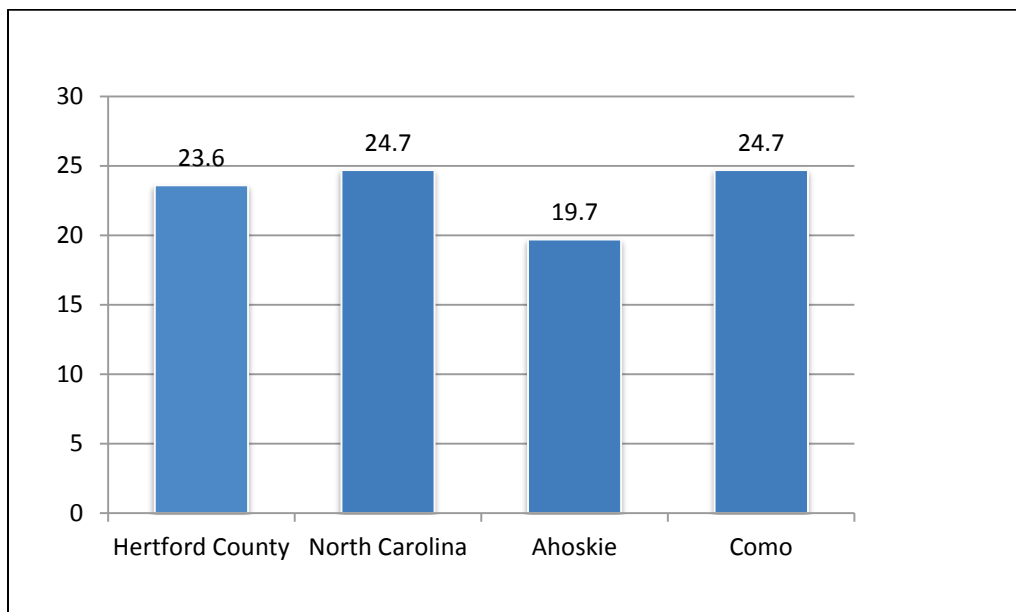


Figure 5. Mean Commute Time to Work in Minutes

<sup>11</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)".

## Housing Profile<sup>12</sup>

Hertford County has 10,564 housing units. 64 percent of these are single-family homes, while 11 percent are multi-family units and 25 percent are manufactured housing.

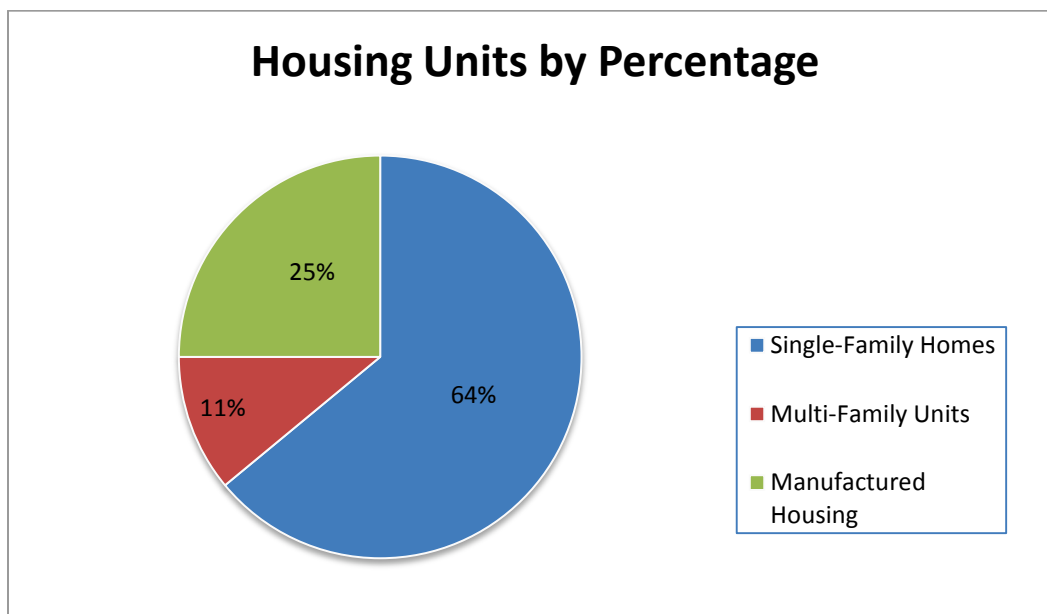


Figure 6. Housing Units by Percentage

In Hertford County, 18 percent of housing units are vacant, as compared to 15 percent for North Carolina. Within Hertford County, Cofield has the largest percentage of vacant housing units, 41 percent, while Como has the least, 0 percent.

Of the occupied housing units, 65 percent are owner-occupied and 25 percent are renter-occupied, the same proportions as North Carolina.

The median housing value in Hertford County is \$137,834. In comparison, the median housing value in North Carolina is \$140,000. Within Hertford County, Murfreesboro has the highest median housing value, \$128,800. Cofield has the lowest median housing value, \$73,600. According to the National Housing Preservation Database, Hertford County has 675 affordable housing units, located primarily in Ahoskie and Murfreesboro.

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

## Economic/Business Profile

Hertford County is home to a number of industrial employers, as well as a privately run federal prison. According to the US Census Bureau’s Longitudinal-Employer Household Dynamics Program, jobs are distributed throughout the county but are concentrated primarily in Ahoskie and Murfreesboro.<sup>13</sup>

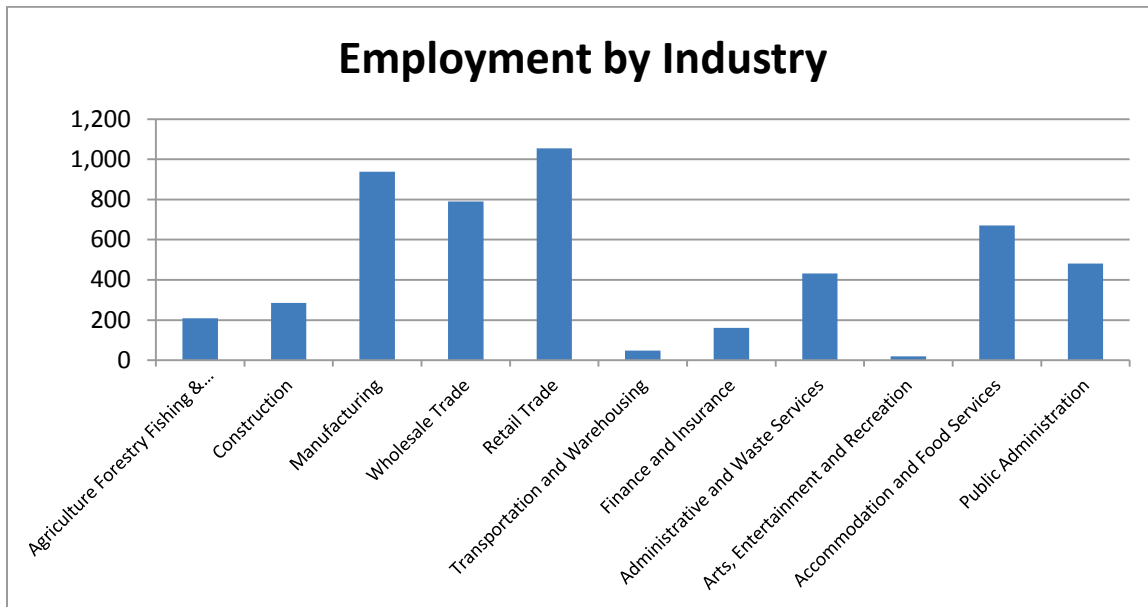


Figure 7. Employment by Industry

## 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 Hertford County is 9,388.<sup>14</sup> Within Hertford County, Como has the largest percentage of residents 16 years or over in the labor force, 78 percent, while Winton has the smallest, 40 percent.<sup>15</sup>

The civilian unemployment rate in Hertford County is 6.5 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.<sup>14</sup> Within Hertford County, Como has the lowest civilian unemployment rate at 0 percent while Winton has the highest, 22 percent.<sup>15</sup>

13 Source: AccessNC – North Carolina Department of Commerce, April 2017:  
<http://accessnc.nccommerce.com/DemoGraphicsReports/pdfs/countyProfile/NC/37065.pdf>

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

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

## Major Employers

The top ten employers in Hertford County<sup>16</sup> represent the medical, education, public administration, retail and manufacturing industries, and are listed in order of total employees:

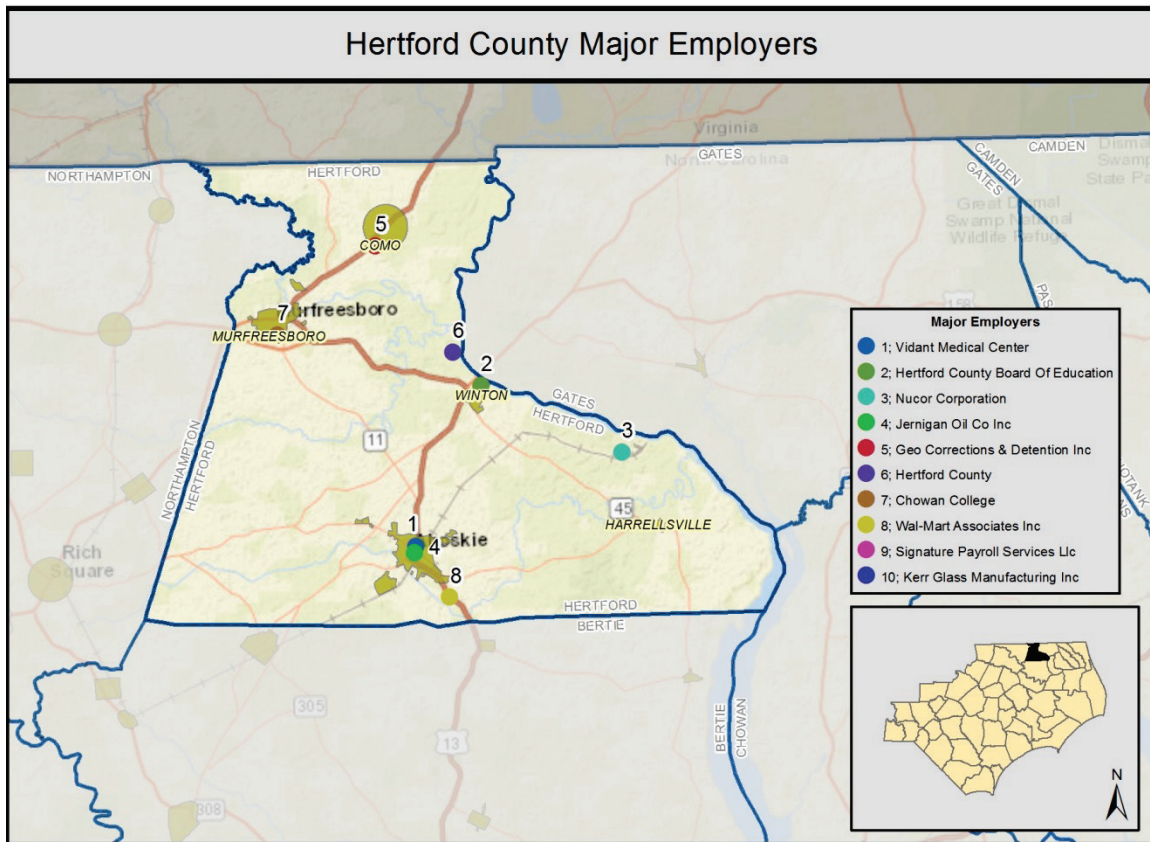


Figure 8. Major Employers by Number of Employees

## Economic Development<sup>17</sup>

The Hertford County Economic Development Commission is an organization that aims to promote local economic growth by “facilitating the profitable operation of business and industry”. Hertford County offers incentive grants for qualifying new businesses likely to bring jobs and growth to the County. Roanoke-Chowan Community College also operates the Hertford County NC Works Center, which provides citizens with employment and training opportunities. An \$11 million railroad renovation project, announced in 2016, is expected to revitalize local employer Nucor and the overall economic health of the county.

## Infrastructure Profile

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

<sup>16</sup> Source: NC Department of Commerce

<sup>17</sup> Source: Hertford County Economic Development Commission



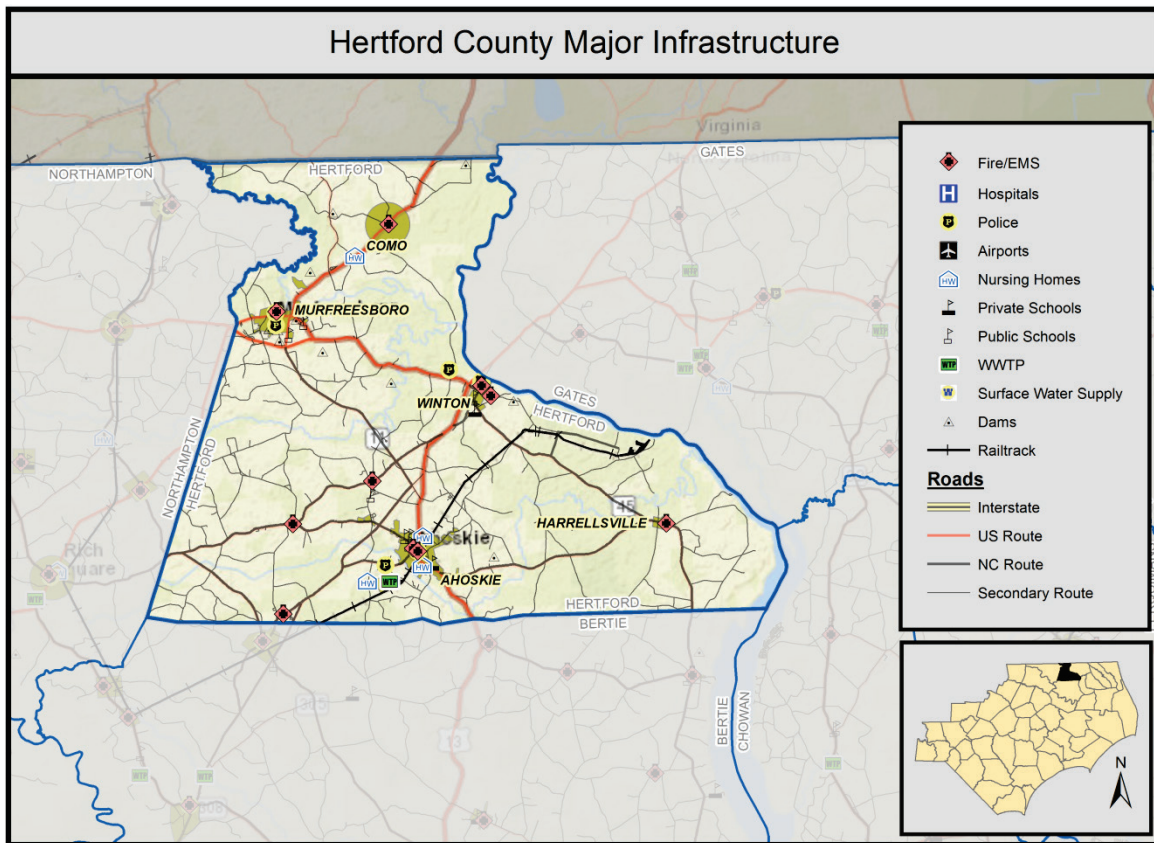


Figure 9. Hertford County Major Infrastructure

## Transportation

Access to Hertford County is provided by US 158, an east-west highway, and US 13, which runs to the north and south. Hertford County is also served by rail via NCVA (North Carolina-Virginia Railroad) and CSX. Tri-County Airport is a general aviation airport located approximately 10 miles west of Ahoskie.

## Health

Vidant Roanoke-Chowan Hospital is located in Ahoskie, and there are also community health centers in Ahoskie and Murfreesboro.

## Education<sup>18</sup>

Chowan University, a small private university, is located in Murfreesboro, and Roanoke-Chowan Community College is located in Ahoskie. Hertford County Public Schools oversee seven schools: three high schools, one middle school, and three elementary schools.

## Water

Hertford County Rural Water is comprised of two water districts: Northern and Southern. Together, these two districts have four wells, a booster pump station and five, 200,000 gallon elevated tanks.<sup>19</sup>

<sup>18</sup> Source: Hertford County Public Schools

<sup>19</sup> Sources: NC Division of Water Resources, Local Water Supply Plans



## **Power**

Electric service in Hertford County is provided by the Roanoke Electric Cooperative. There are also a number of solar installations in the County.<sup>20</sup>

## **Environmental Profile**

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

### **Water Resources**

The Chowan River flows along the northern and eastern borders of the County. Riverine wetlands are present along the Chowan River and its tributaries. The most common wetland type in Hertford County is freshwater forested/shrub wetland.<sup>21</sup>

### **Natural and Managed Areas**

According to the NC Natural Heritage Program, there are several natural areas of high, very high, and exceptional value in Hertford County. A band of high, very high, and exceptional value land is present along the Chowan River. There are additional areas of high and very high value present in the southeast corner of the county.

There are several managed areas under state ownership within Hertford County, including game lands and conservation easements.<sup>21</sup>

### **Biodiversity and Wildlife Habitat**

The NC Natural Heritage Program produces a biodiversity and wildlife habitat assessment for the state. According to this assessment, there are areas of high and very high value throughout the state, particularly along the Chowan River and in the southeastern part of the county near Harrellsville.<sup>21</sup>

### **Parks and Recreation**

There are a number of parks and recreational facilities located throughout the county. The Town of Ahoskie has a municipal gym and a recreational complex, as well as three parks. The Town of Murfreesboro has 16 acres of parkland.

## **Administrative Profile**

Hertford County has emergency services and planning departments with the capacities to assist in hazard mitigation planning and disaster preparedness. While some towns in the County have planning departments or boards that would be able to assist, smaller communities and towns within Hertford County may need assistance in the administration and implementation of projects due to their limited staff capacity.

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<sup>20</sup> Source: US Department of Energy, US Energy Mapping System

<sup>21</sup> Source: NC Natural Heritage Program



An aerial photograph showing a residential neighborhood severely impacted by flooding. The water is a murky, brownish-yellow color, covering large areas of the landscape. Numerous houses with grey roofs are visible, some partially submerged. A network of roads crisscrosses the area, with some sections completely underwater. Large 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 Hertford County is highlighted graphically in the figure below.

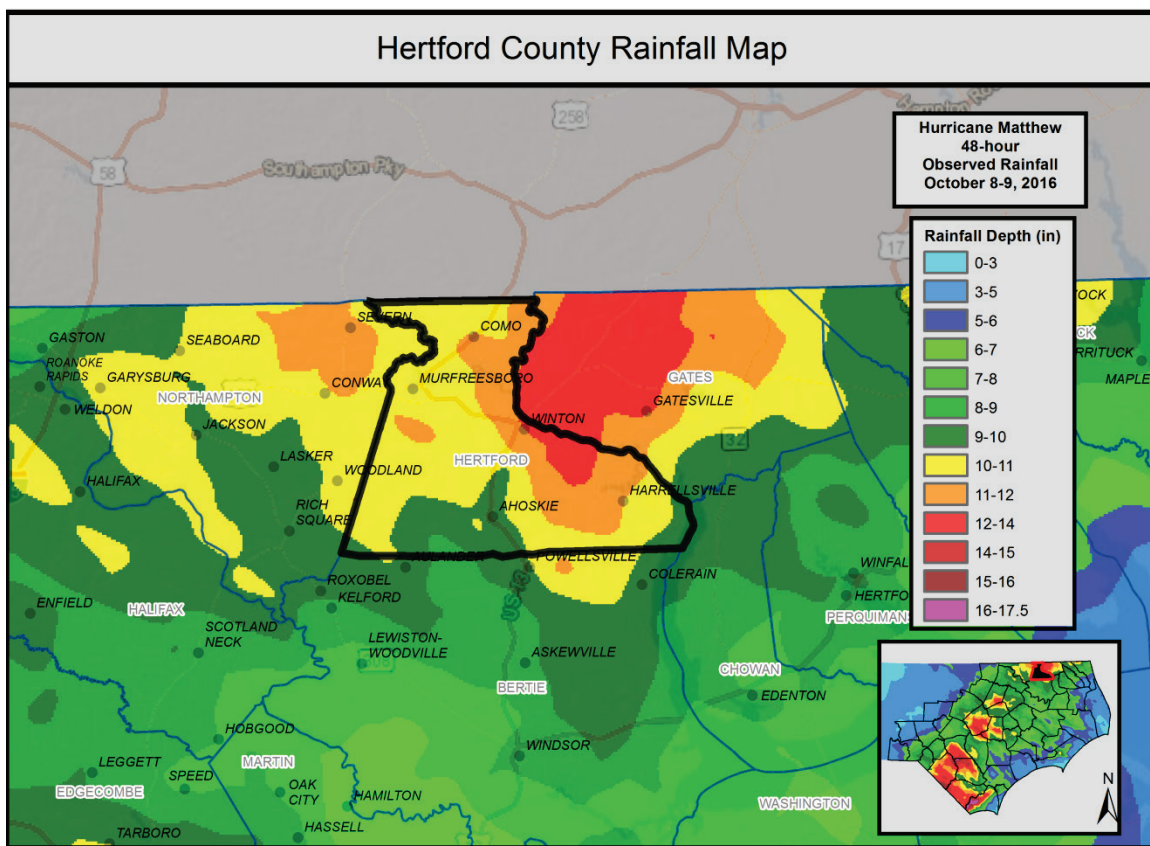


Figure 10. 48-hour Observed Rainfall Depth (October 8-9, 2016)

#### Riverine Flooding Summary

USGS documented streamgage data in the report “Preliminary Peak Stage and Streamflow Data at Selected Streamgaging Stations in North Carolina and South Carolina for Flooding Following Hurricane Matthew, October 2016”. Streamgage data from the USGS report for Hertford 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)
02053500	Hertford	Ahoskie Creek at Ahoskie, NC	63.3	15.74	17.32
02053200	Hertford	Potecasi Creek near Union, NC	225.0	26.98	28.90

Table 3. Hertford County USGS Stream gage Data

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

## Housing

According to Individual Assistance claims as of February 16, 2017, there were 453 impacted houses in Hertford County as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew may still be pending, so this number may not reflect the final claims data from the event. This also does not take into account other historic impacts to the county or other areas of concern for flooding that may not have occurred during this storm. With that in mind, the planning team attempted to take a comprehensive look at both Hurricane Matthew impacts and any historic impacts that local officials felt would validate areas that should be considered at high risk to future flooding.

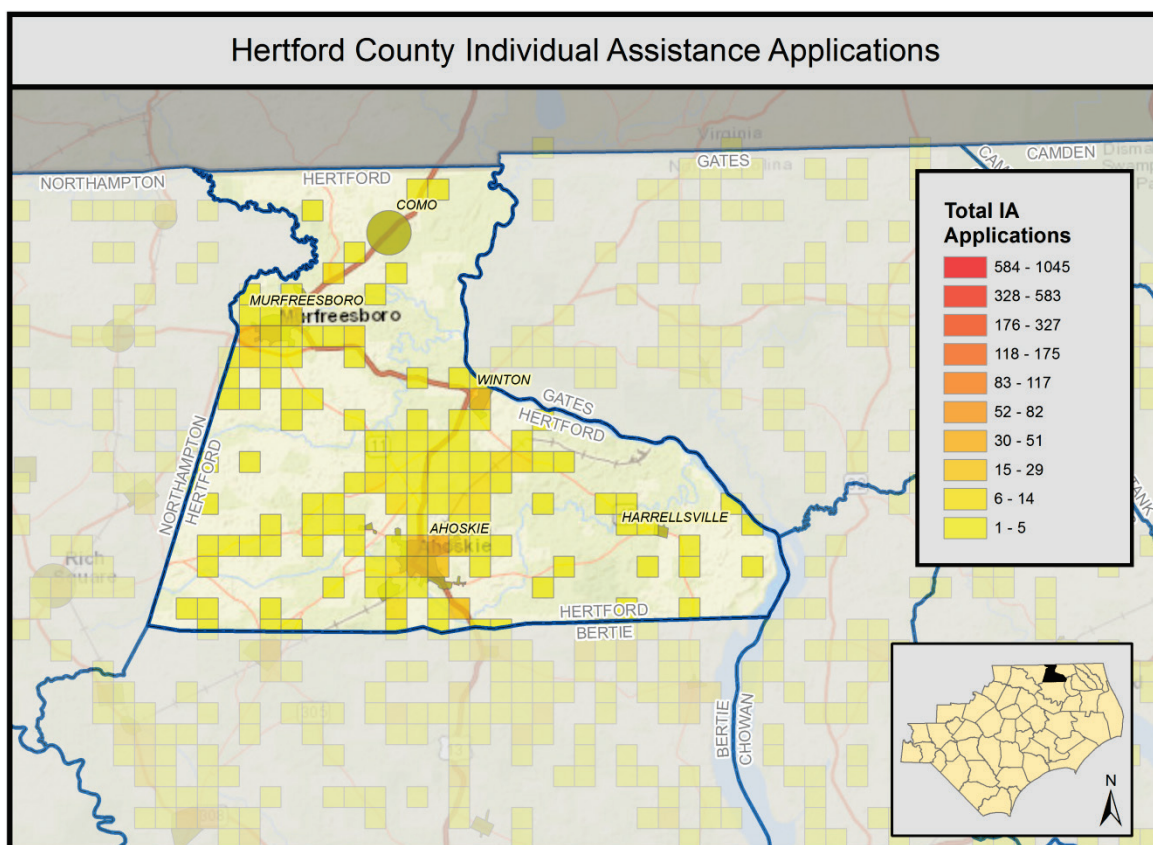


Figure 11. Hertford County IA Applications by Area

Housing was certainly impacted in Hertford County as a result of Hurricane Matthew as there were several homes damaged. The bullets below summarize some of the major impacts to housing that were identified by local officials from the event.

- Homes Flooded from Hurricane Matthew:** There were multiple houses and combination housing/business structures that were flooded in low areas around the county. These locations included land around Ahoskie Creek (Arrow Road, DT Road) and various other locations across the county where repeated substantial loss has occurred due to regular flooding conditions. Homeowners in these areas are interested in buyouts and elevations where appropriate. In addition, regular maintenance of culverts and debris removal from Ahoskie Creek may assist in reducing future impacts.

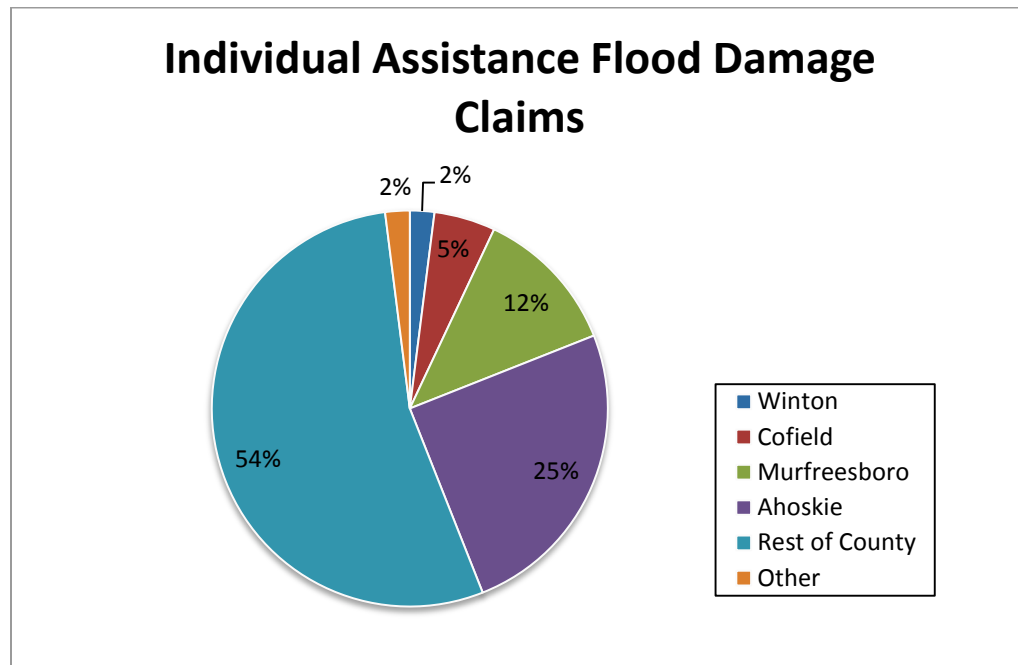


Figure 12. IA Flood Damage Claims by Area

### Economics / Business / Jobs

Although there were some impacts to the economy in Hertford 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 by local officials from the event.

- Downtown Areas Impacted:** The Ahoskie Business District experienced widespread impacts to multiple businesses including a daycare, restaurants, building contractors, and multiple car dealerships. This flooding was due to inundation from Ahoskie Creek, and regular debris removal and maintenance may help to reduce future impacts of this magnitude.
- Recreation Driver:** Beechwood Golf Course was severely impacted from flooding of Potecasi Creek. The clubhouse was rendered unfit for use from 10-12 feet of floodwater, and the golf course and surrounding homes were underwater as well.

### Infrastructure

There were no Public Assistance (PA) claims made in Hertford County as a result of Hurricane Matthew; however, county infrastructure was one of the greatest areas of concern in the wake of Hurricane Matthew as there were several types of infrastructure that were damaged in multiple locations. The bullets below summarize some of the major impacts to infrastructure that were identified by local officials from the event.

- Road/Bridge Flooding:** Road and bridge overtopping are common occurrences in Hertford County and impacted a number of different locations 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:

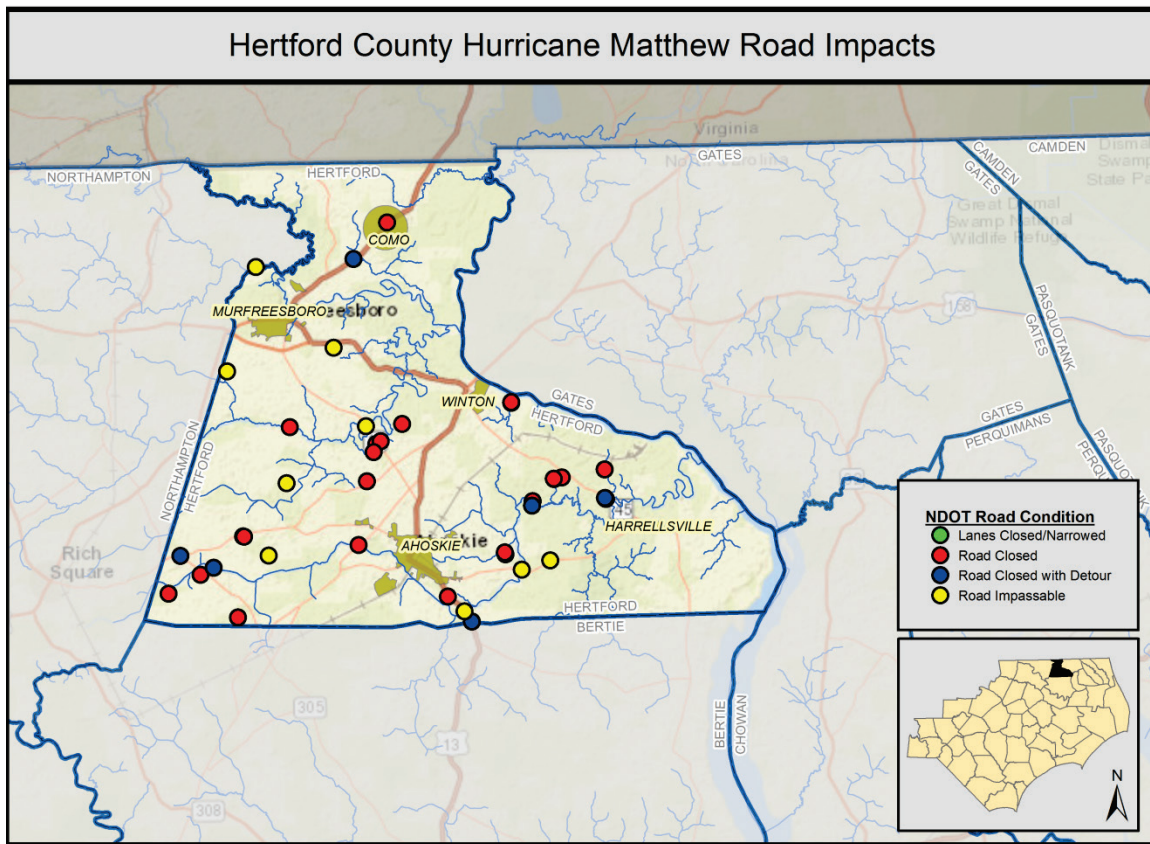


Figure 13. Impacted NDOT Road Condition in Hertford County

- As mentioned above, the east sector of the county around Harrellsville has extensive drainage issues. Water in this area does not contract quickly due to low roadways on all sides of the town, and this combination of flooding cuts off all access to Harrellsville. Several roadways in this area experienced overtopping including NC 45 and NC 561. Major water crossings like Chinkapin Creek and Wiccacon River would be initial targets for bridge elevations.
- US 13 and NC 11 Inter-county connections are diminished during flooding events. Hertford County is cut off from Bertie County and points south due to major flooding of Ahoskie Creek.
- Stormwater drainage is an issue in many areas of the county due to poor maintenance of ditches and lack of regular cleaning. This issue especially exists in Como off Buckhorn Church Road, and in Murfreesboro at 4th Street, Union Street, High Street, and Spring Avenue.
- The Hertford Health Department was rendered unusable due to flooding damage from Ahoskie Creek. There is currently no functioning health department in Ahoskie until a new site is identified and a facility can be constructed.
- 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. During Hurricane Matthew, a number of water/wastewater facilities were impacted in Hertford County.

- Well #2 on Shriners Road floods regularly and has to be taken out of service because it is essentially inaccessible during flooding events. Potecasi Creek renders roads in this area unpassable.
- There is a general need for additional wells and water storage across the county during flooding events so that population centers and county services can be better served with potable water.

### **Ecosystems / Environment**

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

- **Natural Debris Buildup Causing Flooding:** Several low-water bridges across the county (mentioned in previous sections) experienced a significant amount of debris buildup in streams. This debris is frequently in the form of downed trees and other buildup of natural remains. Indeed, one of the major causes of debris buildup is from beaver dams that are constructed and then washed out during heavy rainfall/flooding events. This debris is then caught underneath bridges and in culverts, causing a jam which backs up water upstream and results in flooding.



An aerial photograph showing a residential neighborhood severely affected by flooding. The houses, which are mostly two-story structures with grey roofs, are surrounded by deep, muddy brown water. Many trees are also submerged, with only their tops visible above the water line. The water appears to have inundated the entire area, leaving very little dry ground visible. The text "4. Strategies for Resilient Redevelopment" is overlaid in a large, bold, dark blue font across the center of the image.

## **4. Strategies for Resilient Redevelopment**



## 4. Strategies for Resilient Redevelopment

This section provides details about the resilience and revitalization strategies and actions identified in Hertford 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	1
Economic Development	2
Infrastructure	9
Environment	0
<b>Grand Total</b>	<b>12</b>

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

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

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 2: Countywide Buyouts & Elevations	High	1
Infrastructure	Infrastructure Tier 1 Action 1: US 13 at Ahoskie Creek	High	2
Infrastructure	Infrastructure Tier 2 Action 2: Countywide Water Storage	High	3
Infrastructure	Infrastructure Tier 3 Action 1: Ahoskie Health Department	High	4
Infrastructure	Infrastructure Tier 2 Action 1: Shriner Road Well	Medium	5
Infrastructure	Infrastructure Tier 1 Action 1: Harrellsville "Island"	Medium	6
Infrastructure	Housing Action 1: Ahoskie Creek & DT Road	Medium	7
Economic Development	Economic Development Action 1: Ahoskie Business District	Medium	8
Infrastructure	Infrastructure Tier 1 Action 4: Murfreesboro Drainage & Culverts	Low	9

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Action 8: Ebo Road Drainage & Culverts	Low	10
Economic Development	Economic Development Action 2: Beechwood Golf Course	Low	11
Infrastructure	Infrastructure Tier 1 Action 3: Como Drainage & Culverts	Low	12

**Table 5. Projects by Rank**

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

## Housing Strategies

### High Priority Housing Strategies

Pillar	Action Name	Priority	Overall Ranking
Housing	Housing Action 2: Countywide Buyouts & Elevations	High	1

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

This project represents the housing strategies that Hertford County indicated are the highest priority to address. Additional detail on the projects can be found below:

- **Countywide Buyouts and Elevations:** This project would provide funding to assist homeowners in buyouts and elevations for their homes so that repeated damage is avoided from future storm events.
- **This is a county-wide project so no project area map is included.**

## Housing Action 2: Countywide Buyouts & Elevations

**County:** Hertford

**Priority Grouping:** High Priority

**Priority Ranking:** 1

**Project Timeframe:** 0-5 years

**Location:** Countywide housing

**Project Summary:** This project involves buyout of flood prone properties. Priority will be given to repetitive loss properties, both because they have the most capacity to reduce suffering and because are most likely to be cost effective (and therefore eligible for grant funding).

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Demand for individual buyouts that have not been granted is still high as is the desire for elevations in locations where possible. County lists will be included for both a full list and repetitive losses.	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.	Providing permanent affordable housing outside of the floodplain will stabilize and possible increase the consumer base adding to the flow of money into the economy.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	100-200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	No Impact	Agree
What impacts to the environment of the county will result from this project?	Buyout of properties in the floodplain and restoring them to permanent open space will increase the capacity of the floodplain to store flood waters reducing the intensity of future floods	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

## Economic Development Strategies

### Medium Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Economic Development Action 1: Ahoskie Business District	Medium	8

**Table 7. Hertford Medium Priority Economic Development Summary**

This project represents the economic development strategy that Hertford County indicated is a medium priority to address. Additional detail on the project can be found below:

**Ahoskie Business District:** During Hurricane Matthew, several businesses in Ahoskie experienced flooding and other impacts. The project involves regular debris removal and consistent maintenance in this portion of Ahoskie Creek in order to improve hydraulic efficiency and minimize the risk of flooding during future storm events.



**Figure 14. Economic Development Action 1: Ahoskie Business District**

## Economic Development Action 1: Ahoskie Business District

**County:** Hertford

**Priority Grouping:** Medium Priority

**Priority Ranking:** 8

**Project Timeframe:** 0-5 years

**Location:** Ahoskie Business District

**Project Summary:** Multiple damaged businesses including Davis Kids College, Diversified Energy, Abrams restaurant, Masters Heating and Air, parking areas at Ahoskie car dealerships - 42 vehicles damaged during Matthew. This project involves: Regular debris removal and maintenance of Ahoskie Creek to reduce future impacts. Floodproofing of businesses where appropriate

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Ahoskie Creek overtopping many aspects of the town's infrastructure highlights the need for more regular maintenance of the creek	N/A
Consistent with existing plans (describe points of intersection/departure)	Consistent with mitigation plans.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	This project will minimize both economic losses from damage to businesses and the time that businesses must be closed during and after storm events.	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?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	Less than 25%	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Minimal to low confidence	N/A
What impact will this action have on the local economy/tax base?	Between 26 and 50%	Agree
What impacts to the environment of the county will result from this project?	Limited - potential impacts to wildlife in immediate vicinity of debris removal area. Limited duration of impact.	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?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

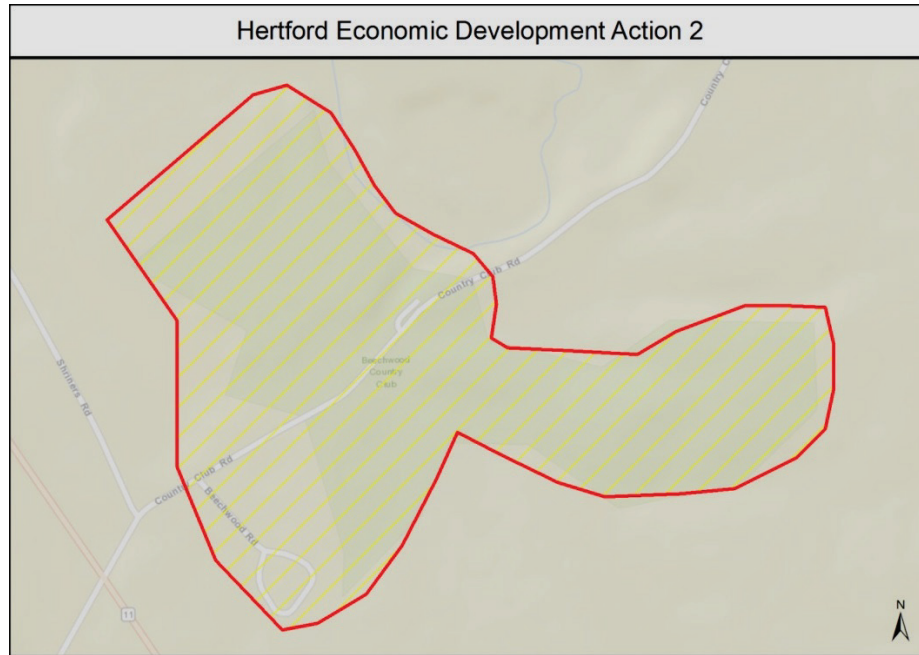
## Low Priority Economic Development Strategies

Pillar	Action Name	Priority	Overall Ranking
Economic Development	Economic Development Action 2: Beechwood Golf Course	Low	11

**Table 10. Hertford Low Priority Economic Development Summary**

This project represents the economic development strategy that Hertford County indicated is a low priority to address. Additional detail on the project can be found below:

**Beechwood Golf Course:** During Hurricane Matthew, Potecasi Creek experienced flood elevations of 10-12 feet. As a result, the golf course clubhouse was flooded and rendered unusable. The project involves floodproofing this facility to improve its resilience and allow for continuity of operations during future storm events. It also involves housing improvements to lessen future impacts on 10 residences in the vicinity of the golf course that were affected by Hurricane Matthew.



**Figure 15. Economic Development Action 2: Beechwood Golf Course**

## Economic Development Action 2: Beechwood Golf Course

**County:** Hertford

**Priority Grouping:** Low Priority

**Priority Ranking:** 11

**Project Timeframe:** 0-5 years

**Location:** Beechwood Golf Course

**Project Summary:** During Hurricane Matthew, Potecasi Creek experienced flood elevations of 10-12 feet. As a result, the golf course clubhouse was flooded and rendered unusable. The project involves floodproofing this facility to improve its resilience and allow for continuity of operations during future storm events. In addition, there were approximately 10 adjacent homes affected by this flood event.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The golf course is currently very restricted for use because the facilities were destroyed. A financial burden exists for the owners while they try to find solutions.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Flood-proofing the clubhouse facility will allow the golf course to resume operations more quickly following storm events minimizing downtime and economic losses.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?	None	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$251K - \$500K	Agree
What is the level of public support for this project?	Medium	Agree
What is the technical feasibility of this project?	Unknown	Agree
Who will administer this project?	County	Agree

## Infrastructure Strategies

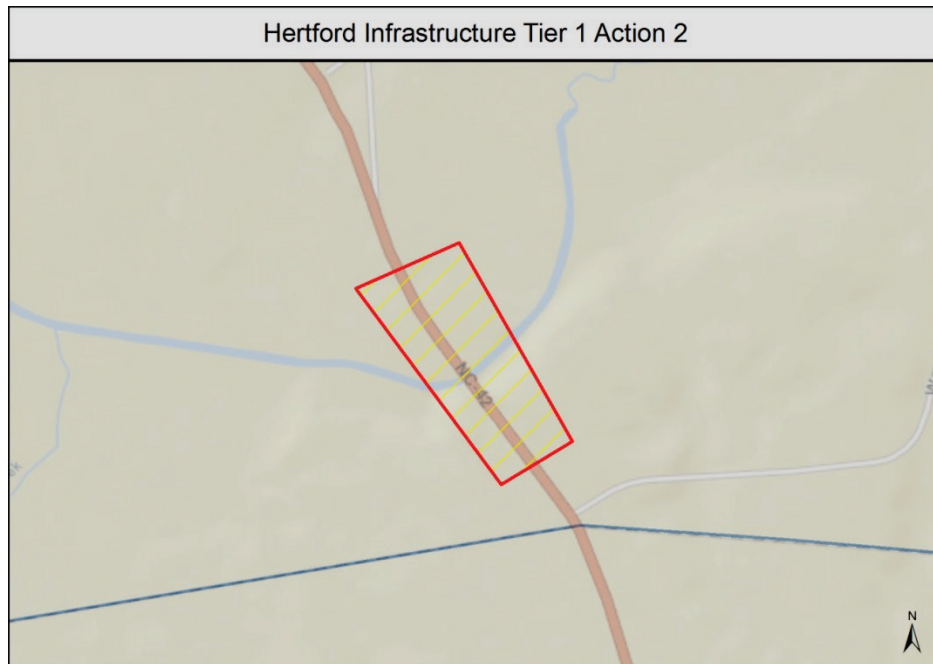
### High Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Tier 1 Action 1: US 13 at Ahoskie Creek	High	2
Infrastructure	Infrastructure Tier 2 Action 2: Countywide Water Storage	High	3
Infrastructure	Infrastructure Tier 3 Action 1: Ahoskie Health Department	High	4

**Table 8. Hertford High Priority Infrastructure Summary**

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

- US 13 at Ahoskie Creek:** During Hurricane Matthew, these major thoroughfares are often flooded and impassable. This cuts off access from Hertford County to Bertie County and other points south, presenting challenges for emergency access and commerce. The project involves the elevation of roadways, especially over Ahoskie Creek, and a regular culvert maintenance program.



**Figure 16. Infrastructure Tier 1 Action 1: US 13 at Ahoskie Creek**



## Infrastructure Tier 1 Action 2: US 13 Access

**County:** Hertford

**Priority Grouping:** High Priority

**Priority Ranking:** 2

**Project Timeframe:** 1-5 years

**Location:** US-13 and NC-11 int. Ahoskie Creek

**Project Summary:** During Hurricane Matthew, these major thoroughfares are often flooded and impassable. This cuts off access from Hertford County to Bertie County and other points south, presenting challenges for emergency access and commerce. The project involves the elevation of roadways, especially over Ahoskie Creek, and a regular culvert maintenance program.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	At this point Hertford County and Bertie County are disconnected when Ahoskie Creek floods. This project will eliminate the issue	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Closing these major inter-county thoroughfares can interfere with economic activity such as the transport of goods around the state. Improving the resiliency of these roads will therefore result in an economic benefit to the county.	Agree
For how long will this solution be effective?	More than 50 years	Agree
How effective is the risk reduction?	100-200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	Unknown.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$51K - \$100K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- **Countywide Water Storage:** Because the county has a relatively limited supply of wells, it could face water shortages if wells are forced to go offline during storms. This project involves the identification of suitable sites and the installation of wells, storage tanks, or other means of retaining water. This redundancy will make the county more resilient during future emergencies.
- **This is a county-wide project so no project area map is included.**

## Infrastructure Tier 2 Action 2: Countywide Water Storage

**County:** Hertford

**Priority Grouping:** High Priority

**Priority Ranking:** 3

**Project Timeframe:** 0-5 years

**Location:** Countywide

**Project Summary:** Because the county has a relatively limited supply of wells, it could face water shortages if wells are forced to go offline during storms. This project involves the identification of suitable sites and the installation of wells, storage tanks, or other means of retaining water. This redundancy will make the county more resilient during future emergencies.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	provides resiliency to address water supply issues highlighted by effects of Hurricane Matthew	N/A
Consistent with existing plans (describe points of intersection/departure)	consistent with intent to protect critical infrastructure	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.	greater resiliency in available water supply	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	>200 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	>6	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	no adverse impacts anticipated	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?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Ahoskie Health Department:** During Hurricane Matthew, the health department was inaccessible because access roads to the area flooded. The department's proximity to Ahoskie Creek renders it vulnerable to flooding. Therefore, the project involves identifying a suitable replacement site and relocating all facilities and services of the health department to the new site.

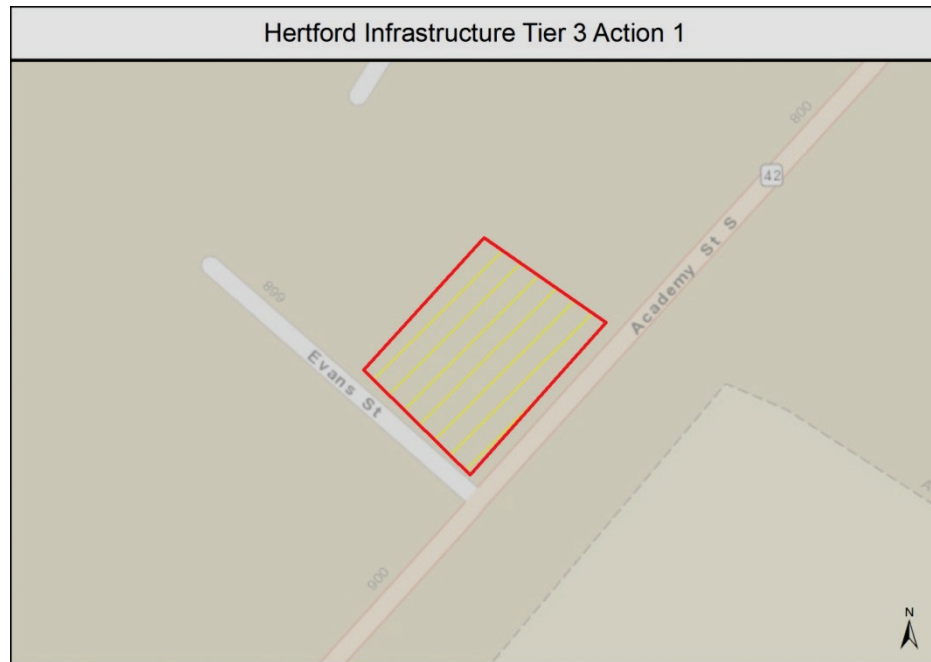


Figure 17. Infrastructure Tier 3 Action 1: Ahoskie Health Department

## Infrastructure Tier 3 Action 1: Ahoskie Health Department

**County:** Hertford

**Priority Grouping:** High Priority

**Priority Ranking:** 4

**Project Timeframe:** 5-10 years

**Location:** Ahoskie

**Project Summary:** During Hurricane Matthew, the health department was inaccessible because access roads to the area flooded. The department's proximity to Ahoskie Creek renders it vulnerable to flooding. Therefore, the project involves identifying a suitable replacement site and relocating all facilities and services of the health department to the new site.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The health department serves an overwhelming majority of the population in the county and the services have not been restored at this time. There is a major need for this facility to be reopened as soon as possible.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	When the health department is inaccessible during and after storm events individuals are forced to seek healthcare elsewhere including at facilities outside the county. Improving the resiliency of this facility will minimize economic losses during these events.	Agree
For how long will this solution be effective?	Between 31 and 50 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	Unknown.	N/A
What is the capability of the local government to administer this project?	Unknown	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

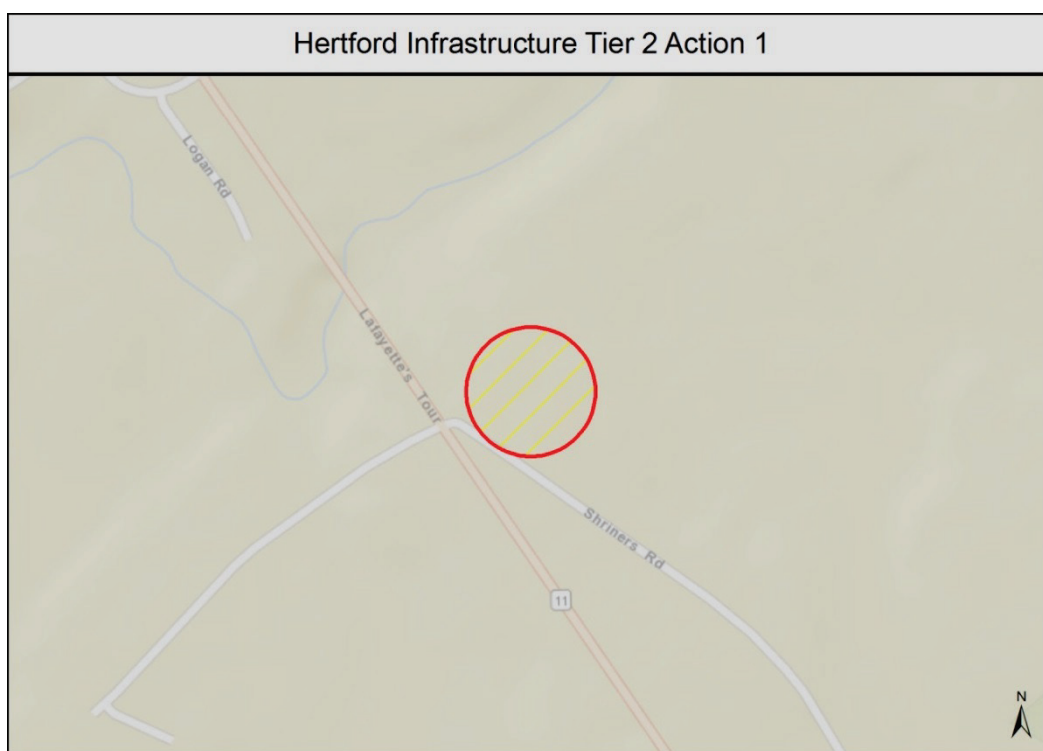
## Medium Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Tier 2 Action 1: Shriner Road Well	Medium	5
Infrastructure	Infrastructure Tier 1 Action 1: Harrellsville “Island”	Medium	6
Infrastructure	Housing Action 1: Ahoskie Creek & DT Road	Medium	7

**Table 9. Hertford Medium Priority Infrastructure Summary**

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

- Shriner Road Well:** This well flooded during Hurricane Matthew, and had to be taken out of service. The project involves installation of elevated generators and a remote access system so the well can be monitored by personnel even when surrounding roads are impassable.



**Figure 18. Infrastructure Tier 2 Action 1: Shriner Road Well**

## Infrastructure Tier 2 Action 1: Shriner's Road Well

**County:** Hertford

**Priority Grouping:** Medium Priority

**Priority Ranking:** 5

**Project Timeframe:** 0-5 years

**Location:** Shriner's Road

**Project Summary:** This well flooded during Hurricane Matthew, and had to be taken out of service. The project involves installation of elevated generators and a remote access system so the well can be monitored by personnel even when surrounding roads are impassable.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	A widespread issue in rural counties is the need to elevate and floodproof pumps and water/sewer infrastructure. These types of projects are relatively simple to address and return a huge value to the community. The need for these improvements has not been addressed at this point	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Unknown.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	>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?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	Unknown at this time.	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?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree



- **Harrellsville “Island”:** During Hurricane Matthew, the Town of Harrellsville was isolated from surrounding areas when the storm flooded NC-45 and NC-561. This project will increase the resiliency of these critical roadways by elevating major low water crossings (such as Chinkapin Creek and Wiccacon River) and creating a regular maintenance program for culverts.

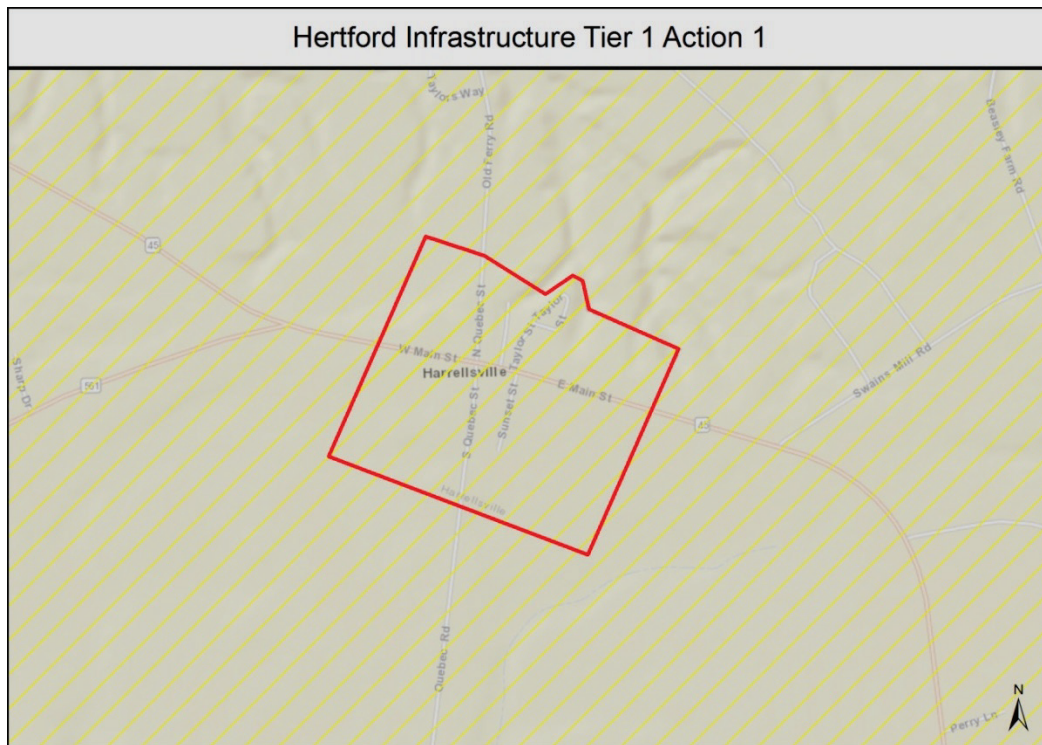


Figure 19. Infrastructure Tier 1 Action 1: Harrellsville “Island”

## Infrastructure Tier 1 Action 1: Harrellsville "Island"

**County:** Hertford

**Priority Grouping:** Medium Priority

**Priority Ranking:** 6

**Project Timeframe:** 0-5 years

**Location:** Harrellsville

**Project Summary:** During Hurricane Matthew, the Town of Harrellsville was isolated from surrounding areas when the storm flooded NC-45 and NC-561. This project will increase the resiliency of these critical roadways by elevating major low water crossings (such as Chinkapin Creek and Wiccacon River) and creating a regular maintenance program for culverts.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	The Town of Harrellsville was completely cut off from outside access during Hurricane Matthew. The existing infrastructure on NC 45 and NC 561 have not been improved to eliminate future repetition of this event	N/A
Consistent with existing plans (describe points of intersection/departure)	consistent with intent to protect critical infrastructure	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 improvements outlined in this task will ensure that Harrellsville will remain viable in future storm events and connected to outside supplies and services	Agree
For how long will this solution be effective?	Between 31 and 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?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Between 51 and 75%	Agree
What impacts to the environment of the county will result from this project?	no adverse impacts anticipated	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$1M+	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	State	Agree

- **Ahoskie Creek and DT Road:** Several homes and businesses in this area were inundated by floodwaters from Ahoskie Creek during Hurricane Matthew. The project involves regular debris removal and consistent maintenance of this portion of Ahoskie Creek in order to improve hydraulic efficiency and minimize the risk of flooding during future storm events.

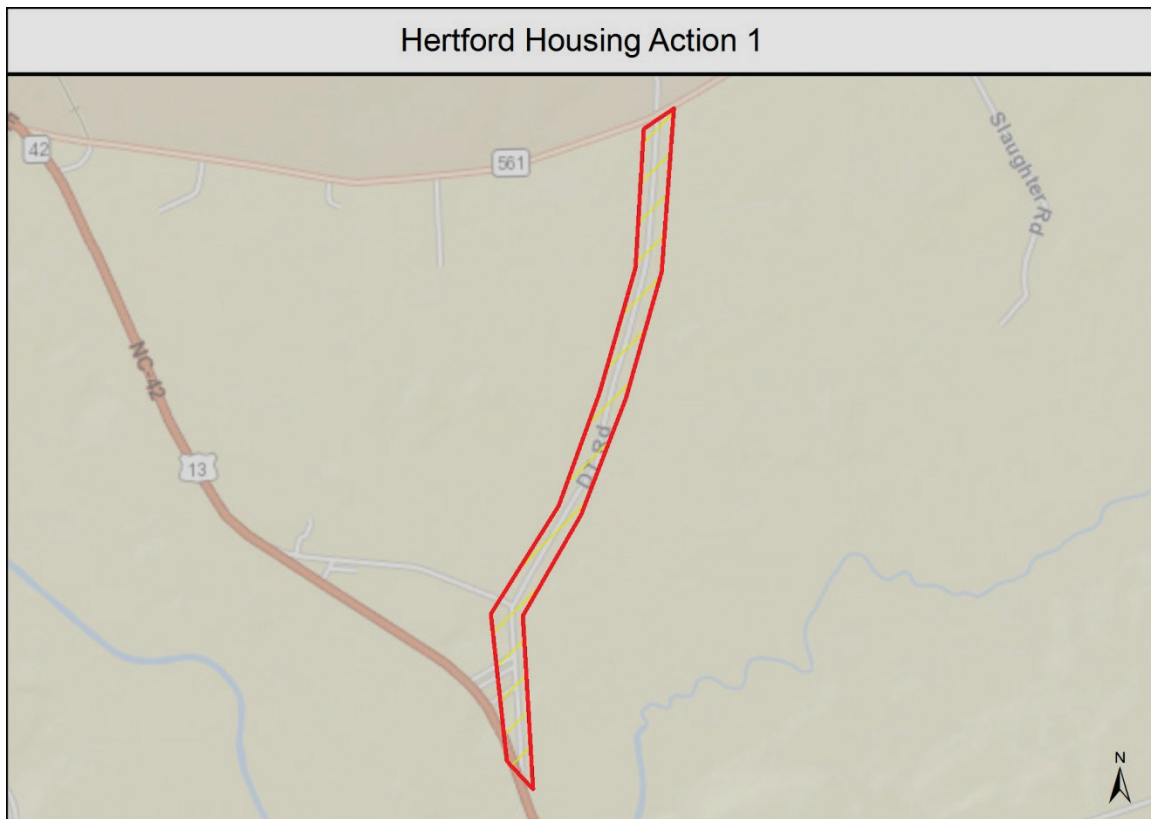


Figure 16. Housing Action 1: Ahoskie Creek & DT Road

## Housing Action 1: Ahoskie Creek Maintenance at DT Road

**County:** Hertford

**Priority Grouping:** Medium Priority

**Priority Ranking:** 7

**Project Timeframe:** 0-5 years

**Location:** Arrow Road / DT Road

**Project Summary:** Several homes and businesses in this area were inundated by floodwaters from Ahoskie Creek during Hurricane Matthew. The project involves regular debris removal and consistent maintenance of this portion of Ahoskie Creek in order to improve hydraulic efficiency and minimize the risk of flooding during future storm events.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	These areas are currently facing repeat damages from Ahoskie Creek continuing to rise over its banks and flood	N/A
Consistent with existing plans (describe points of intersection/departure)		Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Businesses in this area were damaged as a result of Hurricane Matthew. Improving the hydraulic efficiency of Ahoskie Creek in this area will reduce the risk of flooding during future storms.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	0	Agree
Is coordination with other communities/counties needed to complete this project?	Yes	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Less than 25%	Agree
What impacts to the environment of the county will result from this project?		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?	High	Agree
What is the technical feasibility of this project?	Unknown	Agree
Who will administer this project?	Unknown	Agree

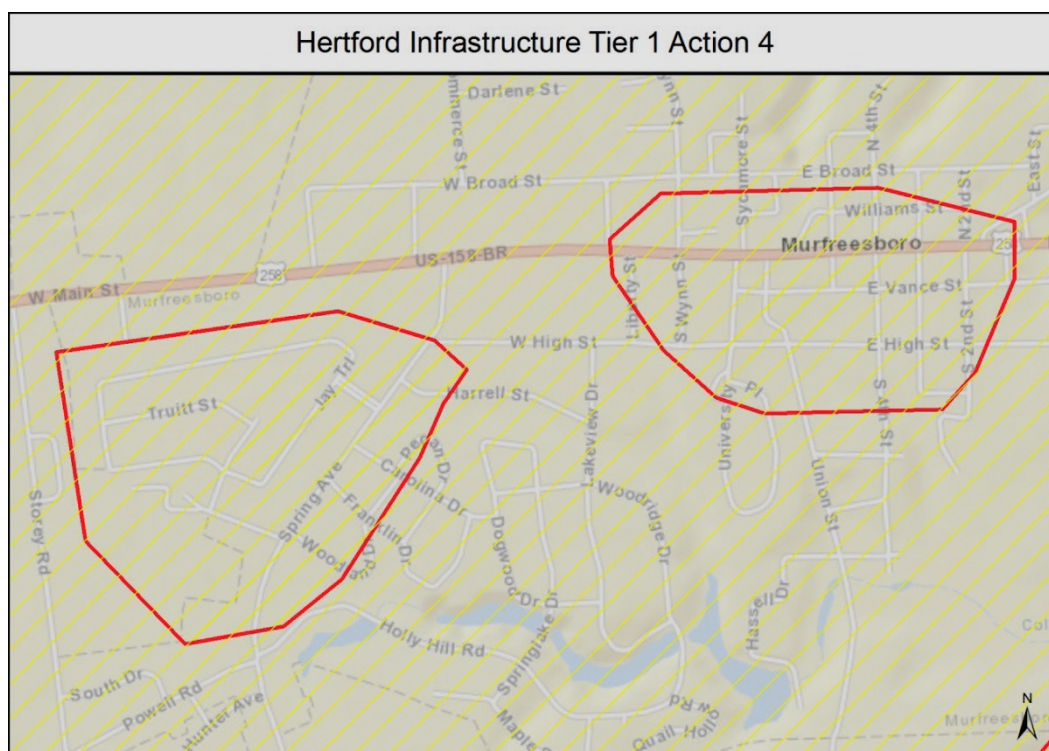
## Low Priority Infrastructure Strategies

Pillar	Action Name	Priority	Overall Ranking
Infrastructure	Infrastructure Tier 1 Action 4: Murfreesboro Drainage & Culverts	Low	9
Infrastructure	Infrastructure Action 8: Ebo Road Drainage & Culverts	Low	10
Infrastructure	Infrastructure Tier 1 Action 3: Como Drainage & Culverts	Low	12

**Table 10. Hertford Low Priority Infrastructure Summary**

This project represents the infrastructure strategies that Hertford County indicated are of a lower priority to address. Additional detail can be found below:

- **Murfreesboro Drainage & Culverts** : Several areas within the town flooded during Hurricane Matthew. The project will implement a program for regular culvert and ditch maintenance in this area.



**Figure 17. Infrastructure Tier 1 Action 4: Murfreesboro Drainage & Culverts**

## Infrastructure Tier 1 Action 4: Murfreesboro Culvert & Ditch Maintenance

**County:** Hertford

**Priority Grouping:** Low Priority

**Priority Ranking:** 9

**Project Timeframe:** 0-5 years

**Location:** Town of Murfreesboro (4th Street, Jay Trail, Union Street, High Street, Spring Avenue).

**Project Summary:** Several areas within the town flooded during Hurricane Matthew. The project will implement a program for regular culvert and ditch maintenance in this area.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	Improved maintenance of water management means that in these flood prone areas a financing need gap that has existed for some time and is estimated to continue in perpetuity without this assistance.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Unknown.	Agree
For how long will this solution be effective?	Between 11 and 30 years	Agree
How effective is the risk reduction?	<50 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	4-6	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?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	Unknown.	N/A
What is the capability of the local government to administer this project?	Medium	Agree
What is the financial range of this project?	\$101K - \$250K	Agree
What is the level of public support for this project?	High	Agree
What is the technical feasibility of this project?	Unknown	Agree
Who will administer this project?	Unknown	Agree



- **Ebo Road Drainage & Culverts:** Several areas along this residential corridor flooded during Hurricane Matthew. The project will implement a program for regular culvert and ditch maintenance in this area.

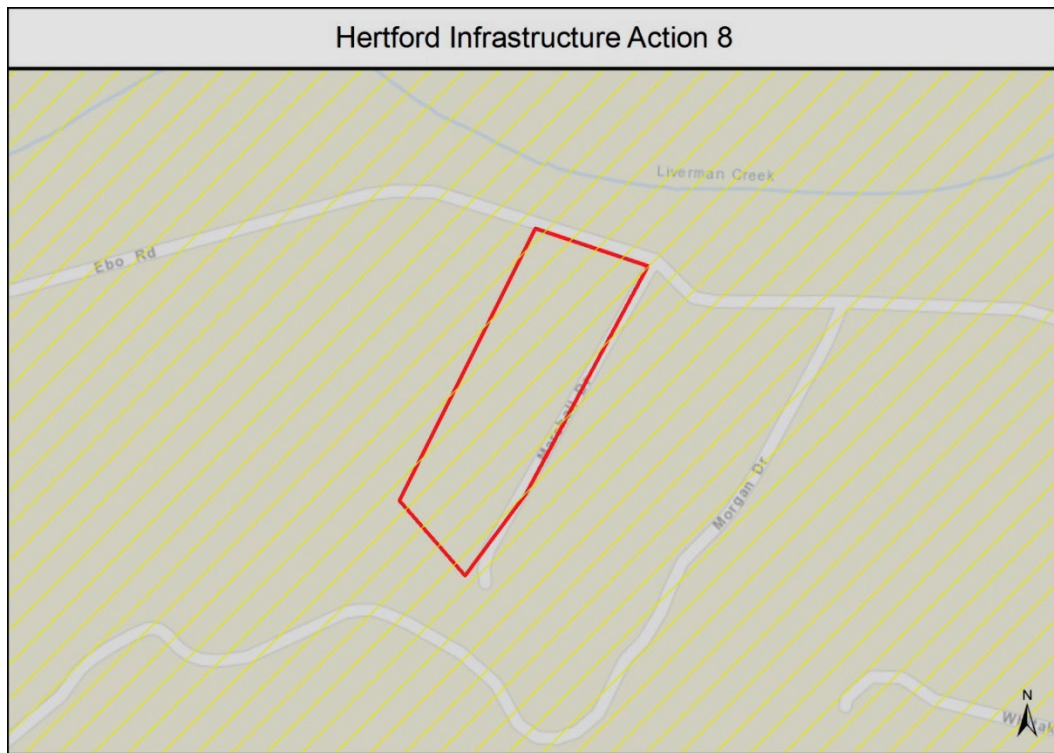


Figure 18. Infrastructure Action 8: Ebo Road Drainage & Culverts



## Infrastructure Action 8: Ebo Road Culvert & Ditch Maintenance

**County:** Hertford

**Priority Grouping:** Low Priority

**Priority Ranking:** 10

**Project Timeframe:** 0-5 years

**Location:** Ebo Road

**Project Summary:** This important thoroughfare flooded during Hurricane Matthew. The project will implement a program for regular culvert and ditch maintenance in this area.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This road represents a primary connection for residents. Increasing its resiliency against future storm events will benefit the county as a whole.	N/A
Consistent with existing plans (describe points of intersection/departure)		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.	Agree	Agree
For how long will this solution be effective?	Less than 10 years	Agree
How effective is the risk reduction?	50-100 year event	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	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?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?		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?	High	Agree
What is the technical feasibility of this project?	Higher than 75%	Agree
Who will administer this project?	County	Agree

- **Como Drainage & Culverts** : Several areas along this residential corridor flooded during Hurricane Matthew. The project will implement a program for regular culvert and ditch maintenance in this area.

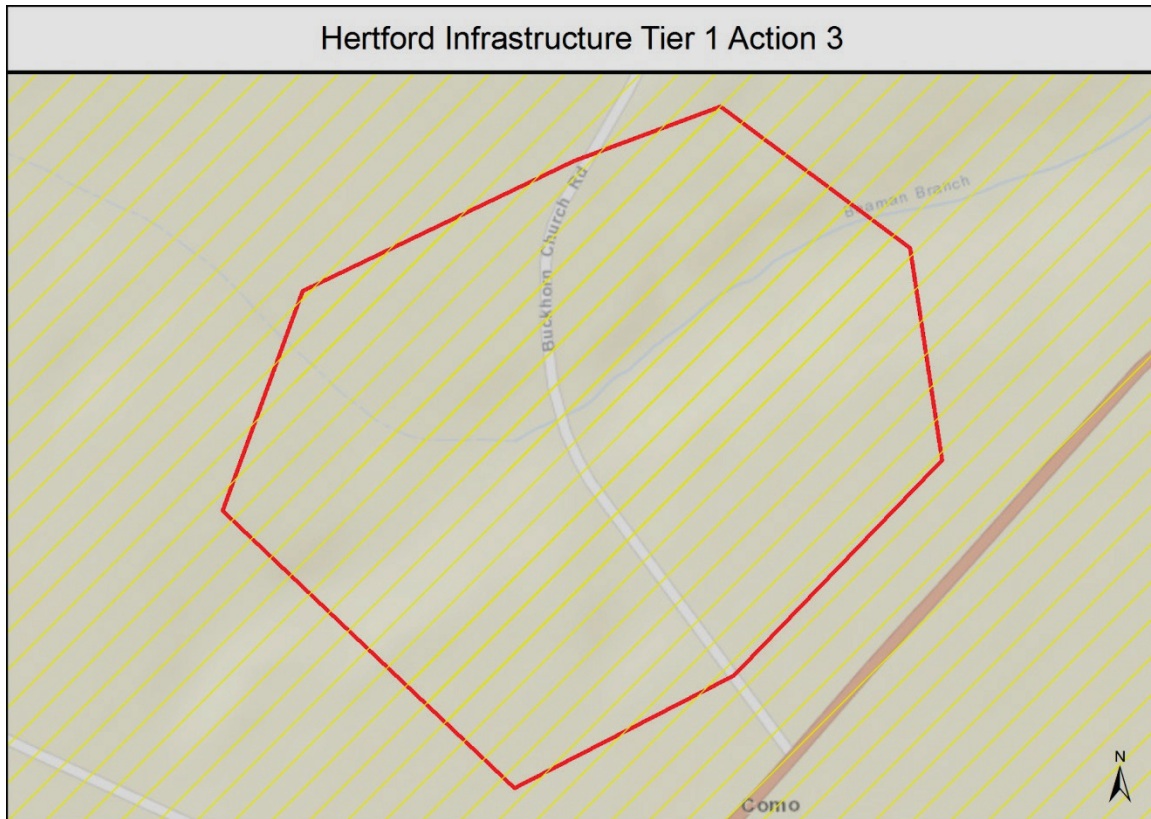


Figure 19. Infrastructure Tier 1 Action 3: Como Drainage & Culverts

## Infrastructure Tier 1 Action 3: Como Culvert & Ditch Maintenance

**County:** Hertford

**Priority Grouping:** Low Priority

**Priority Ranking:** 12

**Project Timeframe:** 0-5 years

**Location:** Buckhorn Church Road int. Highway 258, Town of Como

**Project Summary:** This important thoroughfare flooded during Hurricane Matthew. The project will implement a program for regular culvert and ditch maintenance in this area.

Question	Response	Disposition
Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew.	This is one of the locations in Hertford County where repeated flooding has created a category of projects that need attention before another flood event that will cause yet another damaging result.	N/A
Consistent with existing plans (describe points of intersection/departure)	Unknown.	Agree
Does this project comply with existing Local and State authority (codes, plan and ordinance)?	Yes	Agree
Does this project meet the intents and goals for the Hurricane Matthew Recovery Act?	Yes	Agree
Explain any benefits or impacts to the economy of the county from this project.	Uninterrupted access to the roadway will allow for cars and commerce to proceed to their destinations, which is not currently the case during certain rain events.	Agree
For how long will this solution be effective?	Less than 10 years	Agree
How effective is the risk reduction?	Unknown	Agree
How many public facilities are involved in this project (buildings and infrastructure)?	1-3	Agree
Is coordination with other communities/counties needed to complete this project?	No	Agree
Is this project consistent with Federal Laws	Yes	Agree
To what degree does this project adversely impact local floodplain/coastal zone management?	No Impact	Agree
To what degree will it be possible to positively quantify the environmental benefits and ROI of this project?	Unknown	N/A
What impact will this action have on the local economy/tax base?	Unknown	Agree
What impacts to the environment of the county will result from this project?	Unknown.	N/A
What is the capability of the local government to administer this project?	High	Agree
What is the financial range of this project?	\$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

## 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.