

Hurricane Matthew Resilient Redevelopment Plan

Gates County



May 2017

Version 1.1

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Change Log

| Version | Date | Summary of Changes |
|---------|---------|-------------------------------------|
| 1.1 | 6/15/17 | Minor Revisions |
| 1.2 | 8/30/17 | Labor and unemployment data updated |
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Executive Summary

In October 2016, Hurricane Matthew caused widespread destruction in the Caribbean and up the Eastern Seaboard of the United States. In North Carolina, at least 25 people lost their lives, and 100,000 homes, businesses, and government buildings sustained damage estimated at \$4.8 billion.¹ At the storm's peak, 3,744 individuals fled to 109 shelters across the region. More than 800,000 households lost power and 635 roads were closed, including the major east-west and north-south corridors.

In December 2016, the North Carolina General Assembly established the North Carolina Resilient Redevelopment Planning (NCRRP) initiative as part of the 2016 Disaster Recovery Act (*Session Law 2016-124*). The purpose of the program is to provide a roadmap for community rebuilding and revitalization assistance for the communities that were damaged by the hurricane. The program empowers communities to prepare locally driven recovery plans to identify redevelopment strategies, innovative reconstruction projects, and other needed actions to allow each community not only to survive but also to thrive in an era when natural hazards are increasing in severity and frequency.

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

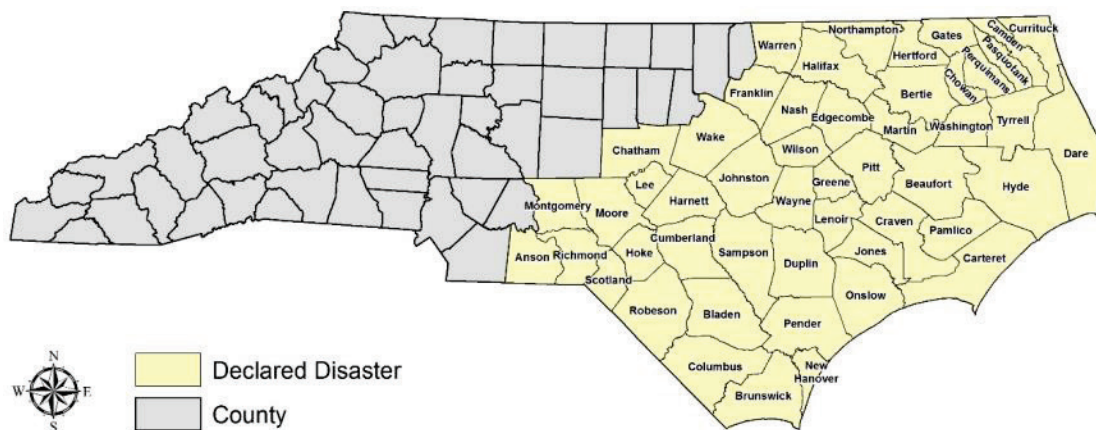


Figure 1. NCRRP Counties

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

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

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

After multiple public meetings, Gates County has identified seven 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 | 2 |
| Economic Development | 0 |
| Infrastructure | 4 |
| Environment | 1 |
| Grand Total | 7 |

Table 1. Gates County Summary of Projects by Pillar



1. Background

1. Background

Summary of Hurricane Matthew Storm Damage

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

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

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

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

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

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

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

State/Legislative Response

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

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

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

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

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

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

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

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

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

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

Resilient Redevelopment Planning

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

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

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

Scope of the Plan

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

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

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

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

Local Participation and Public Engagement

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

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

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

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

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

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

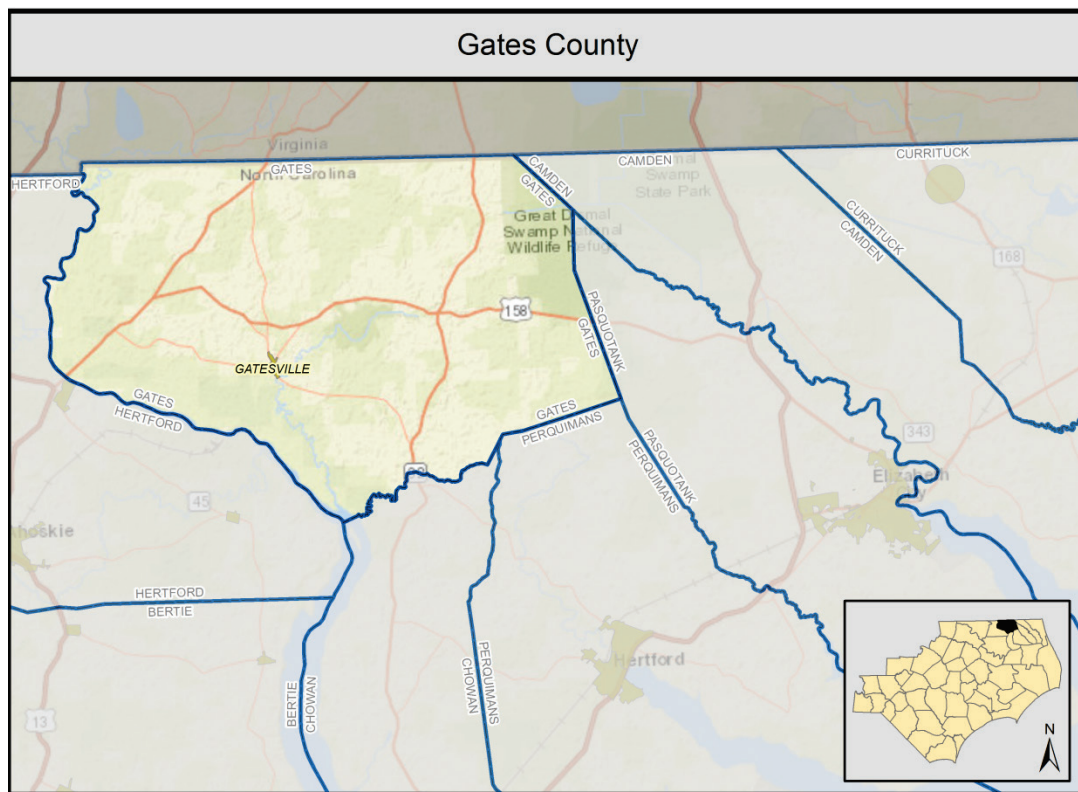


Figure 2. Gates County and Neighboring Counties

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. In the upper half of the image, a large body of water has inundated a wooded area, with only the tops of many trees visible. Below this, a residential street is shown with several houses. The yards and surrounding areas are completely underwater. The houses are mostly two-story structures with light-colored siding and dark roofs. Some houses have their lower levels submerged. In the foreground, there is a large, dense area of green trees, some of which are also partially submerged. The overall scene depicts a significant natural disaster impact on a community.

2. County Profile

2. County Profile

Located in the northeast portion of the state, Gates County shares a border with Virginia. The County is located in the Northern Coastal Plain of North Carolina on the North Carolina/ Virginia state line. The county is adjacent to Suffolk, Virginia, and immediately Southwest of Chesapeake, VA. The county includes two census-designated places: the Town of Gatesville and Sunbury. Based on ACS, 2011-2015 population estimates the population of the county is 11,724. This section provides a profile of housing, economics, infrastructure, environment, and administration within Gates County.

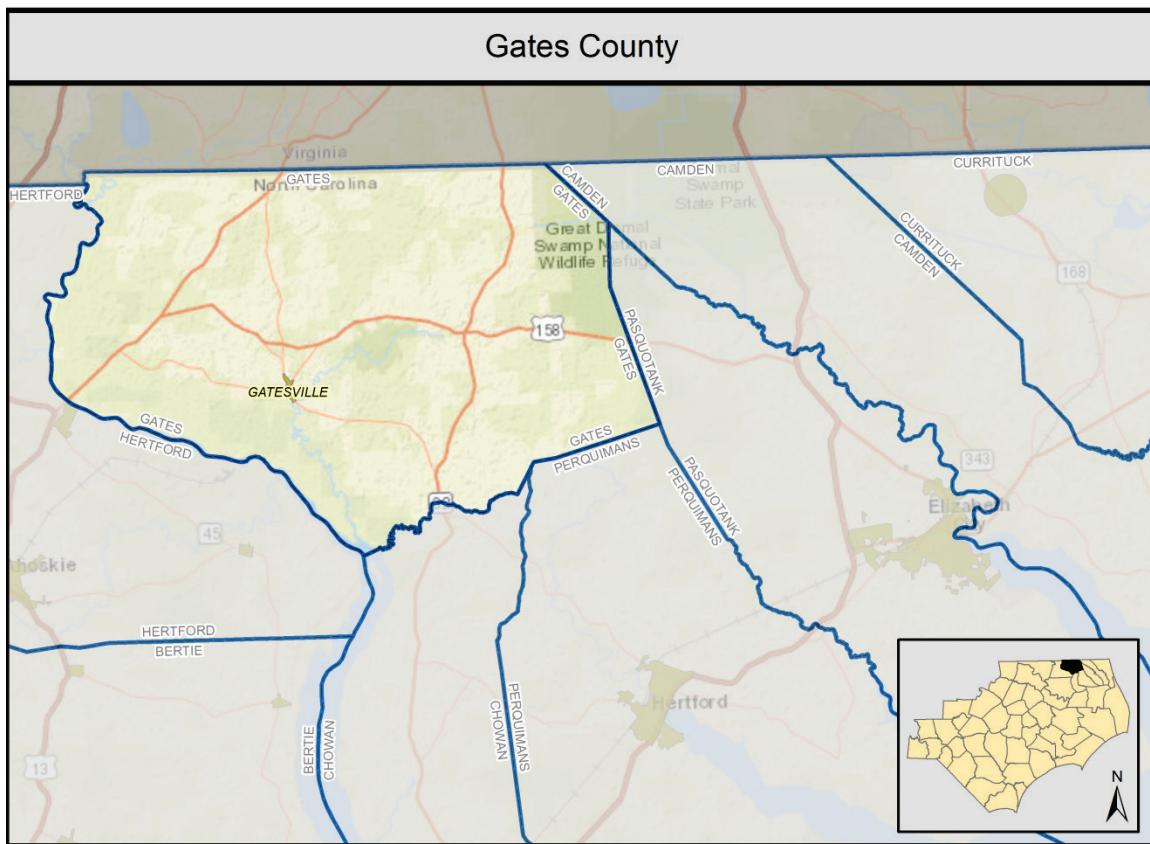


Figure 3. Gates Base Map

Demographic Profile

Demographics for Gates 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

Gates County has a population of 11,724 persons. The Town of Gatesville is the most populous place within the County with a population of 403 persons. Sunbury, a census designated place and an unincorporated community has a population of 284 persons.³

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

Population Change (2000 to 2010)

The Gates county population remained relatively the same between the 2000 and 2010 Census. In 2000 the population was 10,516 persons and in 2010 it was 12,197 persons. The population increased by 1,681 persons (16 percent) over this 10-year period. In comparison, North Carolina grew by 19 percent from 8,049,313 persons in 2000 to 9,535,483 persons in 2010.⁴

Age

The median age in Gates County is 43 years; the median age for North Carolina is 42 years. Within Gates County, the median age of residents in Gatesville (42 years) is higher than that exhibited by the residents of Sunbury, which is 37 years.³

Race and Ethnicity

White persons comprise the single largest ethnic group in the County comprising nearly 64.2 percent of the population. Black persons account for 33.6 percent of the population. The remaining race categories in the County include American Indian and Alaska Native Alone (0.3%), Asian (0.2%), Native Hawaiian/Pacific Islander (0.0%), Some Other Race (0.4%) and two or more races (1.4%).

Within the County, both Gatesville and Sunbury are predominantly White. African Americans account for a quarter of the population in Sunbury and 10 percent of the population in Gatesville. Minorities comprise 31 percent of the population in Sunbury compared to 12.7 percent in Gatesville. Both jurisdictions had a lower share of minority persons compared to Gates County and the state.

The Latino population in the County is just 1.9 percent compared to 9 percent for North Carolina. Sudbury CDP has a Latino population of 5.6 percent compared to only 0.2 percent in Gatesville. Table 2 presents the racial distribution of the areas within the County in comparison to the state.

| 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 |
|-----------------------|--------------|---------------------------|---|-------------|-----------------------------------|-----------------|-------------------|-----------------|
| Gatesville | 87.3% | 10.4% | 0.0% | 0.7% | 0.0% | 0.2% | 1.2% | 12.7% |
| Sunbury | 68.7% | 25.7% | 0.0% | 0.0% | 0.0% | 5.6% | 0.0% | 31.3% |
| Gates County | 64.2% | 33.6% | 0.3% | 0.2% | 0.0% | 0.4% | 1.4% | 35.8% |
| North Carolina | 69.5% | 21.5% | 1.2% | 2.5% | 0.1% | 3.0% | 2.4% | 30.5% |

Table 2. Gates 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 Gates County, most of individuals identified as LEP (less than 1 percent) speak Spanish and a very small percentage speaks Indo-Euro languages. Similarly, the primary language group for LEP individuals in North

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

Carolina is Spanish. Gatesville has some residents who can be classified under this category. Sunbury does not have a LEP population according to census data.⁵

Poverty

In Gates County, 14 percent of the population is below the poverty level compared to 17 percent of the North Carolina population. In Gatesville and Sunbury, 16 percent and 11 percent of the populations are below the poverty level respectively.⁶

Low and Moderate Income Individuals

In Gates County, 41 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.⁷

Median Household Income

The median household income of the population is \$49,258 in Gates County and \$53,000 in North Carolina. Sunbury has the highest median household income for this age group, \$69,712 and Gatesville reported a median household income of \$52,230⁸

Zero Car Households⁹

In Gates County, 4 percent of households do not have a vehicle available compared to 7 percent of North Carolina households. Within Gates County, Gatesville residents reported 2.5 percent of the population without access to a vehicle, while no residents in Sunbury reported not having a vehicle for their use. Not having a car available directly impacts the ability to evacuate in an emergency. The residents of Gatesville would have the greatest need for assistance in the event of an evacuation.

5 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".

6 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.

7 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/>

8 Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B19013, "Median Household Income in The Past 12 Months (In 2015 Inflation-Adjusted Dollars).

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

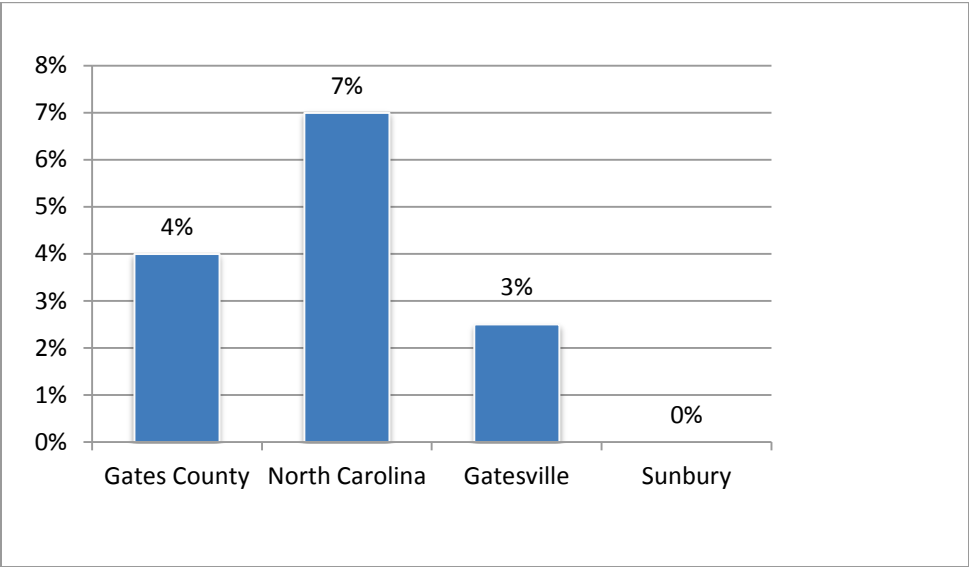


Figure 4. Zero Car Households by Percentage

Commuting: Travel Time to Work, Means of Transportation¹⁰

The majority of Gates County residents commute alone to work (83 percent), which is nearly identical to state average of 81 percent. Within the County, both Gatesville and Sunbury reported nearly 84 percent of their residents commuting to work alone. There were no residents in the county commuting to work by public transport.

The mean commute time to work for Gates County residents is approximately 36 minutes. In comparison, the North Carolina mean commute time is 24.7 minutes. Mean commute times for the two large jurisdictions in the county was nearly identical to the pattern exhibited in the state.

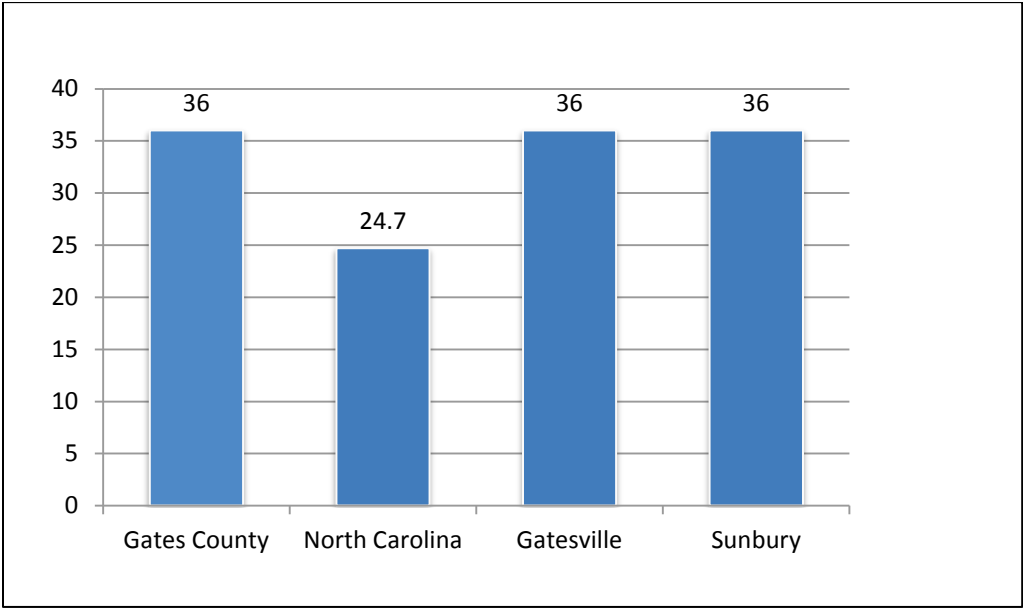


Figure 5. Mean Commute Time to Work in Minutes

¹⁰ 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 Profile¹¹

Gates County has approximately 5,200 housing units, 68 percent of which are single-family homes, 1.0 percent multi-family units, and 31 percent are manufactured housing units.

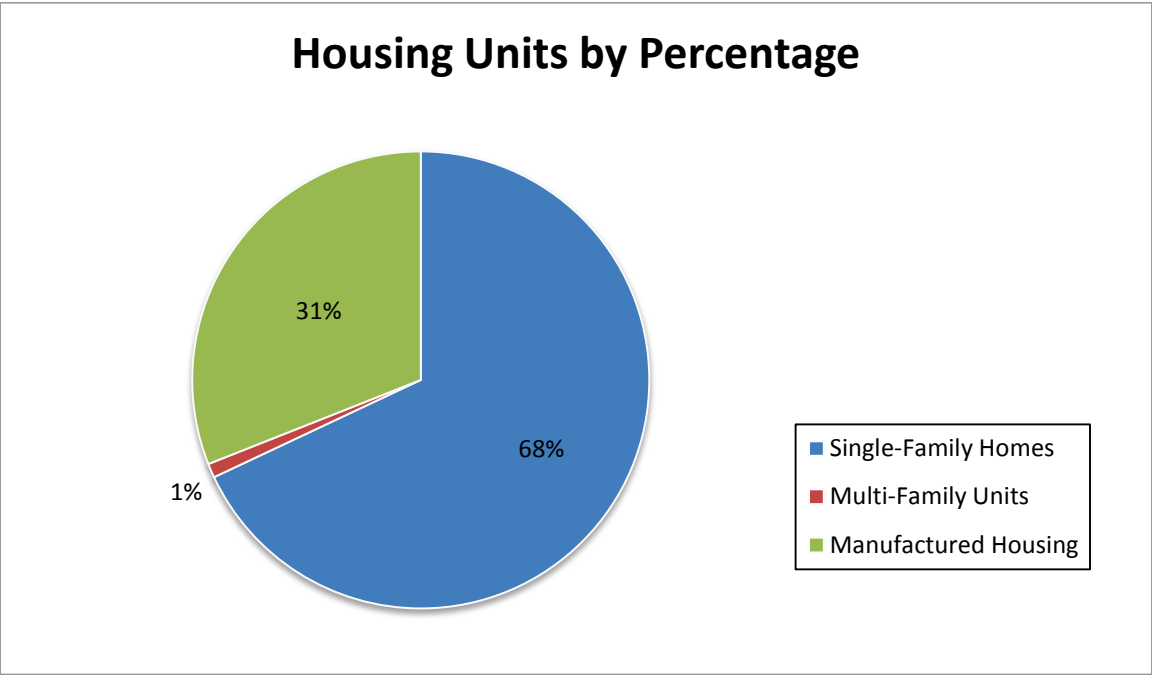


Figure 6. Housing Units by Percentage

Of the occupied housing units, 80 percent are owner-occupied compared to 65 percent in North Carolina; 20 percent are renter-occupied compared to 35 percent in North Carolina.

The median housing value in Gates County is \$144,300. In comparison, the median housing value in North Carolina is \$140,000. Housing values in the town of Gatesville (\$162,500) was higher than those reported in the County.

According to the National Housing Preservation Database, Gates County has only seven affordable housing units.

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

Economic/Business Profile

Gates County has a good representation from businesses a variety of industry sectors. Based on a review of U.S Census data tables from 2000 to 2013, the Educational, Health and Social Services sectors were the largest employment sectors in the County. Most of the jobs generated by these sectors were located in the Town of Gatesville. Retail trade and Agriculture sectors were the other key sectors employing a large portion of the County's workforce. Together these three sectors employed nearly 60 percent of the workforce.¹²

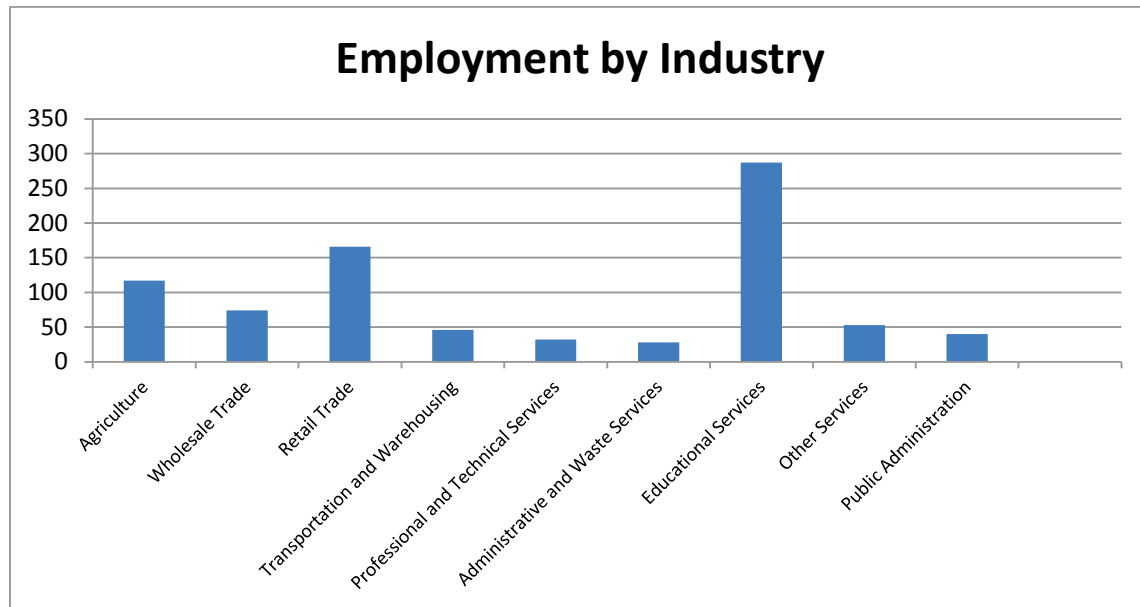


Figure 7. Employment by Industry

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 Gates County is 5,193.¹³

The civilian unemployment rate in Gates County is 5.2 percent. In comparison, the North Carolina civilian unemployment rate is 5.1 percent.¹³ Within the town of Gatesville, the unemployment rate was reported to be 13.4 percent and 6.9 percent in Sunbury.¹⁴

¹² Source: AccessNC – North Carolina Department of Commerce, April 2017:
<http://accessnc.nccommerce.com/DemoGraphicsReports/pdfs/countyProfile/NC/37065.pdf>

¹³ 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>

¹⁴ 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 Gates County¹⁵ represent the education and health services; manufacturing; information; natural resource and mining; trade, transportation and utilities sectors.

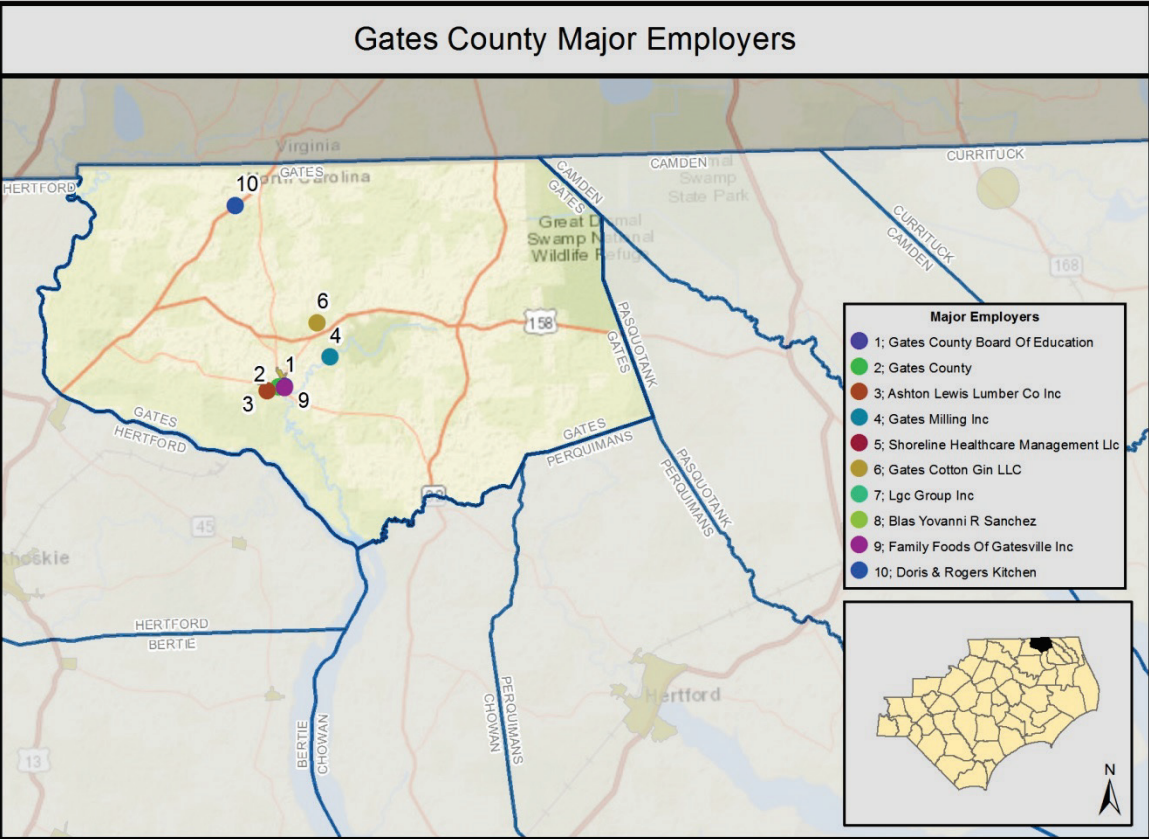


Figure 8. Major Employers by Number of Employees

15 Sources: NC Department of Commerce

Economic Development

Based on the Gates County Comprehensive Plan, 2016, there is one privately-owned commercial park in Gates County. The Merchants Commerce Park, located on U.S 158 across from the Gates County High School is approximately 147 acres. Tenants of the park include the Gates County Community Center, Gates County Library, State Employees Credit Union, and the Gates House Meridian Assisted Living Facility. Along with the County administration, the Gates County Chamber of Commerce strives to improve the attractiveness of the County to businesses and industry groups. The chamber offers valuable information to new businesses that wish to relocate to the County.

Infrastructure Profile

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

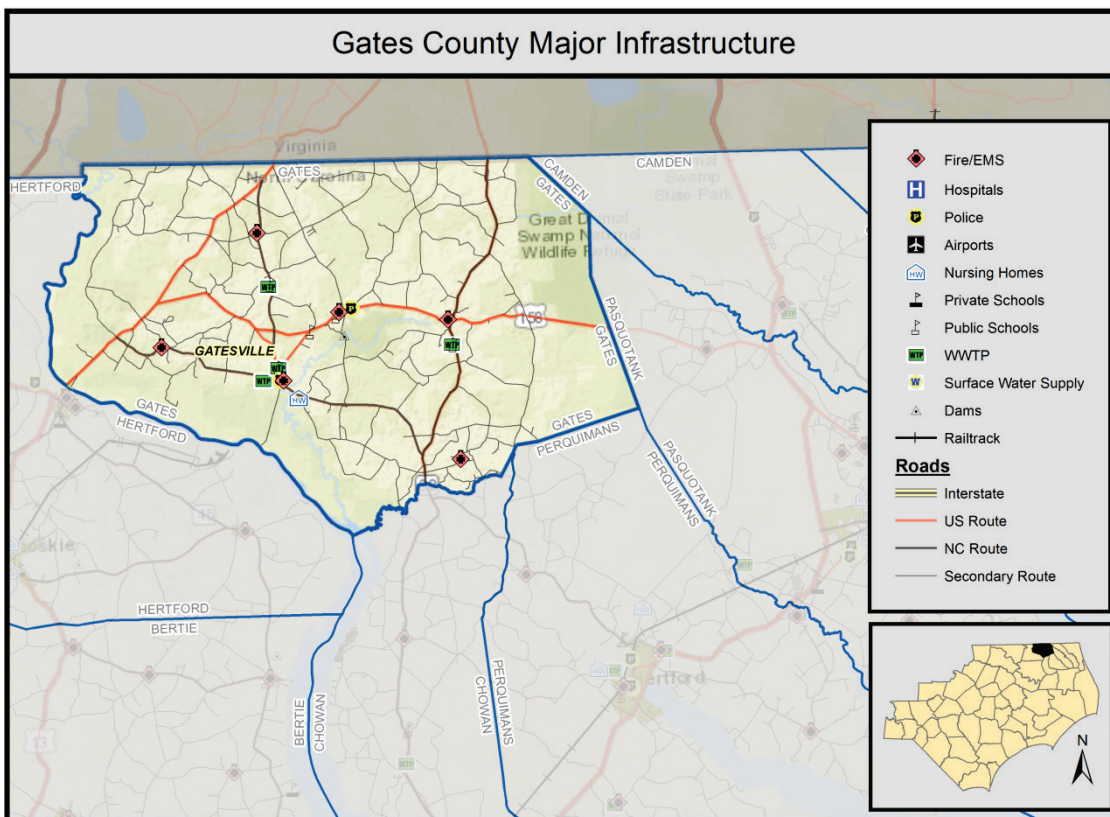


Figure 9. Gates County Major Infrastructure

Transportation

The existing highway system in the County primarily consists of U.S and North Carolina secondary roads. The major routes that traverse the County are U.S routes 13 and 158 and North Carolina primary roads 131, 137, 37 and 32. Routes 37 and 32 run north to south, U.S 13 cuts through the western portion of the County and U.S 158 runs east-west through the middle of the County. There are no airport facilities located in the County. A rail corridor that ran through the County from the Virginia border to Hartford County is now permanently closed. The County has also designated portions of route 37 as bicycle path for the use of residents and visitors.

Health

Health facilities in the County include the Gates County Medical Center, and the Gateway Community Health Centers' Adolescent Care Center. There is no full service hospital facility located within Gates County; however, the base hospital for EMS Responders within Gates County is the Sentara Albemarle Medical Center located in Elizabeth City.

Education

There are five public schools in the Gates County school district (Gates County Comprehensive Plan, 2016). They include three elementary schools, one middle school, and one secondary school. There are no private schools or other higher educational facilities located in the county.

Water

Gates County owns and operates the County Water System which supplies water to all residents in the County¹⁶. However, some citizens continue to rely on wells for water supply. The Gates County Water Department also provides water to approximately 3,700 customers plus the Town of Gatesville. The Water Department pumps its water from three deep wells located on Water Plant Road. Currently the system has three overhead storage tanks: two of these contain 250,000 gallons and one contains 400,000 gallons. The system has approximately 400 miles of water main, plus 200 fire hydrants. There are no known plans for private water service areas.

Nearly all property owners, businesses and institutions rely on private on-site septic systems for wastewater treatment. There are no private wastewater service areas¹⁷.

Power

The Roanoke Electricity Cooperative supplies power to the residents and businesses located in the County. There are no known solar farms located within Gates County¹⁷.

Environmental Profile

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

Water Resources

The Chowan River runs along the western border of the County and numerous tributaries of the Chowan River and the Great Dismal Swamp traverse the County. Wetlands comprise nearly 37 percent of the County's land area and the Riverine Swamp Forest type of wetlands account for 13 percent of all wetlands.¹⁷

Natural and Managed Areas

There are numerous significant protected lands and natural heritage areas in Gates County. The county is an environmentally rich area. Some of the primary natural heritage program areas include the

¹⁶ Sources: NC Division of Water Resources, Local Water Supply Plans

¹⁷ Sources: Gates County Comprehensive Plan, 2016

Chowan River Aquatic Habitat, Chowan Swamp, Great Dismal Swamp National Wildlife Refuge and the Chowan Sand Banks.¹⁸

Biodiversity and Wildlife Habitat

The NC Natural Heritage Program produces a biodiversity and wildlife habitat assessment for the state. According to this assessment, areas with the highest rating for biodiversity and wildlife habitat are along the Neuse River and its tributaries. These areas rank between a 7 and 10, with 10 being the highest possible score. Other areas of the county rank 5 to 6. Most of the county is unrated.¹⁸

Parks and Recreation

Based on the 2016 Comprehensive Plan, Gates County does not maintain a full-time Parks and Recreation Department; however, there are several active and passive recreational resources located in the County. Merchants Mill Pond State Park is located east of Gatesville in rural Gates County. The park is a regionally significant park. It covers 3,447 acres around a 200-year-old, 700-acre millpond. Canoeing is one of the park's major attractions; however, a range of facilities and activities are available on a seasonal basis. They include a campground, comfort stations, educational programs, fire rings, fishing, picnic facilities, bathhouses and hiking trails. Other large parks and recreational areas in the County include a boat launch, dock and fishing pier at US 13 and Shoups Landing Road and a boat launch at New Road Street.

Administrative Profile

Gates County has a hazard mitigation plan prepared as part of the Albemarle Regional Hazard Mitigation Plan. In order to guide the development of this Plan, the counties that comprise the Albemarle region created the Albemarle Hazard Mitigation Planning Committee (HMPC). This committee represented a community based planning team made up of representatives from various county departments and municipalities and other key stakeholders identified to serve as critical partners in the planning process. One of the hazard mitigation strategies in the plan is for all counties to develop and maintain ongoing protocols to maintain critical public services at all times, and train staff at the respective county and town departments to prepare, respond and recover from disaster events.

¹⁸ Source: NC Natural Heritage Program



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 Gates County is highlighted graphically in the figure below.

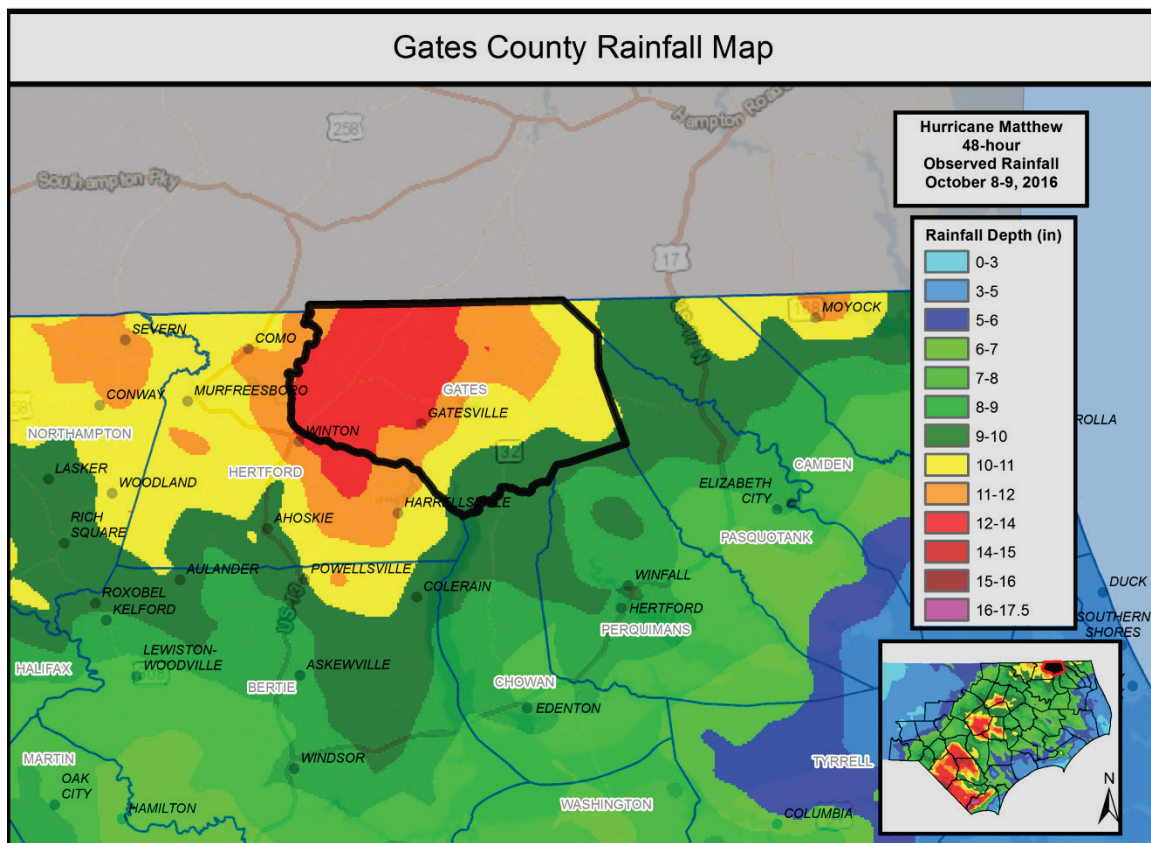


Figure 10. 48-hour Observed Rainfall Depth (October 8-9, 2016)

Housing

According to Individual Assistance claims as of 2017, there were 158 impacted houses in Gates 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.

There were minimal impacts to housing in Gates County because of Hurricane Matthew. The bullets below summarize some of the major impacts to housing units and subdivisions that local officials identified from the event.

- **Homes Flooded from Hurricane Matthew:** Approximately 10-15 homes along Sarem Road and Savage Road located in the northern portion of the County experienced some flooding during Hurricane Matthew. The homes are in low-lying areas and are prone to flooding during heavy rain events.
- **Homes At-Risk of Future Flooding:** Some structures along Harrell’s Church Road in Gatesville are at risk from flooding. According to historic flooding information, none of these structures have experienced repetitive losses.

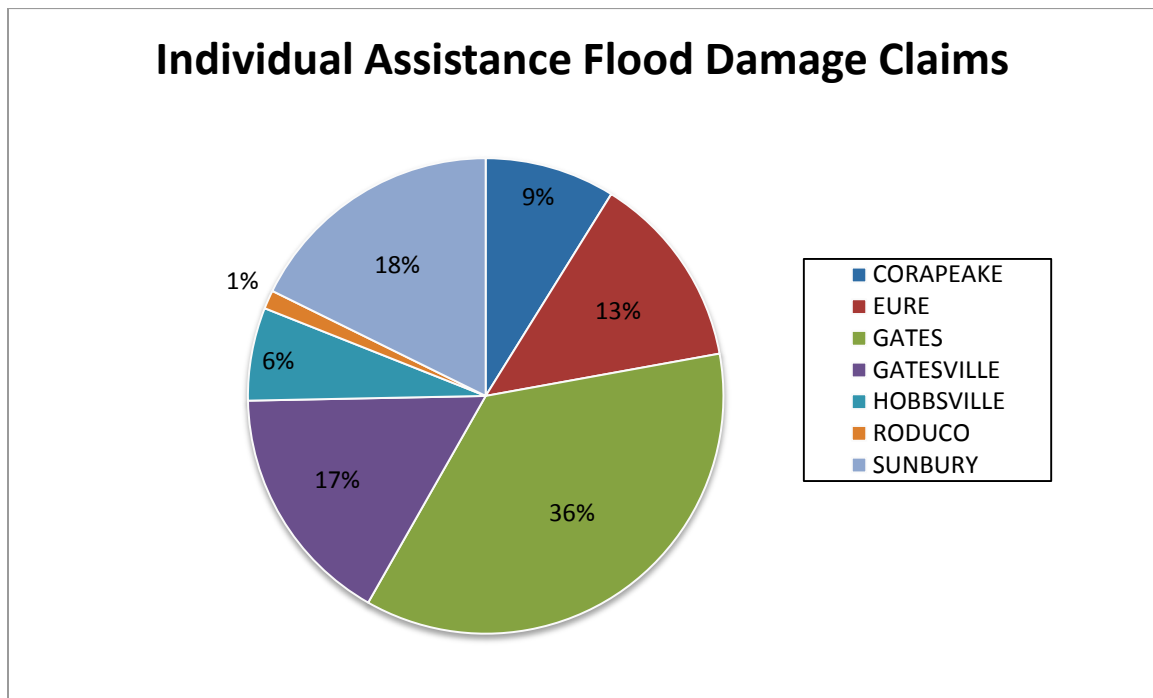


Figure 11. IA Flood Damage Claims by Area

Economics / Business / Jobs

Impacts to the local economy, business operations and jobs were minor in Gates County. There were no reports of business closures for any extended period of time. The bullets below summarize some of the impacts to the economy/businesses/jobs that were identified by local officials from the event.

- **Flooding of individual businesses:** County officials reported the flooding of three poultry houses. Due to possible contamination of the poultry sheds, all chickens were killed resulting in substantial business losses.

Infrastructure

According to Public Assistance claims, which are often closely tied to infrastructure, there were no claims in Gates County as a result of Hurricane Matthew. It should be noted that additional claims from Hurricane Matthew may still be pending, so this number may not reflect the final claims data from the event.

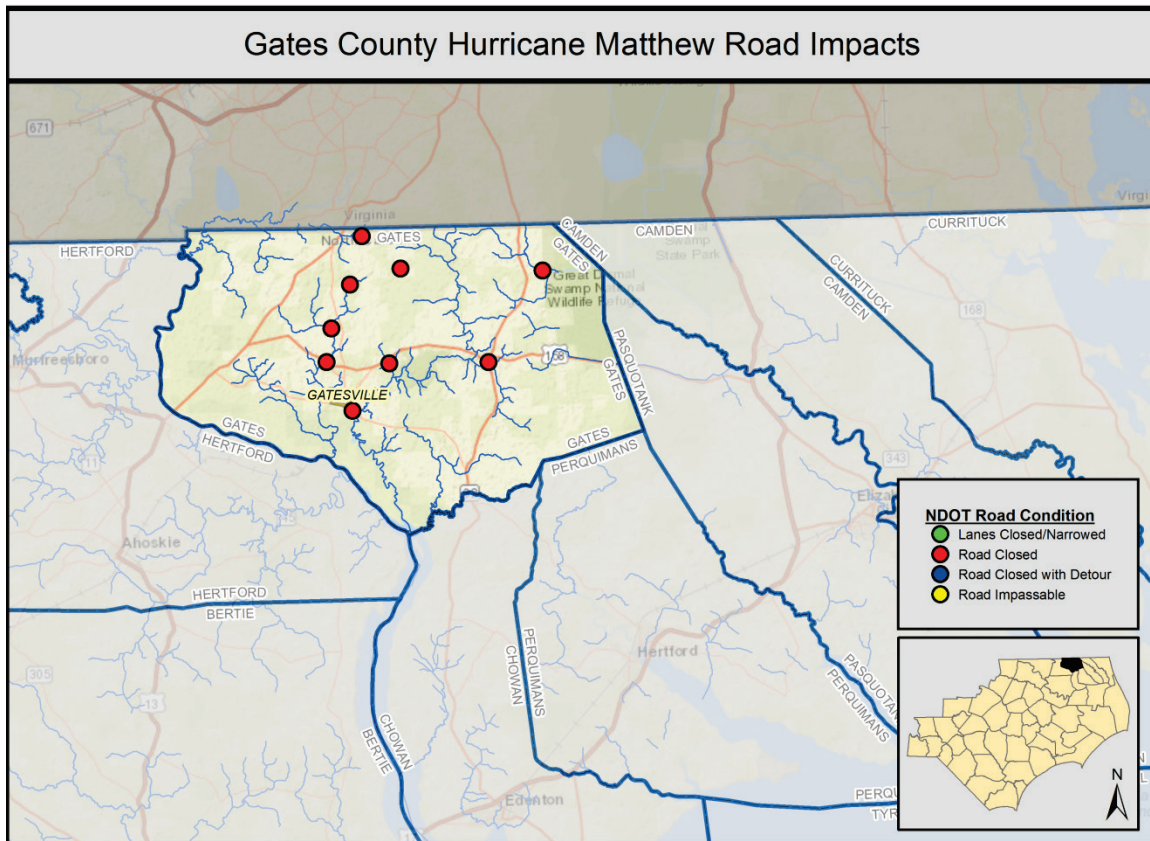


Figure 12. Gates County Infrastructure Damage

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

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 did take place in Gates County, but were not as widespread as noted in some of the other counties affected by Matthew. Some of the locations that were brought to our attention by County officials include:
 - Bennett's Creek, a large waterway that passes through the County flooded and caused some minor flooding on NC 37. A gas station located along NC 37 and close to Bennett's Creek also flooded.
 - The Cole Creek Bridge located along Hackley Road also flooded due to the storm. One of the reasons for the flooding is the presence of Beavers in some locations along Cole Creek.
 - Flooding at the intersection of High Road and Highway 137
 - Washout of the culvert along Highway 32 and the Trotman Creek
- **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 small number of water/wastewater facilities were impacted in Gates County. Details on the incidents are below:

- The south-eastern portion of the Town of Gatesville relies on water supply from the Sunbury water tower. During Matthew due to pumping issues at the Sunbury water tower, the south-eastern portion of the town experienced some loss of water. This can be mitigated if an approximately 6" water line can connect the main line that stops along Highway 37, south of the town of Gatesville to a valve along Flat Branch Road, that would supply water to the south-eastern portion of the Town of Gatesville.
- Due to debris and over-grown vegetation clogging the storm drains, there was some flooding at the intersection of Route 32 and US 158. However, county officials were of the view that this is not a systemic issue, but a rare occurrence.
- The excessive rainfall due to Hurricane Matthew resulted in some erosion along water lines at two locations. About 25-30 feet of an 8" main line across from the Fire Tower on US 158 was exposed, and about 8 feet of a 4" line along Bosley Road suffered some damage during the hurricane.

Ecosystems / Environment

Overall, environmental impacts in Gates County as a result of Hurricane Matthew were relatively minimal. However, damage to the ecosystem from a variety of sources that can lower water quality is an issue of concern. Further details are provided below.

- **Water Quality:** Along the Chowan River and in water-bodies across Gates County and some of the neighboring counties, the presence of blue-green algal blooms and alligator weed choking waterways is a common occurrence. There are also several locations along the Chowan River and parts of the Albemarle Sound where Hydrilla is present, and is gradually spreading across these water bodies. One of the reasons for the growth of these plant species in water bodies is transfer of nutrients and sediments from farmlands to the water-bodies either through erosion, agricultural operations or accelerated clearcutting of riparian forests. As these water-bodies are sources of drinking water, these sediments, nutrients, and the plant species are known to affect the quality of the water source.
- **Natural Debris Buildup:** There are a large number of water bodies, wetlands and swamps in Gates County. Tributaries of the Chowan River and Great Dismal Swamp drain throughout the County. Nearly all these waterbodies and swamps 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 that backs up water upstream and results in flooding.



4. Strategies for Resilient Redevelopment

4. Strategies for Resilient Redevelopment

This section provides details about the resilience and revitalization strategies and actions identified in Gates 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 | 2 |
| Economic Development | 0 |
| Infrastructure | 4 |
| Environment | 1 |
| Grand Total | 7 |

Table 3. Gates County Summary of Projects by Pillar

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

| Pillar | Action Name | Priority | Overall Ranking |
|----------------|--|----------|-----------------|
| Infrastructure | Gates Infrastructure Action 2: Ditch Cleaning | High | 1 |
| Infrastructure | Gates Infrastructure Action 1: Water line south of Bennett's Creek Bridge | High | 2 |
| Infrastructure | Gates Infrastructure Action 3: Water line repairs on US-158W and along Bosley Road | High | 3 |
| Housing | Gates Housing Action 1: Housing along Sarem Road and Savage Road | Medium | 4 |
| Infrastructure | Gates Infrastructure Action 4: Cole Creek Bridge along Hackley Road | Medium | 5 |
| Environment | Gates Environment Action 1: Water-bodies countywide and along the Chowan River | Low | 6 |
| Housing | Gates Housing Action 2: Homes along Harrell's Church Road | Low | 7 |

Table 4. 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

Medium Priority Housing Strategies

| Pillar | Action Name | Priority | Overall Ranking |
|---------|--|----------|-----------------|
| Housing | Housing Action 1: Housing along Sarem Road and Savage Road | Medium | 4 |

Table 5. Gates Medium Priority Housing Summary

The project in the table above represents the housing strategy that Gates County indicated is of a medium priority to address. Additional detail on the projects can be found below:

- Housing along Sarem Road and Savage Road:** Approximately 10-15 homes and trailers are at risk of flooding and have experienced flooding previously from other disasters. Elevating or relocating the home includes benefits which include the elimination of residential structure and contents damages from future events. Residents will have to purchase flood insurance, but there would be a reduction in emergency management costs.

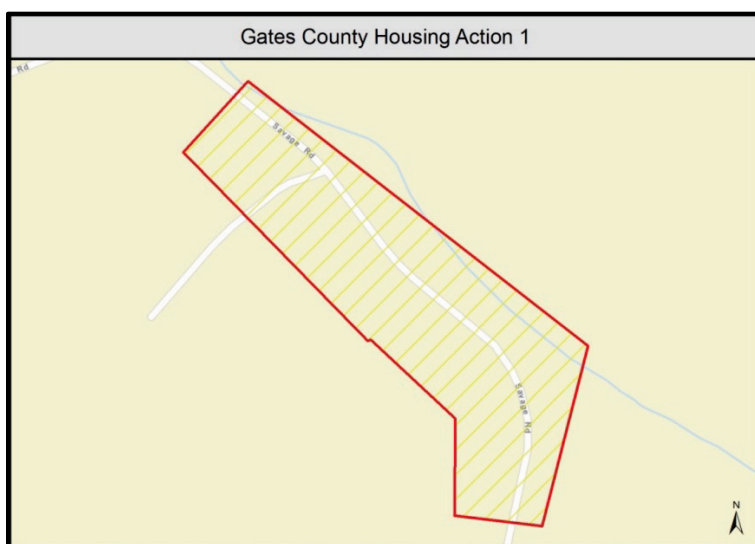


Figure 13. Housing Action 1: Housing along Savage Road

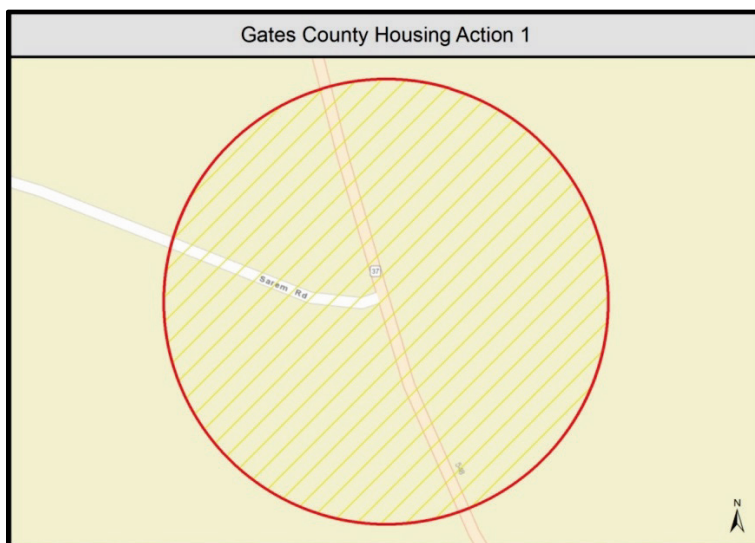


Figure 14. Housing Action 1: Housing along Sarem Road

Housing Action 1: Housing along Sarem Road and Savage Road

County: Gates

Priority Grouping: Medium Priority

Priority Ranking: 4

Project Timeframe: 6-12 months

Location: Homes and trailers along Sarem road and Savage road

Project Summary: Approximately 10-15 homes and trailers are at risk of flooding and have experienced flooding previously from other disasters. Elevating or relocating them would prevent future flooding.

The benefits include the elimination of residential structure and contents damages, the need of the home owners to buy flood insurance, and a reduction in emergency management costs.

| Question | Response | Disposition |
|---|---|-------------|
| Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew. | This area has experienced flooding on numerous occasions and the proposed project will be a permanent solution to the problem. | N/A |
| Consistent with existing plans (describe points of intersection/departure) | Project proposes to prevent loss of life and minimize property damage which are consistent with Hazard Mitigation Plan adopted by 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. | There are no benefits or impacts to the county economy from this project. | 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? | Unknown | Agree |
| To what degree will it be possible to positively quantify the environmental benefits and ROI of this project? | Minimal to low confidence | N/A |
| What impact will this action have on the local economy/tax base? | Less than 25% | Agree |
| What impacts to the environment of the county will result from this project? | There will be no measurable impacts to the environment in the county from this project. | N/A |
| What is the capability of the local government to administer this project? | Unknown | Agree |
| What is the financial range of this project? | \$501K - \$1M | Agree |
| What is the level of public support for this project? | Unknown | Agree |
| What is the technical feasibility of this project? | Unknown | Agree |
| Who will administer this project? | County | Disagree |

Low Priority Housing Strategies

| Pillar | Action Name | Priority | Overall Ranking |
|---------|---|----------|-----------------|
| Housing | Housing Action 2: Installation of flood vents for homes along Harrell's Church Road | Low | 7 |

Table 6. Gates Low Priority Housing Summary

The project in the table above represents the housing strategy that Gates County indicated is of a medium priority to address. Additional detail on the projects can be found below:

- **Installation of flood vents for homes along Harrell’s Church Road:** Provide funding to homeowners to bring homes into compliance with Gates County flood damage prevention ordinance by installing flood vents in enclosed crawl spaces that are no more than 12 inches above adjacent ground level.

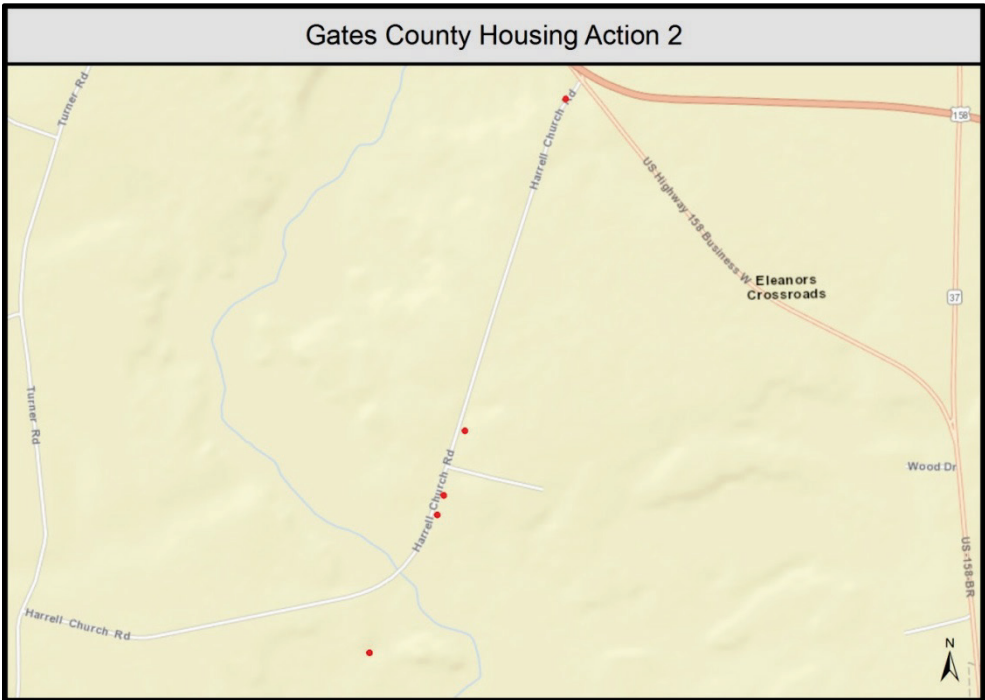


Figure 15. Housing Action 2: Installation of flood vents for homes along Harrell’s Church Road

Housing Action 2: Homes along Harrell's Church Road

County: Gates

Priority Grouping: Low Priority

Priority Ranking: 7

Project Timeframe: 6-12 months

Location: Single family homes along Harrell's Church Road

Project Summary: Provide funding to homeowners to bring homes into compliance with Gates County flood damage prevention ordinance by installing flood vents in enclosed crawl spaces that are no more than 12 inches above adjacent ground level.

The proposed project will risk reduction by preventing structures from collapsing due to water pressure on walls that surround crawl spaces. This will improve the structural integrity of the homes and also prevent flooding of structures.

| Question | Response | Disposition |
|---|--|-------------|
| Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew. | | N/A |
| Consistent with existing plans (describe points of intersection/departure) | Proposed project will prevent loss of life and minimize property damage which are consistent with Hazard Mitigation Plan adopted by 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. | There will be no measurable impacts to the economy in the county from this project. | 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? | No Impact | Agree |
| What impacts to the environment of the county will result from this project? | The project will have no direct impacts to the environment outside of reduced flooding. Habitats will be maintained and sediment loads into local waterways will be reduced. | 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? | Unknown | Agree |
| Who will administer this project? | County | Disagree |

Infrastructure Strategies

High Priority Infrastructure Strategies

| Pillar | Action Name | Priority | Overall Ranking |
|----------------|--|----------|-----------------|
| Infrastructure | Infrastructure Action 2: Ditch Cleaning | High | 1 |
| Infrastructure | Infrastructure Action 1: Water line south of Bennett’s Creek Bridge | High | 2 |
| Infrastructure | Infrastructure Action 3: Water line repairs on US-158W and along Bosley Road | High | 3 |

Table 7. Gates High Priority Infrastructure Summary

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

- **Ditch Cleaning:** Several ditches in the county are completely filled with debris and out-growth of vegetation. This is clogging drains and preventing the natural flow of water. Cleaning of the ditch will provide a natural channel for rainwater to flow and this will prevent future ponding and flooding of roads. This will improve safety of drivers along roads and prevent flooding of homes nearby, which will reduce repair and emergency response costs.
- **This is a county-wide project, so no project area map has been included.**

Infrastructure Action 2: Ditch cleaning

County: Gates

Priority Grouping: High Priority

Priority Ranking: 1

Project Timeframe: 6 months

Location: Ditch cleaning and snagging

Project Summary: Several ditches in the county are completely filled with debris and out-growth of vegetation. This is clogging drains and preventing the natural flow of water. Cleaning of the ditch will provide a natural channel for rainwater to flow and this will prevent future ponding and flooding of roads. This will improve safety of drivers along roads and prevent flooding of homes nearby, which will reduce repair and emergency response costs. A list of drains and ditches is being prepared for submitting to the State for review and action.

| Question | Response | Disposition |
|---|---|-------------|
| Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew. | Clogging of drains and ditches has been an on-going issue in the state. The problem was exacerbated following Hurricane Matthew and some of the flooding can be attributed to the flow of water being obstructed by the debris and outgrowth. | N/A |
| Consistent with existing plans (describe points of intersection/departure) | As the county relies on ditches ponds and natural areas to handle stormwater run-off these need to be maintained so they can perform their intended function. | 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. | There are no benefits or impacts to the county economy from this project. | Disagree |
| 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)? | >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? | Minimal to low confidence | N/A |
| What impact will this action have on the local economy/tax base? | Less than 25% | Agree |
| What impacts to the environment of the county will result from this project? | The project will have positive benefits to the environment. Habitats will be maintained and sediment loads into local waterways will be reduced. | N/A |
| What is the capability of the local government to administer this project? | Medium | Agree |
| What is the financial range of this project? | \$501K - \$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 |

- Water line south of Bennett's Creek Bridge:** During Hurricane Matthew, the southeast portion of Gates County was completely out of water due to a main break on 32 South. The main was washed out at a cross line about halfway between Sunbury and Hobbsville due to high volume of flowing water. This area of the county is currently supplied by Sunbury water tower. There was close to a quarter of the County's population without water for 6 days as well as a nursing home and saw mill. By installing a 6 inch directional bore interconnect under Bennett's Creek in Gatesville on Hwy 37 South, the system will have the ability to supply the Southeast region of the county from the Gates and Gatesville towers along with the Sunbury tower.

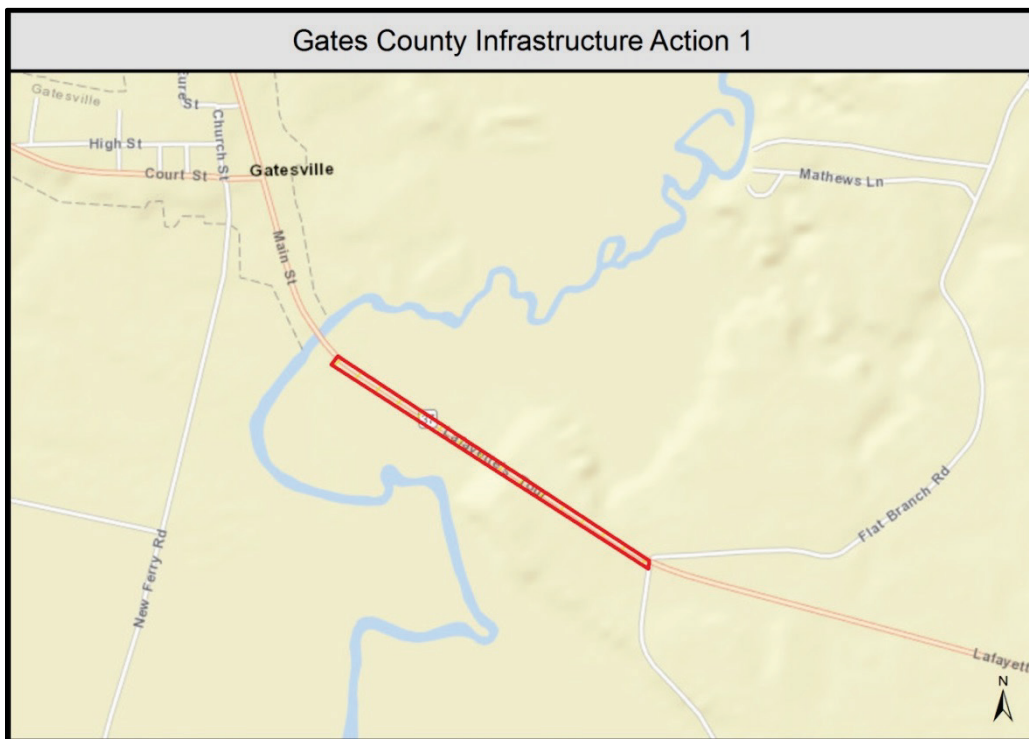


Figure 16. Infrastructure Action 1: Water line south of Bennett's Creek Bridge

Infrastructure Action 1: Water line south of Bennett's Creek Bridge

County: Gates

Priority Grouping: High Priority

Priority Ranking: 2

Project Timeframe: 3 months

Location: South of Bennett's Creek Bridge

Project Summary: During Hurricane Matthew, the southeast portion of Gates County was completely out of water due to a main break on 32 South. The main was washed out at a cross line about halfway between Sunbury and Hobbsville due to high volume of flowing water. This area of the county is currently supplied by Sunbury water tower.

By installing a 6-inch directional bore interconnect under Bennett's Creek in Gatesville on Hwy 37 South, the system will have the ability to supply the Southeast region of the county from the Gates and Gatesville towers along with the Sunbury tower. This will also add redundancy to the system as well as eliminate two dead in-lines, improving water quality to the area. If this infrastructure had been in place prior to Hurricane Matthew, water could have been restored to the Southeast region 3 to 4 days sooner.

| Question | Response | Disposition |
|---|---|-------------|
| Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew. | The proposed project will add redundancy to the system and ensure all areas within the county have adequate water supply. | N/A |
| Consistent with existing plans (describe points of intersection/departure) | Consistent with Capital Improvement aims of 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. | There will be no loss of water to the southeast portion of Gates County and particularly businesses will not have to close their operations due to water supply issues. | Agree |
| For how long will this solution be effective? | More than 50 years | Agree |
| How effective is the risk reduction? | 50-100 year event | Agree |
| How many public facilities are involved in this project (buildings and infrastructure)? | 1-3 | Agree |
| Is coordination with other communities/counties needed to complete this project? | No | Agree |
| Is this project consistent with Federal Laws | Yes | Agree |
| To what degree does this project adversely impact local floodplain/coastal zone management? | Unknown | Agree |
| To what degree will it be possible to positively quantify the environmental benefits and ROI of this project? | Low to moderate confidence | N/A |
| What impact will this action have on the local economy/tax base? | No Impact | Agree |
| What impacts to the environment of the county will result from this project? | There will be no measurable impacts to the environment in the county 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? | \$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 |

- **Water line repairs on US-158W and along Bosley Road:** An 8 inch line across from the Forestry fire tower on US 158 W and a separate 4 inch line along Bosley Road was uncovered by rushing waters during Hurricane Matthew. They have been covered but another heavy rain event will re-expose the lines possibly causing damage.

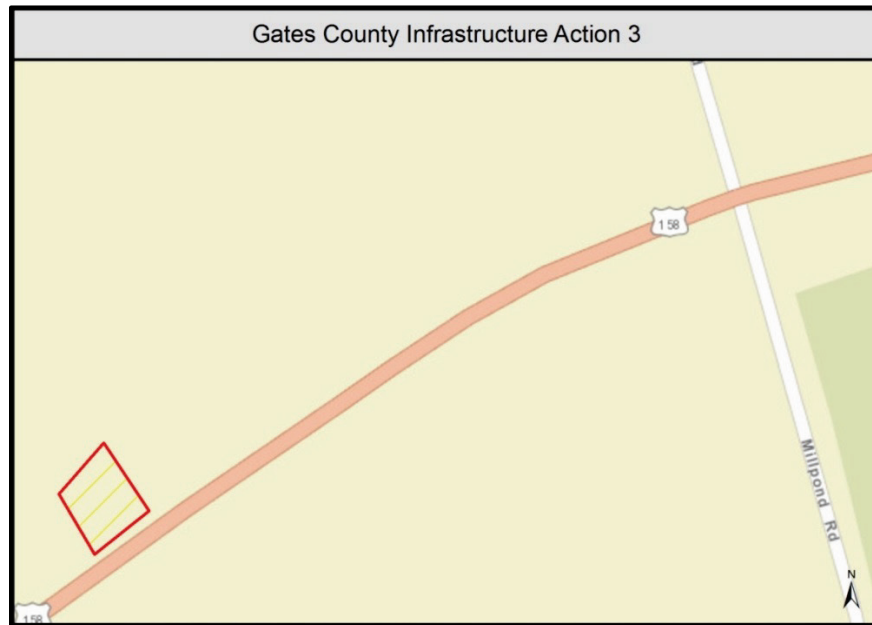


Figure 17. Infrastructure Action 3: Water line repairs on US-158W

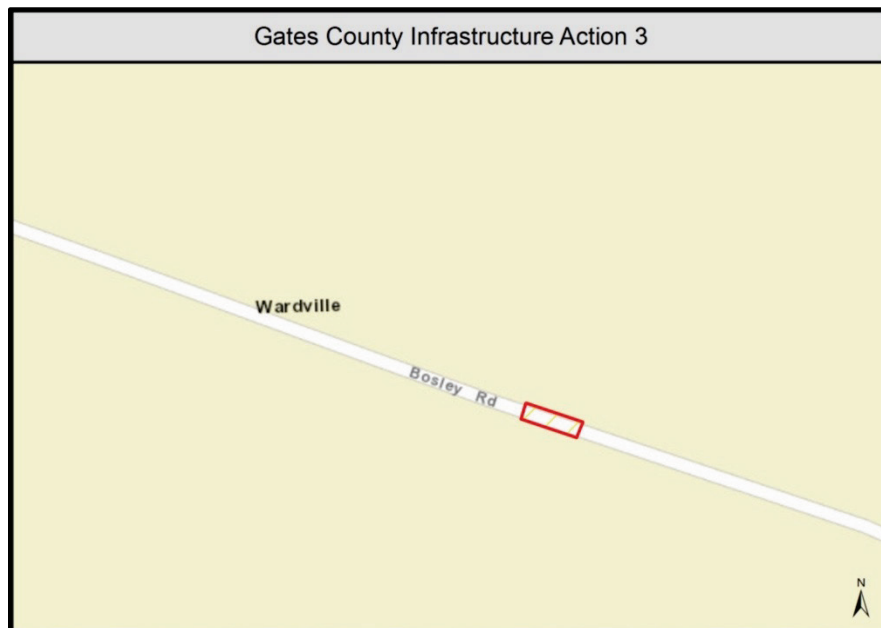


Figure 18. Infrastructure Action 3: Water line repairs along Bosley Road

Infrastructure Action 3: Water line repairs on US-158 W and along Bosley Road

County: Gates

Priority Grouping: High Priority

Priority Ranking: 3

Project Timeframe: 3 months

Location: Water line repair across from the Forestry fire tower on US 158 W and another along Bosley Road.

Project Summary: An 8 inch line across from the Forestry fire tower on US 158 W and a separate 4 inch line along Bosley Road was uncovered by rushing waters during Hurricane Matthew. They have been covered but another heavy rain event will re-expose the lines possibly causing damage.

| Question | Response | Disposition |
|---|--|-------------|
| Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew. | The repairs are needed due to damages sustained following Hurricane Matthew. Permanent repairs are needed to ensure there is no disruption in water supply once again. | 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. | Repairs will ensure continuous supply of water to commercial enterprises and this will allow normal business operations. | 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? | Minimal to low confidence | N/A |
| What impact will this action have on the local economy/tax base? | No Impact | Agree |
| What impacts to the environment of the county will result from this project? | There are no benefits or impacts to the environment 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? | \$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 Infrastructure Strategies

| Pillar | Action Name | Priority | Overall Ranking |
|----------------|---|----------|-----------------|
| Infrastructure | Infrastructure Action 4: Cole Creek Bridge along Hackley Road | Medium | 5 |

Table 8. Gates Medium Priority Infrastructure Summary

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

- **Cole Creek Bridge along Hackley Road:** The Cole Creek Bridge located along Hackley road experienced flooding during Hurricane Matthew. One potential reason is the presence of beavers in the area that could have constructed small dams and other similar structures obstructing the flow of water along the Creek. The beaver dams do make existing flood situations worse by restricting flow and increasing water levels. In addition, debris from the dams could also block downstream culverts or bridge openings and further restrict flow. The beavers would be relocated to avoid rebuilding of the dams.

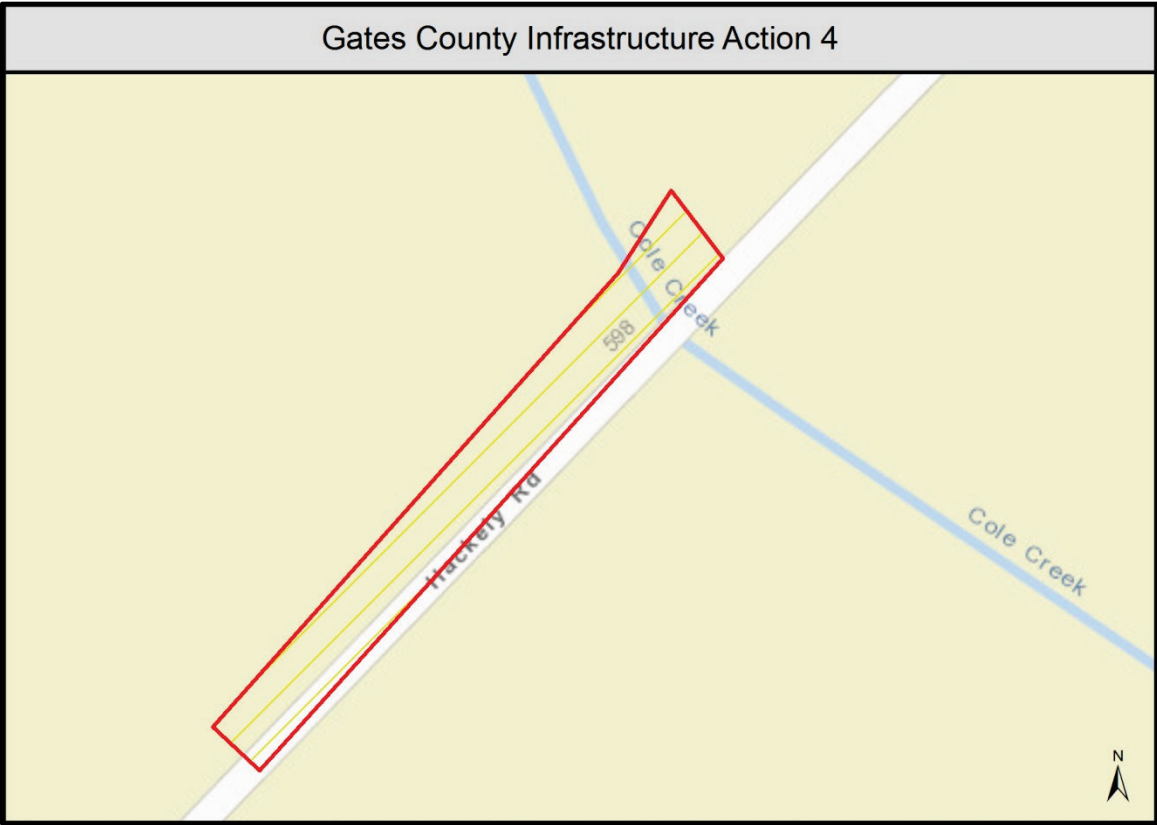


Figure 19. Infrastructure Action 4: Cole Creek Bridge along Hackley Road

Infrastructure Action 4: Cole Creek Bridge along Hackley Road

County: Gates

Priority Grouping: Medium Priority

Priority Ranking: 5

Project Timeframe: 3-6 months

Location: Hackley Road

Project Summary: The Cole Creek Bridge located along Hackley road experienced flooding during Hurricane Matthew. One potential reason is the presence of beavers in the area that could have constructed small dams and other similar structures obstructing the flow of water along the Creek. The beaver dams do make existing flood situations worse by restricting flow and increasing water levels. In addition, debris from the dams could also block downstream culverts or bridge openings and further restrict flow. The beavers would be relocated to avoid rebuilding of the dams.

| Question | Response | Disposition |
|---|---|--------------------------|
| Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew. | This project would address another source of flooding and infrastructure damage that has not been remedied since Hurricane Matthew. | N/A |
| Consistent with existing plans (describe points of intersection/departure) | No similar action is mentioned in the County's Comprehensive Plan or the Regional Hazard Mitigation Plan. | Agree with Modifications |
| Does this project comply with existing Local and State authority (codes, plan and ordinance)? | Yes | Agree |
| Does this project meet the intents and goals for the Hurricane Matthew Recovery Act? | Yes | Agree |
| Explain any benefits or impacts to the economy of the county from this project. | None. | Agree |
| For how long will this solution be effective? | Less than 10 years | Agree |
| How effective is the risk reduction? | <50 year event | Agree |
| How many public facilities are involved in this project (buildings and infrastructure)? | 1-3 | Agree |
| Is coordination with other communities/counties needed to complete this project? | No | Agree |
| Is this project consistent with Federal Laws | Yes | Agree |
| To what degree does this project adversely impact local floodplain/coastal zone management? | Unknown | Agree |
| To what degree will it be possible to positively quantify the environmental benefits and ROI of this project? | Minimal to low confidence | N/A |
| What impact will this action have on the local economy/tax base? | No Impact | Agree |
| What impacts to the environment of the county will result from this project? | Unknown until a more exact study of dam locations can be completed. | N/A |
| What is the capability of the local government to administer this project? | Medium | Agree with Modifications |
| 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? | Between 51 and 75% | Agree |
| Who will administer this project? | County | Agree with Modifications |

Environmental, Ecosystem and Agricultural Strategies

Low Priority Environmental Strategies

| Pillar | Action Name | Priority | Overall Ranking |
|-------------|--|----------|-----------------|
| Environment | Gates Environment Action 1: Water-bodies countywide and along the Chowan River | Low | 6 |

Table 9. Gates Low Priority Environmental Summary

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

- **Water Quality along Chowan River:** There has been an increase in the presence of blue-algal blooms, alligator weed and hydrilla along water bodies that are choking waterways, impeding the flow of water and affecting water quality. The proposed project will remove these species and suggest actions to improve water quality.
- **This is a county-wide project, so no project area map has been included.**

Environment Action 1: Water Quality Chowan River

County: Gates

Priority Grouping: Low Priority

Priority Ranking: 6

Project Timeframe: 6-12 months

Location: Water-bodies countywide and along the Chowan River

Project Summary: There has been an increase in the presence of blue-algal blooms, alligator weed and hydrilla along water bodies that are choking waterways, impeding the flow of water and affecting water quality. The proposed project will remove these species and suggest actions to improve the overall water quality.

| Question | Response | Disposition |
|---|---|--------------------------|
| Articulate how this project addresses an unmet need that has been created by damage from Hurricane Matthew. | The presence of the algal blooms and other species have been recorded for a long time. However clogging of the waterways by these plants restricting the flow of water worsened the problem. | N/A |
| Consistent with existing plans (describe points of intersection/departure) | Yes. Although not officially stated in the county planning documents maintaining good water quality is one of the overall goals of all counties. | 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. | There are no benefits or impacts to the county economy from this project. | Agree |
| For how long will this solution be effective? | Less than 10 years | Agree |
| How effective is the risk reduction? | Unknown | Agree |
| How many public facilities are involved in this project (buildings and infrastructure)? | 4-6 | Disagree |
| Is coordination with other communities/counties needed to complete this project? | No | Disagree |
| Is this project consistent with Federal Laws | Yes | Agree |
| To what degree does this project adversely impact local floodplain/coastal zone management? | No Impact | Agree |
| To what degree will it be possible to positively quantify the environmental benefits and ROI of this project? | Minimal to low confidence | N/A |
| What impact will this action have on the local economy/tax base? | No Impact | Agree |
| What impacts to the environment of the county will result from this project? | One reason for the presence of these species is an increase in fertilizers and other chemicals in agricultural operations. Informing farmers about the detrimental effects of over utilizing fertilizers will be an outcome of this project which is expected to benefit the county and the region. | N/A |
| What is the capability of the local government to administer this project? | Medium | Agree with Modifications |
| What is the financial range of this project? | \$101K - \$250K | Agree |
| What is the level of public support for this project? | High | Agree with Modifications |
| What is the technical feasibility of this project? | Between 51 and 75% | Agree |
| Who will administer this project? | State | 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.