

REQUEST FOR BOARD ACTION

HENDERSON COUNTY BOARD OF COMMISSIONERS

MEETING DATE: June 21, 2006

SUBJECT: Hazard Mitigation Plan Update

ATTACHMENTS: Existing Mitigation Goals, Updated Mitigation Goals and 5 Year Action Matrix

SUMMARY OF REQUEST:

Pursuant to the Robert T. Stafford Disaster Relief and Recovery Act, the Henderson County Multi-Jurisdictional Hazard Mitigation Plan has been updated to reflect experiences from the effects of Hurricanes Frances and Ivan. This plan contains input from each governmental unit within Henderson County regarding strategies to protect human life and health, minimizing damage to existing buildings, protecting infrastructure and the environment from the effects of natural or technological hazards. Staff request the Board provide comments on the draft document and schedule a public hearing before final approval.

COUNTY MANAGER'S RECOMMENDATION/ACTION REQUIRED:

Recommend the Board schedule a public hearing for 11am on July 19, 2006.

I. HENDERSON COUNTY

Mitigation Goal 1

Improve Public Awareness/Education: Public awareness/education is a strategy that addresses all hazards. The list of strategies to achieve the goal of public awareness/education is unlimited. However, it is important in the process of education that as many people as possible are reached and provided information. Thus, it is best to identify multiple strategies that can be used to accomplish this goal. In an effort to assist the municipalities located within the County the goal of improving public awareness will be a joint effort between the County and its municipalities.

First, sponsoring a seminar based on hazards and mitigation activities to address said hazards reaches large numbers of people at one time. In addition, it provides a forum for citizens to interact with persons about the best way to reduce their personal vulnerability to hazards. A seminar would provide illiterate persons the opportunity to hear the necessary information that quite often is dispersed in written format only. However, a seminar alone is not an effective way for a county/community to provide public awareness as there are many citizens incapable of attending such an event. Because a seminar is a proven way of reaching large numbers of persons at one time Henderson County has chosen to hold a County sponsored seminar as one of their strategies.

In addition, the dispersment of written materials is another way of reaching the largest number of residents in the community, as well as, business owners, specifically those involved in the development and construction process of new structures in the area. It also provides people with written materials for future reference. However, the cost of dispersing written materials can be costly and could reach an illiterate population who can not use it. Nonetheless, providing written materials to citizens has been a proven way of conducting public awareness/education strategies. These strategies could include displaying the information on an information board at the County and municipal administrative offices, handing out information to those applying for permits or to new home buyers, sending out inserts in local gas/utility bills or water bills, and posting information on County or municipally sponsored websites. Because Henderson County has a highly literate population and because there is a high level of personal computer ownership and utility usage in the area the County has chosen to implement all the aforementioned strategies in an effort to provide the public with the necessary information.

Public awareness/education can serve two major points in the mitigation efforts of the planning area. First, in an education capacity, the seriousness of the potential for disaster as a result of hazards can be communicated. Here the saying "knowledge is power" is an adequate statement, for the more knowledge the public has on the potential hazards that affect Henderson County, the more likely they are to take appropriate steps in securing their property and protecting their families against the dangers associate with said hazards. Second, citizens and visitors alike can be made aware of evacuation routes, which physically remove people from the path of danger. Many lives have been saved through public awareness/education during pending emergencies. Since new residents and seasonal visitors in Henderson County may be unaware of mountainous hazards, public awareness should be implemented on an ongoing basis.

Mitigation Objective 1.1

Educate the public about hazards prevalent in their area.

Mitigation Implementation Measures

- 1.1.1 Hold a County sponsored hazard mitigation seminar for the county residents, including information on preparedness for all hazards significant to Henderson County.***
- 1.1.2 Educate contractors about principles for quality redevelopment and safe housing development through written materials or a County sponsored workshop.***
- 1.1.3 Provide new home and property buyers with information on quality redevelopment and safe housing development. The information is probably most efficiently dispersed at the County and local administration buildings.***

Mitigation Objective 1.2

Publicize the documents associated with emergency response and mitigation.

Mitigation Implementation Measures

- 1.2.1 Manually disperse and have a website posting which provides information about the Henderson County Multi-Jurisdictional Hazard Mitigation Plan and relevant mitigation measures the public can take. In addition, provide a response/reply section where residents can comment on the effectiveness of the current plan and where they can make suggestions for future revisions on the plan.

Mitigation Goal 2

Maintain Emergency Infrastructure: The maintenance of emergency infrastructure is a key factor in a county or community being able to respond to the needs of its citizens in the disaster warning phase, as well as, the recovery stage. Henderson County has identified three areas of importance it chooses to address in an effort to meet this goal: communications, transportation, and power preservation. The most important of these objectives is the need for updating and maintaining its communications system.

During the development of the original Henderson County Hazard Mitigation Plan, County Emergency Services utilized a communications system designed over 30 years ago for limited communications in a rural environment. Since that time the system has been upgraded and numerous strategies previously identified have been accomplished. However, there are still several strategies that have been identified to ensure first responders are adequately equipped for their safety on the job.

As previously noted, the County is an area with rough terrain and numerous water bodies. Rescue efforts in areas of this nature require vehicles with special abilities. Vehicles of this magnitude can be costly but can often be shared with other departments in an effort their need. The County should survey the County agencies to determine the availability of currently owned County vehicles and should subsequently establish a policy for the use of said vehicles during periods of inclement weather.

The County is prone to power outages which result from winter storms, tropical cyclone events, severe thunderstorms and the like. The County should insure that all County offices have adequate power coverage and that surge protection is in place for all County computers and major electrical equipment. In addition, the County should provide auxiliary power systems for all primary County buildings and schools as these buildings are often considered critical facilities during the disaster recovery process.

Mitigation Objective 2.1

Assure communication can continue during a disaster or can be quickly restored.

Mitigation Implementation Measures

2.1.1 Establish two – way radio communication for key personnel (i.e. County Manager, Emergency Services providers, Shelter Teams, etc.).

2.1.2 Include 311 systems, prescribed messaging in communications system.

Mitigation Objective 2.2

Assure availability of power during hazardous events.

Mitigation Implementation Measures

2.2.1 Establish auxiliary power systems via portable generators for all primary County buildings and schools. Make certain to include the wiring closets to accommodate technology routing.

Mitigation Goal 3

Minimize the potential for damage to personal property, infrastructure, and life due to flooding: Henderson County has a mountainous topography, and, as seen in the previously discussed maps, is highly susceptible to flooding in some areas. Flooding can lead to structural damage, infrastructure damage, the loss of life or major injury as well as, damage to natural resources. During the Planning Area Capability Assessment it was found that the County has adequate control over development in their floodplain. The aim of this goal is to address this issue by improving the County's current legal capability to control the development of their floodplain and to improve the infrastructure within the floodplain to mitigate the potential damage to natural resources and ecosystems.

Currently, the County participates in the NFIP but not the CRS programs. They have an adopted Flood Damage Prevention Ordinance but do not have a Stormwater Management Ordinance. The purpose of the Flood Damage Prevention Ordinance is to restrict or

prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities. The ordinance requires that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction. It assists in controlling the alteration of the natural flood plains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters. In addition it provides controls for filling, grading, dredging and other development which may increase erosion or flood damage and prevents or regulates the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.

The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) allows communities to reduce flood insurance rate premiums for citizen property owners. In order to capitalize on these reductions, a community must take specific steps to improve upon the minimum floodplain management requirements of the NFIP. The CRS awards flood insurance premium discounts from 5-45% for eighteen different flood management activities that fall into the following four categories: public information, mapping and regulation, flood damage reduction, and flood preparedness. Participation in the CRS, which is contingent upon community compliance with NFIP rules, will provide Henderson County with the opportunity to dramatically reduce flood insurance rate premiums for its residents. In order to participate, the County must designate a CRS coordinator to handle the application and serve as a liaison between the community and the Federal Emergency Management Agency. Work on a CRS plan is facilitated by completion of the Henderson County Multi-Jurisdictional Hazard Mitigation Plan, participation in the NFIP, and adoption of a Flood Damage Prevention Ordinance.

The adoption of Stormwater Management Ordinance could provide the County with the ability to restore and preserve water quality and the natural ecological functions of surface waters that are included in its planning area. In addition, it could work with the Zoning Ordinance, Subdivision Ordinance, Flood Damage Prevention Ordinance to assist in regulating existing developments, future developments, and construction activities, as well as, instituting mandatory requirements to prevent careless pollution to surface waters.

In addition to the legal capability improvements provided by the County's participation in the CRS Programs, as well as, the adoption of a Stormwater Management Ordinance the county could improve their ability to protect natural resources and ecosystems from extensive flooding and erosion. The first step in improving the County technical capability is to install stream gauges on major waterways throughout the County to collect data on stream water height and velocity. In addition, the County must develop a plan for monitoring water

and sewer lines located within the floodplain in an effort to mitigate any potential leaks or breakages.

Mitigation Objective 3.1

Improve the County's ability to control development in the floodplain.

Mitigation Implementation Measures

3.1.1 Develop a County Stormwater Management Plan.

3.1.2 Incorporate into the County Zoning and Subdivision Ordinances construction standards for privately owned bridges.

Mitigation Objective 3.2

Maintain and improve infrastructure located within the floodplain.

Mitigation Implementation Measures

3.2.1 Monitor water and sewer lines in the floodplain.

3.2.2 Install stream gauges on major waterways throughout the County to collect data on stream water height and velocity (this will also assist in mitigating erosion hazards).

Mitigation Goal 4

Minimize the Impacts of Erosion. Rivers and streams that are relatively stable or growing provide protection to structures behind them. However, rivers and streams that are eroding away endanger property. During the Area Vulnerability Assessment it was found that several agencies or committees have collected and published information on the French Broad River and Mudd Creek and ways to mitigate the erosion and sedimentation for each body. However, other rivers and creeks in the County have not received the same attention and do not have plans in place to mitigate the effects of natural erosion. In reviewing tropical cyclones, nor'easters, severe thunderstorms/windstorms, landslides, and flooding in the area it was found that erosion and sedimentation was a factor that required the County to improve their legal capability in mitigating erosion and sedimentation of the rivers and creeks in the area.

Mitigation Objective 4.1

Improve the County's capability to mitigate erosion.

Mitigation Implementation Measures

4.1.1 Develop a plan, which will include annual monitoring of sediment transport and erosion, to address the long – term issue of river and stream erosion in the County.

4.1.2 Support State enforcement of sedimentation and erosion control regulations.

Mitigation Goal 5

Minimize the Impact of Landslides. Many problems related to landslides are hazardous only if they are unexpected. There are two areas in the County that have been identified as having issues with landslides. The Hebron Road area and the Bat Cave area. However, there are other areas that have had landslides in the county. These areas are mostly located in the

area of Pisgah National Forest and away from the develop[ed] areas of the County. The Hebron Road area has received extensive attention from NCDOT and as a result the issues in that area have been rectified. Henderson County has chosen a multifaceted approach in dealing with their vulnerability to landslides in the Bat Cave area. This approach includes public information, policy development, preventative maintenance, and acquisition.

An informed public can minimize its exposure to financial loss and personal injury from landslide related problems, even in areas where little can be done to arrest the underlying landslide process itself. As a result, the public information and education strategies identified in goal 1 are imperative in reducing the level of vulnerability to landslides in the Bat Cave area.

Land use management and regulations in the presence of real or potential subsidence is an additional strategy that can be used to regulate development in areas prone to landslides. The appropriate land use planning response to landslides depends on the nature of the landslide. County agencies with regulatory powers can develop and help implement the plans to control construction techniques. Additionally, improved building codes are an alternative to land use regulations. Buildings and other facilities sometimes can be designed to accommodate landslide movements. Because of the long-term nature and the cost-effectiveness of regulation control, Henderson County has chosen to regulate development in areas prone to landslides through the improvement of development and construction standards in the Zoning and Subdivision Ordinances.

Landslides are often worsened in areas where there is extensive loose debris. Loose debris can become a landslide with very little precipitation or earth movement. Scaling is an activity that can be conducted in areas prone to landslides to reduce or eliminate the level of loose debris. Scaling is cost-effective and has been used in numerous states as a method of preventative maintenance. As a result, Henderson County will train certain emergency management personnel in the practice of scaling. These individuals will conduct the scaling process on a schedule set out by the emergency management office.

Mitigation Objective 5.1

Regulate development in areas prone to landslides through policy development.

Mitigation Implementation Measures

5.1.1 Incorporate development and construction standards into the Zoning and Subdivision Ordinances to further regulate construction in areas prone to landslides.

Mitigation Objective 5.2

Provide preventative maintenance to reduce the potential for landslides in the Bat Cave area.

Mitigation Implementation Measures

5.2.1 Implement scaling as a method of preventative maintenance to reduce the amount of loose debris that could lead to landslides during high precipitation events or seismic events.

Mitigation Goal 6

Minimize the Impact of Earthquakes to County Property. As previously discussed, the impacts earthquakes have had on the planning area has been minimal. However, because the County is located near an active fault the vulnerability to earthquakes is considered moderate in nature. There are numerous strategies that can be implemented to reduce the County's vulnerability to earthquakes (i.e. public education and outreach, securing County property, and development regulation through County ordinances).

Regulation of development is a proven method used by different jurisdictions to reduce the level of vulnerability to earthquakes. Currently, the Henderson County, through its ordinances and the North Carolina Building Codes address the issue of appropriate development in earthquake prone areas. As a result, there is no need to expound on the development of new or revision of old regulations.

The most significant strategy used to reduce the potential of injury or loss of life and to reduce the level of property damage is public education and outreach. This strategy is adequately identified in a variety of ways to reach a large number of Henderson County citizens in goal 1.

Research identified that most equipment owned by the County has not been strapped or secured in an effort to reduce the potential of damage. Computer equipment, televisions, and other electronic equipment can be secured with straps specifically developed to elevate damage to property damage as a result of earthquakes. The County has chosen to develop an objective to prevent damage to county property during earthquake events. In an effort to accomplish this objective the county will circulate an assessment to determine what devices are being used to secure County property but will also assess what County agencies have equipment that is not secured. The County will then purchase and install all strapping necessary to secure County property.

Mitigation Objective 6.1

Protect County property from damage during earthquake events.

Mitigation Implementation Measures

- 6.1.1 Circulate an assessment survey to determine what methods or devices County agencies have in place for securing equipment and furniture during earthquake events.
- 6.1.2 Establish policy to assure all computer equipment and furniture are secured in a manner to avoid toppling during an earthquake.
- 6.1.3 Incorporate GIS modeling to show areas of the County prone to more serious damage during earthquake conditions.

Mitigation Goal 7

Minimize the Risk of Wildfire. Fires, whether resulting from natural events or technological causes, have the potential to spread over a substantial portion of the County, endangering life and property. The County's vulnerability to wildfires has a high index ranking as it has been identified as one of the most severe hazards for the area.

As previously identified, Henderson County is equipped with numerous fire departments that are equipped with the materials and knowledge for addressing any fire event. In addition, the County and its municipalities have a cooperative working relationship with the US Forestry Service. In fact, the U. S. Forestry Service provided significant input and guidance in the development of the wildfire portions of this plan. This cooperative relationship allows the County to aggressively address the issue of wildfires. Numerous strategies can be implemented to reduce the County's level of vulnerability to wildfires (i.e. public awareness, continuing education of fire fighting staff, maintenance and purchase of new equipment, as well as, development and enforcement of regulations).

The issue of public awareness and education is primary in the successful mitigation of wildfires in the area. As a result, goal 1 is important in the mitigation of this hazard. Over and beyond public awareness, the Fire Department can continuously improve their education and training, ensure their equipment is in proper working order, and ensure they are in possession of the appropriate equipment needed by each firefighter to conduct the day-to-day duties. The department is currently in possession of the appropriate equipment needed to conduct day-to-day activities safely. In addition, the departments have programs already in place to ensure the continued education of their staff and to ensure the staff is educated on the most up to date methods for fighting fires and running equipment.

Areas of improvement are more directly related to current regulation enforcement and the development or revision of policy that would provide for an increase in buffers and green areas. Implementing these type of strategies will provide the County with the ability to more effectively mitigate its vulnerability to wildfires. In addition, it continues the current and long standing cooperation between the County and the U. S. Forest Service and is cost-effective to implement.

Mitigation Objective 7.1

Improve the County's efforts to mitigate their vulnerability to wildfires.

Mitigation Implementation Measures

7.1.1 Coordinate efforts with the U.S. Forestry Service to enforce banning burns.

7.1.2 Encourage development and enlargement of buffers and green areas.

Mitigation Goal 8

Minimize the Potential for Damage or Injury Due to HAZMAT Events. As previously noted, there are several issues within Henderson County that relate to hazardous material processing, manufacturing or storage. As a result, contamination from Hazardous Materials is possible. By establishing goal 3 the county is not only controlling certain aspects of flooding but, is also, mitigating HAZMAT events. In addition to the previously established strategies in goal 3, the community could also maintain up to date training and education on HAZMAT event preparedness, sponsor public awareness programs, and develop a plan for HAZMAT response. The County has an established HAZMAT response plan through the its Emergency Operations and Response Plan, thus there is no need to develop a stand alone plan which would address the same information. Goal 1 provides public awareness activities to fulfill the public information need. Because the County feels that HAZMAT is directly related to the purity of ground and surface water and because they have taken a

proactive approach to HAZMAT event mitigation, response, and preparedness in the past they have decided to continue by further addressing HAZMAT event preparedness through adequate continued training and education for emergency personnel, the development of solid procedures for handling hazardous materials, and reaffirmation of plans for isolation and evacuation during HAZMAT events.

Mitigation Objective 8.1

Maintain HAZMAT event preparedness.

Mitigation Implementation Measures

- 8.1.1 Assure adequate training for emergency personnel to respond to HAZMAT events is on-going.
- 8.1.2 Incorporate procedures for handling hazardous materials into GIS modeling.
- 8.1.3 Reaffirm plans with emergency service agencies and providers for isolation and evacuation during HAZMAT events.

Mitigation Goal 9

Minimize the Potential for Damage or Injury Due to Dam/Levee Failure. Henderson County's vulnerability to dam failure is low. Though the County has a significant number of dams the majority of them are class A or B which means they are small in nature and pose little to no threat to the population. There are numerous activities the County could embark upon that would assist in reducing the County's level of vulnerability to dam/levee failures (i.e. public awareness and education, development of sound policy for controlling development in areas prone to flooding, development of a dam failure response plan, improvement of knowledge base on local dams/levees, and acquisition of properties in harms way of flooding from dam/levee failure).

Again, the issue of public awareness and education is a sound and proven strategy that the County has chosen to implement in an effort to reduce its vulnerability to all hazards. This includes dam/levee failure. It is important for citizens to be aware of the dangers that they could face if they live in an area identified as being vulnerable to dam/levee failure. This strategy is effectively addressed in goal 1 of this plan.

An emergency actions plan would provide actions for various agencies to conduct during a failure; would list downstream residences, businesses, and transportation routes; and would provide a sound procedure on the evacuation of said residences and businesses. Henderson County has developed an emergency operations plan that consists of such specifics and has thereby already reduced their level of vulnerability to dam/levee failures. In an effort to improve the level of planning found in the Emergency Operations Plan the County should develop a GIS database that would provide County emergency management services with information on the dam/levee's structural makeup, failure history, as well as, residential and commercial properties located within harms way of flooding.

The County has addressed its need for improved regulation for the control of development in the floodplains and other areas prone to flooding in goal 3. By implementing the strategies in goal 3 to address flooding the strategies will, also, reduce the County's vulnerability to dam/levee failure.

The most significant strategy the County has chosen to embark upon is the development of a stand-by acquisition grant that lists properties with a high potential for damage or destruction due to dam/levee failure. This will provide the County with the necessary information to immediately apply for acquisition funds following the next federally declared disaster. The significant benefits of this are that the acquisition of such properties would permanently reduce the level of vulnerability in these areas. Nonetheless, the acquisition program is voluntary and does require a presidentially declared disaster which could impede the level of participation in the program and the County's ability to implement the strategy in a timely manner.

Mitigation Objective 9.1

Maintain information on all dams/levees in the County.

Mitigation Implementation Measures

9.1.1 Develop a dam/levee structural database with the County GIS system with the assistance of the North Carolina Dam Safety Program.

Mitigation Objective 9.2

Reduce the vulnerability to personal property and life as a result of dam/levee failure.

Mitigation Implementation Measures

9.2.1 Develop a stand-by acquisition grant application that lists properties with a high potential for damage or destruction due to a dam/levee failure.

Mitigation Goal 10

Minimize the potential for damage to personal property, as well as, death or injury in areas identified as multi-hazard areas. The area known as Bat Cave has been identified in this plan as having a multi-hazard vulnerability. This area has been identified as having a high vulnerability to flash flooding, landslides, and other hazards that affect the County as a whole. In the past landslides and flooding have placed life and property at a high risk of loss and some citizens have ignored orders of evacuation for the area. Goal 1 addresses the public awareness and education necessary for the citizens of this area to be made aware of the seriousness of ignoring such an order of evacuation and also provides them with mitigation activities they can personally take to reduce their level of vulnerability. Goal 3 addresses the issue of flooding and provides for improved regulations that will further control development in areas prone to flooding. Goal 6 provides for regulatory controls and preventative maintenance for areas prone to landslides, specifically in the Bat Cave area. Regardless of this high level of mitigation the County has identified as a part of this plan, they have chosen to further reduce the level of vulnerability to these multi-hazards through the development of a stand-by acquisition grant. This will provide the County with the necessary information to immediately apply for acquisition funds following the next federally declared disaster.

Mitigation Objective 10.1

Avoid hazards in multi-hazard areas.

Mitigation Implementation Measures

10.1.1 Develop a stand-by acquisition grant application that lists properties located in multi-hazard areas specifically those properties located near US HWY 74 and NC HWY 9 (Bat Cave) which are prone not only to flash flooding but also to severe landslides.

Henderson County Existing Goals Worksheet

Goal Category	Goal Statement	Document Reference	Hazard Threat Addressed
General	... to promote, through proper planning, health, safety and general welfare by providing for the orderly subdivision of land in Henderson County.	Subdivision Ordinance, July 5, 2001, 170-2	None
Future Development, Existing Structures	...establish procedures and standards for the subdivision of land.	Subdivision Ordinance, July 5, 2001, 170-2	None
Future Development, Existing Structures	...provide for orderly growth and development.	Subdivision Ordinance, July 5, 2001, 170-2	None
Natural Resource Protection	...promote environmentally quality.	Subdivision Ordinance, July 5, 2001, 170-2	None
Future Development, Existing Structures	...protect and enhance property ownership and land values.	Subdivision Ordinance, July 5, 2001, 170-2	None
Future Development, Existing Structures	...provide for dedication or reservation of road right-of-way.	Subdivision Ordinance, July 5, 2001, 170-2	None
Future Development, Existing Structures	...assure the property design and installation of roads and utilities.	Subdivision Ordinance, July 5, 2001, 170-2	Traffic
Future Development, Existing Structures	...assure proper legal description, identification and recordation of property boundaries to maintain an accurate, up-to-date land records management system.	Subdivision Ordinance, July 5, 2001, 170-2	None
Natural Resource Protection	... to manage the uses of land and structures encompassed by watersheds within Henderson County in order to maintain the high quality of surface water in these watershed by enforcing standards which shall limit the impact from existing or potential sources of contamination through the regulations of lot sizes and development intensity.	Water Ordinance, July 5, 2001, 192-3	Flooding and Erosion

Henderson County Existing Goals Worksheet

Goal Category	Goal Statement	Document Reference	Hazard Threat Addressed
Future Development, Existing Structures	... to provide a resource for the Henderson County Board of Commissioners as they consider and evaluate the application of Countywide Land Use Regulations in Henderson County.	Land Use Regulation Guide, July 1999, pg. 1	None
Future Development, Existing Structures	... to examine the north central area of the County and make recommendations about how growth should occur.	Mills River/ Fletcher Land Use Study, March 2001, pg. 1	None
General	... to reduce the vulnerabilities of people and property to disaster and establish capabilities to respond effectively to the actual occurrences of a disaster.	Emergency Operations Plan, 2006, pg. 10	All
General	Provide a vision of where Henderson County wants to be in the next 10 years and a strategy of how to realize that vision.	County Comprehensive Plan, July 2004, pg. 1	None
General	Provide statements of public policy related to the management and development of Henderson County.	County Comprehensive Plan, July 2004, pg. 1	None
Future Development	Identify areas within the county appropriate for residential, commercial, office, and industrial development.	County Comprehensive Plan, July 2004, pg. 1	Flooding, Erosion, HAZMAT Events, Wildfire
Future Development	Plan for the provision of utilities and transportation access necessary for areas of anticipated growth.	County Comprehensive Plan, July 2004, pg. 1	Traffic
General	Determine the best balance of job-producing activities and residential growth.	County Comprehensive Plan, July 2004, pg. 1	None
General	Provide strategies to deliver services to unnerved portions of the county.	County Comprehensive Plan, July 2004, pg. 1	None
General	Establish a framework for coordination of activity between the various jurisdictions within Henderson County.	County Comprehensive Plan, July 2004, pg. 1	None
Future Development	Determine the extent that land development regulations (like zoning and subdivision regulations) should play in guiding the development of the county.	County Comprehensive Plan, July 2004, pg. 1	None

Henderson County, NC 5-Year Action Matrix

Goals/Objectives	Implementation Measures	Type of Strategy	New, Continuation or Amendment	Target Completion Date	Responsible Party/Org.	Potential Funding Sources	Monitoring/ Evaluation Indicators	Hazards Identified and Addressed in Plan																	
								Tropical Cyclones	Nor'easters	Severe Thunder/Wind-storms	Tornadoes	Flooding	Erosion	Droughts	Extreme Temperatures	Landslides	Dam/Levee Failure	Earthquakes	Wildfires	HAZMAT Events	Winter Storms				
2.2	Assure availability of power during hazardous events.	2.2.1	<i>Establish auxiliary power systems via portable generators for all primary County buildings and schools.</i>	Preventative	New Project	December 1, 2007	Central Services & Henderson County Public Schools	11, 16	Determine if auxiliary power systems have been purchased and installed in primary County buildings and schools.	√	√	√	√	√					√				√		
3. Minimize the Potential for Damage to Personal Property, Infrastructure, and Life Due to Flooding																									
3.1	Improve the County's ability to control development in the floodplain.	3.1.1	<i>Develop a Stormwater Management Plan.</i>	Preventative	New Policy	December 1, 2008	County Engineer	11, 30, 31	Determine if a plan has been developed and adopted by the County Board.	√	√	√		√	√										
		3.1.2	<i>Incorporate into the County Zoning and Subdivision Ordinances construction standards for privately owned bridges.</i>	Preventative	New Policy	December 1, 2006	Planning Director	11	Determine if construction standards have been developed and incorporated into the Zoning and Subdivision Ordinances and if revisions have been approved and adopted by the County Board.	√	√	√		√	√							√			
3.2	Maintain and improve infrastructure located within the floodplain.	3.2.1	<i>Monitor water and sewer lines in the Floodplain.</i>	Preventative	Continuation of Existing Policy	Initiated (January 1, 2004) and Continuous	County Engineer & City Engineers	11	Determine if a schedule for the monitoring of water and sewer lines has been established and if it is being implemented.	√	√	√		√	√							√			
		3.2.2	<i>Install stream gauges on major waterways throughout the County to collect data on stream water height and velocity.</i>	Preventative	New Project	December 1, 2008	Soil and Water Conservation	18, 20, 26, 27	Determine if stream gauges have been installed and what data they are collecting.	√	√	√		√	√	√						√			
4. Minimize the Impacts of Erosion																									
4.1	Improve the County's capability to mitigate erosion.	4.1.1	<i>Develop a plan, which will include annual monitoring of sediment transport and erosion, to address the long - term issue of river and stream erosion in the County.</i>	Preventative	New Policy	December 1, 2006	Soil and Water Conservation & Planning Director	11, 18, 20, 26, 27	Determine if a plan has been developed and adopted by the County Board.	√	√	√		√	√	√						√		√	

Henderson County, NC 5-Year Action Matrix

Goals/Objectives	Implementation Measures	Type of Strategy	New, Continuation or Amendment	Target Completion Date	Responsible Party/Org.	Potential Funding Sources	Monitoring/ Evaluation Indicators	Hazards Identified and Addressed in Plan														
								Tropical Cyclones	Nor'easters	Severe Thunder/Wind-storms	Tornadoes	Flooding	Erosion	Droughts	Extreme Temperatures	Landslides	Dam/Levee Failure	Earthquakes	Wildfires	HAZMAT Events	Winter Storms	
	4.1.2	<i>Support State enforcement of sediment and erosion control regulations.</i>	Preventative	Continuation of Existing Policy	December 1, 2006 and Countinous	Soil and Water Conservation & Planning Director	11	Determine if regulations involving the enforcement of erosion and sedimentation control and being implemented.	√	√	√		√	√	√			√		√		
5. Minimize the Impacts of Landslides																						
5.1	Regulate development in areas prone to landslides through policy development.	5.1.1	<i>Incorporate development and construction standards into Zoning and Subdivision Ordinances to further regulate construction in areas prone to landslides.</i>	Preventative	New Policy	December 1, 2008	Planning Director	11	Determine if policy has been established, if revisions to the Zoning and Subdivision Ordinances have been made, and if they have been adopted by the County's Board.									√				
5.2	Provide preventative maintenance to reduce the potential for landslides in the Bat Cave area.	5.2.1	<i>Implement scaling as a method of preventative maintenance to reduce the amount of loose debris that could lead to landslides during high precipitation events or seismic events.</i>	Preventative	New Project	December 1, 2007	Emergency Management Director & NCDOT	11, 13	Determine if scaling has been adopted as a method to reduce the level of loose debris in the Bat Cave area.	√	√	√		√	√			√	√			√
6. Minimize the Impacts of Earthquakes to County Property																						
6.1	Protect County property from damage during earthquake events.	6.1.1	<i>Circulate an assessment survey to determine what methods or devices County agencies have in place for securing equipment and furniture during an earthquake.</i>	Preventative	New Project	December 1, 2007	Information Technology Director	11	Determine if a survey has been circulated and returned to the IT Department.										√			
		6.1.2	<i>Establish a policy to assure all computer equipment and furniture are secured in a manner to avoid toppling during an earthquake.</i>	Preventative	New Policy	December 1, 2007	Information Technology Director & Central Services	11	Determine if a policy has been developed and approved by the County Board.										√			
		6.1.3	<i>Incorporate GIS modeling to show areas of the County prone to more serious damage during earthquake conditions.</i>	Preventative	New Project	December 1, 2006	Information Technology Director	11	Determine if GIS modeling has been developed and incorporated into the current GIS system.										√			
7. Minimize the Risk of Wildfire																						

Henderson County, NC 5-Year Action Matrix

Goals/Objectives	Implementation Measures	Type of Strategy	New, Continuation or Amendment	Target Completion Date	Responsible Party/Org.	Potential Funding Sources	Monitoring/ Evaluation Indicators	Hazards Identified and Addressed in Plan																
								Tropical Cyclones	Nor'easters	Severe Thunder/Wind-storms	Tornadoes	Flooding	Erosion	Droughts	Extreme Temperatures	Landslides	Dam/Levee Failure	Earthquakes	Wildfires	HAZMAT Events	Winter Storms			
10.1	Avoid hazards in multi-hazard areas.	10.1.1	<i>Develop a stand-by acquisition application that lists properties located in multi-hazard areas specifically those properties located near US HWY 74 and NC HWY 9 (Bat Cave Area).</i>	Property Protection	New Project	December 1, 2007	Planning Director	11	Determine if a stand-by application has been developed.	√	√	√		√	√			√		√				