

# 1. INTRODUCTION TO HAZARD MITIGATION PLANNING

Since the beginning of recorded history, the built environment and the natural environment had a less-than-harmonious relationship. Volcanoes, floods, and other perceived disasters are recorded since the advent of civilization. These events are a perfectly natural and inevitable phenomenon, so why are they called “disasters?”

The natural environment adapts to the conditions that exist, such as pines whose seeds only germinate after being exposed to fire. The human environment with its buildings, crops, and relatively short view of time do not always reconcile with their environment over the long term. When hurricanes, tornadoes, floods, and winter storms occur where there are no people, they are not “disasters.” It is not until these events intersect with our homes and businesses, our crops and livestock that they become disasters.

## 1.1. What is Hazard Mitigation?

Hazard mitigation planning seeks to reduce the instances where the worlds of violent natural phenomenon and the human environment intersect. By reducing the risk of personal injury and property damage, a community can lessen the effects of a “disaster” when one of these events crosses paths with people.

## 1.2. Purpose of the Plan

Planning is the cornerstone to successful hazard mitigation efforts. Citizens, local government, and private interests with proactive policies can reduce the man-made environment in harms way. Benefits realized by implementing hazard mitigation measures include:

- Saving lives by removing people from hazard prone situations
- Limiting property damage by regulating development in hazard areas
- Saving money for taxpayers by reducing the need for services during a disaster
- Speeding disaster recovery and post-disaster relief funds
- Demonstrating a strong commitment to the health and safety of the community.

Relocating people, institutions, and businesses from hazard prone areas saves property and lives. Removal of the structures means that there is less to pay for disaster recovery or for services during an event. Post-event, recovery crews will have less to do because there will be less damage. This speeds the recovery process.

Both state and federal governments made the development of a hazard mitigation plan a requirement for any local government requesting mitigation grant funding.

## 1.3. Scope of the Plan

This plan assesses the likelihood of all natural hazards possible on the Edgecombe County portion of the Town of Whitakers. The Town is split between Edgecombe County on the east and Nash County on the west. The Town overall is addressed in the Nash County Multi-jurisdictional Hazard Mitigation Plan of 2004. This Plan addresses multi-jurisdictional concerns on the Edgecombe side of Town. It addresses mitigation measures for those hazards that pose a “high” or “moderate” risk where mitigation measures are possible and easily identifiable. In the Edgecombe portion of Whitakers this will be flood risk.

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Other hazards, including man made hazards are considered but not fully addressed within this plan. Man made hazards must be tied to some natural phenomenon to be considered, such as a dam; otherwise HAZMIT sites such as chemical manufacturing or petroleum distribution were noted during the critical facilities and vulnerability analysis.

The geographic area covered in the plan includes the incorporated areas of the Town in Edgecombe County and any Town owned or maintained facilities outside of the Town Limits Edgecombe County.

#### **1.4. Authority**

This Edgecombe County Multi Jurisdictional Hazard Mitigation plan was adopted by the Town of Whitakers under the authority and police powers granted to municipalities in the North Carolina General Statutes (NCGS), Chapter 160A, Article 8.

This plan was developed in accordance with current rules and regulations governing local hazard mitigation plans. The plan shall be routinely revisited to insure compliance with the following laws:

NCGS Chapter 166A: North Carolina Emergency Management Act as amended by Senate Bill 300: An Act to Amend the Laws Regarding Emergency Management as Recommended by the Legislative Disaster Response and Recovery Commission (2001).

The Robert T. Stafford Disaster Relief and Emergency Assistance ct as amended by the Disaster Mitigation Act of 2000 (Public Law 106-390, October 30, 2000).

#### **1.5. Participants in the Planning Process**

The Town of Whitakers participated in the county-wide, multi-jurisdictional hazard mitigation planning process. In this process, there are three forms of participation: the advisory committee for the County, their counterparts from each municipality, and the public. Gwen Parker was the Town’s representative. She worked on the Town-specific appendix to this plan with sessions at the County, and also participated in the multi-jurisdictional process and the county-wide Committee.

#### **1.6. Description of Planning Process and Citizen Participation**

There are six steps in the overall planning process; the first three phases involve background research that becomes the foundation for defining a strategy to diminish the damage done when a hazard strikes. The last three steps involve drawing conclusions from your research and planning and implementing improvements for the future.

The first step, hazard identification and analysis looks at past events in Edgecombe County. These historic occurrences help determine the risk posed by a particular kind of threat based on frequency, magnitude, and impact on the community. The first meeting of the Advisory Committee meeting was the forum to go over what happened in the past and use Worksheet 1 (See end of Chapter 3) to determine risk.

The second step identifies specific facilities or neighborhoods that are in risk-prone areas. This “vulnerability assessment” is done through the use of geographic data and geographic information systems to graphically show where these risk areas are. It will also assess demographics and development trends that may exacerbate a particular hazard. These maps were presented to the

Advisory Committee for each Town in the multi-jurisdictional plan, then reviewed and final critical facilities that were vulnerable were identified.

The third and final part of the background research is the capabilities assessment, which reviews the ability of emergency services providers and local governments to respond to disaster. The capabilities reviewed in this plan include staffing, organizational capacity, fiscal and technical capability, policies and programs, and the legal and political environment.

Other plans and studies were also reviewed for applicability to hazard mitigation potential, notably the Regional Comprehensive Economic Development Strategy for future growth and employment trends. The Town also adopted a Hazard Mitigation Plan in 2001 that was used to craft the new plan.

Ultimately, this capability assessment will identify any gaps, conflicts, or shortcomings in local programs that might hamper mitigation efforts; it will also note successful efforts already in the community that can be built upon to establish a successful hazard mitigation program.

Once the background studies are done, the staff of the planning agency assisted the County and the respective municipalities with analysis of the background data. Paul E. Black, AICP of the Upper Coastal Plain Council of Governments with help from Chris Lukasina, GIS Planner reviewed the data gathered and helped the County, City, and Towns develop Community Goals Statements, the 5<sup>th</sup> step. These become the guiding principals for the final step, the Hazard Mitigation Strategy. The strategy becomes the action phase of the plan, with both general and specific measures to implement.

The public and other appropriate agencies such as private electric utilities, the Red Cross, et cetera were invited to attend Advisory Committee Meetings, and the public was notified for the kickoff meeting and Committee approval of the draft multi-jurisdictional document just prior to submittal to the State. Their input was also solicited in identifying past events and for crafting future policy. Participation by the public was nil in spite of advertising the meetings.

A process for prioritization of identified hazard mitigation strategies was performed. The hazard mitigation advisory committee used the following criteria for prioritization of hazard mitigation strategies:

- 1) cost-benefit review
- 2) results of Hazard Identification and Analysis
- 3) results of Vulnerability Assessment
- 4) results of Community Capability Assessment
- 5) effectiveness in meeting hazard mitigation goals and comprehensive plan goals

Cost-benefit review was given special emphasis, in light of its possible use in environmental reviews for HMGP, FMA and other federal hazard mitigation projects. Given the tight budgets of recent years, most goals are based in existing programs or will be dependent on grants or other outside funds.

The public and other appropriate agencies such as neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties that could be identified were invited by letter to attend Advisory Committee Meetings. The public was notified through newspaper advertising for a public kickoff meeting in April and Committee approval and public review of the preliminary draft plan on 1 September 2004 just prior to submittal to the State.

The Town formalized a process by which the requirements of this hazard mitigation plan will be incorporated into other local plans. During the planning process for new and/or updates to existing plans, the planning department will make copies of the current hazard mitigation plan available to decision makers and the public either in paper copy or using the internet. Decision makers will also be briefed on the goals of the hazard mitigation plan and how hazard mitigation can be incorporated into their decision making process.

The Town has created a process by which the requirements of this hazard mitigation plan will be incorporated into other local plans. During the planning process for new and updated local planning documents, such as the comprehensive plan, capital improvements plan, or emergency management plan, to name a few examples, the Planning Department will provide a copy of the hazard mitigation plan to each respective advisory committee member. The Planning Department will also educate advisory committee members to ensure that all goals and strategies of new and updated local planning documents are consistent with the hazard mitigation plan and will not contribute to increased hazards in the jurisdiction.

## **2. COMMUNITY PROFILE**

**See Nash County Hazard Mitigation Plan (Appendix section)**

### 3. NATURAL HAZARD IDENTIFICATION AND ANALYSIS

Identifying past occurrences of natural hazards affecting the community is the first concrete step in mitigating their effects should they occur again. This section of the plan will identify what events affected Edgecombe County as a whole, with breakouts for the Town of Whitakers for localized phenomena if appropriate.

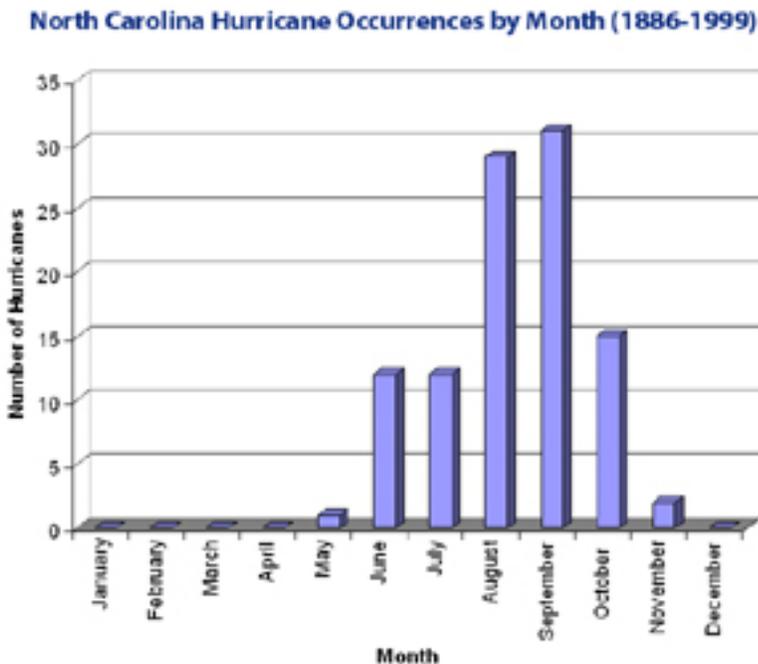
There are five facets to consider when looking at past events, according to the North Carolina Division of Emergency Management. These are:

- The **types of natural hazards** that occurred in Edgecombe County,
- The **likelihood of occurrence** of each of the hazard types,
- The **locations** of past events,
- The **strength** or intensity of the hazards, and
- The **impacts** of the hazard events on the area.

#### 3.1. Hurricanes/Tropical Storms

Hurricanes and tropical storms are low-pressure storm systems that originate over the warm waters of the tropics. As these storms move from their warm water birthplace into the mid-latitudes they pose a problem for North Carolina. When they come ashore and cross paths with our man-made environment, the results can be devastating to the lives and livelihoods of thousands of people.

Though they occur in all of the worlds tropical oceans, North Carolina is only affected by Atlantic basin hurricanes, which include those originating in the Caribbean Sea and the Gulf of Mexico. They can form from June to November, with storm probability peaking in early to mid-September.



**Figure 1: North Carolina Hurricanes by Month.**

Source: State Climate Office of North Carolina

The vectors of destruction include very high, sustained winds, heavy precipitation and tornadoes. Coastal areas and inland areas with significant estuaries can also experience high surf, storm surge, and tidal flooding.

When the sustained wind speeds of one of these tropical low pressure systems reach 39 miles per hour, it becomes an official tropical storm and is given a name determined by the World Meteorological Organization. When the sustained winds reach 74 miles per hour, it becomes a hurricane. There are degrees of intensity based on maximum sustained winds, and these fall into 5 categories on the Saffir-Simpson Scale.

**Table 1: The Saffir-Simpson Scale.**

Category	Barometric Pressure	Wind Speed	Storm Surge	Damage Potential
1 weak	28.94" or more 980.2mb or more	65 - 82kt 75 - 95mph	4 - 5ft 1.2 - 1.5m	Minimal damage to vegetation
2 moderate	28.50" - 28.93" 965.12 - 979.68mb	83 - 95kt 96 - 110mph	6 - 8ft 1.8 - 2.4m	Moderate damage to houses
3 strong	27.91"-28.49" 945.14 - 964.78mb	96 - 113kt 111 - 130mph	9 - 12ft 2.7 - 3.7m	Extensive damage to small buildings
4 very strong	27.17"-27.90" 920.08 - 944.80mb	114 - 135kt 131 - 155mph	13 - 18ft 3.9 - 5.5m	Extreme structural damage
5 devastating	< 27.17" < 920.08mb	> 135kt > 155mph	> 18ft > 5.5m	Catastrophic building failures possible

Source: State Climate Office of North Carolina

North Carolina's protruding coastline puts it in the path of many Atlantic storms. Since 1900, it is behind only Texas, Florida, and Louisiana in landfalling hurricanes.

If tropical storms are also included, the number is much higher. Since reliable classification of storms began in 1886 through 1999, nine hundred and fifty-one tropical cyclones were recorded in the Atlantic Ocean and Gulf of Mexico. Thirty-eight tropical cyclones made direct landfall in North Carolina. Of these, 10 were tropical storms, 22 were minor hurricanes, and 6 were major hurricanes. (Source: State Climate Office of North Carolina)

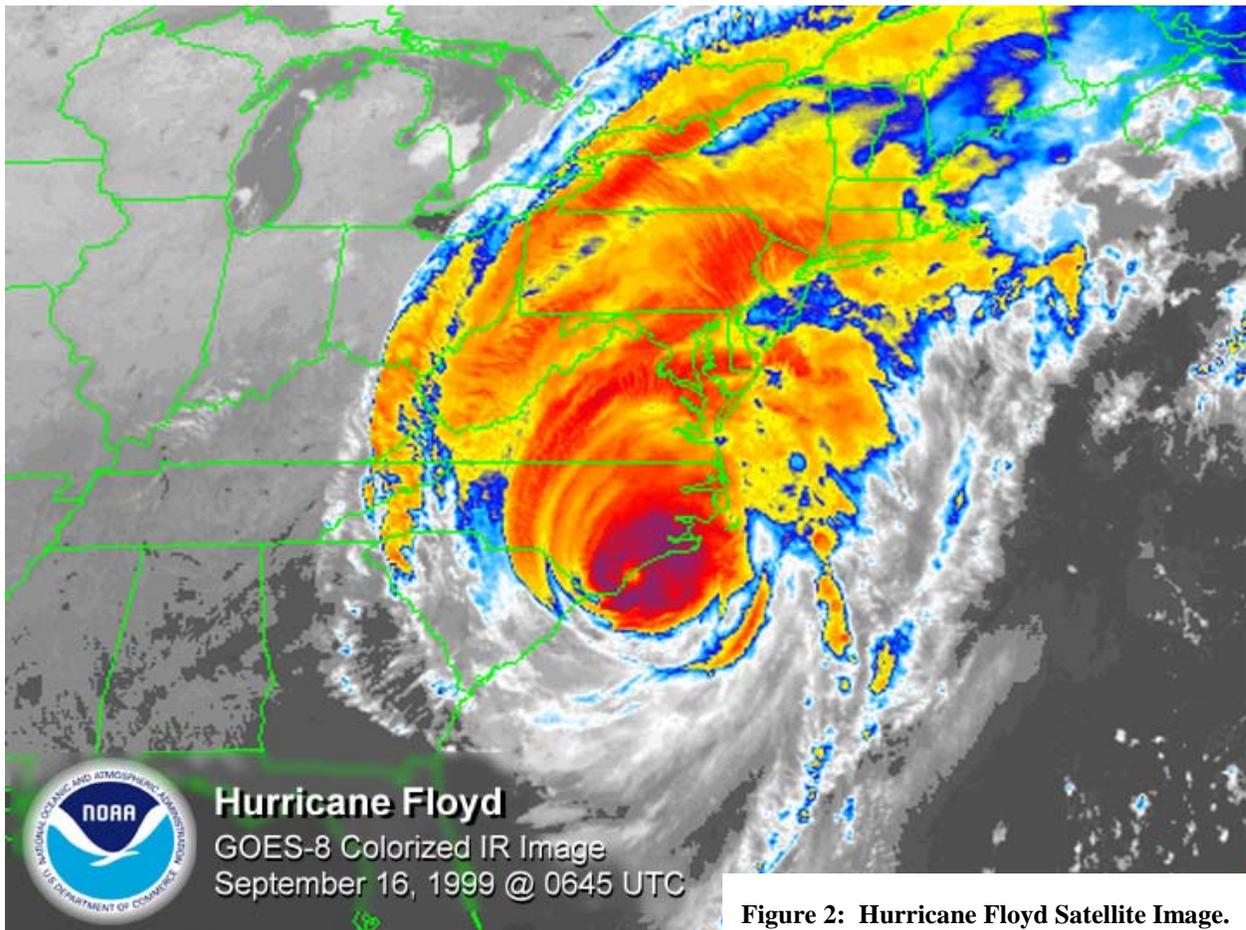


Figure 2: Hurricane Floyd Satellite Image.

**Table 2: Hurricane Strikes by State**

.AREA	Category Number					ALL	MAJOR
	1	2	3	4	5	1,2,3,4,5	3,4,5
<b>U.S. (Texas to Maine)</b>	58	36	47	15	2	158	64
<b>Texas</b>	12	9	9	6	0	36	15
(North)	7	3	3	4	0	17	7
(Central)	2	2	1	1	0	6	2
(South)	3	4	5	1	0	13	6
<b>Louisiana</b>	8	5	8	3	1	25	12
<b>Mississippi</b>	1	1	5	0	1	8	6
<b>Alabama</b>	4	1	5	0	0	10	5
<b>Florida</b>	17	16	17	6	1	57	24
(Northwest)	9	8	7	0	0	24	7
(Northeast)	2	7	0	0	0	9	0
(Southwest)	6	3	6	2	1	18	9
(Southeast)	5	10	7	4	0	26	11
<b>Georgia</b>	1	4	0	0	0	5	0
<b>South Carolina</b>	6	4	2	2	0	14	4
<b>North Carolina</b>	10	4	10	1*	0	25	11
<b>Virginia</b>	2	1	1*	0	0	4	1*
<b>Maryland</b>	0	1*	0	0	0	1*	0
<b>Delaware</b>	0	0	0	0	0	0	0
<b>New Jersey</b>	1*		0	0	0	1*	0
<b>New York</b>	3	1*	5*	0	0	9	5*
<b>Connecticut</b>	2	3*	3*	0	0	8	3*
<b>Rhode Island</b>	0	2*	3*	0	0	5*	3*
<b>Massachusetts</b>	2	2*	2*	0	0	6	2*
<b>New Hampshire</b>	1*	1*	0	0	0	2*	0
<b>Maine</b>	5*	0	0	0	0	5*	0

Source: National Weather Service Tropical Prediction Center

The National Climatic Data Center lists 6 “Hurricane and Tropical Storm” events that affected Edgecombe County in the period from January 1, 1950 through April 2004.

**Table 3: NCDC Hurricane Events for Edgecombe County 1950-2002.**

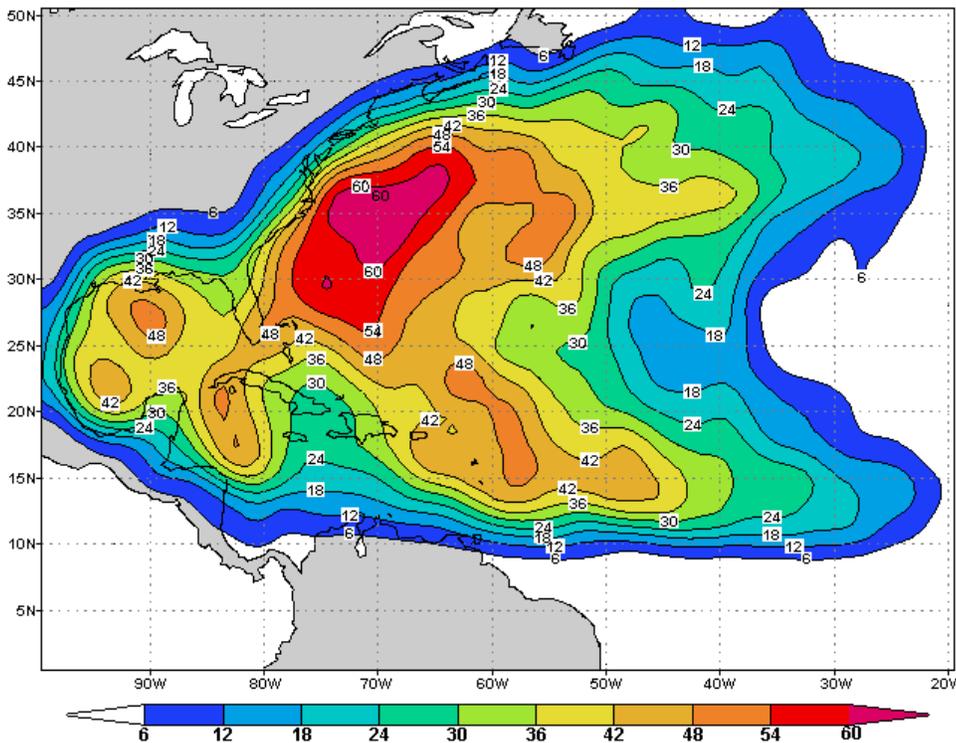
Storm	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Bertha	7/12/1996	0800	Hurricane	N/A	0	0	0	0
Fran	9/5/1996	1700	Hurricane	N/A	7	2	0	0
Bonnie	8/27/1998	2000	Hurricane	N/A	0	0	0	50.0M
Dennis	9/4/1999	2100	Hurricane	N/A	0	0	0	3.0M
Floyd	9/15/1999	1600	Hurricane	N/A	0	0	3.0B	500.0M
Isabel	9/18/2003	0900	Hurricane/typhoon	N/A	1	0	7.3M	0
<b>TOTALS:</b>					<b>8</b>	<b>2</b>	<b>3.007B</b>	<b>553.000M</b>

Reviewing the NCDC table of events in its entirety, coverage of all types of hazard events in Edgecombe County is somewhat spotty prior to the mid-1980s (See Appendix J). Additional Hurricanes or Tropic Storms not listed in the NCDC tables but brought up by the public include Hazel, Bonnie, and Gloria. Hazel was noted to be particularly destructive, with wind damage to structures and crop damage rather than flooding as the primary problems. Other Hurricanes or storms with a track near Edgecombe County but not included are Arthur, Charlie, Diana, Ginger and Irene.

The table looks as though every 3 years roughly three hurricanes or tropical storms will affect Edgecombe County. Even after the addition of storms not noted by the NCDC this is misleading, as prior to 1996 only the 1955 hurricane season had three hurricanes making landfall in North Carolina in one year: Connie, Diane, and Ione. The additional storms added by the public create a more balanced view of past events with at least a few storms every decade.

**Figure 3: Annual Probability of a Named Storm.**

Source: National Weather Service

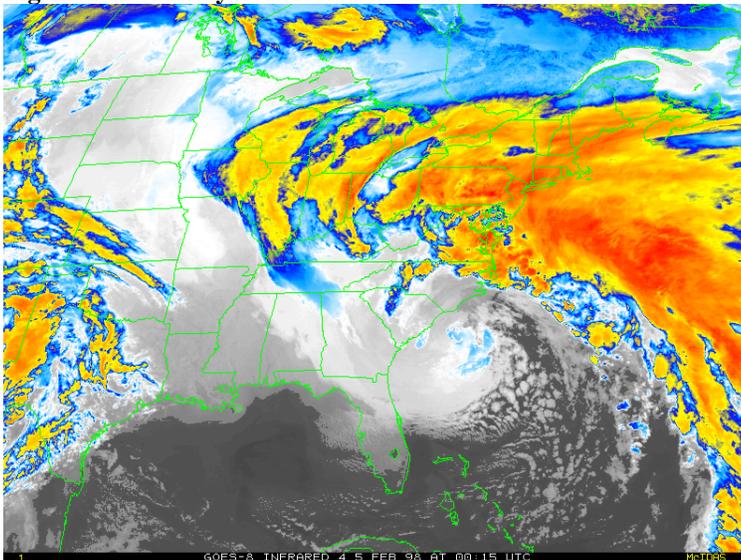


The NOAA Hurricane Research Division estimates the probability of a named storm in the region between 18 and 24 percent annually. With the destructive Hazel in 1954 and Floyd in 1999 it is reasonable to assume that some of these storms will cause heavy damage in the County. NCDEM rates hurricanes a moderate risk for Edgecombe County.

### 3.2. Nor'Easters

The technical definition of a nor'easter is a coastal low pressure system along the Atlantic seaboard that is characterized by strong northeasterly winds off the Atlantic that produce heavy amounts of precipitation, high surf, and coastal erosion. The counter-clockwise rotation of the low pressure system and the location and track of the storm mean the onshore winds at the onset of the storm come from the northeast, hence it's name nor'easter. They are the strong storms that form outside of hurricane season, and their origins are different from hurricanes because of the winter weather patterns. They typically form near the Bahamas or north of Cuba, along the Appalachians or off Cape Hatteras. Nor'easters are spawned by a trough in the Jet Stream that dips far south allowing cold arctic air to meet warm air. The warm air rises over the cold, creating instability high in the atmosphere and an area of low pressure below. As the incoming air rises around the center, the Jet Stream whisks it away further increasing the speed of the incoming air. The faster the air moves the faster the barometric pressure drops, and the gradient of the pressure change generates the strong winds.

Figure 4: February 1998 Nor'easter.



The normal Jet Stream winter pattern is to follow the coast which drags the storm to the northeast. Sometimes a high pressure center further north blocks the path of the nor'easter and it churns over the ocean for a long time. This sends strong waves onshore causing tremendous erosion. During the October to April nor'easter season, February is the busiest month.

While a nor'easter does not achieve the wind-speed of hurricanes, their destructive capability is in their duration (up to a week) and size (up to 1000 miles or more in diameter). Because of their winter occurrence, they can also create problems

with frozen precipitation. The March 1993 “Storm of the Century” is one example, though it was not technically a nor'easter until it came east of the Appalachians and strengthened. It is listed under winter storm events for this report.

Though nor'easters are perceived as a coastal phenomenon, they pose a threat inland from wind and heavy rain. North Carolina’s proximity to the Gulf Stream makes it vulnerable to nor'easters. The North Carolina Department of Emergency Management rates nor'easters as a **MODERATE** risk for Edgecombe County (*Local Hazard Planning Mitigation Manual, November 1998*).

### 3.3. Flooding

Flooding is the most pressing environmental hazard in low-lying Edgecombe County. There are two types of flooding: flash floods and general floods. General flooding caused by tropical storms, hurricanes and nor'easters is the most common in Edgecombe County, though flash floods occurred in urbanized areas during hurricane Irene.

Flash floods are caused different ways. Generally they are caused when a great deal of precipitation falls over a short period of time and overloads the natural drainage systems. They can also be caused by dam or levee failure, or when an ice jam dislodges and releases the water it held back. They are more prevalent in areas with pronounced topographic relief or urbanized areas because the runoff is quickly channeled to the lowest lying areas faster than it can move downstream.

Figure 5: Before and After Floyd Images.



General floods result from precipitation falling over a longer time period over a given river basin. There are 3 types of general floods: riverine, coastal, and urban. Riverine flooding is a function of excessive precipitation and runoff within the watershed of a stream or river. Coastal flooding is typically a result of storm surge, wind-driven waves, and heavy rainfall produced by hurricanes, tropical storms, nor'easters and other large coastal storms. Urban flooding occurs where man-made development obstructs the natural flow of water and decreases the ability of natural groundcover to absorb and retain surface water runoff.

The severity of a flood event is determined by a combination of factors, including stream and river basin topography and physiography, soil saturation levels, precipitation and weather patterns, and the degree of urbanization or clearing of vegetation.

Periodic flooding of lands adjacent to rivers, streams and shorelines is a natural and inevitable occurrence whose probability can be determined based upon established recurrence intervals. The recurrence interval of a flood is defined as the average time interval, in years, expected between a flood event of a particular magnitude and an equal or larger flood. Flood magnitude increases with increasing recurrence interval.

A "floodplain" is the lowland area adjacent to a river, lake or ocean. Floodplains are designated by the frequency of the flood that is large enough to cover them. For example, the 10-year floodplain will be covered by a 10-year flood event and the 100-year floodplain by the 100-year flood.

Flood probabilities, such as the "100-year flood," are determined by statistically analyzing the elevation of known floods for an area and determining how often floods of a particular size occur. Another way of expressing the flood frequency is the chance of occurrence in a given year, which is the percentage of the probability of flooding each year. For example, the 100-year flood has a 1% chance of occurring in any given year.

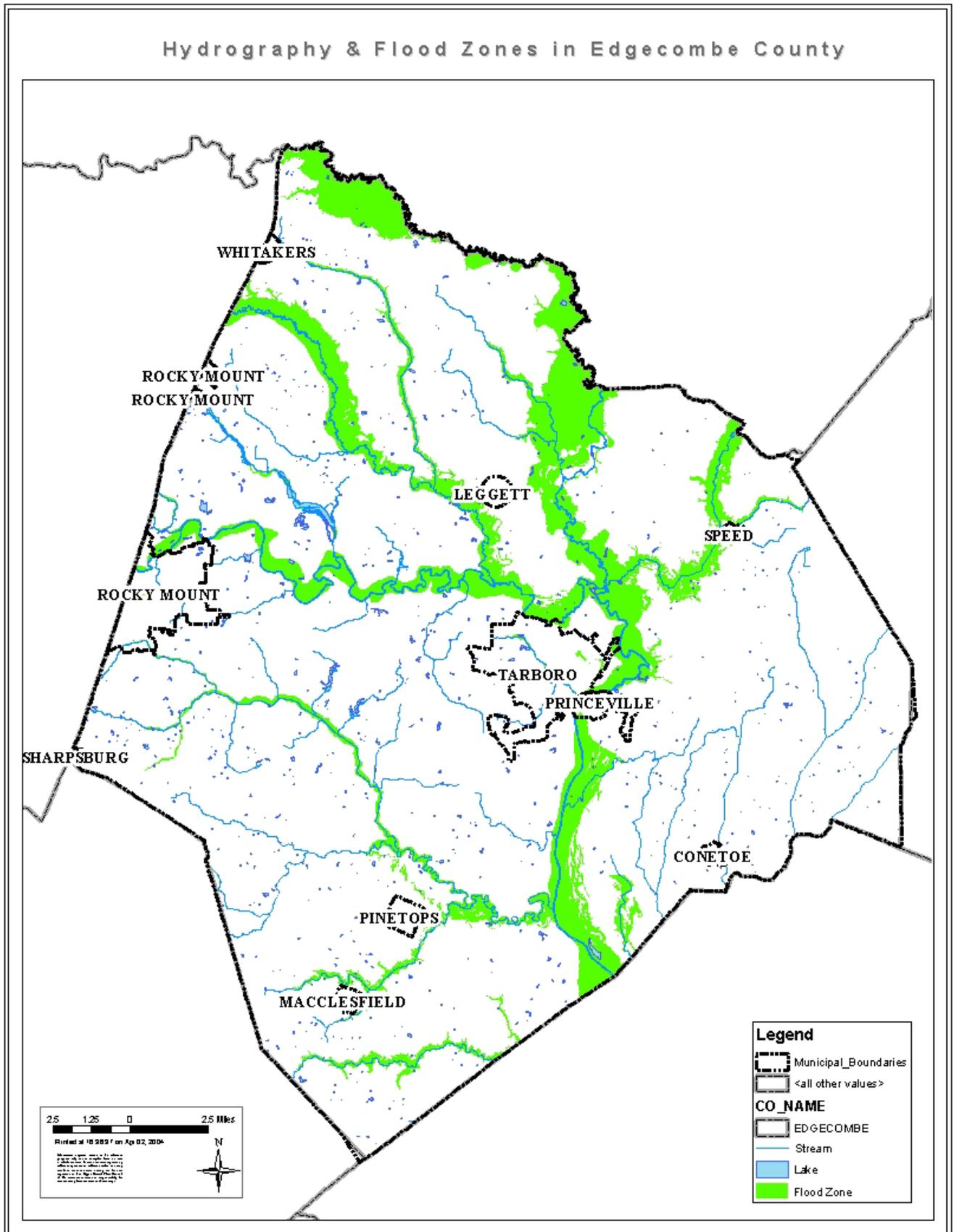
Past flood events wreaked havoc on Edgecombe County. From 1995 until May of 2003, hurricanes, tropical storms, nor'easters, and intense summer storms all left their high-water marks on the County. Combined they are responsible for 500 million dollars of structural damage and over 3.0 billion in crop damage in Edgecombe County alone. Floyd was a particularly devastating event for the County with a combined crop and property damage toll of 3.5 billion dollars. Property and crop damage is listed in the hurricane section of this plan. Tragically, flooding associated with Floyd also is responsible for 8 deaths in the County and is listed below.

**Figure 6: NCDC Flood Damage Report.**

Storm	Date	Time	Type	Mag	Deaths	Injuries	Prop. Damage	Crop Damage
1 Rocky Mount	7/16/1994	1725	Flash Flooding	N/A	0	0	0	0
2 Countywide	9/5/1996	2300	Flash Flood	N/A	0	0	0	0
3 Countywide	7/24/1997	0830	Flash Flood	N/A	0	0	0	0
4 NCZ011 - 028	1/22/1998	1600	Flood	N/A	0	0	0	0
5 NCZ028 - 039 - 042>043 - 073>077 - 084 - 086	1/27/1998	1300	Flood	N/A	0	0	0	0
6 NCZ026>028	2/9/1998	0800	Flood	N/A	0	0	0	0
7 Countywide	9/6/1999	2000	Flash Flood	N/A	0	0	0	0
<b>8 Countywide*</b>	<b>9/15/1999</b>	<b>2200</b>	<b>Flash Flood</b>	<b>N/A</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>
9 Countywide	9/21/1999	1145	Flash Flood	N/A	0	0	0	0
10 Countywide	9/27/1999	2330	Flash Flood	N/A	0	0	0	0
11 Countywide	9/28/1999	1630	Flash Flood	N/A	0	0	0	0
12 Countywide	9/28/1999	0820	Flash Flood	N/A	0	0	0	0
13 Countywide	10/17/1999	1800	Flash Flood	N/A	0	0	0	0
14 Northeast Portion	6/16/2001	1100	Flash Flood	N/A	0	0	0	0
15 Central Portion	7/5/2002	2000	Flash Flood	N/A	0	0	0	0
16 Northwest Portion	9/16/2002	1100	Flash Flood	N/A	0	0	0	0
17 Tarboro	9/18/2003	1600	Flash Flood	N/A	0	0	0	0
Note: Hurricane Floyd Damage Listed Under The Hurricane Category								
<b>Total</b>					<b>8</b>		<b>0</b>	<b>\$ 0.00</b>

\*Hurricane Floyd Property and Crop damage listed under Hurricane in Table 3

Figure 7: Edgecombe County Flood Zone Map.



Digital floodplain maps are newly re-mapped and adopted for Edgecombe County, and this makes it much easier to accurately show vulnerable areas countywide.

NCDEM classifies Edgecombe County as a moderate risk for flooding in the August 2001 *Statewide Risk Assessment for Natural Hazards*. In light of hurricane Floyd in 1999 and subsequent weather events, this is probably an underestimation and should be upgraded to **MODERATE** and perhaps higher. The Edgecombe County Hazard Mitigation Plan of June 2001 also reached this conclusion.

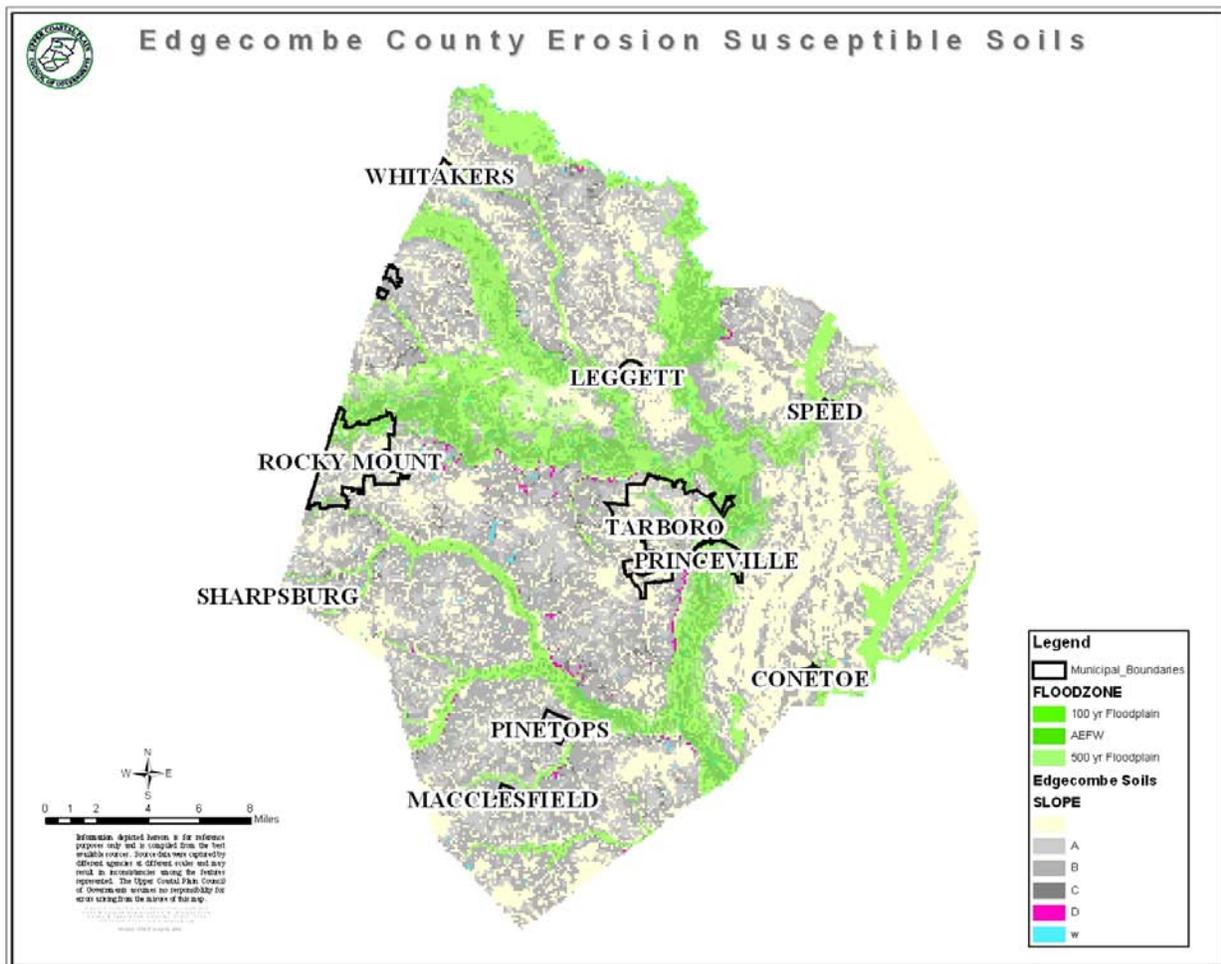
### 3.4. Coastal/Riverine Erosion

Erosion is the removal of soil or weathered material, usually by wind or water. Coastal erosion occurs during storm events from storm surge and wave action. Riverine erosion is generally caused by large flows caused by heavy rain events. There are two kinds of erosion that typify inland erosion processes: sheet erosion and rill erosion. Sheet erosion is more or less evenly distributed over an area and removes thin layers of soil. Rill erosion is caused by running water scouring small channels.

The USDA Soil Conservation Service Soil Survey for the county shows that soils in the county with relatively steep slopes are those with a D, E, or F slope characteristic. Figure 8: Erosion Prone Soils illustrates the areas in the central portion of the county, and areas eroded already by streams, notably along the Tar River.

Edgecombe County is not a coastal county, and coastal erosion is not applicable to the area. Riverine processes do exist in the county, though. The County is relatively flat, but parts of the county are susceptible to rill erosion. In some central areas adjacent to streams there is enough slope to create the flows needed to scour a channel. Generally, the rate of soil formation is enough to keep pace with erosion, and the risk for the county is **LOW**.

Figure 8: Erosion Prone Soils.



### 3.5. Severe Winter Storms/Freezes

Severe winter weather includes heavy snow, wind, freezing rain and ice pellets, and extreme cold. These storms are extra-tropical cyclones fueled by strong temperature gradients and an active upper-level jet stream. The severe winter storms that impact North Carolina usually emerge in the Gulf of Mexico or off the southeast Coast.

Although most winter storms occur in the mountainous regions of the Appalachians, the geographical orientation of the mountains and the piedmont contribute to a regular occurrence of freezing precipitation events in the piedmont. These winter storms may result from cold air damming. Cold air damming is a shallow, surface-based layer of relatively cold, stable-stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling precipitation in the form of snow melts, then either becomes supercooled (liquid below the freezing point of water) or refreezes. This results in freezing rain or sleet. Cold air damming generally occurs in the western half of North Carolina. Edgecombe County is not classified as being vulnerable for cold air damming.

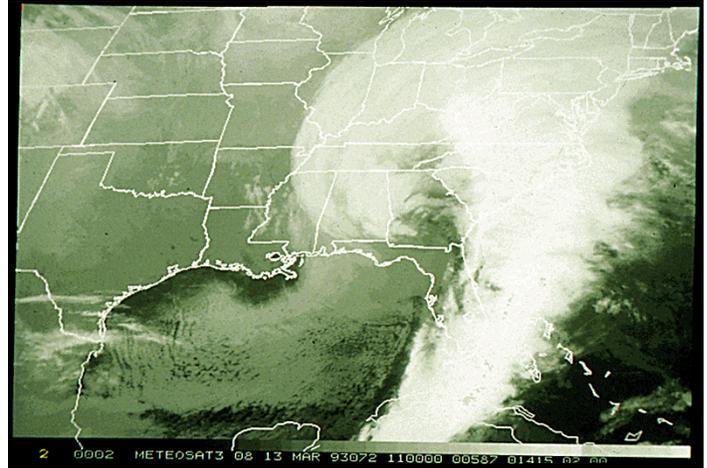


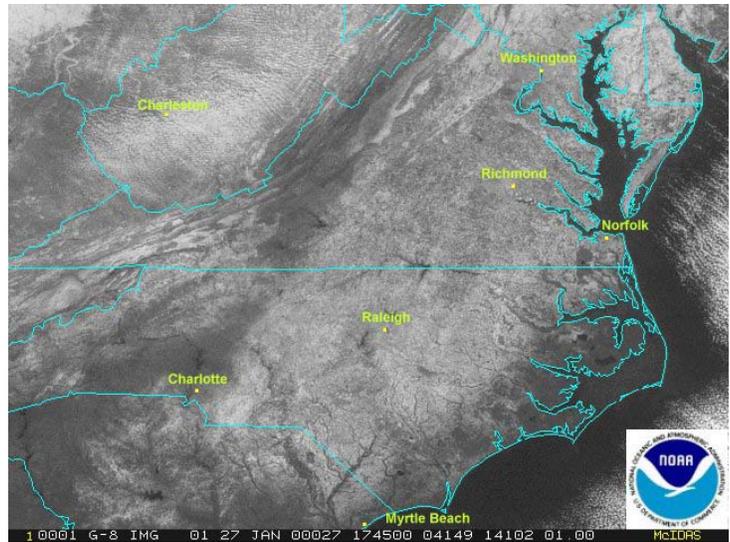
Figure 9: Storm of the Century--1993 Blizzard.

The largest threat for Edgecombe County for severe winter weather is from Nor'easters and other severe winter coastal storms. There are 8 winter weather events including the March 1993 “Storm of the Century” listed for Edgecombe County by the National Climatic Data Center.

Table 4: Recorded Winter Storm Events for Edgecombe County (NCDC).

Storm	Date	Time	Type	Mag	Deaths	Injuries	Prop. Damage	Crop Damage
<a href="#">102 NCZ007&gt;011 - 021&gt;028 - 038&gt;043 - 073&gt;078 - 083&gt;086 - 088&gt;089</a>	1/18/2000	0200	Winter Storm	N/A	0	0	0	0
<a href="#">103 NCZ007&gt;011 - 021&gt;024 - 026&gt;028 - 038&gt;043 - 076&gt;077 - 089</a>	1/20/2000	0000	Winter Storm	N/A	0	0	0	0
<a href="#">104 NCZ007&gt;011 - 021&gt;028 - 038&gt;043 - 073&gt;078 - 083&gt;086 - 088&gt;089</a>	1/22/2000	1800	Winter Storm	N/A	0	0	0	0
<a href="#">105 NCZ007&gt;011 - 021&gt;028 - 038&gt;043 - 073&gt;078 - 083&gt;086 - 088&gt;089</a>	1/24/2000	0500	Winter Storm	N/A	0	0	0	0
<a href="#">106 NCZ007&gt;011 - 021&gt;028 - 038&gt;043 - 073&gt;077 - 083&gt;086 - 088&gt;089</a>	1/28/2000	1000	Winter Storm	N/A	0	0	0	0
<a href="#">112 NCZ010&gt;011 - 026&gt;028 - 042&gt;043 - 077 - 077&gt;078 - 088&gt;089</a>	12/3/2000	1200	Winter Storm	N/A	0	0	0	0
<a href="#">118 NCZ007&gt;011 - 021&gt;028 - 038&gt;043 - 073&gt;078 - 083&gt;086 - 088&gt;089</a>	1/3/2002	0000	Winter Storm	N/A	0	0	0	0
<a href="#">126 NCZ007&gt;011 - 021&gt;028 - 038&gt;043 - 073&gt;077 - 083&gt;084</a>	12/4/2002	1500	Winter Storm	N/A	0	0	0	0

In 1997 the National Climatic Data Center (NCDC) compiled extreme snowfall statistics for the contiguous United States. One-day, observed-maximum-snowfall amounts, in inches, were compiled for selected stations (many for the period of 1948-1996). Based on the Local Hazard Mitigation Planning Manual, the extreme one-day snowfall averaged for the FEMA study stations in Edgecombe County is 11.3 inches. This snowfall is below the extreme average-one-day snowfall for the County's Climate Division (Climate Division 8): 12.24 inches. Although the northern coastal divisions fall second in extreme average snowfall to the mountainous climate divisions (Climate Divisions 1 and 2) compared with the rest of the state, the North Carolina Division of Emergency Management has classified Edgecombe County as having a **LOW** vulnerability to severe winter weather.



**Figure 10: Visible Snow Cover From the January 24th 2000 Storm**

### 3.6. Tornadoes/Severe Storms

Tornadoes are violently rotating air columns and are generated from major storm events. Sometimes the source is a hurricane. Other times, the main agent is not a hurricane, but a major thunderstorm. The strong winds of tornadoes can destroy weak or fragile structures and can blow down trees and limbs. This destruction may cause additional damage as the items fall to the ground.

Tornadoes occur all over the state of North Carolina. In fact, the state ranks 22nd nationally for number of tornadoes reported. Edgecombe County and the counties immediately surrounding Edgecombe have experienced a number of strong tornadoes in the last 100 years. The NCDC lists 5 reported tornadoes since 1950 either originating in or tracking through part of Edgecombe County.

Tornadoes are measured using the Fujita scale, which ranks a tornado based on its wind speed and the level of destruction it causes.

**Table 5: The Fujita Scale of Tornado Intensity.**

<b>F-Scale Number</b>	<b>Intensity Phrase</b>	<b>Wind Speed</b>	<b>Type of Damage Done</b>
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

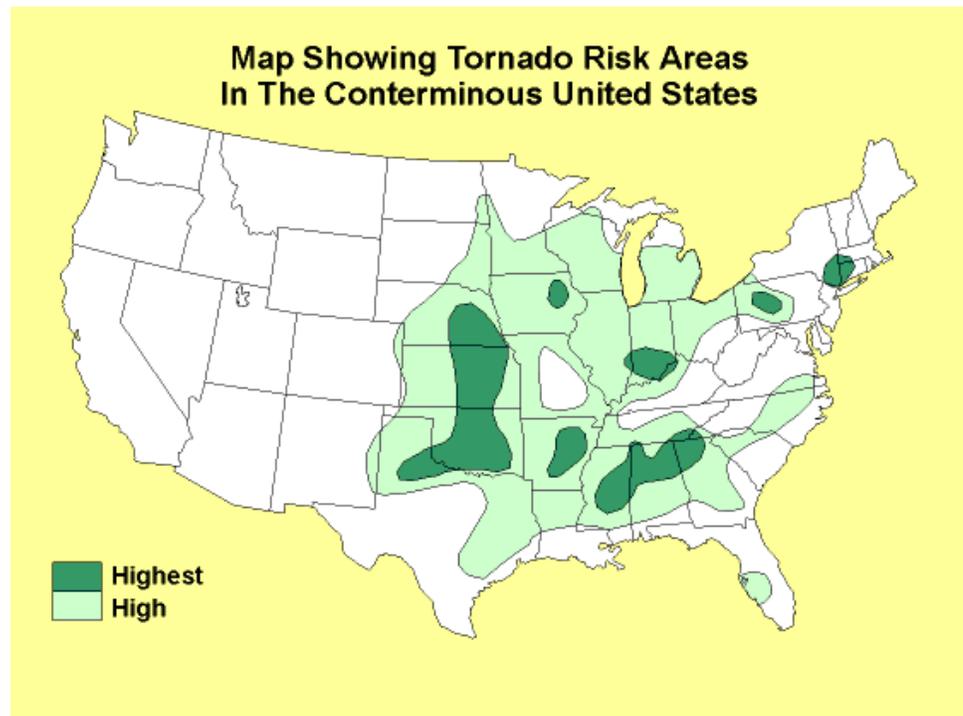
Edgecombe County had 2 magnitude F3 (severe) tornadoes that did 250,000 dollars worth of damage in the 1950's, and numerous other smaller events that combined for a total of 325,000 dollars of damage.

**Table 6: Tornado Events in Edgecombe County 1950- June 2003.**

Storm	Date	Time	Type	Mag	Deaths	Injuries	Prop. Damage	Crop Damage
<a href="#">1 EDGECOMBE</a>	3/15/1953	2050	Tornado	F3	0	0	0K	0
<a href="#">2 EDGECOMBE</a>	11/8/1957	1800	Tornado	F3	0	3	250K	0
<a href="#">13 EDGECOMBE</a>	5/5/1977	1730	Tornado	F1	0	0	25K	0
<a href="#">60 Pinetops</a>	11/11/1995	1950	Tornado	F1	0	3	50K	0
<a href="#">125 Conetoe</a>	10/11/2002	2338	Tornado	F1	0	0	0	0
<b>Totals:</b>					<b>0</b>	<b>6</b>	<b>\$325,000</b>	<b>0</b>

Edgecombe County's eastern location - within a moderate distance to locations experiencing regular hurricane activity - increases its risk of tornado development. Its location makes it more likely than many other areas of the state to experience tornadoes. Accordingly, the NC Division of Emergency Management assigned Edgecombe County a **MODERATE** threat level for tornado activity based on its general climatic conditions and the frequency of historic tornadoes.

**Figure 11: Tornado Risk in the Contiguous US (USGS).**



### 3.7. Wildfires/Forest Fires

A wildfire is an undesirable, uncontrolled burning of grasslands, brush or woodlands. According to the National Weather Service, more than 100,000 wildfires occur in the United States each year. Humans start roughly ninety percent of these wildfires, i.e., campfires, debris burning, smoking, et cetera. Lightning starts the other ten percent. The potential for wildfire depends upon surface fuel characteristics, weather conditions, recent climate conditions, topography and fire behavior.



Figure 12: Wildfire.

Fuels are any combustible materials that sustain a fire. Typically, this is whatever vegetation is prevalent in a given area and the debris from the vegetation. Fuel availability is affected by how often fires occur; if an area has long intervals between fires, there is more fuel available when a fire event happens.

Weather is one of the most significant factors in determining the severity of wildfires. The intensity of fires and the rate with which they spread is directly related to the wind speed, temperature and relative humidity. Climatic conditions such as long-term drought also play a major role in the number and intensity of wildfires, and topography is important because the slope and shape of the terrain can change the rate of speed at which fire travels.

There are four major types of wildfires: ground fires, surface fires, crown fires, and spotting fires. Ground fires burn in natural litter, duff, roots or sometimes soils with high organic content like peat. Once started they are very difficult to control, and some ground fires may even rekindle after being extinguished. Surface fires burn in grasses and low shrubs (up to 4' tall) or in the lower branches of trees. They have the potential to spread rapidly, and the ease of their control depends upon the fuel involved. Crown fires burn in the tops of trees, and the ease of their control depends greatly upon wind conditions. Spotting fires occur when burning embers are thrown ahead of the main fire, and can be produced by crown fires as well as wind and topographic conditions. Once spotting begins, the fire will be very difficult to control.

Wildfires become significant threats to life and property along what is known as the “wildland/urban interface.” The wildland/urban interface is defined as the area where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Since 1985, approximately 9,000 homes have been lost to urban/wildland interface fires across the United States.

All of North Carolina is susceptible to wildfire, although according to the North Carolina Division of Emergency Management only the southern coastal plain is said to be at especially “high” risk. Although wildfires are possible throughout the year, normal fire season peaks for eastern North Carolina are in the Spring and late Fall months. Between 1928 and 2000, the North Carolina Division of Forest Resources has recorded a total of 281,660 wildfires for an average number of 3,858 fires per year. For that same period, a total of 9,598,498 acres have burned for an average of 131,486 acres per year. According to the U.S. Forest Service, a total of 4,949 fires burned 25,146 acres and destroyed 27 homes and 275 structures in North Carolina during the year 2000.

According to the North Carolina Division of Emergency Management, Edgecombe County faces a low risk to wildfire. The North Carolina State Forest Service assessed wildfire potential using forest service

records for the period between 1950 and 1993. The State Forest Service categorized Edgecombe County having a **LOW** wildfire potential for both number of fires and number of acres burned.

The average wildfire category for Edgecombe County's climate division (Climate Division 8) is 2.2 ("Moderate"). Therefore, Edgecombe County, with a category of 1 ("Low") for both number of fires and number of acres burned, falls below this average. Based on this information, wildfire does not appear to pose a significant natural hazard risk for Edgecombe County.

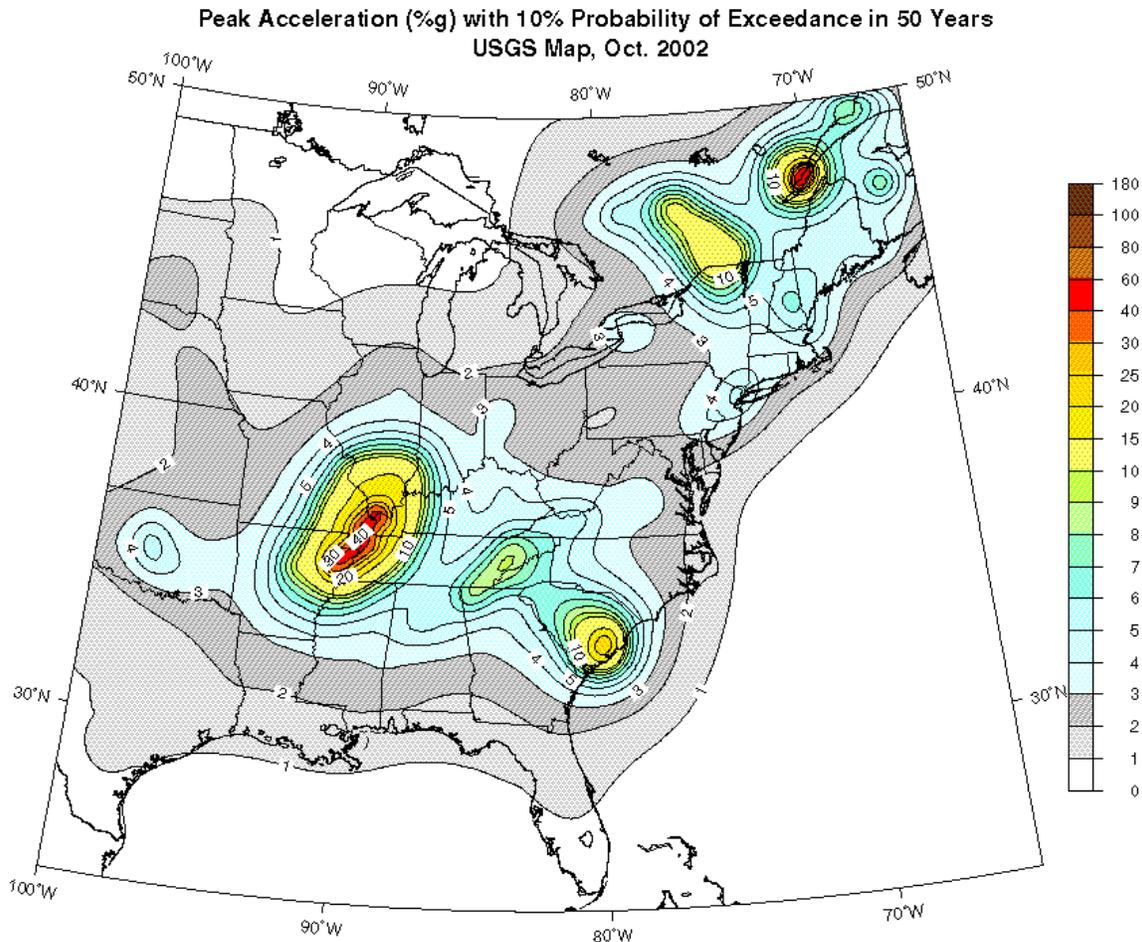


Figure 13: Climate Divisions of North Carolina

### 3.8. Earthquakes

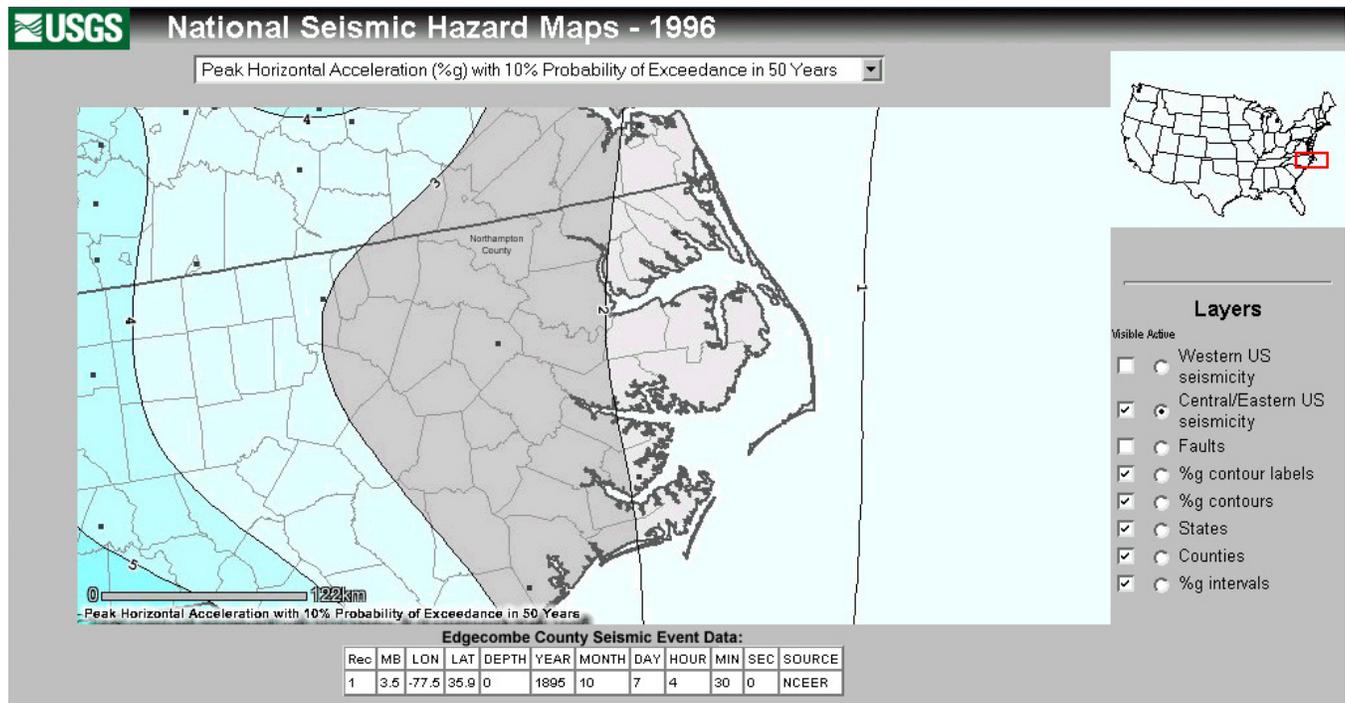
An earthquake is the violent shaking of the Earth caused by a sudden movement of rock beneath its surface. Rocks respond to stress (squeezed or pulled apart) near the Earth's surface by breaking, and when rocks move along either side of a fracture, it is called a fault. The land around a fault may shift horizontally, vertically, or a combination of these motions. The force that causes the stress within the rock is a result of movement of giant sections of the Earth's crust.

**Figure 14: Earthquake Probability Map.**



The epicenters of earthquakes affecting North Carolina are generally concentrated in the active Charleston and Eastern Tennessee Seismic Zones. The Charleston Seismic Zone is part of a crescent of moderate seismic activity risk extending from Charleston, South Carolina, northwestward into eastern Tennessee where it meets the East Tennessee Seismic Zone. This zone roughly follows the path of Interstate 75 between Chattanooga and Knoxville. Edgemont County lies well to the northeast of these regions. The Virginia Seismic Zone is far less active, but is much closer than the other major fault zones and plays a significant role in the County's earthquake history. It is discernable on the map as the northeastward bulge of 3 percent probability into central Virginia.

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude. Each unit increase in magnitude on the Richter Scale corresponds to a ten-fold increase in wave amplitude, or a 244-fold increase in energy (USGS 1996). Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale. It is a twelve-level scale based on direct and indirect measurements of seismic effects. Roman Numeral I corresponds to imperceptible (instrumental effects), IV corresponds to moderate (felt by people), and XII for catastrophic (total destruction). There have not been any earthquakes in the Eastern Tennessee Seismic Zone since 1928 with MMI intensity greater than IV. (This corresponds to a Richter Scale magnitude between 4.8 and 4.2, and a maximum acceleration of less than 100 mm/sec.) However, the area has the potential to produce an earthquake of significant intensity in the future (NCDEM 1999).



North Carolina's vulnerability to earthquakes decreases from west to east and south to north in relation to the two Seismic Zones. The eastern portion of the State (including Edgecombe County) faces minimal effects from seismic activity. The North Carolina Division of Emergency Management has classified Edgecombe County as a **LOW** vulnerability area for earthquakes. The U.S. Geologic Survey rates earthquake probability by looking at past events and proximity to known background fault zones. The USGS estimates probability of a major earthquake in a 50 year interval in Edgecombe County at 2 percent. Until the 4.5 magnitude earthquake on the 9<sup>th</sup> of December 2003, the closest significant earthquakes in recorded history occurred in Edgecombe County on October 4<sup>th</sup> 1895 and in central Virginia in 1875.

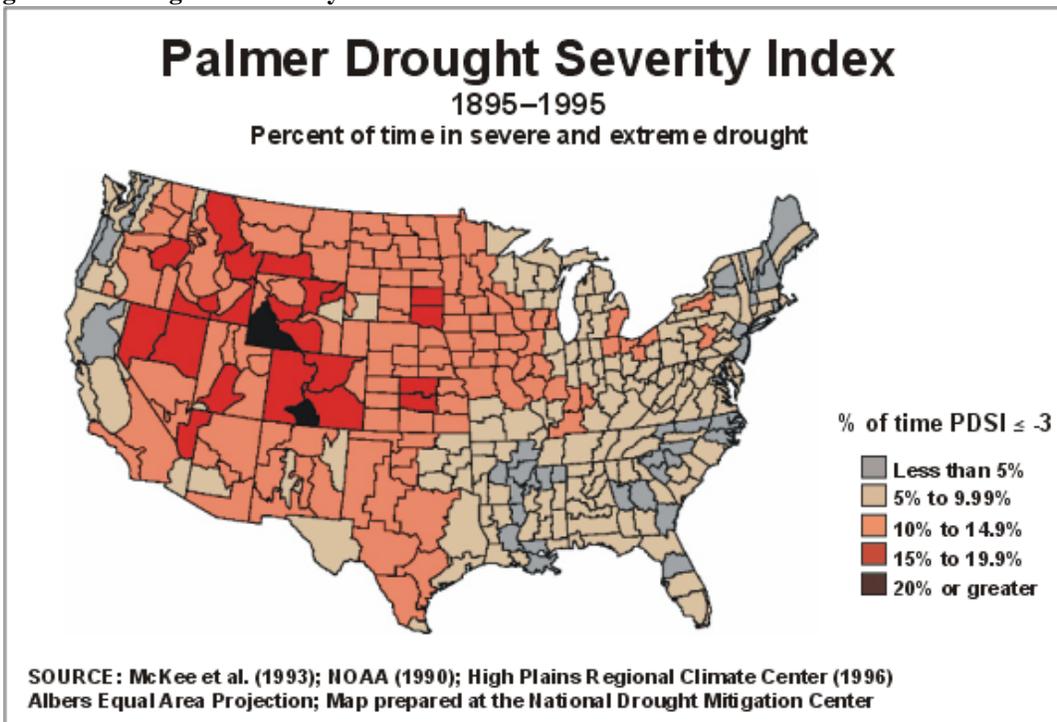
### 3.9. Drought/Heat Waves

Drought is a normal, recurrent feature of climate, although many erroneously consider it a rare and random event. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another. Drought is a temporary aberration; it differs from aridity, which is restricted to low rainfall regions and is a permanent feature of climate.

Drought has scores of definitions, but it originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and evapotranspiration (i.e., evaporation + transpiration by plants) in a particular area, a condition often perceived as “normal”. It is also related to the timing, i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages, and the ability of the soil to absorb the rains. Other climatic factors such as high temperature, high wind, and low relative humidity are often associated with it in many regions of the world and can significantly aggravate its severity.

Long term drought probability can be measured using the Palmer Index. The Palmer Index was developed by Wayne Palmer in the 1960s and uses temperature and rainfall information in a formula to determine dryness. It has become the semi-official drought index. The Palmer Index is most effective in determining long term drought—a matter of several months—and is not as good with short-term forecasts (a matter of weeks). It uses a 0 as normal, and drought is shown in terms of minus numbers; for example, minus 2 is moderate drought, minus 3 is severe drought, and minus 4 is extreme drought. The advantage of the Palmer Index is that it is standardized to local climate, so it can be applied to any part of the country to demonstrate relative drought or rainfall conditions. The negative is that it is not as good

Figure 15: Drought Probability.



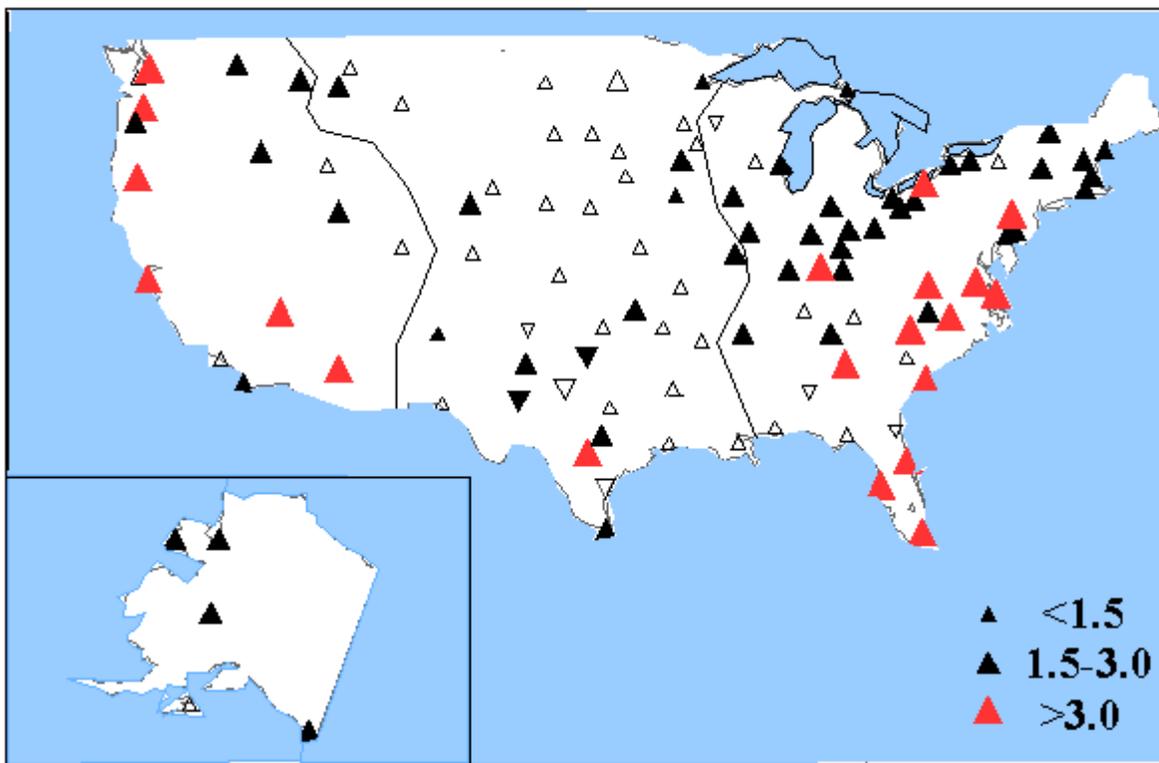
for short term forecasts, and is not particularly useful in calculating supplies of water locked up in snow, so it works best east of the Continental Divide. Edgecombe County is a low risk area for extreme drought, though seasonal droughts are not uncommon.

A heat wave is generally a period of abnormally and uncomfortably hot and usually humid weather. It could last from several days to several weeks. The Weather Channel uses the following criteria for a heat wave: a minimum of ten states with 90 degree plus temperatures and the temperatures must be at least five degrees above normal in parts of that area for at least two days or more.

Heat kills by taxing the human body beyond its ability to cool itself. North American summers are hot, and in the Southeast they are humid and sunny as well. High humidity and direct sunlight further burden the human body’s ability to cool itself. Both are factors of the Edgecombe County summer.

The National Climatic Data Center Looked at nearly 40 years worth of heat-related data for the Continental United States, and the Upper Coastal Plain shows a significant more, hotter days (see Figure 16: Temperature Trends Map from NOAA NCDC). Edgecombe County’s location makes it prone to hot, humid summers. Therefore the risk of prolonged periods of hot, harmful weather is likely. The risk of experiencing a heat wave is **MODERATE**.

**Figure 16: Temperature Trends Map from NOAA NCDC.**



**Trends in the annual frequency of daily minimum apparent temperature exceeding local threshold values from 1949-1995. The size and color of the triangle indicates the magnitude of the trend (ranging from -2.7 to +5.2 per decade); its orientation (on its base or on its apex) indicates the sign of the trend (positive or negative, respectively). Filled triangles indicate significant trends (at  $p < 0.05$ , using non-parametric methods).**

### 3.10. Landslides/Sink Holes

A landslide is the movement of earth materials caused by gravity, and generally involved downslope movement. An avalanche is a similar movement of snow and ice.

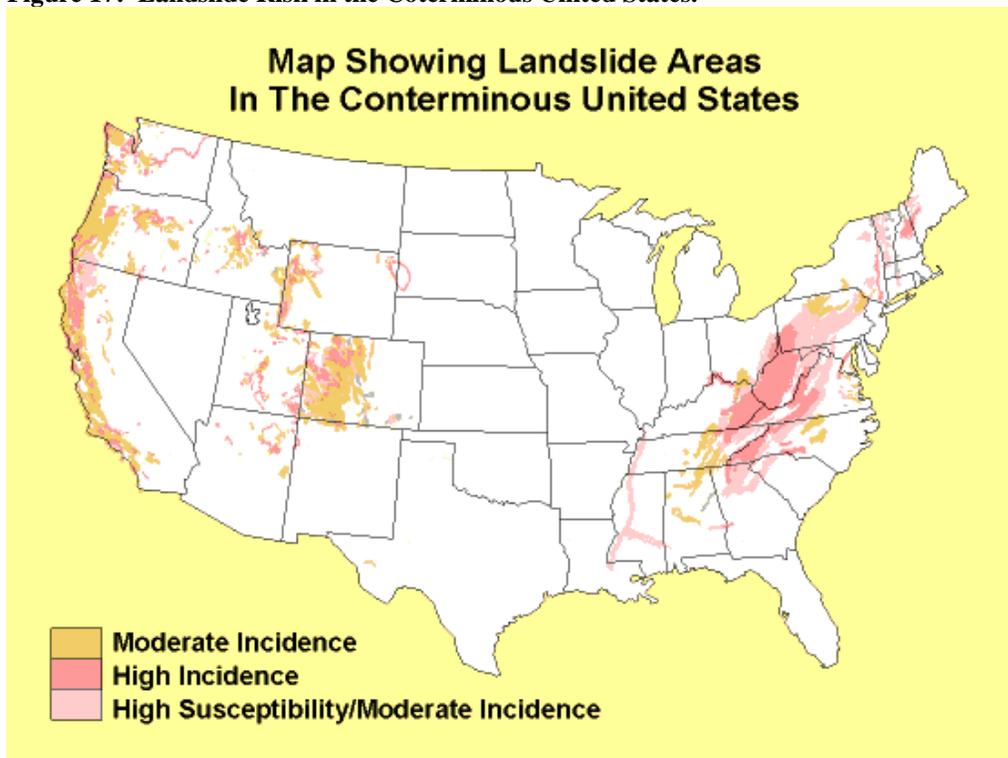
According to the United States Geological Survey (USGS), landslides are a major geologic hazard that happen in all 50 states, cause over \$2 billion in damage annually, and result in 25 to 50 deaths each year (FEMA 2003). Landslides are can be caused by heavy rainfall, steepening of slopes by erosion or construction, alternate freezing or thawing cycles, earthquakes, and volcanic eruptions.

Although uncommon in the northern coastal plains, landslides are common throughout the mountainous Appalachian region due to the clay-rich soils. The USGS identifies landslide incidence/susceptibility for the eastern United States by:

Classifying geographic areas by high, medium, or low landslide incidence and  
Evaluating geologic formations in these areas by high, medium, or low susceptibility to a landslide.

The North Carolina Division of Emergency Management has classified Edgecombe County as having a **LOW** vulnerability to landslides. As shown in the *Local Hazard Mitigation Planning Manual*, the County has a landslide vulnerability value of 1. Again, the “Low” classification includes vulnerability values of 1 and 2. The categorization is based on a scale of 1-6 (“Low to High”) for national landslide susceptibility and incidence for the conterminous United States. The value of 1 implies low landslide incidence and low landslide susceptibility, meaning that less than 1.5 percent of the area has been involved in a landslide.

Figure 17: Landslide Risk in the Coterminous United States.



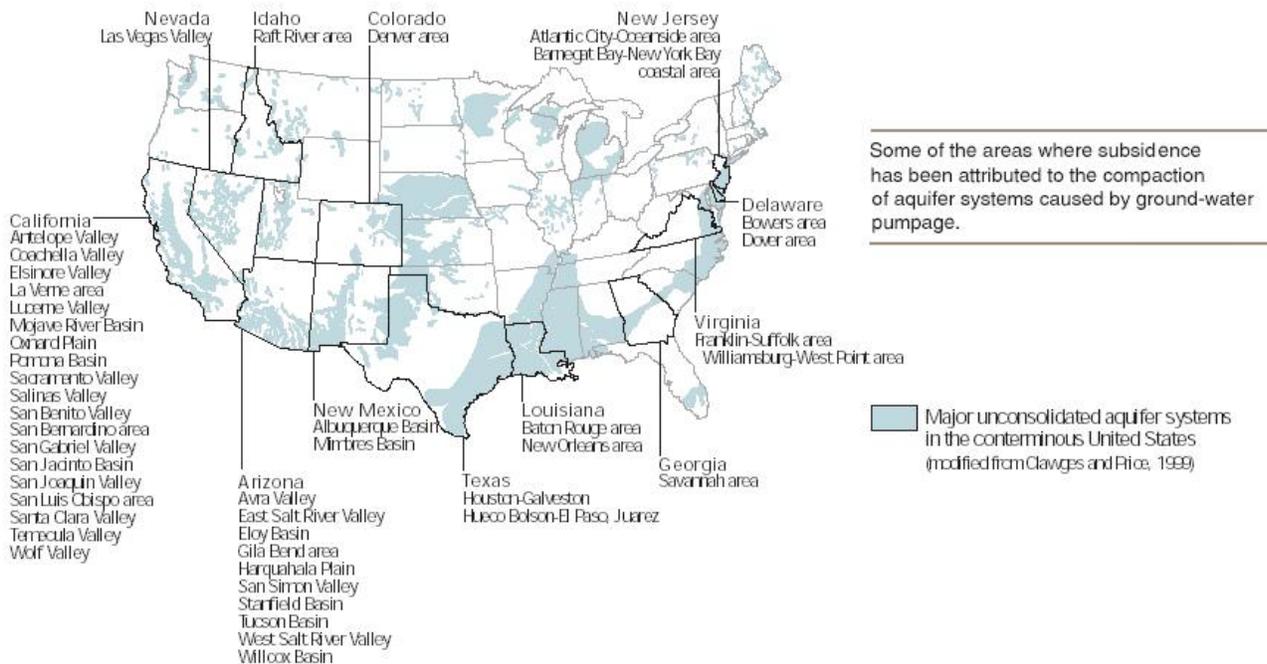
Source: USGS, *Geographic Distribution of Major Hazards in the US*

FEMA notes that:

- Areas that are generally prone to landslide hazards include existing old landslides; the bases of steep slopes; the bases of drainage channels; and developed hillsides where leach-field septic systems are used.
- Areas that are typically considered safe from landslides include areas that have not moved in the past; relatively flat-lying areas away from sudden changes in slope; and areas at the top or along ridges, set back from the tops of slopes.

For most of Edgecombe County, steep slopes are not problematic for development purposes. Only 1 percent of the County has slopes that average greater than 13 percent. These slopes are found adjacent to drainage ways. Based on this information, landslides do not appear to pose a significant natural hazard risk for Edgecombe County.

**Sinkholes** are when soil subsidence occurs into a natural void beneath the soil surface. Three distinct processes account for most of the water-related subsidence—compaction of aquifer systems, drainage and subsequent oxidation of organic soils, and dissolution and collapse of susceptible rocks (USGS). The compaction of aquifer systems is generally caused by the mining of groundwater for municipal and agricultural use. As the water is withdrawn from an unconsolidated aquifer, the weight of the soil and structures above can exceed the pressure once exerted by the water, and subsidence occurs.

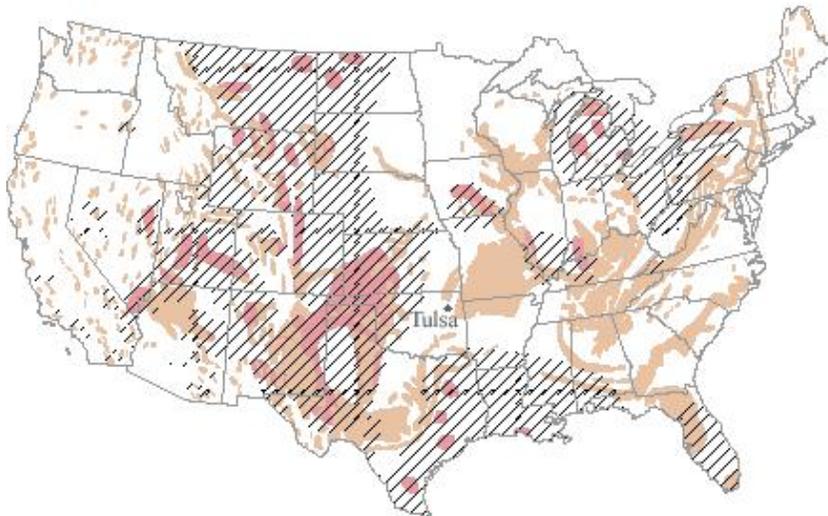


Organic soils are found mostly in the northern United States and Alaska, though some exist in the lowland swamps of the Southeast.



Most organic soils occur in the northern contiguous 48 States and Alaska.

Rock dissolution primarily occurs in areas of limestone or gypsum bedrock. Subsidence occurs when groundwater passes over soluble minerals in the bedrock, dissolving the bedrock. Eastern North Carolina does have some areas with this kind of bedrock.



Salt and gypsum underlie about 40 percent of the contiguous United States. Carbonate karst landscapes constitute about 40 percent of the United States east of Tulsa, Oklahoma (White and others, 1995).

-  Evaporite rocks—salt and gypsum
-  Karst from evaporite rock
-  Karst from carbonate rock  
(modified from Davies and Legrand, 1972)

Sinkhole risk in Edgecombe County is primarily from unconsolidated aquifers. Though there is significant agricultural activity in the county, there is generally sufficient rainfall to recharge the aquifers. Therefore Sinkhole risk is **LOW**.

### 3.11. Tsunamis

A tsunami is a series of waves generated by an undersea disturbance such as an earthquake. From the area of the disturbance, the waves will travel outward in all directions, much like the ripples caused by throwing a rock into a pond. The time between wave crests may be from 5 to 90 minutes, and the wave speed in the open ocean will average 450 miles per hour. Very large inland lakes, such as North America's Great Lakes can also have tsunamis.

Japanese for "harbor wave," tsunamis reaching heights of more than 100 feet have been recorded. As the waves approach the shallow coastal waters, they appear normal and the speed decreases. Then as the tsunami nears the coastline, it may grow to great height and smash into the shore, causing much destruction.



**Figure 18 Tsunami**

Tsunamis are caused by an underwater disturbance, usually an undersea earthquake. Landslides, volcanic eruptions, and even meteorites can also generate a tsunami. Tsunamis can originate hundreds or even thousands of miles away from coastal areas. Local geography may intensify the effect of a tsunami. Areas at greatest risk are less than 50 feet above sea level and within one mile of the shoreline.

Edgecombe County is 30 miles from Pamlico Sound, which is protected by the Outer Banks barrier island chain. It is roughly 70 miles to the open sea. Edgecombe County has a **LOW** risk of tsunamis because tsunamis generally do not impact that far inland.

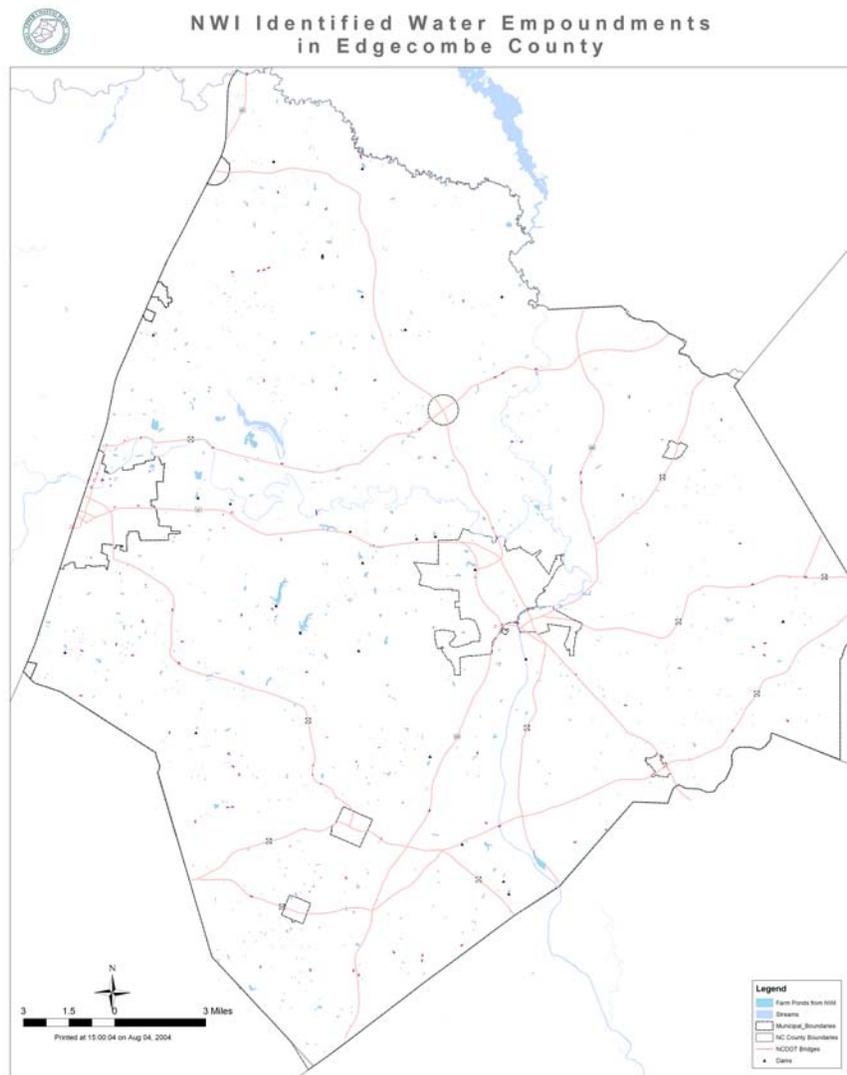
### 3.12. Dam/Levee Failure

Dam and levee failure are generally caused by heavy precipitation events, and will result in flash flooding, covered in the flood section. In some high-magnitude general floods, levees can be breached but not destroyed, and this can result in a wider general flood rather than a flash flood. The general flood behind the levee can be prolonged as well, with the levee holding the water back on the “protected” side after the initial flood subsides.

There are 286 agricultural retention and irrigation ponds in Edgecombe County based on the National Wetlands Inventory. These are in various states of repair, but generally do not hold large volumes of water and are not near populated areas, and therefore they pose a **LOW** risk.

In addition, ponds of over 10 acre-feet (a water volume measurement equal to one foot of water on one acre of land) are regulated by the NC Department of Natural Resources’ Land Management Division’s Land Quality Section. This covers repairs to old dams and new dams not otherwise exempt (Corps of Engineer, TVA, SCS et cetera).

**Figure 19: Impoundments and Levees from NWI**



### 3.13. Hazard Identification Synopsis

The Advisory Committee went through the background data for each hazard and reviewed the plan recommendation for potential risk based on the worksheet in Table 7: Hazard Identification Analysis Worksheet for the Town of Whitakers. After review of the meeting results and individual municipal worksheets, Major and minor hurricanes were split into two categories; even though both were a moderate risk, their probabilities and impacts differ. The potential risk for floods set by the state in 1998 was considered too low in the wake of Hurricane Floyd and subsequent events. The flood risk was raised from “Low” to “Moderate.” All other potential risks are generally in line with state’s classifications.

**Table 7: Hazard Identification Analysis Worksheet for the Town of Whitakers.**

<b>Type of Hazard &amp; Associated Elements</b>	<b>Likelihood of Occurrence (Highly Likely, Likely, Possible, Unlikely)</b>	<b>Intensity Rating (Intensity Scales or Relative Terms)</b>	<b>Potential Impact (Catastrophic, Critical, Limited, Negligible)</b>	<b>Conclusions (Rank the Seriousness of the Hazard)</b>
Hurricane/Tropical Storm	L i k e l y	M o d e r a t e	Catastrophic	Moderate
Nor'easters	L i k e l y	M i l d	Negligible	Moderate
Flooding	L i k e l y	M o d e r a t e	Critical	Moderate
Coastal/Riverine Erosion	U n l i k e l y	M i l d	Negligible	Low
Freezes/Severe Winter Storms	L i k e l y	M o d e r a t e	Limited	Moderate
Tornadoes/Strong Storms	L i k e l y	M i l d	Critical	Moderate
Wildfires/Forest Fires	U n l i k e l y	M i l d	Limited	Low
Earthquakes	U n l i k e l y	M i l d	Negligible	Low
Drought	U n l i k e l y	M i l d	Limited	Low
Heat Wave	L i k e l y	M o d e r a t e	Negligible	Moderate
Landslides/Sink Holes	U n l i k e l y	M i l d	Negligible	Low
Tsunamis	U n l i k e l y	M i l d	Negligible	Low
Dam/Levee Failure	L i k e l y	S e v e r e	Negligible	Low

## **4. Town of Whitakers Hazard Mitigation Plan (Edgecombe County Portion)**

### **4.1. Inter-County Cooperative Planning**

The Town of Whitakers participated in the Nash County Multi-jurisdictional Hazard Mitigation Plan in March 2004. The Town of Whitakers is split by the Nash-Edgecombe County boundary. This necessitates participation in both Nash and Edgecombe County hazard mitigation planning efforts in order to facilitate coordination between emergency management and public safety in both counties. As part of this effort, Whittaker played an active roll in the Edgecombe County Hazard Mitigation Advisory Committee. The majority of this plan is consistent with the Nash County HMP which should be referred to. Where appropriate, additions have been made to cover the Edgecombe County portion of the municipality.

**4.2. Table 8: Worksheet #2: Geographic Planning Area Vulnerability Assessment**

Geographic Planning Area: The Town of Whitakers

Hazard: Flood and Steep Slope

Current Conditions The Town does not contain steep slope or floodplain.				Potential Future Conditions		
Type of Development	Number of Existing Private Buildings	Current Value	Current Number of People	Projected Number of Private Buildings	Projected Value (If developed under existing policies)	Projected Number of People (If developed under existing policies)
Single-Family Residential	101	\$2,230,811	226 est.	-	-	-
Multi-Family Residential	-	-	-	-	-	-
Commercial	1	\$3,564	-	-	-	-
Industrial	-	-	-	-	-	-
Other	4	\$223,156	-	-	-	-
<i>Subtotal</i>	<i>106</i>	<i>\$2,457,531</i>	<i>226 est.</i>	-	-	-

Data was collected from the County Tax Office for areas that intersect with Hydrologic Soil types. Data was collected and totaled by County, Category, and Conditions.

Worksheet #2 Continued on next page...

Worksheet # 2 Continued from previous page...

Current Conditions				Potential Future Conditions		
Public Buildings and Critical Facilities						
Type of Facility	Number of Existing Public Buildings and Critical Facilities	Current Replacement Value	Current Number of People	Projected Number of Public Buildings and Critical Facilities	Projected Value	Projected Number of People
Sewage Treatment Plant	-	-	-	-	-	-
Water Treatment Plant	-	-	-	-	-	-
Hospital	-	-	-	-	-	-
Schools	-	-	-	-	-	-
Infrastructure (roads, bridges, drainage, etc.)	-	-	-	-	-	-
Police Station	-	-	-	-	-	-
Fire Station	-	-	-	-	-	-
Hazardous Materials Facilities	-	-	-	-	-	-
Government Offices	-	-	-	-	-	-
Emergency Shelters	-	-	-	-	-	-
Public Housing	-	-	-	-	-	-
<i>Subtotal</i>	<b>3</b>	-	-	-	-	-
<b>Total</b>	<b>3</b>	-	-	-	-	-

**4.3. Analysis of All Edgecombe County Critical Facilities**

There are 182 critical facilities identified in the vulnerability analysis database, compiled from county parcel data and outlined in Edgecombe County Multi-jurisdictional Hazard Mitigation Plan. Many of the critical facilities throughout the county were improved and raised to an elevation above that of the highest level of the Hurricane Floyd flooding event. Despite these improvements, those facilities that flooded during Hurricane Floyd may be considered vulnerable. It is important to note that these buildings may not lie within the 100-year floodplain but their vulnerability during the most recent natural hazard requires attention. Ten of the 182 critical facilities experienced some level of flooding during the Hurricane Floyd event in the fall of 1999. These ten flooded facilities are:

Edgecombe County Flooded Facilities	
1. Princeville Volunteer Fire Department	6. Edgecombe County Courthouse
2. Conetoe Volunteer Fire Department	7. Town of Tarboro Fire Department
3. Tarboro Wastewater Treatment Plant	8. Ray Center (Town of Tarboro)
4. Edgecombe County Administration Building	9. Warehouse (Town of Tarboro)
5. Edgecombe County Maintenance Building	10. Garage (Town of Tarboro)

Town of Whitakers Critical Facilities:

The Town of Whitakers has three facilities in Edgecombe County that are located within the flood zone as identified by the mapping analysis. These include the Main Lift Station for Whitakers located just east of the municipal boundary, as well as two additional lift stations located in central and southern Whitakers.

## **5. CAPABILITY ASSESSMENT**

**See Nash County Hazard Mitigation Plan (Appendix section)**

### **Geographic Information Systems (GIS)**

GIS systems can best be described as a set of tools (hardware, software and people) used to collect, manage, analyze and display spatially-referenced data. Many local governments are now incorporating GIS systems into their existing planning and management operations.

Town of Whitakers currently has no GIS capability, but can draw on the resources of its contract engineer and the Upper Coastal Plain Council of Governments, of which the Town is a member.

## 6. Hazard Mitigation Goals

See Nash County Hazard Mitigation Plan (**Appendix section**)

## 7. MITIGATION GOALS AND POLICIES—UPDATES AND MONITORING

The Town of Whitakers will work with the County Floodplain Manager to continually update and monitor the plan in a variety of ways:

- Continued annual meetings of the Emergency Operations Coordinating Committee, which acts as the Advisory Committee, with a regular review of progress on implementation policies;
- The EOCC can choose to add new goals and policies as the need arises in order to respond quickly to changing conditions;
- Incorporate an update of man-made hazard types from the 2001 plan into this plan;
- Continued work on lowering the Community Flood Rating score and submittal of CFR reports to FEMA and the State Hazard Mitigation Officer (SHMO) by staff at least annually. The public will be able to access the plan on the internet or at the Planning Department in City Hall during business hours.

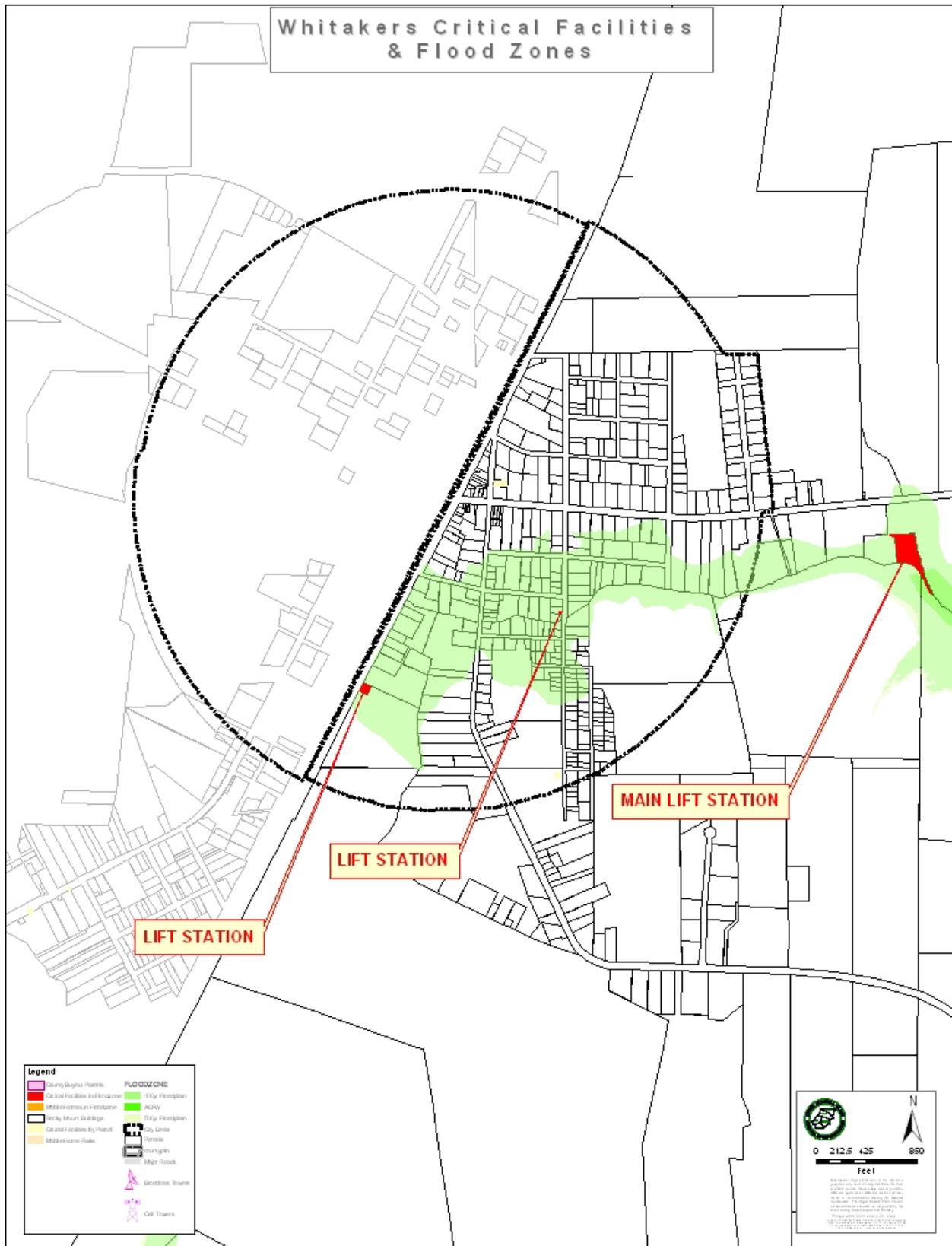
In five (5) years from the adoption of this plan, the Town of Whitakers with cooperation from the County will revisit this plan to assess progress, evaluate existing programs, and add new goals as needed. The EOCC will evaluate progress annually as part of the CFR process and forward report to the SHMO.

At the regular five-year updates required by the Disaster Mitigation Act of 2000 (DMA2K) the Town will use the following questions as criteria for assessing the effectiveness and appropriateness of their plan:

- Do the goals and objectives address current and expected conditions?
- Has the nature or magnitude of risks changed?
- Are the current resources appropriate for implementing the plan?
- Are there implementation problems, such as technical, political, legal or coordination issues with other agencies?
- Have the outcomes occurred as expected?
- Did the agencies and other partners participate in the plan and planning process as proposed?

This evaluation will include how well the goals address current and expected conditions, the nature and magnitude of the risks and if there has been change in either, current resources, problems, outcomes from successfully completed goals, and how other partners may be involved to maximize benefit and minimize cost. The five year update will also be submitted to the SHMO for approval by the State and FEMA.

# 8. APPENDIX



**Table 9: Worksheet #4: Community Goals**

Goal Category	Goal Statements	New or Existing Goal?		Hazard Threat Addressed
Existing structures	By evaluating the Towns culverts and drainage for capacity and improvement will help to protect these structures from hazards such as floods. Continuing to enforce minimum housing codes help to make sure that existing structures are safe and reliable.	New	<b>Existing</b>	Flooding; Hurricane; Tornado; Tropical Storm; Severe Storm; Freezes / Severe Winter Storms; Nor'easters
Natural Resources Protection	A 50' undisturbed riparian vegetation buffer through the Tar-Pamlico River Watershed for new development will help to protect commercial forest, along with Livestock Operations and Agricultural Lands, from flooding which could severely damage lands and such operations. Adoption of Tar-Pamlico Stormwater rules will also help protect the natural environment from un-natural debris.	New	<b>Existing</b>	Flooding
Future Development	By continuing to use and update the Flood Hazard Overlay District will help to identify flood hazards provisions and the Tar- Pamlico vegetative buffer.	New	<b>Existing</b>	Flooding
Public Education	Adoption of the new flood maps will educate the public as to areas which are more prone to Flooding. This as an effect will help identify areas less suitable for development and other land usage.	<b>New</b>	Existing	Flooding
General	By conducting a study on the development of an Emergency Operations Plan, new options may be presented for dealing with Hazards	<b>New</b>	Existing	All emergencies
Public Education Outreach	Educate the public by providing information on various Hazards which will also provide steps the public can take to help better prepare and deal with Hazards.	<b>New</b>	Existing	Various ones, Heat Wave

**Table 10 Worksheet # 5: Geographic Planning Area Policies**

**Geographic Planning Area: Whitakers**

<b>Policy</b> (classify each as a new initiative, a continuation and support of existing policies, or a recommended change to an existing policy)	<b>Type(s) of Hazard Targeted</b>	<b>Funding</b> (amount and source; local match required?)	<b>Responsible Party/Start &amp; Completion Dates</b>	<b>Benchmarks and Indicators of Progress</b> (Monitoring and Evaluation)	<b>Priority</b> (high, medium, low)
(New) Work with the County to establish and publicize cooling stations	Heat Wave	N/A – Existing Revenue Stream	Coordinate with County	Continued participation with County agencies	Medium
(New) Elderly fan distribution program	Heat Wave	N/A – Existing Revenue Stream	Coordinate with County	Continued participation with County agencies	Medium
(Continuation) Continue enforcement of North Carolina building code	Severe Weather and Winter Weather, Strong Storm and Tornado	N/A – Existing Revenue Stream	Coordinate with County	Enforce building codes	Medium
(Continuation) Improve bridges and culverts/drainage on NCDOT roads through the RPO and district engineer	Flooding	N/A – Existing Revenue Stream	Coordinate with County	Improvements monitored	Medium

**Town of Whitakers Hazard Mitigation Plan  
(Transferred From Nash County Multi-Jurisdictional Plan)**

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## **Town of Whitakers**

### **Appendix B: Assessment of Vulnerability**

#### **A. Introduction**

The Nash County/Town of Whitakers Composite Hazard Index (Table A-27 in Appendix A) outlines the six hazards rated “moderate” or “high” for potential threat to persons and property. Three of these hazards – droughts and heat waves, hurricanes and coastal storms, and winter storms and freezes – typically have a regional impact; however, the impact of droughts and heat waves is typically limited to agricultural crops. Based on hazard event history, it is estimated that the Town of Whitakers has a maximum 100% exposure to hurricanes/coastal storms and winter storms/freezes. A 100% exposure means that all structures both public and private within the Town could possibly be impacted by these types of hazard events.

The other three hazards – floods, severe storms and tornadoes, and wildfires – typically have a much more limited area of impact. Floods only impact flood hazard areas thus exposure is limited to development within these identified and mapped areas of Town. For severe storms and tornadoes and wildfires, it is estimated that the Town of Whitakers has a maximum 10% exposure, i.e., 10% or less of all structures within the Town could be impacted by these types of hazard events. This information from Appendix A will be used in this section to estimate a dollar amount of exposure to these hazards.

#### **B. Community Description** (Map B-1: Town of Whitakers Multi-Hazards/Critical Facilities/ Vulnerable Populations Map)

The Town of Whitakers, with a 2000 Census population of 799, is located northeast of the City of Rocky Mount on the boundary of Nash County and Edgecombe County in the Piedmont area of North Carolina. The Town of Whitakers incorporates 500 acres (0.8 square mile) of land area. The Town is divided with 250 acres within Nash County and 250 acres within Edgecombe County. The community is centered on the intersection of US Highway 301 (White Street) and NC Highway 33 (Nash Street). The Seaboard Coastline railway line traverses the center of the town from north to south.

The Town of Whitakers is located two smaller drainage basins within the Tar River Basin. Both drainage basins drain to the east into two separate unnamed tributaries of White Oak Swamp. The terrain in and around the Town ranges from nearly level in the inter-stream areas to rolling along the waterways. There is no 100-year floodplain within the Nash County portion of the Town. The Edgecombe County side of the Town is split east to west by the 100-year floodplain along a tributary to White Oak Swamp (Map B-1p).

#### **Major Employers and Demographics**

The largest employer in the area is Consolidated Diesel Company, which is located 2 miles south of town on US 301. Most residents of Whitakers work outside of town. The 2000 Census indicates that over half of Whitakers’ population is not in the work force (Table B-1).

The economy of the Town of Whitakers depends largely on the production, transportation, and material moving occupations, along with sales and office occupations which in the 2000 Census (Table B-1) accounted for 54.9% of the total work force. The average travel time to work for the Town of Whitakers is 22 minutes, indicating that most work locations are outside of the town itself.

Over 58% of The Town of Whitakers' residents have a high school diploma or higher, but only 8.4% of residents have a bachelor's degree or higher. The median age of residents in 2000 was 40.7 years of age with 74.6% of the population above the age of 21.

**Table B-1: Town of Whitakers Demographics**

<b>Economic</b>		
Total Population		799
Median Household Income		\$24,141
Average Household Size		2.41
Percent of Individuals Below Poverty Level		33.3 %
<b>Occupation</b>	<b>People</b>	<b>Percent</b>
Management, professional, etc.	58	20.9 %
Service related	44	15.9 %
Sales and office	69	24.9 %
Farming, fishing, and forestry	4	1.4 %
Construction, extraction, and maintenance	19	6.9 %
Production, transportation, material moving	83	30.0 %
<b>Employment</b>	<b>People</b>	<b>Percent</b>
Employed	277	43.8 %
Unemployed	32	5.1 %
Not in labor force	324	51.2 %
<b>Social</b>		
<b>Level of Educational Attainment</b>	<b>People</b>	<b>Percent</b>
Less than 9 <sup>th</sup> grade	88	17.2 %
9 <sup>th</sup> – 12 <sup>th</sup> (no diploma)	123	24.0 %
High School Diploma (includes GED)	176	34.4 %
Some college, no degree	57	11.1 %
Associate degree	25	4.9 %
Bachelor's degree	29	5.7 %
Graduate or professional degree	14	2.7 %
<b>Housing</b>		
<b>Selected Characteristics</b>	<b>People</b>	<b>Percent</b>
Lacking complete plumbing facilities	7	2.1 %
Lacking complete kitchen facilities	2	0.6 %
No phone service	18	5.3 %

Source: US Census, 2000

### **Developed and Undeveloped Areas**

Developed land within the corporate limits is composed primarily of single-family residential units, including manufactured homes and site built homes. Multifamily units are concentrated in a few complexes. Commercial and industrial uses are located primarily along the two major road corridors – US 301 and NC 33, on both sides of the railroad. Downtown commercial and service uses are typical for a small town.

Table B-2 shows that property improvements account for almost \$9.8 million in tax value. The total value of land, buildings, and other improvements within the town corporate limits exceeds \$12.3 million in tax value. Both real estate improvements and land (tree damage, erosion, etc.) are exposed to possible damage from future natural hazards. Those properties located within the 100-year floodplain are the most likely to be affected by a future hazard event.

**Table B-2(a): Value of Developed and Undeveloped Land within  
Town of Whitakers Municipal Corporate Limits (Nash County)**

Type of Use	Number of Parcels	Number of Acres	Building Value (in 000s)	Land Value (in 000s)	Other Value (in 000s)	Total Tax Value (in 000s)
Residential	126	65.12	\$5,119	\$1,352	\$143	\$6,613
Commercial/Industrial	31	38.13	\$4,328	\$552	\$167	\$5,046
Other (farm buildings, etc.)	11	38.96	\$0	\$127	\$13	\$139
<b>Subtotal</b>	<b>168</b>	<b>142.21</b>	<b>\$9,447</b>	<b>\$2,031</b>	<b>\$323</b>	<b>\$11,798</b>
Undeveloped Land	62	73.67	\$0	\$522	\$0	\$522
<b>Total</b>	<b>230</b>	<b>215.88</b>	<b>\$9,447</b>	<b>\$2,553</b>	<b>\$323</b>	<b>\$12,320</b>

Source: Nash County Tax Department, May 2003.

**Table B-2(b): Value of Developed and Undeveloped Land within  
Town of Whitakers Municipal Corporate Limits (Edgecombe County)**

Type of Use	Number of Parcels	Number of Acres	Building Value (in 000s)	Land Value (in 000s)	Other Value (in 000s)	Total Tax Value (in 000s)
Residential	199	86.60	\$6,014	\$1,084	\$0	\$7,098
Commercial/Industrial	26	5.29	\$501	\$132	\$0	\$633
Other (farm buildings, etc.)	13	6.24	\$1,316	\$85	\$0	\$1,401
<b>Subtotal</b>	<b>238</b>	<b>98.13</b>	<b>\$7,831</b>	<b>\$1,301</b>	<b>\$0</b>	<b>\$9,132</b>
Undeveloped Land	126	122.00	\$0	\$569	\$0	\$569
<b>Total</b>	<b>364</b>	<b>220.13</b>	<b>\$7,831</b>	<b>\$1,870</b>	<b>\$0</b>	<b>\$9,701</b>

Source: Edgecombe County Tax Department

### **Housing Growth**

As shown in Table B-3, the 2000 Census estimated that the Town of Whitakers had 377 total housing units; 49 (13.0%) units were mobile homes, which are more susceptible to damage by natural hazards. In June of 1976, the United States Congress passed the National Manufactured Housing Construction and Safety Act (42 U.S.C.), which assured that all homes were built to strict national standards. The regulations governing mobile/manufactured home standards were again strengthened in 1993 when more stringent Department of Housing and Urban Development (HUD) wind resistance standards were established. It should be noted that only 21.8% of all homes constructed in the Town of Whitakers are less than 20 years old.

Approximately one-third of the Town of Whitakers remains undeveloped at this time. As shown in Table B-2, Whitakers has approximately 73.67 acres of vacant or undeveloped land. Undeveloped parcels within the current corporate limits average about 1.2 acres in size. The undeveloped land within the municipal jurisdiction of the Town of Whitakers comprises 34.1% of the total land within the locality.

**Table B-3: 2000 Census of Housing Units/Year Built – Town of Whitakers**

Types of Housing Units		
Type of Unit	Number of Units	Percent of Total Units
Single Family	275	72.9 %
Multi-family	53	14.1 %
Mobile homes	49	13.0 %
<b>Total Units</b>	<b>377</b>	<b>100 %</b>

Housing Units by Year Built		
Year Built	Number of Units	Percent of Total Units
1959 or earlier	171	45.3 %
1960 - 1979	124	32.9 %
1980 – March 2000	82	21.8 %
<b>Total Units</b>	<b>377</b>	<b>100.0 %</b>

Source: 2000 U.S. Census

**Scheduled Infrastructure Areas**

The Town of Whitakers adopted a Capital Improvement Plan in 2003 that schedules rehabilitation of water and sewer lines and upgrade of substandard or inadequately sized distribution pipes.

**C. Critical Facilities (Map B-1: Town of Whitakers Multi-Hazards/Critical Facilities/Vulnerable Populations Map)**

Critical public facilities are those facilities that are essential to the health, safety, and viability of the community. Critical facilities include public buildings, public infrastructure (roads, highways, bridges, water and sewer facilities\*) and private utility services, e.g., electric, phone and cable, without which residents and businesses could not survive for extended periods of time. Certain facilities are critical to the response and recovery efforts in the wake of a disaster resulting from a natural or technological hazard. These include fire and rescue facilities, hospitals, major transportation facilities, communication facilities, and public water and sewer infrastructure.

The inventory of critical public facilities within the Town of Whitakers planning jurisdiction is shown in Table B-4 while other privately-owned or semi-public critical facilities and essential and supportive public facilities are listed under Table B-4. All facility locations are shown on Map B-1. The ability to protect these facilities from damage from a future natural hazard event is vital to the welfare of the citizens of the Town.

**Rationale for Designating a Facility as Critical**

Facilities within the Town of Whitakers have been divided into three categories of importance for hazard mitigation purposes:

1. Critical (Table B-4) – Publicly-owned facilities that are absolutely necessary for response and recovery efforts during and after a disaster. This category includes all county-owned and/or town-owned facilities that must either remain in operation without interruption or should be operational within 24 hours of an emergency.
2. Essential – facilities that are essential for normal community functions. Should be back in service within 72 hours following a disaster.

3. Supportive – facilities/services that are typically available to the public but which can be closed for a week or more following a disaster without undue harm to public health and safety

\*(Note: Underground public water and sewer lines are generally not considered vulnerable to the types of hazards that could impact the Town of Whitakers with the exception that underground distribution and collection lines could be impacted by erosion associated with flooding events. Due to the very limited nature of this potential impact, underground lines are not included in the list of critical public facilities. Major roads, highways and bridges within the Town of Whitakers are owned and operated by the State of North Carolina and the Federal Highway System. Since the Town is not responsible for the operation and maintenance of these facilities, they are not included in vulnerability calculations.)

**Table B-4: Critical Public Facilities within the Town of Whitakers Corporate Limits**

Type of Facility	Location/Site	Function	Size (sq. ft.)	Importance	Replacement Value
<b>Government Services</b>					
Town Hall / Police Station	302 NW Railroad St	Law Enforcement	4,761	Critical	\$382,526
<b>Fire Department</b>					
Whitakers Fire Station	104 SW Railroad St	Fire Services	5,391	Critical	\$211,747

*Source: Town of Whitakers, Nash County Planning Department, and Nash County Fire Marshall's Office.*

**State/Federally-Owned Critical Facilities**

**Transportation Facilities**

- NC-33
- US-301

**US Post Office**

**Privately-Owned Critical Facilities**

**Utilities**

- Dominion Power (formerly Virginia Electric/VEPCO)
- Sprint
- NC Natural Gas (NCNG)

**Health Services**

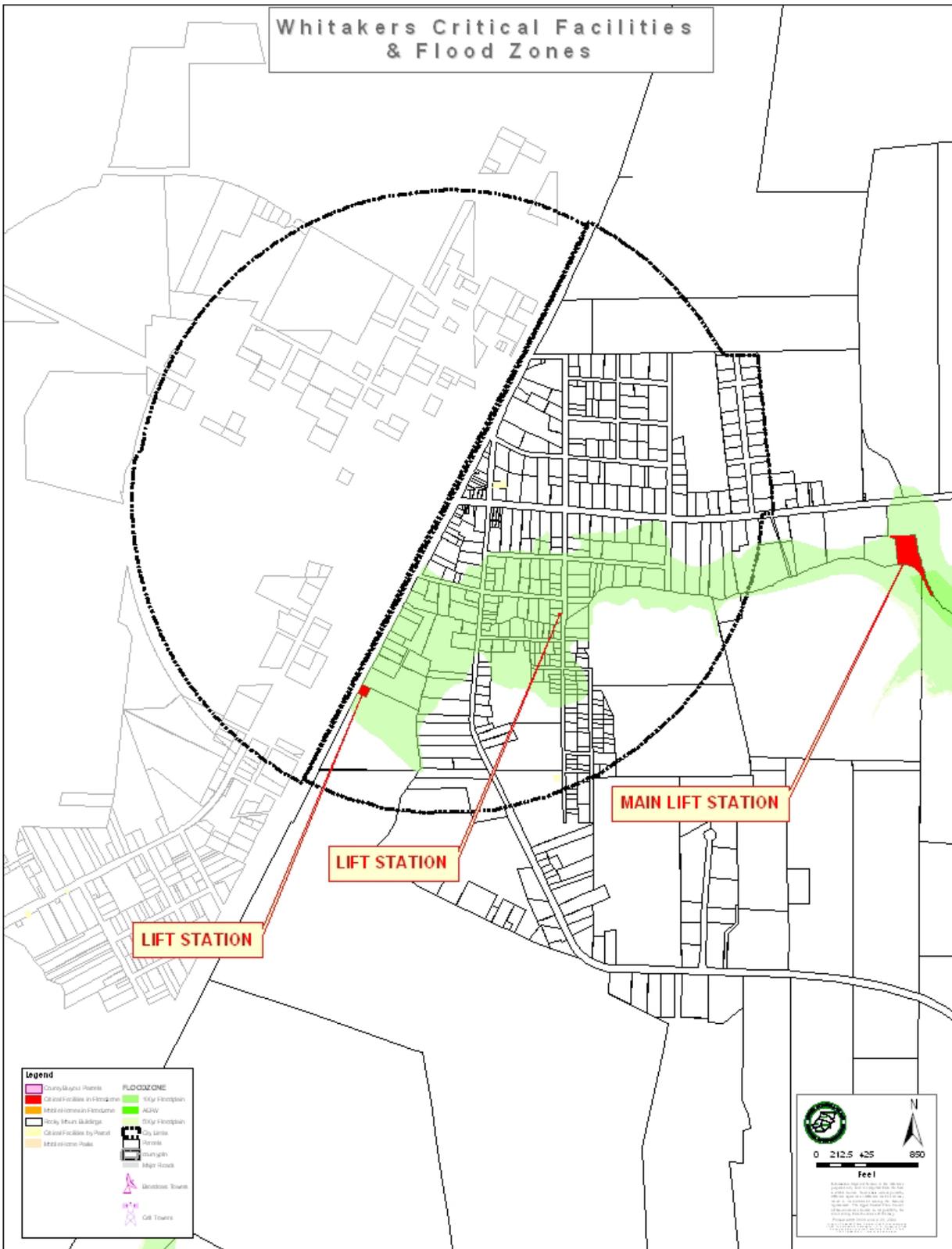
- Whitakers Medical Center

**Other Facilities**

**Essential**

- Recycling Convenience Center #8

**Map B-1: Town of Whitakers Multi-Hazards/Critical Facilities/Vulnerable Populations Map**



**D. Description of All Hazards Exposure** (Map B-1)

The entire Town of Whitakers is susceptible to certain natural hazards, e.g., severe winter storms, hurricanes, tornadoes, that are not confined to specific identifiable areas. Developed properties within the central core of the town and along major transportation corridors have the highest potential risk of exposure to financial losses from future natural hazards. The only locations within the town that are known to be specifically susceptible to a natural hazard are floodplains/flood hazard areas.

**Vulnerable Populations** (Map B-1)

Vulnerable populations have been identified as special needs populations (senior citizen centers/retirement homes) and mobile home parks. Special needs populations are those persons residing in senior living centers that may need special assistance during a natural hazard event. Mobile home parks were identified as vulnerable due to their increased susceptibility to high wind hazards. The Town of Whitakers has no retirement centers or mobile home parks.

**Flood Hazard Areas** (Map B-1)

Flood hazards areas within the Town of Whitakers are located along a tributary to White Oak Swamp.

**Table B-5: Acres Susceptible to Flooding – Town of Whitakers**

Creek	Floodway (acres)	100-Year Floodplain (acres)	500-Year Floodplain (acres)	Total Acres by Creek
Tributary to White Oak Swamp	0	0	0	0

*Source: Edgecombe County GIS/Mapping Department.*

As shown in Table B-6, the Town of Whitakers did not issue any zoning or building permits for construction within the 100-year floodplain from January 1993 – May 2003. (By interlocal agreement, Nash County issues all building permits for the Town of Whitakers within Nash County and Edgecombe County.)

**Table B-6: Town of Whitakers Building Permits January 1993 – May 2003**

Type	Total Permits	Located within 100-Year Floodplain
Single Family	12	0

Multi-family	0	0
Non-Residential	1	0
<b>Total</b>	<b>13</b>	<b>0</b>

*Source: Nash County Planning and Inspections Department.*

**Hazardous Area Intersections with Community Features** (Map B-1)

Within the Town of Whitakers there are no critical facilities located in the flood plain. Development within the flood plain consists of private single family dwellings, site built and manufactures home on individual lots.

## National Flood Insurance Program

The Town of Whitakers is an active participant in the National Flood Insurance Program (NFIP). Although the position of the Federal government is to discourage development within flood hazard areas, the NFIP was created to ensure that owners of flood susceptible properties could purchase flood insurance coverage. Data on current NFIP insurance policies and recent claims within the Town of Nashville are shown in Table B-7.

**Table B-7: National Flood Insurance Program Statistics Town of Whitakers**

Category	Number or Value
<b>Total Insured Value</b>	<b>\$184,000.00</b>
Number of Policies	4
<b>Total Premiums</b>	<b>\$849.00</b>
Average Premium	\$212.25
NFIP Claims Since 1978	0
NFIP Claim Amounts Paid Since 1978	\$0

Source: NC Emergency Management, May 2003.

### Repetitive Loss Claims

One of the main objectives of the hazard mitigation planning process is to determine how best to reduce repetitive loss claims. Through FEMA, the Federal government annually makes available grants to local governments for the purchase and/or elevation of flood prone properties in order to reduce the re-occurrence of flood damages. NFIP statistics indicate that there are no repetitive loss claims within the Town of Whitakers.

### High Wind Hazard Vulnerability

Predicting where damage from high winds and tornadoes will occur is impossible. Mobile/manufactured homes, however, are more vulnerable to the damaging effects of high winds than are site-built structures.

Mobile/manufactured homes built before 1993 when more stringent Department of Housing and Urban Development (HUD) wind resistance standards became effective are especially susceptible to wind damage (Table B-8). County tax and building permit records do not indicate the age of individual manufactured home units, however, in the 1990s, 68% of all residential building permits countywide were for mobile/manufactured home units. In the 2000 Census, 49 (13%) of all dwelling units within the Town of Whitakers were mobile/manufactured homes. All of these units, regardless of age, are generally more susceptible to wind damage than are site-built dwelling units.

**Table B-8: HUD Wind Resistance Standards for Mobile/Manufactured Homes**

Year	Wind Resistance <sup>1</sup>	Weight	Anchor Requirements <sup>2</sup>
Pre-1993	75 mph	16,000	5-6 anchors/side
Post 1993	100 mph	40,000	11-14 anchors/side

Source: Manufactured Housing Institute, [www.mfghome.org](http://www.mfghome.org)

<sup>1</sup> Wind resistance standards for coastal placement are more rigorous.

<sup>2</sup>An anchor is a weighted disc buried in the ground and attached to the manufactured unit with steel cable.

**E. Population Growth Projections**

According to the 2000 Census (Table B-9), the population of the Town of Whitakers decreased from 860 persons in 1990 to 799 persons in 2000 – a decrease of 61 people (7.1%). The Office of State Planning projects population growth rates for counties but not for municipalities. State projections for population growth rates for Nash County are also shown in Table B-9. The Town of Whitakers, for planning purposes is assumed to have the same growth rates as Nash County.

**Table B-9: Projected Population Figures for Nash County and Town of Whitakers**

Year	Nash County		Town of Whitakers	
	Population Estimate	Ten-Year Growth Rate	Population Estimate	Ten-Year Growth Rate
2000	90,843	18.5%	799	-7.09%
2010	102,743	13.1%	904	13.1% <sup>1</sup>
2020	114,211	11.2%	1005	11.2% <sup>1</sup>

Source: NC Office of State Planning; local population estimates.

<sup>1</sup>Note: Town of Whitakers has not projected populations through 2020, therefore growth rates for Nash County were assumed

Using the 2000 Census average household population size of 2.54 persons/household for Nash County, an estimated 41 new residential units will be built in the Town of Whitakers by 2010 and an additional 40 new residential units between 2010 and 2020, totaling 81 new residential units by 2020. This future growth and development must be encouraged in areas of low vulnerability. Strict enforcement of mitigation measures, such as hurricane building codes and a flood damage prevention ordinance, will decrease the Town’s vulnerability to hazards.

**F. Summary Conclusions**

The Town of Whitakers, as determined in Appendix A, is most vulnerable to droughts and heat waves; hurricanes and coastal storms; winter storms and freezes; floods; severe storms and tornadoes; and wildfires. Since droughts and heat waves tend to only affect agricultural crops, this hazard is not included in vulnerability assessment tables at the end of this section.

**Table B-10: Potential Hazard Exposure**

Hazard	Hazard Ranking	Estimated Level of Exposure
Droughts and Heat Waves	Moderate	Minimal
Hurricanes and Coastal Storms	Moderate	100% Exposure
Winter Storms and Freezes	High	100% Exposure
Floods	Moderate	Limited to Flood Hazard Areas
Severe Storms and Tornadoes	Moderate	10% Exposure
Wildfires	Moderate	10% Exposure

Source: Appendix A Table A-27.

## **Methodology for Calculating Current Hazard Exposure**

Current (Year 2000) hazard exposure to hazards has been estimated using the 2000 Census housing and population count and Year 2000 property tax values. The left side of Tables B-11 and B-12 summarize the total vulnerability of persons and property values in the Year 2000. This information is presented in two categories - Private Development and Public Critical Facilities. Due to the limited amount of data that was available on specific the Town of Whitakers monetary damages from past hazard events, it is difficult to predict exactly what monetary level of damages can be expected with future hazard events. With better data available at the first Plan update, a more detailed analysis will be possible.

### **Current Vulnerability to Hurricanes/Coastal Storms and Winter Storms/Freezes**

It is estimated that the Town of Whitakers has a maximum 100% exposure to hurricanes/coastal storms and winter storms/freezes. A dollar estimate of current exposure to these hazards is detailed on the left side of Table B-11 Current Conditions (Year 2000).

### **Current Flooding Vulnerability**

The Town of Whitakers currently has very limited exposure to flood hazards. The Town of Whitakers plans to adopt a Flood Damage prevention Ordinance before November 2004 as a prerequisite for flood insurance. The Town of Whitakers estimates that there are approximately 78 structures with a combined value of \$1.8 million within FEMA-identified 100-year flood zones in the Edgecombe County side of the Town planning jurisdiction.

### **Current Vulnerability to Severe Storms/Tornadoes and Wildfires**

For severe storms and tornadoes and wildfires, it is estimated that the Town of Whitakers has a maximum 10% exposure. A dollar estimate of current exposure to these hazards is detailed on the left side of Table B-12 Current Conditions (Year 2000).

## **Methodology for Calculating Potential Future Vulnerability**

The Town of Whitakers expects to continue to grow substantially in the next two decades. Using the Nash County population growth rates (Table B-9) the Town of Whitakers estimates that total population will

increase to over 1,005 by Year 2020. To estimate the number of housing units that will be required in 2020 (right side of Tables B-11 and B-12), 2020 population estimates were divided by the 2000 Census average household size. The number of commercial/industrial and other structures were then estimated to increase a comparable amount. Year 2020 values were predicted using the average per property values of 2000 times the number of projected units (constant Year 2000 dollars were assumed – no factor was used for inflation).

The County has already instituted a number of measures to help reduce flood hazard exposure as the population grows over the next two decades. The County and participating municipalities are also considering a number of additional measures (see Section II. Mitigation Action Plan) that will further limit development in sensitive environmental areas as well as reduce stormwater runoff.

#### **Future Vulnerability to Hurricanes/Coastal Storms and Winter Storms/Freezes**

Future exposure to hurricanes/coastal storms and winter storms/freezes (right side of Table B-11 – Potential Future Conditions (Year 2020)) was estimated using the methodology described above. A 100% exposure of all development - both public and private - was assumed for these two types of hazards.

#### **Future Flooding Vulnerability**

Future flooding vulnerability should be reduced over time through the purchase and/or elevation of existing flood threatened properties. The Town of Whitakers will pursue voluntary acquisition of flood exposed structures through State and Federal funding sources (see Section II. Mitigation Action Plan), but actual realization of flood hazard reduction will be dependent on the number of property owners who choose to participate in the program. If all current property owners choose to participate then the exposure of structures to flood hazards would be reduced to zero.

The County will also continue to enforce and enhance land use regulations that limit construction in flood hazard areas (see Section II. Mitigation Action Plan). The County already has a flood hazard overlay zoning district that specifies that when a structure is built within a flood hazard area that the building be elevated or flood-proofed for protection. Again, the County will be considering strengthening these regulations under the 5-year Mitigation Action Plan. The Town plans to adopt a Flood Damage Prevention Ordinance before November 2004.

**Future Vulnerability to Severe Storms/Tornadoes and Wildfires**

Future exposure to severe storms/tornadoes and wildfires (right side of Table B-12 – Potential Future Conditions (Year 2020)) was estimated using the methodology described above. A 10% exposure of all development – both public and private – was assumed for these two hazards.

**Table B-11: Town of Whitakers Vulnerability Assessment for Hurricanes/Coastal Storms and Winter Storms/Freezes (100%)**

Private Development						
Current Conditions (Year 2000) <sup>1</sup>				Potential Future Conditions (Year 2020) <sup>2</sup>		
Type of Development	Number of Existing Private Buildings	Current Value (in 000s), (Year 2000 \$)	Current Number of People	Projected Number of Private Buildings	Projected Value (in 000s), (Year 2000 \$)	Projected Number of People
Single-Family Residential	275	\$3,836	582	334	\$4,666	733
Multi-Family Residential	53	\$742	113	64	\$898	141
Mobile Homes	49	\$684	104	59	\$830	131
Subtotal Residential	377	\$5,262	799	458	\$6,394	1,005
Commercial/Industrial	31	\$4,495	0	35	\$5,041	0
Other	11	\$13	0	12	\$15	0
Subtotal Non-Residential	42	\$4,508	0	47	\$5,056	0
<i>Subtotal Private</i>	<i>419</i>	<i>\$9,770</i>	<i>799</i>	<i>505</i>	<i>\$11,450</i>	<i>1,005</i>

Public Buildings and Critical Facilities						
Current Conditions (Year 2000)				Potential Future Conditions (Year 2020) <sup>1</sup>		
Type of Development	Number of Existing Buildings and Critical Facilities	Current Replacement Value (in 000s), (Year 2000 \$)	Current Number of People	Projected Number of Public Buildings and Critical Facilities	Projected Replacement Value (in 000s), (Year 2000 \$)	Projected Number of People
Town Hall/Police Station	1	\$382	0	1	\$428	0
Whitakers Fire Station	1	\$212	0	1	\$238	0
Subtotal Public	2	\$594	0	2	\$666	0
<b>Community Total</b>	<b>421</b>	<b>\$10,364</b>	<b>799</b>	<b>507</b>	<b>\$12,116</b>	<b>1,005</b>

<sup>1</sup> 2000 Data based on 2000 Census data and local tax revenue data.

<sup>2</sup> 2020 Projections based on population projections and estimated number of new dwelling units with comparable increase in commercial/industrial properties.

**Table B-12: Town of Whitakers Vulnerability Assessment for Severe Storms/Tornadoes and Wildfires (10%)**

<b>Private Development</b>						
<b>Current Conditions (Year 2000)<sup>1</sup></b>				<b>Potential Future Conditions (Year 2020)<sup>2</sup></b>		
<b>Type of Development</b>	<b>Number of Existing Private Buildings</b>	<b>Current Value (in 000s) (Year 2000 \$)</b>	<b>Current Number of People</b>	<b>Projected Number of Private Buildings</b>	<b>Projected Value (in 000s) (Year 2000 \$)</b>	<b>Projected Number of People</b>
Single-Family Residential	28	384	58	33	467	73
Multi-Family Residential	5	74	11	6	90	14
Mobile Homes	5	68	10	6	84	13
Subtotal Residential	38	526	79	45	639	100
Commercial/Industrial	3	450	0	4	504	0
Other	1	1	0	1	2	0
Subtotal Non-Residential	4	451	0	5	506	0
Subtotal Private	42	977	79	50	1,145	100

<b>Public Buildings and Critical Facilities</b>						
<b>Current Conditions (Year 2000)</b>				<b>Potential Future Conditions (Year 2020) 1</b>		
<b>Type of Development</b>	<b>Number of Existing Buildings and Critical Facilities</b>	<b>Current Replacement Value (in 000s) (Year 2000 \$)</b>	<b>Current Number of People</b>	<b>Projected Number of Public Buildings and Critical Facilities</b>	<b>Projected Replacement Value (in 000s) (Year 2000 \$)</b>	<b>Projected Number of People</b>
Town Hall/Police Station	0.1	38	0	0.1	43	0
Whitakers Fire Station	0.1	21	0	0.1	24	0
Subtotal Public	0.2	59	0	0.2	67	0
Community Total	42	1,036	79	51	1,212	100

<sup>1</sup> 2000 Data based on 2000 Census data and local tax revenue data.

<sup>2</sup> 2020 Projections based on population projections and estimated number of new dwelling units with comparable increase in commercial/industrial properties.

Town of Whitakers  
Appendix C: Community Capability Assessment

A. Introduction

The ability of a community to develop an effective hazard mitigation plan depends upon five implementation factors specific to that unit of government:

1. Departments and Agencies
  - a. Local government departments or agencies that have direct responsibility for hazard mitigation activities, e.g., public works department responsibility for storm water system maintenance;
  - b. Other local departments or agencies that may, by virtue of their work, either increase or decrease local vulnerability, e.g., school system selection of new school construction sites;
2. Existing Policies, Programs and Ordinances;
  - a. Local policies, programs and ordinances that affect hazard mitigation;
  - b. State programs, e.g., NCDOT maintenance of state-owned roads and highways;
3. Legal Capability (State authorization for local government programs);
4. Fiscal Capability (Operating budget, capital improvement program);
5. Technical Capability (Departmental agencies);
6. Political Climate (local political will for implementation of hazard mitigation activities).

**B. Departments and Agencies**

The Town of Whitakers is a local government body with a council-mayor form of government. The elected Town Board of Commissioners is the decision making body for the Town. A planning board serves as an advisory panel to the Town Commissioners on specific matters, including planning and land use. The Town employs professional staff to carry out day-to-day administrative activities.

Departments and Agencies with Direct/Indirect Impact on Hazard Mitigation

**Table C-1: Departments and Agencies - Town of Whitakers**

<b>Department/Agency</b>	<b>Direct/Indirect Impact</b>	<b>Function</b>
Whitakers Fire Department	Direct	Volunteer fire department- protects the community during emergencies, enforces fire code ordinances, and provides education in fire safety.
Building Inspections (Nash County)	Direct	Responsible for building, mechanical, electrical, and plumbing code inspections for the Town of Whitakers.
Whitakers Police Department	Direct	Responsible for protecting life and property through law enforcement and crime prevention.
Public Works Department	Direct	Responsible for providing a safe and adequate water supply and for wastewater treatment, for maintaining Town buildings, grounds, and streets (including stormwater management), and vehicles. The department also collects solid waste for residential and commercial customers.
Chief Administrative Official	Direct	The Mayor is the chief administrative official for the town and is responsible for implementing Town policies and regulations.
Zoning Enforcement Officer/ Subdivision Administrator	Direct	Responsible for administering and enforcing the provisions of the zoning and subdivision ordinances. The Town Clerk serves in this capacity.
Town Clerk	Indirect	Gives notice of Town Board meetings, prepares the agenda and records proceedings. The clerk is custodian of all permanent Town records and keeps track of appointments and terms for boards and commissions.
Finance Officer	Indirect	The Town Clerk is the Finance Officer and is responsible for accounting, debt administration, payroll, utility billing and collection, and purchasing.
Personnel/Human Resources	Indirect	This position is assumed by the Town Mayor. The Mayor advises the Town Board on recruitment and hiring. Responsibilities include classification and pay, employee relations, equal employment opportunities, training, benefits and employee safety.

Source: Town of Whitakers

## Other Departments/Agencies

### **Nash-Rocky Mount Public School System**

The Nash-Rocky Mount Public School System provides public educational programming and facilities. The school system is responsible for constructing and maintaining schools facilities. When selecting new school sites, the school system considers environmental factors that would impact the development potential of each site under consideration.

### **NC Department of Transportation**

The NC Department of Transportation is responsible for construction and maintenance of state-owned roads and highways, including the construction and of stormwater drainage systems. Sizing and maintenance of stormwater drainage systems can have an impact on hazard mitigation. If inadequately sized structural elements, e.g., piping, channels, etc., cannot handle stormwater runoff, then upstream flooding will occur. Lack of maintenance especially due to insufficient resources (staff and equipment) can also increase the likelihood of system failure and stormwater damage to system elements, e.g., culverts, during flooding.

### C. Existing Policies, Programs and Ordinances

The Town of Whitakers has the statutory authority to plan for growth and development including the power to make studies of the Town, to determine growth objectives, to prepare and adopt plans for achieving those objectives and to develop policies, ordinances and the administrative means to implement plans. The Town Mayor has created and appointed a Planning Committee to serve as an advisory body on planning matters.

The Town of Whitakers has used its legislated regulatory power to adopt and implement policies, programs, and ordinances that regulate land use and development. These policies and regulations help mitigate potential harmful effects of natural hazards.

Each Town policy, ordinance or regulation has a unique and varying impact on hazard mitigation. Although policies and ordinances may have not been created specifically for hazard mitigation purposes, they have been and can be utilized to implement hazard mitigation initiatives. Existing Town policies and ordinances include:

- Zoning Ordinance
- Subdivision Ordinance
- Capital Improvements Plan (CIP)
- Building Code Enforcement (Nash County)
- Tar-Pamlico River Basin Rules
- Land Use Plan

### **Zoning Ordinance** (adopted 1990)

Local governments use zoning to help mitigate the impact of natural hazards. The Whitakers zoning ordinance states that “For the purpose of promoting the health, safety, morals, and general welfare, this ordinance is adopted by the governing body to regulate and restrict the height, number of stories, the size of buildings and other structures, the percentage of lots that may be occupied, the size of yards, courts, and other open spaces, the density of population, and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes.”

The zoning ordinance establishes nine zoning districts that regulate the use of land. The nine zoning districts are described in Table C-2. The ordinance stipulates that no mobile home can be placed on ground susceptible to flooding. Note: At this time the Town does not have a reproducible size zoning map.

**Table C-2: Town of Whitakers Zoning Districts**

<b>Zoning District</b>	<b>Description</b>
R-30 Medium-Low Density Residential	The purpose of this district shall be to provide for residential development in rural areas where public water and sewer are not available but soils are suitable for septic tanks on 30,000 sq. ft. lots.
R-30 MH Medium-Low Density Residential Mobile Home	The purpose of this district shall be to provide for the compatible mixture of residential and individual mobile home development in areas where public and water sewer are not available.
R-10 High Density Residential	The purpose of this district shall be to provide for development at relatively high densities in urban and town fringe areas where public water and sewer and other urban services are accessible. A minimum lot size of 10,000 sq. ft. is required.
R-6 High Density Residential	The purpose of this district shall be to provide for residential development at very high densities within the town where public water and sewer and other urban services are available. A minimum lot size of 6,000 sq. ft. is required.
B-1 Highway Business	The purpose of this district shall be to provide for and encourage the proper groupings and development of roadside uses which will best accommodate the needs of the motoring public, the reduction of highway congestion and hazard, and the minimization of blight.
B-2 General Business	The purpose of this district shall be to provide space for the main business district for the convenience of local shoppers.
MI General Manufacturing Industrial	The purpose of this district shall be to provide suitable locations for service, manufacturing, and warehousing activities which are non-noxious and do not emit smoke, dust, odor, noise, fumes, glare, vibration, or other objectionable characteristics from the property on which they are located.
R-10 MH High Density Residential	The purpose of this district shall be to provide for development at relatively high densities with a compatible mixture of residential and individual mobile home development where public water and sewer and other urban services are accessible. A minimum lot size of 10,000 sq. ft. is required.

*Source: Town of Whitakers Zoning Ordinance*

**Subdivision Ordinance** (adopted 2001)

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. Flood-related subdivision controls typically require that developers install adequate stormwater drainage facilities and design water and sewer systems to minimize flood damage and contamination. Regulations prohibit the filling of floodways or the subdivision of land subject to flooding unless flood hazards are overcome through filling or other measures.

Subdivision regulations provide for orderly growth and development by setting standards for street construction, interconnecting street systems, and for other improvements that ensure the appropriate design and layout of new development. These regulations also serve to protect natural features and resources by not allowing or reducing development intensity within sensitive environmental areas.

The Town of Whitakers adopted a Subdivision Ordinance in 2001 for the purpose of providing for the orderly growth and development of the town, coordination of streets and highways, dedication or reservation of recreation areas or school sites, dedication of rights-of-way or easements for street and utility purposes, distribution of population and traffic to avoid congestion and overcrowding, and construction of community service facilities in accordance with municipal policies and standards.

While these regulations have a multi-dimensional intent, major goals include coordination of streets and highways and distribution of population and traffic to avoid congestion. Both of these purposes are directly related to hazard mitigation, ensuring that should a natural disaster occur, an efficient emergency response is probable.

### **Capital Improvements Plan (CIP)**

In October 2003 the Town of Whitakers adopted a Capital Improvements Plan for improvements to the water, sewer, and storm drainage systems. These Town systems were for the most part built in the 1940s and 1950s and are in need of repair.

The Town has been diligent in evaluating these systems to isolate problem areas and to determine the most cost-effective methods for repair and/or replacement. The projected 20-year needs in the CIP indicate that the storm drainage system is providing inadequate drainage due to the size of the pipes and the accumulation of debris in pipes and drainage ditches. In some areas poor drainage is causing water to enter the sanitary sewer system.

The Town will be correcting the majority of the deficiencies in the system by:

- Completing a system-wide cleanup of drainage pipes and pipe networks.
- Establishing a scheduled maintenance program to keep the system free of sediment and debris.
- Acquiring drainage easements where none exist to help assist with future maintenance.
- Replacing undersized pipes.

The total estimated cost for all system improvements over the 20-year period is \$825,000. Work is scheduled to begin in 2005-2006 with \$111,000 set aside for cleaning debris from pipes and ditches. Repair and replacement of storm sewers will begin shortly thereafter under the following schedule: 2007-2008 - \$150,000; 2009-2010 - \$100,000; 2011-2012 - \$150,000, 2013-2017 - \$200,000; and 2018-2024 - \$114,000.

### **Building Code Enforcement** (Nash County)

Under interlocal agreement, building code enforcement within the Town of Whitakers is under the jurisdiction of Nash County. Nash County issues building permits after the Town has issued a zoning permit for the proposed development.

In 1973, Nash County adopted a local building code enforcement ordinance that incorporated the North Carolina State Building Code. The ordinance provides that any revisions, amendments, or additions to the state code are automatically included in the Nash County ordinance. In 2002, the State of North Carolina adopted the International Building Code.

The County enforces the ordinance within the unincorporated areas of the County and also has the authority to enforce the code in any municipality, which requests by resolution that the County does so within its corporate limits. Currently, Nash County enforces the building code within the towns of Bailey, Castalia, Dortches, Middlesex, Momeyer, Nashville, Red Oak, Spring Hope, and Whitakers.

## Tar-Pamlico River Basin Rules

The Town of Whitakers lies entirely within the Tar-Pamlico River Basin. North Carolina has enacted a number of rules intended to help control runoff and pollution of storm water within the Tar-Pamlico River Basin. State storm water rules include provisions for protection of riparian buffers along all water bodies (rivers, lakes, ponds, and streams but not manmade ditches) and use of swales, created wetlands and detention or retention ponds.

Riparian buffers provide a number of economic benefits including:

- (a) Removing pollutants, in particular sediment which is expensive to treat at water supply treatment plants;
- (b) Protecting stream banks from erosion which can cause expensive property damage; and
- (c) Keeping buildings and other structures away from damaging floodwaters.

The Riparian Buffer Rule establishes a 50' wide riparian buffer within the Tar-Pamlico River Basin. The buffer protection rule requires that riparian buffer areas be protected and maintained on the banks of all waterways within the river basin. The rule does not require the establishment of new buffers unless the existing use of the buffer changes.

The rule applies to existing intermittent and perennial streams, lakes, ponds and estuarine waters shown on either Nash County Soil Survey maps or U.S. Geologic Survey maps of the County. The rule does not apply to:

- (a) manmade ditches other than modified natural streams except for water conveyances that have been constructed for navigation or boat access;
- (b) manmade ponds and lakes that are outside natural drainage ways; and
- (c) ephemeral (storm water) streams.

Under the rule, Zone 1 - the 30' closest to the water body - is to remain essentially undisturbed. Zone 2 – the next 20' beyond Zone 1 - is to be vegetated. Any existing, on-going uses within the protected buffer are exempt from the rule. Existing uses may include, but are not limited to, agriculture activities, buildings, industrial, commercial and transportation facilities, maintained lawns, utility lines, and on-site wastewater treatment systems.

The buffer protection rule includes a table of uses, which may be permitted within the buffer area. Specific activities are listed as either “exempt”, “allowable”, “allowable with mitigation”, or “prohibited”. A separate buffer mitigation rule establishes requirements for activities that are allowable with mitigation. Under certain circumstances, a prohibited activity may be allowed by variance where complying with the rule will cause practical difficulties or unnecessary hardships.

## **Land Use Plan** (2003)

The Town of Whitaker recently adopted a Land Use Plan in 2003. This plan establishes long-range growth and development polices for future development within the Town’s planning jurisdiction. By adopting a Land Use Plan, the Town of Whitakers are establishing areas of concern by identifying environmentally hazard areas that have the potential for development as population projections rise and areas of undeveloped land become developed.

## **Community Capability Assessment Summary**

The overall assessment of Town of Whitakers community capability to address hazard mitigation through existing policies and ordinances is summarized in Table C-3.

### **Incorporating Hazard Mitigation Requirements into Community Plans**

No policies, programs or ordinances have been found to have the effect of hindering hazard mitigation; however, there are opportunities to make current policies more effective for mitigation. Existing policies and ordinances are regularly reviewed and considered for updates/revisions to meet changing community needs and to stay in compliance with State and Federal regulations.

The Town will create a process to incorporate requirements in the Hazard Mitigation Plan into existing community plans and ordinances. The Town Clerk will be responsible for providing a copy of the Hazard Mitigation Plan to the Mayor/Town Board and to each Town department and for ensuring that the responsible department (see Table C-3) incorporates hazard mitigation goals, objectives and actions into plan updates and ordinance revisions to ensure that updates and revisions do not contribute to increased community vulnerability to natural hazards.

The specific departments, as noted in Table C-3, that are responsible for implementation, enforcement, and updates to community plans and ordinances will be charged with monitoring programs and regulations for opportunities to improve hazard mitigation actions. More specific information on recommendations for new or revised policies and programs is detailed in Section II. Mitigation Action Plan.

**Table C-3: Community Capability Assessment – Town of Whitakers**

<b>Policies and Programs</b>	<b>Program Status</b>	<b>Effectiveness for Mitigation</b>	<b>Rationale for Effectiveness</b>	<b>Recommendations for Incorporating into Hazard Mitigation Strategy</b>
Zoning Ordinance	Existing	Low	Does not address development in flood hazard areas (Note: Town planning jurisdiction does not currently include any flood hazard areas.)	Amend ordinance to restrict development in flood hazard areas prior to extending town limits or ETJ into areas with flood hazards. The Town Board is responsible for revising the ordinance; the Town Clerk is responsible for day to day enforcement.
Subdivision Ordinance	Existing	Low	Regulations could be strengthened to improve control of development within flood hazard areas.	Amend regulations to restrict development in flood hazard areas prior to extending town limits or ETJ into areas with flood hazards. The Town Board is responsible for revising the ordinance; the Town Clerk is responsible for day to day enforcement.
Building Code Enforcement	Existing	High	Provides for proper building construction according to State Building Code standards.	Continue to incorporate and enforce any revisions to State Building Code standards. Nash County is responsible for enforcing the NC State Building Code.
Tar-Pamlico River Basin Rules	Existing	Medium	State river basin rules require stream buffers to reduce stormwater runoff (quantity and velocity) and to reduce water pollution.	Any revisions to State regulations will be enforced by the town as required by law. The Town will work with Nash County and the State to enforce the rules..
Capital Improvements Plan (CIP)	Existing	Medium	Plans and budgets for major capital expenditures 20 year planning period.	Implement plan and adopt future plans to address any stormwater management, water and sewer concerns. The Town Board develops and adopts the CIP.
Land Use Plan	Existing	Medium	Plan would set goals and objectives for future development.	Develop goals and objectives that would reduce flood hazard vulnerability through environmental conservation, stormwater management, and flood damage prevention. The Town Board is responsible for updating the plan.

Source: Town of Whitakers

#### D. Legal Capability

Local governments in North Carolina have a wide array of powers that enable counties and municipalities to adopt and implement policies and ordinances that may be used to mitigate the potential harmful effects of natural hazards. Bellow is a summary of the legal authority and powers that North Carolina has conferred on local governments within the state (*Local Hazard Mitigation Planning Manual*, NC Division of Emergency Management, 1998, Appendix B, pp. 61-64.) These powers fall into four broad categories: regulation, acquisition, taxation, and spending.

#### **Regulation** (General Police Power)

Local governments in North Carolina have been granted broad regulatory powers. North Carolina bestows the general police power on local governments, allowing them to enact and enforce ordinances which define, prohibit, regulate, or abate acts, omissions, or conditions detrimental to the health, safety, and welfare of the people and to define and abate nuisances (including public health nuisances). Since hazard mitigation can be included under the police power (as protection of public health, safety and welfare), towns, cities and counties may include requirements for hazard mitigation in local ordinances. Local governments may also use their ordinance-making power to abate “nuisances,” which could include, by local definition, any activity or condition making people or property more vulnerable to any hazard (NCGS 160A Art. 8 (Delegation and Exercise of the General Police Power to Cities and Towns); 153A, Art. 6 (Delegation and Exercise of the General Police Power to Counties)).

#### **Building Codes and Building Inspection**

Many structural mitigation measures involve constructing and retrofitting homes, businesses and other structures according to standards designed to make the buildings more resilient to the impacts of natural hazards. Most of these standards are imposed through the building code.

North Carolina has a state compulsory building code, which applies throughout the state (NCGS 143-338(c)). However, municipalities and counties may adopt codes for their respective areas if approved by the state as providing “adequate minimum standards” (NCGS 143-338(e)). Local regulations cannot be less restrictive than the state code. Exempted from the state code are: public utility facilities other than buildings; liquefied petroleum gas and liquid fertilizer installations; and farm buildings outside municipal jurisdictions. No state permit may be required for structures under \$20,000. (Note that exemptions apply only to state, not local, permits).

Local governments in North Carolina are also empowered to carry out building inspections. NCGS 160A, Art. 19, Part 5; and 153A Art. 18, Part 4 empower cities and counties to create an inspection department, and enumerates department duties and responsibilities, which include enforcing state and local laws relating to the construction of buildings, installation of plumbing, electrical, heating systems, etc.; building maintenance; and other matters.

#### **Town of Whitakers**

Through interlocal agreement, Nash County enforces the building code within the Town of Whitakers in both Edgecombe and Nash Counties.

#### **Land Use**

**Land use regulatory powers granted by the state to local governments are the most basic manner in which a local government can control the use of land within its jurisdiction. Through various land use regulatory powers, a local government can control the amount, timing, density, quality and location of new development. All these characteristics of growth can determine the level of vulnerability of the community in the event of a natural hazard. Land use regulatory powers include the power to engage in planning, and to enact and enforce zoning ordinances, floodplain ordinances, and subdivision controls.**

Each community possesses great power to prevent unsuitable development in hazard-prone areas. (NCGS 160A, Art. 8. (Delegation and Exercise of the General Police Powers to Cities and Towns); Art. 19 (Planning); Part 3 (Zoning); and 153A. Art. 6 (Delegation and Exercise of the General Police Power to Counties; Art. 18 (Planning and Regulation of Development); Part 2 (Subdivision Regulation); Part 3 (Zoning).

### **Planning**

In order to exercise the regulatory powers conferred by the General Statutes, local governments in North Carolina are required to create or designate a planning agency (NCGS 160A-3 87). The planning agency may perform a number of duties, including: make studies of the area; determine objectives; prepare and adopt plans for achieving those objectives; develop and recommend policies, ordinances, and administrative means to implement plans; and perform other related duties (NCGS 160A-361).

The importance of the planning powers of local governments is emphasized in NCGS 160A-383, which requires that zoning regulations be made in accordance with a comprehensive plan. While the ordinance itself may provide evidence that zoning is being conducted “in accordance with a plan”, the existence of a separate planning document ensures that the government is developing regulations and ordinances that are consistent with the overall goals of the community.

#### **Town of Whitakers**

Early in 2003, the Town of Whitakers adopted a Land Use Plan that describes policies and goals for development of the Town until the year 2020. The Town of Whitaker will work with Nash County to produce a digital version of a land use map.

### **Zoning**

Zoning is the traditional and nearly universal tool available to local governments to control the use of land. Broad enabling authority for municipalities in North Carolina to engage in zoning is granted in NCGS 160A-381; and for counties in NCGS 153A-340. (Counties may also regulate inside a municipal jurisdiction at the request of a municipality (NCGS 160A-360(d)). The statutory purpose for the grant of power is to promote health, safety, morals or the general welfare of the community. Land uses controlled by zoning include the type of use (residential, commercial, industrial) as well as minimum specifications such as lot size, building height and set backs, density of population, etc.

Local governments are authorized to divide their territorial jurisdictions into districts, and to regulate and restrict the erection, construction, reconstruction, alteration, repair, or use of buildings, structures or land within those districts (NCGS 160A-382). Districts may include general use districts, overlay districts, and special use or conditional use districts. Zoning ordinances consist of maps and written text.

#### **Town of Whitakers**

The Town of Whitakers has adopted a zoning ordinance that establishes zoning districts and minimal development regulations. The ordinance needs to be updated to more fully address development standards that would reduce stormwater runoff and the potential for flooding. The Town currently encompasses only minimal flood hazard areas but this will change as the town continues to grow and expand outward. The Town of Whitakers will work with Nash County to produce a digital version of a zoning map.

### **Subdivision Regulations**

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. Flood-related subdivision controls typically require that subdividers install adequate drainage facilities and design water and sewer systems to minimize flood damage and contamination. Subdivision regulations prohibit the subdivision of land subject to flooding unless flood hazards are overcome through filling or other measures. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use made of land or the minimum specifications for structures.

Broad subdivision control enabling authority for municipalities is granted in NCGS 160-371, and in 153-330 for counties outside of municipalities and municipal extraterritorial planning jurisdictions. Subdivision is defined as all divisions of a tract or parcel of land into two or more lots and all divisions involving a new street (NCGS 160A-376). The definition of subdivision does not include the division of land into parcels greater than 10 acres where no street right-of-way dedication is involved (NCGS 160A-376(2)).

#### **Town of Whitakers**

The Town of Whitakers has adopted subdivision regulations that establish minimum standards for land development. The ordinance needs to be updated to more fully address development standards that would reduce stormwater runoff and the potential for flooding. The Town currently encompasses only minimal flood hazards areas but this will change as the town continues to grow and expand outward.

### **Floodplain Regulation**

In the summer of 2000, the North Carolina General Assembly adopted an act entitled “An Act to Prevent Inappropriate Development in the One Hundred-Year Floodplain and to Reduce Flood Hazards”. By this act, the North Carolina statutes regulating development within floodways were rewritten to include floodplain regulation (NCGS 143-314.51-214.61). The purpose of the new law is to:

1. Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
2. Prevent and minimize loss of life, injuries, property damage and other losses in flood hazard areas.
3. Promote the public health, safety and welfare of citizens of North Carolina in flood hazard areas.

The new statute authorizes local governments to adopt a flood hazard prevention ordinance to regulate uses in flood hazard areas and to grant permits for the use of flood hazard areas that are consistent with the requirements of the statute. The statute provides for certain uses within flood hazard areas without a permit consistent with local land use ordinances (NCGS 143-315.54).

The statute establishes minimum standards for local ordinances and provides for variances for prohibited uses as follows:

- (a) A flood hazard prevention ordinance adopted by a county or city pursuant to this Part shall, at a minimum:
  - (1) Meet the requirements for participation in the National Flood Insurance Program and of this section.

- (2) Prohibit new solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities in the 100-year floodplain except as noted in section (b) below.
  - (3) Provide that a structure or tank for chemical or fuel storage incidental to a use that is allowed under this section or to the operation of a water treatment plant or wastewater treatment facility may be located in a 100-year floodplain only if the structure or tank is either elevated above base flood elevation or designed to be watertight with walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.
- (b) A flood hazard prevention ordinance may include a procedure for granting variances for uses prohibited under G.S. 143-315.54(c). A county or city shall notify the Secretary (of Crime Control and Public Safety) of its intention to grant a variance at least 30 days prior to granting the variance. A county or city may grant a variance upon finding that all of the following apply:
- (1) The use serves a critical need in the community.
  - (2) No feasible location exists for the location of the use outside the 100-year floodplain.
  - (3) The lowest floor of any structure is elevated above the base flood elevation or is designed to be watertight with walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.
  - (4) The use complies with all other applicable laws and regulations.

**The statute authorizes priority ratings for local government applications for revolving loans or grants based on adoption of a local comprehensive land use plan, a zoning ordinance, or other measures that significantly contribute to the implementation of the comprehensive land use plan and the flood hazard prevention ordinance.**

The Floodplain Act also instructed the Environmental Review Commission to study and report its findings to the 2001 General Assembly on the need to:

- (1) Increase the minimum elevation requirement.
- (2) Increase the authority of the Secretary of Crime Control and Public Safety to enforce the new statute.
- (3) Increase protection against the potential recurrence of damage to public and private property that resulted from the hurricanes of 1999, and other measures to reduce the likelihood that public assistance will be needed in response to future hurricanes and other storm events.

#### **Town of Whitakers**

The Town of Whitakers does not currently have a Flood Damage Prevention Ordinance. The Town intends to adopt an ordinance prior to November 1, 2004 as a requirement of the town's hazard mitigation planning grant.

#### **Acquisition**

The power of acquisition can be a useful tool for pursuing mitigation goals. Local governments may find the most effective method for completely "hazard-proofing" a particular piece of property is to acquire the property (either in fee simple or a lesser interest, such as an easement). Public acquisition removes the property from the private market and eliminates or reduces the possibility of inappropriate development. North Carolina legislation empowers cities and counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain (NCGS 153A. Art. 8; 160A. Art. 11).

#### **Taxation**

The power to levy taxes and special assessments is an important tool delegated to local governments by North Carolina law. The power of taxation extends beyond merely the collection of revenue and can have a

profound impact on the pattern of development in a community. Communities can set preferential tax rates for areas, which are unsuitable for development (e.g., agricultural land, wetlands, and floodplains) to discourage development in hazardous areas.

**Because the usual methods of apportionment seem mechanical and arbitrary, and because the tax burden on a particular piece of property is often quite large, the major constraint in using special assessments is political. Special assessments seem to offer little in terms of control over land use in developing areas. Assessments can, however, be used to finance the provision of necessary services within city or county boundaries. In addition, they are useful in distributing to new property owners the costs of the infrastructure required by new development.**

### **Spending**

The fourth major power that has been delegated by the North Carolina General Assembly to local governments is the power to make expenditures in the public interest. Hazard mitigation principles should be made a routine part of all spending decisions made by a local government, including adoption of annual budgets and a capital improvement plan (CIP).

A CIP is a schedule for the provision of city or county services over a specified period of time. Capital programming, by itself, can be used as a growth management technique, with a view to hazard mitigation. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control growth to some extent especially in areas where the provision of on-site sewage disposal and water supply are unusually expensive.

In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to services. A CIP that is coordinated with extension and access policies can provide a significant degree of control over the location and timing of growth. These tools can also influence the cost of growth. If the CIP is effective in directing growth away from environmentally sensitive or high hazard areas, for example, it can reduce public costs associated with degradation of the environment and damages to properties caused by natural hazards.

### **Annual Operating Budget/Capital Improvements Plan (CIP)**

The Town of Whitakers recently applied \$2 million in grant funds from the NC Rural Center and USDA to address water and sewer system rehabilitation projects identified in the adopted Capital Improvements Plan. The Town has also recently instituted a 3.25 cents/month charge for customers receiving city water/sewer services to help fund such activities as culvert management, sewer pipe maintenance, etc.

#### **Town of Whitakers**

The Town of Whitakers adopted its first Capital Improvements Plan in 2003. The CIP primarily addresses water and sewer system rehabilitation and expansions, and storm water activities for 10 years, and identifies future needs expected beyond the plan's time frame.

### **E. Fiscal Capability**

Beyond legal authority and political willpower, fiscal capability is a key component to effectively developing and implementing a hazard mitigation plan. In addition to local tax funds, non-profits and other non-governmental organizations are often interested in helping to implement hazard mitigation projects. Local governments can also apply for State and Federal funds to implement hazard mitigation initiatives. Appendix D lists state and federal sources for information and funding of hazard mitigation initiatives. The NC Emergency Management website at [http://www.ncem.org/Mitigation/additional\\_funding.htm](http://www.ncem.org/Mitigation/additional_funding.htm) includes a more exhaustive list of over 300 state and federal funding sources.

### **Local Funds**

In North Carolina, property taxes provide the primary source of revenue for municipalities. These taxes are typically used primarily to finance services that must be available and delivered on a daily basis, such as police and fire emergency services, solid waste collection and disposal, street maintenance, etc. and, leaving very little, if any, for additional services and projects. Fortunately, State and Federal funds are available to local governments for the development and implementation of hazard mitigation programs.

### **Ability to Pay**

In recognition of the disparate economic prosperity of the State's one hundred counties, the North Carolina Department of Commerce ranks counties in an economic tier system. The impetus for this system was the William S. Lee Quality Jobs and Business Expansion Act of 1996 (Lee Act) which provides for a sliding scale of state tax credits for economic investment. The Lee Act has become the State's main development tool in an effort to help smaller rural counties be more economically competitive. The tier ranking is also used by the State as a measure of an individual county's ability to pay when applying for state and federal grants.

The most economically distressed counties are ranked in Tier 1 and the most economically prosperous in Tier 5. The rankings are evaluated annually using three factors – population growth, unemployment rate, and per capita income. The 2003 NC Department of Commerce ranking places Nash County in Tier 4.

## **F. Technical Capability**

Effective hazard mitigation initiatives depend largely on a community's technical capability. Many smaller governments in North Carolina have only limited technical capabilities due to size and budget restrictions and must depend on larger government units for technical assistance. However, the most valuable technological resource is the wealth of knowledge accumulated by the various staff members through their years of experience. The Town of Whitakers depends largely on the assistance of Nash County and the resources they provide such as planning, building inspections, code compliance, information management, emergency services, and Geographic Information Systems mapping of hazard areas (primarily floodplains). In addition to technical assistance from Nash County, the Upper Coastal Council of Governments also provides assistance to the Town of Whitakers. Together these technical capabilities help build a more resilient community by better planning before the occurrence of a natural hazard, as well as by better response during the event and during the recovery period.

### **Fire Department**

This voluntary department protects the community during emergencies, enforces fire code ordinances, and provides education in fire safety.

### **Building Inspections (Nash County)**

This department is responsible for building, mechanical, electrical, and plumbing code inspections for the Town of Whitakers.

### **Police Department**

This department is responsible for protecting life and property through law enforcement and crime prevention.

### **Administration**

This department consists of the Town Mayor who is responsible for implementing Town policies and regulations.

### **Zoning Enforcement / Subdivision Administrator**

This department is responsible for administering and enforcing the provisions of the zoning and subdivision ordinances. The Town Administrator serves in this capacity.

### **Finance Department**

This department consists of the Town Administrator who is responsible for accounting, debt administration, payroll, utility billing and collection, and purchasing.

### **Personnel / Human Resources**

This department consists of the Town Mayor, who is responsible for advising the Town Board on recruitment and hiring. Responsibilities include classification and pay, employee relations, equal employment opportunities, training, benefits and employee safety

## **G. Political Climate**

The elected officials of Town of Whitakers are in agreement that implementation of the Hazard Mitigation Plan is a necessary tool to minimize damages from natural hazards. The Board of Commissioners supports the need for hazard mitigation to reduce future loss of life and property. The Board of Commissioners intends to vigorously support the hazard mitigation efforts acknowledging the limited resources both monetarily and physically at the Town's disposal.

After Town of Whitakers was so gravely impacted by Hurricane Floyd in 1999, the citizens, property owners, business owners, as well as elected officials can most assuredly be counted on to realize the need and enforcement of the Hazard Mitigation Plan. The Town has made preparedness a community priority. The Board of Commissioners is willing to restrict private property rights regarding development in flood hazard areas. The Board of Commissioners strives in its efforts to make Town of Whitakers a safer community, and sees the Hazard Mitigation Plan as a means to help achieve that goal.