

NATURAL HAZARDS

In any community there are certain natural and/manmade features that pose potential hazards to residents of that community. While it is not possible to eliminate all of these hazards, it is possible to identify them and take measures to ensure their impact on the community is minimal.

This chapter of the Comprehensive Plan identifies the types of natural hazards most likely to have an impact on the Study Area. Measures necessary to adequately prepare for and respond to such hazards are also set forth in this section.



Hurricane Floyd
NOAA-15 AVHRR HRPT
Multi-spectral False Color Image
September 14, 1999 @ 1244 UTC



I. EXISTING CONDITIONS

One step in the long-term process of improving resistance to natural hazards is the development of a hazard mitigation plan. The City of Rocky Mount's Hazard Mitigation Plan serves several purposes. It sets the stage for long-term disaster resistance through identification of actions that will, over time, reduce the exposure of people and property to natural hazards.

On July 23, 2001, the City of Rocky Mount adopted a Hazard Mitigation Plan. Increasing awareness of natural and manmade hazards and their potential impact on area residents was a key reason for development of this plan. In addition, the Plan will qualify the City for additional points under the National Flood Insurance Program (NFIP) Community Rating System (CRS) and establishes eligibility for certain mitigation grant funds that may become available in the future.

The information presented in this chapter is based upon the data and recommendations presented in that plan. RC Quinn Consulting, Inc. developed the mitigation plan in accordance with the process stated in a resolution of the Rocky Mount City Council, adopted on February 12, 2001. The resolution recognizes that:

- Natural hazards pose a continual threat to public health and safety and could result in significant property damage.
- A Hazard Mitigation Plan is required by several grant agreements.
- The planning process encouraged by the State of North Carolina and the Federal Emergency Management Agency offers the opportunity to consider hazards and identify mitigation actions to reduce future risks.

The Hazard Mitigation Plan was introduced to the public at the July 10, 2001 meeting of the Planning Board and copies of the final draft were made available to the public for comment. In preparing the Comprehensive Plan, the City's Hazard Mitigation Plan was assessed using an instrument that was endorsed by the American Planning Association. That instrument was the Institute for Business and Home Safety's Community Land Use Evaluation (CLUE) for Natural Hazards. The evaluation revealed that Rocky Mount does a very good job of addressing its natural hazard vulnerabilities. The City earned an "A-," scoring 52 out of a possible 71 points. By implementing the strategies outlined in this chapter, the City can make its good Hazard Mitigation Plan even better.

Table 10-1: Relative Hazard Risks in the Study Area

Hazard	Nash County	Edgecombe County
Earthquake	Low	Low
Landslide	Low	Low
Hurricane	Moderate	Moderate
Nor'easter	Moderate	Moderate
Tornado	High	Moderate
Severe Winter	Low	Low
Wildfire	Low	Low
Flood	Moderate	Moderate

Source: Rocky Mount Hazard Mitigation Plan, July 2001

A. DEFINING HAZARDS

A uniform system for ranking hazards has not been developed. However, as part of its efforts to support and encourage local hazard mitigation planning and initiatives, the NC Division of Emergency Management has prepared a qualitative assessment of the relative risk of eight natural hazards in each North Carolina county. This simple approach is based, in large measure, on past occurrences and a qualitative assessment of the possible impact of each type of hazard. Table 10-1 indicates the relative risks for the two counties surrounding the City of Rocky Mount.

It is important to understand that the three levels of "impact" generally refer to overall relative impact. For example, while a severe winter storm would certainly affect nearly everyone in the area, it would be unlikely to cause widespread property damage. Thus, its overall impact on the City would be low. It is notable that the relative risk of tornadoes in Nash County is shown as "high" due to recent occurrences and the severity of damage, not because any given tornado is expected to cause widespread damage.

The following narratives describe the characteristics of the hazards listed in Table 10-1 above. This information was summarized from the City's Hazard Mitigation Plan (2001) and the NC Division of Emergency Management's Natural Hazards Mitigation Plan (409 Plan, 1999).

1. Earthquake

Earthquakes are geologic events that involve movement or shaking of the earth's crust. Earthquakes are usually caused by the release of stresses accumulated as a result of the rupture of rocks along opposing fault planes in the earth's outer crust. These fault planes are typically found along borders of the earth's 10 tectonic plates. These plate

borders generally follow the outlines of the continents, with the North American plate following the continental border of the Pacific Ocean in the west, but following the Mid-Atlantic trench in the east. As earthquakes occurring in the mid-ocean trench usually pose little threat to humans, unlike earthquakes located along continental boundaries, the greatest earthquake threat in North America is along the Pacific coast.

Earthquakes are relatively infrequent, but not uncommon in North Carolina. The earliest North Carolina earthquake on record is that of March 8, 1735, near Bath. This event was probably less than intensity V (Slightly strong; sleepers awake). The most property damage in North Carolina ever attributed to an earthquake, however, was caused by the August 31, 1886, Charleston, South Carolina shock. On February 21, 1916, the Asheville area was the center for a large intensity VI earthquake, which was felt in Alabama, Georgia, Kentucky, South Carolina, Tennessee and Virginia—some 518,000 square kilometers in all. Subsequent minor earthquakes have caused damage in North Carolina in 1926, 1928, 1957, 1959, 1971, 1973, and 1976.

North Carolina's vulnerability to earthquakes decreases from west to east in relation to the Eastern Tennessee Seismic Zone. Generally, there are three different zones of seismic risk in North Carolina that correspond to different effective peak velocity-related accelerations of ground movement. The eastern portion of the state faces minimal effects from seismic activity. Locations in the middle and southeastern areas of the state face a moderate hazard from seismic activity, while the area from Mecklenburg County west through the Blue Ridge Mountains faces the greatest risk from seismic activity. These different levels of risk correspond to proximity to areas with historical seismic activity and changes in topography.

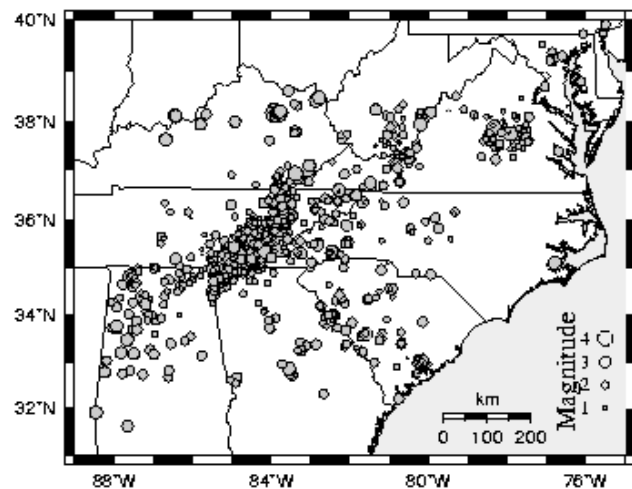
Figure 10-1 shows the epicenters of earthquakes occurring in and around North Carolina from 1977 to 1996. Epicenters are generally concentrated in the active Eastern Tennessee Seismic Zone, which is second in activity in the eastern US only to the New Madrid Fault.

2. Landslide

According to the United States Geological Survey (USGS), landslides are a major geologic hazard occurring in all 50 states. They cause \$1-2 billion in damages and result in an average of more than 25 fatalities each year (USGS, 1997). Landslides are especially troubling because they often occur with other natural hazards, such as earthquakes and floods.

Deadly manifestations of landslides are debris flows. Debris flows (also referred to as mudslides, mudflows or debris avalanches) are a common type of fast-moving land-

Figure 10-1: Epicenters of Earthquakes in the S.E. United States, 1977-1996



Source: NC Division of Emergency Management Natural Hazards Mitigation Plan. Map by Snoko and Chapman, 1997

slide that generally occur during intense rainfall on water-saturated soil. They usually start on steep hillsides as soil slumps or slides that liquefy and accelerate to speeds as great as 35 miles per hour or more. They continue flowing down hills and into channels depositing sand, mud, boulders and organic material onto more gently sloping ground. Their consistency ranges from watery mud to thick, rocky mud (like wet cement) which is dense enough to carry boulders, trees and cars. Debris flows from many different sources can combine in channels, where their destructive power may be greatly increased.

In the eastern United States, landslides are common throughout the mountainous Appalachian region and New England, predominantly from sliding of clay-rich soils. Scientists have documented 51 historical debris-flow events between 1844 and 1985 in parts of the Appalachians — most of them in the Blue Ridge area. Historical records suggest that destructive landslides and debris flows in the Appalachian Mountains occur when unusually heavy rain from hurricanes and intense storms soaks the ground, reducing the ability of steep slopes to resist the down slope pull of gravity.

3. Hurricane

Hurricanes are cyclonic storms that originate in tropical ocean waters. Hurricanes that impact North Carolina form in the so-called Atlantic Basin, from the west coast of Africa westward into the Caribbean Sea and Gulf of Mexico. Hurricanes in the basin generally form between June 1 and November 30, with a peak around mid-September. As an incipient hurricane develops, barometric pressure at its



Table 10-2: Significant Hurricanes in North Carolina 1879-1999

Name/Date	Category (in NC)	Maximum Wind	Pressure (in NC) inches Hg	NC Deaths	NC Damage (in Millions \$)
August 1879	4	168	N/A	40+	N/A
September 1883	3	100+	N/A	53	N/A
August 1899	4	140	N/A	25	N/A
September 1933	3	125	28.26	21	3
September 1944	3	110	27.97	1	1.5
Hazel, 1954	4	150	27.70	19	136
Ione, 1955	3	107	28.00	7	88
Donna, 1960	3	120	28.45	8	25
Diana, 1984	3	115	28.02	3	85
Gloria, 1985	3	100+	27.82	1	8
Hugo, 1989	3	100	28.88	7	1,000
Emily, 1993	3	111	29.00	0	13
Fran, 1996	3	100	27.91	--	7,200
Bonnie, 1998	3	100	28.17	--	450
Dennis, 1999	2	90	28.38	0	Unknown
Floyd, 1999	3	135	27.17	52	>1,000

Source: NC Division of Emergency Management, Natural Hazards Mitigation Plan (409 Plan)

center falls and winds increase. A weather system with winds at or exceeding 39 mph is designated as a tropical storm, which is given a name and closely monitored by the National Oceanic and Atmospheric Administration (NOAA) National Hurricane Center in Miami, Florida. When winds are at or exceed 74 mph, the tropical storm is deemed to be a hurricane. North Carolina has had an extensive hurricane history dating back to colonial times. By virtue of its position along the Atlantic Ocean adjacent to and protruding to the edge of the Gulf Stream, North Carolina is frequently impacted by hurricanes. In fact, North Carolina has experienced the fourth greatest number of hurricane landfalls of any state in the 20th century (after Florida, Texas, and Louisiana).

Notable 19th century storms occurred in 1837, 1846, 1856, 1879, and 1899. The 1950s were a busy time for hurricanes in North Carolina, including Hazel, Connie, Diane and Ione. From 1960 to 1990, only one major hurricane (Hurricane Donna in 1960) made land fall in North Carolina. Recent years have proven busy as well, with Hugo (1989), Emily (1993), Opal (1995), Bertha (1996), Fran (1996), Bonnie (1998), Dennis (1999) and Floyd (1999) all leaving their mark on the coast and across the state.

Hurricanes have the greatest potential to inflict damage as they make landfall, crossing the coastline from the ocean. Because hurricanes derive their strength from warm ocean waters, they usually decline in potential to inflict damage after they make landfall. The forward momentum of a hurricane, combined with a counterclockwise surface flow makes the right front quadrant of the hurricane the location of the most potentially damaging winds.

Perhaps more than other natural hazards that impact North Carolina, hurricanes have the potential of threatening a large segment of non-residents. Summer populations of coastal areas can swell to many times the year-round population during the first half of the hurricane season. Other important vulnerability factors for coastal areas include the number of evacuation routes and their vulnerability to flooding, as well as the percentage of dwellings in floodplains.

Another vulnerability to hurricanes is the population occupying mobile homes. These structures are particularly vulnerable to damage and destruction by high winds. Coastal counties with a high percentage of mobile home dwellings,

such as Brunswick (38.3%), Pender (33.0%) and Tyrell (31.3%) face a higher level of vulnerability. Inland coastal plain counties with similarly high percentages of mobile homes include Hoke (36.3%), Warren (32.9%), Franklin (32.1%) and Harnett (30.7%).

4. Nor'easter

In the past decade, research meteorologists have come to recognize the damage potential of so-called Nor'easters. Unlike hurricanes, these storms are extra-tropical (forming outside of the tropics), deriving their strength from horizontal gradients in temperature. It is the temperature structure of the continental air mass and the position of the temperature gradient along the Gulf Stream that drives this cyclone development. As a low pressure deepens, winds and waves can quickly increase and cause serious damage to coastal areas as the storm generally moves to the north-east.

The coastal counties of North Carolina are most vulnerable to the impacts of Nor'easters. Since the storms often occur at night, they typically make landfall with less warning than hurricanes, catching residents at home and unprepared. On the other hand, Nor'easters typically occur during the off-season when fewer non-residents are visiting the coast. As with hurricanes, vulnerability is proportional to structural strength, with mobile homes particularly vulnerable.

5. Tornado

Several meteorological conditions can result in winds that are severe enough to cause property damage. High winds have been associated with extreme hurricanes that reach inland, with tornadoes and with locally strong thunderstorms. Thunderstorms are the by-products of atmospheric instability, which promotes the vigorous rising of air parcels. A typical thunderstorm may cover an area three miles wide. The National Weather Service considers a thunderstorm "severe" if it produces tornadoes, hail 0.75 inches or more in diameter or winds of 58 mph or more. Structural wind damage may imply the occurrence of a severe thunderstorm.

Tornadoes pose the greatest threats to life and safety. The National Weather Service defines a tornado as a violently rotating column of air in contact with the ground and extending from the base of a thunderstorm. Of all tornadoes reported in North Carolina between 1953 and 1990, 71% were classified as "weak", 28% as "strong", and about 1% as "violent". Although tornadoes have been reported throughout the year, 60% occur from March through June.

Because mountainous areas disrupt the inflow of air near the surfaces of squall lines and individual thunderstorms, organized thunderstorm and tornadic activity are generally

not as strong in western North Carolina as they are in the eastern part of the state. Hurricane-induced tornadic activity generally occurs close to the coastline as a hurricane makes landfall. In the Rocky Mount area, most wind damage is limited to downed trees, blocked roads, and interrupted power lines. Tornadoes have touched down in the area several times in the past few years.

6. Severe Winter Weather

The entire state of North Carolina has a likelihood of experiencing severe winter weather. The threat varies by location and by type of storm. Severe winter storms can produce an array of hazardous weather conditions, including heavy snow, blizzards, freezing rain and ice pellets and extreme cold. The most severe storms are extra-tropical cyclones fueled by strong temperature gradients and an active upper-level jet stream. North Carolina's worst winter storms, Nor'easters, generally form in the Gulf of Mexico or off the southeast Atlantic Coast, and most do not produce blizzard conditions (defined by winds in excess of 35 mph, falling and blowing snow, and a maximum temperature of 20° Fahrenheit).

The most obvious parameter in winter weather is snow. It is extreme snow that is the most potentially disruptive to society, for it can bring down power lines and trees and cause roofs to collapse. FEMA commissioned the National Climatic Data Center (NCDC) to compile snowfall extreme statistics for the contiguous US in 1997. One-day observed maximum total snowfall amounts (in inches) were compiled for selected stations (many for the period 1948-1996). The average one-day extreme snowfall for each climate division, based on available county data, is shown in Table 10-3. Nash and Edgecombe Counties fall into Climate Division 8, while the mountainous counties fall into Climate Division 1 and 2.

Table 10-3: Extreme Average Snowfall By Climate Division

Climate Division	Average	Climate Division	Average
1	14.39	5	11.62
2	15.06	6	10.69
3	11.62	7	12.38
4	11.56	8	12.24

Source: NC Division of Emergency Management, Natural Hazards Mitigation Plan (409 Plan)

The data above suggests that the mountains have the highest extreme one-day snowfall, followed by the northern coastal divisions (associated with coastal winter storms).

The mountains of North Carolina usually receive several snowfalls of four to six inches in a given winter weather season. There has been at least one severe winter storm at some location in the mountains each year from 1984-1993. The western area of the state is more likely to experience greater and more frequent snowfalls and blizzards than other locations in the state.

Coastal areas typically face their greatest threat from Nor'easters and other severe winter coastal storms. These storms can contain strong waves and result in extensive beach erosion and flooding. Freezing rain and ice storms typically occur once every several years at coastal locations, and severe snowstorms have been recorded occasionally in coastal areas.



7. Wildfire

A wildfire is an uncontrolled burning of grasslands, brush or woodlands. The potential for wildfire depends upon surface fuel characteristics, recent climate conditions, current meteorological conditions and fire behavior. Hot, dry summers and dry vegetation increase susceptibility to fire in the fall, a particularly dangerous time of the year for wildfires.

The southern coastal plain is most vulnerable to the wildfire

hazard. As development has spread into areas which were previously rural, new residents have been relatively unaware of the hazards posed by wildfires and have used highly flammable material for constructing buildings. This has not only increased the threat of loss of life and property, but has also resulted in a greater population of people less prepared to cope with wildfire hazards.

Table 10-4: Average Annual Economic Losses From Droughts, Floods And Hurricanes

Hazard	Average Annual Loss
Droughts	\$6—8 billion
Floods	\$2.41 billion
Hurricanes	\$1.2—4.8 billion

Source: National Drought Mitigation Center, July 2002

8. Drought Hazards

Current drought conditions in the Study Area have increased the potential for wildfires. However, drought conditions not only precipitate wildfires but also are hazards in and of themselves. The National Drought Mitigation Center (NDMC) explains that droughts are hazards that can adversely affect the economy, the environment and people.

An agricultural drought adversely affects the economy when there is not enough soil moisture to meet a particular crop's needs, and the crop fails. As a result of the crop failure and the revenue that selling the crops would have generated, the economy suffers losses. Table 10-4 shows that the annual average economic loss from droughts in the United States is more than the average annual economic loss from floods and hurricanes.

In addition to having adverse economic impacts, droughts are hazardous to the environment when lack of surface and subsurface water threatens the natural habitat of wildlife. Prolonged droughts can go beyond harming the economy and the environment to causing loss of human life.

Since droughts are such devastating natural hazards, the NDMC stresses planning ahead to mitigate their effects. The NDMC lists three types of responses to droughts as being part of a sound drought mitigation plan:

Strategic Measures—Long-term responses that are established by law and supported by considerable investment. Strategic measures include long-term conservation programs and construction of new reservoirs.



Tactical Measures—Short term responses planned within a strategic framework. These measures include conservation or supply actions that are triggered when the water supply decreases to a certain level.

Emergency Measures—Responses to unexpected circumstances, such as closing a plant or condemning water rights. Emergency responses are usually used for water shortages not caused by drought, such as a chemical spill into the water supply.

, coupled with the imposition of mandatory water restrictions show that the City is using strategic and tactical measures to respond to the drought.

9. Flood Hazards

Flooding is a localized hazard that is generally the result of excessive precipitation. Threats to life and property from floods can be severe. Floods are often categorized as follows:

- **Flash Floods** which occur suddenly and often involve forceful flows that can destroy buildings and bridges, uproot trees and scour out new channels. Most flash flooding is caused by slow-moving thunderstorms, repeated thunderstorms in a local area or by heavy rains from hurricanes and tropical storms. Although flash flooding occurs often along mountain streams, it is also common in urban areas where much of the ground is covered by impervious surfaces and drainage ways are designed for smaller flows. Flood Insurance Rate Maps typically show the 1% annual chance (100-year) floodplain for waterways with at least 1 square mile of drainage area.
- **Riverine Floods** are a function of precipitation levels and water runoff volumes and occur when water rises out of the banks of a river or other waterway. Flooding along waterways that drain larger watershed often can be predicted in advance, usually taking more than 24 hours for the flood crest (maximum depth of flooding) to pass. In North Carolina, most Riverine flooding is caused by large rainfall systems associated with hurricanes and tropical storms. These systems can take as long as a day to pass, giving ample opportunity for large amounts of rain to fall over large areas. The Flood Insurance Rate Maps show the 1% annual chance floodplains of Riverine systems.
- **Urban Flooding** occurs where development has altered hydrology through changes in the ground surface and modification of natural drainage ways. Urbanization increases the magnitude and frequency of floods by increasing impermeable surfaces, increasing

the speed of drainage collection, reducing the carrying capacity of the land and, occasionally, overwhelming sewer systems. Most changes that would result in subsequent urban flooding are not shown on the Flood Insurance Rate Maps.

- **Dam Failure Flooding** occurs when a dam fails and releases impounded water. The sudden release of large volumes of water most often occurs when rainfall is already causing high water levels or, if a dam is in poor condition, under “sunny day” conditions. Areas predicted to flood if a dam fails might have been approximated on a map if an Emergency Action Plan is prepared; typically only dams classified as “high hazard” have Emergency Action Plans.

Since 1908, a number of damaging floods have been recorded in Rocky Mount. These floods have occurred in low-lying areas along the Tar River and its tributary streams, commonly known as floodplains. Areas having the most severe flooding lie within the Tar River and Stony Creek floodplains.

Within the Study Area, the floodplain of the Tar River varies in width from approximately 600 to 8,500 feet. The Stony Creek floodplain varies from 400 feet at the upper end to 2,800 feet where it flows into the Tar River. Map 10-1 (located at the end of the chapter) indicates these floodplain areas in the Rocky Mount area. This map was prepared based on official maps obtained from the Federal Emergency Management Agency. The floodplains indicated on these maps include that land area covered with water during a 100 and 500-year flood. These maps indicate the areas most susceptible to flooding once every 100 or 500 years on the average, and are called 100-year / 500-year floodplains. In order to protect the lives and property of its residents, and to provide flood insurance through the National Flood Insurance Program, the City has adopted requirements governing development in the 100-year floodplains. The current flood map is based on existing FEMA information. New data is scheduled to be published in 2002 and will be used to update the maps when it becomes available.

In addition to these seven natural hazards, the Study Area is susceptible to damage from manmade causes such as transportation of hazardous materials. The Offices of Emergency Services of Edgecombe and Nash Counties maintain documentation on hazardous material (HAZMAT) incidents (transportation and fixed facility) and maintain the reports submitted by handlers and manufacturers in compliance with federal requirements. In recent years there has been an increase in the number of incidents requiring response to spills and releases of hazardous materials (primarily petroleum products). The increase in transporta-



Table 10-5: Federal Disasters Declared in Nash and Edgecombe Counties, 1965-2000

Date	County Declared	Nature of Event
February, 1968 (DR 234)	Both	Severe Ice Storm
March 1984 (DR 699)	Nash	Severe Storms & Tornadoes
December 1988 (DR 818)	Nash	Severe Storms & Tornadoes
January 1996 (DR 1087)	Both	Blizzard of 1996
September 1996 (DR 1134)	Both	Hurricane Fran (flooding)
March 1998 (DR 1211)	Both	Severe Storms, Tornadoes & Flooding
September 1999 (DR 1292)	Both	Hurricane Floyd (flooding)
January 2000 (DR 1312)	Both	Winter Storm

Note: Both indicates Edgecombe and Nash Counties
 Source: Rocky Mount Hazard Mitigation Plan, July 2001

tion incidents is linked with increased traffic on the highways and rail lines in and around the City.

B. Study Area Disaster History

Numerous federal agencies maintain records regarding losses associated with natural hazards. There is no definitive record of all losses—public and private—caused by local disaster events. For the United States as a whole, estimates of the total public and private costs of natural hazards range from \$2 to over \$4 billion per year. Table 10-5 includes a summary of hazard events occurring in the Study Area between 1965-2000. While not an exhaustive list, the hazard events listed below were determined to be significant enough to warrant declaration of a major disaster by the President of the United States. The following are losses due to disasters.

1. Hurricanes

Fran (September 1996)

Hurricane Fran passed over Rocky Mount in September 1996, leaving behind damage that affected many private property owners as well as causing some damage to public property. Losses associated with damage to public utilities and other costs that were determined to be eligible for reimbursement from FEMA were:

- Approximately \$1 million for debris removal and cleanup
- \$386,000 for electric utility repairs
- \$90,000 for emergency protective measures

Floyd (September 1999)

Following directly on the heels of Hurricane Dennis in September 1999, Hurricane Floyd was an extraordinary event. Due to its magnitude and severity, FEMA provided 90% of eligible costs and the State provided the remaining 10%. The following impacts characterize the scale of the event :

- Nearly 3,000 dwellings were damaged, with about 470 properties (nearly 800 housing units) targeted for acquisition.
- Nearly 22% of the City's total area was affected by flooding (3,632 acres in the City and 7,573 acres in the ETJ).
- Areas inundated, by land use included 684 acres of residential use; 400 acres of commercial, office and religious use; 315 acres of parkland and 177 acres of industrial use.

Data from Hurricane Floyd can, in part, characterize the exposure of public property to flood risks. It is important to note that the losses sustained in Floyd are no longer reasonable measures of likely future flood damage because of the number and type of mitigation measures that were implemented in its aftermath:

- Total losses reported to FEMA were just over \$23.92 million.
- Insurance covered \$3.87 million.
- Reimbursement requests covered \$20.05 million.

The following is a list of losses reported to FEMA that include a brief description of specifically what the losses were for (does not include ineligible expenditures that were covered entirely by the City):

- Over \$3 million for debris clearance and handling.
- Over \$150,000 emergency response and protective measures by the Police and Fire Departments.
- Repairs to streets, bridges, culverts and other road-related costs totaled just over \$500,000.
- Damage to public buildings (including the Arts Center, the Rocky Mount Children's Museum and the Playhouse Theater) and equipment/contents totaled over \$8 million, of which nearly \$300,000 was covered by insurance.
- Damage in City parks exceeded \$5.8 million and affected buildings and contents, swimming pools and outside facilities; insurance covered nearly \$1.9 million.

FEMA's data on the costs of disasters do not capture the impacts on all private citizens, businesses and industries. The following summarizes reported impacts due to Hurricane Floyd:

- Hardee's moved its corporate headquarters out of Rocky Mount after sustaining flood damage.
- Several major employers left the area in 2000, partly due to flood-related impacts.
- For Edgecombe and Nash Counties, a total of 5,963 applications for disaster housing were approved for a total of \$20.6 million (data not available for incorporated cities and municipalities).
- A total of 4,077 applications for Individual and Family grants were approved for a total of \$25.4 million.
- A total of 2,181 applications for SBA home loans were approved for a total of \$101.8 million.
- A total of 806 applications for SBA business loans were approved for \$55.8 million.

2. High Winds

Most high wind damage in the Study Area, including that caused by tornadoes, is usually associated with hurricanes. Although the Study Area has sustained high wind damage independent of that associated with hurricanes, no data is available on the resulting losses.

3. Severe Winter Storms

Since 1995, two major winter storms have prompted federal disaster declarations in Nash and Edgecombe Counties. Appendix B contains some comments by Committee members regarding the effects of these storms. Although many people were affected by the length of time it took to clear roads and restore power, no federal assistance was provided to cover private losses. The amount of federal disaster assistance provided to cover the City's eligible costs were minor:

- In 1996, approximately \$20,000 in federal assistance was received.
- In 1999, FEMA reimbursed nearly \$30,000 for the cost of snow removal and repairs for water and sewer lines.

4. Hazardous Materials

Incidents involving hazardous materials may occur at fixed facilities such as industrial plants and waste handlers or during transport along highways and rail lines and usually are not associated or triggered by a natural hazard event. With highways and rail lines crossing the City and surrounding area, the likelihood of transportation incidents is high. For the year 2000, Edgecombe County Emergency Management reported responding to 12 spills. Nash County Emergency Management responded to 18 spills in 2000 and the first half of 2001. Most involved gasoline and oil by-products.

C. LOCAL DEGREE OF RISK

When the full range of possible natural and manmade hazards is reviewed, it becomes apparent that some events occur frequently, and some are extremely rare. Some hazards impact large numbers of people to a limited degree, while others can cause very localized damage. Damage and losses (including physical damage, indirect or economic losses, and injuries/deaths) that are associated with hazards result when an event affects areas where people and improved property are located. After hazards are identified, then some measure of how exposed people and property—or how “at-risk” they are—can be estimated.

Because of the tremendous damage associated with Hurricanes Floyd and Dennis in 1999, it is widely acknowledged that Rocky Mount's most significant hazard is flooding. In addition, severe winter storms and high wind incidents are also prevalent in this area. The remainder of this section will identify the risks to public and private properties associated with flooding, severe winter storms and high wind events.

1. Flood Risks

As of mid-2001, the January 1982 Flood Insurance Rate Maps (FIRM) prepared by FEMA offer the best overview of flood risks. The FIRM's are used to regulate new development and substantial improvement or repair of substantial damage of older buildings.

Using the City's GIS mapping and the 1982 FIRM as an overlay to the property parcel data, approximately 5.9 square miles (16%) of the City's 36.75 square miles is mapped as a special flood hazard area.

Following the widespread flooding due to Hurricane Floyd in 2000, the North Carolina Legislature authorized funding and a program to cooperate with FEMA to revise and republish FIRMs throughout the State. The City of Rocky Mount received the preliminary FIRMs in May 2003. The review period for these maps ends in June of 2003. Implementation of finalized maps to follow at the completion of the review period and finalization of the maps by the State in summer 2003..

1. Buildings

The City's Department of Planning and Development has estimated the number of buildings in some of the mapped flood hazard areas. Excluding the Tar River, Little Cokey Swamp and Cowlick Creek, it is estimated that approximately 500 buildings are flood-prone. As evidenced by flooding from Hurricane Floyd, the total number in the City is considerably higher. Six manufactured home parks and subdivisions are found within the City limits and the ETJ, and some are subject to flooding.



Based on flood insurance data provided by FEMA, 29 properties have received multiple claims and meet FEMA's definition of "repetitive loss." Repetitive loss properties are those that have received two or more claims of at least \$1,000 since 1978.

3. Public Infrastructure And Buildings

The City of Rocky Mount owns several buildings throughout the City. Hurricane Floyd revealed that a number of buildings are at risk if a flood event is severe. The following is a summary of the impact that Hurricane Floyd has on the infrastructure of Rocky Mount and the City's recovery efforts:

- Rives Avenue (SR 1713) over Maple Creek is the most severe flood-prone, predicted to have +4' of water during the 1% annual chance flood.
- No Fire stations or public schools appear to be at risk of flooding.
- The City has no record of damage sustained by City owned property due to high winds or heavy winter storm events.

4. Roads

Based on the Flood Insurance Study (1981) for the City, a total of 64 crossings span waterways within the City. It is notable that this inventory is based on a data source that is +20 years old; thus, it is not a definitive list of all flood prone crossings. Five crossings carry the Seaboard Coast Line Railroad; 59 crossings carry roads ranging in size from large highways (US 64 and US 301) to a dirt road over Compass Creek.

Table 10-6 lists 37 road crossings over waterways that are subject to some degree of flooding as indicated by the flood profiles contained in City's Flood Insurance Study. The following are notable conclusions:

- Nine roads are predicted to flood between 2-4' deep, which poses considerable threat to the traveling public as 18-24" of water can float the average car.
- Sixteen roads are predicted to flood between 1-2' deep, which is generally considered not to cause a significant threat to vehicles; however, 2 feet of flooding can be hazardous to adults and children on foot.
- Twelve roads are expected to experience mirror overtopping during the 1% annual chance flood event.
- One Seaboard Coast Line rail crossing (located on Compass Creek between US 301 and the confluence with Indian Branch) appears to be subject to minor flooding of about 1' under 500-year flood conditions.
- Nationwide flooded roads pose the greatest threat to people; on average, more than 200 people die in floods, most of them are lost when they try to cross flooded roads. Many cars will float in less than 24" of water, and fast moving water can quickly wash cars off the road. While most roads in the Rocky Mount area are unlikely to have deep or fast moving water during flood conditions up to the level of the 10-year flood, this threat still exists.

Hurricane Floyd: Infrastructure Recovery

An engineering report was prepared for the River Drive Water Plant after Hurricane Floyd to evaluate the damage and identify options; some low-cost measures were implemented, including anchoring raw material tanks to prevent flotation.

During Hurricane Floyd, the pump station flooded, impairing the on-site generator at the wastewater treatment plant; the generator has been elevated above the flood level experienced in Hurricane Floyd, but the screw pump motors are subject to extreme flooding.

Hurricane Floyd flooded 20 sewer lift stations in the collection system. Some switchgear and breaker equipment were raised above flood levels experienced in Hurricane Fran and additional electrical controls were elevated after Hurricane Floyd. Generators are being placed on platforms to elevate equipment above the flood levels experienced in Hurricane Floyd.

Several electric substations are in the mapped floodplain; Hurricane Floyd flooded three substations, they have been rebuilt (elevating components that can be elevated) using FEMA recovery funds.

In addition to human costs associated with flooded roads, there are considerable financial costs. Replacing roads and bridges that are washed out by floods costs millions of dollars each year. If the damage is caused by a disaster officially declared by the President, FEMA may pay up to 75% of the costs. If roads are locally owned, local jurisdictions are expected to pay at least 25%. Local jurisdictions pay 100% of the repair or replacement costs if the damaging event is not declared a major disaster.

6. Storm Water Management

Experience shows that many drainage problems in Rocky



Table 10-6: 100-Year Flood—Predicted Depth Over Road

0-1 foot	1-2 feet	2-4 feet	+4 feet
US 301/Business (Hornbeam Br)	SR 1251 (Tar River Trib)	SR 1268 (Tar River Trib)	1713/Rives Ave (Maple Cr)
SR 1541/Jeffreys Rd (Hornbeam Br)	Hunting Lodge Rd (Tar River Trib)	Dirt Road (Compass Cr)	
NC 48/St. Catherine's Walk (Hornbeam Br)	SR 1401 (Compass Cr)	SR 1538 (Compass Cr)	
SR 1536 (Hornbeam Br)	US 301 (Compass Cr)	Leggett Rd (Cowlick Cr)	
NC 97 (Compass Cr)	NC 48/St Catherine's Walk (Compass Cr)	Virginia St (Cowlick Cr)	
Seaboard Coast Line RR (Compass Cr)	Stokes Ave (Cowlick Cr)	Madison St (Parkers Cr)	
Farm Rd (Cowlick Cr)	East Grand Ave (Parkers Cr)	US Hwy 64 (Stony Cr downstream)	
SR 1616/Country Club Rd (Goose Br)	Olive St (Parkers Cr)	SR 1158/Vance St (Little Cokey Swamp)	
SR 1616/Country Club Rd (Stony Cr)	Coleman Ave (Parkers Cr)	Boone St (Little Cokey Swamp)	
SR 1717/Westmount Dr (Grape Br)	Park Ave (Parkers Cr)		
SR 1002/Old Wilson Rd (Little	SR 1544/Barnum Rd		
Powell Dr (Little Cokey Swamp)	SR 1714/Bethlehem Rd (Maple Cr)		
	Church St (Little Cokey		
	Kinlaw St (Little Cokey		
	SR 1727 (Little Cokey		
	SR 1251 (Tar River Trib)		

Source: Rocky Mount Hazard Mitigation Plan, July 2001

5. Hazardous Materials

When floodwaters impact locations where hazardous materials are stored or used, the stage is set for potential effects that go far beyond the physical on-site damage associated with flooding. Certain materials are reactive in water and others may pose health and safety risks if distributed downstream by rising waters. The Edgecombe and Nash County Emergency Management Departments

maintain information on certain reported hazardous materials. If the information is verified to determine whether the actual physical locations of the materials can be determined, it can be used with the flood hazard maps to screen for potential interactive risks. Depending on the nature of the materials and the facilities, it may be appropriate for owners to examine potential damage under a reasonably anticipated flood.



Mount are not dramatic or life threatening. Many areas experience accumulations of rainfall that are slow to drain away, causing disruption of normal vehicular and pedestrian travel, soil erosion, water quality problems and some minor damage and disruption for residents and businesses.

Rocky Mount's storm water management provisions are applied only through the subdivision process, and thus not to single large lot developments. This is done because storm water management is not intended or likely to significantly reduce severe flooding along the Tar River and major tributaries for the following reasons:

- Most of the Tar River watershed is outside of the City and thus not subject to regulations imposed by the City.
- Storm water management generally focuses on runoff from the 2- and 10-year storms, which helps improve water quality, minimizes erosive effects on receiving streams and reduces the likelihood of low level and localized flooding.

The Rocky Mount Comprehensive Plan acknowledges that improving water quality and maintaining the capacity of local drainage ways is important. The City is evaluating alternatives to regulate and finance a storm water management program.

7. Dams

FEMA and the US Army Corps of Engineers maintain the National Inventory of Dams (1998), a database of high and significant hazard dams. For the most part, data on non-federal dams is provided by state agencies responsible for regulation and inspection of dams. The North Carolina Department of Environmental Health and Natural Resources has reported on dams located on waterways that drain through the City of Rocky Mount. Dams are categorized into three hazard potential classes:

- **High Hazard Potential** dams are those where failure or operational failure will probably cause loss of life and/or significant infrastructure losses
- **Significant Hazard Potential** dams are those where failure or operational problems are unlikely to cause loss of human life, but can cause economic loss, environmental damage, disruption of lifelines or other concerns
- **Low Hazard Potential** dams are those where failure would cause no probable loss of human life and low economic and/or environmental losses, and such losses typically are limited to the owner's property

Although they are classified as high hazard potential dams, none of the dams are noted as having Emergency Action



Courtesy of R.M. Telegram

Plans. Emergency Action Plans typically include some form of identification of vulnerable property (dam failure inundation map or list), coordination protocols for notification of emergency personnel and delineation of evacuation routes.

8. Severe Winter Storm Risks

Severe winter storms adversely affect the region around the City of Rocky Mount in three significant ways:

- Major transportation routes are impaired, requiring significant State resources to maintain traffic.
- Local streets become impassable, requiring extensive use of City employees and heavy equipment to clear roads.
- Tree damage may result, causing damage to power lines, affecting residential, commercial, and industrial users.

For non-residential construction, the building code requires design to meet a specific snow load. Although it is unknown how many buildings do not meet this load requirement, little structural damage due to snow has occurred.

9. High Wind Risks

Most significant wind events that have affected the Rocky Mount area have been associated with major hurricanes. In recent years, winds from Hurricanes Fran and Floyd had considerable effect throughout the area, largely associated with tree damage and downed power lines. Although not all outages are directly related to wind, during Hurricane Floyd, over half of the customers served by the City's electric utility were without power. Most areas were without power for several hours to a few days, with some out of service for more than 5-8 days.

Wind risks are addressed through administration of the



Table 10-7: High Hazard Dams In The Tar River Watershed

Dam Name Owner Purpose	NID # Waterway	Year Built Inspected by DENR	Emergency Action Plan Height of Dam
Lake Royale Dam Lake Royale Devel. Corp. Recreation	NC00821 Cypress Creek	1973 Mar 1993	No 45 feet
Tar River Dam City of Rocky Mount Water Supply	NC00913 Tar River	1971 Nov 1994	No 35 feet
Lambert Dam George W. Lambert Fire/Farm Pond	NC002589 Press Prong Creek	Not reported Oct 1993	No 18 feet
Cone Pond Dam D. and E. Cone Fire/Farm Pond	NC002595 Norris Creek	1989 Oct 1994	No 17 feet
Rose's Warehouse Dam Rose's, Inc. Fire/Farm Pond	NC04430 Not reported	Not reported March 1993	No Not reported
Buffalo Millpond Buffalo Mining/D. Spencer Irrigation	NC04436 Not reported	1864 Nov 1993	No 20 feet

Source: Rocky Mount Hazard Mitigation Plan, July 2001

building code. The current code requires design to 100 mile per hour winds. Other structures must meet the design wind speed requirement in the building code, including towers. Above-ground utilities such as water tanks, telephone poles and electrical poles and lines must meet certain design criteria.

D. HOW HAZARDS ARE ADDRESSED

In recent years it has become widely understood that the best way to reduce future damage is to "build it right the first time." Property protection is part of the reason why building codes establish minimum standards. Protecting occupants and public safety is the primary reason.

The City of Rocky Mount administers the mandatory North Carolina State Building Code, based on the 2000 International Building Code with North Carolina Amendments for both commercial and residential construction. This replaces the previous code based on the 1994 edition of the Standard Building Code (with 1996 amendments and the 1992 edition of the Council of American Building Officials

One—and Two-Family Dwelling Code), the NC State Building Code establishes design and construction provisions, including provisions related to anticipated wind and snow loads. The City administers the Floodplain Protection Zoning Overlay to factor flood hazards into development decisions.

The Department of Planning and Development is responsible for coordinating with other departments to:

- Review building permit applications for consistency with the NC State Building Code, the Floodplain Protection Zoning Overlay and other regulations that govern development
- Perform inspections during construction to new work (including additions and renovations, as well as residential construction)
- Perform inspections prior to issuance of Certificates of Occupancy



Members of the Mitigation Planning Committee were interviewed to gain an understanding of awareness of hazards and how they are addressed. The following highlights key aspects of how the City deals with hazards today:

1. Flood And Storm Water

- Using data from upstream USGS gauges, the Water Resources Department coordinates issuance of flood warnings.
- The Water Resources Department reviews proposed developments within the City and ETJ. Water and sewer lines and lift stations installed by developers must meet City standards. Based on the last two floods, those standards are deemed satisfactory.
- New manholes are required to be elevated +1' above the base flood elevation.
- The City has a multi-year program to raise sewer manholes that are located in flood hazard areas so that they are at or above the base flood elevation. The maintenance budget includes approximately \$300,000 for retrofit and upgrade (i. e. grout liners).
- When flooding is likely, the Fire Department staff tour flood-prone areas.
- A database of homes, streets and areas subject to flooding is used to direct personnel in the field to notify occupants. Approximately 700-800 homes are flood-prone. The maps/database is not based on different flood level predictions (stage-inundation maps).
- The Engineering Department and the Street Division block flooded roads to protect the traveling public.
- The City enforces sediment and erosion control measures on developments that disturb more than 1 acre, and through this review, identifies proposals to grade, cut or fill in the floodplain.
- The City's storm water management standards require management of runoff from the 10 and 25-year storms; detention basins are not required to detain runoff from the 100-year storm, but must be able to pass that discharge.
- Landowners are responsible for maintenance of storm water management measures and operations and maintenance agreements are required. The City has the right to inspect these measures, but at this time does not have an active inspection program.
- Snags and debris blockages are removed from drainage when identified and sediment deposits are removed where long-term maintenance is provided
- Drainages that receive runoff from a City-maintained street or City-owned properties are inspected seasonally and grass is cut to the "flow line."
- The Utilities Department maintains emergency plans to shut down power during a flood and will shut down gas service at meters if owners call in.

2. Severe Winter And High Winds

- Of the 35 sewer lift stations, only a few have generators, causing problems during power outages. The capital budget includes funds to provide additional generators over the next several years.
- City Utilities staff conducts annual inspections of antennas and repeaters used for emergency/police. A ground-level visual inspection of the base station/repeaters and antennas is done three times a week.
- The NC State Building Code requires design and construction for the 100 mph wind and 20-lb snow load.
- City-owner generators are positioned at private facilities for peak power shaving.
- Currently use both wood and steel electric transmission poles in areas where guy wires would normally be needed, but if but a property owner doesn't provide permission, steel poles are used because they are stronger, and guy wires are not necessary.
- Utility poles are more closely spaced than typical to improve resistance to wind and snow.
- Regular trimming and maintenance of right-of-ways along power lines in on a 3-year cycle; cannot go outside of the right-of-way.

3. Wildfire

There are some wooded lands in/near the City. The Fire Department has developed a wildfire-interface plan, although this type of fire is not considered a major threat.

4. Hazardous Materials

The City has "Operations-Plus Response Level" designation for hazardous materials incidents and the counties are notified if an event occurs.

"Nature has no mercy at all. Nature says, "I'm going to snow. If you have on a bikini and no snowshoes, that's tough. I am going to snow anyway."

-Maya Angelou



II. GOALS

The mitigation goal of the City of Rocky Mount is to protect public health, safety and welfare by identifying natural and manmade hazards, by increasing public awareness of those hazards, and by fostering both individual and public responsibility in mitigating risks due to those hazards.

III. OBJECTIVES AND STRATEGIES

A. PROVIDE THE CITY AND ITS RESIDENTS WITH IMPROVED PROTECTION AGAINST FLOOD HAZARDS.

1. Incorporate Digital Floodplain And Topographic Data Into Automated Permit Database/System And Geographic Information System Data Layer Inventory

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The presence of buildings in flood hazards areas means more than potential property damage, it means people are at risk. Improved flood hazard information, accessible in GIS format will help improve communication during anticipated flooding periods and will enhance to City's ability to issue flood warnings, to evacuate and to undertake other safety measures.

Examples of improved flood hazard information include such things as adding a "floodplain" flag to the property database to facilitate permit administration and public awareness mailings, incorporating additional site-specific data from Elevation Certificates for pre-firm buildings.

Availability of accurate digital floodplain and topographic data would make it possible to identify property owners most likely to benefit from pre-disaster actions to reduce damage and relocate high-risk properties to be targeted for post-flood inspections and immediate notification of substantial damage requirements.

2. Evaluate Whether Public Buildings And Facilities Are Exposed To Flood Hazards

Using new flood study and supporting information, determine whether public buildings, critical facilities, public shelters and fire stations are located in mapped floodplains. If so, determine whether flood insurance should be purchased for these facilities, encourage development of flood response plans and evaluate whether to implement preliminary retrofit/mitigation measures.

3. Improve Pre-disaster Planning For Flood Warning And Public Safety

Use new digital topography, combined with revised FIRMs, to develop stage inundation maps keyed to flood warnings. These staged inundation maps can be used to improve evacuations, review road closure plans and implement pre-flood property protection measures.

4. Develop And Implement Multi-year Public Awareness Campaign

As a result of the experiences associated with Hurricane Floyd, the City has taken some steps to improve public awareness of hazards. Agreements have been developed with local broadcast media regarding dissemination of critical information, awareness notices are transmitted on the City cable channel and a web-based mechanism is available for citizens to report storm water and drainage concerns.

While these actions may allow better and more accurate information to be shared with the public in times of disaster, there is need for increasing the public's awareness and understanding of issues related to disaster preparedness. During development of the City's Hazard Mitigation Plan, it was the consensus of the Mitigation Planning Committee that, except for those directly affected by Hurricane Floyd, the average citizen does not perceive that any hazards pose significant threats to safety or property. A long-term campaign to increase public knowledge of local hazards and ways to minimize their impacts on citizens appears necessary at this time. Suggested components of such a campaign may include the following items:

- A schedule of hazard related topics (floods, severe winter storms, wind hazards) for the City Manager's newspaper column, utility bill inserts and other distributions
- Coordination with campaigns undertaken by the State (hurricane/flood awareness, winter storm awareness, etc.)
- Web-based materials
- Coordination with storm water management initiative to distribute periodic mailing to property owners along waterways to inform them of the importance (and their responsibility) of keeping drainage ways clear (don't dump debris, yard clippings, tree limbs, etc.)
- Use of annual CRS public awareness mailings tailored for recipients (homeowners, business owners, owners of vacant lands). Topics could include flood insurance, mitigation options, flood safety, permit requirements, others
- Hazard and mitigation awareness materials for manufactured home installers and manufactured home park owners (permit requirements, wind tie downs, reinforced piles, flood warning, flood insurance)



5. Identify Hazardous Materials Handlers/ waste Sites In The Mapped Floodplain

The Fire Department has an inventory of businesses that use hazardous materials. This listing identifies the location of the business, not the materials themselves. For businesses in flood prone areas, the companies should be notified and encouraged to implement appropriate protective measures for the hazardous materials they utilize on their site. Preparation of a flood response plan should also be encouraged.

6. Evaluate Flood Damage Potential Of Electric Utility, Water And Sewer Distribution Systems

Use new flood study and supporting information to identify substations, lift stations, pump stations and other distribution equipment that appear vulnerable to flooding and/or erosion; evaluate potential for damage and options to minimize damage; use evaluations as a factor in determining capital improvement plan (CIP) properties.

7. Increase City's Classification In The NFIP Community Rating System

As part of the mitigation process, a detailed review of current and proposed actions related to the goals of the CRS program was conducted and is on file in the Planning and Development Department. Including ongoing functions and requirements, several potential activities were identified for consideration by the City to gain additional CRS points. Building on the current point assignment, only 340 points are required to yield a 10% discount in the flood insurance premiums charged to City residents. Increased efforts by the City have resulted in a 1 point increase in the NFIP Community Rating System since Hurricane Floyd.

8. Develop Comprehensive Open Space/ Reuse Plan To Support Floodplain Acquisition Initiatives And Recreational Opportunities

The City is acquiring a significant amount of acreage under the flood buyout program. These are properties that were inundated by flooding resulting from Hurricanes Dennis and Floyd, and many are located in the 100-year floodplain. The City should prepare a plan to guide reuse of these parcels, given that the obligation is to clear the sites and maintain them as public open space. Federal funds are limited and additional resources may be necessary to remove streets and underlying unnecessary infrastructure. Some parcels could be used as storm water or compensatory floodwater facilities.

9. Make Flood Hazard Information Available To Other Public Agencies

The City has always provided flood insurance map information to the general public, primarily through the building permit review process. In order to encourage the purchase of flood insurance, development of flood response plans and implementation of loss reduction measures, the City should make flood hazard information and maps available to other private and public entities (school board, adjacent jurisdictions, others).

10. Evaluate Flood Damage Potential Of Transportation Infrastructure

When the new flood study and rate maps are received from the State in late 2002, they should be used to evaluate potential for damage through identification of roads, bridges, and culverts that appear vulnerable to +1-foot inundation under 100-year conditions. This evaluation can be used as a factor in determining CIP priorities as well as options to minimize future damage.

11. Identify High Hazard Dams On Waterways That Drain Through The City

Because the City's dam at the Reservoir is rated as a high hazard dam, it is important that existing dam safety data and plans be used to coordinate warnings with owners/operators of key facilities identified as subject to flooding. Additionally, this information can be used to estimate impacts on downstream properties most likely to be impacted by any failure of this dam.

12. Obtain And Maintain North Carolina Certified Floodplain Manager Status

To insure that the City is knowledgeable of current floodplain requirements and issues, it is recommended that at least one staff member in the Department of Planning and Development obtain and maintain North Carolina Certified Floodplain Manager status.

13. Standardize Procedures For Handling Certain Post-damage Permit Processing Procedures

Once a disaster strikes the area, all public and private resources are directed to recovery and rebuilding efforts. To this end, these processes can be simplified and made more effective through development of standard procedures and worksheets to use for circumstances involving substantial improvement and substantial damage. Information about such procedures and worksheets can be disseminated on a regular basis to members of the development community as well as to City staff in order to lessen the learning curve in the post-disaster period.



14. Enhance Awareness In The Private Sector Of The NFIP Regulations And Requirements

The City of Rocky Mount is committed to informing its citizens and providing opportunities for participation and input. Since Hurricane Floyd, the City has held numerous meetings and issued many newsletters, newspaper articles and columns related to flood mitigation, flood safety and storm water management. It is recommended that such efforts continue and even be expanded to include sponsorship of periodic NFIP workshops for lenders, insurance agents, real estate professionals and others. Another useful tool would be to modify the current annual mailing sent to flood-plain residents to address more topics. These activities should also be coordinated with the public awareness campaign outlines in Objective 4.

B. SUPPORT ENHANCEMENT OF EMERGENCY MANAGEMENT FUNCTIONS IN THE CITY

While this plan has identified many ways to minimize and/or reduce the impact of various natural hazards upon area residents, disaster events cannot be totally eliminated. It is important that the City regularly review its emergency management plans to insure they result in the most responsive set-up possible for post-disaster actions. Equipment needs should also be evaluated on a regular basis to insure materials necessary to manage a disaster event are readily available and operational when needed.



Water supplies to be airlifted to victims of Hurricane Floyd
Courtesy of R.M. Telegram

