

SECTION 8

MITIGATION STRATEGY

This section of the plan provides the blueprint for the participating jurisdictions in the Southeastern NC Region to follow in order to become less vulnerable to their identified hazards. It is based on general consensus of the Southeastern NC Regional Hazard Mitigation Planning Committee and the findings and conclusions of the *Capability Assessment* and *Risk Assessment*. It consists of the following five subsections:

- ◆ 8.1 Introduction
 - ◆ 8.2 Mitigation Goals
 - ◆ 8.3 Identification and Analysis of Mitigation Techniques
 - ◆ 8.4 Selection of Mitigation Techniques for the Southeastern NC Region
 - ◆ 8.5 Plan Update Requirement
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8.1 INTRODUCTION

The intent of the Mitigation Strategy is to provide the communities in the Southeastern NC Region with the goals that will serve as guiding principles for future mitigation policy and project administration, along with an analysis of mitigation techniques available to meet those goals and reduce the impact of identified hazards. It is designed to be comprehensive, strategic, and functional in nature:

- ◆ In being *comprehensive*, the development of the strategy includes a thorough review of all hazards and identifies extensive mitigation measures intended to not only reduce the future impacts of high risk hazards, but also to help the region achieve compatible economic, environmental, and social goals.
- ◆ In being *strategic*, the development of the strategy ensures that all policies and projects proposed for implementation are consistent with pre-identified, long-term planning goals.
- ◆ In being *functional*, each proposed mitigation action is linked to established priorities and assigned to specific departments or individuals responsible for their implementation with target completion deadlines. When necessary, funding sources are identified that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes the identification of mitigation goals. Mitigation goals represent broad statements that are achieved through the implementation of more specific mitigation actions. These actions include both hazard mitigation policies (such as the

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regulation of land in known hazard areas through a local ordinance) and hazard mitigation projects that seek to address specifically targeted hazard risks (such as the acquisition and relocation of a repetitive loss structure).

The second step involves the identification, consideration, and analysis of available mitigation measures to help achieve the identified mitigation goals. This is a long-term, continuous process sustained through the development and maintenance of this Plan. Alternative mitigation measures will continue to be considered as future mitigation opportunities are identified, as data and technology improve, as mitigation funding becomes available, and as this Plan is maintained over time.

The third and last step in designing the Mitigation Strategy is the selection and prioritization of specific mitigation actions for the Southeastern NC Region (provided separately in Section 9: *Mitigation Action Plan*). Each county and participating jurisdiction has its own Mitigation Action Plan (MAP) that reflects the needs and concerns of that jurisdiction. The MAP represents an unambiguous and functional plan for action and is considered to be the most essential outcome of the mitigation planning process. The MAP includes a prioritized listing of proposed hazard mitigation actions (policies and projects) for Brunswick, New Hanover, Onslow and Pender counties and their municipal jurisdictions to complete.

Each action has accompanying information, such as those departments or individuals assigned responsibility for implementation, potential funding sources, and an estimated target date for completion. The MAP provides those departments or individuals responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring success or progress over time. The cohesive collection of actions listed in the MAP can also serve as an easily understood menu of mitigation policies and projects for those local decision makers who want to quickly review the recommendations and proposed actions of the Regional Hazard Mitigation Plan.

In preparing each Mitigation Action Plan for the Southeastern NC Region, officials considered the overall hazard risk and capability to mitigate the effects of hazards as recorded through the risk and capability assessment process, in addition to meeting the adopted mitigation goals and unique needs of the community.

8.1.1 Mitigation Action Prioritization

All existing mitigation actions found in the Mitigation Action Plan were previously prioritized by the participating jurisdictions. For the 2021 update of the plan the members of the Regional Hazard Mitigation Planning Committee were asked, as part of the process of providing a status update for each action, to make sure that the assigned priority for each action was still appropriate. Prioritization of the proposed mitigation actions was based on the following strategies:

1. High Priority – Highly cost-effective, administratively feasible and politically feasible strategies that should be implemented in fiscal years 2020/2021 and 2021/2022 and be continued.
2. Medium Priority – Strategies that have at least two of the following characteristics (but not all three) and should be implemented in fiscal years 2021/2022 to 2022/2023:
 - a. Highly cost-effective; or
 - b. Administratively feasible, given current levels of staffing and resources; or
 - c. Are politically popular and supportable given the current environment.

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3. Low Priority – Strategies that have at least one of the following characteristics (but not two or three) and should be implemented in the next five (5) years (by the end of 2025/2026):
 - a. Highly cost-effective; or
 - b. Administratively feasible, given current levels of staffing and resources; or
 - c. Are politically popular and supportable given the current environment.

The point of contact for each county helped coordinate the prioritization process by reviewing each action and working with the lead agency/department responsible to determine a priority for each action using the factors listed above.

As the actions were reviewed as part of the 2021 update of the plan, each community was asked to review the priority assigned to each action and ensure that the priority had not changed. If the priority of a particular action did change, the participating jurisdictions were asked to revise those priorities accordingly using same criteria as defined above.

8.2 MITIGATION GOALS

44 CFR Requirement

44 CFR Part 201.6(c)(3)(i): The mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The primary goal of all local governments is to promote the public health, safety, and welfare of its citizens. In keeping with this standard, Brunswick, New Hanover, Onslow and Pender counties and the participating municipalities have developed five goal statements for local hazard mitigation planning in the region. In developing these goals, the project consultant reviewed the goals from the previous plan and discussed them with the Regional Hazard Mitigation Planning Committee.

The proposed regional goals were presented, reviewed, voted upon, and accepted by the Regional Hazard Mitigation Planning Committee at their second meeting. Minimal revisions to the wording of the goals were made. Each goal, purposefully broad in nature, serves to establish parameters that were used in developing more mitigation actions. The Southeastern NC Regional Mitigation Goals are presented in **Table 8.1**. Consistent implementation of actions over time will ensure that community goals are achieved.

As part of the development of the 2021 update of this plan, the goals found in Table 8.1 were reviewed and discussed at the 2/11/20 meeting of the Regional Hazard Mitigation Planning Committee. It was determined that the goals are still applicable for the region and only minor revisions to the wording of the goals were recommended. Onslow County representatives agreed to have the goals from their previous plan replaced with these goals.

TABLE 8.1: SOUTHEASTERN NC REGIONAL MITIGATION GOALS

	Goal
Goal #1	Work to improve existing local government policies and codes to reduce impacts of natural hazards.
Goal #2	Design and implement specific mitigation measures to protect vulnerable public and private properties.

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	Goal
Goal #3	Increase the protection of critical facilities and infrastructure from hazard threats through retrofit projects for existing facilities and innovative design standards for new facilities.
Goal #4	Enhance public education programs to promote community awareness of natural hazards and the hazard mitigation techniques available to reduce their impact.
Goal #5	Improve stormwater management through enhanced local government programs, policies, and practices.
Goal #6	Enhance each county's storm evacuation procedures through increased intergovernmental coordination between the Counties, the participating municipalities, and the State of North Carolina.
Goal #7	Increase the County's emergency management capabilities through sustained system and technology improvements.
Goal #8	Promote volunteer involvement in emergency preparedness and response through increased citizen awareness and training activities.

8.3 IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES

44 CFR Requirement

44 CFR Part 201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In formulating the Mitigation Strategy for the Southeastern NC Region, a wide range of activities were considered in order to help achieve the established mitigation goals, in addition to addressing any specific hazard concerns. These activities were discussed during the Southeastern NC Regional Hazard Mitigation Planning Committee meetings. In general, all activities considered by the Regional Hazard Mitigation Planning Committee can be classified under one of the following six broad categories of mitigation techniques: Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, and Public Awareness and Education. These are discussed in detail below.

8.3.1 Prevention

Preventative activities are intended to keep hazard problems from getting worse, and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are built. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- ◆ Planning and zoning
- ◆ Building codes

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- ◆ Open space preservation
- ◆ Floodplain regulations
- ◆ Stormwater management regulations
- ◆ Drainage system maintenance
- ◆ Capital improvements programming
- ◆ Riverine / Shoreline / fault zone setbacks

Each of the prevention mitigation techniques is described in more detail in the Capability Assessment section (Section 7).

8.3.2 Property Protection

Property protection measures involve the modification of a site or the modification of existing buildings and structures to help them keep the hazard away or better withstand the forces of a hazard, or removal of the structures from hazardous locations. Examples include:

- ◆ Modification of the site to keep the hazard from reaching the building
 - Flood Barriers
 - Relocation
 - Building Elevation
 - Demolition
 - Demo/Rebuild
- ◆ Modify the building (retrofit) so it can withstand impacts of the hazard
 - Windproofing
 - Dry Floodproofing
 - Wet Floodproofing
 - Seismic design techniques
- ◆ Critical facilities protection
- ◆ Safe rooms, shutters, shatter-resistant glass
- ◆ Insurance (private property and public property)

Site Modification

Flood Barriers

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed to ensure that it does not create additional flooding or drainage problems on neighboring properties. Depending on how well the ground drains, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that will fall inside the perimeter. This is usually done with a sump or French drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier. However, barriers can only be built so high and they can be overtopped by a flood higher than expected.

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Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and properly maintained.

Relocation

Moving a flood-prone building to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost increases for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new location available outside of the hazard zone.

Building Elevation

Elevating a building above the flood level can be almost as effective as moving it out of the floodplain. Once the building is raised, water is allowed to flow under and around the building, causing little or no damage to the structure or its contents. Raising a building above the flood level is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation. Building elevation protects the physical building but does not eliminate life safety or rescue needs during a flood event.

Demolition

Some buildings, especially heavily damaged or repetitively flooded ones, may not be the expense to protect them from future damages. In some cases, it is cheaper to demolish them and either replace them with new, flood protected structures, or relocate the occupants to a safer site. Demolition is also appropriate for buildings that are difficult to move – such as larger, slab foundation or masonry structures – and for dilapidated structures that are not cost-beneficial to protect.

Demolition/Rebuild

If a building is not in good shape, elevating it may not be feasible or it may even be dangerous. An alternative is to demolish the structure and build a new one on the site that meets or exceeds all flood protection codes. However, it can be difficult to qualify for the FEMA funding to implement this technique and it is not a regularly funded option. Certain rules must be followed to qualify for federal funds for pilot reconstruction.

Site Modification (Retrofitting)

Dry Floodproofing

Dry floodproofing is a mitigation practice whereby one makes all areas of a structure below the flood protection level watertight. Dry floodproofing can be achieved by coating wall with waterproofing compounds or plastic sheeting. Additionally, openings, such as doors, windows and vents, are closed, either permanently, with removable shields, or with sandbags. Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under state, FEMA and local regulations. Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. There are no restrictions for dry floodproofing buildings located outside the regulatory floodplain.

Dry floodproofing is only effective for areas of shallow flooding, such as areas with repetitive drainage problems. It does not protect from the deep flooding along lakes and larger rivers caused by hurricanes

or other storms or velocity flooding where floodwaters move swiftly and can damage the dry floodproofing materials.

Wet Floodproofing

The alternative to dry floodproofing is wet floodproofing: water is let into the structure and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage. For example, concrete block walls are used instead of wooden studs and gypsum wallboard. Mechanical fixtures such as the furnace, water heater and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms.

Insurance

Private Property

Although most homeowner's insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the National Flood Insurance Program. Flood insurance coverage is provided for buildings and their contents damaged by a "general condition of surface flooding" in the area. Most people purchase flood insurance because it is required by the bank when they get a mortgage or home improvement loan. Usually these policies just cover the building's structure and not the contents. Contents coverage can be purchased separately. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. Most people don't realize that there is a 30-day waiting period to purchase a flood insurance policy and there are limits on coverage.

Public Property

Governments can purchase commercial insurance policies. Larger local governments often self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can drain the government's budget. Communities cannot expect federal disaster assistance to make up the difference after a flood.

8.3.3 Natural Resource Protection

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

- ◆ Wetland protection
- ◆ Erosion and sediment control
- ◆ Watershed management
- ◆ Stream/River Restoration
- ◆ Best Management Practices
- ◆ Dumping Regulations
- ◆ Farmland Protection

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- ◆ Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)
- ◆ Habitat preservations
- ◆ Slope stabilization

Wetland Protection

Wetlands are often synonymous with floodplains and topographically depressed areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flows. They also serve as a natural filter and helps improve water quality, and they provide habitat for many species of fish, wildlife and plants. The Southeastern NC Region is characterized by many acres of wetlands.

Erosion and Sedimentation Control

Farmlands and construction sites typically contain large areas of bare exposed soil. Surface water runoff can erode soil from these sites, sending sediment into downstream waterways. Erosion also occurs along stream banks and shorelines as the volume and velocity of flow or wave action destabilize and wash away the soil. Sediment suspended in the water tends to settle out where flowing water slows down. This sediment can clog storm drains, drain tiles, culverts and ditches and reduce the water transport and storage capacity of river and stream channels, lakes and wetlands.

There are two principal strategies to address these problems: minimize erosion and control sedimentation. Techniques to minimize erosion include phased construction, minimal land clearing, and stabilizing bare ground as soon as possible with vegetation and other soil stabilizing practices. Many of the participating jurisdictions in the Southeastern NC Region have adopted Erosion and Sedimentation Control Ordinances and/or Stormwater Management Ordinances that address some of these issues.

Stream/River Restoration

There is a growing movement that has several names, such as "stream conservation," "bioengineering," or "riparian corridor restoration." The objective of these approaches is to return streams, stream banks and adjacent land to a more natural condition, including the natural meanders. Another term is "ecological restoration," which restores native indigenous plants and animals to an area. A key component of these efforts is to use appropriate native plantings along the banks that resist erosion. This may involve retrofitting the shoreline with willow cuttings, wetland plants, or rolls of landscape material covered with a natural fabric that decomposes after the banks are stabilized with plant roots.

In all, restoring the right vegetation to a stream has the following advantages:

- ◆ Reduces the amount of sediment and pollutants entering the water
- ◆ Enhances aquatic habitat by cooling water temperature
- ◆ Provides food and shelter for both aquatic and terrestrial wildlife
- ◆ Can reduce flood damage by slowing the velocity of water
- ◆ Increases the beauty of the land and its property value
- ◆ Prevents property loss due to erosion

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- ◆ Provides recreational opportunities, such as hunting, fishing and bird watching
- ◆ Reduces long-term maintenance costs

Best Management Practices

Point source pollutants come from pipes such as the outfall of a municipal wastewater treatment plant. They are regulated by the US EPA. Nonpoint source pollutants come from non-specific locations and harder to regulate. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, other chemicals, animal wastes, oils from street surfaces and industrial areas, and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams.

The term "best management practices" (BMPs) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff rates and volumes, prevent erosion, protect natural resources and capture nonpoint source pollutants (including sediment). They can prevent increases in downstream flooding by attenuating runoff and enhancing infiltration of stormwater. They also minimize water quality degradation, preserve beneficial natural features onsite, maintain natural base flows, minimize habitat loss, and provide multiple usages of drainage and storage facilities. Many of the Stormwater Management Ordinances that are in place in the SENC Region contain regulations for stormwater BMPs. Because of the SENC Region's unique geologic and hydrologic conditions (i.e., poorly drained soils and a shallow water table), the types of appropriate BMPs that can be effectively utilized in the region are limited.

Dumping Regulations

BMPs usually address pollutants that are liquids or are suspended in water that are washed into a lake or stream. Dumping regulations address solid matter, such as shopping carts, appliances and landscape waste that can be accidentally or intentionally thrown into channels or wetlands. Such materials may not pollute the water, but they can obstruct even low flows and reduce the channels' and wetlands' abilities to convey or clean stormwater.

Many cities have nuisance ordinances that prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations need to also apply to "non-objectionable" materials, such as grass clippings or tree branches, which can kill ground cover or cause obstructions in channels. Regular inspections to catch violations should be scheduled.

In addition, many people do not realize the consequences of their actions. They may, for example, fill in the ditch in their front yard without realizing that is needed to drain street runoff. They may not understand how regrading their yard, filling a wetland, or discarding leaves or branches in a watercourse can cause a problem to themselves and others. Therefore, a dumping enforcement program should include public information materials that explain the reasons for the rules as well as the penalties.

Farmland Protection

Farmland protection is an important piece of comprehensive planning and zoning throughout the United States. The purpose of farmland protection is to provide mechanisms for prime, unique, or important agricultural land to remain as such, and to be protected from conversion to nonagricultural uses.

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Frequently, farm owners sell their land to residential or commercial developers and the property is converted to non-agricultural land uses. With development comes more buildings, roads and other infrastructure. Urban sprawl occurs, which can lead to additional stormwater runoff and emergency management difficulties.

Farms on the edge of cities are often appraised based on the price they could be sold for to urban developers. This may drive farmers to sell to developers because their marginal farm operations cannot afford to be taxed as urban land. The Farmland Protection Program in the United States Department of Agriculture's 2002 Farm Bill (Part 519) allows for funds to go to state, tribal, and local governments as well as nonprofit organizations to help purchase easements on agricultural land to protect against the development of the land.

8.3.4 Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- ◆ Reservoirs
- ◆ Dams / levees / dikes / floodwalls
- ◆ Diversions / detention / retention
- ◆ Channel modification
- ◆ Storm sewers

Levees and Floodwalls

Probably the best-known flood control measure is a barrier of earth (levee) or concrete (floodwall) erected between the watercourse and the property to be protected. Levees and floodwalls confine water to the stream channel by raising its banks. However, they must be well designed to account for large floods, underground seepage, pumping of internal drainage, and erosion and scour.

Reservoirs and Detention

Reservoirs reduce flooding by temporarily storing flood waters behind dams or in storage or detention basins. Reservoirs lower flood heights by holding back, or detaining, runoff before it can flow downstream. Flood waters are detained until the flood has subsided, and then the water in the reservoir or detention basin is released or pumped out slowly at a rate that the river can accommodate downstream.

Reservoirs can be dry and remain idle until a large rain event occurs. Or they may be designed so that a lake or pond is created. The lake may provide recreational benefits or water supply (which could also help mitigate a drought).

Flood control reservoirs are most commonly built for one of two purposes. Large reservoirs are constructed to protect property from existing flood problems. Smaller reservoirs, or detention basins, are built to protect property from the stormwater runoff impacts of new development.

Diversion

A diversion is a new channel that sends floodwaters to a different location, thereby reducing flooding along an existing watercourse. Diversions can be surface channels, overflow weirs, or tunnels. During normal flows, the water stays in the old channel. During floods, the floodwaters spill over to the diversion channel or tunnel, which carries the excess water to a receiving lake or river.

8.3.5 Emergency Services

Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- ◆ Warning systems
- ◆ Evacuation planning and management
- ◆ Emergency response training and exercises
- ◆ Sandbagging for flood protection
- ◆ Installing temporary shutters for wind protection

Threat Recognition

The first step in responding to a flood is to know when weather conditions are such that an event could occur. With a proper and timely threat recognition system, adequate warnings can be disseminated. The National Weather Service (NWS) is the prime agency for detecting meteorological threats. Severe weather warnings are transmitted through NOAA's Weather Radio System. Local emergency managers can then provide more site-specific and timely recognition after the Weather Service issues a watch or a warning. A flood threat recognition system predicts the time and height of a flood crest. This can be done by measuring rainfall, soil moisture, and stream flows upstream of the community and calculating the subsequent flood levels.

On smaller rivers and streams, locally established rainfall and river gauges are needed to establish a flood threat recognition system. The NWS may issue a "flash flood watch." This is issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain nor imminent. These events are so localized and so rapid that a "flash flood warning" may not be issued, especially if no remote threat recognition equipment is available. In the absence of a gauging system on small streams, the best threat recognition system is to have local personnel monitor rainfall and stream conditions. While specific flood crests and times will not be predicted, this approach will provide advance notice of potential local or flash flooding.

Warning

The next step in emergency response following threat recognition is to notify the public and staff of other agencies and critical facilities. More people can implement protection measures if warnings are early and include specific detail.

The NWS issues notices to the public using two levels of notification:

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- ◆ Watch: conditions are right for flooding, thunderstorms, tornadoes or winter storms.
- ◆ Warning: a flood, tornado, etc., has started or been observed.

A more specific warning may be disseminated by the community in a variety of ways. The following are the more common methods:

- ◆ CodeRED countywide mass telephone emergency communication system
- ◆ Commercial or public radio or TV stations
- ◆ The Weather Channel
- ◆ Cable TV emergency news inserts
- ◆ Telephone trees/mass telephone notification
- ◆ NOAA Weather Radio
- ◆ Tone activated receivers in key facilities
- ◆ Outdoor warning sirens
- ◆ Sirens on public safety vehicles
- ◆ Door-to-door contact
- ◆ Mobile public address systems
- ◆ Email notifications

Just as important as issuing a warning is telling people what to do in case of an emergency. A warning program should include a public information component.

StormReady

The National Weather Service (NWS) established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather related warnings for the public. To be officially StormReady, a community must:

- ◆ Establish a 24-hour warning point and emergency operations center
- ◆ Have more than one way to receive severe weather warnings and forecasts and to alert the public
- ◆ Create a system that monitors weather conditions locally
- ◆ Promote the importance of public readiness through community seminars
- ◆ Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises

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Being designated a NWS StormReady community is a good measure of a community's emergency warning program for weather hazards. As documented in the Capability Assessment section of this plan, there are six StormReady communities in the SENC Region.

Response

The protection of life and property is the most important task of emergency responders. Concurrent with threat recognition and issuing warnings, a community should respond with actions that can prevent or reduce damage and injuries. Typical actions and responding parties include the following:

- ◆ Activating the emergency operations center (emergency preparedness)
- ◆ Closing streets or bridges (police or public works)
- ◆ Shutting off power to threatened areas (utility company)
- ◆ Passing out sand and sandbags (public works)
- ◆ Holding children at school or releasing children from school (school superintendent)
- ◆ Opening evacuation shelters (the American Red Cross)
- ◆ Monitoring water levels (public works)
- ◆ Establishing security and other protection measures (police)

An emergency action plan ensures that all bases are covered and that the response activities are appropriate for the expected threat. These plans are developed in coordination with the agencies or offices that are given various responsibilities.

Emergency response plans should be updated annually to keep contact names and telephone numbers current and to ensure that supplies and equipment that will be needed are still available. They should be critiqued and revised after disasters and exercises to take advantage of the lessons learned and of changing conditions. The end result is a coordinated effort implemented by people who have experience working together so that available resources will be used in the most efficient manner possible.

Evacuation and Shelter

There are six key components to a successful evacuation:

- ◆ Adequate warning
- ◆ Adequate routes
- ◆ Proper timing to ensure the routes are clear
- ◆ Traffic control
- ◆ Knowledgeable travelers
- ◆ Care for special populations (e.g., disabled persons, prisoners, hospital patients, schoolchildren)

Those who cannot get out of harm's way need shelter. Typically, the American Red Cross will staff shelters and ensure that there is adequate food, bedding, and wash facilities. Shelter management is a

specialized skill. Managers must deal with problems like scared children, families that want to bring in their pets, and the potential for an overcrowded facility.

8.3.6 Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- ◆ Outreach projects
- ◆ Speaker series / demonstration events
- ◆ Hazard map information
- ◆ Real estate disclosure
- ◆ Library materials
- ◆ School children educational programs
- ◆ Hazard expositions

Outreach Projects

Outreach projects are the first step in the process of orienting property owners to the hazards they face and to the concept of property protection. They are designed to encourage people to seek out more information in order to take steps to protect themselves and their properties. Awareness of the hazard is not enough; people need to be told what they can do about the hazard.

Thus, projects should include information on safety, health and property protection measures. Research has shown that a properly run local information program is more effective than national advertising or publicity campaigns. Therefore, outreach projects should be locally designed and tailored to meet local conditions.

Community newsletters/direct mailings: The most effective types of outreach projects are mailed or distributed to everyone in the community. In the case of floods, they can be sent only to floodplain property owners.

News media: Local newspapers can be strong allies in efforts to inform the public. Local radio stations and cable TV channels can also help. These media offer interview formats and cable TV may be willing to broadcast videos on the hazards.

Libraries and Websites

The two previous activities tell people that they are exposed to a hazard. The next step is to provide information to those who want to know more. The community library and local websites are obvious places for residents to seek information on hazards, hazard protection, and protecting natural resources. Books and pamphlets on hazard mitigation can be given to libraries, and many of these can be obtained for free from state and federal agencies. Libraries also have their own public information campaigns with displays, lectures and other projects, which can augment the activities of the local government.

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Today, websites are commonly used as research tools. They provide fast access to a wealth of public and private sites for information. Through links to other websites, there is almost no limit to the amount of up to date information that can be accessed on the Internet. Some examples of resources that can be found online include, but are not limited to, floodplain maps, information for homeowners on how to retrofit for floods and flood information for children.

Technical Assistance

Hazard Information

Residents and business owners that are aware of the potential hazards can take steps to avoid problems or reduce their exposure to flooding. Communities can easily provide map information from FEMA's FIRMs and Flood Insurance Studies. They may also assist residents in submitting requests for map amendments and revisions when they are needed to show that a building is located outside the mapped floodplain.

Some communities supplement what is shown on the FIRM with information on additional hazards, flooding outside mapped areas and zoning. When the map information is provided, community staff can explain insurance, property protection measures and mitigation options that are available to property owners. They should also remind inquirers that being outside the mapped floodplain is no guarantee that a property will never flood.

Property Protection Assistance

While general information provided by outreach projects or the library is beneficial, most property owners do not feel ready to retrofit their buildings without more specific guidance. Local building department staffs are experts in construction. They can provide free advice, not necessarily to design a protection measure, but to steer the owner onto the right track. Building or public works department staffs can provide the following types of assistance:

- ◆ Visit properties and offer protection suggestions,
- ◆ Recommend or identify qualified or licensed contractors,
- ◆ Inspect homes for anchoring of roofing and the home to the foundation, and
- ◆ Explain when building permits are needed for home improvements.

Public Information Program

A Program for Public Information (PPI) is a document that receives CRS credit. It is a review of local conditions, local public information needs, and a recommended plan of activities. A PPI consists of the following parts, which are incorporated into this plan:

- ◆ Description of the local flood hazard,
- ◆ The property protection measures appropriate for the flood hazard,
- ◆ Flood safety measures appropriate for the local situation,

- ◆ The public information activities currently being implemented within the community, including those being carried out by non-government agencies,
- ◆ Goals for the community's public information program,
- ◆ The outreach projects that will be done each year to reach the goals, and
- ◆ The process that will be followed to monitor and evaluate the projects.

8.4 SELECTION OF MITIGATION TECHNIQUES FOR THE SOUTHEASTERN NC REGION

In order to determine the most appropriate mitigation techniques for the communities in the Southeastern NC Region, the Regional Hazard Mitigation Planning Committee members thoroughly reviewed and considered the findings of the *Capability Assessment* and *Risk Assessment* to determine the best activities for their respective communities. Other considerations included the effect of each mitigation action on overall risk to life and property, its ease of implementation, its degree of political and community support, its general cost-effectiveness, and funding availability (if necessary).

8.5 PLAN UPDATE REQUIREMENT

In keeping with FEMA requirements for plan updates, the Mitigation Actions identified in the previous SENC Regional Hazard Mitigation Plan and the Onslow County Hazard Mitigation Plan were evaluated to determine their 2021 implementation status. Updates on the implementation status of each action are provided. Any changes to the relative priority of the actions are noted as well. The mitigation actions provided in Section 9: *Mitigation Action Plan* include the mitigation actions from the previous plans as well as any new mitigation actions proposed through the 2021 planning process. Actions identified as completed in the 2016 version of the plan have been moved to Appendix E.